NORTHWESTERN UNIVERSITY

SOME MARKETING PROBLEMS OF THE UNITED STATES AUTOMOBILE TIRE INDUSTRY AND SOME OF THEIR EFFECTS UPON THAT INDUSTRY SINCE 1922.

A DISSERTATION

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By

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PREFACE

"In the marketing field, the changes that have occurred since 1922 have been fully as notable as the changes in most other types of business activity, and of as great significance to the community." So stated M. T. Copeland in prefacing the chapter on "Marketing" in that significant work entitled "Recent Economic Changes" published in 1929.¹ The changes that occurred in tire distribution between 1922 and 1929, and more particularly those that have taken place since the latter date, were as "notable" and "significant" as those taking place in any other field.

The automobile tire industry has fallen heir to almost all of the marketing problems that have beset industry in recent years. The market has contracted very materially due partly to the depression and partly to the state of maturity attained by the industry, but primarily to improvements in production which have resulted in a product that now gives double the service that it did in 1922.² Consumer buying habits have altered and, as a result, both marketing methods and the loci of trade have been materially affected. New channels of retail distribution have arisen and brought in their wake many important price and brand problems.

² In 1922 there were 2.92 casings required per registered car, while in 1933 the figure was 1.34. "Renewal Tire Market Analysis of the United States," United States Bureau of Foreign and Domestic Commerce, Rubber Section, Special Circular no. 3500, 1933.
prices have fallen until the price of one tire for a Ford car in 1922 will buy practically four tires today. Finally, hand-to-mouth buying, installment selling, trade-ins and special sales have further confused the tire marketing picture.

In this thesis no attempt has been made to treat all of the marketing problems confronting the tire industry. Instead, the study has two aims: The first objective has been to describe and analyze what appear to have been the industry's three major marketing problems; namely, (1) the marketing changes that have taken place as a result of the improvements in tire quality and performance; (2) the quantitative and qualitative changes that have occurred in the various segments of the tire market; and (3) the recent shifts that have taken place in tire marketing methods, especially in the retailing field. These changes have been so vital and significant that they have colored and affected the entire industry. Their repercussions have extended back through the marketing structures and into the productive organization; price they have depressed the tire-level and reshaped the entire price structure; and, in addition, have left definite imprints upon manufacturers', wholesalers' and retailers' costs and margins.

The second objective has been to discover, describe and measure, in so far as is possible, some of these effects and repercussions upon (1) the organizations, (2) the price structures, and (3) the tire manufacturers', wholesalers' and retailers' costs and margins.
The scope of this study is thus definitely limited. It excludes many important problems that are worthy of careful investigation as, for instance, tire advertising and its influence upon buying habits and distribution methods, tire price policies, distribution policies and their effects upon company profits and the industry at large, and the influence of marketing methods upon the cyclical behavior of the industry. Moreover, the study does not purport to be an economic analysis of the industry although such analysis should be both interesting and valuable. The findings made may throw some light upon these important subjects but only incidentally.

This study is confined to the United States market. The significance of the foreign market and the interest which American manufacturers have there is fully appreciated. About three per cent of the annual production of the United States tire industry is sold outside the confines of the United States and American companies own and operate plants abroad, excluding Canada, that were purported to have produced about 4,500,000 units in 1934.\(^1\) The foreign market is somewhat isolated and presents distinct and separate problems and therefore it is not considered in this thesis.

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1. Exports have averaged almost 3.5 per cent of the United States production since 1922. (United States Bureau of Foreign and Domestic Commerce, op. cit.) Standard Statistics reported that the foreign plants of American companies would produce about 4,750,000 units in 1934. (Standard Trade and Securities, Section 2, April 17, 1935.)

Tire imports are negligible. Over the nine years 1925-1933 they averaged only 13,500 units per year. (United States Bureau of Foreign and Domestic Commerce, op. cit.)
The period chosen for treatment embraces the years 1922 to 1934, although some data are given for the year 1935. In some instances, however, data were available only through 1933. The year 1922 was taken as the point of departure since it marked the end of the World War depression. The industry was again forging ahead and continued advancing until 1930. Furthermore, as this market advance got under way, the old pre-war order began to feel the effects of new market influences. In other words, these thirteen years represent a major cyclical span and, it is believed, a distinct evolutionary period in the life of the industry.

The organization of the thesis has been practically determined by the definition of the problem. After an introductory statement, the subject matter has been organized under the following headings:

I. The Automobile Tire Industry Prior to 1922.
II. Improvements in Automobile Tire Quality and Consumer Tire-Buying Habits.
III. The Automobile Tire Market--Its extent and Peculiarities.
IV. Changes in Automobile Tire Distribution Methods.
V. Some of the Effects of the Marketing Problems Upon the Organization Structures of the Industry.
VI. Some of the Effects of the Marketing Problems Upon the Price Structures of the Industry.
VII. Some of the Effects of the Marketing Problems Upon Costs and Margins of the Industry.
VIII. Conclusion.
Although the tire industry constitutes one of the major industries of the nation, there exists little literature on this field aside from technical treatises. In 1932, David Miers Beights wrote a doctoral dissertation upon "Financing American Rubber Manufacturing Companies."\(^1\) More recently, J. H. Reid made a study of "Marketing Automobile Tires and Tubes" as a master's thesis.\(^2\) Mr. H. S. Firestone, in collaboration with Samuel Crowther, published a book entitled "Men and Rubber," and Norman Beasley wrote a similar volume around the Goodyear Tire and Rubber Company.\(^3\) Aside from these efforts, the field was practically virgin. Reliance had to be placed upon trade and general magazines and interviews with men engaged in various phases of the industry. The Federal Trade Commission in the Matter of the Goodyear Tire and Rubber Company opened hearings on January 15, 1934, and much documentary material became available. Fortunately, some of the writer's investigations had a direct bearing upon the case and he was extended every courtesy, both by the Commission attorneys and the Goodyear Tire and Rubber Company, in his efforts to secure a distribution picture of the industry. Table XV entitled "The Distribution of Renewal and Spare Automobile Pneumatic Tire Gaging Sales to Consumers by Various Channels, 1922-1934, Inclusive" was the result of these

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Norman Beasley, Men Working, (New York: Harper and Brothers, 1931.)
investigations and the data for the years 1926 to 1933, inclusive, were stipulated in the Federal Trade Commission Docket 2116 as Respondent's exhibit no. 22082.

The analytical method has been employed primarily in order to determine the significance and causal relationships existing in the phenomena. Since the time element entered in, chronological sequences naturally came in for some consideration, but the historical method played a secondary role. Likewise, quantitative data were used, treated and analyzed, but the statistical methodologies employed were rather commonplace and simple.

Many individuals have given material assistance in the preparation of this study. Had it not been for the interest and generous assistance of numerous friends in the "rubber shops," the oil companies, the mail order houses and among the dealers, this dissertation could not have been written. In many instances their specific contributions remain unacknowledged at their request. The writer particularly wishes to express his appreciation to the following: Messrs. William Bloor, Statistician, and R. E. Davis, Manager, Commercial Research, The Goodyear Tire and Rubber Company; J. P. Woodlock, Petroleum Sales, and J. Lintner, Commercial Research, The B. F. Goodrich Company; Ralph Busbey, of the Tire Review; E. G. Holt, Assistant Chief, Leather and Rubber Division, United States Department of Commerce; and E. F. Naycraft, Counsel, and F. J. Corbin, Special Examiner, The Federal Trade Commission. These men were invaluable sources of information and advice. The writer is greatly indebted to
Professors James Washington Bell, Fred E. Clark, F. S. Deibler, and R. J. Ray of Northwestern University. Their patience and forbearance were extraordinary. Professor Bell gave encouragement and advice when they were most needed. Professors Clark and Deibler read and criticized the manuscript and are largely responsible for whatever merit it may have. Professor Ray made countless suggestions and criticisms that were of invaluable aid in perfecting this dissertation. Finally, the author gratefully acknowledges the tireless efforts of Julia R. Leigh, who drew all of the charts, typed and retyped the materials.

This task has been a pleasant one. The quest for information has given the writer an insight into the functioning of a large industry, has unearthed many interesting materials, and has raised numerous challenging problems. While these investigations have led to some definite conclusions, they have disclosed many more unanswered questions that invite further study.

Northwestern University
March, 1936

Warren W. Leigh
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INTRODUCTION

The development of the rubber industry is encompassed in the period 1887 to date. The intervening forty-eight years saw tires develop from "bandages," as Dunlop called his crude tires, to the safe and durable "air wheels" of today. This brief history is a dynamic and interesting story portraying the struggles of persistent men against difficult engineering problems, the rise and fall of hundreds of enterprises, the building and collapse of fortunes and internal complications arising over the principal material—crude rubber.

The industry has experienced its most phenomenal growth and development during and since the World War. With the flood of war orders, plants expanded tremendously and new enterprises sprang up everywhere. Akron, Ohio, the center of the industry, alone employed 87,890 workers within its factories in 1917.\footnote{Rubber Age, July 10, 1933, p. 261.} The inrush of labor in response to the war demand crowded the hallways of hotels, rooming houses, and homes of that little city (50,000 population) until accommodations could be erected. After a severe collapse in 1920, the industry again went forward to its period of greatest expansion which terminated with the recession of 1929. The product and manufacturing developments did not lag behind the physical growth. The tire...
product has improved in design and its performance more than trebled in the course of the years 1916 to date. Process and method likewise have made great strides. New machinery, straight line production, process innovations and more effective utilization of labor have advanced the production efficiency of the industry second to none.¹

Nor has the market been less dynamic than the other phases of the industry for improvements in the quality of the product, changing buying habits, shifting markets, and the incoming of large scale distribution have greatly altered the marketing picture. These shifts in the market since 1922 have naturally raised grave marketing and managerial problems.² Some of these problems will form the center of interest in this study. In the first case, an understanding of the marketing movements themselves and their significance appears desirable and worthwhile since nowhere is such an analysis available. In the second instance, certain of these marketing influences have extended far beyond their immediate sphere and have left

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¹ See Boris Stein, "Productivity in the Automobile Tire Industry." United States Bureau of Labor, Bulletin 535, 1933, Ch. 1, 2, and 3. According to Mr. Stein (p.9) per man productivity in the tire industry on the basis of 1914 as 100 was as follows: 1927, 392.55; 1929, 428.66; and 1931, 547.21. According to Woodlief Thomas (American Economic Review Supplement, March 1928, p. 128) the per man productivity in industry generally was 151-155 on an 1899 base or adjusted to 1914 base it was 140-144. In 1925 Tugwell gave the per man productivity for eleven industries. Automobile tires ranked first with a gain of 311 per cent over 1914. R. G. Tugwell, Industry's Coming of Age (New York: Harcourt, Brace and Co., 1927) p.3. ² The marketing problems were not so important
their imprint upon the organization and price structures, and costs and margins of the industry. To the extent that this has occurred the facts can speak for themselves.

The reader will be able to undertake his task, and it is a tremendous one, without any particular preparation since few technical terms are used and full explanations accompany them. However, a few definitions or explanations of the use of basic terms need to be made at this point.

"Tires" is a term much employed in this paper, and its usage has not always been in the same precise sense. The industry frequently uses the term to cover both casings and tubes and that practice has been followed here because the data and convenience dictated that usage. On the other hand, the term in a precise sense denotes casings. The dual usage of the word will cause no confusion, however, for the context will make the meaning clear. In instances where precision is necessary, either limiting phrases accompany the term or the word "casings" has been substituted.

Footnotes Continued:

during the war as were production problems, since the domestic market had to be limited in order to satisfy the war demand. After the war the market became of major interest.
In this industry the individual retailer, not necessarily an independent, is called a "Dealer." The Bureaus of Census and Foreign and Domestic Commerce of the United States Department of Commerce have dignified the term. In this case, the "dealer" has a connotation that is more specific and limiting than that conveyed by the term "retailer" for it excludes the store units of the large centrally-controlled chains. Therefore, this term is employed to designate the individual firm or account that secures its tires through the branch-house or wholesale channels rather than through the central warehouse of a chain organization.

The term "standard brands" likewise will be met frequently. Standard brands are the first line tires of the large nationally advertising companies--Firestone, Goodrich, Goodyear, and United States Rubber. "Special brands", on the other hand, designate such brands as the All State or Atlas brands produced by tire manufacturers for large private branding middlemen. At times the term "middlemen's private brands" has been employed synonymously, but since the term "private brand" in the industry connotes the subsidiary brands of the large manufacturers which are not sold through the usual distribution channels, this term has been avoided except in a few instances.
CHAPTER I

THE AUTOMOBILE TIRE INDUSTRY PRIOR TO 1922

**

Beginning of the Industry

The rubber industry dates back to 1823 when Charles MacIntosh of Glasgow organized a firm to waterproof garments through the use of a solution of rubber in coal tar naphtha.¹ The new industry began in America in 1832. In that year a Mr. Chaffee, a manufacturer of patent leather, organized the Roxbury India Rubber Company of Roxbury, Massachusetts, to manufacture rubber coated shoes, rubber cloth, life preservers, and sundry other rubber articles.² The infant industry literally boomed for a short time, but its collapse was equally spectacular for the new rubber products failed to withstand weathering—the substance became soft and sticky in warm weather and cracked and lifeless after a short period of exposure to the air.³ These defects were

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¹ Herbert L. Terry, India Rubber and Its Manufacture, (New York: D. Van Nostrand and Company, 1903). Chapter I is devoted to the early phases of the English industry.

² Chauncey M. Depew (Editor), One Hundred Years of American Commerce, (New York: D. O. Hayes, 1895), pp. 499 and 500.

³ Ibid.
overcome by the discovery of the vulcanization process by Charles Goodyear in 1839. Following this discovery, rubber companies again began to spring up. Watertown, Chicopee Falls, and Boston in Massachusetts and Passaic, New Jersey, became the chief centers of the new industry.

Beginning of the Rubber Tire Industry

The modern rubber tire was originated by Robert William Thompson, an Englishman, who in 1845 patented "an application of elastic bearings around the wheels of carriages rendering their motion easier and diminishing their noise while in motion." Thompson's tires were inflated hollow tubes composed entirely of rubber and gutta-percha and covered with a leather sheath. These "aerial wheels", as they were called, measured five inches in diameter. Forty-one years later John Boyd

3. Henry C. Pearson, Pneumatic Tires, (New York: The India Rubber Publishing Company, 1922), p. 34. One of the Pharaohs was supposed to have cushioned his chariot wheels with rubber tires, India Rubber Review, November, 1933, p. 408.
4. Ibid.
Dunlop applied a set of crude pneumatic tires, which he termed "bandages," to the wheels of his son's tricycle.\footnote{Encyclopedia Britannica, 14 Edition, p. 743, Jean McClintock (daughter of Dunlop). See also Henry C. Pearson, op. cit., pp. 335-36, and W. C. Greer, The Reign of Rubber, (New York: The Century Company, 1922).} From this experience, he conceived the idea of producing pneumatic tires for bicycles and later organized the Dunlop Tire Company for this purpose.

The tire industry in its early stages was devoted to the manufacture of bicycle and carriage tires, but primarily to the former.

The manufacture of bicycles started in the United States in 1877 in which year Colonel Albert A. Pope organized the Pope Manufacturing Company. During the decade of the 1890's the industry expanded most rapidly.\footnote{Chauncey M. Depew, op. cit., p. 550.} It has been estimated that there were 500 bicycle manufacturers in the United States in 1898 with an annual output of 1,250,000 bicycles or "wheels," as they were popularly called.\footnote{Cycle Age, September 21, 1899, p. 518.} The manufacturing of tires for this new vehicle required 60,000,000 pounds of rubber in 1895.\footnote{Chauncey M. Depew, op. cit., p. 501. The first bicycle tires were solids. Henry C. Pearson, op. cit., pp. 646-7.
In 1896 rubber tires began to make their appearance on carriages. The manufacture of these tires consequently was just getting well under way when the automobile appeared upon the scene.

Bicycle tires were largely hand made and production methods were rather simple; consequently, many companies entered this field of production. The established rubber companies, such as the B. F. Goodrich, added tire departments. Many of the bicycle companies made their own tires. Several specialized tire companies

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1. This statement applies to the United States. Mr. H. S. Firestone tells us that rubber tires had been used by London cab companies several years previously. Mr. Firestone himself had the only rubber-tired carriage in Detroit. From this he conceived the idea of starting a tire factory to make tires for carriages. As a result, the forerunner of the present Firestone Tire and Rubber Company made its appearance in Chicago in 1896. H. S. Firestone and Samuel Crowther, Men and Rubber, (New York: Doubleday, Page and Company, 1925), pp. 38-40.

2. Henry C. Pearson, op. cit. See the Foreword.

3. The B. F. Goodrich Company was founded in Akron in 1871. It manufactured a varied line of hose and mechanical rubber goods.

4. Henry C. Pearson, op. cit., p. 649. Among the most famous tires in this category were the "G and J" which were made by Gormilly and Jeffrey Manufacturing Company. By virtue of the clincher attachment this company became one of the strongest factories in the trade. The company ultimately became a part of the United States Rubber Company.
arose, among them Morgan and Wright and the Goodyear Tire and Rubber Company. As the carriage tire market developed, tire companies turned their attention in that direction also.

In order to serve the bicycle market the early manufacturers established sales branches in the principal cities of the country. These branches sold and supplied tires to bicycle manufacturers, assemblers, and wholesaler.

In the carriage field branch houses were likewise utilized. However, in addition to performing the usual functions they became "mounting stations."

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1. The Morgan Wright Company became the largest producers of bicycle tires, at one time making 70 per cent of the total output. (Henry C. Pearson, op. cit., p. 649) This company became a manufacturer of automobile tires later and when the United States Rubber Company was formed it was taken in as one of the members.

2. For a history of the Goodyear Tire and Rubber Company see Norman Beasley, Men Working (New York: Harper's, 1831). We are informed that Goodyear escaped a severe financial squeeze by selling carriage tires to three large makers at cut prices for cash. Norman Beasley, op. cit., pp. 21-22.

3. The American Rubber Company had 100 branches, according to its advertising, and some of these were independent agencies, no doubt. (Horseless Age, May, 1898) The Rubber Tire Wheel Company had five branches (Horseless Age, December, 1895, p. 3). In 1903 and 1904 the Hartford Rubber Company, an early stalwart in the bicycle and automobile tire field, had eleven branches (Automobile, March 7, 1903, Advertisement). Goodyear claimed ten branches (Automobile, January 3, 1903); Goodrich, eight (Horseless Age, June 4, 1902); Fisk, three (Automobile, April 18, 1903).


stock and channeling\(^1\) had to be carried in large varieties and when tires were mounted special skill and equipment were needed to cut and prepare the wheels and fit and splice the tires.\(^2\)

The Automobile Tire Industry

With the advent of the automobile just at the turn of the century, the tire business really began to assume importance and a distinctive character. While some of the factors common to the bicycle and carriage period persisted, the product and service demands of the automobile created an industry with an organization and problems peculiar unto itself. An attempt will be made to portray something of the character of this new industry

\(^1\) "Channeling" is the hollowed steel rim that holds the tire on the wheel. These channels were first applied to the wheel, joined or riveted onto the felloe, and then the rubber tire was applied.

\(^2\) On this point Mr. H. S. Firestone states: "Each length of tire was mounted for the wheel it was designed to fit and then cured separately. The carriage wheels of the day had at least ten different diameters and hence any dealer that held himself out as prepared to do business had to carry a minimum of 400 tires." (H. S. Firestone and Samuel Crowther, op. cit., p. 71) The American Tire Company stated in this connection that "hitherto wheels had to be made to fit the tire, but now they made tires in eight standard heights." Horseless Age, May 1896, p. 15.
by reviewing the following topics:

1. Automobile tire construction.
2. The organization of the industry.
3. Tire demand and sales.
4. The distribution pattern.
5. Profits in the industry.

Automobile Tire Construction

The first automobile tires were solids, which might have been expected since the early automobiles were "motor carriages" in fact as well as in name. However, in 1896, Alexander Winton, the maker of the Winton automobile, had Goodrich design and manufacture him a set of single tube pneumatic tires.\(^1\) Following this experiment came several trying years, during which tires were being perfected to give satisfactory performance on these new vehicles.\(^2\) The problem of fastening the tire to the wheel so that it would not fall off or creep around the wheel and yet be removable for repair was a difficult one. But even more serious was the task of building tires that would stand up for any length of time under the

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1. Tires, October 1920, p. 29. See also B. F. Goodrich Company, Best in the Long Run, (1918), p. 60. This set of tires are purported to have cost Winton $500, since he had to pay for the molds.

2. This wholly inadequate treatment of tire construction developments is based upon Pearson, op. cit., Ch. II, III, and XI.
weight of a heavy automobile travelling over the rough and rocky roads at twenty miles an hour, a terrific pace at that time. These tires were composed of several layers or plies of rubberized fabric covered with an outer rubber sheath.\(^1\) They proved very susceptible to punctures and stone bruises, but more common were blow-outs which were caused by the terrific heat generated by the flexing of the tires as they bounded over the road. This constant flexing caused the fabric plies to work upon each other causing wear, friction, and the generation of heat, which ultimately resulted in a blow-out. Tire improvement continued pace from 1900 to 1912 but at the latter date the average mileage obtained from a standard tire was only about 3500.\(^2\) In 1912, cord con-

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1. In order that the reader might have a better comprehension of this material on tire construc-
tion it might be well to describe most briefly the basic parts of a tire. The carcass, or body of the tire, might be said to consist of three parts—a series of four or more plies which are cotton fabrics impregnated with rubber, chafing strips, which prevent the rim from chaf-
ing the side walls of the tire, and the bead which is composed of wire and fabric. This latter forms the lips of the tire which fasten onto the rim and hold the tire in place. Upon the carcass the tread or heavy rubber stock is laid and cemented. The tire is then vulcanized or cured in steam heated pits or molds, which causes it to become one unit, creates the characteristic markings in the tread, and cures or "fixes" the elastic and wearing qualities of the rubber.

struction was introduced. This cord construction was largely responsible for increasing tire mileage about 250 per cent in the next ten years.

1. The standard tire prior to 1912 was of the so-called fabric type. A ply in this tire was a tightly close-woven fabric similar to a heavy piece of cotton cloth. Instead of having a tightly woven warping the new cord fabric was composed of longitudinal threads which were merely held in position by tiny cross threads. The weakness that is apparent in this type of fabric was overcome by cutting the plies on a bias and laying them so that the cords would run at an angle of about 45° to the core. The second ply would then fall so that its cords would make a 90° angle with those of the first ply, and so give reinforcement in all directions.

According to Mr. Pearson, (op. cit., pp. 232-234), the cord construction resulted in the following advantages:

1. The cord tire was better balanced as to service between carcass and tread. Formerly the carcass gave way long before the tread was worn away.
2. Cord construction insured greater flexibility and resiliance. Tests show that cord tires will bounce 35-40 per cent more than fabric tires.
3. It gave even tension and developed less frictional heat, due to each cord being insulated.
4. Cord tires offered better resistance to punctures and stone bruises. The carcass, being more flexible, withstood shocks without breaking.
5. The tires were more buoyant and hence required less air pressure.
6. Cord construction permitted of larger cross section, which lowered the inflation necessary and so insured greater riding comfort and prolonged the life of the car.

In addition to the introduction of cord construction, many significant improvements had been made, among which might be mentioned the development of straight side tires, non-skid treads, the use of casings and inner tubes in place of single tube tires, and improvement in tire fabrics, rubber compounding and vulcanization.

2. Mr. Pearson (op. cit., p. 47) gives the increase in tire guarantees resulting from improvements
Organization of the Industry

With the prospect of an automobile tire market before it, the embryonic tire industry took on activity and life. The technological problems involved demanded that more attention, capital, and space be devoted to tires, but capital and entrepreneurs seemed ready to venture if the increase in tire companies can be taken as an index. The following table gives the number of

Footnotes Continued:

in tire construction. The following examples are typical:

<table>
<thead>
<tr>
<th>Make of tire</th>
<th>Fabric tire guaranteed mileage (1910-1912)</th>
<th>Cord tire guaranteed mileage (1919)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firestone</td>
<td>3500</td>
<td>8000</td>
</tr>
<tr>
<td>Fisk</td>
<td>4000</td>
<td>8000</td>
</tr>
<tr>
<td>Goodrich</td>
<td>3500</td>
<td>8000</td>
</tr>
</tbody>
</table>

Another way to present the effects of tire improvement over the period is by the number of casings required for replacement per car registered the preceding year. This is given by alternate years below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Casings per car</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>4.43</td>
</tr>
<tr>
<td>1912</td>
<td>4.46</td>
</tr>
<tr>
<td>1914</td>
<td>4.84</td>
</tr>
<tr>
<td>1916</td>
<td>5.05</td>
</tr>
<tr>
<td>1918</td>
<td>4.08</td>
</tr>
<tr>
<td>1920</td>
<td>2.57</td>
</tr>
<tr>
<td>1922</td>
<td>2.92</td>
</tr>
</tbody>
</table>

United States Bureau of Foreign and Domestic Commerce, Rubber Section, "United States Tire Market Analysis," Special Circular No. 3500 (1933), Table IV.
companies, number of wage earners, capital investment, and value of output for the industry for the years 1909-19 inclusive. Although the tire and tube classification at this date included certain other rubber manufacturers in addition to tire and tube producers, the data are indicative of the growth of the industry.1

**TABLE I**

Number of Companies, Wage Earners Employed, Capital Invested, and Value Output of the Tire Industry on Census Years 1909-1919 inclusive.2

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Enterprises</th>
<th>No. of Wage Earners</th>
<th>Capital Invested</th>
<th>Value of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1909</td>
<td>227</td>
<td>26,521</td>
<td>98,507,228</td>
<td>129,435,747</td>
</tr>
<tr>
<td>1914</td>
<td>301</td>
<td>50,220</td>
<td>199,183,036</td>
<td>223,610,784</td>
</tr>
<tr>
<td>1919</td>
<td>437</td>
<td>119,848</td>
<td>782,637,722</td>
<td>987,088,045</td>
</tr>
</tbody>
</table>

The number of enterprises engaged in tire manufacture practically doubled in the course of the ten year period. The number of wage earners employed increased about 450 per cent, the capital investment almost 800 per cent, and the value of products over 750 per cent.

1. The Census classification at the dates shown included mechanical goods within the tire and tube classification, hence this data is not strictly accurate nor is it comparable with the Census data given for the industry subsequent to 1921 as the classification was revised in that year. Biennial Census of Manufactures, 1921, p. 1167.
2. Ibid., p. 1172.
The scale of operations increased considerably during the decade, as well. According to the data, the average concern employed about 112 wage earners, utilized capital to the amount of $433,955 and produced $565,796 worth of products in 1909. In 1919 the corresponding figures were 274, $1,790,933, and $2,258,783. Since the dollar values show the effect of increasing price levels, perhaps the number of wage earners is the best index of the increasing plant size. This would denote that the scale of operations of the average plant almost doubled between 1909 and 1919.

Data are available which indicate something of the rate at which this concentration movement was taking place within the industry. As this subject will be touched upon later, it is desirable to call attention to it at this point in order to afford a contrast. Table II gives the plant capacities and estimated sales of the major companies engaged in the tire industry. The absence of data and the varied life span of the different companies prevent a comparison over a definite and uniform period.
Table II

Daily Plant Capacity of Selected Tire Companies at Selected Dates.

<table>
<thead>
<tr>
<th>Company</th>
<th>1911-12</th>
<th>1914-15</th>
<th>1920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodyear</td>
<td>8,000(^a)</td>
<td>10,000(^d)</td>
<td>25,000(^h)</td>
</tr>
<tr>
<td>Goodrich</td>
<td>14,000(^d)</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>United States Rubber</td>
<td>9,000(^g)</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Firestone</td>
<td>2,600(^c)</td>
<td>7,500(^d)</td>
<td>18,000</td>
</tr>
<tr>
<td>Fisk</td>
<td>1,000(^b)</td>
<td>2,500(^e)</td>
<td>15,000</td>
</tr>
<tr>
<td>Miller</td>
<td>1,000(^f)</td>
<td></td>
<td>7,500</td>
</tr>
<tr>
<td>Ajax</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td>Kelly-Springfield</td>
<td>1,000(^e)</td>
<td></td>
<td>7,000</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td>25,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>147,500</td>
</tr>
</tbody>
</table>

\(a\) Horseless Age, September 25, 1912, p. 450.
\(b\) India Tire Review, March 15, 1913, p. 122.
\(c\) Automobile, June 10, 1915, p. 1045.
\(d\) Ibid., October 7, 1915, p. 658.
\(e\) Ibid., November 4, 1915, p. 856.
\(f\) Ibid., November 23, 1916, p. 871.
\(g\) Ibid., June 17, 1915, p. 1086.
\(h\) Tires, October 1920, p. 19, and estimates based upon interviews with men engaged in the industry.

According to these data the four largest companies in 1920 had a combined capacity of about 83,000 tires or 56 per cent of the total industry, while the second group of four companies accounted for 39,500 or 27 per cent. The remaining enterprises contributed 17 per cent.
TABLE III
Sales of the Tire Industry and of Particular Industrial Groups, 1914, 1919, and 1921.

<table>
<thead>
<tr>
<th>Date</th>
<th>Sales of Industry</th>
<th>Sales of Big Four&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Per Cent of Industry</th>
<th>Sales of Four Next Largest Companies&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Per Cent of Industry</th>
<th>Percentage Control of First Eight Cos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>223,611</td>
<td>147,856</td>
<td>66.1</td>
<td>20,966</td>
<td>9.2</td>
<td>75.4</td>
</tr>
<tr>
<td>1919</td>
<td>987,088</td>
<td>551,726</td>
<td>55.9</td>
<td>113,798</td>
<td>9.5</td>
<td>65.4</td>
</tr>
<tr>
<td>1921</td>
<td>595,990</td>
<td>345,061</td>
<td>57.9</td>
<td>91,691</td>
<td>19.4</td>
<td>77.3</td>
</tr>
</tbody>
</table>

The analysis of the sales figures of the particular tire companies considered above gives a result very comparable to that shown by the analysis of plant capacities. Since the sales reports include sales of mechanical goods as well as of tires and the "Big Four," especially United States Rubber and Goodrich, were heavy producers of such goods, it is believed that the sales percentages of these companies may be given an upward bias by this fact. From this data the second line companies appear to have forged ahead more rapidly between

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1. The "Big Four" refers to Goodyear, Goodrich, United States Rubber and Firestone. The sales of these companies were taken from Moody's Manual of Industrials. Since the Census classification included mechanical goods as well as tires and tubes, United States Rubber sales were adjusted by allowing 33-1/3 per cent for the sales of boots and shoes. This was the usual figure reported for these lines.

2. These companies were Fisk, Miller, Kelly-Springfield, and Ajax. Kelly-Springfield did not report
1914 and 1921 than did the larger companies.

From these two tables it appears that the four leading tire companies did about 56 per cent of the volume of the industry. The next group of four companies did about 20 per cent. Combined, they were responsible for fully 75 per cent of the sales of the industry.

Footnotes continued:

sales but they could be estimated reasonably closely from data at hand. Inventory-sales ratios were available for several large and small companies. These could be used to estimate Kelly-Springfield sales since its inventories were reported. In a few cases it was possible to find statements relative to their sales and these were used as a check against our estimates. While inaccuracies are present, it is not believed that they are sufficient to materially disturb the ratios.

1. The reasons lying behind this apparent concentration movement are beyond the scope of our present study. However, as far as the writer can determine, they did not arise from manufacturing economies. A tire plant operates in some respects as a series of plants operating as a unit. The large plant with its improved machinery could probably produce more economically, but this was partly offset by the movement of stocks and reheating necessary between the steps in production and the loss of time and cost of change-overs necessitated by variations in demand. In connection with this point Mr. E. G. Holt states: "The writer believes that size of plant per se has practically no influence on the cost of production in the rubber industry. Specifically, granting an identical material, labor costs per unit, and the same management a plant which at capacity produces 1000 tires a day in two 6-hour shifts is about as economical to operate as a plant which produces 10,000 to 20,000....." United States Bureau of Foreign and Domestic Commerce, Rubber Section, "Costs of Rubber Industry Materials and Operations Indicated by Official Data for 1927, 1929 and 1931," Special Circular No. 3502, 1933, p. 14.

On the other hand, the following factors seem to be contributory. First, product advantages. By this we refer either to patents that were procured or developments that occurred within the laboratory. Those concerns
that remained in the foreground of product development seemed to have a decided advantage in the market. In this regard Goodyear, Firestone and perhaps Goodrich appeared to be the most aggressive. The United States Rubber, at one time, controlled all of the basic patents, but they were content to rest rather than exploit them and as a result lagged in the race. Size and financial standing would both be factors in making research possible and economical. Second, financial strength. This factor operated in many ways. In the first instance it was necessary to carry heavy inventories of a rather expensive raw commodity and expensive tire stocks were maintained at the plant and warehouses. In addition, it was necessary to finance a costly wholesale distributive system and dealers and at this stage, as far as can be determined, the company which was able to finance a far flung distribution system had a decided advantage. Furthermore, guarantees against price declines were common. This gave the well financed company a decided preference with the retailers. Third, those companies that were able to procure a large share of the original equipment business thrived. Original equipment sales represented cash sales and in addition assured a large demand of replacement sales. The Firestone Company was greatly aided by Ford’s business which dated back to 1905. Diamond Rubber Company had a large share, likewise, and its original equipment connections were no doubt an important factor in the Diamond-Goodrich merger in 1911. Goodyear was most aggressive in this field and at one time claimed 50 per cent of these sales. (Fortune, November, 1932, p. 104) Fisk was an important factor in the original equipment field. However, here again product development, research and financial strength were factors as well as the many other things that may have been involved, such as aggressive sales effort, low prices, good product, far flung distributive system, etc. When the automobile manufacturers began to produce on a substantial scale, they could not afford to depend upon a manufacturer who was not equipped with an engineering organization to work with them over their common problems, and who could not finance their orders until delivery. (See R. C. Epstein, The Automobile Industry, Chicago: A. W. Shaw, 1928, pp. 37-54.) In the early days of the industry rubber futures were not developed. Consequently, the only way for a manufacturer to hedge an original equipment contract was to buy and hold crude sufficient to cover the contract. (The India Rubber Tire Review, November 1921, p. 961.)
The Tire Demand and Tire Sales

The market for automobile tires is determined by the annual production and registration of motor vehicles. The accompanying chart (Chart I) shows the annual production and registration of passenger cars and trucks in the United States during the years 1900-1921. Attention is particularly called to the rapidity and growth of both production and registrations. Furthermore, the rate of increase maintained itself quite consistently throughout the period.

The sales of automobile tires are divided into three main classifications. The first, called "original equipment," are those tires that are sold to automobile manufacturers as equipment for their cars. "Export Sales" need no definition. "Renewal" tires are sold to the ultimate consumer to replace the tire equipment purchased with the car.

Original equipment, export, renewal, and total sales of automobile tire casings are presented for the years 1910-1921 inclusive in Chart II. Data for the earlier years are not available.

The export sales increased from about 50,000 units in 1910 to about 1,500,000 units at the peak in 1920. It will be noticed that this market was quite erratic: it slipped off considerably in 1913 and 1914.
PASSENGER CAR AND TRUCK PRODUCTION AND
REGISTRATION IN THE UNITED STATES.
UNIT SALES OF AUTOMOBILE CASINGS.
1910-1921.

Source:
Dept. Commerce, Sp. Cir. #3500.
at the outbreak of the World War, declined again in 1917 and 1918 and, after a spurt during the years 1919 and 1920, it fell sharply in 1921. Original equipment sales showed a steady growth throughout the period. Their rate of gain, however, decreased quite perceptibly from 1917 onward and in the years 1918 and 1921 equipment sales registered two sharp declines.¹

The renewal market experienced a steady and rapid increase during the years 1910-1919. Sales in the former year were about 1,500,000 units and increased to 23,372,590 units in the latter. In the two subsequent years, sales declined to 20,564,539 and 21,973,414, respectively. Total sales reveal the same general contours as do renewal sales except that the declines in the original equipment and export sales in 1918 were sufficient to effect a slight fall in total sales, but, on the other hand, the increases made in original equipment and export sales in 1920 caused the total sales figure to move almost sidewise between 1919 and 1920.

¹ In the earlier years, original equipment sales constituted about 27-30 per cent of the total sales and throughout the remaining years they continued at approximately this level except in periods of depression, although the relationship of cars produced during the same period declined from 29 per cent to 23 per cent. The principal reason for this was, of course, that the life of tires improved to such an extent that increasing car registrations did not consume a proportionate increment of tires.
By way of summarizing this chart it might be said that the sales of automobile tires increased steadily and rapidly throughout the years 1910 and 1921. Certainly this industry had no problem of creating a market to absorb its product.

The Marketing Pattern

The machinery used in the marketing of automobile tires evolved from and about the nucleus established to sell bicycle and carriage tires.

Sales at wholesale were made directly to car manufacturers and through manufacturers' branch houses or wholesalers to retailers.

Practically all sales to car manufacturers were made and handled directly by the factory. The reasons for this are quite obvious. The size and credit standing of the vendee and the volume involved would encourage direct relations. Furthermore, the engineering problems involved necessitated the closest and most consistent contact between the tire and car manufacturer. Tires are such a vital part of the automobile that their size, riding qualities, and tread materially affect the steering, springing, guiding, and

breaking power of the automobile and conversely changes in automobile design affect tires. Consequently, any change in tire design has to be worked out in conjunction with the car manufacturer. Tire deliveries were usually made in carload quantities from the tire factory. Occasionally, car producers availed themselves of branch house stocks, but only in case of emergency.

In selling to the renewal market the manufacturer's sales branch or branch house, as it is commonly termed, early assumed the leading role and ultimately came to be the predominating channel of wholesale distribution.

Branch house development seemed to pass through two stages. In the first stage, embracing the years 1900 to about 1910, the branch house performed the characteristic functions of serving as a selling headquarters for the field organization, carrying stocks of tires, breaking down shipments into retail quantities.

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2. Interview with R. S. Burnham, Manager, Manufacturers Tire Sales, Goodyear Tire and Rubber Company, April, 1935.
3. Manufacturer's sales branches are common in many lines of trade such as machine, equipment and supplies, plumbing and heating products, meats and many other lines. See Census of American Business, Wholesale Distribution, Vol. I, 1933, Summary for the United States, A12 and 13, Table 2B
and parcelling them out to the trade, extending credit and making collections. All of these were very important as the tire manufacturer was recruiting and building his retail organization, supplying a product that was practically an emergency good, and creating good-will. 1

But in addition to these functions, the early branch house acted as a repair and tire servicing agency. There were no servicemen in the field trained or equipped to repair tires so tires were sent to the branch for repairing. 2 In fact, the manufacturer had to open additional repairing stations to meet the market demand. 3

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1. In the early period when tire developments were taking place rapidly, tires were non-standardized and this necessitated that a large variety of types and sizes of tires be carried in stock. The New York Branch of the Continental Caoutchouc Company carried a stock valued at $85,000 in 1906. (Automobile, May 17, 1906, p. 1813) The B. F. Goodrich Company in Boston devoted two floors each 94 x 97 to automobile stock. (Automobile, May 17, 1906, p. 1813)

2. One motorist, for example, states that he bought a tire which blew out in about 300 miles. He sent it to the factory for repair. They fixed it, but the tire blew out shortly afterwards and the tire was ruined. Horseless Age, November 23, 1904, p. 537.

Another individual states that it was impossible to carry a spare every time one went out for a little trip and the bicycle man had not the tools or the skill to vulcanize tires except in rare cases. This person states: "The largest single item in the cost of operating a vehicle is tires." Horseless Age, June 22, 1901, p. 171.


The following description of the branch of the repair department of the Continental Caoutchouc Company
After the elementary principles of tire repairing were worked out, the branch sales organization was able to establish tire repairmen in the field.\textsuperscript{1} The branch, however, continued to function as a laboratory and school for tire repairing to which salesmen and dealers came for instruction.

It might be added in this connection that the car manufacturer was indirectly but tremendously interested in having his tire supply source extend its branch house organization. So important was tire service to successful motor car performance that the car manufacturer insisted that full and complete stocks of the tires carried by his car and proper servicing facilities be available everywhere throughout the market. This situation is pointedly illustrated in the early relations of the Firestone Tire and Rubber Company with the Ford Motor Company. In 1905 the Firestone Company secured the Ford contract for 2,000 sets of tires at

Footnotes continued:

of New York is interesting: "Large preparations have been made and huge stocks of tire parts and accessories have been accumulated in anticipation of demand. Tires are coming in at about the rate of 50 per day. From 15 to 20 workmen are busy on repair. This department was started last summer and cares for only a limited territory. Others are to be found in Boston and Chicago and establishments are soon to be opened in Denver and San Francisco."

Extract from American Automobile, May 17, 1906, p. 1813.

1. As nearly as could be determined from a perusal of the journals, it appeared that repairmen began to appear upon the scene during the latter part of 1904.
§55 per set.¹ In due course the tires were delivered and in service they performed most satisfactorily. But at this point an unexpected problem arose. When replacement tires were required, the Ford owner was handicapped for other makes of tires would not fit the Ford car and Firestone did not have sufficient stations scattered up and down the market to make replacements as needed. The Firestone Company had but two alternatives: either to provide service or to procure a license from the Clincher Tire Association which would permit them to make the more widely used clincher tire.² Incidentally, when American automobiles equipped with straight side tires were first sold in the European market, the tire manufacturer who hoped to share in this original

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¹ For this incident see H. S. Firestone and Samuel Crowther, op. cit., pp. 61-68.
² This Association was composed of the licensed manufacturers of the famous G & J clincher patents. An agreement was reached as to the volume of production for each year and the percentage to be produced by each member of the pool. In case any manufacturer exceeded his allotment, a certain percentage on the excess sales was paid into the fund of the Association. There was an agreement to maintain prices. The management was in the hands of a commissioner. Henry C. Pearson, op. cit., p. 63. Mr. Firestone had asked the association for a license and was refused. (H. S. Firestone and Samuel Crowther, op. cit., p. 78.) Such a refusal apparently was not an uncommon thing for this association held practically a monopolistic grip upon the market until the basic patents were upset by the United States Court of Appeals in April, 1908.
equipment business had to have or provide service facilities throughout the continent.¹

The second stage of branch tire wholesaling developed in 1910 when the primary and fundamental problems of product service had been solved. In this stage the branch expanded more as a supply and aggressive selling agency. The function of physical supply became more important. The numerous tire retail outlets could supply the common service calls but they had to rely upon conveniently located warehouse stores for a large share of their needs. In 1910 Goodrich, one of the two leading companies in the industry, recognized the importance of the supply function and set up a chain of what they termed "supply depots" or sub-branches to supplement the services of the main branch.² These "Depots" were more than warehouses since they did repairing and made adjustments on returned tires in addition to performing the physical supply function. The other

¹ The European market held on to the clincher tire long after it had been abandoned in America. Consequently, American automobile manufacturers had to be assured of foreign service for straight side tires before they would place them on cars designated for the foreign market. Interview with Mr. R. S. Burnham, Manager, Manufacturer's Tire Sales Department, Goodyear Tire and Rubber Company.

² These were placed in all of the important cities not having branches. The stocks carried in these "depots" were inventories at $550,000 which gave an average stock of $30,000 per warehouse. Horseless Age, December 7, 1910, p. 790.
companies soon followed the Goodrich lead.\textsuperscript{1} These warehouse systems were extended from time to time as the market developed.\textsuperscript{2}

The highly competitive state of the market furthered branch house control. Wholesalers had been established in the sparser markets. They were not very successful, however. Wholesalers, or jobbers, as they were commonly called, in order to make a thorough-going job of selling tires were expected to function in the capacity of distributors.\textsuperscript{3} They were expected to provide the space and capital necessary to carry complete tire stocks and provide repairing and service facilities in order to coach retailers and aid them with their tire servicing problems. It was anticipated that they would establish retail accounts and contribute to them time, counsel, and liberal credit until these accounts were well established. In order to insure their activity and to guarantee the tire manufacturer his proper share of the territorial volume, jobbers were given quotas which they were expected to meet.\textsuperscript{4} In return for these

\textsuperscript{1} Goodyear also established a number of service stations in the larger cities to service trucks equipped with solid tires. \textit{Automobile,} June 19, 1913, p. 1245.
\textsuperscript{2} Goodrich added 38 more in 1917. \textit{Automobile,} February 22, 1917, p. 399.
\textsuperscript{3} The following discussion on jobbers is largely based upon H. S. Firestone and Samuel Growther, op. cit., p. 157 et seq.
\textsuperscript{4} Ibid., pp. 158-159.
services, the tire manufacturer was prepared to grant to jobbers exclusive territorial rights and aid them in promoting sales. The jobbers performed the routine selling and warehousing satisfactorily, but they were not sufficiently interested in tires to devote the necessary time to build up retail accounts and aggressively force sales. Nor were they financially able to or desirous of assuming the great risks incident to carrying stocks and providing credit for the dealers. As a result, the large manufacturers displaced wholesalers with their own branch houses as rapidly as their financial standing and the condition of the market would permit.


2. Before the War, the Industries Board attempted to standardize tires and tubes. It was necessary for the wholesaler to carry 32 sizes of tires in three types or 156 different tires in all. The Board reduced the size to nine with an oversize for each and discontinued two of the three types. This minimum did not continue for long, however, for the automobile and tire makers each began to multiply tire types and sizes again almost immediately. Rubber Age and Tire Review, April 10, 1919, p. 20.


Goodyear reached the same decision in 1917. Rubber Age, October 10, 1918, p. 24.

In 1916, the Lee Company eliminated its wholesalers and established its own agencies as "working arrangements with jobbers proved unsatisfactory." India Rubber Review, April 15, 1918, p. 224.
The wholesalers utilized in the industry were of two types—the general line wholesaler and the semi-jobber. Wholesalers were used mainly by the smaller tire companies and the larger companies for their secondary lines.\(^1\) They probably handled no more than 25 per cent of renewal tire sales even before the World War.

The general line wholesalers were jobbers of hardware, automobile accessories, farm implements, and groceries, mainly.\(^2\) These wholesalers, however, carried too diversified a line of merchandise to be able to meet the demand that tire selling imposed.\(^3\) They continued to function in an incidental capacity, but they became less important as a tire middleman than the semi-jobbers.\(^4\)

The semi-jobber or large retailer carrying on the wholesale function in conjunction with his retail activities probably arose in the first instance because

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1. In 1914, United States Rubber stated that it would supply G and J tires not through its branches but through a number of large "distributing agencies." \(\text{Automobile, December 24, 1914, p. 1181.}\)
   Goodrich continues to sell its Diamond brand tires through jobbers today. Goodrich likewise sells its Marathon tire to jobbers.

2. Interview with William O'Neil, President of the General Tire and Rubber Company.

3. Mr. Reynolds, a hardware jobber, stated that after the War Industries Board had reduced tire sizes, the field was not open to jobbers. \(\text{Rubber Age and Tire Review, April 10, 1919, p. 20.}\)

there were few regular wholesalers available able to distribute tires on the basis required by the manufacturer. In this event the logical move for the tire manufacturer was to persuade a large retailer to carry a complete line of tires and to sell them wholesale throughout the territory adjacent to his business. This retailer was given an exclusive franchise and functioned as a full-fledged distributor. Whether he devoted himself exclusively to a single manufacturer's brand is not certain, although the presumption is that he did. At any rate, this distributor emphasized one brand of tires primarily, even though he may have carried secondary brands as fill-ins.

1. Maynard, Weidler and Beckman in discussing the semi-jobber state: "The semi-jobber combines the functions of retailing and wholesaling. In many cases integration has been initiated by the retailer and in others by the wholesaler. Semi-jobbers abound in large numbers in the electrical field and in the automobile accessory field." Principles of Marketing, Revised Edition (Yonkers, New York: The Ronald Press Co., 1933) p. 274.

2. Tires, August 1929, p. 37.

A perusal of the dealer testimony in the Federal Trade Commission v. Goodyear Case, Docket 2116, reveals numerous instances in which the large city retailer functioned also as a wholesaler, for instance, the case of the Newsum Tire Company of Nashville, Tennessee. Mr. Newsum states that his company had been in business for 33 years selling at retail and distributing tires through the Nashville territory.

3. Interview with Mr. E. G. Holt, April 24, 1934.
This type of wholesaler possesses many advantages. In the first case the tire business is one which easily lends itself to a combination of wholesale and retail activities. The tire is re-shipped to a retail outlet in the original package or covering, being merely handled in smaller quantities. Furthermore, a large dealer must carry a reasonably complete stock to serve his own trade; his wholesale activities would therefore entail little additional burden in this regard. Tires are easily stored and do not require a large space. Furthermore, such a retailer would be experienced and schooled in the problems of tire service and tire selling and would be better able to instruct and counsel retailers in these fields than would the ordinary type of wholesaler. Finally, such a middleman would be more likely to devote himself to one brand of tires exclusively which, of course, would be a decided advantage to the manufacturer.  

These combination retailers-wholesalers have persisted in the trade to the present time and the evidence indicates

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1. Mr. Ralph Epstein states that this combination wholesaler-retailer is very common in the automotive industry for quite similar reasons. In this particular case, however, he wholesales the product as a retailer in the original form and unit in which purchased, and, secondly, he maintains a large stock of replacement parts which he would be required to do whether selling wholesale or not. R. C. Epstein, The Automobile Industry—Its Economic and Commercial Development, (Chicago: A. W. Shaw Company, 1923), p. 143.
that most of the independent wholesaling is still done
by them.

Jobbers were allotted a regular trade dis-
count of about 20 per cent and they received in addition
quantity bonuses.

Sales agents were also used, but their role
was a very minor one. 3

Little definite and conclusive information
exists relative to tire retailing, particularly during
the period 1900-1910. No doubt the first tire retailers
were the bicycle retail dealers and repair shops with
whom tire manufacturers already had established relation-
ships. As the automobile trade developed and garages,
automobile dealers and distributors, and curb gasoline

1. See Testimony of President E. D. Levy
of the Fisk Rubber Company at Code Hearings, October 20,
1933.

2. In 1916 Firestone quoted margins of
about 20 per cent. Price Lists, Firestone Tire and Rubber
Company Library. The Federal Trade Commission Brief,
Docket 2216, hereafter referred to as Docket 2216, p. 1,
states 10-15 per cent.

3. Lee Tire and Rubber Company used Kelly
Field and Company, New York, sales agents. In this
connection Mr. Field sold the sales company to Lee and
accepted an executive position on the sales staff with
distributors arose, these were utilized. In the smaller town and rural areas hardware stores, implement houses, general stores and others were pressed into service. But on the whole, there is some evidence indicating that rubber companies did not grant dealerships quite so promiscuously as they did after 1910 or 1912. This is indicated by the fact that Goodyear Tire and Rubber Company increased its retail dealerships relatively slowly before 1911, although it should be remembered that the industry went through a marked "reversal" in 1909 and 1910. It seems probable that a number of dealers might have been reluctant to take on tires in this period, due to the many doubtful quality and performance of the product, the services necessary in conjunction with it, and the inventory investment

1. E. G. Holt, Department of Commerce, "Tire Distribution," American Automobile, Overseas Edition, August and September 1929. Also file of historical materials gleaned from the journals of the period as Cycle Age, Horseless Age, Automobile, and interviews. For instance, a large garage was opened in Chicago in 1904. It was stated that the first floor was to be devoted to offices and sales force. The second, third, and fourth floors were devoted to garage purposes and the fifth floor to car repairs but this store also was "to carry a complete assortment of all makes of tires." Horseless Age, February 17, 1904, p. 188.
2. Story of Goodyear, Company Publication, 1925, p. 17
required. Manufacturers, on the other hand, while willing
to extend their retail organizations and sell on credit,
were probably limited in this regard by their slender
resources. Then, too, the automobile industry was in the
experimental stage until 1912 for by that date automobile
registrations were only slightly in excess of 900,000.

Following 1911 dealerships began to expand
rapidly and apparently promiscuously. Every type of
retailer who could carry tires apparently was employed.
By 1917 Goodyear had granted 30,000 dealerships and the
other companies a corresponding number.

In 1916 the General Tire and Rubber Company
was organized and began distributing its product through
a selected group of retailers who were given exclusive
rights within their trade territory. This company, of

1. Practically all of the tire companies except
Firestone operated retail stores at their branches, due
perhaps to the lack of competent dealers and also the
necessity of accumulating knowledge upon the problems of
retail tire merchandising. United States Rubber Company
discontinued its retail activities in 1912, (Automobile,
February 22, 1912) and the other companies followed.
Kelly-Springfield, possibly the last major company to
operate such stores, closed them in 1922. India Rubber
Review, June 1922, p. 42.

2. Automobile Facts and Figures, National
Automobile Chamber of Commerce, 1934 Edition. These
publications will hereafter be designated as "Facts and
Figures" accompanied by the year of issue.

3. Rubber Age and Tire News, October 10, 1918,
p. 24.

4. On the subject of General Tire and Rubber
Company distribution plan see Executive Service Bulletin,
April 1933, pp. 7 and 8; also Sales Management, September 27,
1930, pp. 460-462 and 464.
course, was selling a quality product and its policy proved very successful. The Goodyear Tire and Rubber Company, probably motivated by General's success, announced in 1917 a "plan" of selective distribution. It planned to reduce the number of its retail dealerships from 30,000 to 10,000. These dealers were to be known as "service dealers," identified by a large appropriate sign, given advertising support (even to an advertising allowance) and would be coached in tire merchandising. They could carry other makes of tires, but they were expected to push Goodyear brands and carry a stock adequate to supply the needs of their trade. In consideration for these services they were to receive a special discount, the amount of which was not stated. The plan apparently was put into effect but the dealers were reduced to only 17,000 and not 10,000 as stated.

1. This proposed plan was announced in Automobile, September 28, 1916. Full details accompanied by its service station contract appears in Goodyear's answer to Federal Trade Commission inquiry in Rubber Age and Tire News, October 10, 1918, pp. 220-24.

2. Dealer lists were about 10 per cent below consumer lists. From this the preferred dealer received 10 4 7/13 off list and another 5 for cash. The regular dealer received 10 off list and the 5 for cash. Automobile, April 3, 1913, p. 755. Firestone gave 40 per cent off list to dealers on Oldfield tires. (Courtesy of Firestone Tire and Rubber Company.)
This seemed an opportune time for such an experiment. The rubber companies were hard pressed to meet war requirements and the tire supply to the domestic market had to be restricted.\textsuperscript{1} Furthermore, the expansion of automobile ownership had reached a point where it was feasible in the larger centers, at least, to more or less specialize in the sale of tires. In turn, this policy, it would seem, would tend to encourage specialization in tire retailing and there is evidence to the fact that it did. One authority states that "standard brands of tires were sold through established dealers who were granted exclusive rights in a designated territory."\textsuperscript{2} In its survey of 1923, Harvard Bureau of Business Research found that, out of 211 firms who answered their questionnaire, tires and tubes constituted more than 65 per cent of their total net sales volume.\textsuperscript{3}

With the close of the War, however, the tire plants found themselves with excess capacity and there was urgent need for more volume. Consequently, a general race for dealers began. Goodyear expanded its dealerships to 33,000 and the other large companies

\textsuperscript{2} R. C. Smith, Tires, August 8, 1929, p. 37.
\textsuperscript{3} Operating Expenses in the Retail Automobile Tire and Accessory Business in 1923, Bureau of Business Research, Bulletin No. 48, (Cambridge: Harvard University Press, 1924).
claimed a similar number. The city of Milwaukee alone had 400 retail outlets. One writer made a survey of tire dealers and declared that one town of 7,000 population with a registration of 400 cars had tires in five out of six garages and the local hackman and others were tire agents. Mr. H. O. Smith bewailed the fact that the prosperous days of tire distribution when "established tire dealers" only were used were forgotten in the mad rush for dealers and volume.

The two principal mail order houses and several chain store syndicates began to sell tires after 1910 or 1911. Sears Roebuck began selling tires in 1911 but apparently their efforts were not particularly successful or they did not push the item. Montgomery Ward introduced tires in 1912 but in 1915 sold only 200,000 units. The first chain store to sell tires was probably Western Auto Supply which was founded in

1. Reported statement of F. A. Seiberling, Tires, January 21, 1921.
2. Tires and Accessories, August 1919, p. 29.
4. Mr. H. O. Smith, Tires, August 1929, p. 37.
1910. The Keystone Tire and Rubber Company, J & R Motor Company, and others arose within the next few years. In total the mail order houses and chain stores probably sold not more than half a million tires or about 2 per cent of the market in 1921.

Profits in the Industry

With a rapidly expanding market the manufacturing and distribution of tires should have proved profitable during this period and so it did. The profit-to-total asset ratio of the six largest companies ranged well above 5 per cent during most of the period 1912 to 1922. Their ratio of profits to sales would be almost identical since their sales to investment ratio averaged about one. The profit ratios of the smaller companies are likewise substantial. An unfavorable

1. Catalog of Company.
3. The profits to total asset ratios averaged for the period 1912-1921 about as follows: Goodyear 11.5 per cent; Goodrich, 5.9 per cent; Firestone (6 years only) 9.6 per cent; United States Rubber, 5.6 per cent; Fisk, 3.8 per cent; and Kelly-Springfield, 10.5 per cent. Everyone suffered a loss in the year 1921. Financial data were taken from Poor's and Moody's Manuals.
4. Ajax Tire and Rubber Company had a ratio of profits to assets of 24.9 per cent and above during the years 1912, 1913, and 1914. For the next four years it averaged about 12 per cent and then it fell sharply and in 1921 showed a negative ratio of 10 per cent. Miller Rubber averaged about 7 per cent throughout the period. Lee apparently earned about 5 per cent although its earnings
profit showing was made in 1920-21 by all companies, which was due in part to the sales situation, but particularly to the losses taken on crude rubber. Six companies alone took losses on inventories in the two year period, totalling more than $86,000,000.

