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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
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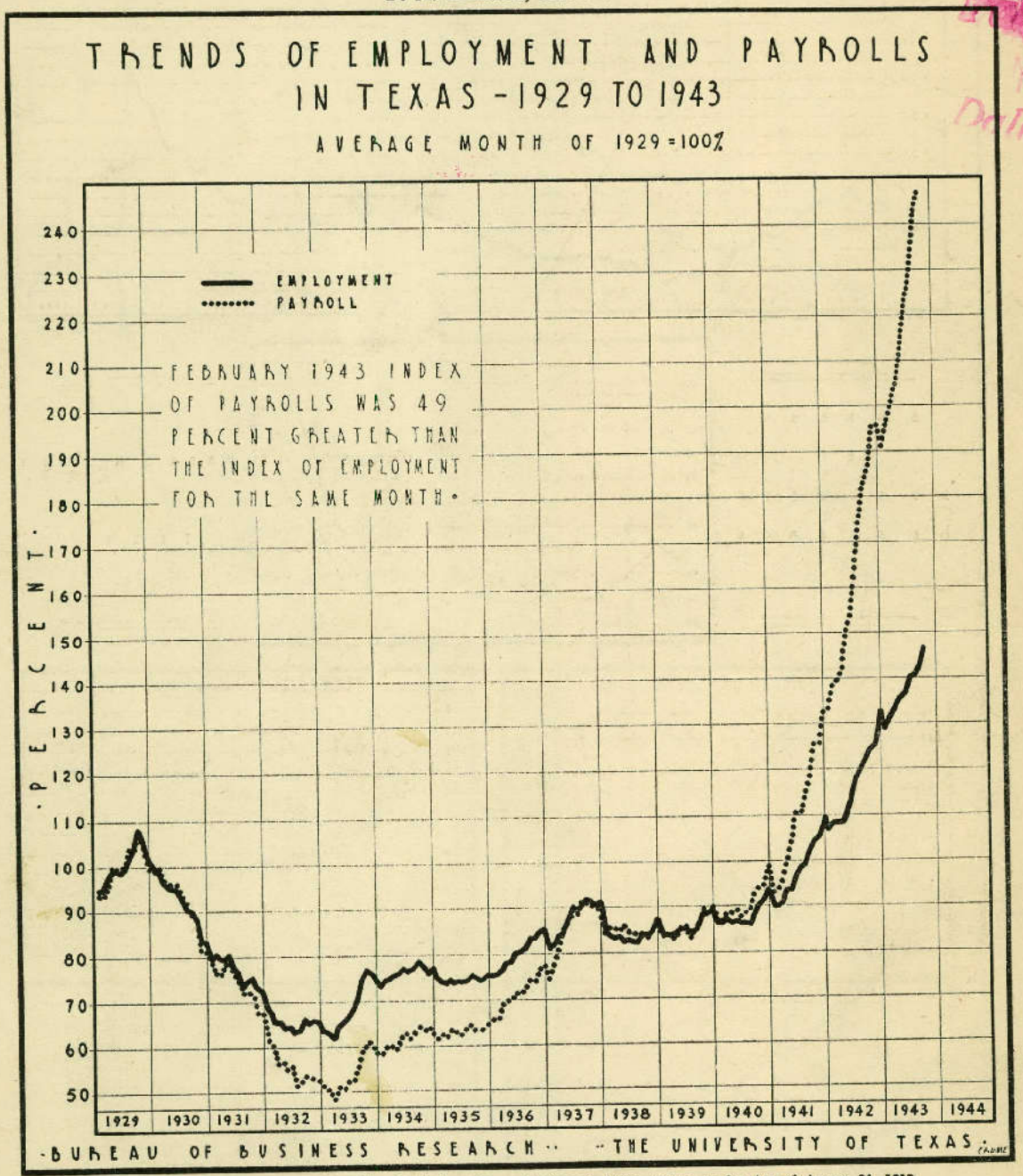

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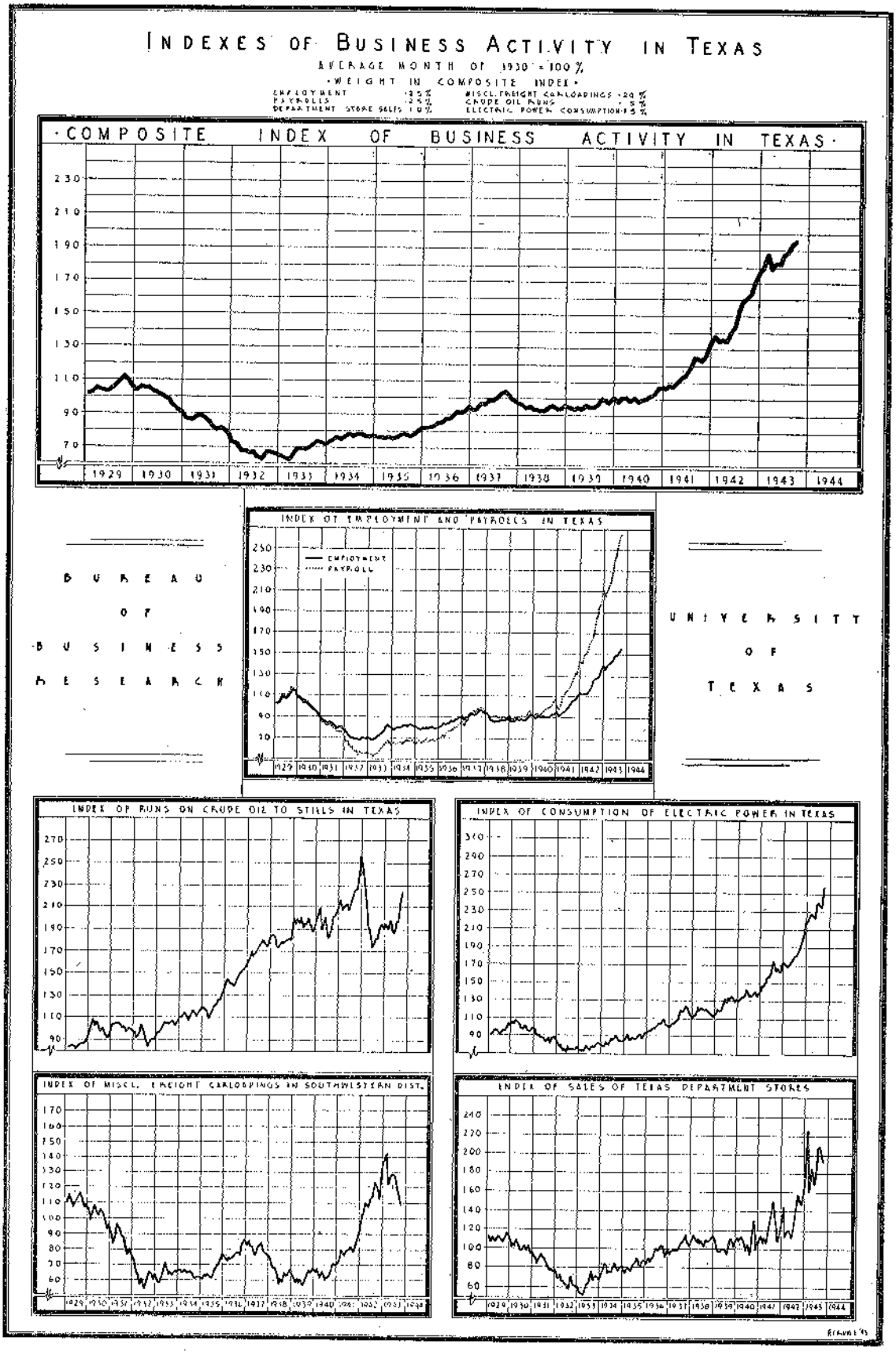

