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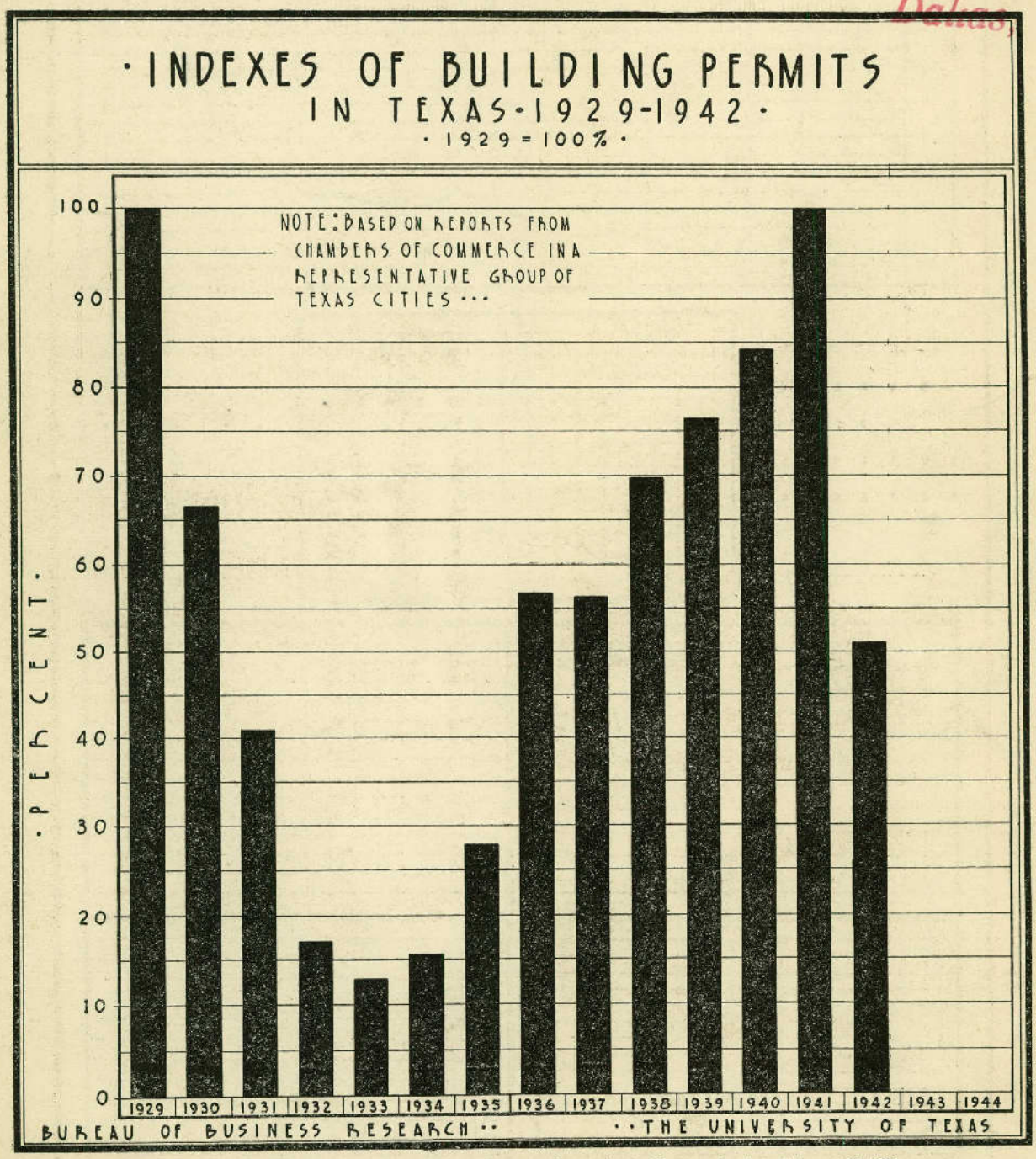
A Monthly Summary of Economic and Business Conditions in Texas
By the Staff of the Bureau of Business Research, The University of Texas
F. A. Buechel, Editor.



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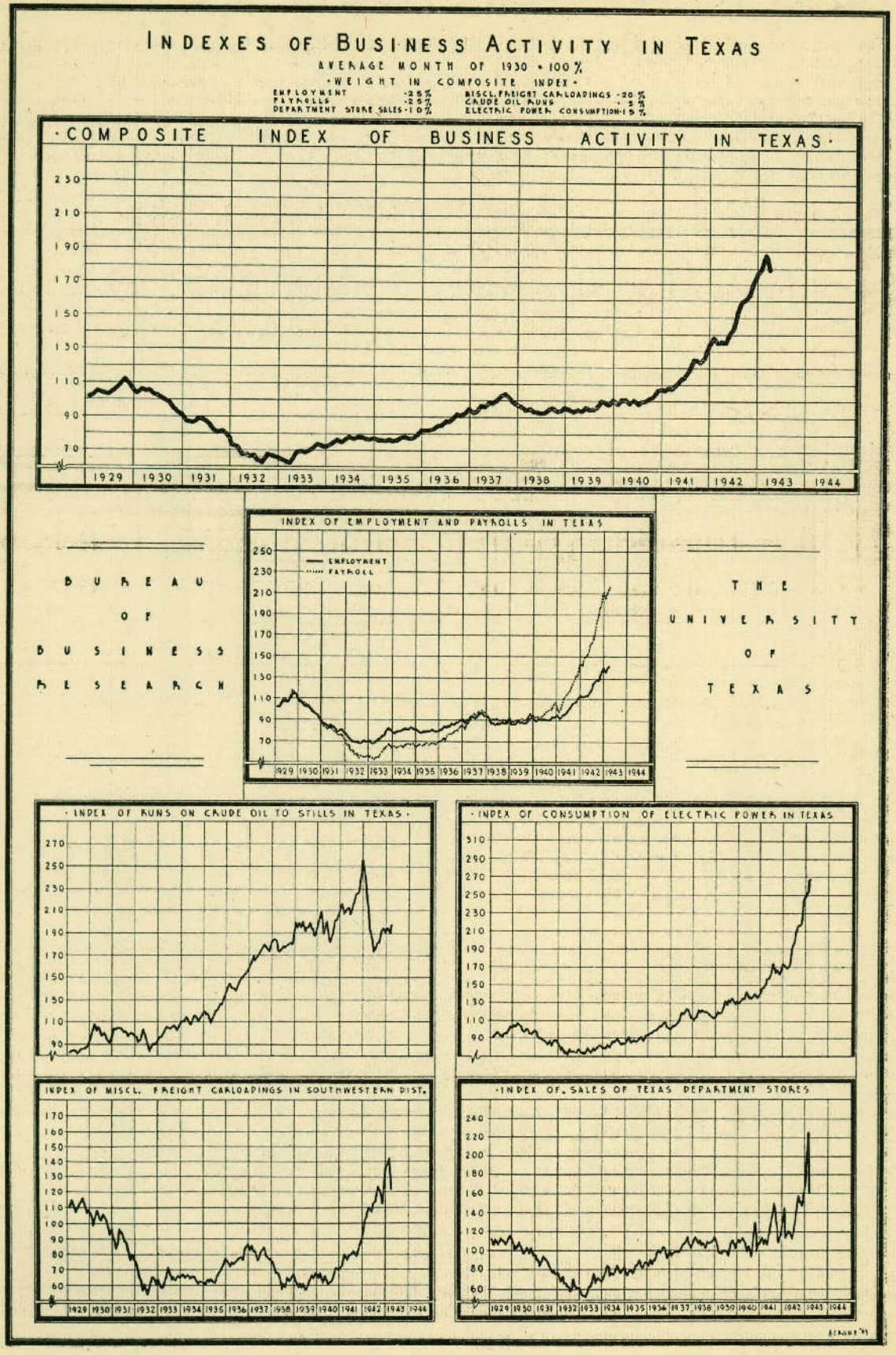

INDEXES OF BUSINESS ACTIVITY IN TEXAS
AVERAGE MONTH OF 1930 = 100%
WEIGHT IN COMPOSITE INDEX
EMPLOYMENT 25%
PAYROLLS 25%
DEPARTMENT STORE SALES 10%
MISCL. FREIGHT CARLOADINGS 20%
CRUDE OIL RUNS 5%
ELECTRIC POWER CONSUMPTION 15%
COMPOSITE INDEX OF BUSINESS ACTIVITY IN TEXAS
230
210
190
170
150
130
110
90
70
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944
INDEX OF EMPLOYMENT AND PAYROLLS IN TEXAS
EMPLOYMENT
PAYROLL
250
230
210
190
170
150
130
110
90
70
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944
BUREAU OF BUSINESS RESEARCH
THE UNIVERSITY OF TEXAS
INDEX OF RUNS ON CRUDE OIL TO STILLS IN TEXAS
270
250
230
210
190
170
150
130
110
90
INDEX OF CONSUMPTION OF ELECTRIC POWER IN TEXAS
310
290
270
250
230
210
190
170
150
130
110
90
INDEX OF MISCL. FREIGHT CARLOADINGS IN SOUTHWESTERN DIST.
170
160
150
140
130
120
110
100
90
80
70
60
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944
INDEX OF SALES OF TEXAS DEPARTMENT STORES
240
220
200
180
160
140
120
100
80
60
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944

Business Review and Prospect

Since President Roosevelt's timely anti-inflation pronouncement there has been considerable dampening of popular inflationary sentiment, but the forces which are making for inflation are still as potent as ever. Not until adequate tax measures have been enacted and a systematic procedure for the purchase of government bonds has been put into effect can ceilings on prices of goods be established, wages of labor be stabilized, or effective rationing be maintained. It would be extremely fortunate if during this pause in inflationary sentiment governmental action were promptly taken to drain off, in the form of taxes and loans to the government a sufficient proportion of the rapidly increasing purchasing power of millions of workers in war plants, farms and such other groups as have had a sharp increase in income as a result of war activity. If such action is not taken soon, the next surge of inflationary sentiment will carry wages and prices to still higher levels and the upward spiral will gain additional momentum, thus adding still further to the problems of inflationary control.

War expenditures rose sharply during March to approximately seven and a half billion dollars, or at an annual rate of ninety billion dollars. Since the national war production plant is still some distance from capacity operation, further substantial monthly increases in expenditures for production of war materials may definitely be expected. It is highly important for all citizens of this country that this increase in dollar expenditure for war production shall reflect a corresponding increase in war materials and that it shall not merely reflect rising prices.