This brief resume of the tire industry gives the reader a picture of the status of the industry in 1922 as it began to move forward out of depression and into a new era when distribution and not production problems became its principal concern.

Footnotes continued:

for the years 1917 and 1918 are not reported. General made earnings in 1919 of 13 per cent, in 1920 of 8 per cent, and in 1921 of 15½ per cent. Poor's Manuals and Moody's Industrials.

1. Sales in 1920 were generally higher than in 1919 but they shrank markedly in 1921. Moody's Industrials. The shrinkage for the five largest companies from 1920 to 1921 was as follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>1920 Sales</th>
<th>1921 Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States Rubber</td>
<td>256,150</td>
<td>164,707</td>
</tr>
<tr>
<td>Goodyear</td>
<td>204,956</td>
<td>82,196</td>
</tr>
<tr>
<td>Goodrich</td>
<td>150,007</td>
<td>86,807</td>
</tr>
<tr>
<td>Firestone</td>
<td>114,981</td>
<td>66,573</td>
</tr>
<tr>
<td>Fisk</td>
<td>42,289</td>
<td>45,402</td>
</tr>
</tbody>
</table>

2. Inventory losses* suffered by these six major companies were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>United States Rubber</th>
<th>Goodyear</th>
<th>Goodrich</th>
<th>Firestone</th>
<th>Fisk</th>
<th>Kelly</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>33,727,000</td>
<td>9,970,000</td>
<td>9,743,000</td>
<td>23,776,000</td>
<td>8,310,000</td>
<td>496,000</td>
<td>$86,028,000</td>
</tr>
<tr>
<td>1921</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Taken from Annual Statements and Moody's Industrials
CHAPTER II

IMPROVEMENTS IN AUTOMOBILE TIRE QUALITY AND CONSUMER TIRE BUYING HABITS

* * * *

The years since 1922 might be termed the distribution era in the chronology of the automobile tire industry for in the course of these years, the industry has experienced a number of significant and far-reaching developments and encountered, largely as a result of these developments, some very perplexing marketing problems. This and the two following chapters will attempt to describe and analyze these marketing developments and the accompanying problems under the following headings: (1) Improvement in automobile tire quality and consumer tire buying habits. (2) The automobile tire market—its extent and peculiarities. (3) Changes in automobile tire distribution methods.

Market improvements have been made during this period in tire design, construction, and quality. These improvements are of tremendous importance to tire and automobile technologists, but the discussion that follows

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1. The trade journals and literature in the fields are devoted primarily to the raw material—crude rubber—or to tire processing. (See "Bibliography on Rubber Technology" published by the Rubber Committee of the Special Libraries Association, 1928, Bulletin No. 7.) The subject of tire merchandising is considered primarily in only two magazines: Tires—a Raymond Bill's publication, New York—and the India Rubber and Tire Review, published by the Babcock Publications, Akron, Ohio.
is concerned with them only as they affect consumers' tire buying habits. These tire developments have been basically responsible, it is believed, for most of the alterations that have occurred in tire buying habits although many other factors, such as changes in purchasing power and methods of living, have also been operating. It is not always possible to separate the effects of one of these factors from those of the other; consequently, while the emphasis will be upon tire developments and their effects upon buying habits, the principal changes in those habits, due to whatever cause, will be treated in this chapter. The topics (a) Improvements in tire quality, (b) Tire buying motives, (c) Tires as convenience, specialty or shopping goods, and (d) Tire distribution policies will be considered in the order named.

**Improvements in Tire Quality**

Even though tires were far removed from the experimental stage by 1922, the improvements in tire quality that have occurred since that date have been most important. The most striking and significant development was, perhaps, the discovery of the balloon type tire which reduced tire air pressure, decreased the dangers of blow-outs and gave more comfortable riding qualities. The rate at which the market accepted both the high
pressure cord and balloon type tires is shown in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fabric</th>
<th>H. P. Cord</th>
<th>Balloon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>51.4</td>
<td>43.6</td>
<td>0</td>
</tr>
<tr>
<td>1923</td>
<td>42.6</td>
<td>55.4</td>
<td>2.0</td>
</tr>
<tr>
<td>1924</td>
<td>29.7</td>
<td>58.8</td>
<td>11.5</td>
</tr>
<tr>
<td>1925</td>
<td>14.1</td>
<td>51.8</td>
<td>34.1</td>
</tr>
<tr>
<td>1926</td>
<td>5.3</td>
<td>47.2</td>
<td>47.5</td>
</tr>
<tr>
<td>1927</td>
<td>1.5</td>
<td>44.6</td>
<td>53.9</td>
</tr>
<tr>
<td>1928</td>
<td>0.6</td>
<td>33.0</td>
<td>66.4</td>
</tr>
<tr>
<td>1929</td>
<td>---</td>
<td>25.2</td>
<td>74.8</td>
</tr>
<tr>
<td>1930</td>
<td>---</td>
<td>16.9</td>
<td>83.1</td>
</tr>
<tr>
<td>1931</td>
<td>---</td>
<td>14.2</td>
<td>85.8</td>
</tr>
<tr>
<td>1932</td>
<td>---</td>
<td>12.2</td>
<td>87.8</td>
</tr>
<tr>
<td>1933*</td>
<td>---</td>
<td>10.8</td>
<td>89.2</td>
</tr>
</tbody>
</table>

# First nine months.

The significance of these improvements can best be presented in terms of both mileage delivered per tire and the number of tires required per year per car. Mr. E. G. Holt states that the present tire delivers six times as much mileage as did a tire in the year 1920. This appears to be an over-statement of the

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1. United States Bureau of Foreign and Domestic Commerce, Rubber Section, Special Circular No. 3500, Table V, December 1, 1933.

case, but the mileage gain registered was most material. The average tire in 1922 probably would run 8,000 miles.\footnote{1} By 1931 it was good for 15,000 miles and today it can reasonably be expected to run 20,000 miles before it is ready for discarding.\footnote{2} One second line tire was claimed to give a 10 per cent longer wear in 1931 than it had one year earlier.\footnote{3} On the basis of these data an increase of about 300 per cent in tire wear seems to have occurred.

This improvement in tire wear reflected itself in the prolonged tire life as is indicated by the number of tires required per registered car for the various years.\footnote{4}

\footnote{1}{The writer estimated this as a fair figure since Pearson (op. cit., p.47) informs us that the common mileage indicated by the various tire guarantees was about 6,000 to 8,000 miles. See also C. E. Fraser and G. F. Doriot, Analyzing Our Industries, (New York: McGraw-Hill Company, 1932) p. 104.}

\footnote{2}{C. E. Fraser and G. F. Doriot, op. cit., p. 104.}

\footnote{3}{C. E. Fraser and G. F. Doriot, op. cit., p. 104, footnote.}

\footnote{4}{On the assumption that new cars will not require tires for a year at least, cars registered the previous year is taken as the base.}
<table>
<thead>
<tr>
<th>Year</th>
<th>No. Tires Required Per Year</th>
<th>Year</th>
<th>No. Tires Required Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>2.92</td>
<td>1929</td>
<td>1.88</td>
</tr>
<tr>
<td>1923</td>
<td>2.41</td>
<td>1930</td>
<td>1.42</td>
</tr>
<tr>
<td>1924</td>
<td>2.36</td>
<td>1931</td>
<td>1.44</td>
</tr>
<tr>
<td>1925</td>
<td>2.32</td>
<td>1932*</td>
<td>1.29</td>
</tr>
<tr>
<td>1926</td>
<td>2.02</td>
<td>1933*</td>
<td>1.33</td>
</tr>
<tr>
<td>1927</td>
<td>2.17</td>
<td>1934**</td>
<td>1.34</td>
</tr>
</tbody>
</table>

* Estimates
** Estimated by the writer using the method employed in Special Circular No. 3500.

Over the period the number of tires required per registered car has decreased more than 50 per cent. This decrease corresponds with a 300 per cent increase in tire mileage performance. Motorists' buying habits, annual travelling tendencies, and other factors affect the tire requirement figure and account for this discrepancy.

The variations in tire requirements from time to time designate a rather definite wave or cyclical movement. The index declines definitely and steadily from 1922 to 1926. With the advance in business the

1. United States Bureau of Foreign and Domestic Commerce, Rubber Section, Special Circular No. 3500, Table IV.
2. The other factors beside tire quality which affect tire consumption will be elaborated further in Chapter III.
movement is reversed and the index increases to 2.29 in 1928. No doubt tires were improving somewhat at this time, although not so rapidly as in the preceding years. Then the downward movement takes place as the market tightened, due perhaps both to a definite improvement in tire quality and also to a tendency on the part of the motorist to use his tires longer, and culminated in a new low in 1932. 1 As the market reflected more optimism in 1933, the tire requirement figure again moved slightly upward, to be followed by a downward swing in 1934 as the index fell to 1.34. A further slight decline is anticipated in the current year. 2

In addition to greater tire performance, tire improvements give vastly more trouble-free mileage. Despite higher car speeds, punctures and blow-outs have been greatly reduced. 3 The use of larger cross sections and lower pressures have been largely responsible for this.

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1. This tendency on the part of the motorist may have been caused by his driving less miles in the course of a year, or wearing his tires beyond the point at which he discarded them. The decline in mileage does not seem to have been material. Bureau of Foreign and Domestic Commerce, Special Circular No. 3500, op. cit., p.11.
2. The trade is expecting it to be about 1.25 on the basis of present sales.
3. Interview with K. D. Smith, The B. F. Goodrich Company. The writer has no data as to the amount of the reduction.
These facts indicate a most meritorious record of achievement and one perhaps unequalled by any other major industry.¹ Yet instead of resulting in enlarged profits for greater social services rendered, it has been one of the primary causes of the industry's distress.²

Tire Buying Motives

The improvements in tire quality have had other effects upon consumer buying habits than the obvious one of prolonging tire life and thereby decreasing the number of tires purchased per year. Some of these effects will be seen as the primary, selective and patronage buying motives that affect tire purchases are considered.³

Tires are accessory goods, since they form a part and parcel of the automobile and are absolutely requisite to

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¹ The petroleum industry in its technique of refining probably comes the nearest. According to Fraser and Doriot, 100 per cent more gasoline could be recovered in 1930 than in 1924 from only 44 per cent more crude oil. This would indicate about 72 per cent increase in efficiency. C. E. Fraser and G. P. Doriot, op. cit., p. 425.

² This statement is one of fact purely and implies nothing of what society should or should not do. It does indicate the contradiction or "paradox," as Ely puts it, between the social aim and the functioning of competitive theory.

³ This classification is that of Professor Copeland. He defines primary buying motives as those which "impel to consumers the major, initial impulse to purchase the kind of goods offered for sale." Selective motives, on the other hand, "divert the consumer's expenditure away from other brands of the same article to the particular brand." Patronage motives determine where the product will be purchased. M. T. Copeland, Principles of Merchandising (Chicago: A. W. Shaw Company, 1924), p. 160 and p. 89.
its operation. In such merchandising the primary motives that prompt purchase might logically be expected to be utilitarian, such as quality, price and tire service.

According to surveys of tire buying habits, quality is considered paramount in determining tire purchases. In a recent survey covering 20,000 motorists over 50 per cent of the respondents, when pressed for the reasons which led them to make their last tire purchase, stated that tire quality was primary. Quality to the motorist, no doubt, spells long wear and safety and he is vitally interested in both.

But tire quality can not be determined merely by making an inspection of a tire. The idea of tire quality, as the survey previously referred to indicates, is gained directly through the respondent's experience with a particular brand of tires, or indirectly as a result of the tire maker's advertising, trade standing and the guarantees that accompany the tire, or the recommendation of friends. It is this dependence of

1. Copeland applies the term "accessory equipment" to such articles as motors that are necessary to the operation of the installation itself.
2. This survey was made by an impartial agency and covered 20,000 tire buyers. It will serve as the foundation for most of the discussion on tire buying motives. This survey is confidential material so neither the source nor the detail can be divulged.
3. Ibid.
the consumer upon outside sources, particularly upon the manufacturer or sponsor of a particular brand of tires, that gives opportunity for "demand creation" or the influencing or manipulation of the consumer by means of sales and advertising appeals.¹ That tire purchasers seem to be particularly responsive to demand creation influences is evidenced on all sides. In the first instance the "consumer acceptance" value accorded the tires of certain large, well-advertised companies is equivalent to 5 per cent to 10 per cent of the purchase price.² Customers seem willing to pay this differential to procure these particular tires. Secondly, consumer surveys show that consumers have a very definite leaning or "preference" for a few well known, standard makes. Eight tire brands combined regularly show consumer

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¹ Upon this point Clark, in speaking of consumption goods, states: "They are usually purchased in small quantities by persons who are not skilled in purchasing and who, consequently, must depend to a large degree on the word of those from whom they buy... Here, then, is a great opportunity for demand creation." F. E. Clark, Principles of Marketing, (New York: Macmillan Company, 1932) p.116.
² The Code proposed a plan of "Temporary Differential Control." The members were divided into four groups according to sales volume. The group with the largest sales volume was to be known as Group A. The second group could quote maximum discounts for new dealer business 5 per cent below Group A. The third group could quote 10 per cent and group four 15 per cent. The Proposed Code of Fair Competition for the Rubber Tire Industry as Revised October 3, 1933.
preference ratings of about 80 per cent. Thirdly, recent advertising campaigns featuring such slogans as "Tempered Rubber," "The Golden Fly," and "43% More Miles" have all brought high consumer responses.

This susceptibility of the consumer to brand advertising has been one of the primary causes for definitely placing the control of tire distribution with the manufacturers. The manufacturers' branch house systems capitalized upon and reinforced this advance agent, advertising. Perhaps in no other field has this control been more complete, except it be in the case of automobiles. Recently, this control has been challenged by a few private brands, which marks the first serious threat that has been made to the manufacturer's domination

1. Tire preference surveys show that eight brands account for 79 per cent of the returns and some twenty others only 21 per cent. Survey made by Ohio State University, 1930. A more recent survey shows that the four leading brands account for 60.4 per cent of the total. See Goodyear Annual Statement, 1933, p. 14. These preference checks are confirmed by tire counts. A recent count covering 14,500 cars at the Indianapolis Speedway revealed that eight brands accounted for 80.5 per cent of the 58,248 tires checked. William Bloor, Goodyear Tire and Rubber Company.

2. The "Tempered Rubber" idea has been featured by United States Rubber Company, "Golden Fly" by Goodyear, and the "43% More Miles" by Goodyear around its G6 tire. The writer is informed by men in a position to speak authentically that each campaign was successful.
of this industry.¹

But the faith of the tire buyer in the tire brand sponsor and his belief in the high quality of tires in general takes yet other aspects. In the first case, his proneness to rely upon statements of quality, performance tests and guarantees inclines the industry, particularly the less responsible members, to abuse this faith. When one manufacturer goes beyond the pale, the other must follow unless the abuse can be stamped out promptly. The fiasco of 1930 is an illustration of this in the field of advertising.² Another example is the abuse of guarantees as in 1934 when guarantees for periods of 18 months to 2 years against "all road

1. For an interesting discussion on advertising control in the drug trade see "Trends in Distribution of Drug Products" by Wroe Anderson, The American Marketing Journal, January 1935, p. 53. There the middlemen were quite strong and played a definite part in the struggle.

2. In 1930 the advertising of certain members of the trade became so vicious that the Better Business Bureau finally took a hand and attempted to clean up the situation. They specifically condemned:

(a) Claims of superiority in construction features;
(b) Claims of superiority in safety;
(c) Conflicting superlatives of a general nature;
(d) Incomplete statements of guarantees and pseudo-guarantees;
(e) Claims of superiority in mileage and wearing quality.

File of the National Better Business Bureau, New York City, loaned to the writer to peruse through the courtesy of O. A. Porter of Akron Better Business Bureau, June, 1934.
hazards" were recklessly given. The second aspect is the confusion that necessarily results in the buyer's mind from the conflicting claims, assertions and tests that the sponsors of various tires make. The buyer has tended to become confused and as a result is manifesting a high degree of buying instability—he does not remain consistent in his brand loyalty but shifts from brand to brand. This is shown by the fact that tire counts on cars two years old or more reveal relatively few that carry the same make of tires on all four wheels.

1. Guarantees have long been a problem in the industry. The 90 warranty against inferior workmanship and failure of materials is supposed to be standard. Tires have been so improved, however, that normally they could be counted upon to stand up for 18 months or about 13,500 miles. But guarantees against "all road hazards" covers so many non-predictable and unwarrantable risks that its use was subject to grave abuse and therefore was unjustifiable from an economic standpoint. See India Rubber and Tire Review, June 1934, p. 19.

   Such guarantees would militate against the producers of cheaper tires and also against financially weak houses, for if the long term guarantee was not used, sales would be lost, and, if it were used, the number of tires returned under the guarantee would be financially burdensome to the producer.

2. The rate at which this shift from brand to brand takes place is unknown to the writer, yet he is assured that it is very high. R. E. Davis, Manager Commercial Research, Goodyear Tire and Rubber Company.

3. Interview with Mr. William Bloor, Statistician, Goodyear Tire and Rubber Company.
The manufacturers are primarily responsible for this
condition as a result of their unrestrained competitive
advertising and price and distribution policies, but
now that the vicious cycle is started each must strive
to surpass the other. As a result, advertising and sell-
ing expenses increase and neither producer nor consumer
gains. 1

Price is another primary motive in tire
purchasing, yet it seems to be a dominating factor in
less than 25 per cent of the purchases surveyed. 2 Performance at low cost probably is more important than
price as such.

The importance of the price appeal differs
materially with the different brands of tires. 3 Price
appeal bulks large in the case of tires which, like
those of the Western Auto Company, are usually featured
"at a price." At the other end of the scale stand the
tires of the General Tire and Rubber Company who seldom
mention prices but feature the quality of their product.

1. This is one of the primary criticisms
launched at the competitive system. Clark, op. cit.,
pp. 625–626. See R. S. Veile and P. L. Slagsvold,
pp. 132–134; also see S. H. Slichter, The Trend of
Economics, R. C. Tugwell, Editor, (New York: S. M. Crofts
2. Survey of 2,000 tire purchasers. op. cit.
3. Ibid.
The effectiveness of the price appeal, likewise, varies between periods of time and conditions of the market. This is true, of course, for all commodities.\(^1\) Lough shows that transportation has had an increasing hold upon the consumer purse strings until the recent depression, when expenditures for this service fell off rapidly.\(^2\) This was true for tires for there was a decided shift to the cheaper tire lines as Chart III indicates. This chart presents the sales by quality lines of three large tire manufacturers from 1926 to 1933 inclusive. The picture is quite representative of the entire market, it is believed, since it embraces almost two-thirds of all tire sales. The companies included cover all sections of the market.

Prior to the World War, the larger automobile tire companies had made only one quality line of tires, with minor exceptions. Their entire attention, perhaps, was taken up in getting a product that would stand up under the diverse and often severe conditions to which tires were subjected. Furthermore, the automobile had not penetrated the lower income brackets to the extent it did later, so the demand price was more uniform. In

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2. Ibid.

The decline in total outgo between 1929 and 1931 was 38.5 per cent. Transportation outgo declined 33.5 per cent.
1919 Firestone introduced the Oldfield tire but it was not made a second line tire until the pressure for a cheaper tire became intense in 1921. Similarly, Goodyear introduced its Pathfinder at the behest of the sales department to enable them to sell the agricultural trade. This line was not, however, identified with the company until it had been built up into a large sales volume. As motor car registrations increased in number and motor ownership descended the income scale, the so-called "gyps" cut into the market further and further. The expansion of the sales of the mail order houses after 1925 further intensified competition. To meet this competition the large tire manufacturers devoted more sales effort to second lines.

Examination of the chart reveals that the first line tires constituted only about 60 per cent of the

1. Price lists appeared in February carrying the new Oldfield line. The price set was about 25 per cent above the regular Firestone tire. When it became a second line, it was priced about 25 per cent below the first line, Price Lists, Firestone Library.


3. C. E. Fraser and G. F. Doriot, op. cit., p. 95.

4. Testimony of Joe Mayl, Docket 2216, pp. 19, 484. The hearing which constitutes this docket opened January 15, 1934, and closed about January 28, 1935. Consequently, the date of this docket will be considered as of the year 1934.

See issues of Tires during 1921-1925.

5. See Chapter IV for full detail on the mail order houses.
market by 1926. By 1928 and 1929, the first lines had strengthened their positions but the volume formerly going to the second was now shared by third and even fourth quality lines. In the prosperous year 1928, Goodyear introduced a deluxe or super-quality line to compete with the General tire, but its sales constituted less than 5 per cent of the company's total tire volume. From 1930 onward, the inroads of the cheaper lines have been rapid and by 1933 the standard or first line actually accounted for only 40-45 per cent of sales. First line tires just reversed their position with the cheaper lines during this eight-year period.

In addition to the price appeal, one of the factors responsible for this shift to second or third line tires unquestionably was the fact that tire performance and safety had made such strides that second or even third lines could be purchased with more assurance than could first lines but a few years before.¹

In addition to the lines of tires shown, quality demand has another aspect, namely, the demand for

¹ President Levy of Fisk Rubber Company produced data at the code hearings which indicated that the production cost differences between second and third lines were negligible. This would indicate that the quality differences were not as wide as the price differences indicate. Mr. Levy argued for narrower price differences between the lines. See Code Hearings on Proposed Code of Fair Competition for the Tire Industry, October 20, 1933.
six ply tires.¹ The standard tire is a so-called "four ply" which indicates that the carcass or body of the tire is composed of four strips or plies of rubberized fabric superimposed upon each other. In 1929, six ply and eight ply tires began to sell in appreciable quantities.² The trend since that date is given by the Department of Commerce as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Cent</th>
<th>Year</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>5.0</td>
<td>1930</td>
<td>26.1</td>
</tr>
<tr>
<td>1927</td>
<td>8.0</td>
<td>1931</td>
<td>25.0</td>
</tr>
<tr>
<td>1928</td>
<td>12.6</td>
<td>1932</td>
<td>24.0</td>
</tr>
<tr>
<td>1929</td>
<td>16.9</td>
<td>1933</td>
<td>20.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1934</td>
<td>19.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1935</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

* RMA Reports

These tire sales variations indicate the presence of both market and cyclical factors. The market has become stratified as to purchasing power and more varied as to tire requirements.⁴ This stratified

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¹ The price difference between 4 and 6 ply tires amounts to approximately 25 per cent.
² The six ply tire is certain to further decline in importance with the popularization of the air wheel or super-balloon. The six ply would only make the tire more rigid and would probably add nothing to its wearing qualities.
³ Letter to writer June 21, 1934, from Mr. E. G. Holt, Department of Commerce.
⁴ Salesmen giving tires hard usage need six ply tires; for example, a motorist expecting to trade his car within a year would buy second or third class tires, etc.
and varied condition has offered an invitation to new types of competition and has made necessary further differentiation in tire quality lines. The shift from lower to higher price lines from periods of business retardation to prosperity is shown by the increase in first line tire sales from 1926 to 1929 and the increase in second and third line sales subsequently. ¹ The past year showed some movement toward the higher priced lines again. ²

Finally, the fact that tires are accessory goods with a limited number of uses, to date, makes their demand quite inelastic. ³ Cars continue to require only four tires and although the motorist may carry one or two "spares" they serve only to prolong the life of the tire equipment. ⁴ This leaves but two variables that

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2. No measure of this trend toward higher priced tires is available for the industry, but see The Milwaukee Journal Consumer Analysis, 1934, page 86.
3. Rubber tires are used on milk trucks, etc. and recently experiments have been made on railroad equipment, but this latter field is yet in the experimental stage. The farm market at present is of primary interest. Rubber tires on tractors greatly increase their traction and speed. But to get the best results, the equipment pulled must also be rubber tired so all tillage and road machinery therefore can be considered as available for tires. The expense of change-over appears to be the principal drawback. The industry is very seriously studying the possibilities of this field.
4. Trucks do require more than four tires often times. (Some foreign cars are experimenting with three wheels.)
affect the average tire consumption, namely, annual driving mileage and the point of wear at which tires are discarded. The former has not varied greatly over the past four or five years. On the other hand, tires are worn through the fabric today before they are discarded, while in more prosperous years they were scrapped when the tread became smooth. Consumer education by the tire companies as well as the dictates of economy have been responsible for this practice. In an attempt to promote the demand for tires manufacturers have resorted to the style appeal and the creation of new tire designs such as the "doughnut" tire but their effects in the main have been negligible.

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2. This practice became most noticeable from 1931 onward. The writer recalls that Professor W. L. Crum, of the Harvard Graduate School of Business Administration, stated in a lecture during the summer of 1931 that tire purchases, along with certain other types of purchase, were bound to show an increase because of the worn condition of such a large proportion of tires. But the buying spurt failed to materialize and still the tires got thinner. This phenomenon likewise fooled the tire companies for their surveys indicated the apparent need for new tires which was slow to materialize.
3. Confidential source.
4. Reference is made here particularly to the country wide tour of the B. F. Goodrich Silver Fleet in 1929. They advertised the mileage obtained on tires and presented by word and picture the mileage left in a tire after the fabric was in sight.
5. Doughnut tires were the large low pressure tires that fitted onto the hub of the wheel. They were about 10 to 12 inches in diameter.
6. Tire companies introduced colored sidewalls, particularly B. F. Goodrich, General, of course, with its more fancy tread and cascaded tread offers more of a
"doughnut," while it was not a successful promotion, did serve to introduce the new air wheels or super-balloon type tires which are common today. 1

Since the demand for tires is so inelastic, one wonders why so much "price appeal" characterizes tire selling. Tires cost the average car owner but $23 per year. 2 This cost is but 10 per cent more than he pays for oil and lubrication and only about 25 per cent of his annual gasoline bill. 3 The motorist would no doubt operate his car as much and buy as many tires as at present even if he had to pay 50 per cent more for them. Demand factors favor the tire manufacturers if they could or would

Footnotes Continued:

style appeal, but this enters in only as a factor in procuring a higher price for the tire rather than making for "Progressive Obsolescence." Interview with E. Stiller, General Tire and Rubber Company.

1. The doughnuts represent an instance where the manufacturer purchased the sale of a new design and offered all types of inducements, such as wheel trad- ins, etc. to place the product upon the market. The new tires presented braking and steering difficulties and had a decided tendency to "shimmy" and "tramp." The automobile manufacturers opposed their use because of these difficulties. K. D. Smith, The B. F. Goodrich Company.

2. These data are the estimates of H. E. Davis, Manager of Commercial Research Department, Goodyear Tire and Rubber Company. See also Tires, January 1932, p. 32.

3. Ibid.
take advantage of this fact. This subject will be further discussed in Chapter VI.

A third group of factors mentioned by buyers as determinative in tire selection had to do with "service." Service ranks about on a par with price as a buying motive. To present day tire purchasers service signifies something vastly different from that tire service which so deeply affected the early tire industry. Today, it refers to the manner of selling tires rather than to product service and includes such things as—the motorist knows the dealer and likes his prompt and efficient service, or the brand of tire desired is

1. Tires about meet the conditions laid down by Marshall under which a check to supply could raise materially a requisite of production. He gave four conditions:

1. The factor itself must be essential.
2. The commodity in which the article is a necessary part should be one for which the demand is inelastic.
3. The article should constitute only a small part of the expenses of production of the commodity of which it is a part.
4. A small check in the amount demanded of the commodity should cause a considerable fall in the supply price of the other factors of production.


Tires are not production goods nor do they meet the fourth condition, but the logic holds notwithstanding.

2. Survey of 20,000 car owners.
conveniently located when a tire purchase is to be made. A very small percentage of respondents, however, did declare that the convenience of the particular brand of tire when they had to make an emergency purchase determined their selection.

The fact that the motorist knows the retailer influences the buying decision to a considerable degree, except in the case of the tires that emphasize price as the principal sales factor. This is true particularly in the case of the small companies that have only limited distribution and do not advertise extensively, consequently, they have to rely upon their dealers to a greater degree. The dealer's "store service" followed in second place. The emphasis upon store service indicates definitely that tires have passed from the class of semi-mechanical services to that of merchandisable commodities. The respondents designated the service typified by the oil companies as their choice in this regard. Their preference perhaps indicates that the sales service should be courteous, alert and cheerful, that the establishment should be modern, well arranged, neatly kept, and prepared to service an automobile

1. Survey of 20,000 tire buyers.
2. Ibid.
3. Ibid.
completely—the "super-service" idea. Unquestionably the
demand for this type of tire service is growing. Mr.
Nelson of Sears Roebuck stated upon this point: 1

"We thereupon,------, increased the service
that we gave in the stores------whereas we had
here-to-fore sold them (tires) without any
service, selling tires over the counter, the
customer mounting them himself. We increased
that service until later on we began to use
very complete service facilities."

More recently, Sears Roebuck has found it necessary to
open super-service stations to compete with the oil
companies and the company-owned stores of the tire
companies. 2

As third in rank of the service qualities that
were determinative, consumers mentioned store location.
They indicated their preference on this point by rating
Atlas highest. 3 This subject will be further developed
in the next section.

1. Testimony of D. W. Nelson, Docket 2116,
pp. 22972 and 22973.
2. They have opened four or five super-
service stations at their "A" stores as an experiment.
Ibid., p. 23003.
3. The industry from its experience and
research in locating stores has a determined quality of
preferred location. It should be on a main, arterial
street and on the side vehicles move in going toward the
business district. The site should be on the far corner
so that it can be readily observed by the approaching
motorist and should be sufficiently large to permit
ample space for servicing facilities as well as convey
an impression of spaciousness to the entire set up.
(Lecture by Mr. J. P. Woodlock at the University of
Akron, April 20, 1931) While the major companies all
recognize these location principles, two defects are
Convenience, Specialty or Shopping Goods

The preceding discussion of the motives that prompt tire buying and determine where the motorist will go to make his purchases definitely raises the question as to whether tires are a convenience, specialty, or shopping good.¹

After defining a convenience good as one "customarily purchased at easily accessible stores," Professor Copeland sets up three tests for the determination of such a good, namely: (a) the want can not abide deferrment, (b) purchases are made at frequent intervals, (c) the unit price is small, which will not justify going far out of the way to procure the commodity. How do tires meet these three tests?²

Tires before 1910 or 1912 were largely emergency purchases as tire life and performance were so uncertain. From 1912 to 1922 tire improvements to a

Footnotes Continued:

¹ In the first case, there is the impossibility of securing these preferred sites except at excessively high rentals and in the second instance the traffic habits are far from permanent. This latter reason has led B. F. Goodrich Company to lease locations instead of investing in "brick and mortar." (Confidential source) Copeland, op. cit., p. 28.
² An excellent article upon this subject, although it is somewhat out of date, is "Distribution Policies of Tire Manufacturers," Harvard Business Review, Volume 2, October 1928, pp. 114-119.
considerable extent at least overcame many of the previous
defects. In the period under consideration, tire perform-
ance has been brought under control to such an extent that
the need for purchasing tires as emergency goods is
reduced almost to insignificance.¹ This means that the
purchasing of a tire can be definitely postponed until it
is convenient or desirable for the purchaser to act.
Furthermore, the figures on tire replacements indicate
that on the average a tire is purchased only about once
in every nine months, but, as a matter of fact, there is
an increasing tendency for two or more tires to be
purchased at one time, which means that possibly tires
are purchased only once in eighteen months to two years.²

Nor do tires qualify from the standpoint of
price or transportation. One or two tires represent a
sizable outlay, so thought and time may well be given
to the purchase. Then, too, the motorist has a means of

¹ "Tires used to be emergency purchases, had
a relatively short life and failed one at a time. As
Tires became better, people came to regard them not as
emergency purchases but as desirable purchases so more
people bought tires two at a time (a surprisingly large
number of those surveyed) and bought them at a place
which they found convenient for trade rather than at a
highside station where tires were handy when a blow-out
occurred." Testimony of P. T. Cherrington, Federal
² Ibid.

Survey of 20,000 tire buyers also bears
this out.
transportation that enables him to cover a wide territory, if need be, in selecting the place of purchase.

If tires do not qualify as convenience goods, their position as shopping or specialty goods remains to be determined.

The criterion for determining whether tires are shopping or specialty goods can be stated thus: Is the decision on the particular tire "brand" and where to buy it made in advance of a visit to the store or is it reached only after comparing prices, service, and quality in several stores?\(^1\) However, as Copeland indicates, consumers of but few, if any, commodities make such clean-cut decisions, so most commodities partake of the nature of both specialty and shopping goods.\(^2\)

Brand preference plays a considerable part in tire purchasing.\(^3\) The motorist has become acquainted with one particular brand of tires at the time he made the purchase of his car, a fact which strongly tends to predispose him to make later purchases of the same kind.

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1. Copeland's statement has been paraphrased only sufficiently to adapt it to this problem. op. cit., p. 60.
brand. Tire advertising also plays a vital part. There are many indications that the public acceptance of advertised brands of tires is greater than of most other commodities and seems to be greater at present than it has been at any time previously. These facts would indicate that tires are specialty goods, that the tire buyer definitely knows what brand he desires, and, consequently, in making his purchase acts accordingly.

On the contrary, tires exhibit many characteristics of shopping goods. There is an increasing tendency to buy them in the trading centers, by which is meant that the car owner tends to purchase tires in the town in which he purchases his clothing and household goods and to which he goes for his amusement. No doubt tires are purchased incidentally at the time the family visits town to make other purchases or to attend the "movies." Of

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1. This predisposition is rated at about 25 percent, i.e., that 25 motorists out of 100 will buy the same brand of tires as the car bore as original equipment. This predisposition varies greatly from tire to tire brand. The brand that has the higher consumer acceptance is much more likely to be replaced by another of the same brand than a brand with less consumer acceptance. R. E. Davis, Goodyear Tire and Rubber Company.

2. Ibid.

Another authority (confidential source) also made this statement.

3. B. F. Goodrich Company made a survey of five typical trading centers and found this to be the case. E. C. Lorentzen, formerly Economist, B. F. Goodrich Company.
course, in the trading centers the tire buyer is assured of a larger selection of tires and a greater number of more up-to-date stores from which to choose. In the larger cities the purchase of tires tends definitely to center in the shopping or secondary shopping areas.\textsuperscript{1}

As a result, automobile service stores now are appearing in increasing numbers in the peripheral areas immediately adjacent to the main shopping districts.\textsuperscript{2} Also department stores, in order to take advantage of this trend, are equipping expensive departments to sell tire and other automobile accessories.\textsuperscript{3}

\textsuperscript{1} Surveys show that in a large city 75 per cent of the purchasing is done in the downtown and secondary areas. R. E. Davis, Goodyear Tire and Rubber Company.

\textsuperscript{2} Both Goodyear and Firestone, acting upon this premise, have been building large automobile service centers adjacent to the main business areas. The former recently built a $500,000 store in Cleveland which sells gasoline, oil, automobile accessories in addition to tires and almost every form of automobile service except heavy repair.

\textsuperscript{3} The Kay Company and Kigbees in Cleveland maintain large departments. The Davis store in Chicago has been doing an excellent business in tires for years. A number of department store tire departments are operated by the tire companies. Interview with E. G. Holt, United States Department of Commerce, July 10, 1934.
Furthermore, all indications point to the fact that more and more shopping, particularly price shopping, is done before tires are purchased. This can be accounted for by the fact that the depression has compelled the tire buyer generally to spend his money more carefully and also by the price situation that has prevailed in this industry. The buyer who plays one store and one brand against another has usually found it possible to secure substantial discounts off list. When this condition becomes prevalent, naturally buyers are prone to take advantage of it.

**Tire Distribution Policy**

Consumer tire buying motives have never been clearly understood, if a well-defined distribution policy might be considered as an indicator of such an

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1. The testimony of dealers in the Federal Trade Commission Hearing—Federal Trade Commission v. Goodyear—stressed the shopping that was practiced. When close to the situation in the tire companies report the same situation.

2. A case came to the writer's attention recently (June, 1935) where a motorist succeeded in buying two new tires for $19.40. The first price given was list of $36.00. Calls upon half a dozen stores brought the price down almost 50 per cent. This represents an exaggerated case, but all too frequently discounts of lesser or greater amounts are forthcoming.
understanding, for tire distribution policies have always been most confused. The present alterations in buying habits that have just been described would not be expected to further clarify this marketing enigma.

The formulation of a sound distribution policy is determined, in the first instance, by the class of goods to which tires belong, that is, whether they are convenience, specialty or shopping goods. Since tires seem to be more akin to shopping and specialty goods than to convenience goods, if the above analysis is sound, then one might logically ask why tires are distributed practically on the basis of convenience goods. In 1922 and 1923 there were probably 100,000 retail outlets where tires were available. At the present time the number, as nearly as can be determined, is about 193,000. As the 1933 Census of Business listed only 473,916 food stores and 317,200 gasoline outlets, the significance of this number can be appreciated. Surely it is not necessary to have

1. See Chapter I.
tires for sale in 188,000 retail outlets—practically an outlet for every 120 cars registered—in order to make them conveniently accessible to purchasers. As the automobile affords such a flexible transportation agency, it would seem that a sufficient number of outlets to create competition and to make the various tire brands available in most communities would insure the motorist ample tire service. A reduction of one-half to two-thirds in the number of these stores would afford ample consumer service, enable manufacturers to fully cover the market, and at the same time afford a more selective plan of distribution which would seem to offer many advantages to manufacturers, to retailers, and to consumers.

Through a selective distribution policy, as the one indicated, manufacturers would gain the advantage of lower selling costs because many thousands of small retailers now visited would be dropped from their lists.

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2. According to the census, there were 6,252 incorporated towns in the United States having a population of over 1,000. Abstract of the Fifteenth Census of the United States, 1930, p. 14.

3. One manufacturer to the writer's definite knowledge has his salesmen call regularly upon every community with a car population of 200 or above. There is every reason to believe that the other large manufacturers are doing the same thing throughout the United States.
The dealers handling any particular manufacturer's line of tires would be assured of a larger volume of business on the average and consequently could afford to devote more time and attention to the sale of the particular brand. But possibly the most important advantage would be the price benefits inherent in a restricted selling plan. The manufacturer would be enabled to exercise a more salient price influence for this relatively smaller retail organization and the retailers on their part, because of the larger capital investments in tires, undoubtedly, would be less inclined to cut prices.

Retailers in turn would benefit because manufacturers could cooperate more actively with them in selling their product. Their credit and inventory risks incident to handling tires would be reduced. If better price control could be effected, tires would carry more profitable margins. Finally, the dealer's institutional service rather than price would become a more important factor in tire selling.

The consumer probably would be the largest beneficiary. Tire selling costs would be less because of the decreased advertising, solicitation, and credit expense necessary under the selective plan. In addition, he would procure more complete and satisfactory tire service from his retailer than he does today. The
retailers' tire stocks would be more complete and more
tire information relative to the proper size and kind of
tires best suited to the consumer's purpose would be
obtainable. In order to secure these advantages the con-
sumer might suffer inconvenience in having tires somewhat
less accessible, but this inconvenience would probably
not be material.

The plan of selective distribution, for all its many apparent advantages, is not followed in this
industry for several reasons. First, it is a hold-over
from the days when tires were primarily emergency
purchases and consequently had to be on sale at all
convenient locations. Second, a large number of auto-
mobiles is owned in the small towns and on the farms
and notwithstanding the tendency of tire buyers to make
their purchases in trading centers an unusually large
percentage of automobile buying, according to a recent
study, is still done in the smaller communities.¹ To
tap this business tire manufacturers have thought it

¹ In 1930 there were 5,085,000 motor vehicles
on farms or about 50 per cent of the United States reg-
istration. Facts and Figures, 1934, p. 16.

In 1933, 37.9 per cent of automobile sales
were made in towns of less than 10,000 to only 23.6 per
cent and 27.2 for foods and drugs, respectively. See
"Tabulation on Population Retail Sales and Population
Groups" by Sales Management, March 16, 1936, p. 510.
essential to have representation in such communities. Third, the oil companies by entering the field of tire selling have added about 65,000 new retail outlets.\footnote{The writer's own estimates based upon interviews with tire manufacturers, oil company tire sales executives and oil company officials. See also L. C. Holt, Special Circular No. 5553, op. cit.} This addition, of course, has served to further dilute the retail market, yet there was no way except through the operation of competition that an equivalent number of dealer accounts could be eliminated. On the other hand, no doubt, the entrance of these large scale retailers has served to expand rather than to restrict distribution through small retailers because, fourth, tires possess several characteristics that lend themselves to small scale retailing. They require no packaging for final delivery, no expensive methods of handling and storage. Consequently, they can be installed in any store with a minimum of investment and expense.\footnote{It was reported to the writer that it cost the Standard Oil Company about $25 per store to provide facilities for handling tires. (Confidential source.)} Also, tires are sold so infrequently that it is necessary that they be handled in conjunction with other goods unless the dealer serves a large number of cars. Finally, due to the prompt deliveries possible from spot stocks located
in the immediate vicinity, the relatively few tire sizes necessary to serve the majority of tire demands, and the credit terms available, the retailer has to make but a small financial outlay in order to engage in tire selling. These features all encourage the small hardware merchant, the general country store, the garage, the curb food store and others to carry a small stock of tires which results in further dilution of the market. Fifth, competition has served to burden the industry with this large retail organization. Tire prices have fallen greatly at the time the market has tended to contract due to the improvements in tire quality, the stabilization of automobile registrations and the effects of depression. Manufacturers, under the pressure of declining sales volume, have attempted to recoup this volume by increasing their retail outlets. They

1. The assumption is that automobile registrations have about reached the maximum and tire sales would thereby be definitely limited. Such improvements as then occurred in tire performance which would reduce the tire renewal rate would only serve to curtail the market.

2. This tendency is illustrated in the case of the General Tire and Rubber Company who grants exclusive franchises to retailers. Recently it has been necessary for this company to add lower priced tires to its line. In addition they secured the Yale brand in order to have a brand suitable to the oil market. (General bought the Yale rubber company in 1927 and is now distributing that brand through Pure Oil Company and other oil stations.) As one executive of the company expressed it, the company is hard put to "eat its cake and have it too," implying that restrictive distribution of a high quality product was most ideal but that the company faced the definite problem of procuring added volume without sacrificing the advantages inherent in the former policy. (Confidential source.)
established dealers everywhere dealers could be persuaded to stock their particular tires. Surveys revealed that dealerships had been granted to several times as many dealers as could possibly be sustained by the tire volume within the area.¹ On the other hand, competition has forced the retailer to seek new combinations of merchandise as well as new methods of selling and many other experiments in an effort to increase volume and increase profits. This breakdown of the merchandise demarcations that used to exist between stores is quite apparent everywhere.² In the automotive field, the most convenient and logical product line to add is tires.

To summarize: The tremendous improvement that has taken place in tire quality has cut in half the number of tires required per car per year in addition to affecting tire buying habits generally. Tires being accessory goods, the tire buyer is interested in utilitarian appeals mainly as quality and price. But

¹ For instance, one company would have its tires in four or five stores, all within a two or three block radius of the central store. E. C. Lorentzen, formerly Economist, B. F. Goodrich Company.
² Upon this point John Curney stated: "Another pronounced trend of considerable future effect now demonstrated by the Census is the steady encroachment of almost every kind of retail store upon fields heretofore considered the province of specialty stores." United States Census of Distribution, 1930 (Preliminary) Retail Distribution in the United States, p. 6.
in determining tire quality, the tire buyer is dependent upon the tire seller, which makes him particularly susceptible to demand manipulation as to the brand and quality of tires but not the quantity of tires he buys. The abuse of the consumer's faith in demand creating activities has made him very unstable in his buying habits. This instability is further affected also by the opinion that all standard brand tires are worth the price asked. Price is very important in tire buying due to the penetration of car ownership into the low income classes, the presence of depression, competition of new stores appealing to price, distribution and price policies of manufacturers and the improved quality of tires which insures a good quality even in a second or third line tire. Service in tire selling is important but improved quality tires have transformed this into sales service rather than product service. Competition is increasing the importance of this feature. Tires seem to be more specialty or shopping goods than convenience goods. Recently, however, an account of tire distribution policies and price and selling methods, price shopping, particularly is becoming most prevalent. Finally, although the consumers would go to a reasonable distance to buy tires, tires are distributed as convenience rather than as specialty or shopping goods. This is due
to the hold-over of old distribution methods, the large number of cars in small towns and on the farms, the adaptability of tires for side line selling, the incoming of new marketers as the oil companies and the pressure of competition.
CHAPTER XIII

THE AUTOMOBILE TIRE MARKET--ITS EXTENT AND PECULIARITIES

* * * *

The important quantitative and qualitative changes that have occurred in the automobile tire market since 1922 will be developed in this chapter.

As any analysis of the tire market goes back fundamentally to the movements that have characterized automobile production and registration, these data will be considered first.

Automobile Production and Registration

Chart IV shows the growth and fluctuations in passenger car and truck production and registrations for the period 1922-1934. It will be noted that both the passenger car and truck production curves (shown in red) rise most rapidly through the years 1922 and 1923 and then tend to level off.\(^1\) This is especially true for the curve representing passenger car production. From 1929 to 1932 both curves receded very sharply. The decline in total passenger car and truck production was about 74.4 per cent, which marks the most serious decline

---

1. About 12 per cent of the United States automobile production during the period 1922-1933 has been exported. Facts and Figures, 1934, p. 81. About 15 per cent of cars and assemblies exported are equipped abroad with tires. (Based upon E. C. Holt's estimates of cars "foreign equipped" with tires. United States Bureau of Foreign and Domestic Commerce, Special Circular No. 5500 op. cit., Table I) Consequently, we can estimate that only about 2 per cent of the United States annual automobile production is not equipped with American made tires.
PASSENGER CAR AND TRUCK PRODUCTION AND REGISTRATION IN THE UNITED STATES.

Source:
Facts and Figures, 1934 Edition,
Pages 9, 6 and 10.
of almost any industry with the possible exception of iron ore and the iron and steel industries.¹ In 1933 a revival set in and total production moved upward from a low of 1,125,396 units to just beyond 2,753,000, or an increase of more than 140 per cent within the two year period. But even with this increase 1934 production exceeded that of the year 1922 by only about 200,000 units.² While 1935 or subsequent years may register a substantial increase in production, they are not likely to approximate the 1928 or 1929 records, for the market appears to have reached a point of saturation or stability where annual production may be expected to cover only annual retirements.³

¹ The United States production receded in 1929 from 5,359,090 to 1,370,678 in 1932. Facts and Figures, 1934, pp. 4-5.
² Iron ore production dropped from 55,201,000 long tons in 1930 to 5,331,000 in 1932. Statistical Abstract of the United States, 1934, p. 661.
³ Iron and steel tonnage declined from 41,069,416 to 10,451,083. Ibid., p. 666.
⁴ According to Robert Doane's figures showing the percentage of output capacity of seventeen industries in 1929 through 1933, iron ore is the only one that records a greater decline than automobiles. Economic Forum, September-October 1934, p. 354.
⁵ Facts and Figures, 1934 edition, pp. 4-5.
⁶ The 1934 data are taken from Preliminary Facts and Figures, Automobile Manufacturers Association, New York: Alfred Reeves.
⁷ In 1930 it was estimated there were only 66,043 new and multiple car buyers. Facts and Figures, 1934, p. 18.
⁸ Standard Statistics estimates that production over the coming years will average about 3,000,000 (passenger) vehicles annually. Standard Trade and Securities, January 1935, Section 2.
Automobile registrations both of passenger cars and trucks trace a more regular and consistent course than do the production curves. Both curves (shown in black) follow the same general course throughout: they ascend at a rather sharp angle until the year 1929, when they level off, then recede slightly until 1932 and then ascend again almost to the 1929 levels. The decline registered between 1929 and 1932 was about 10 per cent, which represented a decline in registrations of 2,674,153. The 1934 registration figure was 24,933,403.

Since a slight percentage increase or decrease in car registrations involves a large number of vehicles because of the magnitude of the figures involved, the actual quantitative changes that took place in registrations merit more detailed consideration. The following table indicates the number of cars scrapped and retired from use relative to the number of new cars available for registration annually.

1. Truck registrations reached their peak in 1930, which was 3,486,019. Facts and Figures, 1935, p. 16. 2. Ibid. 3. Preliminary Facts and Figures, op. cit.
### TABLE VII

An Analysis of Annual Changes in Motor Vehicular Registrations in the United States, 1927-1934.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>U. S. Registrations</th>
<th>Cars Available for Domestic Marketa</th>
<th>Cars Scrapped or Retired Adjustedb</th>
<th>New &amp; Multiple Car Owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927</td>
<td>23,133,243</td>
<td>2,935,577</td>
<td>2,110,214</td>
<td>821,644</td>
</tr>
<tr>
<td>1928</td>
<td>24,493,124</td>
<td>3,776,563</td>
<td>2,516,868</td>
<td>1,259,127</td>
</tr>
<tr>
<td>1929</td>
<td>26,501,443</td>
<td>4,625,354</td>
<td>2,772,838</td>
<td>1,851,371</td>
</tr>
<tr>
<td>1930</td>
<td>26,545,281</td>
<td>2,950,980</td>
<td>2,854,228</td>
<td>66,043</td>
</tr>
<tr>
<td>1931</td>
<td>25,832,884</td>
<td>2,148,917</td>
<td>2,915,024</td>
<td>0</td>
</tr>
<tr>
<td>1932</td>
<td>24,115,129</td>
<td>1,250,979</td>
<td>2,492,140</td>
<td>0</td>
</tr>
<tr>
<td>1933</td>
<td>23,927,290</td>
<td>1,744,008</td>
<td>1,683,956</td>
<td>59,617</td>
</tr>
<tr>
<td>1934</td>
<td>24,933,403²</td>
<td>2,442,178</td>
<td>2,063,752</td>
<td>378,426</td>
</tr>
</tbody>
</table>

a. Cars available for the domestic market equals cars produced minus cars exported plus cars imported.

b. The adjusted figure is an estimate made by adding one half of the unadjusted figure for the previous year to one half of the unadjusted figure for the current year, using the Association method. The unadjusted figure is obtained by adding the current cars available for the domestic market to the previous year's registrations and then subtracting current registrations. **National Automobile Chamber of Commerce.**

From these data it can readily be seen that the number of cars available for domestic registration exceeded by substantial amounts the number of cars scrapped until the year 1931. Beginning with that year the number of cars scrapped or retired from use exceeded the number of cars available by substantial amounts, which of course caused the decrease in registrations.

---

2. Estimated 1933 registration was 26,000,000.
shown above. The number of cars available in 1934 again reversed the movement and consequently a substantial gain in registration occurred. It might be added in this connection that, since cars scrapped is an estimated figure arrived at basically by adding cars available for the domestic market to the previous year's registrations and deducting this figure from current registrations, this figure may represent cars scrapped or cars merely retired from use. This retirement may have taken place because the owners could not afford to keep them in repair, pay the necessary license fees, or business did not warrant maintaining them, particularly trucks, in service. There is every evidence that many retirements of the latter type were made. Consequently, as economic conditions improve and activity picks up, these cars again come back into use.\(^1\)

This happened to a considerable extent in 1934, although in addition the new and multiple car market expanded by almost 400,000 units. This increase in new car ownership represented a dammed-up demand that cannot be expected to be increased, if it can be maintained, in the future, for the automobile market appears to have reached a point of

\(^1\) Upon this Mr. E. G. Holt, of the Department of Commerce, states: "Examinations of Table 7 will show that the average life of motor trucks declined in 1932 presumably because of non-registration of trucks not required for service. The same thing happened in 1921 and after 1921 a considerable number of laid-up trucks apparently were brought back into service and if improving conditions would warrant it we could expect again a considerable return to service of trucks not registered in 1931-32." Special Circular No. 3500, op. cit., 1932, p. 9.
saturation or stability.

With this picture of automobile production and registration before us, consideration will be given to the tire market or, rather, markets.

Classification of Tire Markets

The markets for automobile tires can be classified as follows:

I  The original equipment market

II  The renewal market

A. Private car market

B. Institutional market

  1. Commercial market

    a. National accounts

    b. Commercial accounts

  2. Mileage and rental market

  3. Governmental market

III  Export market

The original equipment, renewal and export markets were defined in Chapter I, so the reader is already familiar with these terms. The subdivisions of the renewal market require further definition.

The private car market, of course, refers to the millions of cars owned by individuals for personal or family use. The institutional market, on the other
hand, embraces those cars owned in an institutional capacity by firms, corporations, and governments. The commercial market is primarily the truck market, although it does include some passenger cars, since it encompasses the truck fleets operated by the so-called national and commercial accounts. A national account supposedly is a corporation operating, in various sections of the country, a fleet of more than 100 vehicles for which tires are purchased through one central office.¹ A commercial account, by definition if not in fact, is a corporation operating more than five vehicles—the Tire Code prescribed five vehicles or more.² It is doubtful if the limits prescribed above were adhered to very closely. The mileage and rental market refers to the large bus and taxi operators. The large bus companies operating under a definite route lease tires at a fixed rate per mile. The taxicab operators, on the other hand, secure their tires at a per tire or per day rental. The governmental market embraces the Federal Government, state governments, and municipalities. Almost co-extensive with the institutional market is the "Truck

¹. See Sales Management, July 19, 1930, p. 88. At one time these accounts took the form of approved national accounts. Tires, March 1930, p. 47. Just what agency approved them, unless it were the Rubber Association of America, is not made clear.
². See Proposed Code for Fair Competition of the Tire Industry, October 20, 1933, p. 349.
market." A truck tire is one over six inches in diameter.  

When the term "sales" is used in conjunction with any one of the above terms, it denotes sales made to those particular markets, of course.

Tire Sales by Markets

Before passing on to a consideration of the quantitative demand for automobile tires, a word of explanation regarding the data utilized is necessary. Despite the rather large unit value of an automobile tire and the comparatively few manufacturers in the field, no accurate data on tire production stocks and sales are available.

The Government utilizes one set of figures and the industry another. In this study both Government figures and the writer's own estimates, which have been made up largely with the aid and consultation of statisticians in the industry, will be utilized.

2. Demand, as used here, refers to market takings rather than to demand in a schedule sense.
3. Rubber Manufacturers Association, commonly called R.M.A., has attempted to render the industry a complete and reliable statistical service, but unfortunately not all the rubber companies would submit reports. As a result, the Association reports were incomplete; the degree of completeness averages from 75 per cent until January 1934 and about 98 per cent thereafter.
4. Mr. E. G. Holt of the Department of Commerce makes use of a residual method of estimation in his figures. He takes the Census and the R.M.A. reports to determine annual production. This is "reduced by subtraction
times the use of these two sets of estimates may make for slight and irreconcilable variations in the data, but as the sources will be designated in all instances no confusion need result.

Chart V represents the unit tire sales of original equipment, export and renewal tires for the years 1922 to 1933 inclusive.¹

Footnotes Continued:

¹. Tires as here used include both casings and tubes. Later, when their demand is given in quantitative terms, casings alone will be used. However, tube sale occurs in a rather fixed ratio to casings so that the tube sales can be determined quite accurately by means of a year to year conversion factor. The ratio of tube to casing production by years is given as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Tubes per Casing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>1.26</td>
</tr>
<tr>
<td>1925</td>
<td>1.32</td>
</tr>
<tr>
<td>1927</td>
<td>1.11</td>
</tr>
<tr>
<td>1929</td>
<td>1.06</td>
</tr>
<tr>
<td>1931</td>
<td>1.26</td>
</tr>
<tr>
<td>1933</td>
<td>.93</td>
</tr>
</tbody>
</table>
The Original Equipment Market

The fluctuations in original equipment sales are very noticeable. As a result of the 1929 spurt in automobile production, the number of original equipment tires sold to car manufacturers rose to a peak of 20,956,264.\textsuperscript{1} From this peak sales fell to a low of 5,982,406 or a decline of over 71 per cent in 1932.\textsuperscript{2} From this low point they advanced with increasing automobile production until in 1934, 13,785,303 original equipment units were sold.\textsuperscript{3} Naturally, these wide swings in this market coinciding as they do with the general ebbs and flows of business seem to expand greatly the pressure on this industry in periods of prosperity and curtail it severely in times of recession. This situation is particularly disturbing since all of this volume is concentrated in the four largest companies.

---

\textsuperscript{1} Sources on original equipment are confidential but they are believed to be most reliable. Sales of solid tires are excluded since their use has been declining. Their sales were as follows:

\begin{tabular}{ccc}
1922 & 241,260 & 1928 & 170,970 \\
1923 & 245,374 & 1929 & 142,592 \\
1924 & 224,520 & 1930 & 73,352 \\
1925 & 266,906 & 1931 & 52,360 \\
1926 & 182,339 & 1932 & 33,932 \\
1927 & 186,000 & 1933 & 8,000* \\
\end{tabular}

* Estimated

\textsuperscript{2} Ibid.

\textsuperscript{3} Ibid.
Sales are made to the car manufacturer at a price about 40 per cent below the dealer's price. Auto-
mobile companies are close buyers and have played the four companies handling this business against each other to the extent that the operating profits, that is excluding all financial charges, averaged less than 4 per cent over the last eight years and during 1929 and 1930 sales were made at below cost. F. A. Seiberling and others severely criticized the industry on this score.

The tire companies justify this price policy on three grounds: first, that it enables the car manufacturer to sell his car at a lower price and thereby extends car registrations and the tire market; second, the sale of original equipment results in future sales of the tire manufacturer's renewal tires. The degree of sales exercised in this case varies directly with the brand preference already established by the tire manufacturers. It would appear that as the automobile market tends to reach a point of saturation the strength of the first argument diminishes. This is not necessarily true,

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1. This statement is made on the basis of the Commission's exhibit no. 617, Docket 2116.