INDEXES OF BUSINESS ACTIVITY IN TEXAS
AVERAGE MONTH OF 1930 = 100%
WEIGHT IN COMPOSITE INDEX
EMPLOYMENT 25%
PAYROLLS 25%
DEPARTMENT STORE SALES 10%
MISCL. FREIGHT CARLOADINGS 20%
CRUDE OIL RUNS 5%
ELECTRIC POWER CONSUMPTION 15%
COMPOSITE INDEX OF BUSINESS ACTIVITY IN TEXAS
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944
BUREAU OF BUSINESS RESEARCH
INDEX OF EMPLOYMENT AND PAYROLLS IN TEXAS
EMPLOYMENT
PAYROLL
UNIVERSITY OF TEXAS
INDEX OF RUNS ON CRUDE OIL TO STILLS IN TEXAS
INDEX OF CONSUMPTION OF ELECTRIC POWER IN TEXAS
INDEX OF MISCL. FREIGHT CARLOADINGS IN SOUTHWESTERN DIST.
INDEX OF SALES OF TEXAS DEPARTMENT STORES

Business Review and Prospect

Pearl Harbor was the "ignition spark" which touched off two outstanding achievements in our national life: first, the development of a well-trained, well-balanced military organization; and, second, the creation of a highly efficient industrial establishment for the production of war materials (including food) on a global scale.

It appears, moreover, that the average American layman is definitely conscious and appreciative of the excellence of these achievements, although he may be utterly unfamiliar with the complicated technical processes involved in attaining both of these epoch-making results. He also appears to have confidence that the leadership, technical skill, and management which have thus far accomplished such outstanding achievements in a comparatively short time can be trusted to move forward with increasing momentum until complete military victory will have been attained. Here, indeed, are examples of the leaders in science and industry winning the acclaim of their rank-and-file contemporaries for work well done.

But how about the civilian problems after the war—economic, political, and social? Will there be a "spark" which will set off an inspired, constructive leadership and stir up a loyal citizenship in these fields comparable to that which brought into being almost over night the huge military establishment for meeting our national military crisis? Can the forces and factors which have become so highly effective in production for war be converted into agencies equally effective in production for the needs of peace? The demand for answers to this type of question will become more insistent during coming months throughout the land. Men and women in the armed services will expect that, in addition to providing the implements of war, those remaining at home will have laid the foundations for the speedy re-entrance of those now in the armed service into the type of economic and social organization for which the war is being fought.

In the September issue of the REVIEW, under the heading, "The Bases of Productive Capacity in Texas," attention was called to the type of information needed in the development of our civilian economy. Articles which have appeared regularly in the REVIEW during the past several years, and those which will appear in the forthcoming issues, outline the point of view and the factual bases which are believed to be essential in any systematic program for the development of our economy after the war. More detailed analyses of the problem are contained in a series of studies which at present range from work outlines to completed manuscripts. It is hoped that in this work the Bureau may contribute its part in the development of a dynamic program of post-war economy in which science, technology, and organizational ability will all be mobilized for the attainment of a clean-cut objective. Can the schools and colleges be counted upon to aid in developing a peace-time educational program which will provide a steady flow of skilled workers, technologists, scientists, and business leaders for such a program?

TEXAS BUSINESS

Industry and trade in Texas continued their upward trend through September, although the rate of gain was less than during the preceding month. The employment index at 155.8 was up 2.6 per cent from August to September, and the pay roll index at 265.1 gained 1.7 per cent during this period. Compared with September, 1942, the employment index showed a gain of twenty per cent and the pay roll index thirty-five per cent. The chart on the outside cover page of this issue of the REVIEW gives a graphic picture of the changes in the monthly indexes of employment and pay rolls in relation to 1929 as the base year. It is of interest to note how much higher the pay roll index is now than it was during the earlier prosperity year of 1929. The employment index has fallen far behind the pay roll index during the past two years, but in spite of this fact, the number of workers in the State as reflected by the employment index is seen to be far above that of 1929. A rounding off of the graphs for both employment and pay rolls is to be expected in the near future, as capacity production in the war industries of the State is approximated and the forty-eight hour work week becomes more universally effective.

SEPTEMBER INDEXES OF BUSINESS ACTIVITY IN TEXAS

Average Month of 1930=100%)

	Sept., 1943	Sept., 1942	Aug., 1943
Employment	155.8	129.8	151.7
Pay Rolls	265.1	196.3	260.7
Miscellaneous Freight Carloadings (Southwest District)	108.2	112.3	119.4
Runs of Crude Oil to Stills	224.6	181.3	215.3
Department Store Sales	193.2	150.3	210.8
Electric Power Consumption	258.0	217.7	235.2
COMPOSITE	196.1	160.7	194.1

Other indexes, seasonally adjusted, showing gains over both August and September last year were those of runs of crude oil to stills and electric power consumption; while indexes showing declines from August to September were those of miscellaneous freight carloadings and department store sales, but the index of the latter was sharply above that of September last year. The composite index rose two points during the month, and is thirty-six points above September, 1942.

Farm Cash Income

Because of the unusually heavy ginnings of cotton during August, a result of the early maturing of the crop on account of the hot, dry weather, relatively less than normal was ginned during September, and, as a consequence, income from cotton and cottonseed failed to make as large a seasonal gain as generally occurs from August to September. However, the September farm cash income of 144 million dollars, as computed by this Bureau, was nearly twenty per cent above the 121 million dollars received by farmers during August, and four per cent greater than during September last year; while the aggregate computed farm income from January to September, inclusive, was 728 million dollars, against 555 million dollars during the corresponding period a year ago—an increase of thirty-one per cent.

INDEXES OF AGRICULTURAL CASH INCOME IN TEXAS

(Average month of 1928=100%)

Districts	Sept., 1943	Aug., 1943	Sept., 1942	Computed cash Income Cumulative January to October 1943	1942
1–N	213.5	138.4	172.6	77,807	62,211
1–S	536.4	314.5	331.2	50,852	34,443
2	147.7	198.9	164.5	59,938	53,390
3	207.5	331.4	231.4	33,111	31,090
4	111.8	170.7	116.7	126,236	107,834
5	81.8	153.3	66.1	61,267	35,922
6	232.9	132.1	289.6	32,441	23,628
7	138.9	248.9	179.4	52,724	51,087
8	135.5	159.3	139.6	88,228	63,879
9	194.2	261.0	118.4	56,862	37,929
10	160.7	198.2*	144.2	26,158	15,503
10–A	69.4	278.4*	137.0	62,413	38,008
STATE	129.0	183.3*	125.0	728,037	554,924

*Revised.

Correction: An error was made in the August, 1943, cumulative totals for District 10, 10–A, and the state. The figures are respectively: $24,516,000; $61,773,000; and $584,329,000.

Note: Farm cash income as computed by this Bureau understates actual farm cash income by from six to ten 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.

Cotton ginnings in Texas prior to October 1 for the current cotton year were 1,472,000 bales compared with 1,227,000 bales ginned to the same date last year, and 808,000 bales ginned to the same date in 1941. Accordingly, only 1,378,000 bales of the present crop year remain to be ginned after October 1, if the October 1 estimate of production proves correct; whereas, last year, 1,811,000 bales were left to be ginned after that date. Hence, income from cotton and cottonseed during the coming three months promises to be less than during the corresponding quarter last year, although the decline in marketings will be partly offset by a somewhat higher level of prices for these products.

The number of cattle marketed during September was slightly below that of the corresponding month last year, but, because of the higher prices, the fifteen million dollars received for cattle during the month compares favorably with the less than fourteen million dollars received a year ago. Both the marketings and income from calves were below these items a year ago.