Recent estimates of spendable income for the country in 1943 are even higher than at the beginning of the year, and total national income is now expected to approximate 140 billion dollars. This figure compares with approximately 115 billion dollars in 1942, the previous record year, and 80 billion dollars in 1929, the record up to that time. The quantity of civilian goods available for consumption this year is not expected to be as great as it was in 1942 when approximately 80 billion dollars were spent for this purpose, although the number of dollars expended may equal or even exceed this amount because of the rising trend of prices. The 60 billion dollars representing the margin between spendable income and the expected value of available civilian goods during the current year (at approximately present prices) must therefore be siphoned away as taxes and as bond purchases, if the pressure on prices and wages is to be kept under control. It cannot be overemphasized that a rigorous tax and bond purchasing program levied now on a broad base of mass purchasing power will do more than anything else to effect price stability during the war and to ameliorate post-war economic dislocations.

Texas Business

The composite index of business activity in Texas, adjusted for seasonal variation, declined nearly nine points from February to March. Four of the components—employment, pay rolls, runs of crude oil to stills, and electric power consumption—showed gains; the remaining two components—miscellaneous freight carloadings and department store sales—declined. Compared with a year ago, however, the March index was up nearly forty-four points, or thirty-two per cent.

MARCH INDEXES OF BUSINESS ACTIVITY IN TEXAS

(Average month of 1930=100%)

	March, 1943	March, 1942	Feb., 1943
Employment	141.1	113.1	139.3
Pay Rolls	218.3	150.2	210.9
Miscellaneous Freight Carloadings (Southwest District)	121.5	110.7	142.2
Runs of Crude Oil to Stills	198.6	202.0*	189.6
Department Store Sales	160.1	120.5	226.7
Electric Power Consumption	267.4	168.9*	265.3
COMPOSITE	179.2	135.4*	187.9

*Revised.

A word of explanation should be made concerning the sharp drop in the two factors which caused the decline in the composite index from February to March—department store sales and miscellaneous freight carloadings. Normally, there is a gain in department store sales from February to March of approximately twenty-five per cent; whereas, this year there was a substantial decline in sales during this period. This situation was the result of abnormally large department store sales in February, and was not the result of unsatisfactory sales in March. As evidence of this fact, March department and apparel store sales were thirty-three per cent greater than were sales in March, 1942. Moreover, the favorable comparison with retail trade in March last year was especially noteworthy because a year ago Easter fell early in April and this fact had a stimulating influence on department store sales in March last year. This year Easter came near the end of April, and presumably Easter buying will be reflected in April rather than in March sales in contrast with a year ago.

Similarly, there normally is a sharp seasonal increase in miscellaneous freight carloadings from February to March (eighteen per cent), but this year the increase in the number of cars of miscellaneous freight loaded was only about one per cent, causing a decline in the index of approximately fifteen per cent. The seasonal changes in the number of cars loaded are becoming less and less marked as the railroads approach closer to capacity operations.

For Other Texas Data, See Statistical Tables at the End of this Publication

Farm Cash Income

Cash income from agriculture in Texas during March totalled more than 61 million dollars, compared with 36 million dollars during March, 1942, an increase of seventy per cent. The aggregate total for the first three months was 169 million dollars, or a gain of fifty-two per cent over the 111 million dollars for the corresponding period last year.

Average March cash income for Texas during the five-year base period (1928–1932) was approximately 18 million dollars. Thus, the February index of farm cash income for the State during March was 342.3, which represents a gain of 242.3 per cent over the average cash income in March during the five-year period from 1928 to 1932, inclusive.

INDEXES OF FARM CASH INCOME IN TEXAS

(Average Month of 1928–1932=100%)

	March, 1943	Feb., 1943	March, 1942	Cumulative Income January to April ($000) 1943	1942
1–N	359.7	243.7	125.4	$24,192	$11,492
1–S	806.4	468.2	437.2	19,595	11,660
2	311.6	319.0	216.6	17,022	11,339
3	244.2	288.6	186.3	6,629	4,750
4	235.4	195.2	218.1	19,164	19,525
5	204.5	223.8	111.2	6,829	3,602
6	497.5	426.3	233.6	12,002	7,244
7	208.7	336.3	168.6	7,455	5,321
8	372.2	293.8	193.2	13,344	8,153
9	206.5	284.5	230.8	15,022	12,446
10	467.3	334.1	181.3	5,786	2,582
10–A	502.7	445.1	247.1	22,458	13,066
STATE	342.2	306.4	200.8	169,498	111,180

Note: Farm cash income as computed by this Bureau understates actual farm cash income by from 6 to 10 per cent. This situation results from the fact that means of securing complete local marketings, especially by truck, have not yet been fully developed. In addition, means have not yet been developed for computing cash income from all agricultural specialities of local importance in scattered areas throughout the State. This situation, however, does not impair the accuracy of the *indexes* to any appreciable extent.

Worthy of special note is the fact that nearly one-third of the total state farm cash income was received in the Texas Panhandle Area (Districts 1–N and 1–S), and nearly three-fourths of this huge income was derived from livestock—cattle, calves, hogs, and sheep. Both increased marketings and the high prices of beef animals contributed to the favorable income figure. The average price of beef cattle during March varied from more than one hundred dollars per head in the High Plains to less than fifty dollars per head in East Texas and the coastal area. This wide variation in average price per head as between East and West Texas is the result of differences in the type and average quality of the cattle.

In West and Northwest Texas, not only has the breeding of fine strains of beef cattle been developed to a high degree, but most of the cattle feeding of the State is carried on there. In East Texas and the coastal area, on the other hand, dairy breeds constitute a large proportion of the total, and these cattle not only are smaller than the beef type, but are usually not marketed for conversion into beef until their efficiency in milk production begins to decline. It should be pointed out, however, that there are many excellent herds of the beef type of cattle in scattered areas throughout East Texas wherever local conditions are favorable for this type of livestock enterprise. This development has been particularly marked in recent years as a result of the Government's conservation program.

Other sources of income which show highly favorable year-to-year comparisons are milk and truck crops. Income from milk during March was forty per cent greater, and income from fruits and vegetables was more than double that of March, 1942.

It is improbable that the phenomenal year-to-year increase in Texas farm cash income which prevailed during the first quarter of the year will be fully maintained, but if the forthcoming crops approach normal, which at present is a reasonable expectation, farm cash income in this state in 1943 promises to be well above the record year of 1942.

F. A. Buechel

Wealth-Producing Industries in Texas

Broadly speaking, Texas has four major groups of wealth-producing industries which may be considered as basic ones; these are agriculture and range livestock, the timber-using enterprises, oil and gas production and refining, and the chemical and other industries based on non-metallic resources. Overlappings between these groups occur but for the sake of perspective and emphasis, this grouping, based upon the types of natural resources concerned, has sufficient advantages in its favor to justify its application in analyses of Texas economy. There are, of course, other wealth-producing industries in Texas, but they are dependent, directly or indirectly, upon one or more of these four major groups.

Economic analyses of Texas' wealth-producing industries demand considerably more than mere conventional treatment, whether considered from the standpoint of past trends, current tendencies, or future potentialities. This fact should be clearly apparent from the great number of vital problems that now confront us on every hand as a consequence of the war effort. These problems concerning our basic wealth-producing industries not only will not solve themselves but they will be even more insistent in the post-war period. That the war is inevitably forcing a new attitude toward natural resources and the industries built upon them is, of course, obvious.

More than merely a new attitude, however, is required if we are to meet in somewhat adequate manner the vast complex of the post-war problems that inevitably will challenge the widest understanding and the achievements of the most profound technology that will be available. The significant changes in institutional approaches to these problems will obviously accentuate the importance of a fuller understanding of what are the foundations of economic life in the 20th century.

Recognition of the immensity and the essential nature of these institutional problems has been evolving at an accelerated pace during the past two or three decades, as can clearly be seen by an examination of numerous comparative studies dealing with larger aspects of human problems and especially of the statements of outstanding world leaders. While many of these pronouncements might be noted, a few excerpts have been chosen from a brief paper written by General Jan Christian Smuts in the middle 1930's. It is perhaps worthwhile to note that Jan Christian Smuts, now Premier of South Africa, is a product of the frontier as were Jefferson and Lincoln and Sam Houston in our own country—but the South African frontier has extended well into the 20th century. Of the book to which General Smuts' paper was the Introduction, he wrote:

> It is an intriguing effort, and we must all welcome this scientific approach to the problems of our human advance. More and more it is being felt that what is wanted is more science in the consideration of human problems; the lack of science in our affairs is considered as one of the main reasons why our human world is becoming more and more chaotic, while science in her domain is making a triumphal progress.

General Smuts summarizes his own philosophy as follows:

> The world is not a chaos, a chance selection of items and fragments. It is a closely interwoven system of patterns. What we in our human way call plan and design is present everywhere. This is not to be understood as naïve anthropomorphism. Our most painstaking effort at understanding the world discloses certain dominant features in it—rhythm, regularity, inter-connexion, and linkings up, an interplay of active relationships which is creative of structures, forms, patterns. Such is reality—a vast Pattern of patterns.

Of institutional concepts, and of the dangers of narrow provincial philosophies or of one-sided views, General Smuts continues:

> At any rate, necessity is laid on us, and we dare not sit still in a world today [1935] fuller of dangers for our race than ever before. We must move on and science appears to be the royal road of advance. We cannot accept at their face value the philosophical speculations of a Spengler—that civilization is an organism which grows and decays of its own inner unalterable laws, and that nothing can arrest the disappearance of our own civilization. Nor can we accept—in the face of all that genetics has taught us—that environment is all, and the organism merely a creature of it. Somewhere between lies the truth we are after, between the one-sided environment and organismic views.

Texas Industries in the National Picture

To deal adequately with the basic wealth-producing industries of Texas, whether of the important part they are playing in the present crisis, or of the part they will play in the post-war years to come, requires a sure and comparative knowledge of the industries involved, of the inherent properties of the natural resources upon which they are built, of the scientific and historical background of the evolving technology that is being applied to a more effective utilization of these resources; added to this there must be wide understanding of the workings of the complex social and economic institutional forces concerned. No longer can these problems be considered as merely local ones. The scope of Texas' natural resources and the volume and variety of materials these resources can supply from the standpoint of national markets insure a national interest in the potentialities no less than in the actualities of Texas industries.