2. Ibid.

Raymond Bills, Editor of Tires, declared original equipment prices were 4 per cent below cost in 1930. Sales Management, July 19, 1930, p. 86.

3. Mr. Seiberling declared that the state of the original equipment business was a discredit to the industry. Tires, January 1930, p. 29.
however, for the substitution of new automobiles for old is advantageous, since the older cars usually are remounted with cheaper and non-standard brand tires. Third, the tire manufacturer gains a contact with a large organization of automobile dealers who will be prospective dealers for his tires.

In an attempt to determine whether or not car manufacturers showed any inclination to indulge in speculative buying and also to determine the strength of other movements that were under way in original equipment buying, deviations in original equipment purchases from a hypothetical normal were calculated. This hypothetical normal was established as the number of tires that would be purchased by automobile manufacturers on the basis of four tires per car produced. These deviations, together with the actual original equipment sales, are shown in Table VIII. The deviations from the hypothetical normal established are rather small with a few exceptions. In 1925 apparently the manufacturers either over-purchased or the excess represented failure of the reported data to coincide with actual purchases. The latter is probably the case since a deficit appears in both 1924 and 1926. However, the subsequent years consistently show surpluses and the 1928 excess is particularly large.1

---

1. Practically all trucks over a capacity of two and one half tons require from six or more tires per truck. When trailers are considered, the number of tires may rise to eighteen. In 1928 about 39,000 such trucks were produced and since that date 5 per cent of the trucks
### TABLE VIII

Original Equipment Unit Tire Sales and Their Variation from Demand on Basis of Four Tires per Car. 1922-1934 inclusive.

<table>
<thead>
<tr>
<th>Date</th>
<th>Unit Sales</th>
<th>Variations from Hypothetical Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>9,984,997</td>
<td>118,693</td>
</tr>
<tr>
<td>1923</td>
<td>15,976,768</td>
<td>349,720</td>
</tr>
<tr>
<td>1924</td>
<td>13,534,924</td>
<td>413,036</td>
</tr>
<tr>
<td>1925</td>
<td>17,399,406</td>
<td>1,007,286</td>
</tr>
<tr>
<td>1926</td>
<td>15,984,843</td>
<td>727,293</td>
</tr>
<tr>
<td>1927</td>
<td>13,024,598</td>
<td>494</td>
</tr>
<tr>
<td>1928</td>
<td>17,686,431</td>
<td>924,445</td>
</tr>
<tr>
<td>1929</td>
<td>20,956,264</td>
<td>428,664</td>
</tr>
<tr>
<td>1930</td>
<td>15,630,869</td>
<td>635,125</td>
</tr>
<tr>
<td>1931</td>
<td>2,656,279</td>
<td>365,727</td>
</tr>
<tr>
<td>1932</td>
<td>5,982,406</td>
<td>1,666,494</td>
</tr>
<tr>
<td>1933</td>
<td>10,250,000</td>
<td>b</td>
</tr>
<tr>
<td>1934</td>
<td>13,785,303</td>
<td>3,065,303</td>
</tr>
</tbody>
</table>

a. This tabulation excludes solid tires which amounted to only about 266,000 at the peak and declined to but a few hundred in 1934.

b. These figures represent R.M.A. figures raised to 100 per cent.

c. The Hypothetical Demand was determined by multiplying by 4 the Department of Commerce figures on cars available for domestic tires.

Footnotes Continued:

produced fall into that category. This increase includes also a small number but a large value of truck tires purchased by the car manufacturers as equipment for semitrailer and trailer outfits. Facts and Figures, 1934, p. 7.

1. Original equipment sales were furnished by a confidential but most reliable source.

2. 1935 Estimated Original Equipment unit tire sales were 18,600,000 and hypothetical demand was 3,750,000.
Some speculative buying in anticipation of a heavy production in 1929 may be indicated, but there was involved another trend that made itself increasingly apparent from this date onward, namely, the mounting of spare tires by the car manufacturer.

1. Until 1926 practically all spare tires had been mounted on cars by the automobile distributors. In 1926 and 1927 the manufacturers of the most expensive cars began to equip them with spare tires.

1. Car manufacturers heavily overbought in 1920 for there is evidence of car manufacturers retailing and dumping tires in 1921 and 1922. "The practice of resale through car agencies of surplus stocks and changeovers at prices less than the dealer's costs, and the sale of surplus stocks to brokers has done more to demoralize the price of tires during the past two years than any other agency." India Rubber Review, August 1922, pp. 33-34.

Modern purchasing practice would tend to discourage speculation or undue errors in judgment. Original equipment contracts usually allocate a percentage of the car manufacturer's requirements to a tire manufacturer. Some contracts may call for definite quantities. Then as car production is planned, tire requirement estimates are given the tire maker. These estimates are for two to three months in advance, but on the fifteenth of each month the following month's requirement is definitely planned. Mr. R. S. Burnham, Manager, Manufacturers' Sales Department, Goodyear Tire and Rubber Company.

2. Mr. R. S. Burnham, Manager, Manufacturers' Sales Department, Goodyear Tire and Rubber Company, as well as several executives from the Firestone and Goodrich organizations, were interviewed upon this subject.

3. Ibid.
With the popularization of the "sport model" car with its well-fenders, this movement was furthered. Since 1929 each successive year has seen approximately a doubling of the percentage of cars equipped with spares by car manufacturers, until in 1934 practically 100 per cent of all cars were so equipped. The number of tires purchased by car manufacturers to mount as spare equipment is estimated as follows:

**TABLE IX**


<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Tires</th>
<th>Year</th>
<th>No. of Tires</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>10,000</td>
<td>1931</td>
<td>580,000</td>
</tr>
<tr>
<td>1927</td>
<td>25,000</td>
<td>1932</td>
<td>665,000</td>
</tr>
<tr>
<td>1928</td>
<td>147,000</td>
<td>1933</td>
<td>1,710,000</td>
</tr>
<tr>
<td>1929</td>
<td>385,000</td>
<td>1934</td>
<td>2,580,000</td>
</tr>
<tr>
<td>1930</td>
<td>400,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These spares are sold to the manufacturer at what is termed the "best dealer price." At the accounting period the car manufacturer remits for the spares.

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1. Well-fenders bear depressions or wells in which tires are carried.
2. Estimated by the writer after consultation with manufacturer's sales executives in several large rubber companies. The estimates obtained were then carefully checked against the data portrayed in Table VII. The percentage of spare tire sales was estimated to be 3½ per cent for 1928, 7½ per cent for 1929, 12.4 per cent for 1930, 25 per cent for 1931, 50 per cent for 1932, 90 per cent for 1933, and 100 per cent for 1934.
3. The 1935 figure is estimated at 3,680,000.
used the difference between the original equipment and this "best dealer price."

It would appear to be but a matter of time, however, until the price will be on the original equipment level.

The share of total tire production absorbed by the original equipment market has not changed significantly within the period under review. In 1922 it required about 25 per cent of total sales; in 1926 about 27 per cent; in 1929 about 30 per cent. During the subsequent years the percentage was much smaller but in 1934 it was again to about 30 per cent. The inclusion of spare tires, of course, has helped maintain this percentage as has also the decreased consumption of renewal tires per registered car. Should further improvements in tires materially increase mileage, which seems entirely probable, and should car production be maintained around its present level, the position of this market would be considerably enhanced. This possibility would not help the tire manufacturer financially unless he were able to secure a higher rate of equipment tires than he has in the past. From present indications it appears that the original equipment tire

1. In several years the original equipment business has been sold at an absolute loss. Over the past six or eight years it appears to have returned operating profit of about 4 per cent on sales. See Chapter VI.
demand will continue at about 15,000,000 tire units per year.  

The Export Market

The export market throughout the period until 1931 has absorbed about 3 per cent of the total tire output. During 1931 and the following year, export tire sales, as export trade generally, suffered severely. In the latter year it fell to 73,200 units. Since most of the larger companies have plants abroad that supply the bulk of foreign needs, tire exports will likely range about 2 per cent of the industry's unit volume, hereafter.

The Renewal Market

While automobile registrations have been more stable and regular in their movements than have the year to year output of cars, it does not follow that the

2. Department of Commerce. See also Standard Trade and Securities, April 17, 1935.
3. Goodyear has plants in England, Argentine, Australia, and Canada; Firestone has plants in Canada, Switzerland, England, Argentine, and Spain; and Goodrich has plants in Canada, France, England, and Japan. The latter plant, however, is devoted primarily, if not entirely, to rubber products other than tires. It was estimated that the foreign plants of the large American tire companies manufactured about 4,750,000 tires in 1934. Standard Trade and Securities, April 17, 1935, Section 2. More recently Goodyear and Firestone have opened small factories in the Far East to compete in that area with Japan.
ultimate consumption demand for tires has manifested a correspondingly regular and persistent trend. In fact, the converse seems to have been true. While car manufacturers' requirements rose and fell with the changes in the automobile industry, yet it was the great consumer market that suffered most from all the many technological and market innovations that occurred. As a result, the consumer tire market has deviated from the basis of registrations more and more.

The following table (Table X) presents the sales of pneumatic and solid automobile tire units to the renewal or consumer market together with indices of their movement over the period.

**TABLE X**

Sales of Automobile Tire Units to the Renewal Market, 1922-1934.

<table>
<thead>
<tr>
<th>Year</th>
<th>Pneumatic Units</th>
<th>Solid Tire Units</th>
<th>Total Unit Sales</th>
<th>Index Base</th>
<th>Year-to-Year Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>28,517,000</td>
<td>680,000</td>
<td>29,197,000</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>27,749,000</td>
<td>567,499</td>
<td>28,316,499</td>
<td>97.0</td>
<td>-3.0</td>
</tr>
<tr>
<td>1924</td>
<td>34,186,000</td>
<td>555,072</td>
<td>34,741,072</td>
<td>119.0</td>
<td>22.7</td>
</tr>
<tr>
<td>1925</td>
<td>37,281,000</td>
<td>653,193</td>
<td>37,934,193</td>
<td>129.9</td>
<td>9.2</td>
</tr>
<tr>
<td>1926</td>
<td>40,094,000</td>
<td>477,316</td>
<td>40,571,316</td>
<td>139.0</td>
<td>7.0</td>
</tr>
<tr>
<td>1927</td>
<td>47,123,000</td>
<td>536,000</td>
<td>47,659,000</td>
<td>163.2</td>
<td>17.5</td>
</tr>
<tr>
<td>1928</td>
<td>50,415,000</td>
<td>476,470</td>
<td>50,891,470</td>
<td>174.3</td>
<td>6.8</td>
</tr>
<tr>
<td>1929</td>
<td>45,847,000</td>
<td>398,372</td>
<td>46,245,372</td>
<td>158.4</td>
<td>-9.1</td>
</tr>
<tr>
<td>1930</td>
<td>37,964,000</td>
<td>290,220</td>
<td>38,254,220</td>
<td>131.0</td>
<td>-17.3</td>
</tr>
<tr>
<td>1931</td>
<td>37,310,000</td>
<td>201,840</td>
<td>37,511,840</td>
<td>128.5</td>
<td>-1.9</td>
</tr>
<tr>
<td>1932</td>
<td>32,726,000</td>
<td>190,926</td>
<td>32,916,926</td>
<td>112.6</td>
<td>-12.4</td>
</tr>
<tr>
<td>1933</td>
<td>32,710,000</td>
<td>106,040</td>
<td>32,816,040</td>
<td>112.4</td>
<td>-.2</td>
</tr>
<tr>
<td>1934</td>
<td>51,830,000</td>
<td>40,000</td>
<td>51,870,000</td>
<td>109.2</td>
<td>-2.9</td>
</tr>
<tr>
<td>1935*</td>
<td>29,300,000</td>
<td>10,000</td>
<td>29,310,000</td>
<td>100.4</td>
<td>-8.0</td>
</tr>
</tbody>
</table>

* Estimated

1. Pneumatic Unit Sales were estimated by the writer with the aid of confidential sources believed to be most reliable. Total Solid tire sales are from Facts and Figures, 1933, p. 41, adjusted for Original Equipment Sales.
In the first place, attention is called to the extent to which pneumatic tires dominate the market. The solid tire, at its point of peak demand, supplied less than \(2\frac{1}{2}\) per cent and in 1933 they had all but passed out of the picture. Second, tire demand seems not to have attained any inordinate peak during the hey-day of prosperity as did automobile registrations, but, on the other hand, it has fallen during the depression to a much lower level. The peak of renewal tire demand was less than 75 per cent above, while car registrations reached a high of 224 per cent above the 1922 base. Likewise, 1933 found tires at only 12.4 per cent above the same base, while registrations stood at 205 per cent. In its broad movements, the renewal tire market followed the trend of automobile production more closely than that of the curve of automobile registrations. Third, in the year-to-year change, the tire market has behaved most irregularly in comparison with automobile registration. In six out of the twelve years, sales have fallen below those of the preceding year. Registrations recorded a persistent and rather regular upward trend until 1931, then declined slightly. Tire sales began to decline at the peak of prosperity and registered the heaviest recession in 1930. Certainly it can be said that tire sales have neither followed car registrations in direction of movement nor in amplitude of
swings during much of the period under consideration.

The primary factor responsible for this striking variance between renewal tire sales and automobile registrations has already been indicated in a previous chapter—the increased tire mileage resulting from new types of tire construction. This is but one, however, of the many and varied factors which influence tire consumption. The factors which have a tendency to decrease tire consumption can be enumerated as:

1. Greatly improved tire quality
2. Improved roads.
3. Retreading.

Tire quality has already received adequate consideration. ¹

During the years 1921 to 1930 inclusive there was expended on the state and local highways of the United States a total of over $13,250,000,000.² At the present time there are over 920,000 miles of rural surfaced road.³ The extension of surfaced highways has obviously been an important, though incalculable, factor in prolonging tire life.

¹ See pp. 47 et seq.
³ Ibid.
Tire retreading is not a new art for it was practiced often perhaps to the detriment of the consumer during the boom market of 1919. With the development of the retreading technique in more recent years, retreading has become a very useful service. Tires whose carcasses are not bruised or broken can be retreaded at a very reasonable cost to give them an added life of about 50 percent of that of new tires. This service has been rapidly expanded during the depression, as the following figures indicate:

3. The Federal Trade Commission made an investigation of four New York firms. It seemed that these firms purchased tires, cleaned them, put on a retread, and resold the tires. They guaranteed these tires for 4,000 miles but the tires failed to stand up for this mileage. When the tires damaged were brought back for replacement, a 50 percent charge was made. The long mileage guarantees tended to mislead the public into thinking that the tires were new and probably representations to that effect were made. So it was contended that all retreads should be plainly marked. Rubber Age, May 10, 1929, p. 111.

2. At the present time manufacturers owned-stores are very active in retreading. It is reported that the Firestone Tire and Rubber Company is promoting this service actively. On its face this would seem to be a very mistaken policy since retreading curtails the tire manufacturer's market. However, he reasons, no doubt, that if he does not participate, his share of that business will go to a competitor. Then, too, it gives him a contact with the customer who later will return for a set of new tires and finally, due to the price situation prevailing in the tire field, it is quite possible that the profit made on retreading is as great or greater than that made on the sale of the set of tires. The factory, of course, loses the benefit of a tire sale but it receives the order for the retread stock.

TABLE XI

Number of Tires Retreaded and Estimated Retread Mileage. 1928-1934

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Retreads&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Mileage per Tire&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>200,000</td>
<td>6,000</td>
</tr>
<tr>
<td>1929</td>
<td>400,000</td>
<td>7,300</td>
</tr>
<tr>
<td>1930</td>
<td>650,000</td>
<td>8,500</td>
</tr>
<tr>
<td>1931</td>
<td>800,000</td>
<td>10,000</td>
</tr>
<tr>
<td>1932</td>
<td>1,100,000</td>
<td>12,525</td>
</tr>
<tr>
<td>1933</td>
<td>1,400,000</td>
<td>15,000</td>
</tr>
<tr>
<td>1934&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2,000,000</td>
<td>15,000</td>
</tr>
</tbody>
</table>

<sup>a</sup> Estimated.
<sup>b</sup> National Rebuilt Tire Dealer and Vulcanizer, January, 1935.

Every tire retreaded means the postponement of a tire sale for almost a year. In the light of this date, it seems reasonable to assume that the industry lost the sale of about 600,000 new tire units in 1932, 750,000 in 1933, and 1,000,000 in 1934 due to the activity of the retreaders.

1. Mr. William Bloor, Goodyear Tire and Rubber Company, estimates the number of retreads as 1,330,000 for 1933 and 2,000,000 for 1934. Standard Statistics estimated 1,000,000 in 1934 and sets the figure at 1,600,000 for 1935. Standard Trade and Securities, April 17, 1935, Section 2. Both figures are too low. The National Rebuilt Tire Dealer and Vulcanizer, January 1933, estimated them as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Retreads</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>350,000</td>
</tr>
<tr>
<td>1929</td>
<td>725,000</td>
</tr>
<tr>
<td>1930</td>
<td>1,022,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Retreads</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931</td>
<td>1,250,000</td>
</tr>
<tr>
<td>1932</td>
<td>2,160,000</td>
</tr>
<tr>
<td>1933</td>
<td>2,980,000</td>
</tr>
</tbody>
</table>

2. Retreading increased tremendously in 1933. The tire review estimates them at about 2,500,000 for 1933. January, 1934, p. 7.
On the other side of the picture are the factors that have operated to increase tire consumption. Mr. P. W. Litchfield recently gave an excellent statement of their nature:

"While tire quality has increased during the period, increased car speeds, more powerful brakes, more starting and stopping, smaller diameter tires, and more price buyers have all been factors tending to increase tire consumption." 1

Mr. Litchfield might have included the increasing car mileage driven per year. The evidence indicates that the average annual car mileage increased about 30 per cent between 1922 and 1929. 2 Since the latter date there has been no appreciable change. E. G. Holt estimates the 1929 average mileage at 9,060, 1931 at 9,390, and 1933 at 9,070. 3

The effects of the items mentioned by Mr. Litchfield are impossible of determination but they have greatly increased tire wear. 4 The effects of the various factors enumerated above upon the renewal demand for tires, can be shown most effectively perhaps, by the use of some

2. R. E. Davis, op. cit. He estimates that the average annual mileage is about 7,500. He believes that the mileage figure has increased by about 12 per cent since 1929.
3. United States Bureau of Foreign and Domestic Commerce, Special Circular No. 3500, p. 11.
4. In emphasizing the effect of breaking upon tires, one company had in their sales manual a demonstration to the effect that every car had eight brakes, four on the wheels and four on the road.
hypothetical normal as was used earlier in connection with original equipment sales. If the rate of tire renewal be assumed to have remained constant throughout the period at the rate characterizing it from 1922 to 1926 and this rate be applied against automobile registrations, it is possible to establish a hypothetical demand for tires, which is shown in the table below. The difference between this hypothetical figure and actual renewal tire sales constitutes a measure of renewal tire sales that have been lost or, rather, failed to materialize. This data is presented below.

TABLE XII

Renewal Pneumatic Sales and Variances from Hypothetical Normal, 1922-1934.

<table>
<thead>
<tr>
<th>Year</th>
<th>Renewal Sales</th>
<th>Variations from Hypothetical Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units % Renewal Sales</td>
<td></td>
</tr>
<tr>
<td>1922</td>
<td>28,517,000</td>
<td>+ 5,765,977</td>
</tr>
<tr>
<td>1923</td>
<td>27,749,000</td>
<td>+ 910,010</td>
</tr>
<tr>
<td>1924</td>
<td>34,188,000</td>
<td>+ 761,685</td>
</tr>
<tr>
<td>1925</td>
<td>37,281,000</td>
<td>- 2,111,844</td>
</tr>
<tr>
<td>1926</td>
<td>40,094,000</td>
<td>- 5,080,372</td>
</tr>
<tr>
<td>1927</td>
<td>47,123,000</td>
<td>- 3,155,859</td>
</tr>
<tr>
<td>1928</td>
<td>50,415,000</td>
<td>- 2,737,789</td>
</tr>
<tr>
<td>1929</td>
<td>45,847,000</td>
<td>- 10,532,012</td>
</tr>
<tr>
<td>1930</td>
<td>37,984,000</td>
<td>- 23,215,253</td>
</tr>
<tr>
<td>1931</td>
<td>37,310,000</td>
<td>- 24,172,952</td>
</tr>
<tr>
<td>1932</td>
<td>32,739,000</td>
<td>- 27,251,715</td>
</tr>
<tr>
<td>1933</td>
<td>32,710,000</td>
<td>- 23,581,414</td>
</tr>
<tr>
<td>1934</td>
<td>31,830,000</td>
<td>- 23,454,586</td>
</tr>
</tbody>
</table>

1. The period 1922-1924 was taken because the tire consumption per registered car was declining during these years. In 1927 the trend began to reverse.
From this table it becomes apparent that renewal tire sales would have been from 25 per cent to 75 per cent higher from 1929 to 1934 than they were had not the tire market been curtailed by these product factors.

The phenomena manifested here are most striking when considered in relation to the changes that have occurred in gasoline consumption during this period. Gasoline consumption as contrasted with tire consumption pursued a steady upward trend. If 1922 be taken as an index base, gasoline consumption rose to 290 in 1929, 310 in 1931, and 292 in 1933.\(^1\) While these figures do not make allowances for non-automotive consumption, which would not alter the situation materially, the trend was definitely and rapidly upward over the entire period.\(^2\)

Certain subdivisions of the renewal tire market need further consideration at this point.

---

2. Gasoline consumption per car registered increased for selected years as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>444</td>
</tr>
<tr>
<td>1928</td>
<td>479**</td>
</tr>
<tr>
<td>1929</td>
<td>534*</td>
</tr>
<tr>
<td>1931</td>
<td>587*</td>
</tr>
<tr>
<td>1933</td>
<td>605*</td>
</tr>
<tr>
<td>1934</td>
<td>616*</td>
</tr>
</tbody>
</table>

* Estimated percentage of gasoline consumed by automobiles as 90 per cent of total.
** Estimated percentage of gasoline consumed by automobiles as 85 per cent of total.
The truck market deserves attention because of its great importance from a value standpoint. The average truck tire is six to eight inches in diameter and costs about $30 (1933) as compared to $8 for the average passenger car tire.\textsuperscript{1} The consumption of truck tires has been gradually increasing through the extended use of trucks and busses in the transport of freight and passengers. In 1925 this market accounted for 4.8 per cent of the unit and 16.0 per cent of the dollar sales of the industry. By 1929 the unit sales had increased to 8 per cent and the value to 26.3 per cent and by 1934 to 11.8 per cent and 35.6 per cent, respectively. In 1933, according to one authority, the sales totalled approximately 3,500,000 units with a value of $120,000,000.\textsuperscript{2} The year to year development of this market is revealed in Table XIII.

\textsuperscript{1} A truck tire is defined as one over six inches in diameter. It consists of from 6 to 32 plies and is often hand made, especially in the largest sizes. While the price of the average truck is about $30, many cost $100 or more per tire.

\textsuperscript{2} William Bloor, Statistician, The Goodyear Tire and Rubber Company.
TABLE XIII

Truck Tire Sales in Units and Dollars Expressed as Percentages of Total Renewal Sales, 1925-1934.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Cent of Units</th>
<th>Per Cent of Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>4.6</td>
<td>16.0</td>
</tr>
<tr>
<td>1926</td>
<td>5.4</td>
<td>13.2</td>
</tr>
<tr>
<td>1927</td>
<td>6.1</td>
<td>20.2</td>
</tr>
<tr>
<td>1928</td>
<td>7.1</td>
<td>23.7</td>
</tr>
<tr>
<td>1929</td>
<td>8.0</td>
<td>20.3</td>
</tr>
<tr>
<td>1930</td>
<td>7.9</td>
<td>27.7</td>
</tr>
<tr>
<td>1931</td>
<td>9.3</td>
<td>29.6</td>
</tr>
<tr>
<td>1932</td>
<td>10.7</td>
<td>31.8</td>
</tr>
<tr>
<td>1933</td>
<td>10.8</td>
<td>34.2</td>
</tr>
<tr>
<td>1934</td>
<td>11.8</td>
<td>35.6</td>
</tr>
</tbody>
</table>

Truck tire sales constitute a thorn in the side of the industry, as it were. The cream of this business is a few hundred relatively large national and commercial, mileage, rental and governmental accounts. These, particularly the national and commercial accounts, are concentrated in the larger cities and are readily accessible to all manufacturers, large and small.²

¹ H. E. Davis, Statistical Meeting, Cleveland, April 26, 1935.
² These accounts are not always accessible in a trade sense, for the smaller manufacturers do not have facilities to service a large bus account such as that of the Greyhound Company. Furthermore, established trade relations, size, and reputation of the manufacturer and his financial responsibility have an influence on a responsible purchasing agent in inviting bids or quotations. In addition, reciprocity plays a part. There is no reason to believe it is less active in this industry than in others. In several cases it has been employed to the knowledge of the writer.
³ Truck tire sales increased about 20 per cent in 1935 or to about 14.2 per cent of the total renewal units but the value percentage changed little due to the prevalency of price wars.
Consequently, they invite competitive bidding and so-called "account stealing" and as a result this business is often in a state of chaos. Commercial "price wars" which are disastrous both to manufacturers and middlemen are common.  

The national account market has expanded very rapidly with the growth of mergers and consolidations.  

The magazine "Tires" reported 41 "Approved National Accounts" in 1929.  

In 1933 the National Automobile Chamber of Commerce reported 59 accounts operating over 100 cars each and in 1934 about 104 accounts, if certain municipal and state subdivisions be excepted.  

These accounts operated a total of over 130,000 trucks and 45,500 passenger cars.  

No data are available on the number or average size of the "Commercial Accounts."  

Something of the extent of the bus market can be gained from the 1933 figures on registration and miles run.

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1. See pages 247 et seq. for further discussion of this subject.
3. Tires, March 1929, p. 47.
miles of passenger buses. Registrations numbered 111,500 and passenger bus miles 10,402,000,000 for common carriers alone.¹ Tires are leased to bus companies at a rate of about 1/8 cent per tire mile.² The average return per tire on this basis is about $40 which indicates a per tire performance of approximately 32,000 miles.³ Tires are rented for some 12,000 vehicles.⁴ The use of the rental contract seems to be declining. The entire mileage and rental business returns the industry about $10,000,000 annually.⁵

¹. Facts and Figures, 1934, p. 76.
   Bus Facts for 1933 is more detailed. For data on years prior to 1933 it is preferable.
². Tires, November 1930, p. 81.
³. Confidential source.
   Mr. Ralph Busbey, Editor of India Tire Review, informed the writer that 30,000 miles of operation or better were required to return the cost of the tire.
⁴. Confidential source.
⁵. Mr. E. G. Holt believes the figure to be nearer $12,000,000. (Interview)
   Mr. J. D. Tew, president of the B. F. Goodrich Company, set the figure at about $8,500,000.
   Hearings on Proposed Code of Fair Competition for the Rubber Industry, October 20, 1933, Appendix p. 11.
   Mr. F. A. Seiberling places it at $10,000,000. Tires, March 1932, p. 18.
A rapidly declining tire price is another characteristic that has particularly affected the tire market. Tire prices have moved almost inversely with the improvement in tire quality.¹ The retail price of the average tire in 1922 (this refers to casings only) was about $31.75 and in 1926 it had fallen to $29 and in 1933 to 10.50.² This includes both truck and passenger car tires. The average passenger car tire alone (casings only) has dropped in price at retail from $19.47 in 1926 to 13.02 in 1933.³ This represents a price drop between 1922 and 1933 of 67 per cent and between 1926 and 1933 of 64 per cent. The decline registered in passenger car tire prices has been about 6 per cent or 8 per cent less than the average for all tires for reasons which will be explained later. During this same period the price of gasoline, which has been a particularly competitive commodity and has been characterized by rapid technological advances, has declined 51 per cent and the price of automobiles has fallen but 10.5 per cent.⁴

¹. Sears Roebuck and Company in one of its catalogs showed such a chart to emphasize the worth of the All State tire.
². H. H. Harriman, Akron Beacon Journal, March 13, 1936. This index was constructed by Mr. Harriman with the assistance of the Akron tire companies. Although the data were derived from a sampling of retail prices during the period, the prices found move reasonably closely to wholesale prices and correspond quite closely to an index of passenger car tires prices constructed by H. L. Flanick after the necessary adjustments are made.
³. Interview with Mr. H. L. Flanick, Goodyear Tire and Rubber Company. Mr. Flanick took the ten best selling sizes for his index and weighted them according to their unit sales volume.
The significance of this tire price decline can be appreciated when it is related to the declining number of tires required by the motorist per year. In 1922 the average car owner purchased 2.68 tires per year at an average price of $31.75 each. This represented an annual expenditure for tires of about $82.60 and for tires and tubes $100.1 In 1933 the average motorist required only 1.38 tires per year at an average cost of $10.50. His annual expenditure for both tires and tubes was approximately $17.50. The declining share of consumer outgo available to the tire manufacturer can be readily seen.

If the retailer's position be considered for a moment, a similar condition presents itself. If the assumption is made that the average tire retailer sold 1,000 tire units a year in 1922 to about 350 customers, his tire sales would amount to approximately $31,750. Assuming again that he served the same number of car owners in 1933, he would have sold them approximately 433 tires and his dollar sales would have amounted to $5,071.50! As the retailer market has been dilated by the influx of more retailers since 1922, there is every reason to believe that the volume sales of the average retailer has declined far below this point.

Hitherto only incidental mention has been made of the effects of the state of general business upon tire sales. This study makes no attempt to segregate the cyclical influences acting upon the tire industry or to evaluate them. It suffices to state that they are very apparent in the fluctuations in original equipment sales and also in the movement of renewal tire volume. The former, it will be recalled, fell to a low of 5,982,406 units in 1932 and then rebounded to 15,782,503 in 1934.\footnote{Data derived from Table VIII, p. 97.} This increase was partially due to the inclusion of spare tires as original equipment, but if spares be deducted the respective amounts become 5,317,406 and 11,400,303 which represents a 110 per cent increase during the two years.\footnote{See chart on cyclical movements in the industry by Mr. Davis. The Goodyear Tire and Rubber Company Annual Report to Stockholders, 1933, p. 20. See an article by Mr. Davis on this subject in the Journal of the American Statistical Association, March 1931, Supplement, p. 104.} Renewal tire sales, likewise, "are closely related to the fluctuations of business activity" states A. E. Davis, a close student of the subject.\footnote{See chart on cyclical movements in the industry by Mr. Davis. The Goodyear Tire and Rubber Company Annual Report to Stockholders, 1933, p. 20. See an article by Mr. Davis on this subject in the Journal of the American Statistical Association, March 1931, Supplement, p. 104.} Furthermore, the cyclical movements in the raw materials, particularly rubber, greatly disturb the cost and price relationships and, thereby, upset the industry. These cyclical influences, however, have but served to aggravate the effects of the other conditions such as the improvements...
in tires, declining material and factory costs and the growth of new low-cost methods of distribution. The industry would have been in a much better shape, no doubt, had not depression intervened while these other major transitions were taking place.

Finally, the most effective way to summarize the accumulated effects of these modifications in tire demand, increases in tire prices and depression influences is to portray the decline in the value of the industry over this period: This data for the Census years appears below:

**TABLE XIV**

Current and Deflated Value of Tire and Tube Output, 1921-1933.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Value (000)</th>
<th>Index</th>
<th>Deflated Valuea (000)</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>660,939</td>
<td>100.0</td>
<td>461,415</td>
<td>100.0</td>
</tr>
<tr>
<td>1922</td>
<td>569,131</td>
<td>128.4</td>
<td>565,732</td>
<td>122.6</td>
</tr>
<tr>
<td>1923</td>
<td>524,522</td>
<td>183.1</td>
<td>790,634</td>
<td>172.7</td>
</tr>
<tr>
<td>1927</td>
<td>779,583</td>
<td>173.1</td>
<td>817,126</td>
<td>177.1</td>
</tr>
<tr>
<td>1930</td>
<td>676,010</td>
<td>130.4</td>
<td>701,471</td>
<td>152.0</td>
</tr>
<tr>
<td>1931</td>
<td>565,917</td>
<td>61.5</td>
<td>501,256</td>
<td>108.6</td>
</tr>
<tr>
<td>1932</td>
<td>263,326</td>
<td>87.9</td>
<td>267,223</td>
<td>84.1</td>
</tr>
</tbody>
</table>

a. The Wholesale Price Index (Bureau of Labor Statistics) was used to determine this value.

---

The sales at current value rose from 100, in 1921, to a high of 183.1 in 1925 and since that time the decline has been steady until in 1933, when the index stood at 57.9. If the current values be deflated and put on an index basis, the picture improves but the 1933 figure is then at a level 16 per cent below that of 1921. Certainly, some reorganization of the industry, serious competitive re-alignments and internal adjustments might be expected to follow in the wake of such a market situation.
CHAPTER IV

CHANGES IN AUTOMOBILE TIRE DISTRIBUTION METHODS

* * *

The previous chapter sketched the topography of the tire market, as it were, indicating the peaks and valleys of tire demand and the shifts and displacements that had occurred in the terrain. The present chapter undertakes to portray the adjustments and transitions that have taken place in the distribution pattern of the industry from 1922 to 1934. The changes that have occurred in wholesale distribution will not be treated at this point, because they, in the main, follow as a result of the shifts or adjustments with which this chapter is concerned. They, therefore, will be treated later as one of the "effects" of the marketing phenomena described in this and the preceding two chapters.

During these years there have been rather momentous—often termed by the press "revolutionary"—changes in marketing generally: the chain store has assumed a powerful position in the market, direct marketing by manufacturers has extended rapidly, voluntary chains have arisen in many fields, and all kinds of
marketing experiments have been undertaken.\(^1\) The tire industry seems to be no exception in this regard. The various distribution channels utilized by the industry will be described and quantitatively evaluated as well as their merits and potentialities appraised in so far as is possible.

**Marketing Original Equipment Tires**

The method of marketing original equipment tires has remained as it was formerly. New influences, however, have entered the picture and shifted the business somewhat.

The concentration of automobile manufacture within fewer companies has tended to concentrate original equipment tire sales within a small number of companies.\(^2\) Ajax and Fisk were formerly strong contenders with the "Big Four" for this business.\(^3\) The former, after a rather

---


2. Fraser and Doriot show that the share of the "Big Three" in automobile manufacture increased from about 70% of the total to 85 per cent between 1925 and 1930. *Op. cit.*, p. 40.

3. The "Big Four" are Goodyear, Firestone, Goodrich, and United States Rubber.
hctic life, finally failed, but Fisk enjoyed a liberal portion of this volume until quite recently. In 1928 there existed a community of banking interest between Fisk and Chrysler which resulted in Fisk's securing a cost-plus contract covering practically 100 per cent of the Chrysler-Dodge requirements—estimated at 2,400,000 tires. This contract was purported to be a most profitable one, which was unusual in this field. This business went to Goodyear in 1930. The elimination of these two smaller companies placed the entire original equipment business practically in the hands of Firestone, Goodrich, Goodyear, and United States Rubber. Firestone's relations with Ford have continued to be most friendly and that

1. Ajax was organized by independent automobile companies not operating under the Selden patents. They claimed that they were being discriminated against in the matter of tire deliveries so they set up their own company. This company had a phenomenal growth until about 1918. It failed in 1921, but it had not been of any real consequence in the market for the previous four or five years.


3. Over the past eight years the operating profit has totalled 4 per cent on annual equipment business. In several years it showed an absolute loss. Federal Commission exhibit no. 230, Docket 2116.


5. Generally reported in the trade.
company regularly supplies about 55 per cent to 60 per cent of Ford’s requirements as well as 100 per cent of Studebaker’s.\footnote{1} In 1929 the Du Ponts secured a controlling interest in United States Rubber. It was rumored that Ford, who was establishing rubber plantations in the Amazon Valley, intended, when these plantations matured, to manufacture his own tires and this move on the part of the Du Ponts was to assure General Motors of its tire supply on equally favorable terms.\footnote{2} By meeting the market price, United States Rubber is entitled up to and including 50 per cent of all the General Motor’s business or the business of any of its divisions.\footnote{3} United States Rubber produces about one-half of the Chevrolet, practically all of the Pontiac and Oldsmobile, a majority of the Cadillac and LaSalle, as well as a considerable

\footnote{1}{The amount of the Ford business has been generally stated at 60 per cent. Standard Statistics, October 11, 1933. The figure 55 per cent was reported to the writer by several competitors of the Firestone Company.}

\footnote{2}{"U. S. Rubber—Corporate State," Fortune, February 1934, p. 52.}

\footnote{3}{Confidential source believed to be thoroughly reliable. Strange as it might seem, there are indications that United States Rubber has been unable to accept the volume to which it was entitled under this contract, at least until this past year, because the return on these contracts was so low that too high a ratio of equipment to other business would result in an unsatisfactory margin of profit or in an actual loss. More recently, margins on car manufacturer’s business have gone upward and United States Rubber seems to have approached the contractual limit.}
portion of the Ford, International Harvester, and the entirety of the American Rolls Royce requirements. ¹ Good-year shares some of the General Motors and Ford business and produces all of the Chrysler, Nash, and Hupmobile requirements. ² This company has supplied 28 per cent to 30 per cent of the original equipment volume rather regularly. ³

Besides this shift in the vendor and vendee relationship between car manufacturers and tire makers, another tendency which had a very direct effect upon

¹. "U. S. Rubber--The Corporate State," Fortune, February 1934, pp. 226-227. Also interview with L.F. K. S. Burnham, Manager, Manufacturer's Tire Sales Department, Goodyear Tire and Rubber Company. United States Rubber was declared to be the largest producer of original equipment tires in 1933, in which event it must have produced some 3,500,000 original equipment units. The writer questions this statement because a large share of the General Motors and all of the Chrysler business, which was high in 1933, was supplied by Goodyear. Goodyear has always been the largest supplier.

². The car production of the three principal producers for 1932 and the first ten months of 1933 was as follows: (Motor, January 1934).

<table>
<thead>
<tr>
<th></th>
<th>1932</th>
<th>1933 (10 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Motors</td>
<td>428,765</td>
<td>598,528</td>
</tr>
<tr>
<td>Chrysler</td>
<td>168,905</td>
<td>339,763</td>
</tr>
<tr>
<td>Ford and Lincoln</td>
<td>234,925</td>
<td>273,908</td>
</tr>
</tbody>
</table>

the renewal market has been the mounting of spare tires by
the car manufacturer. ¹ Since 1929, each successive year
has seen, roughly, a doubling of the percentages of the
cars equipped with spares by the car manufacturer until
1933 when 90 per cent and in 1934 practically 100 per cent
of all cars were so equipped.² This means that the car
manufacturers in 1933 and 1934 will have diverted from the
dealer channel approximately 1,710,000 and 2,580,000 tires,
respectively. This equals 5 per cent to 7 per cent of the
renewal and spare volume or sales valued at about $25,800,000
in 1934. The tire manufacturer receives a slightly higher
price for "spares" than for the regular equipment stock,
but the profits on distribution, if any, go to the car
manufacturer instead of to the middlemen where they went
formerly.³

Marketing Renewal Tires

The most striking changes have taken place in
the manner and methods of serving the renewal market.
The rapid intrusion of several types of large scale

₁. See page 99.
₂. Ibid.
₃. The manufacturer gets all tires at the contract
price but at the end of the year he is charged the "best
dealer" price for spares. This would be 25 per cent off list
plus maximum quantity discounts which would range from 10 per
cent to 15 per cent. R. S. Burnham, op. cit. The car
manufacturer probably takes only a manufacturer's profit on
these spares in order to keep the price of his car down.
retailers has severely disturbed the "orthodox" distribution pattern and endangered the stability of the trade. Through the cooperation of tire manufacturers and large retailers it is possible to present a rather complete and comprehensive picture of the rate of development and extent to which these new agencies have come into the tire market.\(^1\) A statistical estimate of retail distribution was compiled for the years 1922 and 1933 inclusive. These estimates were corrected in the light of the data covering the years 1926-1933 submitted by the six tire manufacturers and five large scale marketers in the Federal Trade Commission-Goodyear case.\(^2\) Data for 1934 have since been contributed by the trade. This tabulation entitled "The Distribution of Renewal and Spare Automobile Pneumatic Tire Sales to Consumers by Channels" appears as Table XV.\(^3\)

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1. Sources of data and method used accompany the tabulation. However, it is not possible to reveal nearly all of the sources utilized. Some of the companies objected to the use of their names in this connection, but in numerous instances data were ventured by individuals without company authorization on the assurance that the information would be used in composites and that the identity of the donor would be protected.

2. Goodyear, Goodrich, Firestone, United States Rubber, Dunlop, General, Seiberling, and a few smaller companies submitted production, and/or renewal sales data. The first five submitted information covering their retail operations as well. Sears Roebuck, Montgomery Ward, Western Auto of Los Angeles and the Atlas Supply Company submitted their tire sales.

3. This tabulation, except for the year 1933, appears in the Federal Trade Commission-Goodyear case as Respondent's exhibit no. 22082.
| Year | Industry Renewal Sales | Spares Through Car Manufacturers | Amount | Amount of Spares Per Cent |
|------|------------------------|--------------------------------|M--------|--------------------------|
| 1922 | 28,917,000             | 100.0                          | 100.0  |                         |
| 1923 | 34,183,000             | 100.0                          | 100.0  |                         |
| 1924 | 37,281,000             | 100.0                          | 100.0  |                         |
| 1925 | 47,148,000             | 100.0                          | 100.0  |                         |
| 1926 | 51,565,000             | 100.0                          | 100.0  |                         |
| 1927 | 56,286,000             | 100.0                          | 100.0  |                         |
| 1928 | 56,286,000             | 100.0                          | 100.0  |                         |
| 1929 | 58,890,000             | 100.0                          | 100.0  |                         |
| 1930 | 60,400,000             | 100.0                          | 100.0  |                         |
| 1931 | 60,400,000             | 100.0                          | 100.0  |                         |
| 1932 | 60,400,000             | 100.0                          | 100.0  |                         |

* See Note A.
### TABLE XV
The Distribution of Renewal and Spare Automobile Sales to Consumers by Various Channels, 1922-1932

<table>
<thead>
<tr>
<th>Sales</th>
<th>Spares Through Car Manufacturers</th>
<th>Mail Order</th>
<th>Chain</th>
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<tr>
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<td>Amount (b)</td>
<td>Per Cent</td>
<td>Amount (c)</td>
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<tr>
<td>10,000</td>
<td>500,000</td>
<td>1.8</td>
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</tr>
<tr>
<td>25,000</td>
<td>750,000</td>
<td>2.7</td>
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<td>147,000</td>
<td>1,475,743</td>
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<td></td>
</tr>
<tr>
<td>385,000</td>
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<td></td>
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<tr>
<td>400,000</td>
<td>2,455,923</td>
<td>6.2</td>
<td></td>
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<tr>
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<td>2,876,658</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>250,000</td>
<td>2,547,233</td>
<td>4.6</td>
<td></td>
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<tr>
<td>580,000</td>
<td>2,563,716</td>
<td>5.5</td>
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<tr>
<td>665,000</td>
<td>1,713,614</td>
<td>4.5</td>
<td></td>
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<tr>
<td>1,710,000</td>
<td>1,533,742</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>2,580,000</td>
<td>1,155,484</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
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<td></td>
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</tr>
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</tbody>
</table>

Note A.
Spare Automobile Pneumatic Tire

Auctions, 1922-1934 Inclusive.

<table>
<thead>
<tr>
<th>Chain Store Amount (D)</th>
<th>Per Cents</th>
<th>Company Owned &amp; Controlled Stores Amount (E)</th>
<th>Per Cents</th>
<th>Department Stores Amount (F)</th>
<th>Per Cents</th>
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<tr>
<td>80,000</td>
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<td>.08</td>
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<td>50,000</td>
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<td>.3</td>
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<td>5,291,305</td>
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<td>2,062,400</td>
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<td>3,123,865</td>
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<td>260,000</td>
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<td>2,753,973</td>
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<td></td>
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<td>330,000</td>
<td>1.0</td>
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<tr>
<td>Cent</td>
<td>Department Stores</td>
<td>Oil Company Sales</td>
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<td></td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amount (F)</td>
<td>Per Cent</td>
<td>Atlas &amp; Other Private Brands</td>
<td>Amount (G)</td>
<td>Per Cent</td>
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<td>0.08</td>
<td>15,000</td>
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<td>351,456</td>
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<td>50,000</td>
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<td>0.1</td>
<td>50,000</td>
<td>.2</td>
<td>1,012,328</td>
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<td>150,000</td>
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<td>0.1</td>
<td>90,000</td>
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<td>125,000</td>
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<td>1,628,646</td>
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<td>600,000</td>
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<tr>
<td>Sales curve</td>
<td>Total Sales</td>
<td>Factory Direct Shipments</td>
<td>Independent Dealer</td>
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<td>-------------</td>
<td>-------------</td>
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<td>--------------------</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>21,633,509</td>
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<td></td>
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<td></td>
<td></td>
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<td>19,649,516</td>
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</table>
### TABLE XVb
(Supplement to Table XV)

Estimated Distribution of Renewal Automobile Pneumatic Tire Sales to Consumer by Various Channels, 1935.*

<table>
<thead>
<tr>
<th>Channel</th>
<th>Including Spares</th>
<th>Excluding Spares</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units</td>
<td>%</td>
</tr>
<tr>
<td>Total Renewal Sales</td>
<td>33,020,000</td>
<td>100</td>
</tr>
<tr>
<td>Spares through Car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td>3,680,000</td>
<td>11.2</td>
</tr>
<tr>
<td>Mail Order Only</td>
<td>1,230,000</td>
<td>3.7</td>
</tr>
<tr>
<td>Chain Stores</td>
<td>3,640,000</td>
<td>11.0</td>
</tr>
<tr>
<td>Manufacturers*Owned Stores</td>
<td>3,550,000</td>
<td>10.7</td>
</tr>
<tr>
<td>Department Stores</td>
<td>320,000</td>
<td>1.0</td>
</tr>
<tr>
<td>Oil Companies</td>
<td>3,720,000</td>
<td>11.3</td>
</tr>
<tr>
<td>Atlas and Other Private Brands</td>
<td>1,835,000</td>
<td>5.6</td>
</tr>
<tr>
<td>Standard Brands</td>
<td>1,885,000</td>
<td>5.7</td>
</tr>
<tr>
<td>Direct Factory shipments</td>
<td>302,000</td>
<td>0.9</td>
</tr>
<tr>
<td>Independents</td>
<td>16,378,000</td>
<td>50.1</td>
</tr>
</tbody>
</table>

* Estimates by the author.
A. "Renewal Sales" represent R.M.A. shipments raised to 100 per cent of the industry. From the year 1926 onward the amount given in Column B has been added to these for the respective years in order to keep the base consistent throughout.

B. "Spare tire sales" is an estimate derived from rubber company estimates checked back against "spare tire sales" determined from R.M.A. "original equipment sales." The percentages of "spare tire sales" were estimated to be 3½ per cent for 1928, 7½ per cent for 1929, 12.4 per cent for 1930, 25 per cent for 1931, 50 per cent for 1932, 90 per cent for 1933, and 100 per cent for 1934.

C. "Mail order sales" consist entirely of the catalog sales of the two large houses. The mail sales of others are of little significance even in total. Figures were supplied by Sears Roebuck and Company from 1924 onward. Montgomery Ward's mail order sales were estimated from their total sales which were supplied by the company. The years prior to 1924 were estimated except for Ward's 1922 sales which were reported in Rubber Age, May 10, 1924. Sales of these companies for the years 1926-1933 inclusive are to be found in the Federal Trade Commission Docket 2116, Commission exhibit no. 232 and Respondent's exhibit no. 22081.

D. Retail sales for Sears Roebuck (1927+), Montgomery Ward (1924+ in total), Western Auto Supply Companies of Kansas City (1926+) and Los Angeles are available in Docket 2116, Commission exhibit no. 232 and Respondent's exhibits no. 22081, 21948, and 21947. Gamble Skogmo (1927+) were supplied by these companies. Earlier years were estimated. The sales of some fifty "other chains" were estimated. "Other chain" figures were estimated on the basis of B. F. Goodrich chain store sales which constitute about 50 per cent of the total sales in this field. Knowing the number of accounts and unit stores they supplied and the approximate total number of chain store accounts and stores, this figure could then be statistically derived with reasonable accuracy.
E. Goodyear, Goodrich, Firestone, United States Rubber, and Dunlop retail sales were obtained for the years 1926-1933 inclusive from Docket 2116, Respondent's exhibits no. 22077, 21907, 21900, 21912, and 21921. General Tire and Rubber Company and Seiberling Rubber Company supplied the data directly to the writer. The remaining companies were estimated. For 1934, the companies with the exception of two, gave the information. The position of these two had to be estimated with the aid of authorities in the industry.

F. "Department store sales" were estimated with the assistance of well-known authorities in the field of tire distribution.

G. "The Standard Oil Sales of Atlas Tires" were obtained from the Docket 2116, Respondent's exhibit no. 21903 and other confidential sources. "Other oil companies private brand sales" were estimated with the aid of authorities within the industry.

H. "Manufacturers standard brands sold through oil companies" were obtained from confidential sources within the industry.

I. Originally, estimates were procured from Mr. William Bloor of Goodyear. These were checked with other statisticians within the industry and altered accordingly. Mr. E. C. Holt, Department of Commerce, materially aided with materials and time in arriving at the final figures.

J. "Total independent dealer sales" represent the remainder after all other sales were deducted from Industry renewal plus spare sales."
As the tabulation bears rather complete information on its face, only a few brief explanations are necessary at this point.

The use of the column "Industry Renewal Sales Including Spares" as the base is a departure from trade practice for the industry uses "renewal" sales in this capacity. Renewal sales could not be used in this instance because they failed to reflect the shift in spare tire sales since in the earlier years renewal sales included spares but in the later years did not. To make the base consistent, spares had to be included throughout.

The use of two columns referring to sales through oil companies may not be clear. "Private brands" refer to the sales of oil company branded tires such as "Atlas" of the Standard Oil Company and the "Acme" tire of the Louisiana Oil Company, while "Manufacturers Brands" indicate the sales of such tires as the "Goodyear All Weather Tread," "Firestone High Speed," "Goodrich Silvertown," "U. S. Royal Cord," and others through the stations of such well-known oil companies as Shell, Texas Oil and others. In other words, it differentiates between those oil companies that sell their own brands and those that sell tire manufacturers' nationally-advertised brands.

Finally, the bases of some of the classifications need clarification. The first is the definition of a chain store system. How many stores does a chain have to embrace
in order to be a chain? There are several loosely affiliated buying groups in the industry. What of them? Any concern represented at the Chicago meeting of the National Retailers Automobile Accessory Association called to prepare a code for the chain group was considered to be a chain. Affiliations such as cooperative buying groups were excluded, except where there was definite evidence that they bought through a well organized central agency as in the case of Gamble Skogmo Company. In the oil fields, a similar problem arose concerning licensed outlets. In the case of Standard Oil, the tires were delivered by the company trucks so no difficulty was encountered. Texas Oil, however, has all of its tires shipped and billed to the dealer station by the tire company. The oil company has a blanket contract covering these purchases and makes settlement at a contractual rather than the billed price for the goods. Consequently, tire sales through oil companies were assumed to be "owned or controlled sales" if the company bought the

1. These groups are not strong in this field. The American Tire Alliance began in 1932. It met with very little success until within the past year when it seems to have taken on new life. It now has about 35 contract distributors who in turn distribute to 600 subdealers. Gates Rubber Company of Denver is reported to be operating a group of some 2,000 dealers in the intermountain territory. Recently, Goodrich began providing a similar group. Whether this extends beyond extending them a mere wholesaling service in tires and auto accessories is not certain.

2. Confidential source.
tires for its own account or handled the deliveries to licensees under a blanket contract. Finally, where was the line to be drawn on company controlled stores? Goodrich and others have a financial interest in many stores. These stores were not included unless the control equaled 51 per cent or the store's profit and loss statement was consolidated in the tire company's financial statement.

The relative importance of the various channels composing the renewal marketing pattern is indicated by the percentages. The data are in terms of tire units and not tire values. If values were utilized, the relative weight of the independent dealers would be enhanced since their sales price has ranged from 10 per cent to 25 per cent above the other channels.

Growth of New Distributing Institutions

The story lying behind Table XV is vital to a proper understanding of the material presented, so that story will be sketched rather than the table discussed.

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1. This company reported to the writer on company-owned stores and sales. All sales of affiliated companies consolidated in their financial statements were considered as controlled. When called to submit data to the Federal Trade Commission, the company took the stand that 51 per cent represented control. Naturally there appeared some discrepancy in the figures. The Federal Trade Commission figures were used in this case.

2. Prices will be discussed in Chapter VI.
column by column. Further analysis will be made of the data in subsequent sections.

Mail order sales constitute a volume of about 3 per cent of the renewal and spare business but it possesses great interest to the trade because of its conspicuousness and competitive repercussions. Mail order sales are composed almost entirely of the sales of Sears Roebuck and Montgomery Ward. 1 Both of these companies had entered the tire business long before the World War, but neither seemed to push tires any more than they did their other merchandise. Montgomery Ward began emphasizing tires and increased their sales some 300 per cent between 1923 and 1925. In the last year their sales were approximately 2,000,000 units. 2

Sears Roebuck and Company, when they learned of Ward's 2,000,000 record, considered the sales possibilities of tires more seriously. 3 At that time their sales of the "Master Justice" and "Justice" tires totalled only 700,000 units. 4 They, thereupon, entered into a contract

---

1. Others sell some tires but the sales are negligible. Butler Brothers sold tires, but their sales were at wholesale.


4. Their tires had been manufactured on a cost-plus 5 per cent profit basis by the Murray Rubber
to purchase their future requirements from the Goodyear Tire and Rubber Company. They held a great promotion contest to secure names for their new tires to supplant those of the "Master Justice" and "Justice" and prepared to sell tires aggressively. The opening of their retail stores was partially a part of this tire selling program, as will be seen.

Reference to the table reveals that the combined mail order sales (this excludes their retail store sales) of both houses reached a peak of 2,669,916 in 1925, moved side-wise until 1929 and then declined to a low of 923,350 units in 1933. Sales moved upward again in 1935 with the improve-

Footnotes Continued:

Company of Trenton, New Jersey. They cancelled this contract in 1925. Tires, March 1927.

1. This contract was entered into on March 8, 1926, with the Goodyear Tire and Rubber Company. It provided that Sears was to purchase from Goodyear for a "3 year period its entire requirements of tires and tubes, with the exception of such casings and tubes as were committed for under existing contracts, which will be determined at the earliest possible date." "at cost of manufacture which shall include all costs of shipping and handling and a profit of 6 per cent net, but no selling or advertising expense." The original stipulation was for a production of 1800 tires and tubes per day. Docket 2116, Commission exhibit no. 9. Sears Roebuck entered into two contracts with Goodyear subsequently.

ment in farm income. 1

There had been chains in the field prior to 1921, but their sales were negligible. 2 Between 1923 and 1926, the chains secured a foot hold and in the latter year the two Western Auto Supply Companies alone sold some 500,000 tires. 3 With the entrance of the two large mail order houses into the chain store field, chain store tire sales increased most rapidly. In 1926, Montgomery Ward began to open retail stores and in 1927 Sears Roebuck pursed a similar course. 4 These two companies expanded their stores and sales rapidly. 5 The store sales of Montgomery Ward are not definitely known, but they approximated one and a quarter million units for the years 1929-1932 and a million units for the two subsequent years. The Sears Roebuck stores were primarily retail tire stores until 1929 and, thereafter, while tires did not predominate sales, one of the most, if not the most, important factors in selecting a site for a proposed store was its accessibility to

1. Monthly rural sales rose in 1934 from 9 per cent to 32 per cent over the preceding year. See Domestic Commerce, March 20, 1935, p. 127.
2. See page 41 for the founding of Western Auto Supply Company.
4. Sears Roebuck had retail stores in conjunction with its plants prior to 1929. See Table XVI.
motorists. The success attending the Sears Roebuck venture, as far as tire sales are concerned, can be judged from the figures below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Retail Stores</th>
<th>Retail Store Sales</th>
<th>Per Cent Retail Store Sales to Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>8</td>
<td>555,412</td>
<td>31</td>
</tr>
<tr>
<td>1926</td>
<td>9</td>
<td>2,029,550</td>
<td>63</td>
</tr>
<tr>
<td>1927</td>
<td>23</td>
<td>3,051,151</td>
<td>70</td>
</tr>
<tr>
<td>1928</td>
<td>156</td>
<td>2,661,444</td>
<td>75</td>
</tr>
<tr>
<td>1929</td>
<td>292</td>
<td>7,007,776</td>
<td>76</td>
</tr>
<tr>
<td>1930</td>
<td>309</td>
<td>2,019,734</td>
<td>80</td>
</tr>
<tr>
<td>1931</td>
<td>237</td>
<td>1,299,174</td>
<td>80</td>
</tr>
<tr>
<td>1932</td>
<td>375</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>1933</td>
<td>400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lost the wrong impression be given by the use of the term "mail order houses" it needs to be emphasized that by far the greater proportion of the tire sales of Sears Roebuck and Montgomery Ward are made over-the-counter and

1. Upon this point Mr. D. N. Nelson stated that their early stores were small and given over to the sale of tires, auto accessories and hardware. They were practically garages located where they thought the tire business would develop. They believed that there existed a large market for tires which bore a lower cost of distribution than the dealer was provided. Pocket 2116, pp. 1817-1819. Montgomery Ward opened ten special tire stores in Chicago in 1923, but the writer has no evidence of the final extent of this movement. Tiros, July 1929.