Other important sources of income during the month were eggs, milk, and peanuts, each of which brought in more revenue to the farmers of the State than they did last year, a result of higher prices rather than an increase in the quantity marketed.

F. A. Buechel.

Natural Resources of Texas In Brief Outline

Utilization of Texas natural resources in the modern sense began with Anglo-American colonization in Texas. For more than a century now, during the several developmental periods through which the State has passed, the utilization of Texas natural resources has been manifested in the ever-increasing volume and the gradually, at times even rapidly, expanding diversification of production. It was World War I that crystallized the attention of far-seeing people in the United States upon this country's natural resources, and this was especially true in the case of oil, in which Texas has since become overwhelmingly important. Under the exigencies of World War II, natural resources everywhere have become vital and strategic, and with the greatly increased demands occasioned by the war, the great wealth of Texas' diversified natural resources have given to the State a prominent position in the national picture, not only in agriculture and livestock and oil, but also in the chemical industry, the latest of large-scale enterprises to come to Texas. It will be in the post-war period, however, that Texas natural resources will be called upon to perform what appears to be their most important functions.

The Scope of Texas Natural Resources

The first problem, and a difficult one, in any discussion of Texas, from practically any standpoint, is that of presenting the larger aspects of the scope of the State, physically considered; particularly is this so in regard to the State's rich endowment in natural resources. The broad extent of territory included, together with the diversity and variety of the natural conditions contained in Texas, are reflected in a large way in the extent, variety, and diversity of the State's natural resources.

The scope of physical conditions of Texas is also manifested in the several different natural regions of the State, these regions being as large as ordinary states. The major natural regions, each characterized by its own individual groups and combinations of natural resources are, of course, well known because of the simple fact that the characteristics of each of these regions, individually considered, are outstanding and so conspicuous as to be readily recognizable. These regions may be considered as including East Texas, South Texas, the Black and Grand Prairies, the Western Cross Timbers, the Red Beds Plains, the Edwards Plateau, the High Plains, and Trans-Pecos Texas. In order to have a clear perspective of Texas, it is necessary not only that these several regions be seen in their general setting in the Texas scene, but also that the greater Texas region itself be considered in its relationships to the architecture of the North American continent. It is only through discriminating consideration of comparative aspects and characteristics that the larger features of Texas can be seen best and most fully appreciated.

Types of Natural Resources

The simplest classification of natural resources with respect to their manner of occurrence, comprises two groupings: those that occur at or on the surface of the land, and those that occur below the surface, that is, the sub-surface resources.

In brief, the surface natural resources include those that may be regarded as functions of the interrelationships of climatic-geologic materials-topographic factors; this group of resources includes the natural vegetation, soils, and surface water supplies. These resources are functions of the physical geography of natural regions; the character and kinds as well as the extent of these resources, obviously of primary importance in their utilization, are determined by the interrelationships of climatic factors with the surface geologic materials.

The sub-surface natural resources are the minerals, and in Texas the outstanding ones are petroleum and natural gas, the non-metallics, limestone, building stone, iron ores, together with underground waters, brines, and the like.

These resources are functions of the geologic history, that is, of the geographic geology in past geologic periods, of the particular region concerned; interpretations of their characteristics as well as their mode of occurrence naturally require a rather precise knowledge of the great geologic periods involved—in some cases all the way from the Pre-Cambrian to the present, in others, only those of more recent geologic time. In addition to the physical occurrence of these sub-surface resources in relation to the geologic formations of which they are a part, it is necessary to know also in a rather precise manner the major structural regions of the State, together with the occurrence of minor or local structural conditions which are of major importance in accumulations of the subsurface resources, and in particular those of oil and gas, salt and sulfur.

No classification, however, is to be considered as being absolute, for overlapping cases generally occur. To take a well-known case, the iron ores of East Texas, being lateritic in nature, occur at or near the surface. Apparently they were formed during a period when that portion of East Texas in Miocene time was part of a vast plane, apparently a peneplane, which has since been uplifted, and as a consequence of the rejuvenated erosion brought about by the regional elevation, stream action was renewed; the entire area has now been rather maturely dissected, leaving as remnants of the former plane the iron-capped hills in the interstream areas, where the dissection itself has been slowed down by the occurrence of the hard, resistant caprock beds formed by these lateritic iron-ore accumulations.

Natural Vegetation

Students of plant distribution divide the types of vegetation into three great groups: Forest, Grassland, and Desert. These designations, of course, not only express climatic conditions as well, but they express climatic conditions in an unmistakable manner. These major divisions of vegetation can, in turn, be subdivided on various bases, but, as a rule, the subdivisions based

on climatic factors and physiographic conditions stand out as the most expressive. The make-up of the vegetation, that is, the types of plants occurring in these various subdivisions, may be a function of a long period of past geologic time, but the forms of growth of the plants themselves, taken together with their general physical appearance as expressed in what are called plant formations, are closely adjusted to the various significant factors of the physical environment in which they now occur.

Most of Texas is grassland country; East Texas, however, is forested. Throughout the various grassland regions woody vegetation of one kind or another is usually present, although of various kinds and in varying amounts. In certain districts local, or what are called edaphic desert areas occur; and in portions of the Trans-Pecos the low rainfall in combination with the high evaporation permits only semi-desert types of vegetation.

The vegetation of much of the State has been modified considerably within historic time; much of the East Texas wooded country is said to have been rather open forest when first seen by white men, and throughout the grassland regions of the State, the woody vegetation originally was much less in evidence than it is today.

Much of the timber of East Texas has been cut away, and at present these cut-over lands represent a rather wide variety of conditions as to forest reproduction. In the case of the grasslands of the State, overgrazing, in combination with the reduction in the number and severity of grass fires, has modied considerably the natural vegetation of these regions, making possible the increase of less desirable or even undesirable grasses, weeds, and woody growths at the expense of the more desirable range grasses. In many, if not in most cases, the desirable rangeland grasses can be brought back to at least an approximation of their original conditions, but only under discriminating practices involving varying degrees of difficulty and expense and care. When, however, it is considered how important these desirable grasses have been and are to the important range livestock industry of Texas, and how costly are the undesirable forms of natural vegetation, scientific studies of the adaptabilities of vegetation to the whole complex of the physical environments of the various portions or regions of the State would appear to be highly necessary in conservation programs and in the long run most economical as a simple business proposition.

Types of Natural Vegetation in Texas

Space permits in a short article but a brief discussion of some of the high points concerning the natural resources in Texas. The East Texas forested region represents the western-most prolongation of the great Gulf Timber Belt of Southeastern United States. In brief, the Texas portion of this Timber Belt embraces three subdivisions: the loblolly-hardwoods belt in the rather flat country inland from the Gulf Coast; the irregularly bounded longleaf pine areas which in turn lie immediately inland from the loblolly belt; and the shortleaf-hardwoods of the somewhat more dissected areas of the northeast portion of the State. The coming in of the hardwoods on the western margins of the pine lands of the Gulf Timber Belt is due to the southwestern prolongation of the oak-hickory forests from the southern portion of the Middle West; these forests cover, more or less irregularly, a large portion of the State, as manifested not only in the mixed pine forests of East Texas but also in the distinctive post oak belt of that region of the State, in the Eastern and Western Cross Timbers, as well as in certain edaphic areas which occur far into the central sections of the State, as in eastern portions of Edwards Plateau.

Although less than a fifth of the area of Texas has true forest growth, these forests constitute one of the State's major natural resources. With the recent coming of the pulp and paper industry into Texas and the increasing recognition of wood cellulose as an important chemical raw material, there is no question but that the forests of East Texas will take on an augmented importance in the future.

The once magnificent grasslands of the Black Prairies, which were made up of a rich growth of tall grasses, are now practically all gone, having long since been plowed up to make way for cotton fields.