The impact of the war is forcing a fuller understanding of our agriculture; it is forcing an appraisal of this fundamental industry not only as a national economic problem but also as a social problem of vast magnitude. Facts, not abstract theories, confront American agriculture at large, and the same thing applies in no uncertain terms to Texas agriculture and livestock production.

Oil and Chemical Industries in Texas

In Texas, however, two industries stand out in a strategic sense in the war effort; that these two industries will occupy a still more important position in post-war adjustments can hardly be questioned.

These, the oil industry (together with natural gas), which has long been firmly established in Texas, and the chemical industry, which was just getting a start in Texas in the middle 30's, can scarcely be over-emphasized in any appraisal of Texas economy. Both the oil industry and the chemical industry are basic enterprises that occupy a strategic economic sector on the pioneer industrial front that has extended itself into Texas and the greater Southwest, in ever larger proportions since 1900 and at an accelerating pace particularly since the days of World War I. And now these two industries are being tied together by the indissoluble bonds of today's science and technology—and more than upon any other sector of modern economy it is upon the progressive advance of these industries that the economic and social future of Texas depends.

The oil industry is peculiarly an American industry, not only because of the preponderant place the United States has had in its development but also in the application of American methods of production, transportation, and refining transferred almost bodily to the various oil producing regions of the rest of the world.

The sweep of the oil industry across the American continent during the past three-quarters of a century comprised one of the magnificent spectacles of the times; its transference to other countries has been, from the standpoint of world economics, only less striking than its sweep across the United States.

But the heydays in the development of the oil industry along the older lines are rapidly becoming history. And this war is using up those oil resources that have transportation outlets at a prodigious rate. One of the truly momentous problems of the post-war period will necessarily be concerned with the world's oil resources. Owing to the nature of military operations, oil resources are universally coming to be recognized as vital to the prosecution of the war, and they will become even more vital ere the conflict is ended.

The oil industry is also reaching a turning point in regard to revolutionary methods that are now being applied from the newer knowledge of the chemistry of oil. The post-war oil industry of this and other countries will necessarily be bound up with the fortunes of the chemical industry.

The oil industry will turn more and more to chemistry and to the chemical industry in order to get technologic assistance in making its reserves last longer and go farther—that is, to give its products at once a higher level of usefulness and a wider sphere of application. Already, the accomplishments in large-scale synthesis of converting petroleum and natural gas raw materials into aviation gasoline, explosives, synthetic rubber intermediates, plastics, alcohols, and so on are little short of revolutionary. On the one hand, it is a matter of record that the oil industry has absorbed large sectors of the chemical industry, just as the chemical industry, on the other hand, has penetrated farther and farther into the oil industry. This trend has been in evidence for several years; its rapid evolution has come with the quickening tempo necessitated by the grim requirements of war—of a war in which the whole fabric of civilization is endangered to an extent perhaps not fully realized as yet.

The almost all-inclusive sway from the standpoint of industrial penetration of the chemical industry is also a matter of record; from the point of view of its historical sweep, as concerns the development of the various phases of its history as an industry, it may be emphasized that the beginnings of a chemical revolution antedated by a century the inception of the Industrial Revolution which came in the middle of the 18th century.

An historical perspective of the major shifts and larger developments in the various stages of the evolving chemical industry is essential to a wider understanding of chemical achievements in modern industry. The chemical industry began as, and for a long time continued to be, an industry accessory to other industries. It was not until after 1870 that the chemical industry became a producer of goods in large amounts, especially of dyes, which appeared as such in the consumer product; but the chemical production of dyes, although a marvel of applied science, is also an accessory industry, owing to its associations particularly with textiles. What was more important in the evolution of chemistry was that the production of dyes in large quantities marked the earlier developments in the field of organic chemistry, the dyes being produced from coal-tar materials.

About the same time the production of plastics—of celluloid—in a very small way was begun in the United States and a little later experiments in the production of synthetic fibers were begun in France.

It was not, however, until the period preceding World War I that the revolutionary developments in the new chemical industry reached commercial production. Three or four achievements of this period stand out—the achievements in catalysis, which had been started by Sabatier in France around the turn of the century, the work in high-pressure synthesis exemplified in Haber's synthesis of ammonia in Germany, the cracking of petroleum fractions in refinery operations which had been initiated by Burton and others in the United States, and the triumphal successes in the manufacture of alloy steels which had been made feasible by the electric furnace.

Two sectors of the chemical industry have already grown to substantial proportion in Texas and the greater Southwest. These are the heavy alkalies together with chlorine and the production of synthetics from oil and gas hydrocarbons. Other phases of the chemical industry are getting a foothold in the state, particularly exemplified by the production of magnesium metal by electrolysis.

Shifts and Developments in Alkali Production

The modern chemical industry may be said to have begun with the application of the LeBlanc process to the manufacture of soda ash.

Near the close of the 18th century France was shut off by wars from the supplies of soda (made by burning kelp) which had been used by the French glass industry. At this stage LeBlanc developed a process of making sodium carbonate, using such common materials as salt, limestone, and sulphuric acid. And although the LeBlanc process was an involved one, it marked the beginning of industrial chemistry.

The new alkali industry which came in the wake of the LeBlanc process benefited the growing soap industry more than it did the glass industry and it benefited England more than France.

The alkali industry was established in England in the Liverpool area in the early 1820's. It was set up in an area that possessed brine wells, with supplies of limestone and coal for fuel near by. Sulphur for sulphuric acid could be obtained from Sicily or from pyrite produced in Spain. An unwanted by-product of the LeBlanc process was chlorine. The English, however, succeeded in using chlorine to make bleaching powder which in turn became a boon to English textiles—an industry which was rapidly developing during this period. It was through the production of soda ash and chlorine that England dominated the world's chemical industry until about 1870.

Beginning around 1870 the quickening of the tempo in economic and industrial progress in the Western World became a dominant factor not only in industry but in national economies as well. This quickening tempo was marked by the rise of new technologies and the widening of the raw materials base upon which industry was being built. In the early 1870's the Solvay or ammonia-soda process, which ultimately was to displace the LeBlanc process, was being put into commercial operation. The raw materials for making soda ash by the new process were brine and limestone, both of which are cheap and plentiful, together with ammonia as a process substance. The ammonia is reused continuously—an operation which has to be performed efficiently as losses of ammonia would render the process too expensive. In 1872 a plant using the ammonia-soda process was established in England; and in the early 1880's the Solvay Process Company built an ammonia-soda process plant at Syracuse, New York. In 1892 Michigan Alkali Works located a plant at Wyandotte, Michigan, in close proximity to brine wells; and in 1893 Matthieson Alkali Works established their initial plant at Saltville, Virginia.

Toward the close of the 19th century, with the commercial availability of large blocks of low-cost electric current (which were made available by the expanding new electrical industry), electrolytic production of chlorine (simultaneously with caustic soda) began to be important.

In this phase of development of the alkali industry, the caustic soda was a by-product of chlorine manufacture. The early start in electrolytic production was initiated to supply chlorine for bleaching purposes particularly for the rapidly growing pulp and paper industry; since the chlorine thus produced is consumed by the industry itself, this phase of the alkali industry has been termed a consumer-producer industry.

Until the 1930's the alkali and alkali-chlorine industry was limited largely to western New York, Ohio, Michigan, and in the portion of Virginia lying in the Great Valley. The industry occupied areas in northeastern United States in which supplies of brine were available from wells, and, of course, it was near markets, although its products were carried mainly by land transport.

In the 1930's, however, following the initial stages in the spread of industry development into the Southeast and the Southwest, the heavy alkali industry was substantially established in the Southwest.

Trends in the American Alkali Industry

Modern alkali production has necessarily to be based on the ready availability of a large supply of its raw materials, together with low-cost fuel or power. The ammonia-soda process requires salt and lime and fuel, whereas the electrolytic process requires brine and electric power.

The operation of the electrolytic process produces about equal volumes of caustic soda and chlorine. (Although chlorine in the technical sense is not an alkali, chlorine is now mostly produced by the alkali manufacturers.)

The recent growth in the electrolytic branch of the alkali industry is an outstanding development. After World War I, paper and textile manufacturers, which were then the large consumers of chlorine, having a surplus of electric power available, built small electrolytic plants for the production of chlorine, because chlorine ordinarily is difficult to handle as regards both storage and transportation. Besides producing chlorine, these plants yielded as a by-product electrolytic caustic soda which these consumer-producer manufacturers did not need, and which was thrown on the market at a price below that of caustic soda made by the ammonia-soda manufacturers.

It was not long, however, until the ammonia-soda manufacturers themselves entered the electrolytic process field; in 1927 Solvay Process Co. built a large electrolytic plant at Syracuse, New York. In going into electrolytic production the alkali producers built large electrolytic plants to produce chlorine and caustic with "soda ash subsidized power." The economies effected were important enough to influence the entire alkali industry.

This aspect of intra-industry economy, soda ash subsidized power, has evolved from the fact that in making ammonia soda, large quantities of low pressure steam are used for heating purposes. Steam is generated at high pressures and it is used by turbines to generate

electric power; after being so used, the resulting low-pressure steam is piped to the ammonia-soda portion of the alkali plant without any loss in effective heating capacity. Under these conditions electric power is generated at a very low cost, and as a consequence the alkali manufacturers can produce chlorine cheaply enough to command the market.

By the end of 1942, all but two of the nine ammonia-soda plants in the United States were to have been producing chlorine. These two plants, constituting the exceptions, are Matthieson's at Saltville, Virginia, and Solvay's at Detroit.

Hydrogen gas, a by-product of the electrolytic brine process, was formerly wasted; it has now become a valuable by-product, however, due to its demand for synthetic ammonia manufacture, the hydrogenation of oils, and in some cases for the manufacture of hydrochloric acid.

Plants using the ammonia-soda process causticize soda ash with lime in order to make caustic soda, and thus the manufacturer is able to alter the relative quantity of these two major alkali products.

To sum up: From 1884, when Solvay Process Company built at Syracuse, New York, the first ammonia-soda plant for producing alkalies in the United States, until 1930 all the alkali plants of this country were concentrated in the Great Lakes region, except for the Matthieson plant at Saltville, Virginia.