3. While the data are in hand for 1934, they cannot be released. Yet it can be stated that the retail store percentage declined slightly because of the improvement in agricultural purchasing power.
not through the mails. In fact, the over-the-counter method of selling characterizes tire sales to a greater degree than it does their sales in total.\footnote{1} As nearly as can be determined the "chain and department" store tire sales constituted about 32 per cent of their total sales in 1927, 56 per cent in 1928, 64 per cent in 1929, 72-74 per cent for the years 1930-1933 and 67 per cent in 1934.\footnote{2} In the latter year, mail sales spurred with the revival of the agricultural market. It should be noted, also, that the store tire sales of these two companies constituted approximately 75 per cent of the total chain sales as shown in Table XV, which excludes manufacturers' owned-and-controlled stores, for the years 1929-1932 and 65 per cent for the last two years.

The other chains embraced a host of large and small companies, the most important of which are the Western Supply Companies of Kansas City and Los Angeles,

\footnote{1: Montgomery Ward's store sales equalled 43 per cent of their total sales in 1929. (Annual Report to Stockholders, December 31, 1929) and in 1931 Sears Roebuck's store sales exceeded their catalog sales for the first time. (Annual Report to Stockholders, December 31, 1931.)

2: These companies have department stores in the larger cities. Sears Roebuck had 94 such in 1933 (Annual Report to Stockholders, 1933) and Montgomery Ward had several. Unfortunately, the sales of the department store chains cannot be segregated for these companies or others so they will be characterized just as chain stores hereafter.

3: Based upon Table XVI and confidential information.}
Gamble Skogmo of Minneapolis, Pep Brothers of Philadelphia, Dean Phipps with stores located throughout the New York area, and Gofkauf covering the New England states.¹

Located in the business area and handling cheaper tires in conjunction with automobile accessories these chains have grown rapidly. They sold approximately 1,500,000 tires in 1929² and 1,300,000 through some 1500 store units in 1934.³

Most of the tire companies in the early years had conducted retail sales rooms at their branches; consequently, they had had slight experience in retailing when they began experimenting with retail stores in the 1920's.⁴

The first company to own a chain of retail stores according to all information available was the United States Rubber which began operating the "Smith Tire Service" in the Southwest about fifteen years ago.⁵ In 1927 they added the

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1. Gamble Skogmo is an interesting company. This chain sells tires, auto accessories, hardware, etc. through more than 200 stores and 850 retail affiliates or agencies. They rival either of the Western Auto Companies in tire sales. Headquarters are at Minneapolis and the stores are located throughout the Northwest.

2. The writer's estimate based on actual sales figures of the two Western Auto Companies, Gamble Skogmo, and the J and R Motor Company. The other companies were estimated upon the basis of the B. F. Goodrich Company chain sales (this company sells a large volume to chains), and numerous interviews with chain store managers.

3. Ibid.

4. See page 38.

5. Sales Management, April 19, 1930.
"Mercantile and Royal Tire Companies." Since that time they have reversed their retail store policy and have reduced the number of owned retail outlets until they now operate only twenty.

Through the years 1927-1929, the owned store rosters of the tire companies grew steadily but in no case did the expansion appear to be the result of a definite retail store policy. One tire company, in answer to complaints of dealers, declared that these stores were located only in cities "where for one reason or another, we have found it impossible to get adequate representation through independent dealers." Another said that they were operated as laboratories in order to gain a "better understanding of the dealer's problems" and thereby better assist him in solving them.

In 1928 the Firestone Company took a definite position favoring company owned stores because it became necessary, in the words of Mr. Jackson, "for us to establish our own stores in order to protect our dealers and our

1. Interview with Mr. W. Farr, Assistant to Sales Manager, United States Rubber Company, December 29, 1933.
2. Ibid. At the peak, United States Rubber operated 36 stores (1930). Docket 2116, Respondent's exhibit no. 21910.
3. This has been Goodyear's position throughout. Radio talk by P. W. Litchfield, November 6, 1933. This seems to have been the position of Goodrich also.
business against the mail order competition."¹ They forthwith began to establish some 200 "One-Stop Master Service Stores" on a co-operative basis with the former store proprietors acting as store managers.² Under this arrangement the company owned 51 per cent of the stock to the dealers 49 per cent which insured it control of store policies. In 1929, immediately preceding the stock market

1. Mr. Lee R. Jackson, Vice President, Firestone Tire and Rubber Company, Docket 2116, p. 23843.
2. 1929 Annual Statement of the company. Letter to Stockholders by Harvey S. Firestone. "There were several possible reasons underlying this cooperative plan:

a. The company was not prepared to man such an organization nor did it have sufficient experience in the field.

b. The company took over many independents by purchasing a share of the concern as it stood or by investing to help finance an expansion program.

c. It secured the business goodwill and the dealer's personal backing and interest. The move was uncertain from the standpoint of public reception as it had an "independent" flavor. Also personal touch played quite a factor in tire sales, more so than now, probably. Finally, the manager problem in a chain is the weak link and by thus securing the manager's interest and yet holding control in the home office, they could reasonably expect to obviate this weakness.

d. It required a smaller capital and involved less risk.
crash, this company floated a stock issue to "provide for the increased demand for our product and to extend the establishing of One-Stop Master Service Stores." The next year saw some 400 of these stores in operation.

Throughout this period we find the Firestone organization in somewhat of a paradoxical situation. In 1929 the company added 6,928 new dealers to its organization largely as a result of the active championing of the dealer's cause and at the same time it was extending its owned stores more rapidly and openly than any other tire company. The explanation is easily found. Goodyear had the Sears Roebuck account, Goodrich and United States Rubber secured the Atlas business and the latter, subsequently, obtained the Montgomery Ward contract. Firestone had no special brand business, and consequently its sole reliance was on the dealer and a dealer whose position in the market was declining. The company, therefore, established retail stores as a counter-move against "mass distribution" and entreated the independent dealers to unite with it in the fight against this menace as represented by the mail order houses and oil companies.

1. Annual Statement, 1929, op. cit. They sold 50,000 shares of common stock at $260 per share and 600,000 shares of preferred at $100.
2. The 1930 Annual Statement says "over 400." The company later reported only 350 as "legally owned" or controlled, however. Docket 2116, Respondent's exhibit no. 21830a. The investment in these stores is purported to be $25,000,000.
3. Annual Statements, 1929 and 1930.
4. The Firestone Company maintain that they will have nothing to do with special brand business. They were invited to bid for the Montgomery Ward business, but after investigating it they refused to do so. Testimony of Mr. Lee Jackson, Docket no. 2116.
In the meantime many of the other rubber companies were rapidly expanding their retail store systems. The accompanying table shows the number of stores owned by the various tire companies by years. It will be immediately noted that Dunlop appears the operator of the largest chain of stores. This company did not enter the field until 1930, but by 1932 they had some 23 more stores than did Firestone and in 1934 the number of Dunlop stores was 457 to 450 for Firestone. The numbers here are rather misleading, however, for while Dunlop operated the largest number of stores that company's retail sales were but slightly in excess of those of United States Rubber or General and far behind those of the other companies. The Dunlop stores were very small; they averaged less than 400 tires per store per year, while the stores of other companies averaged almost 2500 units.\(^1\) Goodrich and Goodyear in 1934 operated about 75 and 60 per cent, respectively, as many stores as did Firestone, while General and United States Rubber assumed relatively unimportant positions. Store ownership among the other rubber companies was rather unimportant, although at one time the Fisk Tire Company owned 110 stores.\(^2\)

\(^1\) Dunlop sold only 179,000 units in 1934 through its owned outlets. (Respondent's exhibit 21922, Docket 2116.) The other companies sold over 2,800,000 units. (For sources see Footnote E, p. 128.

\(^2\) Moody's Industrials 1930.
TABLE XVII

The Number of Retail Stores Operated by the Various Tire Companies 1926-1934

<table>
<thead>
<tr>
<th>Year</th>
<th>Good-</th>
<th>Good-</th>
<th>Fire-</th>
<th>U. S.</th>
<th>General</th>
<th>Dunlop</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>year</td>
<td>rich</td>
<td>stone</td>
<td>Rubber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1926</td>
<td>27</td>
<td>8</td>
<td>4</td>
<td>12</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1927</td>
<td>32</td>
<td>25</td>
<td>10</td>
<td>11</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1928</td>
<td>56</td>
<td>50</td>
<td>125</td>
<td>16</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1929</td>
<td>118</td>
<td>120</td>
<td>300</td>
<td>31</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1930</td>
<td>164</td>
<td>163</td>
<td>350</td>
<td>35</td>
<td>25</td>
<td>200</td>
<td>135</td>
</tr>
<tr>
<td>1931</td>
<td>230</td>
<td>174</td>
<td>450</td>
<td>21</td>
<td>31</td>
<td>300</td>
<td>76</td>
</tr>
<tr>
<td>1932</td>
<td>271</td>
<td>138</td>
<td>407</td>
<td>20</td>
<td>35</td>
<td>430</td>
<td>35</td>
</tr>
<tr>
<td>1933</td>
<td>262</td>
<td>140</td>
<td>393</td>
<td>20</td>
<td>40</td>
<td>455</td>
<td>15</td>
</tr>
<tr>
<td>1934</td>
<td>265</td>
<td>350</td>
<td>450</td>
<td>20</td>
<td>45</td>
<td>457</td>
<td>15</td>
</tr>
</tbody>
</table>

a. Commission exhibit no. 218.
b. Respondent's exhibit no. 21905
c. Respondent's exhibit no. 21899a.
d. Respondent's exhibit no. 21910 and 21911.
e. Respondent's exhibit no. 21919.
f. Respondent's exhibit no. 21923. These stores are very small, averaging only about 400 tires each per year.
g. Estimated.
Pisk operated 114 stores in 1930 and Murray also had a chain. See Sales Management, April 19, 1930; also Tires, October 1929.
h. 1934 estimated by the writer.
j. Two factors account for this large jump; (1) this figure includes stores that were not included in the 1933 figure because they represented only stores in which Goodrich had a control of 51 per cent or more and (2) the company has opened some 80 Goodrich Economy Stores since 1933 and perhaps some regular large stores. These Goodrich Economy Stores are small centrally located accessory stores.

In total, the manufacturers-owned stores over the past four years have sold between 8 per cent and 9 per cent of the "renewal and spare" sales. In 1930 they sold over 3,000,000 units.

1. As near as can be determined, Goodyear had about 300 stores, Goodrich 417, Firestone 570, and General 50 at the end of 1935.
Some department stores have been carrying tires for many years, among them the *Davis Company of Chicago*. This company today operates ten mounting stations throughout Chicago and is one of the really important tire accounts of the country. Recently, a new interest has been taken in this field by tire companies and they have worked the field quite intensively. In many instances tire departments are being leased and operated by tire companies.

Oil companies entered the field of tire distribution on a significant scale when the *Standard Oil Company of New Jersey* and its affiliates began selling tires through their service stations. The *Atlas tire*, the private brand of the *Atlas Supply Corporation*—the tire division of the *Standard Oil Companies*—is manufactured by *Goodrich* and the United States Rubber companies on approximately an equal basis.

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1. Interview with Mr. D. Udick, Buyer, *The Davis Company*, April 1934. It was reported that R. H. *Macy Company* launched a campaign with a private branded tire a few years ago, but the venture failed.

2. One authority estimates that there are at least 12 or 15 large leased departments. Recently, *Firestone* secured the *Marshall Field Company* business but whether or not on a leased basis, the author is unable to state.

3. This move occurred in August, 1930. Mr. *Bedford*, a director of the company, declared that the decision of *Standard Oil* was fostered by the success of the mail order companies in tire selling. *Tires*, August 1930, p. 27.

4. This fact is common knowledge in the industry.
In the final months of 1930, this tire became a definite factor in the market, and during succeeding years its sales have increased most rapidly.\(^1\) In addition to the sales of Atlas tires, the column designated "Private Brands" includes the sales of several other private branding oil companies, such as the Louisiana Oil which sells the Acme tire and Linco Oil with its Linco tire.\(^2\) The private brand tire sales of these companies totaled only about 400,000 units at the maximum and they are considerably less than that figure today, since many of them have turned to the tire companies' standard brands.\(^3\)

More recently, the Standard Oil Companies have extended the sale of tires into their leased stations. One affiliate now wholesales to these leased dealers about 40 per cent of its total volume and wholesaling is growing.

---

1. Atlas sales were 51,456 in 1929 and 1,741,417 in 1933. They were slightly less in 1934, although there is every reason to believe that the figure for 1933 was inflated by at least 75,000 units due to a dating plan that the company put into effect in the closing months of that year. The tires moved out to the stations in 1933 but were sold by them in 1934.

2. Barnsdall Oil sells the Barnsdall tire, Champlin Oil the Champlin tire, etc.

3. White Star Oil Company used to sell a private brand called the "Starlene Tire", but now it sells Atlas tires, if the writer is correctly informed.
among the others.\textsuperscript{1} This wholesaling policy was responsible for much of the gain in Atlas volume in the year 1933.\textsuperscript{2}

During 1934, leased outlets increased at a very rapid rate due to the policy of turning stations over to independent operators to avoid sales taxes.\textsuperscript{3} However, tire sales probably declined as a result. About 30,000 to 32,000 stations are today selling Atlas tires.\textsuperscript{4}

\begin{enumerate}
\item Confidential source.
\item Ibid.
\item One company reduced its owned stations from 4,000 to 3,000. (Confidential source) The following newspaper description clearly presents the situation:

"The Standard Oil Company of Indiana will withdraw from the retail service station business in Iowa by June 30 because of the state's new chain store tax, the company announced last night. Because of the drastic character of the tax law recently enacted the company is already at work leasing 350 company owned stations to individuals, it was announced. Persons operating only one station are not subject to the tax.

In addition, 500 stations which have been leased by the company from other owners and are being operated by company agents will also be turned back to the owners, who will either operate them as individuals or lease them to individual dealers.

Standard will operate its bulk stations as before, as its business is largely wholesale." Chicago Tribune, May 25, 1935.
\item Confidential source.
\end{enumerate}
The success of the Standard Oil Companies in tire distribution demonstrated the possibilities of service stations as tire selling agencies. The race began at once by the tire companies to secure oil outlets; these outlets were to be taught to sell not private brands but standard or manufacturer's brands. As a result, a number of large oil companies are now definitely in the tire business.\(^1\) One company, Socony Vacuum, has been conducting a very extensive experiment in tire merchandising. This company apportioned its stations between six tire companies and checked the performance of one tire brand against the others. They have accumulated data on such questions as the cost of selling tires, the type of station best suited to tires, attainable tire sales per man, per station and per 100 gallons of gasoline, and best methods of tire display and selling.\(^2\)

The sale of standard brand or tire manufacturer's brand tires through oil company outlets did not begin in

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1. Twenty to thirty companies are selling tires if one includes the Socony Vacuum group. Some of the main ones are handling the following makes of tires: Sinclair handles Goodyear tires; Shell Oil, Goodyear and Goodrich; Phillips Petroleum, Lee tires; Pure Oil, Yale tires made by General Tire and Rubber Company; General Oil, a Socony Vacuum member, United States tires, etc.

2. Colonel J. L. Cochrun, Seiberling Rubber Company and Gerard Hammond, Vice President, Dunlop Tire and Rubber Company.
earnest until 1930. Since that year, it has increased almost 66-2/3 per cent annually until 1934 when it increased over 50 per cent. In 1934, the sale of standard brand tires by oil companies practically equalled the sales of Atlas and the other oil company private brands. About 25 companies, including the Socony Vacuum group, sell standard brand tires through some 28,000 owned and controlled outlets.

Factory Direct Shipments constitute sales made and handled directly by the tire factories to certain large national accounts, taxi companies, and governmental agencies. The taxi and bus market, the expanding commercial accounts, and the increasing number of national accounts invited direct participation on the part of manufacturers through the boom years. Direct shipments increased in consequence. Due to the bitter protest of dealers and the manufacturer's opening of retail stores, probably the latter, much of this business has reverted back to the retailers in recent years.

1. It handles Goodrich, Firestone, United States and General tires and possibly Seiberling tires.
2. Confidential sources.
3. See page 112.
The independent dealers figuratively and literally seem to have secured what was left. They have been subjected to the buffetting and encroachments of all of these newcomers in the domain of tire distribution. As a result, their position has declined from 98 per cent of the total renewal and spare sales in 1922 to 73.4 per cent in 1929 and to 57.1 per cent in 1934. Apparently, neither the encouragement of tire manufacturers nor the efforts of N. R. A. have served to stem the tide, for in 1934 the independents suffered further volume losses.

Causes Underlying the Growth of Large Scale Retailers

The conditions that have made for the growth of large scale distribution generally and of particular types of large scale marketing institutions have been so fully treated in marketing literature that their restatement here would be superfluous. Therefore, only the conditions that are peculiar to tires or of unusual importance in this connection will be treated.

The conditions favoring or facilitating large scale distribution in this field are numerous. First is the potential volume represented by the automobile market and the stratification that had taken place in that market.

1. No attempt is made to define "independent dealers." They are every other type of store except those specified.

2. F. E. Clark, op. cit., gives an excellent discussion of this subject. Chapter XII.
In 1929 automobile accessories and services accounted for 10.6 cents out of every dollar spent at retail, which amount was exceeded only by the expenditure for food. This rich market was, therefore, unusually attractive. Moreover, it offered opportunity, due to the extent to which the automobile had penetrated even to the lower income groups, for all types of stores and services. Secondly, tires are particularly adapted to the methods of selling employed by chains and mail order houses since they fit in very nicely as side line merchandise and are easy to sell and display. Also, the handling and stocking of the product involve a minimum of labor and cost. Thirdly, the competitive situation furthered the movement. The mail order houses were expanding into the retail store field and automotive accessories and tires became the backbone of these retail

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1. Census of American Business 1933. Retail Distribution, Vol. 1, United States Summary 1933, p. 4. The 1933 percentage was somewhat lower, being only 17.7.

2. Sears Roebuck found that the direct payroll cost of selling tires was 2 per cent as compared to 63 per cent for all divisions of the company. Letter from J. H. Westrick to H. H. Creske, India Rubber and Tire Review, February 1934, p. 33.

3. Tires seem to submit themselves to advertising quite effectively. Cross sectional views can be shown to convey the ideas of quality and wearability. The adaptability of tires for retailing has been developed at length on page 78. Upon the point of tire selling, one of the publications stated that tires were ideal for mail order purposes as they required little preparation for shipment, were easily stocked, unbreakable, non-perishable, and very profitable. Business Week, April 22, 1931, p. 9.
operations. Oil companies, likewise, were forced by their high rental and salary costs to seek additional volume and automobile accessories, especially tires, served that purpose most effectively. The manufacturer, on his side, had unused capacity and seemed particularly willing to enter into favorable terms with these new large scale agencies (at least some of them were). Finally, there was the weakness of the independents. The assumption is that they were less competent in this field than in retailing generally. Many of them were mechanics, most operated on very meagre capital, they knew next to nothing about advertising and sales promotion, and their shops were generally hidden on some back street.

To avoid duplication the major advantages enjoyed by these new types of retailers in mass will be treated. Reference to the various institutions in each instance will call attention to the type to which the advantage specifically applies.

1. D. K. Nelson, Docket 2116, pp. 1818-1819. While Montgomery Ward did not emphasize tires to the same extent, the stores especially catered to the automobile.


3. Men acquainted with the tire retailers generally attest to this, as J. P. Woodlock of B. F. Goodrich and R. E. Davis, Goodyear Tire and Rubber Company.
These large retailers enjoyed a purchase advantage. The extent of this advantage will be discussed in some detail in Chapter VII. Sears Roebuck, perhaps, was the most fortunate in this regard due to their cost-plus contract with Goodyear Tire and Rubber Company. This contract gave them a net cost advantage over the dealer of about 35 per cent. For example, Sears Roebuck was billed $4.62 for a 4.75 x 19 tire in comparison with a billing of $7.88 to the dealer. The dealer's price was discounted about 12 per cent for allowances, discounts and freight, so the net price was really $7.02. The mail order house had to perform the wholesale function, however. If a margin of 30 per cent, which is ample, be allowed to cover the wholesale function, a differential of about $1.74 yet remains in favor of the mail order house. This is far in excess of the purchase differentials found by the Federal

1. The billing prices of dealers and Sears Roebuck differed by a wider margin, but the dealer got additional discounts. Freight was also included in the dealer's price. These adjustments gave the net cost advantage mentioned.

2. This material was taken from a table made by the Federal Trade Commission in the Sears Roebuck-Goodyear case which was based on the margin sheets submitted by the respondent. The comparison is reproduced in the India Rubber and Tire Review, January 1934, p. 26.

3. The wholesale discount allowed on tires runs from 15 per cent to 30 per cent. The Mansfield Tire Company allows 25 per cent which seems to be about standard.
Trade Commission in the chain store inquiry. 1 The other large accounts did not fare quite so well as Sears Roebuck, if reports are true, yet they did secure very favorable prices. 2

Second, these new marketing organizations had lower selling expenses. This was especially true regarding the performance of the wholesale function. As far as can be determined, Sears Roebuck was able to wholesale tires at a cost approximately 60 to 65 per cent of that required by the rubber company. 3 According to our calculations, it cost Sears Roebuck in 1929 about $1.70. This cost included administrative expense and a profit realization above the 6 per cent allowed the retail stores. Goodyear's cost was $2.97 on the same basis. In 1933 the respective figures were $1.39 and $2.53. 4 The retailing costs for the mail order house were likewise lower than that of the independent. 5 The other large scale operators may not have performed so effectively, but there is no reason to believe that their experience differed greatly.

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1. Chain Store Study--Special Discounts and Allowances to Chain and Independent Distributors, Tobacco Trade and Drug Trade Documents 86 and 94.
2. Western Auto had to bear some advertising and selling expense in its purchases made from Goodyear. United States Rubber and Goodrich were purported to sell to Atlas at cost plus 8 per cent.
3. The estimates are made from the so-called margin sheets. Docket 2116, Company exhibit 230 and 617.
4. See page 306.
5. See page 316.
A low purchase cost and low marketing expense gave these large retailers the advantage of a substantial price differential over the tire dealer at a time when the public was most price conscious. The oil companies have consistently maintained their prices at about 10 per cent below the standard brands, the mail order stores 10 per cent to 20 per cent under and the catalog about 25 per cent to 35 per cent below.\(^1\) The ability to sell a good tire at this saving has been in no small measure responsible for their extremely rapid growth.\(^2\)

Again, the superior management of these large retailers was an important factor in promoting their growth. Their merchandise, advertising, research and training staffs were expert and highly specialized while the independent retailer's knowledge of these activities was woefully inferior.\(^3\) The budgeting systems and inventory controls of the large companies were effective, while the dealers scarcely knew what these terms meant.\(^4\) An example of their accomplishments in the latter regard is afforded by Sears

\(^1\) See Chart IX, Chapter VI.
\(^2\) See testimony of P. Cherrington, Docket 2116, p. 23666.
\(^3\) These companies, when they began to sell tires, took many promising young executives from the tire industry. (Personal knowledge of the writer.)
\(^4\) Of course the large companies had to employ budgeting and inventory control on account of their size, but these were not merely functions of their large scale operations as the example demonstrates.
Roebuck and Company. Mr. J. H. Westrich of that company states:

"Through the efficient operation of our three tire controls, located at Akron, Gadsden and Los Angeles, the turnover last year in the 'A' stores was 12.54 times and in the 'B' stores 9 times."

Finally, the special services offered by these particular institutions insured them a permanent place in the market. The mail order house was particularly adapted to serve the farm trade, the mail order house stores and smaller chains the price market and the oil companies, on account of their convenient locations and frequent meetings with the motoring public, could dispense tires in almost all areas to all classes of trade. These particular features of the various institutions will be developed at length in the succeeding section.

Appraisal of Large Scale Retailers as Tire Marketers

Since the discussion immediately preceding has considered large scale retailing as a movement, the pages that follow will be devoted to an analysis and appraisal of the major types of these retail middlemen as tire distributing agencies. An examination will be made of the mail order system, the chains, the oil companies, and the company-owned chains. Chart VI portrays the sales of each of these institutions from 1922 to 1934 inclusive. Reference will be made to this chart as the discussion progresses.

GROWTH OF CERTAIN TIRE DISTRIBUTION CHANNELS

1922-1934

Mail Order
Chains
Company-Owned and Controlled
Oil Companies

Source:
Table XV.
The mail order houses through their catalogs (the over the counter sales of these houses are treated under chain stores) are particularly equipped to reach the farm and small town trade and surveys reveal that they have sold a large proportion of the tires purchased in the rural areas.\(^1\) In addition, over the entire course of the period they have enjoyed a price advantage of from 35 per cent in the earlier years to about 25 per cent at the present time as compared with the standard brands.\(^2\) Yet an examination of the chart reveals that mail order sales reached their peak in 1924, fell off slightly more than did farm income in 1927, moved upward with farm income to 1929 and then fell off with the drop in farm income again until 1933.\(^3\) It should be noted, however, that mail order tire sales declined much less rapidly from 1930 onward than did farm income. In 1934 mail order tire sales increased about 20 per cent which was in keeping with the upward trend again in farm purchasing power.\(^4\) This similarity of movement indicates very clearly

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1. Survey made by the B. F. Goodrich Company in Indiana indicated that the majority of the tires sold on the farm market were mail order house tires. (Confidential source)

2. See Chart IX, Chapter VI.

3. Farm income declined from $11,968,000,000 in 1925 to $11,480,000,000 in 1926 and then moved upward to a peak of $11,941,000,000 in 1929 from whence it declined to a low of $8,351,000,000 in 1932. Estimated Gross Income from Farm Produce, Statistical Abstract of the United States 1934, p. 570.

4. From 1933 to 1934/farm income/moved upward from 69.2 to 83.7. Domestic Commerce, March 20, 1935, p. 127.
that mail order tire sales are closely tied up with conditions in the agricultural market and can be expected to improve or decline more or less with that market. On the other hand, there is little evidence to indicate that mail order will reach beyond this market in view of the increasing tendency of the car owners to purchase tires in the trading center.\footnote{1} Moreover, all types of inducements, such as trade-ins, allowances, cash discounts, two-for-one sales, long term guarantees, and others, have been made without reversing the direction of the mail order sales trend.\footnote{2} The industry feels that mail order per se offers no serious competitive threat, although it may exercise a very disruptive effect upon the market due to its low prices and special purchase inducements.

The chain stores are extremely difficult to evaluate because of their diversity in size and type, embracing, as they do, the large mail order houses and the large and small auto accessory and tire chains. The manufacturers' owned chain is excluded in this instance. The growth of the chains from 1923 to 1929 was phenomenal. The bulk of this increase, however, was due

\footnote{1. See p. 71.}
\footnote{2. See Commission exhibit no. 514-530, Docket 2116. Also testimony of D. M. Nelson, Docket 2116, p. 22011.}
to the growth of the mail order retail stores. From 1929 onward the decline in chain store sales almost paralleled that of the renewal market. The gains registered in the past year have been due largely to the increases made by the smaller organizations as a result of new store openings rather than increased sales through existing outlets.\(^1\) In this connection it should be added that chain store sales were retarded under the Code because with the establishment of floor prices during 1933 the entire industry went to the floor and the chain stores were thus robbed to a considerable degree of their price advantage. This worked a hardship upon them and, no doubt, curtailed sales as customers would prefer the standard brands at only a slightly higher price.\(^2\) There is every reason to believe that price will remain as a very important factor in tire purchasing, and chain organizations, on account of their buying and selling effectiveness, are probably as well or better situated in this regard than are the oil companies. Mr. Nelson of Sears Roebuck and Company indicated that his organization at least was in a position to and would have offered considerably lower prices

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1. Writer's investigations, i.e., the data he has in his possession but cannot reveal.
2. Interview with Mr. Jacobson, Manager, J and R Motor Supply Company, Chicago, April, 1934.
on tires had not pressure been "brought to bear upon us from every direction—not from Goodyear, but from everyone—from dealers, from manufacturers, from bankers, perhaps from others—not to sell tires at a price that would ruin the tire industry." The increasing emphasis upon store service militates against them, but this can be largely offset by price inducements.

In view of these facts it is extremely difficult to make any prediction relative to the future of the chains in this field. There is no reason to believe that they have exploited their advantages to the full, although the period of rapid growth, no doubt, is over. It seems reasonable to expect that chain store tire sales will continue to increase for some time at a faster rate than the industry at large.

Oil companies have two distinct advantages to offer as tire sellers. In the first instance, their far-flung organizations not only practically blanket the country but control most of the preferred locations for

1. Quoted from Docket 2116 by the India Rubber and Tire Review, December 1934, p. 13.
2. Sears Roebuck indicated that the price inducement necessary to overcome the service of the service store is about 10 per cent to 15 per cent. Testimony of D. E. Nelson, Docket 2116, pp. 22977-22979.
3. In 1935 the mail order house chains and Western Auto Companies fell off somewhat.
reaching the motoring public. One company alone is pur-
ported to own and control over 40,000 stations and several
others from 10,000 to 20,000. ¹ A recent survey of one oil
company's station outlets in the South revealed that these
stations covered the automobile market of that section
almost ideally. ² Secondly, these stations through the sale
of gasoline, and other automobile services are in a regular
and almost daily contact with motorists. This means that
they can not only capitalize on the confidence and friend-
ship established but they are in a position to anticipate
the motorist's need and suggest these services to him. ³

Oil companies are not only strategically
located to sell tires but their cost situation gives them
a decided retail cost advantage. This does not imply that
the operating costs for service stations are unduly low,
although they are slightly below the United States average
per cent for all retail institutions, being 23.81 in 1929 and 32.45 per cent
in 1933. ⁴ Their expenses are largely fixed, however,

¹ Confidential source.
² Confidential source.
³ The oil companies encourage their attendants
to examine the condition of tires while the car is at the
filling pump. If this were done consistently, greatly
increased sales would result, they believe.
⁴ Census of American Business, 1933, Retail
Distribution, Vol. I, United States Summary, Table A5.
because of the heavy investment in the building and site and the necessity of keeping their stations manned for long hours. Therefore, as Swensrud indicates, increased sales volume greatly decreases the expense ratio and greatly improves their earning position.\(^1\) Any added volume that can be obtained without further cut-of-pocket expense is a great advantage to these companies. Consequently, they find it possible and profitable to sell tires at a mark-up even below their average station cost. At present it appears that they are selling tires at an average station mark-up of 25 per cent when the cost of station operation ranges at 32 per cent or above.\(^2\)

The potentiality of the average service station as a retail tire outlet is the subject of much speculation. The Standard Oil Companies, which have had the longest experience in this field as tire merchandisers, have been able to obtain a ratio of about 80 tires per year per owned station and about 15 to 20 per controlled station.\(^3\) This gives the company a general average of about 56 tires per year per outlet.\(^4\) Socony Vacuum Company estimated that 53 tires per station was the best that could be expected for

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2. Confidential source.
3. Ibid.
4. This is an estimate made by the author since the ratio between the owned and leased outlets carrying tires is not definitely known.
their company as a whole. It is quite generally recognized that
a sale of 100 tires per year per owned station and 50 per leased
station constitutes an excellent record.

In 1934, about 65,000 gasoline stations, as nearly as can
be estimated, out of a total of 130,000 stations owned and con-
trolled by the major companies were selling tires. At the present
time probably 85 to 90 per cent of the owned and 35 per cent of the
leased stations of the Standard Oil Company are carrying tires.
This face would indicate that this company was already utilizing
the major part of its tire selling resources. Of the other major
oil companies, perhaps 40 per cent of the controlled stations and
10 to 15 per cent of the affiliated stations sell tires. These
companies, no doubt, have yet numerous stations suitable for tire
selling. Of course, improved selling and merchandising methods
may considerably increase the annual tire sales per station. There
is evidence that this latter is occurring. On the other hand, the
rapid spread of chain store taxes is resulting in the substitution
of leases over stations for ownership and this may have the effect
of retarding sales through these outlets. In view of these facts,
it can safely be stated that the oil companies have already creamed

1. Confidential source.
2. These facts are based upon an extensive survey made
available to the writer through the courtesy of one of the large
rubber companies.
3. This company made a good showing in the early months
of 1935, but more recent indications are less favorable. It will
continue to sell apparently about 5 per cent of the industry sales.
4. Interviews with E. J. Brooks, B. F. Goodrich Company,
A. W. Wilson, Goodyear Tire and Rubber Company, Col. Cochran,
Seiberling Rubber Company.
5. Standard Oil of Indiana has reduced its owned outlets
by approximately 25 per cent. (Confidential source) Recently, due
to the initiation of the Iowa sales tax, that company withdrew from
the tire market and, consequently, their total percentage volume will ascend less slowly than in the past. Yet their 1934 sales figures and 1935 indications point to continued progress of the oil companies as tire sellers; particularly is this true of those outside the Standard Oil group.

Manufacturers' Owned Chains

Manufacturers' owned-chains have been reserved for consideration because their development and extension rests upon factors other than the inherent strength or weakness of this particular type of organization as an efficient and economical tire marketing institution.

In the early years of the industry, tire companies engaged in retailing probably because they could not secure sufficient retailers. Also through these retail operations they could gain information that would be helpful in coping with the dealers' problems. The later development of these retail systems, however, was dictated by other causes. First was the necessity of procuring and protecting the commercial business. In 1920-1922 Goodyear inaugurated a rather definite policy of selling large commercial accounts direct. During the following years the practice grew until

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1. A most important consideration in evaluating the ultimate effectiveness of oil companies as tire marketing agencies is the leased and associated stations. If these stations can be converted into effective tire selling outlets and controlled, the oil company bids fair to dominate the tire field. Mr. Wm. O'Neil declares that the oil company's control in this particular is over rated. He thinks that the associated stations should be considered as independent outlets. The success attained by Standard Oil with its associated dealers, however, demonstrates that the company's influence can be a very significant factor. The writer, however, is inclined to believe that the control that can be exercised over most of these non-leased outlets as regards their tire sales is rather negligible.

2. It appears that oil companies will increase their relative share of the market about 16 to 20 per cent in 1935 or to slightly
each manufacturer was soliciting these accounts with specialty salesmen. The value of the commercial business, which was largely in truck tires, was growing rapidly in importance with the expansion of truck and bus transport. To procure and hold this important business retail stores were established.

Mr. Wilson stated in this connection:

"By and large, I would say this, that our stores were essentially opened due to the rising importance of the commercial business in the total market, and that their essential purpose and their prime purpose was to go after the commercial business."2

This commercial business until 1930 approximated 70 per cent of the sales of these stores.3 The other large companies must have been in a similar position. Second, the failure of dealers furthered the program. The dealer became so indebted to the tire company that he had to be taken over to protect the company's investment.4 In other cases, it was necessary to have the dealer expand his operations in order to properly service the market. He could not finance this expansion, so again the company stepped in.5 General Tire and Rubber Company store holdings have been due

Footnotes Continued:

over 10 per cent of total renewal sales.
3. See p. 38.
1. Tires, September 1925, p. 46.
2. R. S. Wilson, op. cit., p. 23780.
3. Ibid., p. 23783.
5. Ibid.
primarily to this reason. ¹ B. F. Goodrich has a group of stores called the "Retail Service Stores" in which it has heavy investments, probably because of advances made to them.² Third, stores were established to secure adequate representation in the territory. Mr. Litchfield gave this as one of the major reasons for Goodyear's position.³ Stores were established in those territories where the company was not securing its share of the business due either to the incompetency of the existing representative or the company's dealer had been taken over by a competitor. Fourth, owned stores were intended to stabilize the market.⁴ In every recession the tire companies find that their dealer organizations are badly decimated and they face a tremendous task in maintaining adequate dealer organizations. The company-owned chain would serve as a skeleton organization in such cases and insure distribution. Furthermore, the presence of owned stores in the principal cities where price cutting, particularly on commercial business, would

¹ Confidential source.
² Interview with Mr. Jerry Lintner, June 12, 1934.
³ Radio talk by P. W. Litchfield, November 6, 1933.
⁴ Confidential source.
tend to exercise a salutary effect upon the dealer organization in this regard. It is extremely doubtful that this effect has resulted, however. ¹ Fifth, these stores were opened to meet the competition of the new large scale retailers who were rapidly invading the market. Mr. L. R. Jackson gave this as the primary reason behind the Firestone expansion program.²

"Firestone in the early part of 1923, embarked on a program of meeting Sears Roebuck mail order competition with company-owned stores .....Firestone knew the real business that Sears had been doing and it was serious enough that they took some action to forestall and meet that form of competition. Consequently, Firestone opened stores in most instances in the same city that Sears had a store."

Firestone was absolutely dependent upon the dealer business since it had no special account business and the invasion of that market by these large, aggressive marketers constituted a particular threat to it. Although Goodyear denied that this had any effect upon their store policy, they, as well as the other large companies, must have been desirous of having a store organization under their own control that would constitute a bulwark against these new competitors.³ Sixth, this program was aimed to provide a

¹ Some of the dealers in the Federal Trade Commission-Goodyear hearings indicated that the competition of the company-owned stores was as destructive as was that of Sears Roebuck.


³ Testimony of Mr. Wilson, op. cit., pp. 23783-23786.
market for the factories. Tire manufacturers needed volume and they sought it through the addition of new dealers, manufacturing special brand tires for large scale retailers, and through their owned stores. Finally, forward integration by manufacturers was becoming more common. Shoe manufacturers, clothing manufacturers, and others may have furnished them an example.

In addition to the motivating causes, the manufacturers' owned retail store plan had other reasons to commend it in this case:

1. Consumers were coming to the cities and larger towns to buy their tires. The manufacturer, therefore, could tap the bulk of the tire market with 400 to 500 well-located stores.¹

2. Each of the larger companies already maintained a large number of branches and warehouses throughout the market. There was the possibility that the wholesale and retail functions could be combined with a consequent saving of expense.

The case of the manufacturers' owned-chain was not entirely a one-sided question. Against these stores the principal arguments are: First, the risk inherent in the policy. The investment in these stores probably amounts to $65,000,000.² This is a heavy additional

¹. There are 375 cities in the country with population of 25,000 and above. These cities embrace 40 per cent of the entire population of the country but when their tributary territories are included, they represent a much larger percentage. Abstract of the Fifteenth Census of the United States, 1930, p. 14.

². Firestone had an investment in owned stores of $25,000,000 in 1930, when the cooperative plan was in effect (see Annual Statement 1930). This estimate assumes an investment of $40,000,000 for Firestone and $25,000,000
investment and should give pause to any industry. Furthermore, car traffic shows marked fluidity and store locations that are most desirable today may be second or third rate next year. Second, the operating and management problem is a serious one. To install a merchandising point of view into the entire organization is proving a difficult task. The problem of securing and training competent store managers is a most difficult one. Firestone, in the first instance, met this problem by instituting its cooperative plan. Then proper system of control had to be evolved to keep the far flung organization in line without stifling it. Finally, the retail organization had to be integrated with the wholesale organization to eliminate duplication and make for a smooth functioning whole. Third, the effect upon the attitude of the dealer organization is apt to prove detrimental. Under the present conditions the dealers are not only the backbone of the tire distribution pattern, but they are its most profitable section. There seems to be little

Footnotes Continued:

for the others. While they, in total, have more stores than Firestone, some of the other companies, particularly Goodrich, lease the site and building; consequently, their investment is low.

1. Goodrich is leasing properties and avoiding costly set up because of this fact (1934-1935). Confidential source.

2. Confidential source.

3. The Akron companies are now putting all college men hired through their retail training program. (July 1935) In the beginning the retail stores were operated by separate organizations, as one would expect, but recently there has been a decided tendency to integrate them into the wholesale organization. The Goodrich Silvertown Corporation—the retail operating organization has been dissolved and the wholesale organization now controls those operations. J. P. Woodlock, B. F. Goodrich Company.
possibility of eliminating the dealer from the distribution picture, so his attitude needs consideration.

A final appraisal of the success of these store programs at this stage of their development is impossible. The tire manufacturers have had to acquire knowledge and experience in retailing. Furthermore, they went into these organizations on a large scale at the peak of prosperity and, since, they have had to operate on a most unfavorable market. Finally, the stores could be unprofitable and yet be successful from the company standpoint because they gave the factory a large volume of profitable business. However, a picture of the manufacturer's retail store situation can be given and some tentative conclusions drawn:

1. The volume attainments of the stores have been, on the whole, very encouraging. The 1000 manufacturers' stores, if Dunlop's activities be excepted, each sold on an average volume of about 3000 tires annually. Few independent dealers approach this figure.¹

2. From a profit standpoint the stores have been disappointing. Goodyear lost $9,471,510 on its stores in less than 8 years or an annual loss of about $1,250,000.² Goodrich has lost about $1,000,000 per year on its operations³ and Dunlop likewise has shown an annual deficit.⁴ Firestone made a slight profit on its stores for the first time in the year 1934.⁵

¹ See United States Bureau of Foreign and Domestic Commerce, Distributors Tire Stocks in the United States, Rubber Industry Letter No. 21, April 1, 1935.
² Docket 2116, Respondent's exhibit no. 16-0. R. S. Wilson, op. cit., p. 23740.
³ The greatest part of this was due, however, to losses on commercial business.
⁴ Confidential source. Store losses were cut greatly in 1934.
⁵ Confidential sources. The reasons for Firestone's greater success with company-owned stores can only be surmised. Since that company built more
3. There are indications that the companies have overdone the building of large, palatial super-service stations. Several officials of Akron companies have expressed this opinion to the writer. Recent store institutions have been of the small, limited service, economical type similar to the Dunlop store. During the latter month of 1934 and the early months of 1935, Goodrich has opened more than 80 and Goodyear more than 50 of these stores.¹ It is rumored that Firestone is pursuing a similar policy. Of course, as the store organizations expand into the smaller cities the stores tend to become smaller, but the trend, in this instance, represents a basic modification in company policy as well.

Footnotes Continued:

¹ Elaborate and costly stations and, therefore, invested more money than did the others, one might expect Firestone to make the worst showing. It has been suggested that this company made more of the products it sold in its stores than did the other companies. Perhaps this is true, but it is doubtful if Firestone is more diversified in this respect than is Goodrich. As a matter of fact, if the writer is correctly informed, Goodrich made battery cases for Firestone until the year 1933. The reasons for Firestone's better retail store showing probably are: (a) The formulation of a definite, decisive retail store policy and the direction of the organization to that end. It is understood that Mr. Firestone himself is actively in control of the retail program. (b) The superiority of Firestone's retail store management. Not only is Mr. Firestone personally directing the retail store operations but he has surrounded himself with a highly trained retail merchandising staff. (c) The entire Firestone organization appears to be retail minded and enthusiastic supporters of the program. This attitude is not so apparent in the other companies.

¹ Confidential sources.
4. The stores have not been able to effect any significant degree of price stabilization. In fact, it is rumored that the company stores are the worst price offenders.

5. It is generally held by the companies operating retail stores that after the excessive store investments are written off, more experience in retail management is gained, and business stabilizes company stores can be operated successfully in this field. The improvements made in the operating efficiency of these stores during 1935, if the writer is correctly informed, tend to substantiate this claim.

6. In most cases the companies seem to have drifted into tire retailing without a very clear-cut policy. Only two companies seem to have a definite retailing policy for any considerable period of time. Firestone publicly avowed a retailing policy and proceeded to open a large number of elaborate and costly service stations. Dunlop likewise, according to one of its officials, definitely decided to protect its retail volume by opening a chain of retail stores when it saw a number of its larger competitors entering the retail field. Its program is quite contrary to that of Firestone or the other companies, however, for its stores are small, are located in the low rent areas, and give very limited service. The other manufacturers have

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1. Mr. Harry Elythe, Goodyear Tire and Rubber Company.
2. See Annual Statement of the Company for 1929.
3. Interview with Mr. Girard Hammond, October 12, 1934.
pursued a most uncertain course. Goodrich opened a large number of owned Goodrich Silvertown Stations. At the same time it controlled a chain of dealer operated stations. The latter apparently represented dealers who had become financially involved to the company. In 1933 this manufacturer opened a large number of small economy stores.\(^1\) Goodyear did not disclose its retail store affiliations until 1930 or 1931, when the owned stores were brought under the Goodyear name. This company did not change its position in the retail field appreciably through the three years 1932-34, but since January, 1935, following the Goodrich lead, it has been opening a number of small automobile accessory stores.\(^2\) United States Rubber Company was the first large operator of retail stores but within the past four or five years it has questioned the advisability of store ownership and as a result has receded from its earlier position in the retail field.\(^3\) The General Tire and Rubber Company, while operating a comparatively large chain of stores, does not publicize the fact and seems not to favor an ownership policy. These facts would indicate that tire retailing by rubber manufacturers is very definitely in the experimental stage. Though these companies are expanding their retail facilities, they seem to have little knowledge as to what the ultimate outcome will be.

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1. Confidential source.
2. Interview with Mr. T. W. Prior.
3. Interview with Mr. Farr, United States Rubber Company, December 30, 1934. Recently it seems to be expanding its stores again.
7. It appears that these manufacturers-owned stores represent, mainly, a move to insure the market and protect the manufacturers' control. The domination of the manufacturers in advertising has already been mentioned, but their domination goes far beyond this. Through their own wholesale establishments they control the flow of their product until it reaches the retailers. Likewise the manufacturers have dominated the price situation.\(^1\) Now several large and powerful retailers have arisen to dispute the domination and to share, if not to assume, the price leadership of the industry.\(^2\)

Not only has the official position, as it were, of the large companies been challenged, but they have received a body blow with the rapid growth of these new retailers. In the first place, the rubber industry is a rather narrow one; that is, it is largely dependent on tires for volume sales.\(^3\) The industry has experimented with rubber for paving, container lining, building insulation and many other purposes and some interesting new products, Armorite, Lastex, Balloon cloth, and many others, have been developed.\(^4\) But the

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1. A study of the price movements as presented in *Horseless Age, Automobile, India Rubber and Tire Review, and Tires* from 1912 to 1925 certainly indicates that this was the fact.

2. See *India Rubber and Tire Review, June* 1932, p. 18. Mr. Nelson, Vice President of Sears Roebuck, admitted that they had been responsible for most of the price changes in the industry since 1926. See *India Rubber and Tire Review, December* 1936, p. 18.


4. See Fraser and Doriot, pp. 100-101. Armorite is an abrasive resisting rubber compound of the B. F. Goodrich Company, especially designed for coal and rock chutes. Lastex is a new elastic cloth used for swimming suits and garments perfected by United States Rubber. Balloon cloth speaks for itself. Many other products could be named.
prospects of new volume markets for rubber are none too bright.\textsuperscript{1}
Furthermore, due to the price structure of the industry, which will be examined in detail later, the renewal, particularly the private car market, is relied upon to make 80 per cent to 90 per cent of the earnings of the industry.\textsuperscript{2} From the standpoint of the tire manufacturers it would hardly seem a wise policy to permit these large private branding companies with nation wide organizations to capture a substantial share of the market without taking steps to assure themselves of an equally strong, permanent position throughout the market. The owned store as a retailing policy might be open to question but as a corporate policy it was almost a necessity.\textsuperscript{3}

**Significance of Distribution Movement**

The preceding pages have described the incoming of large scale retailers into the field of tire distribution and have shown the causes lying behind that movement. Does this not represent but another phase of the large scale distribution movement that has had such a tremendous growth in other fields since 1920?\textsuperscript{4} This is true, but in this case the invasion possessed certain unique and unusually significant characteristics.

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1. Confidential source.
2. See p. 240
3. In discussing this problem with several tire executives the statement was often made that "it was the only solution to the industry's problems."
First, the growth of mass distribution in tire retailing has been most rapid and has progressed to an unusual degree. Professor McNair estimates that within the period 1920 to 1929 the volume controlled by large scale retailers in the grocery field increased 400 per cent and in drugs 270 per cent. But during this period the volume handled by these institutions in the tire field increased almost 1200 per cent. At the present time the chain is stronger only in variety, shoe, food, gasoline and cigar fields than it is in tire distribution. The rapid developments in tire quality and the particular suitability of tires as adjunct or side-line merchandise have encouraged this movement as, also, have the distinct advantages possessed by chain stores and especially oil companies as tire outlets. But unquestionably a factor of tremendous, although measurably, importance has been the price differentials allowed by the tire companies to these large retailers. Goodyear gave Sears Roebuck discounts of 35 to 40 per cent in excess of those allowed its dealers. Two other large tire companies, also, granted wide differentials, although less than those designated, to their large retailer accounts.

Again the distributive situation here seems to be complicated by the variety and strength of particular types of marketing institutions. For instance, mail order sales account for 1 per cent of the total retail sales of the country but 3.4 per cent of tire sales. The chain

1. Malcolm P. McNair, op. cit.
2. Census of American Business, United States Department of Commerce, 1933, Retail Distribution, Chains, and Independents, p. 2A
3. Ibid.
store figures are likewise high as has been mentioned. The oil companies claim over 10 per cent of consumer tire sales, which appears to be far above the volume they do in batteries and other allied lines.\textsuperscript{1} The manufacturers' chains did 3.6 per cent of total chain store business of the United States in 1929 or about 0.8 per cent of the total retail sales, but 4.5 per cent of the volume in this field. Since that date the latter percentage has climbed to 8.8 per cent.\textsuperscript{2} The large "stake" each of these institutions possesses in the tire market combined with the fact that each has its peculiar advantages, marketing methods and cost problems probably tends to have made the distribution situation more disrupted and unstable than it otherwise would have been.

But particular significance attaches to this alteration of the distributive pattern because of the position of the manufacturers in this industry and the particular importance that attaches to the renewal market. The manufacturers--four or five manufacturers to be exact--have dominated the industry. The intrusion of the large retailers not only challenged that position but their

\textsuperscript{1} The writer has no figures on this point but he is confident that the facts will bear him out.
\textsuperscript{2} Fifteenth Census of the United States, 1930, Census of Distribution, Retail Distribution, Retail Chains, p. 19.
invasion of the renewal market, upon which the industry relied for its profits, threatened the earning power of the tire manufacturers. Consequently, these newcomers were not admitted to the field without a struggle.

This struggle took a dual form. In the first case it was a fight for the control of volume. Price cutting and counter-price cutting occurred as one side or the other maneuvered for a position which would insure it a larger share of sales. This maneuvering is detailed at some length in Chapter VII. Further, the extension of dealerships, grooming oil companies to sell standard brand tires, and the establishments of company-owned stores were all but aspects of this battle to maintain a competitive position in the market.

The other phase of this rivalry is what might be termed a "battle of the brands" or "special brands", as they are termed in the industry. Table XV shows that during the years 1927 to 1932 the special brands were decidedly on the ascendancy with the rapid growth of mail order house chains and the Atlas Supply Corporation. In an effort to stem this advance the manufacturers added second, third, and even fourth price lines. More recently the manufacturers' brands have taken the lead. Many of
the small chain store organizations and practically all of the department stores now handle manufacturers' brands although often not the standard brands. But the real gain for the standard brands has come from the rapid extension of their sales through oil company outlets. These sales now rival those of Standard Oil. In this struggle the large companies have fared better than have the smaller ones. The extent of the participation of the various types of companies in the market will form a part of the succeeding chapter.
CHAPTER V

SOME OF THE EFFECTS OF THE MARKETING PROBLEMS UPON THE
ORGANIZATION STRUCTURES OF THE INDUSTRY

* * * *

The preceding three chapters have analyzed certain
distinct marketing problems that have faced the automobile
tire industry arising from (a) the nature of the tire
product and consumer's tire buying habits, (b) the growth,
extent and peculiarities of the market or markets for auto-
mobile tires and (c) the changes that have affected tire
distribution methods since 1922. Even though these marketing
transitions "have not finished their course" and, therefore,
we must wait "upon developments for an accurate appraisal of
their significance," yet in this and the next two succeeding
chapters an attempt will be made to evaluate the effects of
these factors upon the organization structures, prices, costs
and margins of the industry.

In this chapter, the effects of a rapidly impro-
ing product, fluxing markets and shifting distribution
pattern upon the organization of the industry will be
examined. The treatment will consider these effects in
turn: (1) upon the general structure of the industry, (2)
upon the retailing, and (3) upon the wholesaling systems.

1. The parts of the statement in quotations marks
are adapted from Harry Todal, "Some Recent Changes in the
Marketing of Consumer Goods," Harvard Business Review,
January 1933, p. 156.
Effect on the General Structure of the Industry

A market diminution in dollar volume of 42 per cent and the fluxing marketing movements that have been sketched above would be expected to leave their marks upon the general pattern of the industry and so they have.

The mortality of tire manufacturing enterprises is portrayed in Table XVIII. The Table gives by alternate years the total number of enterprises in the tire and tube field and the actual number of tire casing manufacturing companies actively engaged in production. The industry has declined from 178 companies in 1931 to 44 companies in 1935 or a shrinkage of 75 per cent. If active plants alone are considered, the adjusted shrinkage figure becomes 82 per cent! Such a decline would indicate that competition was operating with full force and vigor, if not with a vengeance, in this industry.

1. Monopolistic conditions could bring about the same contraction in the number of firms engaged in the industry. The writer, however, finds no evidence of monopoly but every evidence of competition. There is a most active bidding for business, prices are active and generally downward although a most unsatisfactory profit state exists and there is a decided lack of unity of action between the major companies.
TABLE XVIII
Number of Enterprises, Active Enterprises and Wage Earners in the Tire and Tube Industry in the United States, 1921-1933.

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of Establishments</th>
<th>Active Establishments</th>
<th>Number of Wage Earners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>178</td>
<td></td>
<td>55,496</td>
</tr>
<tr>
<td>1923</td>
<td>160</td>
<td></td>
<td>73,963</td>
</tr>
<tr>
<td>1925</td>
<td>126</td>
<td></td>
<td>81,640</td>
</tr>
<tr>
<td>1927</td>
<td>109</td>
<td>92</td>
<td>78,256</td>
</tr>
<tr>
<td>1929</td>
<td>91</td>
<td>62</td>
<td>83,263</td>
</tr>
<tr>
<td>1931</td>
<td>48</td>
<td>32</td>
<td>49,159</td>
</tr>
<tr>
<td>1933</td>
<td>44</td>
<td>32*</td>
<td>52,976</td>
</tr>
</tbody>
</table>

* Tire manufacturers only. Excludes four tube manufacturers in 1933.

Most of the companies that fell by the wayside were small, since the average company increased in terms of wage earners from 312 in 1921 to 1204 in 1933. The severe competitive situation and added importance attached to brands and advertising, the tendency toward more direct marketing affiliations, the wide fluctuations in the price of crude rubber, and the unfavorable earning position of the industry would all place a severe competitive handicap

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1. The number of Establishments and the number of Wage Earners are taken from the Census of Manufactures: 1929 and 1933, op. cit.

2. A. L. Kress, formerly Deputy Administrator of the Tire Industry, in an unpublished study entitled "A Forecast of Rubber Tires--1940" gave these data on active establishments.

3. Due to the increased productiveness per man (about 500 per cent) the actual increase in size was considerably more than the averages of the number of wage earners engaged indicate.
on the small, weakly financed company. Furthermore, the evidence indicates that the growth of large scale marketers encroached heavily upon the dealer business of the small companies. But some large, established firms such as Ajax, Fisk, Miller, Swinehart, and Mason vanished entirely, went through reorganization, or were bought by larger companies from the auction block, proving that the competitive battle was a desperate one that affected every company, large or small.

This weeding out of the small and medium sized concerns increased the scale of operations which characterized the industry, but a significant concentration movement was occurring as well. In an earlier chapter, the concentration that took place in the industry between the years 1914 and 1921 was shown. In 1921 the eight largest enterprises accounted for 77 per cent of the industry's sales and the four largest companies, Goodyear, Goodrich, Firestone, and United States Rubber, for 57.9 per cent of the total. The following

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1. The industry as a whole during the five years 1926 to 1930 reported a net income for the year 1927 only. Since conditions were much more adverse in the subsequent years, the net deficits would only increase. Rubber Division, Bureau of Foreign and Domestic Commerce, Special Circular No. 3472, July 21, 1933. Net Profits in the Rubber Industry, Table IB.
2. See Table XIX, p. 184.
3. Ajax, after soaring high, pitched into the "red" where it lingered until its demise in 1930. Fisk was one of the strong companies, but it failed in January, 1931. Since reorganization, it is regaining a foothold in the market again. Miller was in financial straits when Goodrich purchased its assets in February, 1930. The other two companies failed.
4. See page 17.
percentage figures purport to show the share of volume sold by
the four companies just named since 1921. These data have been
compiled from sales figures after making adjustments for non-
tire sales.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>58.0</td>
</tr>
<tr>
<td>1925</td>
<td>57.0</td>
</tr>
<tr>
<td>1927</td>
<td>61.2</td>
</tr>
<tr>
<td>1929</td>
<td>74.5</td>
</tr>
<tr>
<td>1931</td>
<td>76.0</td>
</tr>
<tr>
<td>1933</td>
<td>76.5</td>
</tr>
<tr>
<td>1934</td>
<td>76.9</td>
</tr>
</tbody>
</table>

Subsequently, data have been made available which
validate these estimates. Therefore, it can be concluded that
the "Big Four" have gradually increased their position almost
50 per cent within the last decade and that they now control
more than 76 per cent of the industry.