In retrospect, the broader aspects of types of Texas vegetation and the complexities of this vegetation as well, all have to be seen in relation to the position of Texas in the larger phytogeographic provinces of North America. The pine lands of East Texas, for instance, represent the prolongation of the Southeastern pine forests westward well into the State. The tall grasses of the Texas Prairies represent the southwestern extension of the same types of grasses that are dominant in the Mid-West Prairies. In fact, the Black and Grand Prairies with their fine-textured, rich black soils are appropriately designated as the Southern Prairies of the United States, and as such they comprise one of the distinctive natural regions of the nation. The common buffalo and grama grasses characteristic of the plains of western Texas are the southern extensions of the vast areas of the short-grass lands of the Great Plains. And Trans-Pecos Texas, owing to its geographic location as well as certain distinctive features of its environmental conditions, has various representatives of western vegetation, including some that are characteristic of regions as far away as the Pacific Coast. It also has grasses representative of the Great Plains, as well as aberrant types, which are characteristic of the Chihuahua desert country of northern Mexico.

It must not be forgotten that Texas has numerous representatives of vegetation from the subtropics, extending northward from Mexico, which include the woody types of the chaparral, of South Texas, the mesquite and related leguminous trees and shrubs which extend over so large a share of the State, together with the various mesquite grasses, one species of which, the curly mesquite grass, being especially prominent in the Edwards Plateau. In addition, there is the live oak which ranges entirely across southern United States from the Atlantic to the Pacific; live oak growth with its peculiar occurrence in mottes, is characteristic of various areas throughout the southern part of Texas.

The great central portion of Texas from Red River to the Rio Grande and west of the Black and Grand Prairie is mainly a savanna grassland. The characteristic savanna grassland consists of the typically scattered mesquite trees and shrubs growing on a carpet of short grasses, and this sort of vegetation is typically represented in the Red Beds Plains, the southeastern portions of the High Plains and adjacent areas of the Edwards Plateau, as well as in much of the Coastal Plains country of South Texas. The mesquite savanna is one of the distinct phases of natural vegetation regions in the United States. There is nothing like it elsewhere in the country.

Modified savanna grasslands occur in the Western Cross Timbers, the Edwards Plateau, and in the Coastal Plains of South Texas, and it is in these lands particularly that the vegetation has been so markedly disturbed since the coming of white men to Texas. In many sections, the woody growth has now become the dominant vegetation, as in the chaparral or "pygmy-forest" areas, and in various portions of the eastern half of the Edwards Plateau.

The typical grassland savanna is characteristic of plains areas which have deep, silty soils; wherever deviations from such soils occur, as in areas of deep sands, or in shallow soil areas underlain by limestone or sandstone, or other sorts of rock, such modifications are definitely reflected by variations in the vegetation; these variations present more or less sharp deviations from the characteristic mesquite shrub-short grass savanna, and it is this latter vegetation which, as has been noted, may be considered the most truly typical of vegetation formations in all Texas.

Throughout the northern two-thirds of the High Plains, the mesquite decreases northward, both in stand and in size of shrub, and there is but little mesquite in the Panhandle section of the State except in areas of broken topography, as in the valley of the Canadian River. These very slightly rolling to undulating lands of the Panhandle section are typical of the short-grass country as seen in the extensive plains of western Kansas and eastern Colorado, and lacking the mesquite growth, they present an appearance entirely different from the other plains regions of the State. Much of the southwestern portions of the Texas High Plains is covered with shinnery, a dwarf oak of western affinities, which in areas of deep sand grows very thickly. Typical shinnery areas are, as a rule, characterized by scattered tall bunch grasses growing among the oaks.

The Trans-Pecos country is different still. The bolson plains are short-grass lands, as are also the smoother areas, that is, the constructional areas, of the Davis Mountain Plateau and the Diablo Plateau. The light-colored soils of Reeves ountry in the Toyah basin, for instance, are characterized by a black-brush type of chaparral; and the sandy, gravelly mesas and lower rocky slopes near the Rio Grande are characterized by such typical plants from the Central Plateau of Mexico as sotol and lechuguilla and ocotillo. From the lowlands of the Trans-Pecos to the mountain summits of that region, a fairly evident vertical zonation of the vegetation is characteristic, ranging from a lower zone of diverse scrubby woody growths to one of short grasses and live oak, thence through a zone of piñon-cedar, to the more mesophytic island-like summit areas, the mountain ranges, where a rather rich woodland vegetation of pines, Douglas fir, and the like, together with open glades, all reflecting the influence of a humid temperate environment, is found.

The important factor for emphasis in the distribution of the natural vegetation of the Trans-Pecos country is that of vertical zonation, a distribution determined largely by moisture relations, but which is modified by temperature and especially by the evaporation factor.

This vertical zonation is characteristic of the entire farther Southwest, and for Arizona, Shantz has prepared the following table, which with modification, is applicable to Trans-Pecos Texas, as well as to New Mexico.

	Elevation (feet)	Carrying Capacity (acres per cow)
1. Forest		
Spruce-fir		
Yellow pine-Douglas fir	6,500–12,000	30–50
Pinon-juniper	5,000–7,000	25–60
Chaparral	4,000–5,500	30–60
2. Grassland		
Short grass		
Mesquite grass	3,200–6,500	20–45
3. Desert		
Sagebrush	2,500–5,000	50–100
Creosote bush	137–3,000	45–200

It should be noted that altitudinal overlapping occur and these, of course, are to be expected, on account of different exposures, or other modifying factors. The sage brush formations are not present in Trans-Pecos Texas, and the chaparral in the table is a mountain, not a low altitude type of vegetation.

Soil Resources of Texas

The soil resources of Texas are closely related in their areal distribution, as well as in their dominant characteristics, to the natural vegetation areas and regions of the State. The zonal divisions which characterize the distribution of soils the world over have evolved from the reaction of climatic factors, in conjunction with those of the natural vegetation, upon the rock materials present at the earth's surface; these zonal subdivisions present the big picture as to the soil resources of an area as large as Texas. Subdivisions of these larger zonal belts of soils have come about mainly as a result of differences in topography and of the presence or absence of certain constituents in the parent geological materials from which the mineral constituents of the soils in the various areas are derived.

The primary division of the soils of the world, and it is a fundamental division, places soils that are prominently leached into one category and those that are unleached into another. This division of the world's soils corresponds in the main to the climatic division of humid and sub-humid (including semi-arid and desert lands) conditions.

The forests of the world, outside of river alluvial belts, are characteristic of humid climates; they occupy soils that are leached, the degree of leaching attained in maturely developed soils in any part of the world varying with the moisture-temperature relationships of

the region concerned. River alluvial lowlands the world over constitute areas or regions that inherently differ from the adjacent uplands through which the rivers flow, and always have to be given individual attention.

The climatic grasslands of the world occupy unleached soils, unleached, so far as the subsoils are concerned. In fact, in the climatic grasslands, the subsoils are zones of accumulation of soluble mineral compounds rather than zones of subtraction of soluble mineral compounds as is true of the humid regions of the world. These conditions are the result of the operation of factors inherent to these contrasted environments, more particularly, the contrasts between humid and subhumid conditions. The lack of leaching is associated generally with decreased rainfall, although in these regions evaporation is also an important factor. Obviously, the soils of deserts are unleached also, owing to the scanty rainfall of such areas.

In Texas the soils of forested East Texas are leached, the degree and depth of leaching varying with certain characteristics of the parent geologic materials and of the kind of topography in which these materials occur. The soils of the rest of the State are unleached, except in certain local or edaphic areas, such, for example, as the Eastern and Western Cross Timbers, where the character of the geologic materials is such as to be highly favorable to the ready percolation of moisture supplied by the rainfall. These exceptional areas, such as the outcrops of the Woodbine sands of the Eastern Cross Timbers and of the Trinity sands of the Western Cross Timbers, are extensive intake areas for rainfall; and the sub-surface extensions of these geologic formations Gulfward as aquifers are economically of great importance as carriers and as sources of underground waters.