Shift of Heavy Alkalies to the Southwest

The shift of the heavy alkali industry into southwestern United States is a reflection of the general movement of geographic dispersion of industry in the United States. Three new ammonia-soda plants were built in the Southwest, in the 1930's; a few years after their establishment, each one of the plants, among other things, added a chlorine unit of considerable size.

The factors concerned in this southwestern trend of heavy alkalies include:

1. The consumption aspects associated with a growing demand of other large industries in the South and Southwest. This expansion of an industrial market for heavy alkalies and chlorine includes a number of factors:

(a) The movement of the viscose rayon industry southward, an industry which utilizes purified wood pulp and cotton linters, as its raw materials, and which requires large amounts of process chemicals. There is also the factor of a very important potential demand of the rapidly growing rayon industry in the South for chemical pulps from Southern woods and for other chemicals.

(b) The growth of petroleum refining in the Southwest to the proportions of a vast industry, and the consequent large demands for process chemicals in oil refining operations.

(c) The geographic shift of the pulp and paper industry into the South, a movement first manifested in Kraft production, and later in the production of newsprint and bleached fine papers. There is also the increasing production of glass and of soap (both of which are large users of alkali) in the Southwest.

(d) The large expansion of aluminum industry in the Southeast, starting with the greatly increased production of alumina at Mobile (from imported bauxite) and of aluminum at Aloca, Tennessee, an expansion of which has been greatly accelerated by the war program. The production of both alumina and aluminum requires large quantities of process chemicals.

The aluminum industry requires large amounts of soda ash, one of the most common of the heavy alkalies; soda ash is converted to caustic soda which is used in making alumina from bauxite (aluminum ore). The requirements of the expanded aluminum program may put soda ash (and caustic soda) on the scarce materials list in 1943.

The annual output of soda ash has been in excess of 3.5 millions tons. The glass industry has been taking about a million tons annually, the soap industry around 875,000 tons and the chemical indutry itself about a million and a half tons for the manufacture of caustic soda and other chemicals.

2. The raw materials aspect, involving a growing realization of the vast significance of the plentiful raw materials upon which the large growth of the heavy alkali production in the Southwest is necessarily based. These materials include salt and brine, lime including oyster shell, together with cheap fuel, especially natural gas.

3. The availability of tidewater transportation owing to the region's location with respect to the Gulf Coast.

Rise of an Organic Chemical Industry in the United States

The recent expansion in the production of synthetic organic chemicals is little short of a revolutionary development. Thanks to the large supplies of oil and gas hydrocarbons in Texas and to a technology available for putting them to wider uses, the synthetic organic chemistry may be considered as firmly established in the State—or perhaps the statement should be that the beginnings are firmly established for the larger potentialities have as yet scarcely been touched.

It was Germany that led in the great developments of organic chemicals in the latter part of the 19th century. After 1870 had come the quickening of chemical advances in Germany and along with Germany's expanding industry went the rise of organic chemicals, mainly dyes, built upon coal-tar products—the raw materials of which in turn were being turned out at an increasing rate by the rapidly growing German steel industry, which, of course, required large amounts of coke. The coal tar materials were by-products of the coke industry.

When World War I broke out in Europe the United States suddenly was made to realize that it practically had no organic chemical industry. The United States had depended upon Germany for these necessities. Under the spur of necessity there was created in the United States a synthetic organic chemicals industry, which grew apace in the two decades after World War I. The American phase of the industry during these years involved particularly the coal-tar chemicals, rayon, and

the like, the production of which naturally was concentrated in eastern portions of the country. Beginnings were made in other lines, however, and by the time the United States entered World War II the new lines in the American chemical industry were well in evidence. These new lines were built to a large extent upon oil and gas hydrocarbons. They embrace a wide range of strategic products of the first magnitude—explosives, synthetic rubbers, plastics, Nylon, the vinyl compounds, tailor-made aviation gasolines, and so on. These lines are to be considered as almost entirely an American development, just as the oil and gas industries upon which they are built are characteristically American developments.

So momentous are the potentialities for further development along these various lines that it is only appropriate to add that the history of these developments is still ahead of us. Furthermore, with its large supplies of hydrocarbons and having a large sector of the modern oil refining industry already established, it is but natural that a large share of these new developments in the production of organic chemicals should come to Texas, as they have in the war emergency. Because of these factors, together with the momentum already established, it is to be expected that not only will these chemical industries continue to operate in Texas in the post-war period but also that they will expand their operations considerably. It is to be expected that they will increase their mass-production of intermediates and that in addition they will develop facilities for making full lines of consumers' goods not only for the Texas and Southwestern market but for the national market as well.

Larger Aspects of the Chemical Industry

The chemical industry represents *par excellence* the combination of science and technology and industrial organization in the building up of a tremendous sector of modern industry. More than that, however, the chemical industry is to be regarded as an institutional factor at once world-wide in its operations and now an inherent feature in all industries everywhere. All of which means that in the post-war period the challenge to chemistry so far as technology is concerned, to reign supreme in future industrialization will outrank most other considerations based upon technologic developments.

When we consider what this may well mean in the field of textiles or of plastics, of synthetic rubber and dyes and alcohols, of the light metals, of synthetic motor fuels and the like, to take some of the things that already are well in the foreground of current developments, then, indeed, in the light of accomplishments to date, are the potentialities imposing and the implications of the new industry developments so extensive and so far-reaching that the imagination almost balks at trying to visualize the "shape of things to come."

These are things that will affect and modify, even transform the industrial structure of the world at large; but they will do it only if the natural resources upon which they necessarily depend are available in adequate quantities; and the pattern of development to be followed will largely be determined by the patterns of natural resources, their world distribution, their inherent characteristics, and of the combinations in which nature has brought them into existence. It is to these factors that technology will have to adjust itself. All of which means that the potentialities will be laid out in great regional patterns, and that regions possessing the required natural resources will of necessity be the ones to receive primary consideration.

When we consider, for instance, the enormous potentialities that revolve about the chemistry of hydrocarbons on the one hand and on the other the magnificent display of oil and gas resources in Texas, we may be very sure that these resources will be called upon to play a most prominent part in days to come. That the utmost attention must be given the conservation of these irreplaceable resources cannot be questioned. Nor is it probable that the potentialities these resources hold for future industry have been at all fully realized even by those who have given most attention to these vital problems. Our specialized knowledge concerning the details of these dynamic problems is growing at an accelerated pace, and this has to be. On the other hand, it is just as necessary to have over-all points of view which will embrace these basic individual problems as interrelated aspects of an integrated synthesis.

From the very nature of the problems confronting them in laying out programs which of necessity are of a long-range nature, technologists are already giving much attention to presenting their problems in wider settings, both from a technologic and an economic point of view. For instance, G. H. Freyermuth, a technologist of the Standard Oil Company of New Jersey, in an article in *The Journal of Commerce* of April 12, 1943, concisely and pointedly summarizes "chemical synthesis methods widely used in the oil industry" as follows:

> Petroleum chemical research and engineering are forging not only a vastly more powerful weapon in World War II, but a weapon which in the post-war era most certainly will be the basis for opening vast new fields. These fields will affect the lives of everyone. . . . The simple availability of petroleum has not been enough. It has been necessary to convert this petroleum raw material into far more useful forms than were provided by nature. To achieve these has required the application of chemical synthesis in petroleum refining on an unprecedented scale. One of the most important products being provided from petroleum in this war, for example, is 100 octane gasoline—that, super-fuel on which the entire United Nations have now standardized and which, as compared to any naturally available fuel, makes possible an invaluable edge in power and economy for our fighting aircraft.

In many respects 100 octane gasoline is a true synthetic product. The blending agents which comprise nearly half of its total composition are really synthetic molecules precisely constructed from carefully prepared petroleum raw material.

These synthetic blending agents are incorporated into gasoline derived in part from natural sources, but much of which has been drastically revised in its chemical composition by equipment which accomplishes, on a huge scale, results which have been the pride even of a precise laboratory technician a few years before the outbreak of this war. To accomplish these changes, thousands of tons of petroleum will be processed in dramatic application of the use of catalysts in petroleum refining.

Such use of catalysts has entirely altered the refiners' picture of what can be done with a given type of crude or feed stock in the production of certain highly specialized types of products. The World War II refiners, in constructing and operating large full-scale equipment, think in terms of such chemical processes as hydrogenation, alkylation, polymerization, aromatization, superfractionation, isomerization—all terms which only the analytical and research chemist dared use not long ago.

Synthetic toluene is another 'war-baby' of the petroleum industry. Today toluene is being synthesized from petroleum hydrocarbons in tremendous quantities. This toluene is of extraordinary purity; in fact, is one of the first substantially chemically pure products ever produced commercially from petroleum. The importance of toluene is that it is one of the two prime raw materials necessary in the manufacture of TNT.

Some toluene occurs naturally in petroleum and, as a matter of fact, toluene was recovered from petroleum in World War I. By now, methods for recovering this natural toluene have been improved and are in use to recover the maximum natural toluene from petroleum, but which is by no means adequate to satisfy today's huge demands. The answer has been the synthesis of toluene by a catalytic process fortunately developed prior to the war and which, used in many of the industry's refineries, is now this country's mainstay in producing practically unlimited quantities of TNT.

Another war field involving chemical synthesis is the production of raw materials for synthetic rubber. The crises with which this country was faced in the supply of rubber after the Japs took Singapore and the Dutch East Indies was certainly one of the most desperate in our history. Yet today we confidently expect to make synthetically sufficient rubber to meet our minimum military and civilian needs.

In many respects this is one of the world's modern industrial miracles. It has been made possible in no small degree by the ability to produce butadiene from petroleum. Butadiene a few years ago was a rare chemical. Today well over a billion pounds a year are scheduled for production.

Styrene, which is also necessary to the synthetic rubber program, will be produced from petroleum by processes not used before on a commercial basis. In addition, isobutylene, a constituent of refinery cracking coil gases, is being separated and polymerized into butyl rubber—a synthetic of an entirely new type which may well be of great future importance.

Other Contributions

While aviation gasoline, toluene, and rubber are the more dramatic contributions of petroleum in World War II, they should not dim petroleum's many other chemical contributions to our fighting ability. Many base chemicals, such as alcohols, naphthenic acids, sulfonates, and ethylene are being produced from petroleum in quantities sufficient to alter entirely the country's supply picture in these critical chemicals.