The causes for the growing hold of these few large
manufacturers upon the market can be summarized as follows:

1. The growth of "mass distribution" in the renewal tire
market.

2. The growth of large national accounts and the increasing
strength of the commercial market.

3. The practical monopolization of the original equipment
market.

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1. These percentages were obtained by adjusting the
sales data of the "Big Four" for non-tire sales. These adjust-
ments varied from year to year but the general trend was upward.
They were made on the basis of information gathered from the
journals from time to time, as for example, "Four Giants: All
Different," Fortune, September 1930, pp. 85 plus, Standard
Statistics, May 2, 1932, etc.

exhibit 22030, which gave renewal sales by companies for the
years 1926-1933. To this could be added easily the original
equipment sales.

3. The four large cigarette companies manufacture 90
per cent or more of the "ready-made" cigarettes, according to
Frank Desendorf, Barrons', July 16, 1934, p. 7, and William Wren

The four large meat packers control only about 65
per cent of the total sales, according to John T. Mulliken, Jr.,
"America's Adult Industry," Barrons' September 17, 1934, p. 9.
In the course of the Hearings in the Matter of Good-
year Tire and Rubber Company (Federal Trade Commission Docket
2116), the principal tire companies submitted their "renewal
tire" sales, which were, in reality, dealer sales plus company-
owned store sales, for the years 1926 to 1933.¹ With the aid
of these and the materials adduced in Table XV it is possible
to secure an approximately correct breakdown of sales of the
"Big Four" and "other companies" by classes of business.²

**TABLE XIX**

A Breakdown of the Renewal Market by Groups of Manufacturers
and Types of Business Controlled for Selected Years, 1926-1933.

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>1926</th>
<th>1930</th>
<th>1932</th>
<th>1933</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups &amp; Types of Business Controlled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Renewal Market</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Big Four</td>
<td>47.5</td>
<td>69.1</td>
<td>71.7</td>
<td>68.2</td>
</tr>
<tr>
<td>Company Stores</td>
<td>0.3</td>
<td>6.5</td>
<td>8.4</td>
<td>8.5</td>
</tr>
<tr>
<td>Dealers</td>
<td>42.4</td>
<td>48.7</td>
<td>42.1</td>
<td>38.4</td>
</tr>
<tr>
<td>Oil Companies</td>
<td>-----</td>
<td>2.1</td>
<td>5.2</td>
<td>8.2</td>
</tr>
<tr>
<td>Mail Order Companies*</td>
<td>2.8</td>
<td>9.2</td>
<td>13.1</td>
<td>9.9</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2.0</td>
<td>2.6</td>
<td>2.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Small Companies</td>
<td>52.5</td>
<td>30.9</td>
<td>28.3</td>
<td>51.8</td>
</tr>
<tr>
<td>Company Stores</td>
<td>0.2</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Dealers</td>
<td>46.4</td>
<td>20.5</td>
<td>22.8</td>
<td>25.6</td>
</tr>
<tr>
<td>Oil Companies</td>
<td>-----</td>
<td>1.0</td>
<td>1.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Mail Order Companies*</td>
<td>4.3</td>
<td>6.1</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1.6</td>
<td>2.3</td>
<td>3.0</td>
<td>4.3</td>
</tr>
</tbody>
</table>

* Includes mail order and store sales

1. They are given with accompanying percentages of the total market in Appendix VI.
2. Naturally, judgment is introduced in making such a breakdown and this involves possibilities of error. However, it is believed that the table is reasonably correct.
3. In 1934 the "Big Four" strengthened their positions to about 70 per cent of the renewal market.
This table reveals that the four largest tire manufacturers have increased their share of the renewal market from 47.5 per cent in 1926 to 68.2 per cent in 1933. The small companies obviously experienced a corresponding loss, their volume declining from 52.5 per cent to 31.8 per cent.

The underlying cause of this transfer of business from the small to the large rubber companies appears to have been the development of large scale retailers such as the company-owned stores, the oil companies and the mail order houses. These retailers were affiliated almost entirely with the large rubber companies either by stock ties or buying connections. The company-owned store volume increased from .5 per cent of the renewal market in 1926 to 9.4 per cent in 1933 and the store systems of the "Big Four" were responsible for approximately 90 per cent of this increase. The oil companies' position increased from 3.1 per cent to 9.2 per cent and the "Big Four" procured practically all of this gain. The mail order houses, including chain stores, advanced from 7.1 per cent to 9.9 per cent of renewal sales. While the increase in mail order house sales was much less than that of the company-owned stores or oil companies, yet the actual volume increase derived by the "Big Four" was almost as great since the business of Montgomery Ward and Company was transferred from the small company group to the large company group with the purchase by the United States Rubber Company of the Gillette and Sampson Companies in 1930.
The volume of these large retailers appears to have been made largely at the expense of the dealers of the small companies, although the dealers of the large companies suffered considerably after 1930. This point will be elaborated below.

Many reasons can be advanced for the affiliation of the large scale retailers with the four large tire companies. These tire companies had the financial resources to establish company-owned stores and, no doubt, saw the need for these agencies in order to maintain control of the market. The factors determining the alignment of the oil companies and the mail order houses with the "Big Four" are not definitely known, but the following were probably primary:

1. The production facilities of the large tire companies and their financial strength. By this is meant that the large companies had facilities to make tires of any type, quality and in any quantity. Furthermore, their financial positions assured the vendee of their absolute responsibility, permanency and ability to finance production.1 Sears Roebuck stated that the primary reasons for its affiliation with Goodyear was the ability of that manufacturer to produce a quality product consistently and in any quantity.2 Its previous experience with the Murray Tire Company had proved unsatisfactory in that regard.3 It is

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1. The writer had occasion in 1929 to investigate this subject, among others, for the National Association of Purchasing Agents. He found that such companies as General Motors, Detroit Edison, and others investigated these factors quite carefully and weighed them heavily in selecting a source for an important commitment.

2. D. H. Nelson, Vice President, Sears Roebuck and Company. Docket 2116, pp. 21771-21780. This company considered the Fisk Rubber Company as a source of supply and, although prices and other factors were found to be satisfactory, they refused to sign a contract because of Fisk's financial position. (Testimony of L. E. Sexton, Docket 2116, p. 20451.)

3. Testimony of Max Adler, formerly Vice President of Sears, Roebuck and Company, Docket 2116, April 24, 1934. Montgomery Ward procured its tires from four small
reasonable to assume that the Atlas Corporation considered these advantages in selecting Goodyear and the United States Rubber Company as their sources of supply.

2. The decentralized manufacturing and warehousing facilities of the "Big Four." Relations with one or two of these companies which operated plants in various sections of the country offered to the large national selling organization a prompt and economical product service which could be paralleled only by maintaining five or six small, widely scattered, sources of supply. The small producers would be more difficult to control and less flexible, due to their size and independent operations.

3. The reputation enjoyed by the large manufacturers and their products and the marketing services with which these products could be supported. This reputation, even though the name of the company could not be used in advertising, appeared to be an advantage for it was extensively used by Sears Roebuck and Company.1 The "consumer acceptance" attaching to the standard brand tires was apparently one of the basic reasons that induced the large oil companies, excluding Atlas, to sell standard brands instead of their own private brands or the brands of small manufacturers. The tires of the large manufacturers were well known and well advertised; consequently, they could be sold in greater quantities with less expenditure of effort or money. In addition, the oil companies would have the benefit of the sales

Footnotes Continued:

companies prior to United States Rubber gaining control of their business and they were entirely satisfied with the quality of the product and the service given. Testimony of B. R. Prall, Manager, Tire Department, Montgomery Ward and Company, Docket 2116, as quoted by the India Rubber and Tire Review, October, 1934, p. 36.

1. Sears Roebuck advertised that its tires were made by the "world's largest tire maker" and talked about "Super-elastic" and Goodyear "Super-twist", etc. Paul T. Cherrington testified that through his advertising Sears Roebuck benefitted from Goodyear's reputation and position in the tire field. Docket 2116, pp. 23628-23630.
promotion materials and merchandising experience and staffs of the tire companies in extending their tire sales.¹

4. The terms offered were probably more advantageous than the small companies could meet, although this is by no means certain. Sears Roebuck secured a most favorable price from Goodyear, but Mr. Nelson testified that an equally low price could have been procured from Lake Shore Rubber Company or certain other small producers.² The price arrangement of Atlas is unknown. It was reported by one source as a cost plus contract bearing an 8 per cent profit margin and by another as "30 per cent below the best dealer price."³ The oil companies handling standard brand tires secure them at the "best dealer's price" plus an extra concession of 10 per cent.⁴

5. Finally, business connections played a part. These connections were both direct and indirect. United States Rubber purchased the Sarpson Tire and Rubber Company of Los Angeles and a substantial interest in the Gillette Rubber Company of Eau Claire, Wisconsin. In this way they secured all of the Montgomery Ward business.⁵ Also, other types of connections were utilized. One authority stated that oil accounts held by the small tire companies were "easily procured when the right contact was found" and cited instances where such contacts had been employed.⁶ The gasoline and oil consumption of the company-owned store systems could be used effectively as a bargaining factor in seeking oil company business.⁷

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¹ The large companies have men working with their large oil accounts at all times. (A. W. Wilson, Goodyear Tire and Rubber Company) Mr. Gerard Hammond of Dunlop stated that his company could not afford to do this. Interview October 15, 1934.


³ Confidential source.

⁴ Testimony of Joe Mayl, op. cit., p. 23777.
Mr. Wm. O'Neil stated that this discount was 10 per cent. (Interview) It should be recalled that the oil company does not take possession of the tires. This 10 per cent serves them as an "over ride" on the contract.

⁵ Business Week, February 4, 1931, p. 8.

⁶ Confidential source.

⁷ It has been so used to the writer's knowledge.
The behavior of the dealer business as reflected by the table deserves consideration. From 1926 to 1930 the dealer business of the "Big Four" companies increased from 42.4 per cent to 48.7 per cent of the renewal volume. During the same period the dealers of the small companies lost business heavily--their share of the market declining from 46.4 per cent to 20.5 per cent. This situation can be explained on the following grounds: (1) Prosperity was reigning and the well-known standard brands were in demand. Tire prices were declining and the public could buy the standard brand tires for the same or at a lower price than for they had previously paid/lesser known or for inferior tires. (2) The tire manufacturers had not extended their owned retail stores to the extent that they were an important or disturbing factor in the market and, in many instances, the identity of the company stores was not revealed.¹ (3) Goodyear was the only large company affiliated with the larger

¹ Firestone was the only company that boldly announced its retail store program. Fraser and Doriot state that in 1923 Goodyear reaffirmed its faith in the dealer and by "1931 was understood to be the largest distributor of tires through factory owned outlets." They further state that Goodyear's owned stores had been acquired largely through the purchase of dealerships which are continued in operation under the original name, but with the Goodyear employees in charge. (Underscoring is the author's.) Fraser and Doriot, op. cit., p. 97. Although the supposition that Goodyear was the "largest distributor through factory owned outlets" was erroneous, the quotation does show how little was actually known of tire companies' store operations.
marketers and this affiliation was not widely known. 

(4) The large companies could offer their dealers many advantages that the smaller companies could not. They had a tremendous advertising expenditure with which to build consumer acceptance for their products and they could give to the dealer advertising support and assistance, better credit terms, and discounts than could the less fortunately situated manufacturers. Furthermore, they manufactured and sold several lines of tires which enabled their dealers to better withstand the mail order competition. 

(5) No doubt the size and reputation of the large concerns were important

1. According to a survey conducted by Goodyear in December 1933, only about 17 per cent of the respondents associated Goodyear with the Sears Roebuck tire. Docket 2116, Commission's exhibit no. 221.

2. That is, they could provide him with direct mail material to send out under his name, sales aids for his salesmen, etc. It was customary for the large companies to contribute 50 per cent toward the dealer's local advertising, providing he met the requirements of the company. Testimony of R. S. Wilson, Docket 2116, p. 1047. On the Goodrich plan see article in Sales Management, March 22, 1930, p. 510.

3. Goodyear's quantity discounts widened from an average of 4.7 per cent of sales in 1928 to 7.4 per cent in 1930. Commission's exhibit no. 357. The extent to which special discounts and allowances were utilized is not known. There is reason to believe that the manufacturers have been most liberal in this regard. An executive of a small company stated that the chief advantage possessed by the large company was its financial resources, which enabled it to extend aid to dealer, consign its product, and withstand long periods of adversity. Interview with Colonel J. L. Cochrane, Selberling Rubber Company, June 24, 1934.

4. See Chart III, p. 54
trade inducements during a period when the American public seemed to believe that mere scale of operations offered great advantages.¹

From 1930 to 1933 the behavior of the dealer business was just the reverse of that of the preceding years. The dealer volume of the large companies declined from 43.7 per cent to 39.4 per cent or a decline of over 21 per cent while the volume of the small companies' dealers increased from 20.5 per cent to 25.6 or an increase of almost 25 per cent in terms of the 1930 figure.² This situation is contradictory to what might logically have been expected, for it would seem that the large companies could employ their financial resources, advertising and sales promotion efforts to support their dealers in times of depression more effectively than could the smaller companies. In addition, the evidence available indicates that the "Big Four" were more nearly able to maintain the number of their dealers than were the smaller companies.

¹ The popular interest in mere bigness can perhaps be shown by the generality of such phrases as "largest in the world," "greatest in the world," etc. The pervasiveness of the merger movement was another aspect. See W. E. Thorp, "The Persistence of the Merger Movement," American Economic Review Supplement, March, 1931, pp. 77-82.

² Reference to Appendix VI, p. 546, shows that General, Selberling, Dayton, Norwalk, and Mohawk increased their percentage of the industry from 7.64, in 1930 to 9.28 in 1935 or 21 per cent. Their unit sales increased about 18 per cent.
companies. Goodyear, for instance, showed a decline of only 10 per cent in the number of its contract dealers between 1929 and 1932,\footnote{1} Firestone gained 6,938 dealers during the year 1930 and apparently maintained its dealer lists quite successfully during the two subsequent years,\footnote{2} and Goodrich claimed an increase in dealers of 24 per cent between 1931 and 1932.\footnote{3} The dealer mortality of the smaller companies, on the other hand, if Seiberling and Mohawk be fair samples, was much heavier. The former lost approximately 60 per cent of its contract dealers between 1929 and 1933 and the latter about 35 per cent.\footnote{4} This rather anomalous situation can be explained, perhaps, on the following grounds: First, the small companies enjoyed a decided cost advantage. Rubber and cotton prices, during these years, were declining steadily and this decline was an advantage to the smaller companies since they carried relatively smaller inventories and thus were able to buy more effectively on a declining market.\footnote{5} Furthermore, as material

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1. Docket 2116, Commission's exhibit no. 186.
2. See the Annual Statement of the company for 1930. Letter to Stockholders.
4. \textit{The data on Seiberling rubber Company are given in the Commission's exhibit no. 332a, while President Borland testified as to Mohawk's dealers February 8, 1934. Docket 2116.}
5. The large company must carry a minimum inventory of four months supply of rubber. The small company can buy currently and, therefore, can operate on a much smaller cushion. The writer knows of one small company that turned its raw material inventories 18 times in one year or about once every three weeks. A study made by the writer of the sales inventory ratios of four large companies and six smaller ones revealed an average ratio for 1922 of about 3.6 for the large and 4.5 for the small companies.
costs declined, wages became a more important component of
tire cost and, since the large companies were located principal-
ly in Akron, Detroit and Los Angeles where wages were
considerably above the average for the industry, labor costs
became increasingly burdensome and competitively disadvant-
tageous to these manufacturers.¹ Second, the manufacture
of special brand tires for the large scale retailers became
a market issue and militated against certain of the large
companies who produced the bulk of this business. As mail
order house competition became more bitter during 1932 and
1933, the dealers began to question the special brand policy
of the large tire manufacturers. Mr. H. S. Firestone widened
the breach by openly challenging this policy as being unfair
to the dealers.² As a result, many dealers must have turned
to the small companies.³ Third, the owned stores of the large
tire manufacturers replaced, absorbed or alienated the large

¹ For example, during the first six months of
1935, the average hourly wage of the industry was about $.84.
(See Trend of Employment, United States Bureau of Labor
Statistics.) The Akron companies were averaging about $.95
per hour during this period. (Beacon Journal, October 25,
1935) The small plants located in smaller cities were paying
about $.60-.70 per hour. (Mr. Carl Pharis)

² A series of open letters were exchanged between
Mr. Firestone and Mr. P. W. Litchfield, President of Goodyear,
dealing with the policy of manufacturing and supplying
special brand tires to the mail order houses.

³ The writer has no evidence of how many dealers
may have switched allegiance. He is informed that many did.
dealers. These owned stores were located in the concentrated markets where formerly the large dealers had thrived. In many instances the company store took over the former dealer; in others, it forced him out of business or reduced his volume to a shadow of its former size. 1 The large tire companies continued to add dealers in the towns in which they had stores, but these dealers were situated in the neighborhood sections or in the small outlying towns and, consequently, were small volume operators. 2 As a result, the large tire companies showed increases in the number of their dealers, but their total dealer volume declined. The small companies, on the other hand, were forced to maintain their established accounts and, in addition, gained some dealers who formerly had been affiliated with the larger manufacturers.

1. Firestone began its chain by buying a 51 per cent interest in a number of independent dealers. Later, in many cases it was forced to take over these dealers. (Lee R. Jackson, Docket 2116, p. 23346) Mr. R. W. Wilson states that many dealers in the large markets came to Goodyear and insisted upon liquidating. (Docket 2116, p. 23780) An official of one of the large companies admitted confidentially to the writer that the company stores had squeezed out many of the largest dealers.

2. The writer was privileged to see a survey that portrayed this fact clearly. In each of the larger cities two companies, Firestone and Goodyear had their company stores and in the neighborhoods and in the adjacent small towns they had numerous small dealers. Thus, these two companies literally blanketed each of the principal markets. As a result, their sales were exceptionally high in those markets but their per-dealer volume was not as high as for many of the smaller companies.
The large urban dealers constituted the backbone of the small company's distribution system and in order to protect them, the manufacturers gave them exclusive franchises, special discounts, and price protection. Thus the sales volume of these manufacturers was maintained but at a sacrifice of profits.¹ No doubt, one of the causes of the unfavorable financial situation of the small tire companies has been the protection given to these dealers during this critical period.

The growth of the large national accounts and the increasing strength of the commercial market further increased the market position of the four large tire manufacturers.² Attention has already been called to the fact that this commercial business constituted about 35 per cent of the dollar volume of the renewal market.³ The company-owned stores of the four companies made the solicitation and service of this large volume business their primary function.⁴ Furthermore, these large companies offered a distinct advantage to the large national, commercial, and mileage accounts because of their nationwide distributive and service organizations. These organizations enabled such large accounts as the Greyhound Bus

1. Interview with Colonel Cochrun, Seiberling Rubber Company.
2. The extent to which this movement contributed to their growing power can not be determined.
3. See page 111
Company and the American Telephone and Telegraph Company to have their vehicles serviced promptly and effectively wherever these vehicles might be stationed. Then, too, the larger companies were in a stronger position if price became the stumbling block to the sale. There is evidence, if the Goodyear case is typical, that prices were often cut until actual losses resulted in order to secure this commercial business.¹

Finally, the original equipment business fell almost entirely into the hands of the "Big Four." Goodyear alone claimed to have supplied about 28 to 30 per cent of it from 1926 to 1931.² The writer estimates that perhaps 90 per cent of this business was controlled by the four companies in 1926, 92 per cent in 1930, and 100 per cent in 1933.³

If these data on commercial and original equipment sales be combined with those developed in Table XIX, it appears that the "Big Four" manufacturers accounted for

¹ This raises the question why the company should desire this commercial business, but of course the volume would contribute to the reduction of factory overheads. However, in some cases the losses indicated were so heavy that one is inclined to believe that possibly the company would have fared better to have lost the business than to have taken it.

² Docket 2116, Commission's exhibit no. 65. With the increase in the Chrysler business since 1931, Goodyear's position has been 30 per cent or more of the market, it is believed.

³ These estimates are only approximations since the companies are not at all inclined to disclose such information. They were made after considering Fisk's and Kelly Springfield's participation in this business and discussing the subject with several men in the industry.
approximately 75.5 per cent of the total tire market in 1933. 1

This left but 24.5 per cent of the tire business as the share
of the smaller manufacturers.

TABLE XX

Large vs. Small Companies' Participation in the Total Tire Market
1921-1933 for Selected Years Only.

<table>
<thead>
<tr>
<th>Item</th>
<th>1921</th>
<th>1926</th>
<th>1930</th>
<th>1933</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units (000)</td>
<td>%</td>
<td>Units (000)</td>
<td>%</td>
</tr>
<tr>
<td>Big Four Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>57.5</td>
<td>32,263</td>
<td>56.8</td>
<td>38,996</td>
</tr>
<tr>
<td>Replacement</td>
<td>12,971</td>
<td>47.5</td>
<td>22,434</td>
<td>69.1</td>
</tr>
<tr>
<td>Original</td>
<td>12,992</td>
<td>80.0</td>
<td>12,562</td>
<td>92.0</td>
</tr>
<tr>
<td>Others Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>42.5</td>
<td>24,549</td>
<td>43.2</td>
<td>12,012</td>
</tr>
<tr>
<td>Replacement</td>
<td>21,300</td>
<td>52.5</td>
<td>11,821</td>
<td>30.9</td>
</tr>
<tr>
<td>Original</td>
<td>2,249</td>
<td>20.0</td>
<td>1,091</td>
<td>8.0</td>
</tr>
</tbody>
</table>

1. Possibly the fact that the "Big Four" control such a large share of the volume and are so evenly matched is one of the principal reasons for the absence of any type of mutual industrial program in this industry. They are so nearly of a size that no one holds a dominating position. Of course, their interests differ markedly, since Firestone is not manufacturing special brand tires, but instead relies upon its owned stores and its dealers for volume. Finally, these four companies are headed by aggressive and individualistic executives. Outside influences have attempted to effect a stabilization program for the industry. Mr. Cyrus Eaton was a notable example. Continental Shares, representing Cyrus Eaton, bought heavily in the rubber companies with the aim, it was reported, of effecting some unity of action between the large companies. In 1931 this company controlled 7 per cent of Firestone Common, 9.8 per cent of Goodrich, 4.3 per cent of United States Rubber, and 6.8 per cent of Goodyear. It had an additional interest of 16.1 per cent of Goodyear Common through Goodyear Shares, Inc. With the collapse of Continental Shares most of these holdings went on the auction block. Thus another vision for stabilizing this industry vanished. See Fraser and Doriot, op. cit., p. iii and India Rubber and Tire Review, July 1933, p. 7.
The high degree of concentration manifested here might well be questioned from an economic standpoint. In the first instance, the large companies are more severely affected by cyclical changes than are the smaller companies on account of the heavy inventories and receivables which they carry and their large and inflexible organization structures. In order to assure continuous operation they have to carry about a four months' supply of crude rubber while two to three months' supply will serve the small companies. 1 Likewise their receivables-to-sales ratios are larger than for the small companies. 2 The losses of the large companies in periods of business decline, therefore, are relatively heavier than for the smaller companies. 3 Furthermore, the smaller companies, due to their more limited scale of operations, compactness and less complex organization structures, are more flexible and adaptable to the reverses in business than are the large

1. One large company carried an average annual inventory of 120,000,000 pounds of crude rubber for the years 1926 to 1931. Docket 2116, Commission's exhibit no. 361.

The writer made a comparison of the inventory turn-overs of five large companies, including Fisk, and six smaller companies. The smaller companies averaged about 4.75 turnovers from 1922 to 1932 while the large companies averaged approximately 3.7.

2. An analysis similar to the one above showed that the larger companies also had a higher receivables-to-sales ratio for the period.

3. Of course, the large companies are able to provide for these contingencies by means of reserves, but while these cushion the shock and obviate the dangers of insolvency, the social loss is still present.
companies. Such data as are available tend to confirm this.\(^1\)
Second, as far as can be determined, mere scale of factory
operations over any considerable period of time does not
result in a better tire at a lower cost. It should be noted
that reference is made to scale of operations per se. In the
past, when tire technology was evolving extremely rapidly, the
large plants could support better equipped research laboratories
and staffs and, undoubtedly, they contributed more than did
the smaller enterprises to the science of tire production.
Within the last few years tire construction has become more
standardized and, in addition, there have developed numerous
chemical and compounding agencies which provide technical
service of the highest quality so that the smaller companies
suffer no disadvantage in this regard.\(^2\) The large company is
more mechanized and can operate at a lower per unit cost at
or near capacity. On the other hand, the small plant is more

\(^1\) The small concerns had a higher plant-to-total
asset turnover figure than did the large companies, denoting
greater flexibility in this regard. One would think that the
large company with its investment in branch houses and, more
recently, in retail stores would be less flexible than the
company without these appendages. See page 382, however.
Furthermore, the improvement in the sales position of the small
companies from 1930 to 1933 substantiates this hypothesis.

\(^2\) H. E. Simmons, President of the University of
Akron and an authority in the field of rubber chemistry,
informs the writer that such agencies as Du Pont, Rubber Service
and others who supply compounding materials provide the tire
manufacturers with the highest quality of technical advice.
The manufacturer needs to maintain, therefore, only a control
testing laboratory in order to insure the maintenance of his
quality. The General Tire and Rubber Company produces an
excellent quality product, yet the company maintains meager
original research facilities.
flexible, operates at as low, or lower, per unit overhead over a considerable period of time\(^1\) and possibly buys its materials more economically under present conditions, provided it is well financed.\(^2\) Third from a marketing standpoint, it

\[\text{---}\]

1. Very limited data are available as to the relative costs of production for the large and small companies. Sears Roebuck and Company found that the Lake Shore Tire Company could produce tires for them at a cost slightly below that of Goodyear (Docket 2116, p. 22007) and that the Fisk Rubber Company could do likewise. (Docket 2116, p. 2045) Mr. Carl Pharis, President of the Pharis Rubber Company, stated to the writer that his company could manufacture tires at a cost as low or lower than that of the larger companies. (Interview, June 21, 1934) Colonel J. L. Cochrum of the Selberling Rubber Company stated that a comparison of the cost figures of twelve tire manufacturers made in 1934 in order to determine a cost basis for adjusting floor prices under the tire code revealed no significant cost differences between the manufacturers over a period of time. Also, see E. G. Holt’s statement in Rubber Industry Letter No. 12, Costs of Rubber Industry Materials and Operations Indicated by Official Data for 1927, 1929, and 1931. Special Circular 3502, Rubber Section, United States Department of Commerce, December 5, 1933, p. 14.

The large manufacturer may have a real advantage in the foreign market. Through his foreign plants he can profit from any trade improvement in the foreign markets whether or not the export trade of the United States is on a favorable basis. If our export trade is active, he, because of his well trained staff, large financial resources and trade contacts, is in a preferred position.

Professor R. J. Ray of Northwestern University asks why the large manufacturers have captured so great a share of the sales volume of the industry if tire manufacture is not a decreasing cost industry. As indicated above, the large companies can unquestionably produce at lower per unit overhead costs when operating at or near full capacity. During any considerable period of time, however, and particularly under the conditions that have prevailed during the last five years, their rates of operation have been very irregular and often far below normal. As a result, they have been faced with rather high overhead costs. Also, demand has been most variable and this has increased the difficulties of the mass producers. Furthermore, a comparison of the plant, inventory, and total assets turnover ratios of the large and small companies proves, the writer believes, that the management and financial factors have more bearing upon the costs of production and success of a tire company than does its scale of operation.

2. The small tire companies can probably buy rubber at a lower average cost on a declining market than can the
appears that a medium sized tire company can operate at a lower cost. Data are not available to prove this definitely, but there is good reason to believe that the costs of advertising, sales promotion and direct selling are higher for the larger company. This is due to the fact that the large company has to do such intensive advertising, go so far afield and into submarginal territory and accept unsatisfactory credit risks in order to maintain its volume.

large companies because they can buy in small quantities and can take advantage of every opportunity. On an advancing market, the large companies have the advantage. There is reason to believe, due to the state of the textile market over the past several years, that the small company probably was able to buy fabrics at a lower cost than the owned textile mills of the large manufacturers could produce them.

1. Here again the evidence is incomplete. One small company with which the writer is familiar has a direct selling cost of 7.5 per cent which is about one-half that of Goodyear. The India Rubber and Tire Review stated that the small manufacturer could sell more cheaply. (April 1923, p. 547) Upon this point H. O. Smith, then President of the G. and J. Tire Company, stated that the small company could distribute exclusively, avoid the "necessary evil" of branch houses, take a small section of the country and more closely coordinate its sales activities. These features gave the small company a material advantage over the larger rival. Tires, March, 1924, p. 51.

The Association of National Advertisers Inc. made a survey of ten automobile and automotive accessory products (whether tire companies were included is not clear) companies. They found that the largest volume concerns had slightly higher selling expenses than the smaller and firms operating branch houses "in most cases showed the highest rate of distributive expense to net sales." An Analysis of the Distribution Costs of 312 Manufacturers, Association of Advertisers, Inc., 1933, p. 25. See pp.302-303, however.
A consideration of scale of operation from the standpoint of social policy raises many interesting questions, but these are beyond our purview.

**Effect Upon Tire Retailing Systems**

The developments in tire product, market and distribution methods have greatly affected both the composition and control of the retail tire market. In the first place, the number of retail outlets selling tires has increased tremendously. According to the best estimates tire outlets increased from, perhaps, 100,000 in the period 1926-1929 to 183,775 in 1934.¹ Surveys conducted by the tire companies indicate that there are more tire outlets in the average town today than have existed at any previous time.² This increase is to be accounted for by the addition of some 65,000 oil stations besides numerous accessory shops, drug stores, barbecue stands and other types of retailers to the ranks of tire sellers. Second, the cream and control of the retail market have passed largely into the hands of the large scale retailers represented by mail order houses, chain store organizations, oil companies, and tire manufacturers' retailing systems. Between 25 and 30 of the large retailers control 47 per cent of the retail market, if spare tires be disregarded. Third, there has taken place a general diffusion, if not disorganization, of the regular dealer market. This last point requires rather extended examination.

¹ E. G. Holt, Assistant Chief of Rubber Division, Bureau of Foreign and Domestic Commerce. Tire Distribution and Retail Outlets in the United States, 1934, Supplementary to the Rubber Industry Letter No. 18, December 15, 1934.
² William Bloor, Statistician, Goodyear Tire and Rubber
No one knows to what extent the ranks of the independent dealer have been decimated in recent years. The mortality estimates available differ widely. H. S. Firestone declared that the dealer mortality between October, 1928, and October, 1930, was 25,000.\(^1\) A. L. Viles estimated that 30,000 dealers had been driven to the wall by 1933.\(^2\) F. A. Seiberling estimated that by 1934 60,000 out of a total of 120,000 dealers in 1926 had failed.\(^3\) According to the Census of American Business, the number of accessories, tire and battery dealers (stores the majority of whose sales were accessories, tires or batteries) declined from 22,313 in 1929 to 16,027 in 1933.\(^4\) Since 6,224 new stores entered the field between 1930 and 1933 the total number of disappearances in the four years was 12,510, which represents an annual disappearance rate of 14.0 per cent.\(^5\) The average disappearance rate for all stores was 9.1 per cent.\(^6\) Unquestionably, the disappearance rate was high, but no doubt there always appeared new prospects to take the place of those that failed. As a result, the writer believes that the number of independent dealers remained relatively stationary even during the depression.

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Footnotes Continued:

Company. The tire manufacturers have been criticized for seeking all of these new accounts, which, unquestionably, they have done most assiduously.

2. A. L. Viles is General Manager of the Rubber Manufacturers Association, Code Hearings, October 20, 1933, p. 16.
5. Retail Distribution, Vol. IV, Table 1A, p. VII., New and Old Retail Stores in 1933, United States Department of Commerce.
6. Ibid.
Tire dealers have also been altering decidedly in size and volume of tire sales. The following table, which is taken from the records of one large company gives ample proof of this fact. It should be emphasized that this tabulation represents contract dealers only, so it presumably excludes the smallest tire retailers.

**TABLE XXI.**

Percentage of Dealers and Volume of Dealer Sales Classified According to Volume Groupings. 1927-1932.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>$1000</th>
<th>$1000-$3000</th>
<th>$3000-$10,000</th>
<th>$10,000 Up.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% No.</td>
<td>% Vol.</td>
<td>% No.</td>
<td>% Vol.</td>
</tr>
<tr>
<td>1927</td>
<td>51.4</td>
<td>13.6</td>
<td>31.8</td>
<td>18.9</td>
</tr>
<tr>
<td>1928</td>
<td>53.9</td>
<td>13.8</td>
<td>29.7</td>
<td>17.7</td>
</tr>
<tr>
<td>1929</td>
<td>57.0</td>
<td>11.4</td>
<td>26.9</td>
<td>15.7</td>
</tr>
<tr>
<td>1930</td>
<td>65.1</td>
<td>16.7</td>
<td>18.8</td>
<td>12.5</td>
</tr>
<tr>
<td>1931</td>
<td>70.5</td>
<td>13.2</td>
<td>19.8</td>
<td>17.7</td>
</tr>
<tr>
<td>1932</td>
<td>76.9</td>
<td>14.2</td>
<td>15.8</td>
<td>16.7</td>
</tr>
</tbody>
</table>

In the course of six years, the number of dealers returning annual sales of less than $1,000 has increased 50 per cent while the proportional volume returned by this group has remained almost constant. The next two groups (sales $1,000-$3,000 and $3,000-$10,000) reflect considerable similarity of movement. The proportion of dealers in these volume groups has declined 50 per cent or more while the volume of sales has declined only 16 to 20 per cent. The last classification, dealers selling over $10,000 per annum, has likewise registered a heavy percentage decline, but its percentage of sales volume has increased slightly.

¹ Confidential source.
Dealers' tire stocks for this period have been compiled by the Department of Commerce, so they are examined in this connection. See Table XXII. These data show the same general trend as Table XXI but to a much lesser degree. While the trend was exaggerated in that table by declining tire prices, tire stocks minimize, no doubt, the true condition because of the liberal credit terms granted and the extended use made of consignment accounts by tire manufacturers.\(^1\)

**TABLE XXII**

Percentages of Dealers by Volume of Casing Stocks as of April 1 of Alternate Years.\(^2\)

<table>
<thead>
<tr>
<th>Dealers' Stocks of Casing Stocks</th>
<th>1924</th>
<th>1926</th>
<th>1928</th>
<th>1930</th>
<th>1932</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10</td>
<td>12.9</td>
<td>20.36</td>
<td>17.29</td>
<td>15.33</td>
<td>20.61</td>
<td>20.94</td>
</tr>
<tr>
<td>10-24</td>
<td>22.1</td>
<td>28.32</td>
<td>23.27</td>
<td>24.17</td>
<td>27.63</td>
<td>26.72</td>
</tr>
<tr>
<td>50-99</td>
<td>23.5</td>
<td>16.34</td>
<td>19.78</td>
<td>18.32</td>
<td>15.73</td>
<td>15.18</td>
</tr>
<tr>
<td>100-199</td>
<td>11.8</td>
<td>7.95</td>
<td>9.72</td>
<td>10.32</td>
<td>7.96</td>
<td>6.69</td>
</tr>
<tr>
<td>200-299</td>
<td>3.7</td>
<td>2.26</td>
<td>2.82</td>
<td>3.15</td>
<td>2.38</td>
<td>2.74</td>
</tr>
<tr>
<td>Over 300</td>
<td>4.8</td>
<td>2.78</td>
<td>3.64</td>
<td>4.61</td>
<td>3.45</td>
<td>4.52</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

1. There are about 14,000 tire consignment accounts. These no doubt represent unsafe credit risks. E. G. Holt, "Tire Distribution and Retail Outlets in the United States, 1934." Special Circular 3553, p. 6. Rubber Section, Department of Commerce.

2. These surveys have regularly included 20,000 dealers or more.

Data for 1924-1932, inclusive, were supplied by E. G. Holt, Department of Commerce. 1934 figures were taken from Rubber Industry Letter No. 21, "Distribution Tire Stocks in United States, April 1, 1935," Special Circular 3570.

The average number of casings carried in stock per dealer during these years altered little. In 1927 the average was 70.6 casings; in 1933, 64.8; and, in 1934, 79.7 (Ibid). These variations reflect the effects of business conditions rather than changes in the dealer pattern, it is believed.
From these two tables we can conclude that "tire retailing has been falling more and more into the hands of very large dealers on one side, and into the hands of firms which handle tires as an incidental side line on the other side, with the firms of intermediate size assuming less importance constantly." In fact, the dealer volume has concentrated to such a degree that less than 10,000 dealers do about 70 per cent of the total dealer business and the other 100,000 dealers, or more, share the remaining 30 per cent. If the percentages are expressed in terms of the total retail volume (renewal volume less spares) they become 44 per cent and 19 per cent respectively.

In order to survive the onslaught of new forms and methods of distribution, tire dealers necessarily have made many adjustments in their merchandising operations. In the first place, they have begun to adjust their merchandising practices in keeping

1. Distributor's Tire Stocks in the United States, April 1, 1934, Special Circular 3526, p. 2. Rubber Section, Department of Commerce.

2. R. E. Busbey, former Editor of the Tire Review of Akron, Ohio, estimates that there are less than 10,000 first class tire dealers. (Interview, March 10, 1935) W. D. Levy, President of the Fisk Rubber Corporation gave a similar estimate. (Statement given in the Hearing on the Code of Fair Competition in the Rubber Tire Industry, October 20, 1933)

3. The percentages given are estimates, but they are believed to be conservative. The company shown gets 69.1 per cent of its volume from 7.3 per cent of its dealer accounts. Another large manufacturer gets even a larger percentage from its "$3,000 and over" accounts. Since in both cases only contract accounts are included, a large number of very small accounts are excluded.
with those employed by their competitors—modernizing their stores and diversifying their lines. On this latter point an excerpt from a letter written by Mr. Jerry Shaw, Editor of the magazine, "Tires," is enlightening.¹ He states that a survey of 20,000 representative dealers indicated that:²

"73% of the tire dealers of the country sell gas and oil; 93% have (air) compressors; 63% have lubricating service; 33% have car lifts; 73% sell and service batteries; 40% test and rel ine brakes; 28% have wheel alignment apparatus; 30% sell wheels; 67% sell rims and rim parts; 80% sell chains (anti-skid chains); 75% operate vulcanizing shops; 84% sell accessories and 32% have automobile washing apparatus."

In other fields, particularly in groceries and drugs, a common form of adjustment to large scale retail competition has been cooperative action on the part of the retailers.³ The cooperative chains in groceries embrace approximately 30 per cent of the total grocery outlet in the country.⁴ In the tire fields these associations also are developing. The first buying group, the United Tire and Accessory Dealers Association,

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¹ Letter to the writer, August 23, 1934.
² The Department of Commerce in its April 1, 1934, survey found that 30.4 per cent of tire dealers sold automobiles, 72.3 per cent gasoline and 66.9 per cent batteries. Op. cit., p. 3.
was formed in Detroit in 1924, but it did not get beyond the initial stages.¹ In 1929 the Automotive Tire Dealers Association, Inc. sponsored such an organization which prepared to put its own brand of tires on the market, but the plan was dropped in the course of the year.² Since these early ventures several types of cooperative buying have been tried. In 1931, J. Frank Grimes and a wholesaler located at Newark, New Jersey, who operated also a small tire chain, flirted with an organization similar to the I. G. A., but the idea never came to fruition.³ In 1932 the American Tire Alliance was formed with headquarters in Akron. It now claims about 35 contract distributors, who resell to some 600 retail accounts.⁴ The second type of development has been the buying groups promoted by such tire manufacturers as Goodrich and Gates. The former operates the "Goodrich Buying and Selling Organization," which has about 200 buying members.⁵ These members agree to buy their tires and accessory merchandise through the organization. In turn, Goodrich aids them in laying out and equipping their stores, gives them supervision and advice by means of field supervisors, and supplies them a wholesaling service, which otherwise would be unavailable to the independent, at a cost only a little above that of the ordinary automobile accessory chain.⁶ The plan is growing quite satisfactorily and

1. Rubber Age, October 10, 1924, p. 8.
2. See Sales Management, June 5, 1929, p. 506.
3. Leon Miller, who was negotiating this arrangement on behalf of the wholesaler, was a friend of the writer at the time and kept him informed of the progress of the plan.
4. Interview with H. L. Post, July 1, 1935.
5. Interview with Frank Wilson, Manager G.B.S.O., B. F. Goodrich Company.
6. It seems that wholesalers have become automobile part and equipment jobbers rather than of small accessories, so the
is being slowly extended. Gates operates somewhat similarly, but carries a much narrower line of merchandise. The third type of cooperative buying is that typified by Gamble Skogmo Stores, Inc. This company operates a large chain of stores in the northwest. In addition they buy tires, automobile accessories and some other lines for over 800 agency stores. The agents are allowed an operating margin of 20-25 per cent. This plan has since been adopted by wholesalers and other chains.

Within the last year or so Western Auto Company has been establishing dealer agents to handle their merchandise. While more in the nature of consumer rather than retailer cooperatives, mention must be made of the agricultural cooperatives. These cooperatives have been very successful in gas and oil and have recently turned to tires. Many of them have banded together and organized the National Co-ops, Inc. as a purchasing agency. This company now has its "Co-op" brand of gasoline, oil products and tires, the latter being supplied by the Mohawk Rubber Company of Akron. The farm cooperatives sold in total perhaps 80,000

Footnotes Continued:

small independent had suppliers to aid him to compete with the chain accessory store. Frank Wilson.

1. Gates is purported to have about 2,000 affiliated independents.
2. William Bloor, Statistician, Goodyear Tire and Rubber Company.
3. Ibid
4. Interview with Frank Wilson, Manager G.B.S.C., B. F. Goodrich Company.
5. The tire companies are becoming very interested in these/
6. See series of articles by Bertram E. Fowler in Press Scimitar, Memphis, Tennessee, (about February, 1936, exact date unknown)
tires in 1934 and about 110,000 in 1935.\(^1\) In aggregate the buying groups, including the voluntary type, the agency groups and the agricultural cooperatives sold in the neighborhood of 150,000 units in 1934 and 250,000 units in 1935.\(^2\)

**Effect of the Wholesale Structures**

Consideration of the wholesale structures of the industry has been placed last because these structures are considered as the differential gear that adjusts itself as production changes on one hand and as retailing alters on the other. Commercial enterprises, Von Beckerath informs us, "as a rule conform to the requirements of the industry, because the commercial enterprises operating with less fixed capital, and primarily with working capital, are more flexible than industrial undertakings and are not subject to the organizatory and technical requirements of business which run counter to the needs of the market."\(^3\) There is evidence that wholesaling structures in other fields where the market transitions have been marked have been slow to make the adaptation.\(^4\) The question of the adaptability of the wholesaling structure arises in this case particularly because of the sharp market shifts that have occurred and because the wholesale systems are largely producer-owned, and therefore are conditioned

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1. Estimate only.
2. Idem.
presumably by the organization demands of the manufacturers rather than by factors within the market.

As was pointed out in some detail in Chapter I, tire wholesaling has been performed to a very large degree by the owned branch houses of the various tire manufacturers. ¹

Some idea of the scope of this owned wholesaling system can be gained from Table XXIII, which gives the number of branches and warehouses operated by the larger tire companies.

¹. In this industry during the years prior to 1929, there can be little doubt of the superiority of branch to wholesalers:

a. The branches were much more effective as sales and service agencies as has already been shown.
b. Wholesaling could not have procured the necessary volume of this high-priced, branded commodity.
c. Branches were necessary to maintain the dealers organization. Dealers were very impermanent, particularly during periods of depression.
d. The branch played an important role in regularizing distribution.
e. The growth of the truck business and the large national accounts almost necessitated branch wholesaling.
f. The branch gave the manufacturer a far better control of his market.
g. Branch costs prior to 1929 average only slightly more than one-half of those of independent wholesales.
TABLE XXIII

Number of Branches and Warehouses Operated by the Larger Rubber Companies. 1927-1929.

<table>
<thead>
<tr>
<th>Company</th>
<th>Branches and Warehouses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodyear</td>
<td>116a</td>
</tr>
<tr>
<td>Goodrich</td>
<td>183a</td>
</tr>
<tr>
<td>Firestone</td>
<td>147a</td>
</tr>
<tr>
<td>United States Rubber</td>
<td>200b</td>
</tr>
<tr>
<td>Fisk</td>
<td>125c</td>
</tr>
<tr>
<td>Kelly Springfield</td>
<td>46d</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>817</strong></td>
</tr>
</tbody>
</table>

a. Taken from lists appearing in Annual Reports 1929.
b. Interview with W. Farr, Assistant Sales Manager, United States Rubber Company.
c. Estimate of Ralph Busbey, Tire Review.
d. Standard Statistics; Company Reports.

About 350 of these establishments were in-stock sales branches. The remainder were sub-branches that carried stocks, made adjustments, and handled routine credits.

The typical branch was a rather elaborate organization. It was manned by a staff of from ten to twenty men with a branch manager in charge. The departmental organization was usually set up about as follows:

1. Tire Sales  
2. Truck and Bus Tire Sales  
3. Mechanical and Other Sales  
4. Adjustments  
5. Operating--Supply Shipping and Billing  
6. Credit

1. As far as can be determined, each branch operated a warehouse in conjunction, but warehouse stocks were maintained apart and separate from the branches in order to provide prompt delivery service to the dealers.
The volume of sales passing through these agencies in the early twenties must have approximated 80 per cent of the total renewal sales. This volume had decreased to about 65 per cent in 1929, according to the Census of Distribution, and by 1934 it had declined to approximately 60 per cent. The renewal market unit value was 45,847,000 in 1929, so the branch house organizations cleared about 30,000,000 tire units in that year. In 1934 the renewal market approximated only 32,000,000 units, so the branches sold in the neighborhood of only 19,000,000 tires.

1. At that time there were but a few large retail accounts and their total volume did not amount to over 2 per cent of the market. See Table XV. At that time most all of the rubber companies, even to the smaller ones such as Lee Tire and Rubber Company, were selling through branches.

Mr. William O'Neill, President of the General Tire and Rubber Company, estimated the wholesaler's volume at 33 per cent. Needless to say, the writer believes that this figure is too high.

2. The distribution of sales by tire manufacturing companies in 1929 was as follows:

<table>
<thead>
<tr>
<th>Distribution of Sales</th>
<th>Selling Value</th>
<th>% Sales</th>
<th>No. of Plants Selling Total Exclusively</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate Consumer Market</td>
<td>$572,794</td>
<td>100.0</td>
<td>91</td>
</tr>
<tr>
<td>Through--Branch Houses</td>
<td>373,514</td>
<td>65.2</td>
<td>29</td>
</tr>
<tr>
<td>Through--Wholesalers</td>
<td>62,939</td>
<td>11.0</td>
<td>42</td>
</tr>
<tr>
<td>Direct to Retailers</td>
<td>135,343</td>
<td>25.6</td>
<td>67</td>
</tr>
<tr>
<td>Direct to Household Consumers</td>
<td>1,198</td>
<td>.2</td>
<td>17</td>
</tr>
</tbody>
</table>

(Derived from Fifteenth Census of Manufacturers Distribution of Sales of Manufacturing Plants, pp. 32-33, by deducting "Sales to Industrial and Other Large Consumers" to get "Ultimate Consumer Market." A slight error is involved here but it is inconsequential.)

3. This was estimated on the basis of Table XV. However, the Commercial Research Department of the Goodyear Tire and Rubber Company arrived at a similar estimate under date of March 19, 1934.

In this connection, it should be noted that the branch house continues to handle most of the tires sold to the
In addition to this loss of physical volume, the competitive situation has become more intense and marketing margins have narrowed materially.\textsuperscript{1} Furthermore, the tire companies have expanded their market investments and multiplied their already ample marketing facilities by extending their owned-store operations.

In attempting to cope with this situation, several interesting adjustments have been made. During the years subsequent to 1930 tire manufacturers freely used the pruning hook in their efforts to control their branch and selling expenses. Branches and warehouses have been eliminated and branch territories enlarged. Between 1929 and 1933 the number of wholesale tire branches in the United States was reduced from 416 to 340 or 18 per cent.\textsuperscript{2} Goodyear reduced the number of its branches from 52 to 41;\textsuperscript{3} Firestone from 51 to 43;\textsuperscript{4} and Goodrich from 109 to 28.\textsuperscript{5} The Fisk Company discontinued branches almost entirely and went back to the jobber.\textsuperscript{6} Company-owned warehouses were likewise curtailed.\textsuperscript{7}

Footnotes Continued:

\textsuperscript{1} See page 293
\textsuperscript{3} Interview with Harry Blythe, Goodyear Tire and Rubber Company, October 15, 1935.
\textsuperscript{4} Confidential source.
\textsuperscript{5} Jerry Lintner, B. F. Goodrich Company.
\textsuperscript{6} E. D. Levy, Hearings on Code of Fair Competition,
Goodyear reduced its field force from 959 in 1930 to 761 in 1932 and to 690 in 1933.\(^1\) Salaries and commissions were likewise slashed severely. Much more effective sales control methods were introduced and sales expenses were scrutinized most carefully. The industry previously had left the detailed planning of the sales work largely to the salesmen, but the central office now began to exercise a very close control over salesmen's routing and calls and to set mileage and expense standards.\(^2\)

There has been, also, a decided tendency toward dealer warehousing and factory delivery. The dealer-distributors have assumed part of the responsibility for the physical supply function,\(^3\) but the manufacturers also have established numerous warehousing dealers. These dealers are given a 5 per cent commission for housing and handling field stocks.\(^4\) In addition, the manufacturers have attempted to lessen the need for their own warehousing services by promoting direct shipments from

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Footnotes Continued:

2. The industry quite generally appears to be doing this.
3. See pp. 221-224 for a discussion of these functions.
4. All stocks to these accounts are on a consignment basis and are kept separate and distinct from the dealer's stocks. In addition to the 5 per cent warehousing commission the dealer is enabled to obtain a high turnover by charging his stock out only as he sells it. Interview with R. E. Davis, Goodyear Tire and Rubber Company.
the factory. Truck transportation has made more direct shipment feasible, but the example of the mail order houses who supply their stores direct has been, no doubt, a motivating factor. All orders of 2,000 pounds and over will now be shipped direct from the factory and a freight allowance of 2 per cent to 2.5 per cent given.1

In some respects, however, there has occurred an expansion of branch house activities. Tire companies, particularly Firestone and Goodrich, have widened considerably their automobile accessory lines until they now include batteries, car heaters, fan belts, and numerous other items. During the year 1934 Firestone added bulk stations and began delivering oil and gasoline via its own tankers to its owned and dealer stations, but this latter experiment was soon discontinued.2

The opening of the retail stores perhaps has precipitated the gravest problem. These stores represent a tremendous investment and a disappointing one, since, to date, all but one system has resulted in huge operating losses.

1. This plan was also aimed to encourage dealers to order in larger quantities and to carry larger stocks.
2. Likewise, it was reported that this company was preparing to display and sell electrical refrigerators, but the company denied this.
Furthermore, practically every city where a branch was located also supported one or more large, expensive company stores.

The manufacturers' stores from their very inception have been engaged in wholesaling. In addition to soliciting commercial accounts the manufacturers early began to utilize the stores as warehousemen for their respective dealers in the immediate vicinity. The company-stores carried full and complete stocks and, hence, deliveries could be made conveniently and promptly. The next step was to have them function as dealer-distributors or parent stores to a number of independent outlets or sub-dealers in their immediate vicinity. At present most manufacturers' owned stores function as wholesalers and advisors to groups of sub-dealers. While this plan does not entirely eliminate the duplication of activity between the branch and the company-store, it does permit the wholesale salesmen to call upon the sub-dealers much less frequently, for in the interim between calls the dealers are supplied tires by the "key store." This plan appears to be working successfully, particularly where the store manager is somewhat wholesale-minded. Upon this point Mr. H. S. Firestone states: "Many of our stores have been established as warehouse and distribution stores, which reduces our selling and distributing expense and gives our dealers and oil stations unequaled service."^1 An

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attempt has been made to have the company store function as a local full-fledged wholesaler. Under this plan the store manager assumes responsibility for all wholesale sales within the city and adjacent territory; wholesale salesmen are assigned him, a sales quota is set for the territory and he is held accountable for all sales within the district. Goodrich and Firestone have both experimented with this idea. ¹ This plan has not been tried sufficiently to be thoroughly tested. ² Finally, in some territories the branch house and the retail store are housed together where the location of the retail store is suitable and ample space for the wholesale activities exists and the functions are coordinated under one head responsible for all sales of the particular manufacturer's product within the territory. Firestone's Cleveland store functions in this manner. ³

How far tire manufacturers can go in the process of integrating their wholesale and retail activities remains to be seen. Within the past two years they have proceeded far toward centralizing the managerial organization and formulating a coordinated policy. In two companies at least, the separate retail organizations have been disbanded and their functions

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¹ Approximately 150 of the 350 Goodrich owned stores function on this basis. Firestone is purported to have even a larger number of stores operating on this plan. (Confidential source)

² The writer understands that careful cost investigations have cast some doubt upon the purported economies which were to result from this scheme.

³ Firestone has a great many stores of this "distribution" type, but the exact number is unknown.
placed under the control of the wholesale organization. In many instances, as noted above, the wholesaling and retailing activities have been brought together under one roof and in some few cases the wholesale and retail credit, adjustment and clerical functions have been more closely integrated with some economies and better control. On the managerial side, there are distinct advantages to this close tie-up. Branch managers who have had close contact with both the wholesale and retail problems of tire selling conceivably can sell and effect resales more intelligently through dealers than could the wholesale-minded branch managers of the old school. From a sales standpoint, little is to be gained other than some improvement in balancing the sales forces, since the retail and wholesaling organizations will have to be kept quite distinct due to the higher qualifications and training required for wholesale selling. So, while definite progress toward integration can be recorded, yet tire companies have not succeeded in properly balancing their facilities and man-power to the needs of the market so that neither duplication nor excess services result.

   Interview with E. Gaertner, The B. F. Goodrich Company.
2. Goodyear, the writer understands, has experimented along this course.
3. A few salesmen might be used as a flying squadron. When times are slack, they could do door-to-door selling or call on small commercial accounts.
In 1934, 30 to 40 per cent of the sales of the company-owned stores were wholesale.\(^1\) There was a wide variance, of course, among the chains of the various companies. The wholesale volume has been gradually increasing over the last three or four years.

But these modifications in the manufacturer's wholesaling system do not promise to solve the most troublesome marketing problem facing the industry which is to procure the tire volume of the thousands of small and side-line retailers who are scattered throughout all the towns and hamlets of the country. Even though the trend is toward buying in the larger centers, the hinterlands must be fortified with dealers as well, for this volume is essential to keep factory and marketing overhead costs at reasonable levels. This situation has invited the services of intermediaries who can more economically reach this small volume market than can the tire manufacturers. The result has been the growth in this field recently of both dealer-distributors and wholesalers.

The new dealer-distributors are similar and closely related to the old semi-wholesalers who have been encountered previously. The semi-jobber, however, functioned mainly in

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1. Goodrich sold about 20 per cent at wholesale and Goodyear about 40 per cent in 1933. (Confidential source) Firestone assumed an intermediate position, it is believed.
the Western or Southern states or was a distributor of long
standing, whereas his newer counterpart is quite an ubiquitous
institution found in all sections and in both urban and rural
communities.\footnote{These new distributors probably are a direct
outgrowth of the tire manufacturer's experience in wholesaling
through owned stores.}

Besides promising to lower the cost of distribution
to the small outlying dealers these distributors offered a
method of maintaining in business the large tire dealers who
were extremely hard pressed by competition and were rapidly
declining in number.\footnote{The large tire companies, particularly,
felt this loss for their dealer sales had declined significantly
after 1930.}

These distributor-dealers were outstanding inde-
pendents who possessed adequate facilities and sold a large
volume of tires. The tire manufacturer gave them a one to five
year contract which was cancellable upon notice by either party
and which specified that the dealer was to organize in his
locality a number of sub-dealers to whom he was to sell and
supply with the manufacturer's brand of tires.\footnote{The details
of the relationship which was to exist between the key-account
and the sub-dealers were left entirely to the key dealer, except

\begin{footnotes}
\footnote{1. Companies such as the General Tire and Rubber
Company who sold through exclusive dealers have used dealer-
distributors in the cities in order to get fuller coverage.}
\footnote{2. See testimony of M. P. Spransey, Docket 2116,
pp. 13430-13477 on the "key accounts."}
\footnote{3. Page 18+}
\footnote{4. Ibid.}
\end{footnotes}
that the sub-dealers were to follow the tire company's resale policy. In 1933 the arrangement was made more binding. The dealers were expected to become exclusive representatives for the manufacturer as far as tires were concerned, secure contracts from their sub-dealers, and assume responsibility for the volume and sales practices of the latter.¹

**TABLE XXIV**

Number of Tire Distributors and Sub-Dealers by Inventory Groups. April 1, 1935.²

<table>
<thead>
<tr>
<th>Casings in Stock</th>
<th>No. of Distributors</th>
<th>Average Casings per Distributor</th>
<th>Distributors Reporting Sub-Dealer No. of Distributors</th>
<th>No. of Sub-Dealers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 51</td>
<td>22</td>
<td>29</td>
<td>8</td>
<td>52</td>
</tr>
<tr>
<td>51-100</td>
<td>21</td>
<td>78</td>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>101-200</td>
<td>25</td>
<td>154</td>
<td>20</td>
<td>155</td>
</tr>
<tr>
<td>201-300</td>
<td>15</td>
<td>244</td>
<td>12</td>
<td>109</td>
</tr>
<tr>
<td>301-500</td>
<td>25</td>
<td>374</td>
<td>18</td>
<td>189</td>
</tr>
<tr>
<td>501-1000</td>
<td>18</td>
<td>618</td>
<td>18</td>
<td>355</td>
</tr>
<tr>
<td>1001-2000</td>
<td>13</td>
<td>1,393</td>
<td>12</td>
<td>318</td>
</tr>
<tr>
<td>2001-5000</td>
<td>14</td>
<td>3,440</td>
<td>13</td>
<td>2,117</td>
</tr>
<tr>
<td></td>
<td>155</td>
<td>622</td>
<td>112</td>
<td>3,375</td>
</tr>
</tbody>
</table>

The average dealer-distributor according to a recent survey conducted by the Department of Commerce (Table XXIV) had allied to him approximately 30 sub-dealers and carried in stock an average of 622 tires. As far as can be ascertained city accounts usually carry stocks of from 300 to 800 casings

¹. Ibid.
each, depending upon the size of the city, and in small towns from 75 to 150 casings. Sub-dealers usually carry an inventory of only 8 to 20 casings each. 1

The number of dealer-distributors in operation and the volume of their business is not known, but it must have considerably exceeded 3,000 in 1935. Within the past year the number has been increased by the addition of numerous petroleum jobbers or "oil marketers." 2

The margins allowed these accounts generally have been in the form of volume bonuses, although in 1933 one company gave to all of its dealer-distributors a discount of 10 per cent regardless of sales volume. 3 At one time these bonuses reached a maximum of 22 $\frac{1}{2}$ per cent but, in the main, they have been approximately 12 $\frac{1}{2}$ per cent plus a 2 to 2 per cent freight allowance. 4

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1. Ibid.
2. See the Tire Review, Akron, Ohio, issue of December, 1935, p. 8. This Journal estimates that there are more than 1300 independent "oil marketers" who operate in the neighborhood of 28,000 owned and leased stations. Ibid., January, 1936, p. 7.
4. The aim appears to have to allow these distributors about 10 per cent excluding freight and national advertising allowances. Freight amounts to about 2 $\frac{1}{2}$ per cent and national advertising allowances 3 to 4 per cent. (Confidential source) One tire company allows 7 $\frac{1}{2}$ per cent to its distributors in cities where competitors have company stores, plus a regular 2 per cent freight allowance on 2,000 pounds and a 3 per cent on car lot shipments. (Interview with Colonel J. L. Cochrun, Seiberling Rubber Company.)
Certain dealers may receive, in addition, a commission of 5 per cent for serving as warehousemen.