The soils of the Black and Grand Prairies are dark in color, sharply contrasting with the typical reds and browns and grays that are characteristic of the adjacent or near-by soils in forested East Texas. The dark to black color of the Prairie soils is due to the relatively large amount of organic matter they contain, which is intimately mixed into the mineral soil body; the presence of this organic matter is a result of the decay, through long periods in the past, of the grassland vegetation, particularly of the great masses of fibrous roots of the grasses which were characteristic of these Prairies; the depth of the dark layer is distinctly a consequence of the grassland conditions, for when grasses decay they leave the large proportion of the resultant organic matter in the soil. Under forest conditions, by way of contrast, the decaying and decayed organic matter remains dominantly *on* the soil, in which case it completely disappears within a very few years after the lands are brought under cultivation.

In the case of the Black and Grand Prairie, which occur in a moderately humid environment, the content of organic matter which gives these soils their dark color is maintained in the soil owing to the presence of calcium carbonate in the soils. The calcium carbonate, which is supplied as a consequence of the weathering of soft limestone or marls or limy silts, keeps the fine soil particles in a flocculated condition, and as a result of this flocculation, the fine particles of the soils are assembled into aggregates or grains, and therefore the soils are described as granular. The calcium carbonate also keeps the organic matter in a saturated condition and as such it is able to resist the leaching effects of the prevailing climatic conditions. As long as calcium carbonate remains in these soils, the granular condition, which is reflected for instance, in the characteristic mellowness of the soil, and which insures a high degree of workability, will be maintained. In those cases where the calcium carbonate is removed from the soil layers by leaching a definite change in the character of the soils ensues.

It should be emphasized that the American Prairies, the tall-grass regions of the Middle West and those of the Southern Prairies, are vast edaphic areas which, on account of certain factors characteristic of them, constitute exceptions to the climatic soil groupings which hold for the world's soil zones at large. It is precisely because of this factor that the American Prairies (together with a small area in Argentina and a few even smaller Prairie-like "enclaves" in Central Europe) occupy a unique situation in the world's soil resources; and, as a consequence of the particular soil characteristics they possess, they occupy an analogous unique position in the world's agriculture.

Westward from the Prairies are the sub-humid plains with the fertile Black Earth soils of the short grass country; typical Black Earth soils are the best manifested on smooth areas underlain with thick deposits of silty materials, such, for instance, as the eastern portions of the High Plains, the Abilene-Haskell Plains, or the dark-colored soils in the Roscoe area, all of these excepting the High Plains area being in the territory included in the Red Beds Plains.

The Black Earth soils have developed best only where thick deposits of loose silty deposits occur; these silty materials are generally considered to be wind deposits. Such deposits have accumulated and have been maintained on smooth areas particularly because erosion on such lands is considerably retarded by the smooth surface. On the other hand, there is constant, often considerable erosional action on the sloping lands, and on such areas as a rule, the finer silty materials are thus removed, thereby exposing rock outcrops at the surface. In other words, the presence or absence of the blanket of fine-textured silty materials bears a direct relation to the character of the topography of the area concerned, and particularly as to whether the topography is constructional in origin on the one hand or actively erosional on the other. And, in the same manner, the presence or absence of a mantle of these fine-grained materials bears a close relation to the soil resources of the areas. Maturely, that is, fully developed soils from the standpoint of genetic soil formation, can evolve only in areas where the topography is stabilized; in addition, a thick blanket of these fine-textured materials offer optimum conditions for the development of a typical Black Earth soil in this sort of climate.

Oil and Gas Resources of Texas

The occurrence, volume, and characteristics of the oil and gas resources of Texas are tied in with the features of the past geographic geology of the State, the features which have been evolving since Pre-Cambrian times;

for these resources are associated with the types and kinds of geologic formations, the range in geologic time the formations represent, the number and variety of oil producing horizons the formations contain, together with the geologic structures, major and minor, that are present in the different sections of the State.

In brief, as to the occurrence of oil and gas resources in Texas, the State may be divided into two larger sections: (a) The great central portion of the State belonging to the Mid-Continent province and which is a continuation or prolongation southward of the Continental Interior Platform from Oklahoma and Kansas; and (b) the Coastal Plains section underlain by much younger rocks, and which geologically is a sort of annex attached onto the Continental Interior Platform, or a sort of lean-to structure, as it has been aptly described.

The Mid-Continent Portion of Texas

The vast central and much of the western portion of Texas is the southwestern termination of the Continental Interior Platform; the great Permian Basin and the Panhandle fields occur in modied portions of the Mid-Continent province.

Production of oil and gas in this portion of Texas is all from the Paleozoic rocks, from the Permian down to and in one case even including the Cambrian. Paleozoic rocks the world over are not great producers of oil and gas, because, as a rule they have been subjected to strong deformational movements resulting in intensive folding and faulting as a consequence of the action of great mountain-making forces; in such cases, oil and gas accumulations, being in the vast extent of geologic time highly evanescent features in the earth's crust, have long since disappeared. It is only in regions where these old rocks have remained relatively stable throughout their history, as is the case in the Mid-Continent at large, and this means in general undisturbed portions of the Continental Interior Platform, that possibilities for oil and gas accumulations occur.

The district groupings of oil and gas fields in the Mid-Continent portion of Texas are of course well known: they include North-Central Texas, which embraces the fields on the Bend Arch and on the Red River Uplift; they comprise the broad area of the Permian Basin, together with the large gas and oil fields of the Texas Panhandle. Production in the Bend Arch and the Red River Uplift is mainly from the Pennsylvanian, although in the KMA field there is production from the Ellenburger formation of the Ordovician. Most of the production in West Texas thus far and the Panhandle is from porous limestones of the Permian, but in the Panhandle there is production also from the "granite wash," and in West Texas production from the Ellenburger, particularly of the Ordovician, is becoming increasingly important. The reserves in the Panhandle and in the Permian Basin bulk large in the national reserves picture, and if the deep Ordovician proves productive in the newer fields northward in the Permian Basin, West Texas reserves will be considerably augmented. Nor should it be forgotten that the Panhandle gas field is the largest known gas field in the world.

The Coastal Plain Portion of Texas

Irrespective of what deep drilling in the future may reveal as to oil and gas in the deeper horizons, it is well known that the Coastal Plains embrace Texas thick sections of Cretaceous and of Tertiary strata, which, excepting certain local interruptions, dip Gulfward. At the north the Gulf Coastal Plains strata overlap Paleozoic rocks, as in the case of the Ouachita Mountains of southwestern Arkansas and southeastern Oklahoma; westward, in Texas there is a somewhat similar overlapping, but the western boundary of the Coastal Plain in Texas is approximately the Balcones fault zone.

The oil fields of the Gulf Coastal Plain are associated with certain structural and stratigraphic conditions characteristic of different zones or belts of the Coastal Plain.

The so-called fault-line fields follow trends of the Balcones system, as in the Mexia-Powell district where the main production is from the Woodbine sand, and to the southward, at Luling, Darst Creek, and Salt Flats, where production is from the porous upper portion of the Edwards lime. Structurally, these southern fields occur on a great complementary fault east of and parallel to the Balcones Escarpment, which is magnificently displayed along the eastern margin of the Edwards Plateau.

In northeast Texas most of the fields are associated with structures dominated by the Sabine Uplift and the complementary basins or synclines adjacent to this uplift. The Caddo field, located on the northern margin of the Sabine uplift, is one of the oldest oil fields in Texas.