In the rapidly growing field of chemical additives to change the characteristics of petroleum products, new wonders are being wrought. Detergents have been developed which phenominally improve the effectiveness of lubricants. Special inhibitors have been developed to increase greatly the resistance of lubricants to oxidation.

To the great fortune of this country, many of these new chemical processes, developed and applied for war purposes, will find an immediate useful market in the post-war world. Certainly no one can deny the potential benefit to every automobile or airplane owner of the greater power and efficiency of the newly available gasoline. Greatly improved lubricants will permit these engineers to develop these higher powers safely for longer lengths of time. More economical, less troublesome transportation will result.

As a raw material in the chemical field, petroleum seems to have crossed a threshold beyond which lie boundless possibilities. Only time will tell the extent to which the innumerable chemical products it is now known can be made from petroleum will affect our everyday life. New soaps, new textiles, new products of every kind offer a fascinating future to the chemist working in petroleum.

Elmer H. Johnson.

World Demand for United States Grown Cotton

World demand for United States grown cotton is not fixed but is a variable amount depending on many factors most of which are under our own control.

Almost 100 per cent of the cotton consumed in the world must first be made into yarn in spinning mills. The numbers of cotton spinning spindles in a country and the counts of yarn they make are reliable indicators of that country's demand for amounts and kinds of cotton.

Before this war started the world had approximately 145,000,000 cotton spinning spindles and of these Europe, including Russia, had about 87,700,000, North America 27,500,000, Asia 25,500,000, South America 3,000,000 and the rest of the world 1,300,000.

World mill consumption during the three years ending 1938–39 averaged 28,500,000 bales of cotton. During those same three years, world production of cotton outside the United States averaged 17,200,000 bales, and world consumption outside the United States averaged 21,600,000 bales which means that the minimum amount of cotton the United States could export to supply world demand was 4,400,000 bales.

The amount of United States grown cotton which the world outside the United States would take under more favorable trading relations would be substantially increased if it is safe to judge by past history.

Europe and, to a large extent, Asia outside of India will be bare of cotton when the war closes, and, in addition, there will be a large accumulated demand, at least a desire, due to the fact that people in these countries have been able to obtain little or no cotton goods for several years.

The European countries and Japan and China will need at least 2,000,000 bales of cotton immediately to stock their mills, and 1,000,000 bales monthly to supply them until a new crop is available. The country able to supply that greatly needed cotton and the credit and market facilities organized and mobilized to make the sales and transfers will be able to render the world an incalculable service in making the transition from a

war to a peace-time economy and have a greatly increased influence in shaping the world order after the war.

Types of United States Cotton in Demand in Foreign Coutries

Cotton has many uses which require many different characteristics, grades, and staple lengths of raw cotton. The location of the production of these various qualities is determined to a predominant degree by natural factors such as soil, and especially climate. The result is that the Orient, especially India and China, as shown in my March article, dominate the world's production of short staple cotton (cotton under 7/8 inch). Egypt aided somewhat by the Sudan and Peru dominate the world market for long staple cotton (cotton 1 1/8 inch and longer). Whereas the Americas, and more especially the United States, dominate the world markets for medium staple cottons (those 7/8 to 1 1/8 inch staple lengths), and these medium staple cottons because of their large volume and many uses tend to dominate the world markets for all cotton.

What kind of cotton do foreign countries want from this country? According to reports of United States cotton exporting merchants, about 39 per cent of our exports during the season 1937–38 was 15/16 and 31/32 inch, 29 per cent was 1 inch and 1 1/32, 19 per cent was 7/8 and 29/32 inch, 11 per cent was 1 1/16 and 1 3/32 inch. About 1.3 per cent was 1 1/8 inch and longer and less than 1 per cent under 7/8 inch.

It so happens that the countries predominating in the production of both cotton shorter than 7/8 inch and longer than 1 1/8 inch are countries characterized by small farms and relatively low incomes.

There is a very serious shortage of all cottonseed products, oil, meal, linters, and hulls. There is also a relative shortage of 15/16 and 31/32 inch cotton as well as some of the long staples. Facts cited above show that there will be a great and immediate need for lint cotton in the warring nations when the war comes to an end.

In view of the above facts, would it not be good policy for the United States to use its cotton production facilities to a greater degree, especially if the increased production were in those qualities of lint in great demand now and after the war?

A. B. Cox.

COTTON BALANCE SHEET FOR THE UNITED STATES AS OF APRIL 1

(In Thousands of Running Bales Except as Noted)

Year	Carryover Aug. 1	Imports to Apr. 1*	Final Ginnings	Total	Consumption to Apr. 1	Exports to Apr. 1*	Total	Balance Apr. 1
1933–1934	8,176	100	12,664	20,940	3,945	6,098	10,043	10,897
1934–1935	7,746	74	9,472	17,292	3,034	3,573	6,607	10,685
1935–1936	7,138	90	10,420	17,648	4,081	4,814	8,895	8,753
1936–1937	5,397	139	12,130	17,666	5,298	4,389	9,687	7,979
1937–1938	4,498	80	18,242	22,820	4,017	4,657	8,674	14,146
1938–1939	11,533	95	11,621	23,249	4,609	2,786	7,395	15,854
1939–1940	13,033	112	11,481	24,626	5,331	5,350	10,681	13,945
1940–1941	10,596	100	12,298	22,994	6,071	811	6,882	16,112
1941–1942	12,367	†	10,489	22,856	7,501	†	7,501	15,355
1942–1943	10,590	†	12,437	23,027	7,250	†	7,250	15,777

The cotton year begins August 1.
*Figures are in 500-pound bales.
†Not available.

EMPLOYMENT AND PAY ROLLS IN TEXAS

March, 1943

	Estimated Number of Workers Employed* Feb., 1943[1]	Estimated Number of Workers Employed* March 1943[2]	Percentage Change from Feb., 1943	Percentage Change from March 1942	Estimated Amount of Weekly Pay Roll Feb., 1943[1]	Estimated Amount of Weekly Pay Roll March, 1943[2]	Percentage Change from Feb., 1943	Percentage Change from March, 1942
MANUFACTURING								
All Manufacturing Industries	162,633	163,451	+ 0.5	+ 6.2	$4,567,057	$4,616,404	+ 1.1	+29.0
Food Products								
Baking	7,736	7,777	+ 0.5	+11.3	216,679	223,781	+ 3.3	+37.6
Carbonated Beverages	3,021	3,096	+ 2.5	+20.6	83,469	85,134	+ 2.0	+27.0
Confectionery	1,282	1,193	− 6.9	+20.4	16,787	15,947	− 5.0	+52.5
Flour Milling	2,132	2,202	+ 3.3	+11.7	50,947	56,970	+11.8	+53.1
Ice Cream	1,159	1,214	+ 4.7	+ 8.9	28,778	29,030	+ 0.9	+28.2
Meat Packing	6,231	6,045	− 3.0	+13.2	186,006	175,757	− 5.5	+31.0
Textiles								
Cotton Textile Mills	6,774	6,820	+ 0.7	− 5.0	141,892	142,462	+ 0.4	+ 7.9
Men's Work Clothing	4,807	5,095	+ 6.0	+17.3	67,526	76,851	+13.8	+30.4
Forest Products								
Furniture	1,799	1,783	− 0.9	−15.1	32,965	33,977	+ 3.1	− 8.6
Planing Mills	2,120	2,056	− 3.0	− 6.1	56,168	51,944	− 7.5	− 4.2
Saw Mills	16,125	16,108	− 0.1	− 8.0	254,219	250,205	− 1.6	+ 6.4
Paper Boxes	779	807	+ 3.6	+25.1	16,371	17,565	+ 7.3	+47.5
Printing and Publishing								
Commercial Printing	2,396	2,415	+ 0.7	+ 1.9	74,251	73,584	− 0.9	+22.6
Newspaper Publishing	4,179	4,246	+ 1.6	−13.7	108,510	114,092	+ 5.1	− 4.4
Chemical Products								
Cotton Oil Mills	3,445	2,997	−13.0	− 6.7	44,438	40,964	− 7.8	+27.2
Petroleum Refining	22,407	22,096	− 1.4	− 0.5	1,048,955	1,048,955	−[3]	+16.2
Stone and Clay Products								
Brick and Tile	1,766	1,784	+ 1.0	−15.2	28,542	28,333	− 0.7	− 2.6
Cement	1,184	1,165	− 1.6	−13.5	40,733	42,655	+ 4.7	− 5.5
Iron and Steel Products								
Structural and Ornamental Iron	2,867	2,945	+ 2.7	+15.7	76,186	79,140	+ 3.9	+34.6
NONMANUFACTURING								
Crude Petroleum Production	25,992	25,732	− 1.0	−15.4	1,096,247	1,093,032	− 0.3	− 0.8
Quarrying	[4]	[4]	− 3.6	−10.4	[4]	[4]	− 0.4	− 6.0
Public Utilities	[4]	[4]	− 0.1	+ 8.7	[4]	[4]	+ 0.1	+10.8
Retail Trade	204,153	205,587	+ 0.7	+ 9.9	4,269,814	4,308,830	+ 0.9	+19.6
Wholesale Trade	60,084	60,569	+ 0.8	− 5.5	2,079,016	2,132,987	+ 2.6	+ 7.1
Dyeing and Cleaning	2,714	2,775	+ 2.2	+14.4	52,051	53,302	+ 2.4	+36.4
Hotels	18,018	17,679	− 1.9	+11.7	263,785	266,216	+ 0.9	+35.6
Power Laundries	14,266	14,664	+ 2.8	+25.8	218,295	229,611	+ 5.2	+47.8

CHANGES IN EMPLOYMENT AND PAY ROLLS IN SELECTED CITIES[5]