This venture in distribution is too new to be properly appraised, but some of its principal points of strength and weakness can be indicated:

1. The dealer-distributor arrangement was made to provide economical wholesale service to the small outlets whom branch salesmen could not reach frequently and to preserve the large dealers who were disappearing rapidly. The plan appears to be working satisfactorily.

2. This plan is an adaptation of selective distribution to the needs of the trade, i.e., it provides a distributor who fits in with the tire manufacturers' sales program and policy of market control. The plan also is being employed extensively in the sales of petroleum, batteries, and other auto accessories.1

3. The arrangement gives the dealer greater prestige and permanence and insures the manufacturer more concentrated effort on his tires since they are carried either exclusively or as the major line by the dealer.

4. The plan should provide reasonable volume at a minimum wholesale cost. The dealer's major interest is tires; his field of operations is immediately adjacent to his store; he is well situated to give prompt, economical delivery and his relationship with his sub-dealers is a semi-permanent one. To date, however, the operating cost of these distributors has been quite high. Their wholesale volume must cost the manufacturer 15 to 18 per cent or approximately that of regular wholesalers.2

5. The margin allowed the dealer-distributors bears no relation to the services desired of them. It is a volume bonus which often is related more directly to the dealer's retail than to his wholesale sales, since the former frequently constitute the larger volume.3

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1. Interview with H. L. Post, American Tires Alliance, July 1, 1935.
2. With a bonus of 12½ per cent, the dealer would receive the equivalent of about 6 per cent on retail sales and about 15 to 18 per cent on wholesale sales. This is an estimate only.
3. The implication is that the distributor should be remunerated for the duties performed rather than give a quantity discount on his wholesale and retail sales. The two plans may amount to the same in the end, if the bonus is properly adjusted, but the bonus method as here applied is hardly the correct approach.
6. There is a possibility that the added wholesale margin derived by the dealer may make for price cutting. The recent decrease in wholesale margins effected by tire manufacturers indicates that this possibility has become a reality. 1

In conclusion it might be said that this new distributor possesses some real merits and possibilities provided the manufacturer works with him, protects his franchise, and develops him. 2 On the other hand, it must be stated that to date the manufacturer has not integrated him along with the branch and retail store systems into a well-knit distributive organization nor have his activities been defined by a definite marketing policy.

Tire sales by jobbers such as tire and tubes, automotive equipment and parts, 3 and hardware jobbers, have been on the upward trend since 1929. Wholesalers did 11 per cent of the renewal tire volume in 1929 4 and approximately 17 per cent in 1933 and increased in number from 212 to 548. 5 Since tire

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1. This price readjustment occurred as of November 1, 1935. The maximum bonus of 12$\frac{1}{2}$ per cent on sales of $35,000 and over was reduced to 10 per cent and the 3 per cent discount on direct orders was reduced to 2 per cent.

2. One company has a dealer-distributor in the northwest that is doing a remarkable selling job over a wide territory. Confidential source.

3. Strangely enough the automotive jobber is primarily an equipment and parts wholesaler and pays but little attention to small motor accessories or the "variety field" of the automotive trade. Consequently, dealers desiring to go into the automotive accessory field in competition with the chains had no wholesale source of supply. Even though such companies as Gamble Skogmo, Goodrich, and Western Auto have been supplying this service for some time, the wholesalers seem unable to adjust themselves to it. Interview with Frank Wilson, The B. F. Goodrich Company.

4. Distribution of Sales of Manufacturing Plants, Fifteenth Census of the United States, pp. 32-33. These data were used instead of the wholesale data because they appeared more comparable to the 1933 data.

5. The 1933 Census gives the wholesale value of
dealers are becoming more and more automotive service retailers and sell tires only as side line merchandise, general line wholesalers, because of the diversity of their offerings, find themselves in a favorable position. These jobbers in many instances call regularly upon the tire dealers and can sell tires with little or no extra expense, also.

A recent survey of 100 automotive jobbers--50 old line and 50 parts houses--showed that these jobbers were fully apprised of market conditions and were taking a greater interest in tires. The survey commented upon the tire situation as follows:

"Finally, several tire makers, outside of the big five or six, went after the business of the independent trade through automotive wholesalers and have won some of the volume away from tire company stores, direct dealers, chain stores and mail order houses. Some jobbers are still off of oil, batteries and tires but it is significant that oil is among the first twenty lines with forty-five out of one hundred jobbers, batteries with 68 out of 100 and tires with 49 out of 100."

Since 1933, however, the general jobber seems to have met reverses. The discounts allowed the retailer, including the volume bonus by the tire manufacturers were so wide that the

Footnotes Continued:

jobber could not profitably sell tires. Furthermore, he had to push unknown and unadvertised tires at a price only slightly below the prices quoted for nationally-advertised lines. A canvass made of ten or twelve medium sized tire manufacturers such as Pennsylvania, Pharia, Gates, Lee and others revealed that general jobbers were used quite extensively "in areas where towns and cities were not in close proximity."¹ The chief complaint raised by these manufacturers against jobbers was that the latter failed to give the advertised lines of tires the concentrated attention which they required. As far as can be determined, the jobbers' cost of distribution is slightly higher than that of the dealer-distributor since it is about 20 per cent or more, including profit.²

¹. Survey made by Ralph C. Busbey, Tire Review, Akron, Ohio, 1935.
². According to the Census of American Business, the expenses of tire and tube wholesalers amounted to 18.3 per cent. If profits be included, this figure approximates the 20 per cent shown above. Automotive equipment and parts jobbers had an operating cost considerably higher or 23.2 per cent of sales. Wholesale Distribution, Vol. I, Summary for the United States, Table 2B, p. A-5.
The Present Marketing Organization

The following chart is an attempt to portray the marketing structure of the tire industry as it exists today. Necessarily some minor items such as direct consumer sales, which are negligible, and other items have had to be omitted to keep the chart understandable. This chart is believed to be the most complete as well as accurate picture of the industry obtainable. It speaks for itself.

In summary, the organization structures of the tire industry have undergone modifications within the past thirteen years largely as a result of the competitive and managerial difficulties caused by the factors stressed in the three previous chapters. The manufacturers engaged in the industry have declined from 178 to 44, or 75 per cent, indicating that the competitive struggle had been most intense. Also a marked concentration or production has occurred due especially to the large scale retailers, including company-owned stores, cutting into the market of the small manufacturers and transferring this volume to the "Big Four" manufacturers. Largely as a result, these four manufacturers in 1934 controlled over 75 per cent of the production and sales of the industry. In the field of retailing, also, appear many evidences of a most disturbed and unsettled condition. In spite of a heavy disappearance rate, the number of the tire outlets has multiplied. The multiplication of outlets and the diversification of merchandise lines indicates the market reorganization
CHART VII
MARKETING STRUCTURE OF THE AUTOMOBILE TIRE INDUSTRY--1934.

55 Chain Syndicates: 3,755,500 Units
2 Mail Order Houses: 1,155,481 Units
Oil Cos.: 2,550,000 Units.
1500 Distribution Points.

32 Active Tire Manufacturers

Miscellaneous

Automobile & Truck Manufacturers: 13,250,000 Units including Spares

1500 Retail Stores

224 Mfg.* Branches: 19,000,000 Units.
1200 Jobbers: 2,800,000 Units.

Tire Mfrs. Chains: 1450 stores: 3,039,500 Units.

84,000 Dealers (14,000 consignments)

950 Key Dealers: 150,000 Units

35,000 Sub-Dealers

20,000 Sub-Dealers

Ultimately Consumer Market: 31,850,000 Units


* There is duplication here for 3,000,000 or more tires designated under the captions "Oil Companies" and "Tire Manufacturers Chains" flow through the branch houses.

** This refers to mail order sales only. The sales of their 891 stores are included in the chain category.
that has resulted from the impact of the new retail competition, changed tire buying habits and the decline in the renewal tire sales. Independent retailers have copied the store and merchandise plans of the chains to some extent, but to only a limited degree have they utilized united action to improve their position. In the wholesale field interesting movements are in progress. Because of the specialized nature of the manufacturer's wholesale activities, definite limitations are imposed upon these organizations. The branch systems are being curtailed and the wholesale activities are being integrated as far and as rapidly as possible with those of the manufacturer's retail chains. This latter task presents one of the major problems facing the large tire manufacturers. To reach the necessary small stores that now characterize tire retailing an adaptation has been made of the old dealer-distributor plan. This "key dealer" program is being widely used and shows some promise. It appears to have real merit if the manufacturer cooperates with and protects his "key dealers" both with exclusive territory and a judicious use of the franchise.

Regular wholesalers, likewise, were more extensively employed during the period 1929-1930. Despite a temporary set-back, their importance in the trade promises to increase.
CHAPTER VI

SOME OF THE EFFECTS OF THE MARKETING PROBLEMS UPON THE PRICE STRUCTURE OF THE INDUSTRY

* * * *

The aim of this chapter is to describe and analyze certain aspects of the tire price pattern and to indicate how the three marketing problems under consideration have shaped or affected the price structure of the industry. The contours of the general price structure rather than the fluctuations in tire prices, although the latter subject is worthy of careful and prolonged study, will claim our attention. In developing this chapter a comparison will be made of tire prices and those of finished manufactured goods in total, the relation of tire plant output to productive capacity will be examined, the variety and interactions of the various markets for tires analyzed and, finally, the effect of the large scale marketers upon the tire price structures will be portrayed.

Tire Prices Compared to Those of Finished Goods

In discussing the price situation in the automobile tire industry, the magazine Tires stated: "It has long been held axiomatic that declining prices do not stimulate tire sales. People buy tires when they need them." Yet according to the trade publications, not only have tire prices been cut

frequently and severely over most of the last ten or twelve years but a comparison of tire prices with those of all finished goods reveals that the former have declined much more rapidly than the latter since 1923.¹ See Chart VIII.

The contrast is most noticeable. The wholesale and retail prices of tires during 1924 sagged much lower than did those of finished goods; then during 1925 and 1926 they moved upward again but not to the level of the prices of finished goods. In 1927 finished goods price index declined to about 90, while the tire price index declined to 70 of the base year. After moving almost sidewise until 1929, finished goods prices began to decline rapidly and fell to 70.9 in 1932. Tire prices continued to fall from the 1927 level until wholesale prices reached a low of 37.4 in 1932 and retail prices, 35.1. During 1933 finished goods and tire prices moved sidewise and in 1934 began to climb upward again. While finished goods registered a gain of 7 points or to 78.3 tire wholesale prices climbed to 39.3 and retail prices to 36.3. The movement of wholesale and retail tire prices have been very close except during the years 1924, 1925-26, and 1932-34. During this latter period retail prices have lagged significantly. This would indicate that manufacturers were able to better maintain prices than were the dealers. This

WHOLESALE AND RETAIL TIRE PRICES
COMPARED TO THE PRICES OF FINISHED GOODS.
1923-1933.

- Prices of Finished Goods
- Wholesale Tire Prices
- Retail Tire Prices
1923 = 100%
is believed to have been the case.

If these price declines be related to the fall in the costs of production of all manufacturing industries and of tires and tubes (total cost including manufacturer's profit as reflected in the value of products as reported by the Bureau of Census), some interesting facts come to light.² Between 1923

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1. The question arises as to whether these indexes of tire prices reflect the effects of the widening trade discounts that were being given. It is believed that they do. The R. M. A. bases its figures upon shipments and sales reports rather than upon billed prices, if the writer is correctly informed; consequently, discounts and allowances would be eliminated. The retail prices were sales prices rather than list prices.

2. The appended table shows these price and cost comparisons for all manufacturing industries and for tires.

Relative Declines in Price and Values of Product for All Manufacturing Industries and Automobile Tires. 1923 to 1933.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage of 1923 base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Mfg. Industries²</td>
</tr>
<tr>
<td>Prices (Wholesale)</td>
<td>71.1</td>
</tr>
<tr>
<td>Value of Product</td>
<td>51.8</td>
</tr>
<tr>
<td>Materials</td>
<td>49.5</td>
</tr>
<tr>
<td>Wages</td>
<td>47.8</td>
</tr>
<tr>
<td>Other</td>
<td>52.5</td>
</tr>
</tbody>
</table>


b. Wholesale tire prices are those shown above. The other items were derived from the Survey of Current Business, Reprint of article "Some Fundamental Factors in the American Rubber Industry," April, 1933, p. 3.
and 1933 the prices of finished goods declined 29 per cent while their production costs as registered by the value of product for all manufacturing industries fell 49.2 per cent or almost twice as far. Tire prices, on the other hand, dropped 62 per cent, while their production costs, by the same method of measurement, fell 56.5 per cent. Production costs for tires were slightly more flexible than for manufactured goods in general, but this flexibility would not account for tire prices declining substantially below production costs while those of finished goods fell little more than half as far! This relatively greater price fluidity for tires is indicative, perhaps, both of a freer market and of the severe competitive forces at work.

Relation of Plant Operations to Production Capacity

There has been much discussion during the depression period about the degree of over-capacity that exists in American industry. The tire industry was one that was supposed to have been burdened with great excess capacity. If tire plants were equipped to produce far in excess of current market demands, this condition logically would create a state of bitter competition, price cutting, and mal-practice which would result eventually in declining prices and a chaotic market.

1. Such statements by responsible tire officials have been most common. Wm. Bloor, before the Akron Exchange Club, April, 1932, represents but one case.
The most reasonable estimates of the capacity of the tire industry that have appeared are presented in Table XXV. The estimates from 1923 to 1927 inclusive were made by Joe K. Hayes of the Goodrich Rubber Company, who is not only conversant with every phase of tire production, but is a thorough student as well. The data for 1923-1934 are taken from the Standard Statistics report on the tire industry.

**TABLE XXV**

Capacity in Units and Rate of Operations of the Tire Industry for Selected Years. 1923-1934.

<table>
<thead>
<tr>
<th>Year</th>
<th>Practical Capacity</th>
<th>% Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>61,640,000</td>
<td>73.4</td>
</tr>
<tr>
<td>1925</td>
<td>64,592,000</td>
<td>91.0</td>
</tr>
<tr>
<td>1927</td>
<td>74,501,000</td>
<td>85.5</td>
</tr>
<tr>
<td>1929</td>
<td>106,000,000</td>
<td>65.8</td>
</tr>
<tr>
<td>1931</td>
<td>85,500,000</td>
<td>57.6</td>
</tr>
<tr>
<td>1934</td>
<td>69,200,000</td>
<td>65.0</td>
</tr>
</tbody>
</table>

These data would suggest that prior to 1927 the capacity of the industry was almost at normal. The heavy

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2. Standard Trade and Securities, April 17, 1935. The Standard Statistics estimates are verified by the writer's investigation. For instance, the B. F. Goodrich Company had a rated capacity of 41,000 units per day in 1929. Today the factory can produce about 31,000 units daily with a maximum of 35,000. Interview with Mr. Gressy, December 1, 1933, Production Control Department, B. F. Goodrich Company, Tire Division. The estimate for 1934 may be too conservative. The writer would suggest 72,500,000 as a preferable figure.
investments made at that time by most of the tire companies, however, increased their plant capacities beyond the point warranted by the immediate demand for their product.\(^1\) Following this too optimistic venture, the industry had to get its production facilities again under control.\(^2\) This it seemed to have done reasonably well since Standard Statistics indicates that the industry in April, 1935, was operating at 65 per cent capacity, which ratio was perhaps above the operating rate of the industry in general.\(^3\)

1. Four companies, Goodyear, Goodrich, Firestone, and Fisk, increased their plant investments \$34,600,000 or almost 32 per cent between 1927 and 1930. United States Rubber and Kelly Springfield each wrote off more than \$4,000,000 to their plant accounts. (Taken from the reports of these companies as found in Moody's Manual of Industrials.)

2. This reduction in capacity has been brought about through product alterations and changes in managerial policy. Managerial policy has restricted replacements and repairs until some of the former equipment is now useless through obsolescence or lack of repairs. Perhaps most of the reduction is due to change in the product, however. The product has increased in diameter which has materially reduced the capacity of the curing pits and the use of the drum method of construction has increased the building space required. (R. F. Russell, formerly on the technical staff, Firestone Tire and Rubber Company.)


3. Robert Doane made a comparison of the rates of operation in nineteen industries for the years 1929 and 1931-1933, inclusive. These data are presented below in a revised form in order to show the position of the tire industry as compared with the other eighteen industries.

Comparison of the Rates of Operation in the Tire Industry with Eighteen Other Industries.* 1929 and 1931-1933.**

<table>
<thead>
<tr>
<th>Explanation</th>
<th>1929</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Rate—Tire Industry</td>
<td>63</td>
<td>44</td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td>No. Industries with Higher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Rate than Tires</td>
<td>12</td>
<td>12</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>No. Industries with Lower</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Rate than Tires</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>No. Industries with Same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Rate as Tires</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* These groups included such industries as automobile, cement, iron ore, sugar refining, cotton textiles, etc.

The productive situation characterizing the industry, therefore it seems reasonable to conclude, was not unusually serious and consequently was not the primary factor in depressing prices. Unquestionably, over-capacity contributed materially to the competitive struggle and the bitter rivalry for new retail outlets and more volume that ensued following the year 1928, yet it was but one of a combination of factors operating to disturb the price stability of the industry. Coupled with excess capacity was the presence of many small, financially weak producers who had to fight for business at any costs in order to keep out of the hands of receivers.  

The Various Tire Markets and Tire Prices  

Tires are sold to a variety of separate and peculiar markets. The diversity and peculiarities of these markets, it is believed, play an important role in determining the price situation that has prevailed in the tire field.  

In order to focus attention upon the problem, there is presented below a table showing Goodyear tire sales in dollars and in units to and the profit contributions of each of the various markets. This table is presented as an indication of the situation that prevails in the industry and not as a breakdown of the sales of a typical tire company.  

1. Kelly Springfield, although one of the larger companies, went into receivership during this period as did the India Tire and Rubber Company and several others.  
2. The various tire markets are defined and discussed in Chapter III.  
3. The smaller companies do little taxi and bus business, if any, and only a small volume of company-owned store sales. Firestone has no special brand business, but it does a larger proportion of company-owned store volume. United States Rubber has a higher percentage of original equipment and special
This tabulation reveals, in the first case, that the dealer market is the most important volume market and by all odds the most profitable one. This market in 1933 accounted for approximately 50 per cent of the dollar volume and for about 46 per cent of the unit sales of this company. These sales bore an operating profit margin of 13.9 per cent and a net profit of 11.9 per cent. This proves conclusively that this market is the backbone and chief support of the industry. To have it "spoiled" or unduly partitioned by competitors would be most disastrous, particularly to the large manufacturers. This being the case, any large scale invasion of it would be certain to meet with strenuous resistance.

It is also very apparent that the "Taxi and Bus," "Special and Private Brands," and "Original Equipment Sales," which constituted over 40 per cent of the volume in this instance, were made at either no profit or a very low profit. The "Taxi and Bus" sales constituted about 2 per cent of the volume in dollars as well as in units although large bus tires represented a sizeable share of these sales. Yet the average price per tire to taxi and bus accounts was but $9.90 while the units sold to dealers averaged $10.50. An operating loss

Footnotes Continued:

brand volume.

1. The total sales as shown include some $40,000,000 perhaps of other merchandise and services sold by the chain stores. This cannot be separated because the exact amount is unknown.

2. The particular markets portrayed here were defined and analyzed in considerable detail in Chapter III.
TABLE XXVI

Goodyear Tire Sales and Profits by Various Markets, April 1, 1926 to December 31, 1933.

<table>
<thead>
<tr>
<th>Item</th>
<th>Dealer (a)</th>
<th>Taxi and Bus</th>
<th>Special and Private Brands</th>
<th>Original E Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales</td>
<td>$484,228,137</td>
<td>$21,836,498</td>
<td>$134,106,987</td>
<td>$255,900</td>
</tr>
<tr>
<td>Profits on Operation</td>
<td>67,381,417</td>
<td>943,303*</td>
<td>6,756,437</td>
<td>10,236</td>
</tr>
<tr>
<td>% Profits on Operation</td>
<td>13.9</td>
<td>4.32*</td>
<td>5.04</td>
<td>4.0</td>
</tr>
<tr>
<td>Estimated Net Profit (b)</td>
<td>11.9</td>
<td>6.32*</td>
<td>3.04</td>
<td>2.0</td>
</tr>
<tr>
<td>Unit Sales</td>
<td>51,200,000</td>
<td>2,300,000</td>
<td>21,400,000</td>
<td>32,500</td>
</tr>
<tr>
<td>% Units to Total (c)</td>
<td>45.9</td>
<td>2.0</td>
<td>19.2</td>
<td>29.1</td>
</tr>
</tbody>
</table>

* Loss

(a) The exhibit (16-0) included company-owned stores in this column; consequently, the data had to be altered accordingly. Sales were adjusted without difficulty but no adjustment could be made for profits. Profits would have been higher than shown could this adjustment have been made.

(b) The "Profits on Operations" figure includes no financial or other charges which amount approximately to 2 per cent of sales. (Obtained by averaging this charge as found on the annual financial statements 1928-1933.) Consequently, the operating profit percentage was adjusted accordingly to obtain the "estimated net profit" figure.

(c) The percentage of original equipment sales for the industry to total sales over this period has been about 25 per cent, for company-owned retail stores sales about 3.6 per cent, and for dealers sales 50 per cent.
April 1,

<table>
<thead>
<tr>
<th>Special and Private Brands</th>
<th>Original Equipment Sales</th>
<th>Company-Owned Stores</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,106,987</td>
<td>$255,900,000</td>
<td>$84,228,127</td>
<td>$380,299,749</td>
</tr>
<tr>
<td>6,756,437</td>
<td>10,236,000</td>
<td>9,471,511*</td>
<td>73,959,041</td>
</tr>
<tr>
<td>5.04</td>
<td>4.00</td>
<td>11.25*</td>
<td>7.54</td>
</tr>
<tr>
<td>3.04</td>
<td>2.00</td>
<td>13.25*</td>
<td>5.54</td>
</tr>
<tr>
<td>1,400,000</td>
<td>32,500,000</td>
<td>4,200,000</td>
<td>110,600,000</td>
</tr>
<tr>
<td>19.2</td>
<td>29.1</td>
<td>3.8</td>
<td>100.00</td>
</tr>
</tbody>
</table>

1. The tabulation was made from the following data. Respondent's exhibit 16-0, which gave sales and net profits for dealers, company-owned stores and Sears Roebuck and the other special and private brands from April 1, 1926, through 1933. Commission exhibit 356, which gave sales by units to dealers, Sears Roebuck, and other special brands. Commission exhibit 218 which gave annual sales by units to Goodyear-owned stores. Commission exhibit 255 which gave Goodyear production by plants. The above unit volume had to be adjusted to a 7½ year basis, hence the rounded figures.

Original equipment sales had to be estimated with the aid of Commission exhibit 63, which gave Goodyear Unit and dollar sales to Manufacturers from 1926 through 1931 and Commission exhibit 617 which gave profit on specific lines of tires sold to manufacturers for the years 1928 to 1932. The percentage given is rather high, if anything. During the years 1927 to 1932, inclusive, this business averaged a profit of about 2.7 per cent, as far as can be determined. During the years 1929 and 1930 slight losses were registered. This figure makes no allowance for any financial charges or interest, however.
of 4.3 per cent was taken on "taxi and bus" business. The "Special and Private Brand" business constituted about 20 per cent of the total and sold at a per unit value of $6.28.\(^1\)

The return on this volume was low, however, as it bore but a 5 per cent operating profit and a 3 per cent net profit.

The Sears Roebuck sales, which constituted most of this volume, averaged an operating profit of 4.74 per cent for the period.\(^2\)

"Original Equipment Sales" accounted for 29 per cent of the sales and 7 per cent of the total profit. It showed a 4 per cent profit on operations and a 2 per cent net profit. The tires and tubes in this case sold at an average price of $7.85.

There is good reason to believe that the estimates of profit and per unit sales value in this latter case are too high and that perhaps 3 per cent operating profit and a price of about $6.80 would be more nearly accurate.\(^3\)

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1. This includes besides the Sears Roebuck volume, sales to Western Auto Supply Company and several others. Federal Trade Commission Docket 2116, Respondent's exhibit 16-0 C3, 4, 5, and 6.

2. Ibid.

3. The margin sheets (Commission's exhibit 617) show that the price of original equipment tires ran about 35 per cent below the net dealer price. The data used here shows a price of but 25 per cent. Everywhere statements are to be found indicating losses on this business. Standard Statistics, in 1924, declared that for the first time in three years the business was breaking even. (Special Report--Rubber Industry, 1924) In a 1930 report the same source stated that the aggregate loss on this volume for the year amounted to $5,000,000. ("Next Five Years--Tire Industry, February 10, 1930.")
In these last two instances the sales price contains no, or an insignificant amount of, marketing costs; consequently, the profit margin shown made no contribution toward maintaining the manufacturer's sales volume or securing for him a permanent position in the market.\(^1\)

The situation portrayed does not, it is believed, constitute a well balanced tire price structure nor does it reflect a sound price policy on the part of this tire manufacturer or others similarly situated. First, these various markets interact upon each other and tend to bring down the price level of the entire industry. This is not so true, perhaps, in the case of the taxi and bus and original equipment sales for they are made to more isolated markets. However, in this connection, E. G. Holt in one of the Rubber Letters states that "the high prices for tires prior to 1927 were borne chiefly by automobile users" who purchased their "tires from general distributors," while "tire prices to the automobile manufacturers were always kept low." But since 1927 the "prices to the general distributors" (for consumer use) and "to large

\(^1\) This statement is a statement of fact, but from the standpoint of business policy there can be no question but that the producer should make all of his volume bear a share of those expenses that are necessary to maintain the organization as a going concern. In this connection the marketing expenses for necessary advertising and proper maintenance of the sales and distributive organization would be in the same category as factory overhead. This does not say that the manufacturer could recover these costs. For an excellent discussion of this point, see J. M. Clarke, Economics of Overhead Cost, (Chicago, University of Chicago Press), pp. 59-64.
special accounts have apparently been reduced in more equal ratios.\textsuperscript{1} This fact would indicate that even the original equipment market was not entirely isolated as regards its price effects. But the special brand and the commercial markets, the latter of which is partially portrayed by "Company-owned Store" sales and will be described in the next section, do definitely compete with dealer sales. The commercial market is particularly of this character for low prices quoted tend to extend in wider and wider circles and usually lead to price cutting on passenger car tires as well. On the other hand, the special brand tires compete directly with the manufacturers' brands in the renewal market and just to the extent that low purchase costs permit the sellers of these tires to under cut the dealer's price, just to that extent do they invade the renewal market and pull down retail prices. A market price reduction caused by either price cutting in the commercial market or by a special brand account must ultimately affect the manufacturer's prices, too, and the profits derived from dealer sales.\textsuperscript{2} Second, this unbalanced price structure makes the market particularly vulnerable in one segment, the dealer market. General Tire and Rubber Company refused to sell original equipment except at a profitable price and, also, car manufacturers

\textsuperscript{1} United States Bureau of Foreign and Domestic Commerce, Special Circular 3481, Rubber Section, Rubber Letter no. 6, August 29, 1933, p. 4.

\textsuperscript{2} In this connection see N. T. Copeland, "Some Present Day Problems in Distribution," Harvard Business Review, October, 1931, pp. 197-310.
had to agree to resell their tires at a price differential over that of the standard brands.\(^1\) It secured no original equipment volume as a result, but its profits have not seemed to suffer therefrom. Until about 1934 both Atlas and the mail order houses paid no attention to commercial business.\(^2\) On the other hand, all manufacturers and marketing companies fought for the rich dealer market. Finally, this unbalanced price situation has, no doubt, been a major factor in reducing the industry to its unsatisfactory profit position. From 1918 to 1951, inclusive, this industry operated with a net profit (after payment of income tax) amounting to only 0.64 per cent of its gross income.\(^3\) Furthermore, the tire division showed a much lower profit return than did the other divisions of the industry.\(^4\)

In the face of these facts one wonders why this unbalanced price situation has been permitted to prevail. Many reasons can be suggested: (1) The buying companies representing the original equipment, special brand, and taxi and bus markets, are large and powerful and purchase in large quantities—even a commercial account with but a few trucks would buy several thousand dollars worth of tires per year.\(^5\)

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1. Interview with Ben Stiller, Sales Promotion Manager, General Tire and Rubber Company.
2. Recently, Atlas and Sears Roebuck have sought the commercial business. Sears Roebuck has been cutting prices to such a degree that the other companies have been severely tried in order to compete. Interview with Ben Stiller.
4. Ibid., pp. 2 and 4.
5. The tires on one large trailer outfit cost from
Nor do these large buyers hesitate to employ their skill or buying power. (2) The volume which these accounts offer helps to absorb factory overhead, if not to return an absolute profit, and, on account of the contracted state of the market, it is very enticing.\(^2\) (3) The large car manufacturers and special accounts today can readily manufacture their own tires or subsidize small companies to do so. Ford has his rubber plantation in the Amazon Valley which serves as a constant threat.\(^3\) The interlocking interest between General Motors and the United States Rubber Company may also be a factor, although there is no evidence to this effect. Sears Roebuck and Company considered buying or financing small companies to produce their tires if satisfactory prices could not be obtained from Goodyear.\(^4\) (4) The small companies at any time

Footnotes Continued:

\(^1\) 1200 to \$2400. All of these tires would not be replaced annually, although the writer has no average replacement figures on this type of tire.

1. See letters from General R. E. Wood to P. W. Litchfield. *India Rubber and Tire Review*, 1934, pp. 32-33; also the former's testimony, Docket 2116, November 28, 1934.

2. The Sears Roebuck contract was purported to have absorbed \$18,422,288 in overhead over a 7\(\frac{1}{2}\) year period. Docket 2116, Respondent's exhibit 21913.

3. See *Fortune* magazine, February 21, 1934, p. 52.

may invade either the special brand or commercial market and this serves to keep prices low.¹ (5) There is a general absence throughout the industry of definite price policies. Too few of the companies are willing to sacrifice this low price volume business. Firestone and General Tire and Rubber Company both refused to participate at the profit margins prevailing, but the other companies have not taken such a determined stand.² (6) The practice of spring dating no doubt has had a part, particularly in the commercial market, of unbalancing the price structure. The manufacturers induce the dealers to stock heavily; then, if the spring market is adverse, the dealers tend to slash prices in order to move their tires.

The above discussion has made constant reference to the commercial and so-called "dealer markets." These two markets will receive separate and detailed consideration because the former is such a disintegrating factor in the tire price scheme and the latter shows the maneuvers of the tire manufacturers and the large special accounts as they struggled for positions in this market and the manner in which the price structure responded to this struggle.

¹. Carl Pharis claimed that he could make the Sears Roebuck tires below the Goodyear price. Interview, June 21, 1934.

². In the commercial field they often "steal" an account on a price basis. Statement of W. C. Behoteguy, op. cit. 2. See testimony of L. R. Jackson, op. cit., p. 23984. Also see testimony of W. O'Neill, reported in the India Rubber and Tire Review, January, 1935, p. 8.
Prices in the Commercial Tire Market

It has been pointed out, previously, that the commercial and national accounts demanded about 3,000,000 units in 1933, the bulk of which (2,686,575 tires) were over six inches in diameter and had a wholesale value of $77,964,000.¹ These accounts are located mainly in the larger cities and range in size from the small contractor who operates five or more trucks, the supposed minimum to qualify as a commercial account, to the American Telephone and Telegraph Company with its 13,600 trucks and 4,200 passenger cars.²

Price cutting has been more or less common in the commercial market since 1922. In 1925, prices were reduced to such unprofitable levels that the dealers could not handle the commercial account business and the manufacturers had to handle it direct in order to meet the low price quotations prevailing.³ In 1927, the manufacturers' retail stores began to appear and they concentrated on commercial and national account sales.⁴ Finally, a preferred wholesale discount of

¹ The first figure is purely an estimate, the second came from Federal Trade Commission Docket 2116, Respondent's exhibit 21937. See pp. 110-111 for a full discussion of this market.
² Facts and Figures, 1934, p. 17.
³ See Tires, October, 1925, p. 29. Many dealers were reported as not soliciting national accounts. (Tires, September, 1925, p. 31) Dealers' margins had fallen to 10 percent which made the business unprofitable since the dealer was expected to service the account. Tires, September, 1925, p. 46.
"10 and 10" per cent off consumer list price was established on these sales and the manufacturers then directed commercial sales back through the owned store and independent dealer channels. In 1930, however, the list prices and the quoted discount rates were forgotten as price wars began to burst forth in this market and soon list prices became only a basis for the determination of discounts. M. H. Harowitz, a New York dealer specializing in the truck business, testified at the Code Hearings that during the three years 1930 to 1932 discounts from two 10's to thirteen 10's off were prevalent, and that all types of subterfuges prevailed such as selling first quality tires as blemishes, giving all types of free service, making phony adjustments and so on. One magazine presented a table showing the effects of ten 10's off (discount of 65.2 per cent) and then stated, "there is considerable room for further discounting after this point (34.8 per cent) has been reached." The situation became so chaotic in December, 1932, that the manufacturers joined forces and agreed to standardize discounts.

1. The preferred wholesale discount came in with the re-establishment of consumer lists in 1929. Mr. R. S. Wilson, Sales Manager, Goodyear Tire and Rubber Company. Goodyear, in explaining the use of the preferred list, told its dealers that by selling at 10 and 10 off list, they, the dealers, could "realize 7.4% plus realization on old rubber." Tires, December, 1931, p. 52.


3. Tires. March, 1933. During these wars, dealers were usually given a 10 per cent commission on sales. See Docket 2116, pp. 2164 and 2204.

4. An excellent review of this period appears in the India Rubber and Tire Review, December, 1933, p. 12.
Thirty days later, however, California, New York, Chicago, and Cleveland, were quoting from eight to twelve 10's off.\(^1\) Another truce was effected and the Rubber Association established a police force to police the industry and prevent further price cutting.\(^2\) Such was the state of affairs at the inauguration of the "New Deal."\(^3\)

But the granting of discounts on current business was not sufficient; the companies in their mad scramble began or contracting for the year/for even a longer period at these bed-rock prices.\(^4\) On this point, Norvall Trimborn, Manager of the National Tire Dealers' Association stated:\(^5\)

"Evils are more prevalent today than they were four years ago. At the present time, large users are being overstocked in anticipation of the expiration of their contracts. The result is, particularly on the west coast and in New York City, that truck operators are buying tires at such low prices that the dealer can purchase these same tires cheaper from them than from his own manufacturer."

Contracts for 1933 amounted to $7,000,000.\(^6\)

Finally the Rubber Manufacturers' Association intervened and called for all contracts. A ruling was made that after exist-

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1. *India Rubber and Tire Review*, December, 1933, p. 12.
2. Ibid.
3. Ibid.
5. N. P. Trimborn, Hearings on Retail Tire and Battery Code, December 14, 1933, p. 20.
ing contracts were fulfilled, no additional ones should be offered.1

No exact data are available to show the effects of this price warfare upon volume and profits. Since Good-year's company-owned stores were engaged until 1933 primarily in commercial tire selling and most of their losses were purported to have resulted from these sales, their year-to-year earnings are shown as an indicator of the prices and profits that must have prevailed.2 (Table XXVII)


However, the same practice began again during the summer of 1935. The manufacturers took action to stop commitments and all unfilled orders taken at long discounts. Tire Review, November, 1935, p. 5.

2. R. S. Wilson, op. cit., p. 23783, states that the losses sustained in the operation of those company-owned stores were due primarily to the commercial business, because it constituted about 70 per cent of their entire sales. The stores have been somewhat more successful in building up passenger car sales during the succeeding years. Goodrich has had a similar experience. During 1934 the company made great strides in reducing the operating losses shown by the stores. But the commercial price wars during the summer of 1935 again burdened the stores with heavy losses. Confidential source.
TABLE XXVII
Losses of the Goodyear Company-Owned Stores. 1927-1933.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Losses</th>
<th>% to Store Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927</td>
<td>$36,257</td>
<td>1.21</td>
</tr>
<tr>
<td>1928</td>
<td>177,893</td>
<td>3.49</td>
</tr>
<tr>
<td>1929</td>
<td>598,962</td>
<td>6.16</td>
</tr>
<tr>
<td>1930</td>
<td>690,168</td>
<td>4.93</td>
</tr>
<tr>
<td>1931</td>
<td>1,544,054</td>
<td>9.70</td>
</tr>
<tr>
<td>1932</td>
<td>3,438,797</td>
<td>20.08</td>
</tr>
<tr>
<td>1933</td>
<td>2,938,423</td>
<td>16.78</td>
</tr>
</tbody>
</table>

This sketch of the commercial and national account situation indicates many of the reasons why this business is so menacing to the market. Even at the risk of duplication these will be set forth:

1. The commercial and national accounts represent such a concentrated and important market that this volume is coveted by large and small manufacturers and dealers alike and is readily accessible to them.

2. The "stealing" of one account or a dealer who has valuable commercial accounts causes retaliation in the form of special inducements to some account of the offender or a price cut.² Due to the concentration of these accounts the price cutting is very apt to spread quickly throughout the locality.

² R. S. Wilson, Docket 2116, p. 23786 states: "Then as the commercial business grew you gradually got to the point where you usually had one good commercial account in the town. Now if for some reason you lost that one big commercial account, it was a very long, slow process—unless you could step out and get another account from somebody else, to take one of those small accounts and build it back up again, because in the meantime you had lost your contracts with your commercial accounts that you had been serving."
3. Local price wars often spread to other markets despite all efforts by the manufacturers to confine or police them.

4. The practice of contracting this business continues the detrimental price and competitive effects long after the price war has been stamped out.

5. These wars cannot be confined to commercial or national account business. Discounts are soon given to owners of three, two or one truck, and then to employees or relatives and friends of the accounts. Thus the entire structure is undermined.

At the present time, the mail order houses and the oil companies are competing more strenuously for the commercial business. In fact, the oil companies, by selling tires, removed some of the largest accounts since their own fleets often numbered in the thousands. Their competition can scarcely be expected to improve the conditions existing in the market.

---

1. Goodyear, in 1931, in explaining its 1932 lists stated that employee discounts were breaking down the entire market and they declared that such discounts should not be given unless "the account takes the business on its books." Tires, December, 1931, p. 52.

2. Professor F. E. Clark, in making a survey of certain tire markets, found that the generality of these discounts was one of the primary factors in disorganizing the price structure and resulted in unsatisfactory profits to the manufacturer. Conversations with the author.

3. D. M. Nelson testified that these wars hurt their business even though only 5 to 7 per cent of their sales were truck tires because their employees and their customers bought passenger car tires at the discounts. Docket 2116, pp. 21805-21806.


4. Standard Oil of New Jersey stood second in size among fleet owners with 12,000 trucks and 4,000 passenger cars. Cities Service had 2800 trucks and 1,200 passenger cars. Facts and Figures, 1934, p. 17.
The Intrusion of the Large Scale Retailers into the Renewal Tire Market

The following pages will show the general price structure of the renewal tire market and the effects of the intrusion of the special branding large scale markets upon that structure.

Tire prices are quoted to the retail trade either in terms of a "dealer list" or of a "consumer list." In the first case the dealer's cost price is quoted and then a mark-up—about 25 per cent on the sales price—is suggested for the retailer. The consumer lists, which were reestablished in 1929 after having been discarded in 1922, give the consumer price from which a trade discount is allowed. The trade discount is graduated according to the quality of the tire or tube but it averages about 25 per cent.

Tires are sold to the dealers under what is known as a spring dating agreement. The manufacturers all agree upon the program and upon a given date in October or the first half of November solicitation of dealers' orders is begun.

2. For instance, On November 1, 1930, Goodyear quoted discounts on its "Double Eagle" as 33-1/3 per cent, "Heavy Duty," 27% per cent, "All Weather Balloons" 10 to 12½ per cent, and the "Pathfinder" 25 per cent. Docket 2116, Commission's exhibit no. 151.
3. It is extremely difficult to discuss this subject briefly because in 1924 the country was divided into four dating zones each with its solicitation, shipping, payment and price guarantee expiration dates. Also, the dating season has opened later and later each year. In 1932 it could be filled in one or two shipments and payment made in three installments thirty days apart. Thus credit terms ran from 70 to 90 days, in some cases longer, from the receipt of the goods. For further discussion, see Tires, August, 1924, p. 75, and November, 1932, p. 41.
The tire manufacturers have the right to ship these orders during the winter months. In order to induce the dealers to receive these shipments, the manufacturers guarantee prices until about May 15. When shipments are made in installments, the prices on successive shipments are guaranteed, each for about a ninety day period.\(^1\) Payment becomes due on one third of the invoice less two per cent cash on the tenth of the three months, April, May and June.\(^2\)

Five to ten years ago changes in list prices normally occurred in the fall--September to October--and in the spring--April to June. In the fall, price adjustments occurred just about the time solicitation for spring dating contracts began. As the prices of tires were guaranteed until the middle of April or May, when the motoring season was in full swing, it was to the manufacturers' interest, consequently, to avoid a downward revision until the guarantee period had expired.\(^3\) Furthermore, a revision was hardly necessary until

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1. Two shipments may be made on the order. Ibid.
2. Ibid. Also J. H. Reid, "Marketing of Automobile Tires and Tubes," pp. 45-46. The advantages claimed for this practice are:
   a. Results in a uniform sales policy.
   b. Dealers carry a larger and more complete stock of tires during heavy demand.
   c. Shifts storage to the dealer.
   d. Manufacturer able to regularize production.
   e. Manufacturer able to keep tires of more even quality due to more regular plant flow.
3. The effects of these guarantees upon tire prices would make an interesting subject for further investigation.
the spring trade registered the year's demand.

Prior to 1927, the power over prices resided principally in the hands of the "Big Three"—Goodyear, Goodrich, and Firestone—since the United States Rubber Company remained in a rather passive role. One of the large companies made an announcement and other companies followed the lead and each took its accustomed place in the price scheme. The price change was not always welcomed and frequently was bitterly challenged by one of the other large companies. The small manufacturer was in no position to protest due to his limited volume of sales.

Tires, prior to the World War, were of two main types: recognized or standard brands and "gyps" or unknown and doubtful quality tires. The major companies made but one quality line. During the 1921 depression second lines made

1a. This general tendency is quite noticeable to one following the changes in list prices. It is evidenced in the price chart of the Goodyear Tire and Rubber Company. See Annual Statements, 1933 or 1934.
1. This statement is based upon general knowledge after following the price movements as reported by the journals. No tabulations were made.
2. Some companies, such as General, averaged about 20 per cent above the price of the standard brands as the main lines of the large companies are called. Testimony of William O'Neil, Docket 2116, February 9, 1934. On the other hand, many smaller companies, such as Pharis, were below them. Interview with Carl Pharis, June 25, 1934.
3. A former official of the Good Rubber Company, W. C. Behouleguy, stated that the smaller companies tried to edge into the market but at the same time they tried to avoid over-reaching because of the danger of causing a general price cut. Interview, April 10, 1934.
4. See Tires, July, 1920, p. 11; also Horseless Age, March 5, 1919. The large companies sold but the one standard brand. See Norman Beasley, op. cit., pp. 102-104.
their appearance. More recently, third, fourth, and fifth lines, and a deluxe or extra fine line superior to the standard lines have been added. The tire price scale, with the expansion of lines, took on a more complex form. This scale as it existed during the latter part of 1927 is illustrated below.¹

The figures in parentheses indicate the index position of each tire relative to the two standard brands—the "All Weather Tread" and the "High Speed," etc.

<table>
<thead>
<tr>
<th>General</th>
<th>Goodyear</th>
<th>Firestone</th>
<th>Sears Roebuck</th>
</tr>
</thead>
<tbody>
<tr>
<td>120- Balloon (120)</td>
<td>Double Eagle (120)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>All Weather (100)</td>
<td>High Speed (100)</td>
<td></td>
</tr>
<tr>
<td>80-</td>
<td>Pathfinder (82)</td>
<td>Oldfield (82)</td>
<td>All State (75)</td>
</tr>
<tr>
<td>66-</td>
<td>Courier (66)</td>
<td>Airway (58)</td>
<td>Dearborn (60)</td>
</tr>
<tr>
<td>40-</td>
<td>Speedway (56)</td>
<td></td>
<td>Argosy (47½)</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

So much for the general methods that characterized the price-setting process and the general price scheme. The accompanying chart (Chart IX) attempts to portray what has happened to the tire price structure since the beginning of the year 1927 when Sears Roebuck entered the market in an aggressive manner. This chart is over-simplified since it includes only two quality tire lines for each of the three

*Catalog and Store Prices Identical Until January, 1933

No. 320-N

Federal Trade Commission
Confidential Sources within the Industry
institutions, namely, Goodyear, Sears Roebuck, and Atlas. The Sears Roebuck stores during the last few years have established prices at variance with the mail order prices so that adds a fourth series through the latter years. This chart, although it makes no attempt to reflect all price changes, shows the general price movements and the price differentials that existed between the types of tire selling agency represented here. It will be noted that the solid and broken lines represent tire quality while the colored lines represent the different types of institutions.

In January, 1927, mail order prices, as represented by the Sears Roebuck All State tire (solid red line) were about 20 per cent below the standard brands as represented by the Goodyear All Weather Tread (solid black line). The former were just slightly above the second lines (black dashed line) of the large companies. The mail order second line (red dashed line) which at first carried the name of "Dearborn," (later the "Companion"), was about 11 to 15 per cent below the mail order first line. Mail order prices dropped in April, 1927, to widen the margin between All State and the standard brands to approximately 30 per cent, which margin they maintained for some time.

With a wide profit margin and an advantageous cost differential, the mail order houses cut prices severely.¹

¹ Their margin of gross profit was over 40 per cent. Letter from J. H. Westrich to H. H. Crouse, op. cit. See Tire Review for a chart of these price drops in June, 1932, p. 18. The mail order tire was not regarded as the equal in quality of the standard brands at this time. Rubber Age, January 25, 1928, p. 419.
They also began advertising extensively and to push tire sales through their retail stores. As a result, they made heavy inroads into the market increasing their unit volume 80 per cent in 1923 and 35 per cent in 1929.

Early in 1928, one of the journals made this comment:

"Tire manufacturers have been slow to follow mail order houses in offering low prices, because of the possible effects upon their own higher grade brands, but recently pressure from dealers, who felt the need of offering some grades to offset attractive prices have brought in the low priced tire."

In response to the pleas of their dealers, Firestone added two lines, the "Courier" and the "Airway," and Goodyear added one, the "Speedway," which was priced on a par with Firestone's fourth line. In June, 1928, Firestone priced the "Courier" to meet the "All State" and the "Speedway" to compete with the "Dearborn." This practice, in the parlance of the trade, is known as "hitting it on the nose."

The mail order competition was severely felt by the Firestone organization. The latter was the most highly specialized of all the large companies in tire and tube manu-

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2. Total unit sales increased from 1,791,570 in 1927 to 3,247,403 in 1928 and 4,379,667 in 1929. Tire Review, February, 1934, p. 32.
4. This data is taken from price data embodied in the Federal Trade Commission Briefs, Docket 2116.
facture.\textsuperscript{1} Furthermore, as a result of being a source of tire supply to the Ford Company for so many years, Firestone tended to receive a relatively large share of its renewal business in the smaller car tire sizes.\textsuperscript{2} Naturally, it was particularly affected by this mail order house business which was concentrated in the small fast moving lines. Firestone had been experimenting with company-owned stores but in 1928 and 1929 the company established two hundred "One Stop Master Service Stations" as an answer to the mail order house challenge.\textsuperscript{3}

The issue was sharply drawn between these companies thereafter: it was Firestone versus the mail order houses. In 1930, when Goodrich and United States Rubber secured the Standard Oil account and the latter secured the Montgomery Ward business through its acquisition of the Sampson and Gillette companies, this left Firestone as the only large member of the industry without some large special brand contracts. His fate, therefore, became inseparably linked with that of the dealers and he appointed himself their leader in the fight against these invaders.

\textsuperscript{1} Probably 90 to 95 per cent of Firestone's output was tires and tubes while Goodyear's ran about 75 per cent, Goodrich's 50 per cent, and United States Rubber 35 to 40 per cent. See "Four Giants and All Different," \textit{Fortune} Magazine, September, 1930, p. 850.

\textsuperscript{2} The Firestone Plant no. 2 was built for production of this type of tire, if the writer was correctly informed. (Confidential source.)

\textsuperscript{3} \textit{Annual Statement} of the company, 1929. Letter to the Stockholders.
The extent to which the mail order house had become a major factor in the market was due primarily to their aggressive price leadership and the quality of their tires.\(^1\) On the downward movement they had led most of the reduction until the magazine "Tires" was led to comment:\(^2\)

"Once more the tire industry has followed the lead set by the mail order houses in establishing tire and tube prices. We, close to the business, recognize this as no new development, but now the general public....is having pointed out to them the fact that tire manufacturers accept leadership, at least as far as prices are concerned, from factors outside the industry."

The Standard Oil Companies, with their Atlas tire, came into the market in August, 1930.\(^3\) This tire was priced at approximately 87 per cent of the standard price or about midway between it and the Sears Roebuck first line tire price.

No change of consequence occurred until just before the close of the year 1931 when prices broke 10 per cent on the standard lines and 5 per cent on the "All State" and on the "Pathfinder. The competition of the mail order houses had become keener and their volume had expanded; consequently, Firestone cut its price to narrow the margin and thereby impair, to that extent, the advantage of the mail order houses. This move narrowed the mail order house margin to about 23 per cent.

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1. Sears Roebuck sells an excellent tire. It is made according to the Goodyear formula. Testimony of Burgess Darrow, Development Manager, Goodyear Tire and Rubber Company, Docket 2116, January 25, 1935.
2. Tires, January, 1931, p. 36.
3. The Standard Oil of New Jersey started tire selling in 1929, but only a few thousand were sold.
In commenting upon this price cut, President J. W. Whitehead of the Norwalk Rubber Company said:  

"A more unwarranted price change has never been passed along to the industry. . . . It was evidently brought about because of a determination on the part of one of the "Big Four" not to permit any manufacturer of mail order house tires to stand up and see this class of outlet put in a pre-dominant position in the retail field."

As a part of its financial program for 1932, Congress voted a tax of 2½ cents per pound on tires and of 4 cents per pound on tubes, effective June 21. In anticipation of this tax, tire plants "groaned under the avalanche of dealer orders for pre-tax tires." The shipments of tires jumped from 4,260,000 in May to over 10,600,000 in June and manufacturers' inventories shrank to a low point. This tax should have been passed on to the consumer in the form of a price increase, particularly as tire prices were at a "record breaking low." The three large companies took an 11 per cent increase to restore the 1931 level but Firestone delayed, awaiting some definite action on the part of the mail order houses. The mail order catalogs came out with prices unchanged, for they could not raise prices when "dealers were loaded with

3. Ibid.
4. Ibid.
6. Ibid.
inventories of pre-tax tires." Mail order house sales shot upward, as a result. Consequently, tire manufacturers had to re-bill their dealers at the old prices in order that the dealers could meet the mail order prices.\(^1\) By September, the divergent groups got together and price increases of 11 to 14 per cent went into effect.\(^2\)

In the latter part of 1932, Sears Roebuck began quoting store prices on their "All State" and "Companion All State," as their second line tire was now called, at 4 to 5 per cent above the mail order price. The reason for this was possibly twofold: The services demanded by the tire buying public had raised retail selling costs. In the second case this price adjustment may have indicated outside pressure brought to bear in an effort to effect some degree of stability in the market.

In January, 1933, the fiercest tire battle of years was introduced when Sears reduced its store prices to former catalog levels.\(^3\) Firestone followed and that same day Sears countered.\(^4\) They had anticipated the Firestone move, apparently.\(^5\)

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1. See Chart \(X\) on page 282 which shows how the production of Sears Roebuck tires jumped in response.
4. Ibid.
5. The Sears price lists bore date marks indicating that they had been printed beforehand. Ibid.
In March, the Firestone Company cut prices some 15 per cent on their standard and second line tires.¹ This move narrowed the differential of the mail order stores on first line tires to 10 per cent and the catalogs to 15 per cent.² At the same time, Firestone brought out their "Super Oldfield" tire, which had been highly publicized with mail order directness, and priced it identically with the mail order first line.³ Their regular Oldfield tire remained at a level of 20 per cent below their first line and 10 per cent below the "All State" and the fourth line, the "Sentinel," was identical with the "Companion" tire of Sears Roebuck.⁴ The company at the same time stepped up the quality of its products, particularly the "Oldfield" tire, until they were outstanding.

¹ In a letter to stockholders of the company, Mr. Firestone stated that his company had met the 5 per cent reduction of the mail order house catalog in order to bring the prices of standard brand tires more nearly into relation with decreased production costs and by reducing the price differential 5 per cent to make them more comparable to the special brand tires. See Printers Ink, April 5, 1935, pp. 59-61.
² The company had been making direct comparisons with mail order tires. Montgomery Ward had filed a complaint against the company with the Federal Trade Commission as a result. Business Week, April 22, 1931, p. 9. At last the advertising situation became so bad that the Better Business Bureau took a hand. The results accomplished were not very significant. Tire manufacturers and the large retailers did agree on a few definitions of terms, but little else. Files of the case from the New York Office were procured for examination through the courtesy of C. A. Porter, of the Akron Better Business Bureau.
³ Price Survey. Confidential source.
⁴ A man in a competitive factory, whose judgment on such matters should be excellent, M. C. Lorentzen, formerly economist at Goodrich, declared that Firestone's policy, in product and pricing, was the keenest piece of merchandising done by the industry.
The effect of these moves on the part of the Firestone Company was rather detrimental to the mail order houses and possibly to Atlas, for a differential of 10 per cent was inadequate to compensate for their limited service and the lower consumer acceptance they enjoyed. At any rate, the sales of the two mail order houses dropped quite sharply, as the following table shows. Sears Roebuck's sales declined from 57 per cent of the market in 1932 to 42 per cent in 1933 or a shrinkage of about 26 per cent and Montgomery Ward's sales declined 21 per cent. In contrast, Firestone's and Goodyear's renewal tire sales declined but 13.5 per cent and 11.5 per cent, respectively. In comparison with the 1929 sales, however, Firestone was far above the others.

TABLE XXVIII

Comparison of Renewal Unit Sales of Four Companies. 1929 = 100\%^1

<table>
<thead>
<tr>
<th>Year</th>
<th>Sears</th>
<th>Ward</th>
<th>Firestone</th>
<th>Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>100%</td>
<td>100%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>1930</td>
<td>79</td>
<td>84</td>
<td>88.5</td>
<td>95.3</td>
</tr>
<tr>
<td>1931</td>
<td>74</td>
<td>70</td>
<td>94.6</td>
<td>90.2</td>
</tr>
<tr>
<td>1932</td>
<td>57</td>
<td>67</td>
<td>85.9</td>
<td>75.5</td>
</tr>
<tr>
<td>1933</td>
<td>42</td>
<td>53</td>
<td>74.5</td>
<td>66.7</td>
</tr>
</tbody>
</table>

1. Sears sales are given in Docket 2116, Commission's exhibit no. 232, and Montgomery Ward's sales in Respondent's exhibit no. 22081. The sales of Firestone and Goodyear appear in Respondent's exhibit no. 22090.
This price maneuver must have affected the Atlas Corporation adversely for they now entered the price fray for the first time. "Atlas" prices had previously ranged between those of the standard lines and prices of the mail order tires, but they now dropped to mail order levels.