The Van field, discovered in 1929, and apparently a deeply buried salt dome in the East Texas or Tyler syncline, produces mainly from a thick and rich section of the Woodbine sand, the structure of which is a faulted anticline. And to the north are Talco and Sulphur Bluff which produce from the Paluxy sand of the Comanchean, or Lower Cretaceous, together with the Texas section of the Rodessa oil field, which produces from the Glen Rose, also in the Lower Cretaceous. All of these fields are relatively new developments. Then, on the western margin of the Sabine Uplift, and extending fairly well down into the East Texas basin, is the gigantic East Texas oil field, which also produces from the Woodbine sand, of the Upper Cretaceous, in what is termed a shoreline structure. East Texas is generally regarded as one of the largest oil fields in the world, the total volume of oil it possessed originally being estimated by some at around 5 billion barrels.

The Gulf Coast Belt, wherein production is from Tertiary formations, and which extends from the Mississippi River delta country in Louisiana to the Rio Grande, can be divided into two main districts: (a) The Louisiana-Houston portion or district, the production in which is dominantly associated with the occurrence of salt domes, of both the piercement type and the (presumably) deeply buried domes; and (b) the southern district, including the Corpus Christi and Laredo areas, in which production is primarily associated with the so-called trends, the detailed structures of which include stratigraphic traps, domal anticline folds, faulted structures, singly or in combination.

Historically, oil production in the Gulf Coast country has been characterized by several waves of exploration: the first initiated by the Lucas gusher at Spindletop; a second wave began about 1924 with the application of methods of microscopic paleontology and the use of the refraction seismograph to subsurface work; and a third one began about 1928 with the introduction of the reflection seismograph, which is capable of picking up deeper structures. A fourth wave of development may ensue when advances in drilling equipment and technology make practical exploration and production at depths from 15,000 to 20,000 feet, or deeper.

Without doubt, however, the Gulf Coast constitutes one of the nation's big reserve areas of both oil and of natural gas.

Trans-Pecos Texas

West of the Toyah Basin and the Stockton Plateau, the Trans-Pecos country belongs geologically, physiographically, and botanically more to the farther southwestern portion of the continent. Geologically, it is a region which has been subjected to major faulting, the obvious lines of which have a northwest-southeast directional trend; in addition, the region as a whole was uplifted considerably in Mid-Tertiary time and great lava flows of the Tertiary are quite evident. The major physiographic forms are closely associated with the down-faulted belts on the one hand and the intervening plateaus or mountain ranges on the other; the boundaries of these belts west of the Front Ranges of the Trans-Pecos correspond to the major fault lines previously referred to. Then, there are the products of volcanic action, so excellently exhibited in the Davis Mountains, a large plateau, now in various stages of dissection. The land forms of the region as a whole have been considerably modified by erosion of the elevated areas and the complementary deposition of detrital materials in down-dropped lowland belts.

The Non-Metallic Resources of Texas

As is the case of the oil and gas resources of Texas, non-metallics such as salt, gypsum, potash, and sulfur are genetically associated with subsurface geologic conditions. The potash deposits of the Permian Basin in West Texas and southeastern New Mexico, for example, are the products of or the residual accumulations through chemical precipitation in a desiccating sea which became entirely dried up in Permian time; after their deposition as a result of evaporation of shallow seas, these deposits were covered over by Red Beds materials of the continental type which have effectively sealed off these soluble non-metallic materials from the effects of weathering and solution.

The gypsum deposits which are so characteristic of portions of West Texas also were laid down in other stages of the desiccating Permian sea.

In the Gulf Coastal Plain, in association with the peculiar structures known as salt domes, occur vast quantities of salt, and in certain of the salt domes there are considerable amounts of sulfur.

Within recent months the magnesium resources of Texas and the Southwest have been developed on a magnificent scale as a part of the war effort, which quite naturally has greatly increased the demand not only for the light metals, but, also as in the case of magnesium, there has been a greatly expanded demand for this material in the production of incendiary bombs and flares. The first production of metallic magnesium in Texas was from the waters of the Gulf of Mexico, which may be regarded as having practically an inexhaustible supply of magnesium chloride—a raw material for the extraction of metallic magnesium—even if this comopund makes up but a small part of the total volume of ocean water; more recently still, magnesium is being extracted by chemical processes from dolomites quarried in the Llano-Burnet region of Texas, and supplies of magnesium chloride obtained in one of the potash mines near Carlsbad, New Mexico, are also to be used as a raw material for making metallic magnesium in the plant at Austin, Texas.

Conservation

As with the other topics considered in this brief article, the subject of conservation of natural resources is worthy of a much more extended treatment than can be given here.

In view, however, of the sweep of industrial growth, the pattern of which is fully apparent, in Texas, together with consideration of the potentialities that without question will be quite evident in the future—demands expressed for more production in point of volume, for higher quality products, and even for products as yet unknown—there can be little question but that the conservation of its natural resources must necessarily become one of the most outstanding of Texas' problems, involving as it does the material welfare of the entire citizenship of the State.

Much, of course, has already been accomplished in the conservation of oil and gas and water supplies of soils and natural vegetation, but as time goes on, as shortages of one kind or another develop, the essential problems associated with the further conservation of these resources will grow more complex and obviously more insistent.

In conclusion, it must be emphasized that this brief article sets forth only some of the bigger features concerning Texas natural resources at large. The object has been to present these bases of the economic development of the State in broad perspective, which can be amplified and extended in a more detailed manner in later articles.

Acknowledgments

It is fitting that proper credit be given those American scientists whose work constitutes the bases for an understanding and appreciation of our natural resources.

The list is a long one, but such names as Marbut, Robert T. Hill, J. A. Udden, Donald Barton, as well as W. L. Bray, Shantz, L. C. Snider, C. K. Leith, E. H. Sellards, and Alexander Deussen are outstanding ones in any list.

Elmer H. Johnson.

Cotton and Post-War Planning

Recapture of export markets for United States cotton after the War will present tremendously difficult problems. Increased government control and influence over economic activities put cotton at a great disadvantage. Cotton has relatively few friends in the nation as a whole outside the South. Cotton and cotton economy are low in favor as an industry to be fostered because of the low cash income and standards of living it has afforded those engaged in its production. Agriculture as a whole is losing strength in terms of political as well as economic power. As a result of the War, the capacity of the United States to export finished manufactures is being greatly expanded and the increased volume of exports will compete strongly with cotton for what might well be a declining volume of dollar exchange. The development and use of new materials and substitutes, such as synthetic rubber, and many other synthetically made products formerly imported, threaten to eliminate the bulk of dollar exchange formerly available to importers of American cotton. It is very probable also that the use of foreign services, such as shipping and insurance and of immigrant remittances and travel, will furnish the foreigner fewer dollars with which to buy cotton and pay interest on debts to the United States.

Cotton is an industrial raw material desired primarily by highly industrialized countries, especially in Europe, which are compelled to export finished manufactures to pay for raw products. The United States has refused entrance of these goods except at heavy penalty. The result is that these countries are being compelled to buy their cotton from countries such as Egypt, India, and Brazil, that are engaged primarily in the production of raw materials and which wish to trade cotton for manufactures. The major foreign cotton consuming countries invariably have adverse trade balances with the United States, which, for all of them, ranged around $400,000,000 annually prior to 1939. The large and growing capacity in the world to produce synthetic fibers and the continuous improvements in their qualities with lowering costs will present increasingly keener competition for cotton at home as well as abroad.

The conditions and economic relations just described suggest some of the difficulties United States cotton will have to overcome to regain and maintain foreign markets. They also suggest definite changes that must be made in both our cotton economy and in our foreign trade relations policies if we are to regain and hold foreign markets for raw cotton. This makes it obligatory on those interested in the export of cotton to prove *first* that the recapture of foreign markets for American cotton is in the best interest of the nation, both from the standpoint of our domestic economy and our good foreign relations. General statements will not suffice; we must be able to show the approximate amount of cotton it is necessary for the South to produce to maintain its economy at the level which contributes the greatest net balance to those directly concerned and to the nation.