	Employment Percentage Change Feb., 1943 to March, 1943	Employment Percentage Change March, 1942 to March, 1943	Pay Rolls Percentage Change Feb., 1943 to March, 1943	Pay Rolls Percentage Change March, 1942 to March, 1943
Abilene	+ 5.3	+ 51.9	+ 5.8	+ 25.3
Amarillo	− 4.1	− 4.0	− 3.8	+ 16.9
Austin	− 2.1	+ 25.2	− 7.1	+ 33.4
Beaumont	+ 0.1	+ 58.9	+ 5.0	+146.6
Dallas	− 0.8	+ 10.8	− 1.1	+ 31.3
El Paso	+ 0.3	− 1.4	+ 0.7	+ 12.1
Fort Worth	+ 9.6	+ 57.2	+ 12.3	+ 97.3
Galveston	− 7.5	+ 28.2	− 11.1	+ 3.0
Houston	+ 0.1	+ 12.5	+ 1.5	+ 18.1
Port Arthur	− 2.8	±[6]	− 1.0	+ 24.2
San Antonio	− 1.5	+ 3.3	− 1.4	+ 14.0
Sherman	− 1.9	+ 27.3	+ 7.0	+ 54.0
Waco	+ 0.5	+ 14.3	+ 0.3	+ 29.5
Wichita Falls	+ 3.5	+ 21.3	+ 2.9	+ 13.8
STATE	+ 1.3	+ 23.1	+ 3.5	+ 45.6

ESTIMATED NUMBER OF EMPLOYEES IN NONAGRICULTURAL BUSINESS AND GOVERNMENT ESTABLISHMENTS[7]

	1941	1942	1943		1941	1942[1]	1943
January	1,094,000	1,170,000	1,362,000	July	1,156,000	1,317,000	
February	1,120,000	1,199,000		August	1,176,000	1,352,000	
March	1,120,000	1,226,000		September	1,203,000	1,373,000	
April	1,114,000	1,222,000		October	1,219,000	1,384,000	
May	1,120,000	1,251,000		November	1,219,000	1,389,000	
June	1,134,000	1,291,000		December	1,222,000	1,413,700	

*Does not include proprietors, firm members, officers of corporations, or other principal executives. Factory employment excludes also office, sales, technical and professional personnel.
[1]Revised.
[2]Subject to revision.
[3]Less than 1/10 of one per cent.
[4]Not available.
[5]No change.
[6]Based on unweighted figures.
[7]Not including self-employed persons, casual workers, or domestic servants, and exclusive of military and maritime personnel. These figures are furnished by the Bureau of Labor Statistics, U.S. Department of Labor.
Prepared from reports from representative Texas establishments to the Bureau of Business Research cooperating with the Bureau of Labor Statistics.
Due to the national emergency, publication of data for certain industries is being withheld until further notice.

MARCH RETAIL SALES OF INDEPENDENT STORES IN TEXAS

	Number of Firms Reporting	Percentage Changes in Dollar Sales: Mar., 1943 from Mar., 1942	Mar., 1943 from Feb., 1943	Year 1943 from Year 1942
TOTAL TEXAS	943	+24	− 1	+32
STORES GROUPED BY LINE OF GOODS CARRIED:				
APPAREL	103	+38	−17	+63
Family Clothing Stores	29	+44	− 6	+67
Men's and Boys' Clothing Stores	34	+26	−16	+47
Shoe Stores	11	+20	−18	+70
Women's Specialty Shops	29	+46	−20	+74
AUTOMOTIVE*	66	+46	+62	+ 7
Motor Vehicle Dealers	65	+51	+66	+ 9
COUNTRY GENERAL	94	+24	+11	+24
DEPARTMENT STORES	59	+27	− 7	+43
DRUG STORES	117	+25	+ 6	+25
DRY GOODS AND GENERAL MERCHANDISE	23	+70	+ (a)	+75
FILLING STATIONS	31	+14	+ 4	+12
FLORISTS	24	+47	− (a)	+39
FOOD*	133	+35	+ 7	+25
Grocery Stores	42	+34	+ 7	+27
Grocery and Meat Stores	85	+34	+ 7	+23
FURNITURE AND HOUSEHOLD*	67	+ 7	+11	+14
Furniture Stores	59	+10	+14	+16
JEWELRY	27	+68	+13	+44
LUMBER, BUILDING, AND HARDWARE*	172	−19	+10	−12
Farm Implement Dealers	10	−28	− 9	−19
Hardware Stores	53	−16	+11	−11
Lumber and Building Material Dealers	106	−20	+13	−12
RESTAURANTS	15	+65	+13	+65
ALL OTHER STORES	12	+25	+ 7	+30
TEXAS STORES GROUPED ACCORDING TO POPULATION OF CITY:				
All Stores in Cities of—				
Over 100,000 Population	149	+21	− 9	+36
50,000–100,000 Population	110	+33	+ 6	+35
2,500–50,000 Population	461	+26	+ 9	+27
Less than 2,500 Population	223	+11	+12	+10

*Group total includes kinds of business other than the classifications listed.

(a) Change of less than .5%.

Prepared from reports of independent retail stores to the Bureau of Business Research, coöperating with the U.S. Bureau of the Census.

MARCH SHIPMENTS OF LIVE STOCK CONVERTED TO A RAIL-CAR BASIS*

	Cattle		Calves		Hogs		Sheep		Total	
	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942
Total Interstate Plus Fort Worth	6,121	3,547	736	709	1,557	1,094	678	639	9,092	5,989
Total Intrastate Omitting Fort Worth	716	391	228	112	59	8	20	8	1,023	519
TOTAL SHIPMENTS	6,837	3,938	964	821	1,616	1,102	698	647	10,115	6,508

TEXAS CAR-LOT* SHIPMENTS OF LIVE STOCK FOR YEAR 1943

	Cattle		Calves		Hogs		Sheep		Total	
	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942
Total Interstate Plus Fort Worth	13,680	9,628	2,014	2,219	3,985	2,907	2,011	1,413	21,690	16,167
Total Intrastate Omitting Fort Worth	2,380	1,156	604	329	209	35	166	45	3,359	1,565
TOTAL SHIPMENTS	16,060	10,784	2,618	2,548	4,194	2,942	2,177	1,458	25,049	17,732

*Rail-car Basis: Cattle, 30 head per car; calves, 60; hogs, 80; and sheep, 250.

Fort Worth shipments are combined with interstate forwardings in order that the bulk of market disappearance for the month may be shown.

NOTE: These data are furnished the United States Bureau of Agricultural Economics by railway officials through more than 1,500 station agents, representing every live stock shipping point in the State. The data are compiled by the Bureau of Business Research.

MARCH RETAIL SALES OF INDEPENDENT STORES IN TEXAS BY DISTRICTS

	Number of Firms Reporting	Percentage Changes in Dollar Sales: Mar., 1943 from Mar., 1942	Mar., 1943 from Feb., 1943	Year 1943 from Year 1942
TOTAL TEXAS	943	+24	− 1	+32
TEXAS STORES GROUPED BY PRODUCING AREAS:				
District 1–N	67	+55	+ 9	+44
Amarillo	23	+80	+ 5	+63
Pampa	12	+45	+20	+34
Plainview	12	+47	+ (1)	+34
All Others	20	+25	+16	+22
District 1–S	29	+41	+18	+36
Lubbock	16	+42	+22	+38
All Others	13	+38	+ (1)	+29
District 2	84	+28	+ 9	+26
Abilene	15	+57	+10	+62
Wichita Falls	12	+18	+ 4	+12
All Others	57	+17	+10	+13
District 3	35	+ 6	+ 7	+13
District 4	200	+30	−10	+44
Dallas	33	+26	−15	+43
Ft. Worth	24	+35	− 9	+47
Sherman	11	− 3	+ 5	+13
Waco	23	+46	− 1	+56
All Others	109	+33	+ 8	+39
District 5	93	+13	+ 5	+15
District 6	42	+38	+ 9	+33
El Paso	22	+37	+10	+31
All Others	20	+44	+ (1)	+51
District 7	52	+22	+ 9	+21
San Angelo	11	+26	+ 1	+29
Fredericksburg	10	− 3	+12	+ 2
All Others	31	+24	+21	+15
District 8	160	+19	+ 1	+30
Austin	18	+13	+10	+24
San Antonio	48	+23	− 4	+36
All Others	94	+15	+10	+16
District 9	114	+10	− 2	+21
Beaumont	11	+41	−10	+50
Houston	44	+ 6	− 6	+19
Port Arthur	10	+39	+ 6	+43
All Others	50	+ 6	+17	+ 7
District 10	25	+34	− 4	+38
District 10–A	43	+36	+21	+22
Brownsville	11	+31	+12	+20
All Others	32	+39	+25	+24

(1) Change of less than .5%.

NOTE: Prepared from reports of independent retail stores to the Bureau of Business Research, coöperating with the U.S. Bureau of the Census.

PERCENTAGE CHANGES IN CONSUMPTION OF ELECTRIC POWER

	March, 1943 from March, 1942	March, 1943 from Feb., 1943	Year 1943 from Year 1942
Commercial	+ 22.6	− 2.4	+ 17.0
Industrial	+ 21.8	+ 8.9	+ 14.9
Residential	+ 10.2	− 6.0	+ 7.4
All Others	+182.1	+ 16.4	+153.2
TOTAL	+ 40.9	− 6.5	+ 31.7

Prepared from reports of 11 electric power companies to the Bureau of Business Research.

PETROLEUM

DAILY AVERAGE PRODUCTION

(In Barrels)

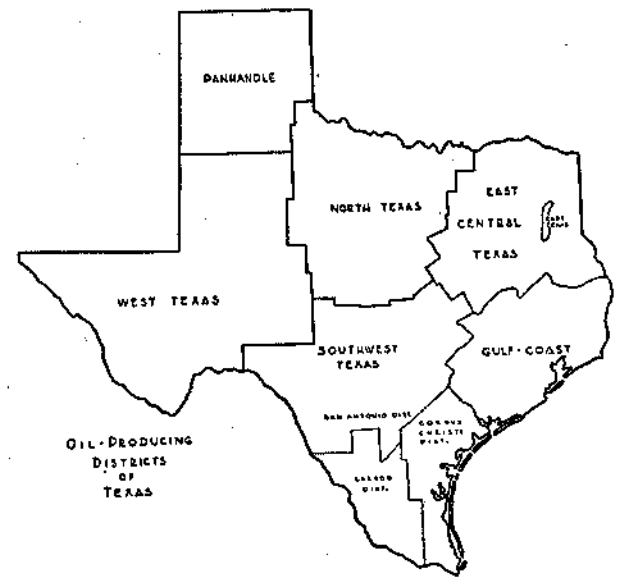
	March, 1943	March, 1942	Feb., 1943
Coastal Texas*	353,250	262,000	320,450
East Central Texas	99,800	86,000	100,550
East Texas	323,400	312,300	325,100
North Texas	136,800	146,450	135,350
Panhandle	88,600	84,800	88,900
Southwest Texas	172,900	187,450	162,150
West Texas	218,100	213,250	210,700
STATE	1,392,850	1,292,250	1,343,200
UNITED STATES	3,898,750	3,740,300	3,867,900

Gasoline sales as indicated by taxes collected by State Comptroller were: February, 1943, 95,327,649 gallons; February, 1942, 106,415,000 gallons; January, 1943, 87,375,064 gallons.