The next move was a drastic price reduction of 20 to 27½ per cent on March 21, 1933, led by Goodrich, accompanied by an announcement that thereafter the company would concentrate on two lines of passenger car and one line of truck tires. Apparently they thought that a radical cut would make unnecessary further price cutting and the elimination of lines would simplify the price structure and eliminate much price maneuvering. Good-year and United States Rubber Company quickly followed the action of Goodrich. Firestone met the price cut but refused to eliminate any lines so that the proposed "stabilization" plan came to naught.

As a result of this price maneuver, the companies were lined up on the following price basis in March, 1933:

TABLE XXIX

<table>
<thead>
<tr>
<th>Tire Lines of Certain Companies Expressed in Terms of the Standard Brands</th>
<th>Goodyear</th>
<th>Firestone</th>
<th>Mail Order Houses</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st line</td>
<td>100</td>
<td>100</td>
<td>85</td>
<td>91</td>
</tr>
<tr>
<td>New line</td>
<td>80</td>
<td>80</td>
<td>68</td>
<td>71</td>
</tr>
<tr>
<td>2nd line</td>
<td>71</td>
<td>71</td>
<td>61</td>
<td>64</td>
</tr>
<tr>
<td>3rd line</td>
<td>64</td>
<td>64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. India Rubber and Tire Review, March, 1933, p. 19.
2. Tires, April, 1933, p. 131. The elimination of two low priced lines would partially offset the price decrease.
3. Ibid; also confidential source.
This situation was so unsatisfactory to the mail order houses that price cutting occurred everywhere.\(^1\) It will be recalled that the commercial market was aflame at the time. Finally, conditions became so bad that the tire company executives were summoned to Washington by President Roosevelt and ordered to restore prices to the levels that existed before the price cut. This was done. The industry then began to grapple with its code which was approved on December 21, 1933.

But still the mail order houses were not satisfied for their price differential remained at 10 per cent. They accepted this differential in selling their list prices but immediately nullified it by offered trade-in allowances of from 25 to 35 per cent, and when these allowances were protested they gave straight 25 per cent discounts to customers.\(^2\)

The price warfare became so vigorous that an emergency was declared to exist in the industry and a truce was agreed to with the mail order houses restricted to their 10 per cent differential and excessive trade-ins and guarantees prohibited.\(^3\)

Before the truce expired, the N. R. A. established floor prices for the industry.\(^4\)

With the expiration of the truce on May 14, a new emergency decree setting floor levels became effective. Tires were classified into A, B, and C grades.\(^5\) The floor price for

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1. Tire Review, December, 1933.
3. Tire Review, December, 1934, p. 34.
4. Ibid.
5. See N. R. A. Decree of above date.
Grade A was set at 77\(\frac{3}{4}\) per cent of the February 9 list price (\$7.30), Class B floor at 70 per cent, and Class C floor at 60 per cent. Immediately the mail order houses went to the floor and Firestone followed with its "New Century of Progress"--the old Super Oldfield--tire. Firestone, it will be recalled, refused under the stabilization plan to eliminate its intermediate line or sub-first line tire. This company dropped the price of this line to the floor and the other manufacturers had to follow with their first line tire since they had no intermediate grade. In order to overcome this disadvantage, Goodyear brought out the "G3" tire. At floor prices manufacturers' branded tires moved in preference to mail order or chain tires, but the manufacturers' profit margins were wiped out.\(^1\) Floor prices prevailed until August when a price revision was made. This revision placed the oil companies at 81 per cent and the mail order houses at 77\(\frac{3}{4}\) per cent of list. There is no evidence that this schedule was adhered to. On November 19, 1934, a price increase of 50 per cent was effected. The mail order houses and oil companies fell in line and the market settled down to a quieter state than it had enjoyed for many a month on the basis of the following schedule:\(^2\)

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1. Mr. Jacobsen, General Manager of J. and R. Motor Supply Company, informed the writer that floor prices affected them most adversely. Their chief sales argument, that of price, was gone. This applied, with more or less force, to the mail order houses also. Interview April, 1934.

2. See India Rubber and Tire Review, November, 1934, p. 5, for a general statement of some of these price changes. Interviews with R. E. Busbey, of the Tire Review, and F. Kohlmier, of Sohio Oil Company.
### TABLE XXX

Schedule of Price for Various Lines of Tires as of November, 1934.

<table>
<thead>
<tr>
<th>Standard Brands</th>
<th>Mail Order</th>
<th>Stores</th>
<th>Catalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Line (100)</td>
<td>Standard Oil</td>
<td>All State (87 1/2)</td>
<td></td>
</tr>
<tr>
<td>Intermediate 1st Line (90) Atlas (90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Line (80)</td>
<td></td>
<td>Crusader (61 3/4)</td>
<td>Companion (55)</td>
</tr>
<tr>
<td>Intermediate 2nd Line (70) Jr. Atlas (66)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Line (61)</td>
<td></td>
<td></td>
<td>Crusader (46)</td>
</tr>
</tbody>
</table>

* The "Companion" was about a third line tire.

This new schedule in many respects was more satisfactory than the previous ones. The Atlas Corporation was given a differential that seemed satisfactory both to it and to the industry. This corporation had introduced a second line tire, the Junior Atlas, to tap the low-priced market which was priced at 66 per cent of the standard brands. Also the mail order houses had widened their differential by 5/8 per cent on first line tires, which strengthened their competitive positions somewhat.1

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1. In describing the price situation following the November adjustment the Tire Review stated "While there are spotty price disturbances, most are short-lived. In main the retail market is firm. Dealers are standing pat. Manufacturers are working closely together in maintaining price stabilization. Sears and Montgomery Ward moved their catalog prices up approximately 20 per cent February 15.........In Ward centers Sears and Ward are retailing first, second and third line tires from their stores at 92 1/2, 85 and 65 per cent, respectively. Atlas is holding consistently at 90 per cent. The major manufacturers are holding to 100 per cent with smaller manufacturers positioned in between top and Atlas levels, on first lines." Tire Review, February, 1935, p. 5.
It is believed that the major large retailers have now found their place in the market and a more stable price condition will result. Adjustments in prices between lines, catalogs and stores, etc., will occur but it is not believed that they will be so significant or disturbing to the industry hereafter.

Tire prices have been most unstable and depressed due to the state of overproduction that has prevailed within the industry, the varied and declining tire market and the intrusion of large scale retailers into the field. This industry was not burdened with excessive production capacity prior to 1927, but the expansion programs that occurred at that time provided the industry with excessive production facilities. Due to enlarged tire sizes and the drastically curtailed repair and replacement policies, the industry by mid-year, 1935, was in a favorable condition, although a surplus capacity still remained.

A declining and varied market, likewise, further tended to weaken prices and cause instability. About 50 percent of the sales of the large companies are made to the private car market and these sales usually bear a long margin of profit. The remainder of the sales are made to the original equipment, taxi and bus, commercial and special accounts market and bear very low, if any, net profit. This situation

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1. Although much price cutting has occurred the price schedule has remained fairly intact. Nor have the mail order houses or Atlas materially increased their market percentage in aggregate; perhaps, their percentage has slightly declined.
results in: (a) the financial state of the industry being
dependent upon the passenger car market, (b) an unbalanced
price structure, which is particularly unstable. As the low
profit business has been increasing rapidly with the expansion
of national and commercial accounts and the development of
large scale retailers, the financial outlook is not too
promising. But the granting of large price concessions to
the large commercial institutions and to the large retailing
companies has proved most disastrous to the price structure.
The discounts given the large retailers, coupled with their
high operating efficiency, have resulted in resales at greatly
reduced retail prices. Consequently, price cutting has been
very prevalent and the market has been kept in a turmoil.
The manufacturers, no doubt, recognized the possible effects of
their actions, but since these large accounts could have pro-
cured the tires elsewhere or purchased or subsidized plants to
manufacture them, there was no alternative except to secure the
best possible price. The intrusion of these large scale
retailers in the market caused price reductions, price wars,
the amplification of competitive tire lines and the utilization
of all sorts of price and competitive practices. The mail order
houses had the greatest price advantage and the Firestone Company,
through its huge chain of owned stores, had the largest invest-
ment in the renewal market; consequently, the struggle centered
around these two groups. All of Firestone's efforts could
not restrict large retailers but they did, apparently, obviate
many of the competitive advantages of the mail order houses. This price struggle decreased the price of tires to such an extent that all except the most efficient manufacturers, wholesalers and retailers operated at a loss. The trade suffered as prices and margins dropped, but the consumer of tires profited.
CHAPTER VII

SOME OF THE EFFECTS OF THE MARKETING PROBLEMS
UPON COSTS AND MARGINS OF THE INDUSTRY

* * * *

As the three factors previously treated had serious repercussions upon prices so did they, likewise, upon manufacturers', and middlemen's costs and margins. In this chapter the influences of these three factors upon manufacturers', wholesalers' and retailers' costs and margins will be analyzed. As the costs of each of these three institutions are considered in turn, two specific questions will be raised; namely, What has been the trend of manufacturers', wholesalers' and retailers' costs and what are the major causes determining that trend? How have the newer types of distribution affected these costs?

It is much easier, however, to raise these questions than it is to answer them. They may not be fully answered, but with the data at hand, some light, it is hoped, will be shed upon them.

Manufacturing Costs

In a recent rubber industry letter Mr. E. G. Holt utilized census data and a technique developed by F. G. Mills to show the trends of tire manufacturing costs.¹ That method

will be utilized in part, in this instance to show the trends of the value of the tire product and of materials, wages and other costs by periods, from 1921 to 1933, inclusive.

TABLE XXXII

Fluctuations in Manufacturing Costs of Tires and Analysis of Variations by Selected Periods. 1921-1933.

<table>
<thead>
<tr>
<th></th>
<th>1921-1927</th>
<th>1927-1931</th>
<th>1931-1933</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$%$</td>
<td>$%$</td>
<td>$%$</td>
</tr>
<tr>
<td><strong>Cost Element</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factory Cost</strong></td>
<td>26.0</td>
<td>36.2</td>
<td>23.7</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td>27.6</td>
<td>52.5</td>
<td>18.9</td>
</tr>
<tr>
<td><strong>Wages</strong></td>
<td>51.7</td>
<td>23.2</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>Other Costs</strong></td>
<td>18.2</td>
<td>7.6</td>
<td>37.0</td>
</tr>
<tr>
<td><strong>Decline</strong></td>
<td>-26.0%</td>
<td>-36.2%</td>
<td>-23.7%</td>
</tr>
<tr>
<td><strong>for Change</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>in Factory</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decline</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>for Change</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>in Factory</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[a. \text{Percentage change in the composite elements is determined by multiplying the percentage decline in the price of that element by its percentage weight in the base year.}\]

Materials, particularly between the years 1921 and 1931, accounted for the greatest share of the change in tire costs—47.3 to 18.2 per cent for wages and other costs combined. From 1931 to 1933 materials were much less active. Over the entire period, however, materials accounted for about 66 per

---

1. The census value per unit was found by dividing the total value of casings produced. The dollar unit values are given in detail in Appendix X. Biennial Censuses of Manufactures, 1921, 1923, 1924, 1927, 1929. 1931 and 1933 data were obtained from Census of Manufactures: 1933. Industry no. 803, p. 1, September 7, 1934.
cent of the entire cost reduction indicated.\(^1\) Labor costs declined throughout almost as rapidly as total factory costs except in the 1931-1933 period. Great progress in manufacturing technique\(^2\) rather than decreases in wages effected this decline, although the latter was a factor.\(^3\) Other costs,

---

1. According to an index compiled by the Commercial Research Department, Goodyear Tire and Rubber Company, the material costs of a tire fluctuated from 1926 to 1933 as follows:

- 1926 - 100.0
- 1927 - 84.6
- 1928 - 68.9
- 1929 - 57.6
- 1930 - 51.7

1931 - 37.1
1932 - 28.1
1933 - 33.8
1934 - 44.9

2. According to Boris Stein (Labor Productivity in the Automobile Tire Industry, United States Bureau of Labor Statistics no. 585, 1932, pp. 20-21) the technological displacement caused by new machinery and processes, more effective labor utilization through time and motion studies, etc. amounted to 42,691 men between 1921 and 1931 or an average displacement of 8,500 per year or approximately 1.4 per cent of the average number employed.

3. From 1927 to 1932 both hourly wages and hours per week declined rapidly in this industry. The weekly earnings in Akron companies consequently declined about 39.5 per cent. During the same period weekly earnings in "25 manufacturing industries" declined 36.3 per cent. (Statistical Abstract of the United States, 1934, p. 309) The weekly earnings of the tire industry at the lowest ebb of the depression, however, were just about equal to those prevailing in manufacturing generally. Weekly earnings for the first four months of 1933 averaged $16.79 for tire companies compared with $16.52 for all manufacturing industries. Since that date, however, both hourly rates and weekly earnings have risen much more rapidly than for all manufacturing industries. Wages were 58.6\% per hour and weekly earnings $17.50 in the tire industry in March, 1933, and by June, 1935, they had risen to 84.5\% and $25.85 or percentage increases of 46.5 and 47.7, respectively. Correspondingly in all manufacturing industries hourly wages increased from 43.5\% to 57.5\% or 32 per cent and weekly earnings from $16.32 to $20.54 or 25.6 per cent. Trend of Employment, monthly issues for the respective years, United States Bureau of Labor, Bureau of Labor Statistics.
representing overhead and profit, were relatively inactive until the depression forced them to decline further than the fall in prices. This decline indicated a loss of profit, no doubt, rather than a significant lowering of overhead.  

So much for manufacturing costs in general. The next question presented is: What effect, if any, have the large scale marketers by contracting for their volume requirements had upon the tire manufacturer's costs? The largest of these contracts—the Sears Roebuck-Goodyear contracts—will be used as the basis of this discussion.

These contracts, it will be recalled, stipulated that Goodyear should supply all of Sears Roebuck's requirements for various periods of time. Sears Roebuck was to purchase the tires supplied at cost plus a 6 per cent profit. The contracts all defined "costs" in about the same manner:

1. Overhead, in the accounting sense, would increase per unit as output decreased and, therefore, would be most likely to increase during a period of depression.

2. There were three of these contracts. The first entered into on March 6, 1928, was for a three year period and covered all of Sears Roebuck tire and tube requirements. The second was dated May 17, 1928, and was terminable during December of any year after the third upon one year's notice. The third contract was non-cancellable for a ten year period. After that period it was terminable at the will of the parties upon one year's notice. See Federal Trade Commission exhibits nos. 9, 10, 11, Docket 2116.

There is little doubt that the Goodyear-Sears contracts were sales contracts rather than manufacturing contracts. The contracts speak of a "sale of product." They were made with the selling company instead of the manufacturing company and the unacceptable merchandise was to be sold by Goodyear and not Sears Roebuck.

3. Taken from the third of 1931 contract which is still in force. Docket 2116, Commission's exhibit no. 11.
"Goodyear's cost of said "product" shall be determined as nearly as circumstances will permit, according to methods usually employed by Goodyear, unless such methods are inconsistent with sound accounting principles, in which event such sound accounting principles shall be used in determining cost; said cost shall include all proper items of cost (including shipping, warehousing and packing expense), but shall not include selling, advertising expense, interest on borrowed moneys, or loss in excess of one-half of one per cent of selling price due to manufacturing of product which in the course of manufacture is classified as "seconds." ........

"Buyer will pay Goodyear an allowance for adjustments a sum equal to three-fourths of one percent of the basic selling price of Goodyear to Buyer of said product plus any actual loss on adjustment thereof up to but not in excess of an additional one-fourth of one per cent." ........

"The profit to Goodyear shall be a percentage of the price of said "product" to the buyer, (excluding, however, from such price for the purpose of figuring said profit, the allowance for adjustments), and such percentage shall be six per cent of the selling price to Buyer of said "product" ........ whenever the price of crude rubber included in the cost to Buyer of said "product" averages twenty-five cents or more per pound for the then current quarter, and shall be six and one-half per cent when the price of said crude rubber averages less than twenty-five cents per pound for said current quarter."

Under these contracts Sears Roebuck secured its tires at a price approximately 35 per cent net below that given the dealer trade.¹ This differential, called a quantity discount

¹. This statement is based upon the margin or cost sheets which purported to show the costs and billing prices of Sears Roebuck and Goodyear tires of the same size (Commission's exhibit nos. 67 and 617, Docket 2116). The tires in both instances were almost identical except that they were cured in different molds. Testimony of Burgess Darrah, Development Manager, January 25, 1935.
by the tire manufacturer although it bore no definite relationship to total volume or size of the individual order, would presuppose that the contracts resulted in large production and distribution economies to the tire manufacturer.  

1. Maynard, Weidler and Beckman define quantity discounts as "discounts granted by vendors to customers who purchase in larger quantities than those to whom the net price applies." They subdivide discounts into non-cumulative and the cumulative: the former applies to "individual sales or shipments" and the latter is "based on the amounts purchased over a given period of time irrespective of the amount or the size of the individual order, and their principal purpose, obviously, is to encourage business. Principles of Marketing, (New York: Ronald Press, 1932), pp. 630-631. On this point Stevens says: "the commonly accepted theory of quantity discounts is that lower prices on larger purchases are justified by reduced costs obtained by the seller through producing, selling, and handling larger quantities." W. H. S. Stevens, op. cit., p. 416.


3. As a full catalog of the benefits accruing from the large orders which, presumably, large scale retailers bestow,
What do the facts in this instance indicate? A comparison of the production costs on an All Weather Tread and an All State tire— the Goodyear and Sears Roebuck brands, respectively— does not indicate a lower cost for the latter. In fact, the differential that does exist is in favor of the Goodyear tire.¹ Table XXXIII gives this comparison in terms of a composite tire which constitutes a fair sample of the costs, it is believed, as revealed by the margin sheets submitted in the Federal Trade Commission v. Goodyear hearings.²

Footnotes continued:

Godfrey Lebhar's list is worth noting:

a. They reduce production costs.
b. They reduce selling costs.
c. They increase consumption.
d. They increase the manufacturers' profit.
e. They reduce the consumers' price.
f. By increasing consumption of the product, they not only increase employment in the plant that produces the item in question, but likewise increase the consumption of the raw material which enters into its manufacture and employment among those engaged in producing raw materials.
g. They tend to raise the general standard of living by making more things available to more people.


¹ This slight cost difference (24¢ per tire) is due perhaps to the more careful finishing and final inspection given All State tires and to a slightly higher overhead loading. Sears Roebuck protested its overhead prorations. See Report of M. W. Lade, as reported, India Rubber and Tire Review, February, 1934, p. 22.

² Margin sheets are cost sheets for individual tire sizes. Goodyear submitted them at the commission's request, but later claimed that they did not represent the true cost situation. They are approximately correct, however, since they were accumulated according to the accepted cost procedures employed in the industry and, seemingly, only embody such errors as arise from attempting to allocate costs to individual tire sizes. In other words, they represented average costs and not job or process cost accumulations. They were submitted for about 30 per cent to 40 per cent of all passenger car tire sales.
TABLE XXXIII

Manufacturing Cost of Goodyear All Weather Tread and Sears Roebuck All State Sample Tire Averaged for Years 1927, 1929, 1931, and 1933.1

<table>
<thead>
<tr>
<th>Items</th>
<th>Goodyear Tire (Dealer)</th>
<th>Sears Roebuck Tire</th>
<th>% Sears Roebuck to Goodyear Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Billing</td>
<td>$10.74</td>
<td>$6.53</td>
<td>61</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>5.47</td>
<td>5.71</td>
<td>104</td>
</tr>
<tr>
<td>Materials</td>
<td>4.35</td>
<td>4.42</td>
<td>101</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.41</td>
<td>.46</td>
<td>112</td>
</tr>
<tr>
<td>Overhead</td>
<td>.71</td>
<td>.83</td>
<td>117</td>
</tr>
</tbody>
</table>

From this exhibit, it can be definitely concluded that Sears Roebuck did not obtain any price discount or concession due to economics resulting in manufacturing costs. If such economies did occur, they were spread over the entire Goodyear product and accrued to dealers and the mail order house alike.

1. Data are taken from the margin sheets. Docket 2116, exhibits no. 67 and 617. See Appendix XI for data for four years. 1933 represents two quarters only. This sample tire represents a composite made up of three large selling tire sizes, namely, 4.75 x 19; 5.25 x 21; and 6.00 x 21. The first was standard equipment for Ford and Chevrolet in 1926 to 1930, the second for Buick, Studebaker, Nash, Dodge, etc. in 1926 to 1928 and the latter for larger cars about the same period. This composite tire enabled us to secure a representative tire for the entire period, which is difficult with individual sizes since they wax and wane over a period of three to four years. The composite figure is a simple and not a weighted average. It is believed that this sample represents a fair picture of the situation. The data for these four years are used in order to make them comparable with census data.
Whether the entire Goodyear product profited and the extent of the benefits that may have accrued can only be inferred from a series of rather lengthy analyses. In the first case a comparison of Goodyear costs with those of the industry at large (Table XXXIV) reveals that the company did enjoy a cost reduction far in excess of the industry in the period 1927 to 1931. Furthermore, the savings were primarily in direct labor and overhead, the very items which might be expected to/most affected by a large volume contract. During the years 1931 to 1933, however, the cost picture is reversed: the industry registered a 4.7 per cent greater cost decline than did Goodyear. Furthermore, both labor and overhead items were materially lower for the industry than for Goodyear. There is an indication here that the heavy decline registered in the Sears Roebuck business in 1931 to 1933 adversely affected Goodyear's cost position, although it should be remembered that Goodyear has consistently held to a high wage policy and also earned a higher profit return in 1933 than did the industry generally. Both of these factors would tend to make Goodyear's costs appear higher.

1. Goodyear is purported to pay the highest wages in the industry. Goodyear earned 5.5 per cent while Firestone earned but 4.3 per cent and Goodrich 2.9 per cent and the industry as a whole reported a deficit 74.7 per cent. The implication is that most of the fall in overhead registered by the industry represented profit and capital losses. Sears Roebuck's business declined 43 per cent in units from 1931 to 1933 in comparison with a decline of 11.5 per cent for total renewal business.

<table>
<thead>
<tr>
<th>Differences: 1927-1931</th>
<th>Differences: 1931-1933</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industry</td>
</tr>
<tr>
<td></td>
<td>Amount</td>
</tr>
<tr>
<td></td>
<td>1927</td>
</tr>
<tr>
<td>Factory Cost(^a)</td>
<td>$3.62</td>
</tr>
<tr>
<td>Materials</td>
<td>3.01</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.39</td>
</tr>
<tr>
<td>Overhead</td>
<td>.22</td>
</tr>
</tbody>
</table>

a. Represents factory costs for Goodyear but value of product for the industry. They are not identical but since the data are uniform throughout and an interest lies in the variations between points of time and not absolute differences, the differences involved can be disregarded.

A comparison of the sales-plant investment ratios of Goodyear to those of the three other large and six smaller tire companies gives further evidence supporting the hypothesis that the Sears-Roebuck volume favorable affected Goodyear.

1. The costs for the industry are taken from the Census of Manufactures, op. cit. The costs for Goodyear are taken from the Margin Sheets (Commission's exhibits nos. 67 and 617). The data used here are the composite tire discussed above, except the Goodyear the Sears Roebuck tires are averaged for the various periods. Appendix XI.
costs during the early years of the contract and adversely affected them later.

TABLE XXXV

A Comparison of the Ratios of Sales-to-Plant Investment of Goodyear and Certain Other Tire Companies. 1925-1933.¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Goodyear</th>
<th>Index</th>
<th>Three large Companies²</th>
<th>Index</th>
<th>Six Other Companies³</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>2.56</td>
<td>86</td>
<td>4.57</td>
<td>142</td>
<td>5.96</td>
<td>122</td>
</tr>
<tr>
<td>1926</td>
<td>2.77</td>
<td>93</td>
<td>4.60</td>
<td>143</td>
<td>6.09</td>
<td>125</td>
</tr>
<tr>
<td>1927</td>
<td>2.63</td>
<td>89</td>
<td>3.96</td>
<td>123</td>
<td>5.95</td>
<td>122</td>
</tr>
<tr>
<td>1928</td>
<td>2.97</td>
<td>100</td>
<td>3.21</td>
<td>100</td>
<td>4.87</td>
<td>100</td>
</tr>
<tr>
<td>1929</td>
<td>2.51</td>
<td>85</td>
<td>2.46</td>
<td>77</td>
<td>4.12</td>
<td>85</td>
</tr>
<tr>
<td>1930</td>
<td>2.00</td>
<td>67</td>
<td>2.11</td>
<td>66</td>
<td>3.49</td>
<td>72</td>
</tr>
<tr>
<td>1931</td>
<td>1.67</td>
<td>56</td>
<td>1.75</td>
<td>55</td>
<td>2.78</td>
<td>57</td>
</tr>
<tr>
<td>1932</td>
<td>1.23</td>
<td>41</td>
<td>1.46</td>
<td>45</td>
<td>2.39</td>
<td>49</td>
</tr>
<tr>
<td>1933</td>
<td>1.32</td>
<td>44</td>
<td>1.53</td>
<td>48</td>
<td>2.81</td>
<td>58</td>
</tr>
</tbody>
</table>

a. Includes Firestone, Goodrich and Fisk until 1930 when Fisk ceased reporting, thereafter only Firestone and Goodrich were used. United States Rubber had been undergoing such drastic physical reorganization that it was omitted.

b. The smaller companies include General, Lee, Gates, Mohawk, Dayton, and Seiberling.

Goodyear, apparently, ran counter to the industry by increasing its sales-plant investment ratio during the years 1925 to 1928. After 1925, the company follows the industry toward a lower and lower ratio of sales-to-plant investment, indicating that whatever margin of effective plant utilization

¹ Based upon the annual statements of the companies and upon the reports found in Moody's Industrials.
that company enjoyed over its competitors prior to 1928, it subsequently lost this advantage, for by 1933 the ratio had declined to 44.5 per cent of the 1928 figure while the large companies had declined to only 47.2 and the six other companies to 57.7 per cent.

During the years 1926 to 1929, Goodyear's sales, primarily due to the Sears Roebuck contribution, increased rapidly—much faster than the industry at large. With the year 1929, however, Goodyear's unit tire sales began to decline although its percentage of sales to the industry increased until 1930. Yet at this time the company had a larger production

1. The percentages of Goodyear and Sears Roebuck's renewal sales to those of the industry are shown below for the years 1926-1933.

<table>
<thead>
<tr>
<th>Year</th>
<th>Goodyear %</th>
<th>Sears Roebuck %</th>
<th>Goodyear &amp; Sears %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>13.0</td>
<td>2.7</td>
<td>15.7*</td>
</tr>
<tr>
<td>1927</td>
<td>13.3</td>
<td>3.8</td>
<td>17.1</td>
</tr>
<tr>
<td>1928</td>
<td>15.2</td>
<td>6.4</td>
<td>21.6</td>
</tr>
<tr>
<td>1929</td>
<td>17.6</td>
<td>9.5</td>
<td>27.1</td>
</tr>
<tr>
<td>1930</td>
<td>20.3</td>
<td>9.0</td>
<td>29.3</td>
</tr>
<tr>
<td>1931</td>
<td>19.5</td>
<td>8.5</td>
<td>28.0</td>
</tr>
<tr>
<td>1932</td>
<td>19.5</td>
<td>7.6</td>
<td>27.1</td>
</tr>
<tr>
<td>1933</td>
<td>15.6</td>
<td>5.4</td>
<td>21.0</td>
</tr>
</tbody>
</table>

* Estimated
capacity available than it ever had due to the opening of the Gadsden plant in 1929.¹

These facts would indicate that the Sears Roebuck business was, at least, one of the primary factors responsible for Goodyear's favorable cost showing during the years 1926 to 1928 or 1929. In the subsequent period Sears Roebuck because of its rapidly declining volume appears to have been partially responsible for Goodyear's unfavorable cost position. Indirectly Sears Roebuck seems to warrant additional responsibility since they practically dictated the erection of the Goodyear Gadsden plant in order to secure a source of supply convenient to their southern market.²

But there are other production aspects of these contracts to be considered. The Goodyear's average monthly production for Sears Roebuck ranged from a low of 100,000 to a high of 340,000 and averaged approximately 208,000 tire units.³ Such a volume, practically 18 per cent of Goodyear's annual

¹. The Gadsden plant was opened in 1929 with a daily capacity of 5,000 casings.
². This plant, costing $5,181,291, cost only two-thirds as much as did the cotton mills which Goodyear purchased at about the same time. Sears Roebuck manifested no interest in this latter purchase so far as can be determined.
³. Goodyear did not expand proportionally with the Firestone Tire and Rubber Company although its expansion expenditure was far more. From 1925 to 1930, inclusive, Goodyear increased its plant investment $58,000,000 or 132 per cent while Firestone increased its investment $37,000,000 or 160 per cent.
³. This data is taken from the Federal Trade Commission Docket 2116, Commission's exhibit no. 255.
volume, would afford, one might suppose, a substantial reserve which would permit Goodyear to plan more effectively its factory schedules with the aim of leveling off the seasonal peaks and valleys which normally characterize the industry.¹ Any such stabilizing effect would be of great value to the company because of the production economies and decreased risks resulting therefrom, and, in addition, would benefit labor by providing more steady employment.

Unfortunately, however, the facts not only shatter this supposition, but prove exactly the contrary, for the mail order production, in the main, accentuated the peaks and further depressed the valleys, thus making for greater irregularity in production. The situation is depicted in the chart on the following page. The monthly production figures are expressed in each case in terms of the annual monthly average.

This failure of the Sears Roebuck production to level out the production peaks and valleys can be accounted for on the following grounds. First, Sears Roebuck draws its business from the same general market as do Goodyear dealers and as such it was subject to the same irregularities and uncertainties. Second, Sears Roebuck does not carry the inventory burden to the same extent as do the dealers. Through spring datings and open book credits the tire manufacturer has

¹ See Boris Stein, op. cit., for an excellent discussion of the seasonal nature of the industry.
PRODUCTION OF SEARS-ROEBUCK T
AS COMPARED WITH GOODYEAR AND OTH

Source: Federal Trade Commission — Exhibit 255
Docket 2116
induced the dealers to carry large tire stocks through the winter and spring months in anticipation of the spring business.\textsuperscript{1} This practice permits the manufacturer to produce to signed orders through the period December to March when otherwise his production would be low. The large marketer, if Sears Roebuck be a typical example, renders the manufacturer no such service. Third, the shipping orders of the large buyer call for immediate attention, regardless of the manufacturer's schedules or convenience.\textsuperscript{2}

Finally, the tangible and intangible risks connected with the business need examination. The pressure brought upon Goodyear to induce them to build a southern plant has already been noted. In addition, Sears Roebuck demanded a $1,250,000 bonus for the 1931 contract which sum might be regarded as further decreasing Sears Roebuck purchasing costs for which no corresponding benefits—that is, over the former

\textsuperscript{1} After spring dating orders are taken, the manufacturer has the right to ship the tires to the dealers. Full payment is not made on these tires, whether shipped in January, February, or March, until about May 15. See page 253.

\textsuperscript{2} Goodyear, under the contract, is pledged to keep an inventory equivalent to Sears Roebuck requirements for a 30 day period. Sears Roebuck then maintains a dispatcher at each of the three Goodyear plants and sends tires to the various stores as requisitions are sent in. This has enabled Sears Roebuck to make very high inventory turnovers. See letter from J. H. Netrich to H. H. Creske, Docket 2116, exhibit no. 253.
contracts—were bestowed. These and other demands show some of the inherent risks involved in these large accounts and the burdens that may be imposed upon the manufacturer's business by them.

In concluding this section then, we submit that in so far as the Sears Roebuck case is concerned:

1. Due to the volume contributed by this account when it was expanding its sales volume, it tended to reduce production costs by making for a more effective utilization of labor and a lower per unit overhead.

2. This account, however, in a declining market, seemed to prove a liability rather than an asset because its volume fell off disproportionately and its demands upon the manufacturer for additional service, lower costs, or special price concessions increased.

3. The regularizing benefits flowing from these contracts are extremely doubtful; in fact, they appear rather as detriments.

4. All in all, it is doubtful if the Sears Roebuck contract contributed any manufacturing economies from which the entire trade benefited, for whatever was gained in the prosperous years seemed more than offset by the loss of business suffered in depressed years and the unreasonable demands made upon the producer.

---

1. General R. E. Wood, President of Sears Roebuck and Company, testified: "I knew...I could get lower costs than I was getting in the contract—it stood......, and for that reason he (P. W. Litchfield) would either have to agree to this reduction with stock (Sears received bonus of 50,000 shares of Goodyear stock) or have me throw it open." Docket 2116, November 28, 1934. The contract did run for a longer term.

2. The second contract was not cancellable before December, 1931. It will be noticed that Sears Roebuck gave notice at the earliest possible moment under the contract.
Marketing Costs

What has happened to marketing costs in the industry during this thirteen year period? How have they responded to the decreased demand for renewal tires, to the drop in the prices of tires and to the changes in retail distribution?

Marketing costs, as used here, embrace all costs adhering to the product beyond the factory door. In this broad sense, these costs include the entire general administration charge, interest on bonds and miscellaneous financial charges, as well as profit realized by the manufacturer, since the accounting method used by the industry does not pro-rate these items to factory cost and available materials are not sufficiently detailed to permit these adjustments to be made.

No reliable data on the total cost of marketing tires for the period under review are available so estimates only can be given. These estimates have been derived by taking the factory value of tires as determined from census data, with one exception, and deducting these figures from a series of retail prices. Obviously there are serious weaknesses in the procedure. In the first instance, the value of the product as derived from the census contains certain general administrative expenses and a profit item, and to that extent deviates from the true factory cost. For the year 1931 in particular this

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1. This broad definition is keeping with the authorities. See F. E. Clark, op. cit., p. 574.
situation was so great that the census figure was made unsuit-
able for our purpose. The unit value figure for that year was
given as $13.49. But this average included a large volume of
original equipment sold at a low price--much below that
received from the trade. The value of the tire sold to the
trade, the Bureau of Labor Statistics determined, was actually
about 35 per cent higher than this. Consequently, a figure
based upon the Bureau of Labor Statistics index is employed
for the year 1921.\(^1\) Secondly, the retail selling prices
utilized are not accurate.\(^2\) They have been compiled thought-
fully and carefully but they are only the "best estimates" of
the prices at which tires were sold rather than actual selling
prices.

\(^1\) See Rubber Industry Letter no. 6, United States
Bureau of Foreign and Domestic Commerce, Rubber Section,
Special Circular no. 3481, 1933, p. 4.

The Bureau of Labor Statistics index closely
parallels the Rubbers Manufacturers Association wholesale
tire price index, which indicates its general accuracy.

\(^2\) Mr. H. H. Harriman of the Akron Beacon Journal,
with the assistance of the Akron tire companies, compiled this
series of retail tire prices.
TABLE XXXVI

Fluctuation in Retail Prices, Marketing and Factory Costs of Tires and Analysis of Variations for Selected Periods.1

<table>
<thead>
<tr>
<th>Item</th>
<th>1921</th>
<th>1927</th>
<th>Decline for Price Reduction</th>
<th>1931</th>
<th>Decline for Price Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Sales Price</td>
<td>$38.40</td>
<td>$21.50</td>
<td>44.0</td>
<td>$12.75</td>
<td>40.7</td>
</tr>
<tr>
<td>Marketing Cost</td>
<td>15.90</td>
<td>11.50</td>
<td>28.0</td>
<td>6.37</td>
<td>44.5</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>22.50</td>
<td>10.00</td>
<td>55.0</td>
<td>6.38</td>
<td>36.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>1933</th>
<th>Decline for Price Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Sales Price</td>
<td>$10.50</td>
<td>17.6</td>
</tr>
<tr>
<td>Marketing Cost</td>
<td>5.63</td>
<td>11.6</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>4.87</td>
<td>23.6</td>
</tr>
</tbody>
</table>

1. Retail prices are those of H. H. Harriman, Akron Beacon Journal. Factory costs were derived from the Census of Manufactures except as noted and equal the per unit value of tire casings. From 1928 onward, it was possible to construct a similar table using the Goodyear Average Retail Prices and the cost of a 4.75 x 19 tire, the selling price of which almost exactly parallels this average price. The results obtained are quite comparable.

2. Had the census figure of $13.49 been used for factory costs at this point the marketing cost would have become $24.91—an amount entirely too high. Furthermore, the resulting percentage declines—54.9 for marketing and 26.0 for factory costs would hardly have seemed logical during a period when technological changes were proceeding apace and marketing facilities and efforts were being extended.
These data (Table XXVI) indicate that during the period 1921 to 1927 factory costs declined further than did marketing costs and were responsible for about 75 per cent of the fall registered by tire prices. Expressed in another way, factory costs declined from 58.6 per cent of the retail sales prices in 1921 to 46.5 per cent in 1927, while marketing costs increased from 41.4 per cent to 53.5 per cent. During the years 1927 to 1931 neither marketing nor manufacturing costs were as flexible as during the previous period. Marketing costs declined slightly more than did factory costs and were responsible for about 60 per cent of the drop in tire prices. Expressed as a percentage of the sale price, each factor represented just 50 per cent. In the last period, 1931 to 1933 factory costs were again particularly active. They declined 23.6 per cent as compared with declines of 11.6 per cent for marketing costs and 17.6 per cent for tire prices. Factory costs were thus responsible for approximately 67 per cent of the drop in tire prices. As a result, in 1933 marketing costs amounted to 53.6 per cent and factory costs to 46.4 per cent of the retail sales price of tires.

Over the entire period, 1921 to 1933, retail tire prices appear to have declined 72.5 per cent, marketing costs approximately 54.6 per cent and manufacturing costs 70.4 per cent. Or to state the case in terms of the responsibility for the reduction, marketing costs contributed 26.8 per cent and manufacturing costs contributed 45.7 per cent of the total
price decline. As a percentage of the sales price marketing costs increased from 41.4 per cent to 53.5 per cent in 1927 and to 53.6 per cent in 1933.

In this overview, it will be noted also that the period 1927 to 1931 witnessed a heavy price decline, 40.7 per cent, and the greatest fall in marketing costs. Factory costs, in the meantime, were only moderately active. These facts suggest that the incoming of the large scale marketers and the competition engendered thereby may have been primarily responsible. More definite information upon this point will be sought in the subsequent pages as wholesale and retail costs are analyzed.

In order to give a more detailed picture of the trend of marketing costs, wholesaling and retailing costs will be considered in the two succeeding sections. There is a paucity of distribution cost data on this industry, but sufficient scattered data have been assembled to present a fairly representative picture of the industry, it is believed.
Wholesale Costs

Since the branch house is the major wholesale distribution channel for tires, branch house distribution costs will be considered first.

There is no information available which would indicate the trend of branch house distribution costs for the years 1921 to 1926. The opinion is ventured, however, that they decreased at about the same rate as did total marketing costs. The volume of sales passing through the branch houses was increasing, the market was becoming more dense rather than expanding in extent, and demand for tires was growing at such a rate that production facilities were strained to keep abreast of it.

Table XXXVII represents the ratios of branch house selling and operating expenses to sales in the tire industry for the years 1926 to 1935. The 1929 and 1933 figures were derived from census data while those for remaining years were estimated from rather complete information on two large companies and fragmentary reports on a third. Although the annual estimates may not be absolutely accurate the general trend portrayed cannot be questioned.

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1. Renewal sales increased from 28,500,000 units in 1922 to 40,100,000 in 1926. The bulk of these sales cleared through the branches.
2. See page 93
TABLE XXXVII

Approximate Ratios of Branch House Expenses to Sales for the Tire Industry for the Years 1926 to 1935.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratios of Expenses to Sales</th>
<th>Year</th>
<th>Ratio of Expenses to Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>10.2</td>
<td>1931</td>
<td>14.7</td>
</tr>
<tr>
<td>1927</td>
<td>11.7</td>
<td>1932</td>
<td>15.3</td>
</tr>
<tr>
<td>1928</td>
<td>12.4</td>
<td>1933</td>
<td>13.2b</td>
</tr>
<tr>
<td>1929</td>
<td>13.6a</td>
<td>1934</td>
<td>12.8</td>
</tr>
<tr>
<td>1930</td>
<td>14.3</td>
<td>1935</td>
<td>12.4</td>
</tr>
</tbody>
</table>


The trend of branch house costs, when expressed as a ratio to sales, was definitely and gradually upward from 1926 to a peak in the year 1932. During the eight years the expense-to-sales ratio increased approximately 5.2 per cent or over 50 per cent in terms of the base year. In spite of this tremendous percentage increase branch house costs in dollar terms actually decreased from about $1.30 per unit to 49.97 due to the rapid fall in the price of tires.¹ The reader should be reminded that during these years the renewal tire market declined almost 20 per cent, tire prices dropped at

¹. This estimate is based upon the wholesale price of the average Goodyear tire, which was found by dividing actual tire casing sales value by casing units sold. Docket 2115, Respondent's exhibit no. 22080.
wholesale about 50 per cent and in addition, some 4,000,000
tires, which formerly passed through the branches, were
shipped directly from the factory.¹

Beginning in 1933 branch house costs began to move
definitely downward. As tire prices have moved upward only
5 per cent in the meantime, this decline represents a sub-
stantial decrease in both percentage and value terms. These
reductions were brought about largely, no doubt, by tire
companies curtailing their branch operations, integrating
their wholesaling organizations, cutting expenses and sub-
stituting company store-and-dealer-distributors to handle the
high cost business. The firming of business conditions also
played a part, although no increase in renewal sales resulted
by stabilizing the market.

A comparison of branch house costs for tires
during the years 1929 and 1933 with those of all industry
reveals that the costs in the tire field declined slightly
while branch operating costs for all industry during this
period increased from 9.8 per cent to 12.5 per cent of sales.²
It is only fair to state that the predominance of branch houses
in the heavy goods industries, which were unduly depressed
during the recession, may have exaggerated the latter figures.

¹ This figure represents only the increases in
mail order house sales, those of the Atlas corporation, and
a few other miscellaneous items. The sales to the other oil
companies still clear through the branch houses.
² Census of American Business, op. cit., Table I,
However, industry in general suffered no such general market shrinkage or disturbance as occurred in the tire field.

In Table XXXVIII the detailed distribution expenses, administrative expenses and profit realizations of the Goodyear Tire and Rubber Company are given both in percentages and in dollars per tire for the years 1926 to 1933, inclusive. These data are valuable for a comparison with those of Table XXXVII and also because they present a cost picture that in its general aspects is believed to be quite typical of the industry, although the cost items may vary from the industry’s average considerably.

The trend of the distribution costs of this company are very similar to those for the entire tire industry. The company’s costs increased much more rapidly from 1926 to 1932—from 15.9 per cent to 43.54 per cent. The costs expressed in per tire terms remained almost constant. Meanwhile, however, this company’s wholesale tire price had fallen more than 57 per cent and, consequently, wholesaling margins had narrowed from $5.83 per tire in 1926 to about $1.82 in 1933. As a result, the company’s profits suffered severely. It will be noticed that the ratio of profit realization declined from 11.4 per cent in 1926 and a high of 17.99 per cent in 1927 to slight losses in 1932 and 1933. In the year 1933 distribution costs began to move downward and this movement has continued since

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1. Factory costs were estimated from the margin sheets. Federal Trade Commission Docket 2116, exhibits nos. 67 and 617.
**TABLE XXXVIII**

Distribution and Administration Expenses and Profit Realizations of the Goodyear Tire and Rubber Company Expressed as Percentages of Net Sales and Dollars per Tire for the Years 1926-1933, Inclusive.

<table>
<thead>
<tr>
<th>Items</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Amount</td>
<td>% Amount</td>
<td>% Amount</td>
<td>% Amount</td>
</tr>
<tr>
<td>Average Tire Price a</td>
<td>12.78</td>
<td>10.07</td>
<td>9.82</td>
<td>9.67</td>
</tr>
<tr>
<td>Discounts &amp; b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowances</td>
<td>5.69</td>
<td>.73</td>
<td>.76</td>
<td>8.85</td>
</tr>
<tr>
<td>Net Tire Price</td>
<td>100.00</td>
<td>12.05</td>
<td>100.0</td>
<td>9.51</td>
</tr>
<tr>
<td>Freight</td>
<td>3.34</td>
<td>.47</td>
<td>.32</td>
<td>3.97</td>
</tr>
<tr>
<td>Warehouse &amp; Shipping</td>
<td>3.44</td>
<td>.42</td>
<td>.27</td>
<td>3.42</td>
</tr>
<tr>
<td>Selling and Advertising</td>
<td>10.83</td>
<td>1.30</td>
<td>12.73</td>
<td>1.17</td>
</tr>
<tr>
<td>Home Office</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling</td>
<td>.91</td>
<td>.11</td>
<td>.08</td>
<td>1.24</td>
</tr>
<tr>
<td>Administrative</td>
<td>1.27</td>
<td>.15</td>
<td>.15</td>
<td>1.33</td>
</tr>
<tr>
<td>Total Distribution</td>
<td>15.94</td>
<td>1.92</td>
<td>17.70</td>
<td>1.64</td>
</tr>
<tr>
<td>Profit Realization</td>
<td>11.41</td>
<td>1.37</td>
<td>17.99</td>
<td>1.67</td>
</tr>
<tr>
<td>Total</td>
<td>27.35</td>
<td>3.29</td>
<td>35.69</td>
<td>3.31</td>
</tr>
</tbody>
</table>

**Notes:**

a. These prices were obtained by dividing total casing sales by total number of casings sold. Respondent's exhibit no. 2250, Docket 2116.

b. Expense percentages were derived from Respondent's exhibit no. 22088. These exhibits were set up using gross sales less return as 100 per cent so "Discounts and Allowances" were deducted to arrive at "Net Sales" and the expense percentages were adjusted accordingly.
<table>
<thead>
<tr>
<th></th>
<th>1929 %</th>
<th>1930 %</th>
<th>1931 %</th>
<th>1932 %</th>
<th>1933 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>$9.04</td>
<td>$7.90</td>
<td>$7.22</td>
<td>$6.28</td>
<td>$5.90</td>
</tr>
<tr>
<td>11.00</td>
<td>.99</td>
<td>12.09</td>
<td>.96</td>
<td>11.63</td>
<td>.84</td>
</tr>
<tr>
<td>100.0</td>
<td>8.05</td>
<td>100.0</td>
<td>6.94</td>
<td>100.0</td>
<td>6.38</td>
</tr>
<tr>
<td>4.58</td>
<td>.37</td>
<td>5.27</td>
<td>.36</td>
<td>5.20</td>
<td>.33</td>
</tr>
<tr>
<td>3.80</td>
<td>.31</td>
<td>4.40</td>
<td>.30</td>
<td>4.35</td>
<td>.28</td>
</tr>
<tr>
<td>.76</td>
<td>.06</td>
<td>.87</td>
<td>.06</td>
<td>.85</td>
<td>.05</td>
</tr>
<tr>
<td>15.44</td>
<td>1.27</td>
<td>17.60</td>
<td>1.22</td>
<td>21.63</td>
<td>1.39</td>
</tr>
<tr>
<td>1.64</td>
<td>.15</td>
<td>1.66</td>
<td>.12</td>
<td>2.44</td>
<td>.16</td>
</tr>
<tr>
<td>8.69</td>
<td>.72</td>
<td>9.66</td>
<td>.67</td>
<td>11.63</td>
<td>.74</td>
</tr>
<tr>
<td>5.11</td>
<td>.42</td>
<td>6.28</td>
<td>.43</td>
<td>7.56</td>
<td>.49</td>
</tr>
<tr>
<td>1.38</td>
<td>.11</td>
<td>1.58</td>
<td>.11</td>
<td>1.85</td>
<td>.12</td>
</tr>
<tr>
<td>21.58</td>
<td>1.75</td>
<td>24.45</td>
<td>1.69</td>
<td>28.68</td>
<td>1.84</td>
</tr>
<tr>
<td>13.50</td>
<td>1.11</td>
<td>8.85</td>
<td>.61</td>
<td>8.53</td>
<td>.54</td>
</tr>
<tr>
<td>34.88</td>
<td>2.86</td>
<td>33.30</td>
<td>2.30</td>
<td>37.21</td>
<td>2.58</td>
</tr>
</tbody>
</table>
that time, although the data are not available.

An examination of the relative controllability of the various elements of distribution costs is also possible from these data. In the first case, "Discounts and Allowances," which is of interest because it reflects to a considerable degree the competitive state of the market, increased about 100 per cent during the period. This item rose very high during the years 1930, 1931, and 1933 when price cutting was particularly current. The high "Discount and Allowance" figures indicate that the manufacturer had to relieve the dealers of a large share of the cost of this market strife.

The next group, "Physical Handling," includes the items of Freight and Warehousing and Shipping. Together these costs decreased from 47 cents per tire in 1926 to 30 cents in 1933, although their percentage to sales increased from 3.84 to 5.74 or about 50 per cent. These costs are closely related to the quantity of merchandise handled and yet, in this case, they have been more nearly controllable than any other item. The use of trucks for tire hauling, direct factory shipments, field warehousing, etc. have no doubt made possible this excellent record.

"Selling and Advertising" costs embrace Home Office Selling, which includes sales administration, planning and research; Field Selling and Branch Operations and Advertising.

1. Confidential source within the company.
In value terms these items have increased only about 18 per cent, but their ratios to net sales have increased from 10.83 per cent to 29.69 per cent or almost threefold! These expenses appear individually and collectively as fixed and non-controllable. As a matter of fact, as sales volume and tire prices declined, the competitive conditions became keener and added selling and advertising effort became necessary for the company to hold its market position. Unquestionably the rapid intrusion of the mail order houses, chains and oil companies and the devastating price policies of the former were to no small degree responsible for the market situation. This point will be further discussed shortly.

Administrative expenses have varied somewhat from year to year, but they have remained at about the same level, 11 to 15 per cent per tire throughout. Their ratio to sales has practically doubled, however.

A comparison of Goodyear's branch costs with those of the entire industry is shown in Chart X. Goodyear's branch house costs were substantially below those of the industry until 1931, when they shot skyward and reached a peak considerably above the industry's high of 15.3 per cent. Since 1932, while Goodyear costs have declined, they have fallen less rapidly than have the costs of the industry. This chart, when considered in connection with the incomplete cost data which the writer has on another large tire company suggests that the large tire companies had lower branch house selling
Chart XI.

Goodyear Branch-House Operating Expense
Compared to That of the Industry, 1926-1935.
costs than did the entire industry during the boom years, but during the depression period their costs rose to much higher levels than did those of their smaller competitors. Moreover, this hypothesis rests on sound reasoning. During the prosperous years these large companies, while operating at near capacity, were probably able to produce tires more cheaply. The market was responsive and branded tires were moving well. But with the depression the picture changed. The large producers suffered from high factory overheads, material and labor costs. Consequently, they found difficulty in competing and their sales volumes were curtailed. After 1933 with materials moving upward again and higher priced tires in greater demand, the larger companies have found themselves more favorably situated. Labor costs still hamper them, however. Also, the large companies have had time to put their wholesaling organizations into better order and to effect some needed cost reductions. Goodyear seems to be lagging behind the others in this regard for some unknown reason.

Finally, the magnitude of the total distribution cost figures warrants consideration. While Goodyear's figures are not a fair average, they do portray, it is believed, the general status of the distribution cost problem that faces most

1. The large companies carry a four to five months supply of crude rubber while two to three months supply is carried by the smaller companies. On a rising rubber market the large companies benefit but on a declining market they suffer. Crude rubber prices fell very rapidly from 1929 to mid-year 1932. Also, as pointed out above, their wage rates were higher and with declining material costs, labor costs became particularly burdensome.
of the other large companies at least.\(^1\)

In the following table the distribution costs of Goodyear for the year 1931 are compared to those of ten companies in the automotive field for the same year. Two of these companies sold automobiles while eight sold automobile accessories. According to this comparison, tire distribution costs were considerably higher—18 per cent—than those for the automotive industry at large. However, of the nineteen industries surveyed ten had costs that exceeded those of the automotive industry, but only seven industries exceeded the cost figures given for Goodyear.\(^2\)

**TABLE XXXIX**

Comparison of Distribution Costs of The Goodyear Tire and Rubber Company with Those of the Automobile Industry, 1931.\(^3\)

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage to Net Sales</th>
<th>Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Automotive Industry</td>
<td></td>
</tr>
<tr>
<td>Direct Selling</td>
<td>12.85%</td>
<td>14.07%*</td>
</tr>
<tr>
<td>Advertising and Sales Promotion</td>
<td>3.99</td>
<td>7.56</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.37</td>
<td>4.35</td>
</tr>
<tr>
<td>Warehousing</td>
<td>.68</td>
<td>.85</td>
</tr>
<tr>
<td>Credit and Bad Debts</td>
<td>1.60*</td>
<td>--</td>
</tr>
<tr>
<td>General Administration</td>
<td>1.52</td>
<td>1.85</td>
</tr>
<tr>
<td>Other</td>
<td>.48</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23.99%</strong></td>
<td><strong>28.68%</strong></td>
</tr>
</tbody>
</table>

* Goodyear includes credit and collections as a part of field Selling and Operating Costs.

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1. The distribution costs of Goodrich likewise approximated 45 per cent in 1932 and 1933. Confidential source.
2. These seven were Confectionery and Bottled Beverages, Drugs and Toilet Articles, Furniture, Heating Equipment, Office Equipment, Paints and Varnishes, and Petroleum Products.
3. An analysis of the Distribution Costs of 312 manufacturers. 1933. Association of National Advertisers, Inc. According to this study, the total cost for automotive companies was 24.68 per cent. This included a financial cost of 1.29 per cent which was excluded since Goodyear does not report this item.
During the depression, however, the high distribution costs of the tire industry were manifested in a more serious manner. These high costs burdened tire dealers with high tire purchase costs at a time when the market was particularly price conscious. Consequently, dealers found great difficulty in selling standard brand tires. The liberal use of discounts, price cuts, trade-in allowance and other promotion plans was the result. The manufacturer, as has been seen, had to help bear this burden in the form of greater discounts. Furthermore, the manufacturers' wholesaling costs appeared to be considerably higher than those of the large scale retailers and this greatly handicapped the dealers in their fight against these institutions. If Goodyear and Sears Roebuck be typical examples of the two groups, this was certainly true.

The following table which utilizes a most popular tire, the 4.75 x 19, gives a reasonably accurate picture of the comparative costs incurred by these two companies in performing the wholesale function. In both cases the tire is taken at the factory door and bears no profit charge at that point; consequently, both margins include profit. Discounts and allowances and freight have been excluded in both cases.

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1. In deriving the Sears Roebuck wholesale margin, the average realized mark-up, including a 6 per cent profit, on their retail operations was taken less all charges for headquarters' service.
TABLE XL

Comparison of the Wholesaling Margins of Sears Roebuck and Company with Those of the Goodyear Tire and Rubber Company, for the Equivalent of a 4.75 x 19 Tire for Selected Years.

<table>
<thead>
<tr>
<th></th>
<th>1929</th>
<th></th>
<th>1931</th>
<th></th>
<th>1933</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>% Wholesale Price</td>
<td>Amount</td>
<td>% Wholesale Price</td>
<td>Amount</td>
<td>% Wholesale Price</td>
</tr>
<tr>
<td>Goodyear</td>
<td>$2.97</td>
<td>39.7</td>
<td>$2.69</td>
<td>42.5</td>
<td>$2.53</td>
<td>47.3</td>
</tr>
<tr>
<td>Sears Roebuck</td>
<td>1.70</td>
<td>27.4</td>
<td>1.32</td>
<td>28.0</td>
<td>1.39</td>
<td>31.7</td>
</tr>
<tr>
<td>Difference</td>
<td>$1.27</td>
<td>12.3</td>
<td>$1.37</td>
<td>14.5</td>
<td>$1.14</td>
<td>15.6</td>
</tr>
</tbody>
</table>

This comparison indicates that while the trend of wholesaling costs, when expressed as a percentage to sales, has been definitely upward, Sears Roebuck has been able to wholesale at less than 60 per cent of the wholesaling cost of Goodyear. Or, to state it in another way, Sears Roebuck performs the wholesale function at a cost of about $1.20 per tire under the Goodyear cost. This $1.20 differential on a tire at wholesale increases, however, to about $1.60 when allowance is made for the 25 per cent mark-up in the sale price by the dealer. This latter figure represents about 15 per cent of the retail sales price of the tire, which constitutes a selling handicap that the dealer must overcome by more effective presentation of the standard brand tire, better store service or a greater personal interest in the customer.

1. Respondent's exhibit no. 17190, Docket 2116.
The other mail order house and the Atlas corporation may not perform the wholesaling function quite as economically as does Sears Roebuck and unquestionably they contribute a higher margin to the manufacturer in the first instance, but the indications are that their wholesale costs are fully 25 per cent under the large manufacturer's distributing costs. This would give their outlets a 11.5 per cent differential over the dealer's selling price without considering the other advantages which their outlets may enjoy.

The foregoing discussion has at several points touched the price relationship that exists between Goodyear and Sears Roebuck. This price relationship will be examined briefly at this point from two angles: (a) the basis of the price differential received by Sears Roebuck, (b) the pricing arrangement from the standpoint of managerial policy and cost allocations.

Previously it was shown that Sears Roebuck received none of the savings that may have been effected in Goodyear's production costs as a result of their volume purchases. The following brief analysis indicates the basis of Sears Roebuck's discounts, which were equivalent to about 35.0 per cent of the dealer's net price.1 It shows that practically the entire amount of the discount given Sears Roebuck represented (1) a

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1. These data are derived from the margin sheets, Docket 2116, exhibits nos. 67 and 617. They were based upon the costs and prices quoted on a composite tire embracing four sizes averaged for three alternate years—1929, 1931, and 1933.
shifting of the wholesaling function to that company and (2) a much lower rate of profit realization on the mail order business.