Each cotton growing State owes an obligation to its citizens to determine these facts. How much cotton is it necessary for Texas farmers to grow for their own best interest? The answer to this question should be determined scientifically without delay.

Once the cotton-growing states have concrete reliable data to show the amount of cotton it is necessary to export, they will then be confronted with the *second* very complex problem of showing how our foreign political and economic relations can be worked out to make such exports possible and advantageous to the nation. How can our internal economy and our foreign trade relations be organized to make it economically and socially advantageous for the United States to export whatever amount of raw cotton it is found to be desirable?

The restoration of the export business to private enterprise is the *third* vital problem to solve in restoring and establishing foreign markets for United States cotton. Some of the more difficult problems in this connection relate to capital movements, finance, availability of dollar exchange, trading rules and trade connections. These problems are likewise of major importance and will require the best thought and much effort on the part of the organized cotton industry coöperating with other groups interested in maintaining private enterprise.

A discussion of some basic factors which should be evaluated in determining the place cotton should occupy in the economy of Texas will appear in the November REVIEW.

A. B. Cox.

COTTON BALANCE SHEET FOR THE UNITED STATES AS OF OCTOBER 1, 1943

(In Thousands of Running Bales Except as Noted)

Year	Carryover Aug. 1	Imports to Oct. 1*	Gov. Est. as of Oct. 1*	Total	Consumption and Exports Aug. 1 to Oct. 1		Total	Balance Oct. 1
					Aug. 1 to Oct. 1			
1934–1935	7,746	19	9,443	17,208	714	706	1,420	15,788
1935–1936	7,138	14	11,464	18,616	859	728	1,587	17,029
1936–1937	5,397	22	11,609	17,028	1,205	752	1,957	15,071
1937–1938	4,498	14	17,978	22,490	1,206	838	2,044	20,446
1938–1939	11,533	29	12,212	23,774	1,093	590	1,683	22,091
1939–1940	13,033	22	11,928	24,983	1,255	644	1,899	23,084
1940–1941	10,596	14	12,741	23,351	1,289	156	1,445	21,906
1941–1942	12,376	69	11,061	23,506	1,750	255	2,005	21,501
1942–1943	10,590	†	13,818	24,408	1,891	†	1,891	22,517
1943–1944	10,687	†	11,478	22,165	1,714	†	1,714	20,451

The Cotton Year Begins August 1.
*Figures are in 500-pound bales.
†Not available.

MANUFACTURING IN TEXAS

A comprehensive report covering United States Census data on manufacturing in Texas, classified according to the 1939 Census of Manufactures, has been completed by the Bureau of Business Research under the direction of Dr. A. B. Cox, Director. The report is published in five conveniently sized volumes and gives in concise form data on each of the 106 Census sub-industry groups represented in Texas which employ 100 or more persons.

Among other data, these reports show the number of individual plants in each industry sub-group in Texas, such as "Bread and Bakery Products" which comes under the heading of "Group 1—Food and Kindred Products," the number of people employed, wages paid, materials, supplies, etc. used, value of products, value added by manufacture, rank of each sub-industry group, and rate of growth or decline of each of the industries analyzed in Texas and the United States.

The groups of industries included in each of the five volumes are shown in the table of contents below. The price of the five volumes is two dollars, postpaid.

Volume I

Group 1—Food and Kindred Products
*Group 2—Tobacco Manufactures

Volume II

Group 3—Textile-Mill Products and Other Fiber Manufactures
Group 4—Apparel and Other Finished Products Made From Fabrics and Similar Materials

Volume III

Group 5—Lumber and Timber Basic Products
Group 6—Furniture and Timber Basic Products
Group 7—Paper and Allied Products
Group 8—Printing, Publishing and Allied Industries

Volume IV

Group 9—Chemicals and Allied Products
Group 10—Products of Petroleum and Coal
Group 11—Rubber Products
Group 12—Leather and Leather Products
Group 13—Stone, Clay and Glass Products

Volume V

Group 14—Iron and Steel and Their Products (except machinery)
Group 15—Nonferrous Metals and Their Products
Group 16—Electrical Machinery
Group 17—Machinery (except electrical)
*Group 18—Automobiles and Automobile Equipment
Group 19—Transportation Equipment (except automobiles)
Group 20—Miscellaneous Industries

*Detailed data for Groups 2 and 18 are omitted to avoid disclosing exact or approximate data reported by individual establishments.

POSTAL RECEIPTS

	September, 1943	September, 1942	August, 1943
Abilene	$ 39,372	$ 30,012	$ 36,555
Amarillo	51,041	42,285	52,649
Austin	86,103	78,145	93,087
Beaumont	41,503	31,826	41,049
Big Spring	8,765	7,783	9,798
Brownsville	10,036	7,607	11,294
Brownwood	24,615	12,712	22,456
Cleburne	4,632	4,080	4,924
Coleman	3,450	3,153	3,537
Corpus Christi	56,073	44,299	58,463
Corsicana	8,186	7,833	7,545
Dallas	502,831	430,476	453,858
Del Rio	5,271	3,524	5,283
Denison	8,308	7,318	9,541
Denton	9,707	8,220	8,387
Edinburg	4,220	3,015	2,829
El Paso	83,060	61,473	87,010
Fort Worth	215,465	191,262	192,013
Galveston	43,754	38,510	45,123
Gladewater	3,404	3,032	3,013
Harlingen	10,749	7,946	10,375
Houston	315,296	291,036	318,909
Jacksonville	6,623	3,592	4,357
Kenedy	2,385	1,699	2,218
Kilgore	3,581	2,990	3,560
Longview	11,055	9,957	12,597
Lubbock	29,134	33,849	29,904
Lufkin	6,247	6,945	5,816
McAllen	5,392	4,896	5,270
Marshall	9,192	9,291	8,677
Palestine	6,768	6,429	7,405
Pampa	8,827	7,858	9,044
Paris	19,868	10,139	19,136
Plainview	4,850	4,924	4,852
Port Arthur	22,981	18,386	23,280
San Angelo	18,290	15,015	17,841
San Antonio	225,856	180,829	216,218
Sherman	11,255	9,615	10,446
Snyder	2,224	1,727	1,846
Sweetwater	6,463	5,090	6,177
Texarkana	22,951	20,349	25,048
Temple	14,828	10,450	13,562
Tyler	29,089	15,211	24,268
Waco	46,534	40,504	45,383
Wichita Falls	39,801	34,687	40,336
TOTAL	$2,090,035	$1,697,979	$2,014,939

NOTE: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.

PERCENTAGE CHANGES IN CONSUMPTION OF ELECTRIC POWER

	September, 1943, from September, 1942	September, 1943, from August, 1943
Commercial	+ 16.2	+ 2.9
Industrial	+ 17.1	+ 1.7
Residential	+ 13.3	+ 3.0
All Others	+200.3	+ 11.7
TOTAL	+ 36.4	+ 4.3

Prepared from reports of 7 electric power companies to the Bureau of Business Research.