*Includes Conroe.

NOTE: From American Petroleum Institute.

See accompanying map showing the oil producing districts of Texas.



CEMENT

(In Thousands of Barrels)

	Feb., 1943	Feb., 1942	Jan., 1943
Texas Plants			
Production	687	878	809
Shipments	929	811	668
Stocks	630	809	872
United States			
Production	10,293	10,813	12,560
Shipments	8,656	8,285	8,641
Stocks	23,005	25,714	21,347
Capacity Operated	54.0%	57.0%	60.0%

NOTE: From U.S. Department of Interior, Bureau of Mines.

BUILDING PERMITS

	Mar., 1943	Mar., 1942	Feb., 1943	Year 1943	Year 1942
Abilene	$ 9,940	$ 84,535	$ 6,647	$ 20,592	$ 284,654
Austin	47,228	447,425	18,772	79,372	984,947
Beaumont	44,376	1,370,767	1,620,890	1,684,093	1,856,936
Cleburne	2,400*	1,650*	†	†	†
Coleman	0	3,700	0	0	100,750
Corpus Christi	352,963	262,382	18,814	510,286	1,487,963
Corsicana	2,385	99,775	1,430	4,785	112,025
Dallas	135,896	659,894	149,604	445,891	3,998,630
Denton	2,675	3,100	330	3,605	23,005
Edinburg	685	8,420	5,059	†	†
El Paso	61,352	933,758	32,468	134,459	1,132,417
Fort Worth	89,461	834,094	357,355	630,777	1,775,021
Galveston	224,192	237,715	14,446	254,059	580,338
Harlingen	2,265	36,900	0	2,615	55,975
Houston	3,429,310	1,486,210	63,105	3,617,980	4,367,635
Jacksonville	700	5,300	1,100	2,300	11,800
Kenedy	0	0	0	0	1,040
Kerrville	673	12,625	380	1,498	25,725
Laredo	5,329	23,485	5,372	14,741	30,835
Lubbock	15,647	851,453	15,875	44,217	1,600,031
Lufkin	650	50,101	1,072	7,770	66,206
McAllen	11,635	43,346	2,305	16,418	90,823
Marshall	275,056	45,010	5,673	282,904	124,758
Midland	1,325	82,130	3,525	5,385	215,020
New Braunfels	525	5,295	1,600	3,879	21,604
Palestine	2,590	3,480	6,915	18,704	14,669
Pampa	111,300	14,050	49,000	160,300	135,550
Paris	12,530	35,775	49,250	70,960	90,333
Plainview	800	1,757	7,455	9,230	5,757
Port Arthur	12,919	14,347	8,840	27,405	148,020
San Antonio	224,872	776,225	85,390	436,666	2,079,798
Sherman	17,971	82,234	8,499	35,887	137,356
Snyder	0	7,000	150	650	13,350
Sweetwater	2,205	13,930	2,010	8,755	39,300
Tyler	3,129	55,718	2,375	8,759	148,735
Waco	62,298	172,388	13,526	121,374	469,709
Wichita Falls	6,082	144,155	9,420	21,556	224,251
TOTAL	$ 5,170,964	$ 8,908,479	$ 2,568,652	$ 8,687,872	$22,454,966

NOTE: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.
*Not included in total.
†Not available.

MARCH, 1943, CARLOAD MOVEMENTS OF POULTRY AND EGGS

Shipments from Texas Stations

	Cars of Poultry				Cars of Eggs							
	Chickens		Turkeys		Shell		Frozen		Dried		Shell Equivalent*	
	March						March					
	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942
TOTAL	5	13½	1	4½	35	9	52	158	72	122½	715	1,305
Intrastate	1	0	0	0	29	4	27	96	4	24½	115	392
Interstate	4	13½	1	4½	6	5	25	62	68	98	600	913

Receipts at Texas Stations

TOTAL	0	½	0	½	29	21	34	68	2	29	113	389
Intrastate	0	½	0	½	21	14	31	60	2	29	99	366
Interstate	0	0	0	0	8	7	3	8	0	0	14	23

*Dried eggs and frozen eggs are converted to a shell-egg equivalent on the following basis: 1 rail carload of dried eggs=6 carloads of shell eggs, and 1 carload of frozen eggs=2 carloads of shell eggs.

NOTE: These data furnished to the Division of Agricultural Statistics, B.A.E., by railroad officials through agents at all stations which originate and receive carload shipments of poultry and eggs. The data are compiled by the Bureau of Business Research.

POSTAL RECEIPTS

	Mar., 1943	Mar., 1942	Feb., 1943	Year 1943	Year 1942
Abilene	$ 41,638	$ 35,042	$ 37,124	$ 126,376	$ 94,684
Amarillo	49,911	33,756	47,592	147,732	99,635
Austin	88,872	79,049	77,137	247,638	233,088
Beaumont	41,127	31,743	36,909	116,163	92,944
Big Spring	10,516	6,450	8,937	29,212	19,903
Brownwood	31,171	27,406	28,201	86,454	64,125
Childress	4,461	2,820	3,559	8,691	11,555
Coleman	3,529	3,269	3,872	11,356	9,223
Corpus Christi	54,414	45,218	47,969	149,443	129,469
Corsicana	8,235	6,534	7,386	23,899	19,454
Dallas	485,740	414,790	447,624	1,354,054	1,189,388
Del Rio	5,252	3,510	4,144	14,453	10,228
Denison	9,469	7,166	7,826	25,381	20,782
Denton	11,552	8,494	8,903	30,783	26,215
Edinburg	3,676	3,115	3,124	10,771	9,486
El Paso	88,690	66,999	76,228	256,320	192,970
Fort Worth	222,502	170,254	186,031	596,604	483,823
Galveston	43,416	40,996	42,591	133,053	110,922
Gladewater	3,321	3,449	3,080	11,017	9,868
Harlingen	10,540	7,956	9,302	30,285	20,545
Houston	334,633	292,651	290,617	926,083	844,104
Kenedy	1,966	1,247	1,779	5,764	4,198
Kerrville	3,322	2,688	2,994	9,429	8,426
Lubbock	31,197	23,832	27,773	86,887	70,537
Lufkin	5,604	5,444	5,701	18,064	16,355
McAllen	5,620	4,891	5,655	17,474	16,485
Marshall	9,261	7,861	7,724	25,638	21,490
Palestine	6,701	5,800	5,937	20,293	18,228
Pampa	9,291	6,853	7,880	26,400	20,961
Paris	18,885	7,265	17,256	55,140	20,613
Plainview	5,204	4,570	4,500	14,895	13,082
Port Arthur	24,499	16,143	21,498	67,316	48,675
San Angelo	17,781	14,314	16,742	52,937	43,037
San Antonio	253,305	168,440	205,382	681,557	487,863
Sherman	11,057	9,390	9,041	31,278	26,592
Snyder	1,819	1,693	1,635	5,840*	†
Sweetwater	7,459	5,674	5,952	21,033	16,791
Tyler	75,013	16,318	25,414	123,279	49,091
Waco	42,078	36,490	41,975	127,275	105,365
Wichita Falls	41,167	49,951	38,501	116,545	141,518
TOTAL	$2,123,894	$1,679,531	$1,831,495	$5,836,972	$4,821,718

Note: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.
*Not included in total.
†Not available.

TEXAS COMMERCIAL FAILURES

	March, 1943	March, 1942	Feb., 1943	First Quarter 1943	First Quarter 1942
Number	1	12	0	7	46
Liabilities†	$10	$116	0	$44	$926
Assets†	8	60	0	23	730
Average Liabilities per failure†	10	9	0	6	20

†In thousands.
Note: From Dun and Bradstreet, Inc.

LUMBER

(In Board Feet)

	March, 1943	March, 1942	Feb., 1943
Southern Pine Mills:			
Average Weekly Production per unit	245,985	298,315	269,219
Average Weekly Shipments per unit	270,591	346,648	289,063
Average Unfilled Orders per unit, end of month	1,461,361	1,762,344	1,577,290

Note: From Southern Pine Association.

MARCH CREDIT RATIOS IN TEXAS DEPARTMENT AND APPAREL STORES

(Expressed in Per Cent)

	Number of Stores Reporting	Ratio of Credit Sales to Net Sales 1943	1942	Ratio of Collections to Outstandings 1943	1942	Ratio of Credit Salaries to Credit Sales 1943	1942
All Stores	52	50.9	64.3	61.8	40.9	1.2	1.0
Stores Grouped by Cities:							
Austin	6	44.1	57.5	70.0	47.7	1.4	1.1
Dallas	6	64.1	75.9	61.2	42.2	0.8	0.7
El Paso	3	43.5	55.3	69.1	40.1	1.3	1.3
Fort Worth	5	47.8	62.4	62.2	41.0	1.3	1.2
Houston	8	48.7	63.6	55.2	40.0	1.6	1.3
San Antonio	4	38.9	53.3	63.4	41.2	1.6	1.5
Waco	5	50.5	61.6	60.1	32.0	1.2	1.3
All Others	15	44.1	56.2	70.2	39.8	1.3	1.2
Stores Grouped According to Type of Store:							
Department Stores (Annual Volume Over $500,000)	17	50.0	63.6	63.4	41.7	1.3	1.1
Department Stores (Annual Volume under $500,000)	9	43.1	53.9	65.3	38.4	1.4	1.3
Dry-Goods-Apparel Stores	3	46.8	57.5	66.6	40.6	1.8	1.8
Women's Specialty Shops	12	57.1	67.9	57.7	38.2	0.8	0.5
Men's Clothing Stores	11	49.3	67.7	60.3	41.8	1.5	1.3
Stores Grouped According to Volume of Net Sales During 1942:							
Over $2,500,000	13	46.3	60.1	64.9	41.1	1.3	1.2
$2,500,000 down to $1,000,000	8	48.6	62.6	59.7	41.5	1.3	1.1
$1,000,000 down to $500,000	6	43.4	55.8	65.9	43.6	1.7	1.2
Less than $500,000	25	38.2	52.7	66.3	39.7	1.9	1.7

NOTE: The ratios shown for each year, in the order in which they appear from left to right are obtained by the following computations: (1) Credit Sales divided by Net Sales. (2) Collections during the month divided by the total accounts unpaid on the first of the month. (3) Salaries of the credit department divided by credit sales. The data are reported to the Bureau of Business Research by Texas retail stores.