<table>
<thead>
<tr>
<th>Average net tire price to dealers</th>
<th>$8.06</th>
<th>To Sears $5.18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differences in net price paid by Sears Roebuck and dealers</td>
<td>2.85</td>
<td>100.0%</td>
</tr>
<tr>
<td>Difference in selling cost allocated</td>
<td>$1.53</td>
<td>53.5%</td>
</tr>
<tr>
<td>(Sears Roebuck v. dealer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advertising</td>
<td>$.65</td>
<td></td>
</tr>
<tr>
<td>Selling</td>
<td>.94</td>
<td></td>
</tr>
<tr>
<td>Difference in profit realization</td>
<td>$1.18</td>
<td>41.5%</td>
</tr>
<tr>
<td>Price variance accounted for</td>
<td></td>
<td>95.0%</td>
</tr>
</tbody>
</table>

These data raise a number of problems pertaining to company policy, the economics of overhead costs, price discrimination and social policy. We desire to consider only the question of company policy in the light of the facts analyzed above.

First, the shifting by manufacturers of the wholesaling function to large integrated retailers is a common occurrence today. However, from the manufacturer's point of view it raises a very serious problem. When the manufacturer shifts the function, he is unable to shift his distribution costs proportionately. J. M. Clark in his "Economics of Overhead Costs" states that these costs are to a considerable degree fixed costs and our analysis has found them so. 2 If

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1. These prices represent net billing prices less all discounts. Sears Roebuck received a discount of 5 per cent under the billing. The reasons for this need not concern us. The dealer's price was net after all discounts and allowances had been allowed. See Respondent's exhibit no. 16-0 4-1, Docket 2116.

this be the case, good managerial policy would dictate that any volume contract should bear a share of these expenses. Competitive factors at times may alter a firm's ability to pass on a share of these costs, but still the question is would not the manufacturer be better off without such a contract than with it. The rate of profit realization raises a second problem. Goodyear received a profit return of $1.53 per tire from dealers to cover all financial charges and dividend requirements and $.35 from Sears Roebuck. Over the eight year period, 1926 to 1933, they received a net profit of 11.9 per cent on dealer volume and of 4.74 per cent on Sears Roebuck volume. The difference in the rates is obvious but it should be recalled that the rate of dealers' profits is on a tire that includes only a small margin over production costs. Consequently, the actual dollar realization per tire is about four times as high in one case as in the other. Here again arises the problem of distribution costs. If they remain fixed, should not all sales make not only a contribution to cover these costs but return a margin of profit upon those costs as well?

Lest the reader secure the impression that the Sears Roebuck stores received the advantage of the price differential of $2.85 indicated it needs to be emphasized

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1. See Table XXVI. Sears Roebuck's return is given in the Commission's exhibit no. 672-B. Docket 2116.
that this was a gross price difference. Out of this had to come the Sears Roebuck's wholesaling cost which approximated a $1.60 per tire/leaving net differential of approximately $1.20 per tire.

Since the tire manufacturers' distribution costs are so high, the utilization of other types of wholesaling channels might serve to lower these costs somewhat. Two alternatives suggest themselves: independent wholesalers or cooperative buying associations.

The automotive equipment (including accessories and parts) wholesalers had a total expense ratio of 29.2 per cent of sales according to the Census of American Business.¹ This figure is approximately 6 per cent higher than the ratios prevailing in 1923 and 1924 as determined by the Harvard Bureau of Business Research.² The specialty tire wholesaler, according to the Census, had an operating expense of 18.3 per cent of sales.³ No doubt this latter middleman is a retailer such as has been described previously but whose wholesale exceeds that sold at retail. This middleman appears to have a great advantage over the more general line operator. But it is doubtful if either of these institutions could solve

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² Operating Expenses in the Wholesale Automotive Equipment Business in 1923 and 1924. Bulletins no. 42 and no. 51, (Cambridge: Bureau of Business Research, Harvard University, 1925)
the problem for the tire manufacturer since they could not relieve him of any wholesaling functions other than those performed by his branch house. Furthermore, the manufacturer's branches cost him less to operate than the margins he would have to allow wholesalers.

This cost analysis indicates, perhaps, why tires have not played so prominent a part in cooperative wholesaling ventures as have gasoline and other commodities. Tires are standardized, non-perishable and easy to handle, but they appear to present a rather difficult commodity from a sales standpoint. Furthermore, were these buying groups able to procure favorable buying arrangements, unless their wholesaling costs were very effective the net saving resulting would be, perhaps, not more than 10 per cent. This comparison assumes a tire of comparable quality in each instance. Unknown brands or private brands could be purchased at a larger differential but this fact would reduce the effective differential.


The fact that wholesalers' costs are higher than branch house costs does not indicate that the former are less efficient operators. Two things should be considered in this connection: First, the manufacturer's branches are on the average large volume establishments and the census data indicate that wholesaling establishments are definitely subject to the law of decreasing costs. (Note Census of American Business, Wholesale Distribution, Vol. I, pp. A55 and A56. Secondly, the wholesalers usually operate in "thin" markets while the branches are located in the dense markets.

2. Interviews with Professor R. M. Mikesell & the University of Indiana, Bloomington, Indiana, a close student of the farmers cooperate movement in Indiana, and with Frank Wilson, Manager, G. B. S. O., The B. F. Goodrich Company. Professor Mikesell stated that the Indiana Farm Bureau has experienced considerable trouble in selling tires.
by 10 to 15 per cent. The "Co-op" brand of the National Co-operatives, Inc. and the "ATA" brand of the American Tire Alliance, cases in point, sell comparable sizes some 15 per cent below the standard brands or at about the level of the large companies' second lines.

The writer does not expect the wholesale cooperative movement, as far as tires are concerned, to grow space for the following reasons in addition to those given above. First, dealers cannot combine in groups that give them the purchasing power to buy in large volume and to create a demand for their own brand and the discounts procurable on manufacturers' standard brands would not be nearly so attractive. In fact, as far as can be determined, the manufacturers offer no discount inducements to such organizations. Second, the association representing the retail trade is subsidized, it is rumored, by the Tire Manufacturers' Association, and, consequently, any cooperative action among retailers undoubtedly is promptly discouraged. At any rate, the National Tire and Battery Association instituted a group buying plan recently to assist independent tire and battery dealers to combat the chains.¹ This plan provided for the buying of all accessories "except tires and tubes."² Third, the most important tire retailers are already being supported by manufacturers with

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¹ See India Rubber and Tire Review, November, 1934, p. 15.
² Ibid.
exclusive distribution rights, distributorships and volume
discounts; therefore, the cooperative arrangement is apt
to appeal strongly to them. Fourth, the "cooperative spirit,"
no doubt, is very weak among tire dealers as a group.

As a result of this rather lengthy analysis,
several tentative conclusions regarding the wholesaling func-
tion and its cost, including manufacturers' and middlemen's
profits, can be made at this point.

1. Wholesale margins have narrowed considerably
since the year 1922. This narrowing did not
indicate a decrease in the costs of perform-
ing the wholesaling functions as such, but
rather a contraction in the per unit profit
realized by tire manufacturers. At least,
this has been the case during the past eight
years.

2. Wholesaling costs, in the accounting sense,
have not decreased on a per unit of product
nor as a percentage to sales. Such a decline
would be most unexpected in this case, for,
as has been mentioned, the renewal market
has declined and the growth of large buying
syndicates belonging to chains and mail order
houses have circuited around the branch house
large volumes of sales. In addition, the
market is more competitive and the retail
trade more disorganized. The effect, inevitably,
would be to increase wholesaling costs: First,
because the branch houses are rather specialized
and hence have little opportunity to build
volume in other lines to absorb part of the
burdensome overheads. Secondly, a large share
of the manufacturer's selling expenses is
relatively fixed and hence cannot be readily
adjusted to declining volume.

3. Manufacturers branch house costs rose rapidly
prior to 1932, but since that date have shown
material improvement. By overhauling their
wholesaling organization, curtailing expenses,
more effective sales planning and the extended
use of distributors, the large manufacturers
have improved their cost ratios greatly. There
are indications that the large tire manufacturers
had the lowest wholesaling costs during the 1920's
but during the recession their costs rose con-
siderably above those of the smaller manufacturers. During the years 1934 and 1935 their costs have declined greatly, due to better cost control and the better competitive position of these large companies.

4. The large integrated retailer has a much lower wholesaling margin, including profit, than does the manufacturer selling his product through his own branch house. In fact his cost appears to be about 60 per cent as high. Whether this saving is affected because of lower wholesaling costs as such or because a lower profit is exacted on the wholesale end is not clear. Since the integrated retailer is relieved of many of the expenses incurred by the wholesaling manufacturer, or wholesaler, such as maintaining a sales force, recruiting new dealers, incurring a credit and collection expense, carrying heavy inventories of varied stocks and the filling of small unprofitable orders, his actual wholesaling expenses should be materially lower. And no doubt they are.

5. The selling of special brands from the standpoint of wholesaling costs appears to be a most doubtful policy, since it reduces the volume of the manufacturers' brands to be sold and increases the marketing overhead to be borne. On the other hand, the competition engendered increases the ratio of selling and advertising costs to sales.

6. The high wholesaling margin required by the manufacturer to distribute tires seems to be one of the weakest links in the distribution chain, if not one of the weakest spots in the industry. The advertising, and selling costs alone represent about 20 to 25 per cent of sales which is double the 1926-1927 average. But when administrative expense and profit are included, the total cost amounts to 35 to 40 per cent of sales. The loading at this point handicaps the independent dealer so that he is placed at a competitive disadvantage regardless of his own operating efficiency.
Retail Costs and Margins

The data available on retail costs and margins is very limited and not entirely satisfactory. Harvard University made a study of automotive accessory and tire retailers' operating costs in 1923, but no such impartial study has since been made. The census figures on total operating expenses for 1929 and 1933 are the only other authentic data on the subject. By estimation, it is possible to fill in some of the gaps with reasonable accuracy. The data for tire dealers, the mail order department and the store division of a large mail order house, automobile accessory and tire chains and one company-owned store chain are presented in the following table.
<table>
<thead>
<tr>
<th>Year</th>
<th>Tire Divisiona</th>
<th>Company-ownedb</th>
<th>Dealers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Department Mail Order House</td>
<td>Stores</td>
<td>Stores</td>
</tr>
<tr>
<td>1923</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1928</td>
<td>12.8</td>
<td>12.7</td>
<td>-</td>
</tr>
<tr>
<td>1929</td>
<td>13.1</td>
<td>15.0</td>
<td>-</td>
</tr>
<tr>
<td>1930</td>
<td>16.4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1931</td>
<td>18.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1932</td>
<td>17.8</td>
<td>10.3</td>
<td>-</td>
</tr>
<tr>
<td>1933</td>
<td>19.0</td>
<td>23.6</td>
<td>30.1</td>
</tr>
</tbody>
</table>

c. Respondent's exhibit no. 16-0 A 2.
e. See Table XLII.
f. Census of American Business, op. cit., p. A 5. The adjusted figure has been used.

1. In 1934 and 1935 it is believed that these expense ratios declined considerably. Nothing is known of the mail order house situation. The chain stores declined to about 27.5 per cent, perhaps although one large chain to the writer's knowledge operates at an expense ratio of just over 25 per cent. The operating expenses of company-owned stores have declined to 29 to 30 per cent. Goodrich sets 29 per cent as the standard for these stores. (E. J. Brooks, The B. F. Goodrich Company, Address, University of Akron, March 12, 1936.) Likewise, expenses of dealers have declined, but it is difficult to state just how far. Dealers embrace stores of all types and they offer such a variety of services; their merchandise may cover but gas, oil, and tires, or include also a variety of accessories of every description. The average operating expense ratio for the country would be, possibly, about 32 per cent. The tire companies maintain that a 30 per cent margin is adequate while 28 per cent should be standard, since the independent can operate more cheaply than the company-owned store. (Confidential sources, representing two tire companies.) The cost of operations for super-service stations as given by the National Petroleum News is 28.23 per cent and the margin 29.99. Quoted by Merchants Service, National Cash Register Company, Dayton, Ohio, "Expenses," 1935, p. 32.
The increase in the operating expenses of every type of retail establishment portrayed, except the chains, is most noticeable. The operating expense of the mail order tire department of Sears Roebuck has increased about 50 per cent since 1925 while that of the tire division in their retail stores has almost doubled. In this latter instance, it will be recalled, that these stores originally gave no tire mounting service and the other store services were most limited. More recently this company has had to provide mounting service, parking facilities and operate more modern stores. These factors have been partially responsible for the tremendous increase in costs, although intensified competition and a lowered price differential between the All State tire and the standard brands also have played a part. Company-owned stores have increased their cost ratios 8.2 per cent, while the independent dealer's expense ratio has increased about 3.8 per cent since 1929 and 11.2 per cent since 1923. In other words, retail costs have increased space in every type of tire retailing institution. While retailing costs have been advancing generally, they have probably increased more rapidly in the field due to the following: 

1. The rapid decline in total renewal unit sales volume accompanied by the rapid decline in tire prices.

2. The rapid expansion of mail order house, chain store, company-owned store, and oil company sales further divided the business to be obtained by each retail outlet and increased the efforts and expenses necessary to procure that limited share.¹

3. The emphasis upon convenience in tire retailing unquestionably made for higher costs. Tire manufacturers were urging their dealers to re-locate in more convenient and prominent sites, and to build more elaborate stations. They were pointing the way with their own stations. Mail order houses and others were likewise putting their stores on busy streets, in most accessible locations and, frequently, providing parking space adjacent to them. This changed attitude toward tire store location greatly increased the rental cost of tire retailing.² In 1923, the common rental figure was 2.5 per cent of sales. Rentals were reported to be 5.0 per cent in 1931, but at present 3 per cent to 3 ½ per cent is the accepted figure.³

4. The increase in services given the motorist. These include such things as more courteous treatment, improved store appearance and layout, quick repairing, road repair service, longer credit or installment buying terms, etc et cetera.⁴

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¹ The dealers called to testify in the Federal Trade Commission v. Goodyear hearings invariably mentioned this point as, for example, T. Rowsum and H. A. Berndt, p. 3799 and p. 3381, respectively. Docket 2116.


³ Harvard Bureau of Business Research, op. cit., gives the figure 2.5 per cent. The recent figure is based upon data given by the National Tire Dealers Association.


Oil stations are noted for the services which they give motorists. Their places of business have been improved to provide the motorist with every possible service his car might need. Tire companies have made advances to dealers in many instances for new stores and equipment. In fact this practice placed many dealers under virtual control of the tire companies. (Confidential source.) Credit in the automobile
The evidence indicates, although accurate data are not available, that since 1933 costs in most types of retailing establishments have gone downward. Business conditions have improved, the tire market has been in less of a turmoil, and, more recently, concerted action has been taken to stabilize tire prices. These improved market conditions rather than increased operating efficiency have no doubt been largely responsible for the decrease, although the chastening influences of the depression should have had some effect upon operating costs.

The fact that retail tire selling costs have increased rapidly indicates nothing as to the absolute amount per tire taken by the retailer for his services. It was possible to derive figures for the years 1928, 1931, and 1933 by deducting the Goodyear dealers' billing price less all discounts from retail tire prices.¹ These retail prices were but estimates made by Goodyear and Sears Roebuck officials in connection with the Goodyear Hearing, but they check so accurately with Flanick's estimates of retail tire prices that they appear to be reasonably accurate.²

Footnotes Continued:

¹. These discounts averaged about 12 per cent.
See Docket 2116, Respondent's exhibit no. 16-0.
². Docket 2116, Respondent's exhibit no. 17188.
W. L. Flanick, Commercial Research, Goodyear Tire and Rubber Company, whose index of passenger car tires is,
TABLE XLII
Retail Selling Price and Dealers' Margins on a 4.75 x 19 or Equivalent Tire for Selected Years. 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Selling Price</th>
<th>Retail Margin</th>
<th>% to Selling Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>$13.50</td>
<td>4.10</td>
<td>30.2</td>
</tr>
<tr>
<td>1931</td>
<td>8.50</td>
<td>2.72</td>
<td>32.0</td>
</tr>
<tr>
<td>1933</td>
<td>8.02</td>
<td>2.67</td>
<td>33.3</td>
</tr>
</tbody>
</table>

These data indicate that the retail margin has declined since 1928 from $4.10 to $2.67 or about 35 per cent but tire prices have fallen so rapidly that the margin as a percentage of the retail selling price of tires has increased 3.1 per cent. The close agreement between the 1935 cost ratio and the census figure indicates that these estimates are reasonably valid.

The more significant aspect of Table XLII is the great variance that exists between the costs of the various types of retailers, although more recent data points to a material narrowing of these divergencies. These variances are most important from a competitive standpoint. The mail

Footnotes Continued:
the writer believes, the most reliable series that has yet been compiled of retail tire prices.
1. The 4.75 x 19 tire was not in use in 1928 but a popular tire for that year was taken and its price adjusted in accordance with the relationship that existed between that tire and a 4.75 x 19 during the year 1929.
order department of Sears Roebuck with an operating ratio of 19 per cent is the lowest of all the retail organizations represented. This operating expense figure is extremely low in comparison with that of all retail establishments as reported by the census.\(^1\) The accessory and tire divisions of the retail stores of Sears Roebuck had total expenses of about 5 per cent above those of the mail order department. This cost is far below that of the other retail institutions presented above, indicating that this company was a most efficient operator—at least in so far as tires were concerned. In fact, the company states that the "operating expenses of this division are the lowest for any divisions of Sears Roebuck and Company by far."\(^2\) The chain store came next in line with an operating ratio of 30.1 per cent. This figure was the average for all accessory, tire and battery chains. The expense figure for tire and battery chains was 34 per cent and for automobile accessory chains 28 per cent. As both types of chain stores handle tires, it would appear that the

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2. Letter of J. H. Westrich, op. cit. The retail stores of this company averaged, as nearly as can be determined, about 26 per cent in 1929, 28 per cent in 1930, 28 per cent in 1931 and 30.5 per cent in 1933. This data is taken from Respondent's exhibit for Identification, no. 17190, Docket 2116. As the company operates A, B, and C type stores, any average is but a close approximation.
accessory store has a material expense advantage. The company-owned store operated at an expense ratio of 31.8 per cent which was 1.7 per cent above the chains and 2.7 per cent below the independent retailer. The cost of operations seems reasonable in this case when the service and facilities provided are considered. Finally, the dealer has the highest operating costs of all. His costs are approximately 75 per cent above those of the mail order department and 50 per cent above those of the tire division of the mail order retail store.

From a competitive standpoint the position of the dealer is not favorable although the retail market is gradually approaching a state of equilibrium. The dealer is burdened with higher operating costs than are his rivals, particularly the mail order houses, and stores. In addition these latter procure their tires at a price about 15 to 20 per cent below the dealer's price; consequently, they can undersell him by a margin of 20 to 30 per cent.\(^1\) On one occasion Sears Roebuck sold tires at a 25 per cent discount and yet made a 37 per cent gross profit.\(^2\) The effective differential is not as wide as this since the differences in services between the mail order house store and the dealers is equivalent to a

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1. The net differential due to buying advantages and lower wholesaling costs amounted to about 16 per cent. (See p. 306) A lower store expense ratio further increased this.

2. Docket 2116, Respondent's exhibit no. 21822. The 37 per cent covered both the wholesale and retail margins.
price difference of 10 to 15 per cent. This leaves an effective price differential of perhaps 12 per cent in favor of the mail order house store. When these stores employ this price weapon, which they frequently do, the tire market experiences another of its characteristic price battles.¹

The chain store as compared to the dealer appears to have a favorable expense margin of 4 ½ per cent or, if the automobile accessory chain alone be considered, 6 ½ per cent. Due to the differences in services rendered and the consumer acceptance for these tires, these differentials do not appear to be particularly detrimental to the dealer. Furthermore, small automotive accessory or "automotive variety" stores are being started by dealers under the aegis of Goodrich, Gamble Skogmo, and others to compete for this business.

The oil chains, according to the census data, have total operating expenses of 27 per cent of sales.² This figure is lower than that indicated by Swensrud or the National Petroleum News.³ Regardless of the exact expense figure, oil

¹ The mail order houses, the writer believes, still have a sufficient price advantage to cause much disturbance in the tire field. They have exploited the cream of the tire market, so probably are less inclined to use this advantage. On the other hand, much pressure has been brought to restrain them from using this price differential. (Testimony of D. M. Nelson, November 27, Docket 2116. Quoted in the Tire Review, December, 1934, p. 18)
companies are so situated costwise that they are able to sell tires at less than their average operating cost and yet find them profitable.\(^1\) As far as can be determined, oil companies can sell tires at a margin of about 25 per cent. At any rate, this is the margin allowed Standard Oil licensed stations by the Atlas Corporation (1934).\(^2\) In the case of owned-stations, the Standard Oil companies allow the station but 10 per cent plus a 5 per cent bonus on volume up to $3,000 and 10 per cent bonus above this amount.\(^3\) This cost situation coupled with the preferred locations possessed by the oil chains makes them most formidable competitors.\(^4\) Their continued expansion in the field of tire selling evidences their strength.

The company-owned store, besides having a slight expense advantage over the independent, is able to capitalize upon the reputation and standing of the tire manufacturer. Furthermore, the control that the manufacturer is able to exercise over distribution and the tie-up that he can secure between local and national advertising makes the manufacturer's chain very difficult competition for the independent retailer to meet.\(^5\) These stores, in fact, have increased their position

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2. Confidential source.
3. Ibid.
4. The strength of this competition is indicated by the great increase that has occurred in tire sales by oil companies. The companies selling standard brands have increased their tire sales about 20 per cent during 1934 and 1935.
5. Some dealers have expressed themselves to the writer more vehemently against the competition of company-owned stores than against the other large scale competitors.
more rapidly than any other type of organization with the exception of the oil companies who sell standard brands.

To attempt to absolutely fix the dealer's position is impossible. His share of the renewal volume has declined steadily up to and including the year 1935 when his position declined another 5 to 7 per cent. Unquestionably dealers are being left the thinner markets as the preferred areas are further exploited by the large-scale retailers. Furthermore, independent stores are becoming on the average smaller and smaller. Efficient operators will be able to compete anywhere but the mass and file of dealers are doomed to serve the sub-margin and sparse markets from present indications. What effect chain store taxes may have is hard to determine; probably little more than to freeze the market at or near its present levels.

So much for the operating costs of retailers. But are these various types of retailers able to recover their operating costs from the sales of tires? The facts indicate that many of them do not. The discounts allowed retailers by one tire manufacturer are shown on the next page. These discounts are quite similar to those of most of the major companies since the dealer lists and bonus plans are all quite uniform.
<table>
<thead>
<tr>
<th>Year</th>
<th>Trade Discount</th>
<th>Cash Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dealer's Bonus</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>and Factory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freight Allowance</td>
</tr>
<tr>
<td>1928</td>
<td>20.00</td>
<td>6.04</td>
</tr>
<tr>
<td>1929</td>
<td>20.00</td>
<td>7.82</td>
</tr>
<tr>
<td>1930</td>
<td>21.25</td>
<td>7.06</td>
</tr>
<tr>
<td>1931</td>
<td>25.00</td>
<td>6.29</td>
</tr>
<tr>
<td>1932</td>
<td>26.00</td>
<td>5.14*</td>
</tr>
<tr>
<td>1933</td>
<td>25.00</td>
<td>7.04</td>
</tr>
</tbody>
</table>

* Adjusted by the writer on the basis of bonus sheets.

While these margins are inadequate to allow the average dealer a profit sufficient to cover his operating expenses, they have been reduced further all too frequently by vicious price cutting, two-for-one sales, free tube deals and trade-ins. The state to which prices declined during the years 1926 to 1933 is shown by the fact the Goodyear owned stores reported an average gross profit on sales of but 13.23 per cent. Their business was largely in the commercial field, which field was particularly subject to price cutting, but at least this figure is suggestive of the competitive state of the tire trade.

The low costs for the large mail order houses and for the chains no doubt were the primary cause of the large

1. Taken from dealer price lists.
2. Docket 2116, Respondent's exhibit no. 19088.
3. Respondent's Exhibit no. 16-0, Docket 2116.
declines registered by tire prices and marketing costs during
the period 1927 to 1931.1 The Atlas Corporation was an im-
portant factor in the market at the latter date, but it was
not an aggressive competitor since it did not engage in price
cutting nor aggressively promote tire sales.2 The competition
of these large marketers forced down marketing margins to the
extent that not only the retailers, but manufacturers as well,
felt the pressure and, since the latter could not reduce their
wholesaling expenses, their operating profits had to bear the
burden. The dealers were likewise called upon to make material
adjustments. Most of them could not adjust sufficiently to
subsist as specialty dealers; consequently, they either failed
or added various other lines of merchandise and became general
automotive accessory dealers or filling station operators. As
the market became more and more disorganized, tires became a
side line and often "football" merchandise in a multitude of
small retail establishments of all kinds and types. The dis-
tribution policy of the tire manufacturers was no doubt also
an important contributing factor to the situation.

1. See Table XXXII.
2. F. A. Seiberling testified to the effect that
the oil companies had not disturbed the market through price
competition. Docket 2116, February 9, 1934)
A. S. Swensrud stated that the oil companies
used tires purely for the purpose of effecting reductions in
overhead and as a result no expenditure was spent for pro-
moting their sale, except the barest minimum. The oil
companies relied upon their natural selling advantages, and
tire quality and price to effect sales. Cleveland Section,
American Marketing Society, 1932. (Not published.)
From this examination of retail costs it would appear that:

1. Retail selling costs in the tire field decreased in dollar terms but in percentage terms they increased rapidly until 1933 and since have decreased somewhat. The increase in the costs of tire retailing is no doubt due to the great decrease in tire unit volume, tire prices and to the addition of elaborate services in tire selling.

2. There exists a wide difference in costs between the mail order, mail order retail chain, other chain and tire dealers. The mail order houses and the oil companies particularly appear to be in a far superior cost position to the dealer. In fact, the dealers appear to be in a most precarious situation as a result.

3. The costs of the retail operations of the large scale marketers are increasing at a faster rate than are those of the independent retailers. This tendency toward the equalization of marketing advantages has been due to the increased competition resulting from the entrance of more and more of these large scale operators into tire merchandising. Furthermore, costs increase as these operators open additional stores and push their operations further afield. Lastly, competition has forced them to give more costly services. Dealer's costs, on the other hand, have shown greater rigidity because they were near the upper margin and further increases meant failure. Then, too, they were able to maintain their costs, no doubt, by adding new combinations of merchandise. This cost situation does not necessarily indicate that a new and more efficient type of independent merchant is entering the field.

4. Tire margins are inadequate to meet the costs of retailing of the typical dealer. This is primarily due to the competition of the low cost, large scale marketers, although the state of tire retailing and the tire manufacturers' distribution policies are contributing factors.
In conclusion, the cost of tires along with tire prices has naturally suffered a severe decline during the years 1922 to 1933. The greatest single factor contributing to this decline has been material costs although during the years 1931-1933 other costs, most likely profits, made the greater contribution. Goodyear costs, from 1927 to 1929, declined faster than did those of the industry. The Sears Roebuck contract, when that company was growing rapidly, undoubtedly was partially responsible for this record. During subsequent years, the decline in Sears Roebuck sales and their demands upon the producer more than offset their previous contributions. Nor did they serve to regularize Goodyear's production and thereby create production savings. Marketing costs in the broad sense have made only about one half the contribution to price declines as have factory costs, although from 1927 to 1931 their contribution exceeded those of the latter. While wholesaling margins declined generally throughout the period, most of this decline was in the profit realized by the manufacturer rather than in the expenses of wholesaling, for the latter remained stationary in per unit dollar terms and increased markedly as a percentage of sales. The costs of wholesaling for tire manufacturers operating large branch house systems, if Goodyear be typical, approximates 35 to 40 per cent of sales. This cost is about 60 per cent higher than for the large integrated marketers. Since the manufacturer's wholesale structures are rather inflexible and his distribution efforts are necessary to maintain market control,
these high wholesaling costs continue to burden the dealer in his struggle against the large scale retailers. Although the tire manufacturer has greatly reduced his costs during the years 1934 and 1935, they are still high and constitute the foremost problem of the industry. Nor do independent wholesalers offer a solution to this problem. Per unit retail costs have declined absolutely but retailing costs in relation to sales have increased rapidly, particularly for the mail order houses and for the company chains. The costs of these large organizations are increasing faster than those of the independent retailers as they have extended their operations and assumed a larger share of the market. But cost differences between the dealers and these other groups, particularly Sears Roebuck, are still wide. The latter, as a result of their wholesaling and retailing efficiency, have been able to undersell the market and yet make a good profit. The other large mail order house appears to be similarly situated. Consequently, these companies have been a primary factor in reducing prices and marketing costs. In fact, margins on tires have been reduced to a point far below retailing costs and as a result, tire dealers particularly have suffered severely. This fact has been a primary factor in causing a general breakdown of the retail market and tires to become primarily side line merchandise.
CHAPTER VIII

CONCLUSION

After this rather detailed examination of the major marketing problems that have beset the tire industry and their effects upon the organization, price structures and costs and margins, a number of conclusions seem warranted. These conclusions can be divided into two groups: the first apply to the tire industry and are therefore somewhat summary in form and descriptive in nature. The second group of general conclusions indicate some of the broader applications of the findings and something of their significance.

Conclusions Relative to the Tire Industry

1. The tremendous improvement in tire quality that has occurred within the period 1922 to 1934 is, unquestionably, the most distinctive and significant development that has affected this industry. This improvement in quality has changed tire buying habits, tire demand and methods of tire selling. The modern tire is no longer an emergency good but is now definitely a desirable purchase that is made at the time and place most preferred by the motorist. Tires have thus been transferred into the class of shopping and specialty goods. But this change in tire quality has reduced tire consumption from 2.92 tires per year per registered car to 1.34—a decline of over 50 per cent. Finally, quality improvements
have made tires standard goods which can be carried and sold by almost any type of retailer while formerly their sale involved the purchase of a service as well. This has opened the way to their sale by chain stores, oil stations, and mail order houses. In short, these quality improvements have not only decreased the consumption of tires but have altered tire buying habits and confused tire distribution methods.

2. The sales of tires, both in unit and value terms, especially the latter, have fallen to a very marked degree. This decline has contributed to the state of overproduction that prevails and has made for a most intense competitive market. The original equipment market has declined with the curtailment of automobile production until the year 1934. Renewal tire demand has fallen as a result of the increase in tire performance, the practice of retreading, the extension of improved roads and the depression. In addition, tire prices have declined rapidly and steadily. As a result, the sales value of automobile tires in 1933 stood 42 per cent below the 1921 figure and 69 per cent below that of the 1925. During 1934 and 1935 unit tire sales have increased about 15 and 25 per cent, respectively, over 1933 because of the spurt in original equipment demand, but renewal sales in both years have been slightly below the 1933 level.

1. The contention here is that when tire quality was so uncertain and non-uniform tires could not be sold readily by institutions selling standardized commodities.
3. The large-scale or corporate distribution movement has proceeded rapidly and to an unusual degree in this field. This movement did not affect tire distribution until after the World War, but within a period of thirteen years over 34.4 per cent of the renewal tire volume has passed into the control of these large-scale distributing organizations. This high percentage is exceeded only in five other fields of distribution; namely, food, gasoline, shoes, variety goods and cigars. Between 1922 and 1934 the sales of the large tire retailers have increased between 1000 and 1200 per cent. Tires, because of their non-perishable and standardized character and of the ease with which they can be advertised and sold, are well adapted to this type of distribution.¹

The adjustments that have followed this revolution in the industry have been extensive and severe.

4. During the past ten years, manufacturers' owned-and-controlled stores have been extended rapidly in the tire field in order to maintain and guarantee a channel of distribution, provide a market for factory production and insure the manufacturer control of the renewal market. In 1934 these stores retailed 6.8 per cent of the renewal volume of the industry and by 1935 their position had increased to 10.8 per cent. These retail programs were dictated by the organizatory requirements of the companies as entities rather than by

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¹ This statement requires some qualification for selling yet presents some difficulties if the recent experience of the oil cooperatives is a fair indicator.
distribution considerations alone and on this basis they are scarcely open to question. Yet they are not a solution to the tire companies' distribution problems: (a) It is inconceivable that they will be able to cover the market with these stores to the extent that they can dispense with the service of the dealers. Even 800 to 1000 of these stores, besides entailing an enormous investment, would provide sales of only 2,000,000 units at a maximum or less than 50 per cent of the renewal sales of either Goodyear or Firestone. (b) To date they have not been able to stabilize retail tire prices or selling practices to any marked extent. (c) These stores create many new merchandising and organization problems. Not only do these stores have to be integrated into the manufacturers' distributive organization, but, since 50 to 60 per cent of their sales are of merchandise other than tires or products closely allied to rubber manufacture, they tend to lead the companies into other lines of manufacturing or wholesaling afield from their major activities. Particularly is this true as the retail stores expand and these non-allied lines of merchandise grow in importance.

5. The marketing situation caused by an improving product, declining market, and the growth of large scale distribution has been a factor in causing the number of manufacturing enterprises in the industry to decline from 178 in 1929 to 44 in 1933. Furthermore, this decline, in conjunction with the incoming of large scale distribution, has been primarily responsible for the concentration of the industry in the hands of the "Big Four" manufacturers. Their percentage
of control has increased from 57.9 per cent in 1921 to approximately 75 per cent in 1933. The last two years have seen a further strengthening of this hold.

6. The development of large-scale retailing and a declining market, coupled with the price situation created thereby, have caused a complete disorganization of the retail structures of the industry. The mortality of the specialized tire dealers has been very high. On the other hand, the total number of retail tire outlets has increased greatly. The tire volume sold per outlet has declined materially, indicating that tires are now carried principally as side-line or fill-in merchandise. The situation has not only increased the instability of the market but has increased the cost of distribution to these dealers as well.

7. The wholesaling costs of branch-house distribution have increased about 120 per cent over the past ten years, and today stand as one of the greatest obstacles in the distribution system. These costs are higher than those required by the large scale retailers to perform the wholesale function and, consequently, stand as a definite handicap to the dealer who attempts to resell the manufacturers' tires in competition with the private brands of these large retail organizations. Nor do wholesalers offer a solution to this cost problem, since they neither relieve the manufacturer of his advertising, selling or administrative expense nor give him control of distribution.
8. The large scale retailers, it appears, have not affected any significant economies in the tire manufacturer's production costs as a result of their volume purchases, but they have been responsible for substantial savings in distribution. The volume increases resulting from the growth of these accounts appear to make possible reduced labor and overhead costs but these savings are largely, if not entirely, offset by the risks assumed by the manufacturer. Nor do their purchases contribute a regularizing or stabilizing influence upon production. These integrated retailers, however, are able to perform the wholesale functions at a cost including profit of approximately 60 to 70 per cent of that required by the manufacturer's branch house. This is perhaps the most substantial saving created by this method of distribution. In addition the retail stores of these large scale retailers operate at a cost of from 5 to 10 per cent below that of the independent dealer. In total, the savings effected by these large retailers approximates 10 to 25 per cent of the retail tire price.

9. The lower cost of distribution of the large-scale retailers insures them an increasingly important position in the marketing of tires. Although the heyday of their growth seems to be past, there is no reason to believe that they will not increase their proportion of tire sales steadily and materially. This expansion, of course, will increasingly hamper the operations of the independent dealer unless he is able to find a means of offsetting their cost advantage.
10. The policy of manufacturing special or private brand tires for these large retailers is a questionable one for the large tire producer. In the first place, this business is done at a very small net profit. Second, these sales reduce the volume that flows through the manufacturer's wholesale branches and to that extent increases his wholesale distribution costs. Third, the low purchase price given the large scale retailers enables them to undersell the manufacturers' dealers. Dealer sales decline and the competition engendered raise the manufacturers' advertising and selling costs. Finally, the manufacturing of such a product tends to rob the manufacturer of his freedom to determine and pursue an independent and aggressive dealer distribution policy.

11. It appears that this industry has need of more clean-cut and decisive distribution policies. The absence of such policies has, it is believed, contributed materially to the state in which the industry finds itself. Tire manufacturers, in disregard of the nature of the buying habits for their product, have drifted into a policy of wide-spread and general distribution. Wide-spread distribution was necessary in the early years but current distribution policies have been such as to further and permanently to fasten it upon the industry. At the present time the retail market is so disorganized that any attempt to curtail or limit distribution appears remote. The same lack of purpose and direction characterizes most of their retail store projects. The Firestone organization is an exception in this respect, but the other companies are not
only following many diverse policies but they are pursuing them in an uncertain and indecisive fashion. The unsatisfactory profit showing made may partially be a result of this dilatory practice. Finally, their policy of drifting seems, also, to characterize their attitude toward special brand contracts. In only two or three instances were definite policies discovered either favoring or disfavoring such contracts.

12. Finally, the distribution of tires over the last thirteen years suggests confusion and disorder. Change and alteration have been apparent everywhere. Under such conditions, stresses and strains, discord and strife, adjustments and realignments are the order of the day. There are many factors, material, cyclical and managerial, that have contributed to the instability of this industry during this period, but the market developments and shifts have assumed an importance second to none. What the future holds for the industry cannot be prophesied. There is evidence that the expansion of large-scale retailing has experienced its period of greatest growth and may henceforth develop more slowly and with less friction and strife. On the other hand, retailers may build up defense measures that will enable them to offer greater resistance to the devastating effects of this competition. But while the tempo of change will probably be much slower, distribution changes are bound to continue. An expanding market rather than a contracting one may serve to assuage some of their sting.
General Conclusions

As mentioned in the preface, the data existing upon the economic phases of this industry are most meagre and scattered. The Federal Trade Commission Hearings in the Matter of the Goodyear Tire and Rubber Company during 1934 and 1935 brought to light much raw material upon tire distribution. The present study has, for the first time, gleaned the meagre bits from newspapers and magazines and sifted some of the "ore" contained in the Hearing referred to, but it also has brought together new and unknown facts upon the flow of distribution, the peculiarities of the tire markets, and the behavior of dealers, wholesalers, prices and costs during the period 1922 to 1934. The contributions of Messrs. Holt and Corbin relative to the activity and behavior of dealers and prices were most significant but in these particulars this analysis goes beyond their findings both by bringing additional materials to light and by fitting these phenomena into the general pattern of the effects growing out of this recent upheaval in tire distribution.

In the second place, it is believed that a distinct service has been rendered not only to the industry but to students of marketing in measuring with some accuracy the rate of intrusion at which large scale retailers have invaded this field and in analyzing the effects of their entrance upon the organization and price structures and costs and margins. The tire industry itself has already made extensive use of these data in shaping distribution plans; they played an important
part in the Federal Trade Commission-Goodyear Hearings; the
data on distribution were used by N. R. A. in drafting its
report on the tire industry, and by the chain store groups
in arguing their case for a revision of price schedules before
that body; finally the 1934 estimates of distribution flow
were published by the Department of Commerce as a part of
Circular No. 3576 under date of June 29, 1935.

Third, the findings of this investigation, though
based upon a single case, indicate that the formulation of
the theory relative to the economies resulting from the volume
purchases of large scale, multiple retailers needs re-
examination and, probably, redefinition. No production
economies, in the long run, it was indicated, result from these
purchases. When the costs and the risks incident to this
business and its effects upon production schedules are con-
sidered, the supposed savings are probably hypothetical.
Furthermore, the supposed regularizing, if not the stabilizing,
effects of these purchases are as doubtful as are its direct
production cost economies.

Fourth, whether the large manufacturer who has
grown by virtue of and is known for his nationally advertised
and branded product should produce private-branded merchandise
for large-scale retailers who will sell in competition with
the manufacturer's dealers is a problem the market over.
If the experience of the tire industry is indicative of all industry, such a policy might well be questioned. These mass distributing organizations do not take the manufacturer's entire line, but only the cream of his quantity, fast-moving merchandise. They share none of the burdens of distribution which the manufacturer must continue to carry and spread over a reduced volume. Their low prices under-cut and decimate his distribution organization and increase his distribution costs. Furthermore, his relations with these large retailers are impermanent, unless some stock interchange is affected, and are likely to be terminated at the most inopportune time. Finally, this policy precludes the manufacturer meeting the competition of these large-scale promotion campaigns of the type and aggressiveness which the situation demands.

Finally, the greatest contribution made by this thesis is, perhaps, a personal one: The insight that has been gained of the marketing problems of an important industry; the confidence attained from grappling with the realities of business; the experience derived in assembling and integrating a vast fund of information and the discipline acquired in collecting and manipulating data, and preparing a treatise of this nature have been invaluable. If having a number of unanswered problems indicates that the writer has acquired some ability to recognize problems when they are presented, he has attained something of that faculty from his efforts as well.
### APPENDIX I

**CHART I**

Passenger Car and Truck Production and Registration in the United States, 1900-1921.

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger Car Registrations</th>
<th>Truck Registrations</th>
<th>Passenger Car Production</th>
<th>Truck Production</th>
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<td>1900</td>
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<td>1903</td>
<td>32,920</td>
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<td>105,900</td>
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<td>1907</td>
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<td>1,700</td>
<td>43,300</td>
<td>700</td>
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<tr>
<td>1908</td>
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<td>3,100</td>
<td>63,500</td>
<td>1,500</td>
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<td>6,050</td>
<td>127,731</td>
<td>3,255</td>
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<td>455,500</td>
<td>10,000</td>
<td>181,000</td>
<td>6,000</td>
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<td>902,600</td>
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<td>356,000</td>
<td>22,000</td>
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<td>1,194,262</td>
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<td>461,500</td>
<td>23,500</td>
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<td>1,625,739</td>
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<td>543,679</td>
<td>25,375</td>
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<td>1915</td>
<td>2,309,668</td>
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<td>1917</td>
<td>4,657,340</td>
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<td>1,745,792</td>
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<td>1918</td>
<td>5,621,617</td>
<td>525,000</td>
<td>943,436</td>
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<td>1919</td>
<td>6,771,074</td>
<td>794,372</td>
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<td>1920</td>
<td>8,225,859</td>
<td>1,006,082</td>
<td>1,905,560</td>
<td>321,769</td>
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<td>1921</td>
<td>9,346,195</td>
<td>1,117,100</td>
<td>1,456,963</td>
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**Source:**

APPENDIX II

CHART II
Unit Sales of Automobile Casings. 1910-1921

<table>
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<tr>
<th>Year</th>
<th>Original Equipment</th>
<th>Exports</th>
<th>Renewals</th>
<th>Total Sales</th>
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<td>1911</td>
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<td>6,007,655</td>
<td>8,321,371</td>
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<td>6,296,986</td>
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<td>21,973,414</td>
<td>28,921,000</td>
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Source: United States Bureau of Foreign and Domestic Commerce, Rubber Section, Special Circular no. 3500, Table III.
## APPENDIX III

### Analysis of Dealer Sales of Passenger Car Casings by Lines, 1926-1933.

<table>
<thead>
<tr>
<th>Line</th>
<th>1926 Firestone (Units)</th>
<th>%</th>
<th>1926 Goodyear (Units)</th>
<th>%</th>
<th>1926 U.S. Rubber (Units)</th>
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<th>1928 Goodyear (Units)</th>
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### Sources
- U.S. Rubber: Respondent's Exhibit 21909,
  Docket No. 2116.
- Goodyear: Commission's Exhibit No. 360
- Firestone: Confidential
### APPENDIX IV

Passenger Car and Truck Production and Registration in the United States. 1922-1934.

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger Car Registrations</th>
<th>Truck Registrations</th>
<th>Passenger Car Production</th>
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<td>1,612,569</td>
<td>3,625,969</td>
<td>407,279</td>
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<td>15,460,649</td>
<td>2,154,724</td>
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<td>17,496,420</td>
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<td>1,575,512</td>
<td>346,545</td>
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<td>21,524,068</td>
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APPENDIX V

CHART V

Unit Sales of Automobile Casinga. 1922-1934

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<thead>
<tr>
<th>Year</th>
<th>Original Equipment</th>
<th>Exports</th>
<th>Renewals</th>
<th>Total Sales</th>
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<td>13,554,924</td>
<td>1,389,135</td>
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Source:

a. Confidential
b. Department of Commerce Special Circular No. 3500.
c. Author's estimate
## APPENDIX VI

Replacement Sales of Rubber Companies and Proportion of Industry's Total. (Through Dealers and Company-owned Stores, Excludes Special Brand Sales.)

<table>
<thead>
<tr>
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<th>Industry Replacement Sales</th>
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<th>% Goodyear to Industry</th>
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Source: Federal Trade Commission vs Goodyear Respondent's Exhibit no. 22090

* Estimated
APPENDIX VI
(continued)

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APPENDIX VI
(continued)

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APPENDIX VII

Wholesale and Retail Tire Prices Compared to the Prices of Finished Goods. 1923-1933. (1923 = 100)*

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<th>Year</th>
<th>Prices Finished Goods</th>
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<td>100.0(^b)</td>
<td>100.0(^c)</td>
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<td>84.0</td>
<td>80.3</td>
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<td>93.4</td>
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<td>91.3</td>
<td>95.1</td>
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* Bases of both Finished Goods and Wholesale Tire prices were shifted from 1925.

Source:

a. Department of Labor as reported in Statistical Abstract of United States, 1933, p. 239.

b. Rubber Manufacturer's Association--Courtesy of the Association.

### APPENDIX VIII

Consumer Prices Listed to Customers

<table>
<thead>
<tr>
<th>Year</th>
<th>Goodyear All Weather Standard</th>
<th>Sears &quot;All State&quot; Mail Order</th>
<th>Goodyear Pathfinder</th>
<th>Sears Dearborn Company</th>
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**Sears Stores**

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**Sources:** Federal Trade Commission.  
Confidential Sources within the Industry.  
Tire Price Lists.
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APPENDIX IX

Production of Sears Roebuck Tires as Compared with Goodyear and Other Special Brands. (Includes Motorcycles—Excludes Bicycles)

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<td>Goodyear</td>
<td>Sears</td>
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<td>Av. = 924,289</td>
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<td>70.5%</td>
</tr>
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<td>91.7%</td>
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<td>97.7%</td>
<td>97.0%</td>
<td>130.8%</td>
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<td>114.3%</td>
<td>93.3%</td>
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<td>100.4%</td>
<td>110.8%</td>
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<td>80.7%</td>
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</tr>
<tr>
<td>Dec.</td>
<td>104.4%</td>
<td>87.1%</td>
<td>50.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sears</td>
<td>Goodyear</td>
<td>Sears</td>
</tr>
<tr>
<td></td>
<td>Av. = 340,602</td>
<td>Av. = 1,300,858</td>
<td>Av. = 265,126</td>
</tr>
<tr>
<td>Jan.</td>
<td>124.1%</td>
<td>107.0%</td>
<td>113.4%</td>
</tr>
<tr>
<td>Feb.</td>
<td>136.0%</td>
<td>110.5%</td>
<td>94.7%</td>
</tr>
<tr>
<td>Mar.</td>
<td>161.8%</td>
<td>123.4%</td>
<td>149.7%</td>
</tr>
<tr>
<td>Apr.</td>
<td>135.7%</td>
<td>124.4%</td>
<td>201.8%</td>
</tr>
<tr>
<td>May</td>
<td>154.4%</td>
<td>128.2%</td>
<td>153.4%</td>
</tr>
<tr>
<td>June</td>
<td>142.2%</td>
<td>113.8%</td>
<td>132.0%</td>
</tr>
<tr>
<td>July</td>
<td>117.2%</td>
<td>105.4%</td>
<td>109.3%</td>
</tr>
<tr>
<td>Aug.</td>
<td>62.6%</td>
<td>100.0%</td>
<td>86.0%</td>
</tr>
<tr>
<td>Sept.</td>
<td>38.7%</td>
<td>82.7%</td>
<td>54.2%</td>
</tr>
<tr>
<td>Oct.</td>
<td>60.8%</td>
<td>86.5%</td>
<td>63.2%</td>
</tr>
<tr>
<td>Nov.</td>
<td>27.7%</td>
<td>64.3%</td>
<td>24.8%</td>
</tr>
<tr>
<td>Dec.</td>
<td>40.9%</td>
<td>53.9%</td>
<td>17.5%</td>
</tr>
<tr>
<td></td>
<td>1932 Sears</td>
<td></td>
<td>1933 Sears</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Av. 170,967</td>
<td>Av. 718,078</td>
<td>Av. 109,919</td>
</tr>
<tr>
<td>Jan.</td>
<td>114.9%</td>
<td>100.3%</td>
<td>42.6%</td>
</tr>
<tr>
<td>Feb.</td>
<td>94.9</td>
<td>143.6</td>
<td>46.8</td>
</tr>
<tr>
<td>Mar.</td>
<td>45.3</td>
<td>152.9</td>
<td>39.7</td>
</tr>
<tr>
<td>Apr.</td>
<td>61.1</td>
<td>135.0</td>
<td>132.3</td>
</tr>
<tr>
<td>May</td>
<td>92.5</td>
<td>111.8</td>
<td>221.5</td>
</tr>
<tr>
<td>June</td>
<td>287.5</td>
<td>134.4</td>
<td>311.5</td>
</tr>
<tr>
<td>July</td>
<td>209.8</td>
<td>78.5</td>
<td>230.4</td>
</tr>
<tr>
<td>Aug</td>
<td>114.9</td>
<td>85.5</td>
<td>83.4</td>
</tr>
<tr>
<td>Sept.</td>
<td>74.5</td>
<td>68.7</td>
<td>30.5</td>
</tr>
<tr>
<td>Oct.</td>
<td>56.4</td>
<td>66.3</td>
<td>32.1</td>
</tr>
<tr>
<td>Nov.</td>
<td>33.5</td>
<td>64.5</td>
<td>19.7</td>
</tr>
<tr>
<td>Dec.</td>
<td>14.6</td>
<td>55.5</td>
<td>9.6</td>
</tr>
</tbody>
</table>

Source: Federal Trade Commission Exhibit No. 255
Docket 2116
**APPENDIX X**

Tire Factory Cost and Tire Cost Elements as Based on Census Data 1921-1933.

<table>
<thead>
<tr>
<th>Year</th>
<th>Unit Cost</th>
<th>Material</th>
<th>Labor</th>
<th>Other Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>$13.49</td>
<td>$7.93</td>
<td>$2.04</td>
<td>$3.52</td>
</tr>
<tr>
<td>1923</td>
<td>9.93</td>
<td>5.63</td>
<td>1.68</td>
<td>2.62</td>
</tr>
<tr>
<td>1926</td>
<td>11.07</td>
<td>6.71</td>
<td>1.44</td>
<td>2.92</td>
</tr>
<tr>
<td>1927</td>
<td>10.00</td>
<td>5.74</td>
<td>1.33</td>
<td>2.83</td>
</tr>
<tr>
<td>1929</td>
<td>8.12</td>
<td>4.53</td>
<td>1.34</td>
<td>2.25</td>
</tr>
<tr>
<td>1931</td>
<td>6.33</td>
<td>2.73</td>
<td>.99</td>
<td>2.66</td>
</tr>
<tr>
<td>1933</td>
<td>4.67</td>
<td>2.27</td>
<td>.89</td>
<td>1.71</td>
</tr>
</tbody>
</table>

Source:

*Census of Manufacturers, 1921, 1923, 1925, 1927, 1929, and 1933; Industry No. 803, p. 1.*
## APPENDIX XI

Manufacturing Cost of Goodyear A. W. T. and Sears Roebuck All-State Sample Tire for Alternate Years 1927-1933.*

### 1927

<table>
<thead>
<tr>
<th></th>
<th>Goodyear</th>
<th>Sears</th>
<th>% Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Billing</td>
<td>$15.59</td>
<td>$9.76</td>
<td>63</td>
</tr>
<tr>
<td>Materials</td>
<td>7.18</td>
<td>6.87</td>
<td>96</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.61</td>
<td>.69</td>
<td>113</td>
</tr>
<tr>
<td>Overhead</td>
<td>1.05</td>
<td>1.24</td>
<td>118</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>8.84</td>
<td>8.80</td>
<td>99.8</td>
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</table>

### 1929

<table>
<thead>
<tr>
<th></th>
<th>Goodyear</th>
<th>Sears</th>
<th>% Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Billing</td>
<td>$10.87</td>
<td>$7.05</td>
<td>65</td>
</tr>
<tr>
<td>Materials</td>
<td>4.74</td>
<td>5.09</td>
<td>109</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.40</td>
<td>.47</td>
<td>117</td>
</tr>
<tr>
<td>Overhead</td>
<td>.65</td>
<td>.72</td>
<td>111</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>5.79</td>
<td>6.28</td>
<td>109</td>
</tr>
</tbody>
</table>

### 1931

<table>
<thead>
<tr>
<th></th>
<th>Goodyear</th>
<th>Sears</th>
<th>% Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Billing</td>
<td>$8.26</td>
<td>4.96</td>
<td>60</td>
</tr>
<tr>
<td>Materials</td>
<td>3.01</td>
<td>3.30</td>
<td>110</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.31</td>
<td>.35</td>
<td>113</td>
</tr>
<tr>
<td>Overhead</td>
<td>.61</td>
<td>.74</td>
<td>121</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>3.93</td>
<td>4.39</td>
<td>112</td>
</tr>
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</table>

### 1933 (2 quarters)

<table>
<thead>
<tr>
<th></th>
<th>Goodyear</th>
<th>Sears</th>
<th>% Goodyear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Billing</td>
<td>$8.25</td>
<td>$4.34</td>
<td>53</td>
</tr>
<tr>
<td>Materials</td>
<td>2.47</td>
<td>2.42</td>
<td>98</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>.31</td>
<td>.31</td>
<td>100</td>
</tr>
<tr>
<td>Overhead</td>
<td>.54</td>
<td>.64</td>
<td>119</td>
</tr>
<tr>
<td>Factory Cost</td>
<td>3.32</td>
<td>3.37</td>
<td>101</td>
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</tbody>
</table>

* For 2 quarters only.
## APPENDIX XII

### Ratio of Sales to Plant Investment (times)

<table>
<thead>
<tr>
<th>Year</th>
<th>Goodyear</th>
<th>Goodrich</th>
<th>Firestone</th>
<th>Fisk</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>2.56</td>
<td>4.36</td>
<td>5.44</td>
<td>3.91</td>
<td>16.9</td>
</tr>
<tr>
<td>1926</td>
<td>2.77</td>
<td>4.29</td>
<td>6.15</td>
<td>3.35</td>
<td>15.4</td>
</tr>
<tr>
<td>1927</td>
<td>2.63</td>
<td>4.17</td>
<td>4.47</td>
<td>3.24</td>
<td>16.2</td>
</tr>
<tr>
<td>1928</td>
<td>2.97</td>
<td>3.57</td>
<td>5.49</td>
<td>2.56</td>
<td>10.2</td>
</tr>
<tr>
<td>1929</td>
<td>2.51</td>
<td>2.43</td>
<td>2.83</td>
<td>2.15</td>
<td>8.4</td>
</tr>
<tr>
<td>1930</td>
<td>2.00</td>
<td>2.23</td>
<td>1.99</td>
<td>---</td>
<td>8.0</td>
</tr>
<tr>
<td>1931</td>
<td>1.67</td>
<td>1.74</td>
<td>1.76</td>
<td>5.7</td>
<td>4.6</td>
</tr>
<tr>
<td>1932</td>
<td>1.23</td>
<td>1.56</td>
<td>1.35</td>
<td>4.6</td>
<td>5.7</td>
</tr>
<tr>
<td>1933</td>
<td>1.32</td>
<td>1.78</td>
<td>1.28</td>
<td>1.65</td>
<td>5.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Lee</th>
<th>Gates</th>
<th>Mohawk</th>
<th>Dayton</th>
<th>Seiberling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>1.9</td>
<td>4.3</td>
<td>3.8</td>
<td>3.7</td>
<td>4.19</td>
</tr>
<tr>
<td>1926</td>
<td>1.7</td>
<td>4.9</td>
<td>4.8</td>
<td>4.7</td>
<td>5.02</td>
</tr>
<tr>
<td>1927</td>
<td>1.4</td>
<td>3.7</td>
<td>4.3</td>
<td>5.4</td>
<td>3.79</td>
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<tr>
<td>1928</td>
<td>1.6</td>
<td>3.2</td>
<td>4.8</td>
<td>4.8</td>
<td>4.64</td>
</tr>
<tr>
<td>1929</td>
<td>1.5</td>
<td>3.7</td>
<td>4.0</td>
<td>4.0</td>
<td>3.10</td>
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<tr>
<td>1930</td>
<td>1.2</td>
<td>3.4</td>
<td>2.4</td>
<td>3.4</td>
<td>2.54</td>
</tr>
<tr>
<td>1931</td>
<td>1.0</td>
<td>3.4</td>
<td>1.8</td>
<td>2.3</td>
<td>2.46</td>
</tr>
<tr>
<td>1932</td>
<td>0.9</td>
<td>2.9</td>
<td>1.9</td>
<td>2.1</td>
<td>1.96</td>
</tr>
<tr>
<td>1933</td>
<td>1.2</td>
<td>3.7</td>
<td>2.4</td>
<td>2.2</td>
<td>2.09</td>
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</table>
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VITA

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He served as teacher in the Malad High School during the year 1920-1921 and in the Ogden High School, Ogden, Utah, during the two subsequent years. In 1924 he was given a teaching assistantship at Northwestern University in which capacity he served throughout that year. In 1925 he was advanced to an instructor and served for one year. In the fall of 1926 he became Professor of Business Administration and Head of the Commerce Department at the University of Akron, Akron, Ohio. He has continued in that position since that date with the exception of the year 1933 when he was granted a leave of absence to pursue graduate work at Northwestern University.