COMMODITY PRICES

	Mar., 1943	Mar., 1942	Feb., 1943
Wholesale Prices:			
U.S. Bureau of Labor Statistics (1926=100%)	103.5	97.6	102.5
Farm Prices:			
U.S. Dept. of Agriculture (1910–1914=100%)	*	146.0	178.0
U.S. Bureau of Labor Statistics (1926=100%)	122.8	102.8	119.0
Retail Prices:			
Food (U.S. Bureau of Labor Statistics (1935–1939=100%)	†	118.6	133.6
Dept. Stores (Fairchild's Publications January, 1931=100%)	113.1	112.5	113.1

*Not available.
†Delayed by changes which must be made in the food index because of rationing and current short supplies of ordinary foods.

TEXAS CHARTERS

	March, 1943	March, 1942	Feb., 1943	First Quarter 1943	First Quarter 1942
Domestic Corporations:					
Capitalization*	1,576†	742	239	2,142	3,208
Number	39	89	20	89	295
Classification of new corporations:					
Banking-Finance	1	1	0	2	2
Manufacturing	5	4	4	12	19
Merchandising	7	11	7	18	29
Oil	5	4	1	10	17
Public Service	0	0	0	1	1
Real Estate Building	14	55	2	26	162
Transportation	1	4	2	5	14
All Others	6	10	4	15	51
Number capitalized at less than $5,000	12	54	8	32	160
Number capitalized at $100,000 or more	2	2	0	2	6
Foreign Corporations (Number)	13	8	16	47	37

*In thousands.
†Capital Stock Subscribed of one Corp. was $1,000,000.
NOTE: Compiled from records of the Secretary of State.

DAIRY PRODUCTS MANUFACTURED IN PLANTS IN TEXAS

Products and Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
CREAMERY BUTTER (1000 lb.)													
1943*	3,012	3,001	2,724										
1942*	2,341	2,076	2,131	3,311	4,396	4,353	3,740	3,735	3,640	3,343	2,659	2,341	38,066
1930–39 average	2,074	2,109	2,392	3,138	3,556	3,166	4,113	2,867	2,513	2,608	2,301	2,211	32,048
ICE CREAM (1000 gal.)													
1943*	1,554	1,218	1,408										
1942*	745	700	1,014	1,312	1,812	2,305	2,294	2,190	1,838	1,585	1,323	1,046	16,089
1930–39 average	1,215	1,262	434	570	752	893	904	846	686	460	259	205	6,486
AMERICAN CHEESE (1000 lb.)													
1943*	874	1,025	1,108										
1942*	1,308	1,302	1,644	2,204	2,756	2,674	2,559	1,989	1,649	1,184	713	735	20,717
1930–39 average	554	590	737	1,050	1,215	1,129	1,119	1,025	866	852	718	641	10,496
MILK EQUIVALENT OF DAIRY PRODUCTS† (1000 lb.)													
1943*	98,377	90,422	88,511										
1942*	75,435	77,913	83,621	48,827	148,707	145,064	145,868	131,841	119,279	104,273	83,502	72,806	1,237,136
1930–39 average	54,675	57,139	67,456	89,641	104,323	97,562	97,075	89,185	76,165	73,444	60,119	55,872	922,656

*Estimates of production made by the Bureau of Business Research.

†Milk equivalent of dairy products was calculated from production data by the Bureau of Business Research.

NOTE: 10-Year Average production of creamery butter, ice cream and American Cheese based on data from the Division of Agricultural Statistics, B.A.E.

Series II

PROGRESS REPORT NO. 1

Comparison of Family Income and Expenditures for Five Principal Budget Items in Twenty Texas Communities 1941 and 1942

Released April, 1943—Price One Dollar for Series
Limited Supply of Copies Available

This is the first of a series of progress reports to be issued, similar to Series I released in 1942, based on the cost-of-living surveys made in twenty Texas communities during the fall of 1941 and fall of 1942, giving comparison of expenditures in the two years for food, rent and house payments, clothing, utilities, and car costs—by race and income—for Texas families in these communities.

LIST OF PUBLICATIONS

1. *The Possibilities of Cotton Manufacturing in Texas;* by Charles J. Rudolph Grossman, Industrial Engineer; Research Monograph No. 1; August 22, 1928. Price $1.00.
2. *A Market Analysis of Cattle Industry in Texas;* by George M. Lewis, Assistant Director, Department of Marketing, Institute of American Meat Packers, formerly in charge of Livestock Marketing Studies in the Bureau of Business Research, The University of Texas; Research Monograph No. 2; September 22, 1928. Price $1.00.
3. *What Place Has the Advertising Agency in Market Research;* by William J. Reilly, Marketing Specialist and Associate Professor of Business Administration; Research Monograph No. 3; April 22, 1929. Price $1.00.
4. *Methods for the Study of Retail Relationships;* by William J. Reilly, Marketing Specialist and Associate Professor of Business Administration; Research Monograph No. 4; November 22, 1929. Price $1.00.
5. *Statistical Survey of Agriculture in the Territory Served by East Texas Chamber of Commerce;* by Charles J. Rudolph Grossmann, Industrial Engineer; June, 1930. Mimeographed.
6. *An Analysis of Shipments of Texas Sheep and Goats;* by George M. Lewis, Assistant Director, Department of Marketing, Institute of American Meat Packers, formerly in charge of Livestock Marketing Studies in the Bureau of Business Research, The University of Texas; Research Monograph No. 7; September 8, 1930. Price $1.00.
7. *A System of Accounting Procedure for Livestock Ranches;* by Frederick W. Woodbridge, Professor of Accounting, University of Southern California, formerly Adjunct Professor of Accounting, The University of Texas; Research Monograph No. 5; October 22, 1930. Price $1.50.
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15. *A Balance Sheet Analysis of Texas State Banks as of December 31, 1929;* by Herschel C. Walling, C.P.A., Associate Research Statistician, and James Edwin Russell, Assistant Research Accountant; July, 1931. Mimeographed.
16. *Trends of Development of Texas Financial Institutions;* by R. V. Shirley and Bervard Nichols; August, 1931. Mimeographed.

*17. *Proceedings of the First Texas Business Planning Conference;* March, 1932. Mimeographed.

*18. *Dairy Manufactured Products in Texas;* by F. A. Buechel, Assistant Director; December 7, 1932. Mimeographed.

*19. *Directory of Texas Manufacturers,* Classified by Cities and by Products as of July 15, 1932; by F. A. Buechel, Assistant Director, Martha Ann Znzley, Alice Bell and Marjorie Vogan, Research Assistants; January, 1933.

20. *Directory of Texas Manufacturers,* Classified by Cities and by Products as of January 1, 1936; by F. A. Buechel, Assistant Director, and Clara H. Lewis, Editorial Assistant; March, 1936. Price $1.00.
21. *Directory of Texas Manufacturers,* Classified by Cities and by Products; by F. A. Buechel, Assistant Director, and Clara H. Lewis, Editorial Assistant; December 1, 1938: Price $2.00.
22. *Power Companies Operating in the State of Texas, Generating Plants, General Offices, and Points Served,* December 1, 1938, Supplement to the 1938 edition of the Directory of Texas Manufacturers; March 1, 1939. Mimeographed.
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    Power Companies Operating in the State of Texas, Generating Plants, General Offices, and Points Served; December 1, 1940.
    List of Texas Florists Alphabetically Arranged; January, 1941.
    Texas Chick Hatcheries; January 1, 1941.
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25. *Directory of Texas Wholesale Firms,* Classified by Cities and by Products; by F. A. Buechel, Assistant Director, and Clara H. Lewis, Editorial Assistant; January 1, 1940. Price $2.00.
26. *Directory of Texas Wholesale Firms,* Classified by Cities and by Products; by F. A. Buechel, Assistant Director, and Edward R. Dedeke, Research Assistant; February, 1942. Price $2.00.
27. *The Basis of the Commercial and Industrial Development of Texas,* A Study of the Regional Development of Texas Resources; by Elmer H. Johnson, Industrial Geographer; Research Monograph No. 9; March 1, 1933. Price $2.00.
28. *Eight Years of Livestock Shipments in Texas, 1925–1932,* Part I: Cattle and Calves, Monthly Shipments and Receipts from and to Texas Classified by Points of Origin and Destination on a District Basis; by F. A. Buechel, Assistant Director; Research Monograph No. 10; March 15, 1933. Price $1.00.
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*33. *Possibilities of Industrial Expansion in Texas,* Preliminary Report; by Elmer H. Johnson, Industrial Geographer; March, 1936. Mimeographed.

34. *Manufacture of Dairy Products in Texas;* by F. A. Buechel, Assistant Director; January 1, 1936. Mimeographed.

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37. *Farm Cash Income in Texas, 1927–1938,* Preliminary Report; by F. A. Buechel, Assistant Director, and Elmer H. Johnson, Industrial Geograpaher; September 1, 1938. Price 1.00. Mimeographed.

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39. *Preliminary Consumer Report* on Family Budgets and Per Capita Consumption of Staple Articles of Food Together with Consumer Opinions, Habits, and Preferences with Reference to Retail Purchases; by F. A. Buechel, Assistant Director, and Edward R. Dedeke, Research Assistant; 1940. Mimeographed.

40. *Progress Report No. 1* on Studies of Family Expenditures and Per Capita Consumption in Nine Texas Communities; by F. A. Buechel, Assistant Director, and Edward R. Dedeke, Research Assistant; January, 1942. Price, Series, $1.00. Mimeographed.

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43. *Progress Report No. 3,* Family Income and Expenditure by Occupational Groups in Twenty-four Texas Communities; by F. A. Buechel, Assistant Director, and Edward R. Dedeke, Research Assistant; August, 1942. Price, Series, $1.00. Mimeographed.

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*Exhausted.

CONTENTS