EMPLOYMENT AND PAY ROLLS IN TEXAS

August, 1943

	Estimated Number of Workers Employed* Aug., 1943[1]	Sept., 1943[2]	Percentage Change from Aug., 1943	from Sept., 1942	Estimated Amount of Weekly Pay Roll Aug., 1943[1]	Sept., 1943[2]	Percentage Change from Aug., 1943	from Sept., 1942
MANUFACTURING								
All Manufacturing Industries	167,193	164,854	− 0.4	+ 2.5	5,423,227	4,912,486	− 9.4	+15.8
Food Products								
Baking	7,865	8,106	+ 3.1	+ 6.5	241,142	249,372	+ 3.4	+18.5
Carbonated Beverages	4,260	4,408	+ 3.5	+53.0	122,299	120,702	− 1.3	+51.0
Confectionery	1,162	1,235	+ 6.3	+21.3	14,222	16,097	+13.2	+49.4
Flour Milling	2,274	2,165	− 4.8	+13.9	63,244	66,601	+ 5.3	+63.7
Ice Cream	1,551	1,481	− 4.5	+ 2.0	40,406	37,545	− 7.1	+21.4
Meat Packing	6,100	6,436	+ 5.5	± (3)	212,704	206,744	− 2.8	+15.7
Textiles								
Cotton Textile Mills	5,904	5,704	− 3.4	−18.3	124,432	125,698	+ 1.0	− 9.1
Men's Work Clothing	4,332	4,149	− 4.7	−19.5	68,175	69,200	+ 1.5	− 6.2
Forest Products								
Furniture	1,692	1,573	− 7.1	−16.9	38,024	36,314	− 4.5	+ 9.9
Planing Mills	2,071	2,101	+ 1.5	−15.8	56,024	53,768	− 4.0	−15.6
Saw Mills	15,830	15,617	− 1.3	− 4.8	286,866	296,500	+ 3.4	+22.6
Paper Boxes	969	948	− 2.1	+54.1	21,207	20,424	− 3.7	+82.9
Printing and Publishing								
Commercial Printing	2,349	2,356	+ 0.3	+ 0.3	73,718	77,187	+ 4.7	+18.4
Newspaper Publishing	4,063	4,037	− 0.6	−11.8	115,649	120,062	+ 3.8	+ 5.1
Chemical Products								
Cotton Oil Mills	2,585	3,530	+36.5	+ 0.4	38,157	56,868	+49.1	+23.2
Petroleum Refining	22,816	22,952	+ 0.6	+ 1.2	1,358,552	1,298,732	− 4.4	+32.7
Stone and Clay Products								
Brick and Tile	1,584	1,497	− 5.5	−17.9	26,001	23,599	− 9.2	−11.1
Cement	1,138	1,080	− 5.1	−20.1	40,733	42,602	+ 4.6	−14.3
Iron and Steel Products								
Structural and Ornamental Iron	2,892	2,869	− 0.8	+ 3.0	86,069	81,677	− 5.1	+25.5
NONMANUFACTURING								
Crude Petroleum Production	25,646	25,588	− 0.2	− 2.8	1,287,527	1,371,112	+ 6.5	+28.2
Quarrying	(4)	(4)	− 2.0	−15.7	(4)	(4)	− 4.5	− 2.0
Public Utilities	(4)	(4)	+ 0.4	+ 7.0	(4)	(4)	− 6.4	+12.5
Retail Trade	209,890	220,409	+ 5.0	+10.6	4,577,065	4,718,498	+ 3.1	+15.5
Wholesale Trade	61,318	60,745	− 0.9	− 9.2	2,243,178	2,171,216	− 3.2	+ 1.0
Dyeing and Cleaning	2,883	2,883	± (3)	+ 4.2	60,187	60,848	+ 1.1	+24.4
Hotels	19,569	19,569	± (3)	+20.3	308,398	326,024	+ 5.7	+56.5
Power Laundries	14,134	13,894	− 1.7	− 7.2	228,452	233,264	+ 2.1	+ 9.9

CHANGES IN EMPLOYMENT AND PAY ROLLS IN SELECTED CITIES

	Employment Percentage Change Aug., 1943 to Sept., 1943	Sept., 1942 to Sept., 1943	Pay Rolls Percentage Change Aug., 1943 to Sept., 1943	Sept., 1942 to Sept., 1943
Abilene	+ 3.6	+ 40.4	+ 3.8	+ 34.1
Amarillo	− 1.7	− 4.1	− 0.7	+ 1.6
Austin	+ 18.1	+ 7.4	+ 8.1	+ 23.5
Beaumont	− 7.0	+ 4.8	− 7.8	+ 29.7
Dallas	+ 15.0	+ 31.6	+ 18.0	+ 59.8
El Paso	− 4.0	− 7.9	− 3.4	+ 11.5
Fort Worth	+ 4.6	+ 88.1	+ 5.6	+111.4
Galveston	− 5.0	+ 18.3	+ 0.3	+ 79.6
Houston	− 0.7	+ 14.9	+ 2.1	+ 28.1
Port Arthur	− 0.8	− 1.9	− 5.9	+ 23.7
San Antonio	+ 0.4	− 0.3	+ 0.9	+ 4.7
Sherman	− 5.8	+ 6.3	+ 0.2	+ 19.3
Waco	− 4.8	+ 0.8	− 0.8	+ 7.4
Wichita Falls	+ 2.9	− 19.9	+ 1.7	+ 13.8
STATE	+ 2.7	+ 20.0	+ 1.7	+ 35.1

ESTIMATED NUMBER OF EMPLOYEES IN NONAGRICULTURAL BUSINESS AND GOVERNMENT ESTABLISHMENTS[6]

	1941[1]	1942[1]	1943		1941[1]	1942[1]	1943
January	1,094,000	1,170,000	1,360,000[1]	July	1,156,000	1,317,000	1,420,000[2]
February	1,120,000	1,199,000	1,367,000[1]	August	1,176,000	1,352,000	
March	1,120,000	1,226,000	1,384,000[1]	September	1,203,000	1,373,000	
April	1,114,000	1,222,000	1,402,000[2]	October	1,219,000	1,384,000	
May	1,120,000	1,251,000	1,427,000[2]	November	1,219,000	1,389,000	
June	1,134,000	1,291,000	1,448,000[2]	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]No change.
[4]Not available.
[6]Based on unweighted figures.
Not including self-employed persons, casual workers, or domestic servants, and exclusive of military and maritime personnel.
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, publications of data for certain industries is being withheld until further notice.

BUILDING PERMITS

	September, 1943	September, 1942	August, 1943
Abilene	$ 3,588	$ 11,340	$ 42,967
Austin	64,653	17,067	28,107
Beaumont	25,018	42,165	24,140
Coleman	150	500	0
Corpus Christi	147,265	55,738	83,766
Corsicana	1,080	3,400	5,545
Dallas	359,791	191,851	755,350
Del Rio	6,380	2,322	12,207
Edinburg*	10,255	289	470
Denton	6,300	740	150
El Paso*	27,807	44,883	34,471
Fort Worth	750,935	136,965	677,690
Galveston	70,667	23,189	64,797
Gladewater	2,540	0	0
Graham	1,580	0	0
Harlingen	0	6,500	523
Houston	673,520	61,720	826,275
Jacksonville	1,025	600	1,850
Kenedy	1,500	0	1,000
Kerrville	365	2,417	883
Longview	10,000	1,325	2,705
Lubbock	27,283	13,939	35,716
McAllen	24,125	2,495	4,535
Marshall	5,760	10,920	7,193
Midland	1,600	1,775	5,075
New Braunfels	4,088	1,905	295
Palestine	330	2,295	1,170
Pampa	2,450	1,750	3,300
Paris	17,500	8,120	29,350
Plainview	7,000	1,650	850
Port Arthur	19,348	12,729	8,503
San Antonio	291,672	181,956	256,593
Sherman	11,370	24,436	6,986
Sweetwater	1,520	850	4,500
Texarkana	16,985	6,916	10,522
Tyler	14,424	6,271	9,344
Waco	37,397	75,483	41,978
Wichita Falls	16,817	51,115	46,750
TOTAL	$2,664,588	$ 977,616	$3,035,556

NOTE: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.

LUMBER

(In Board Feet)

	September 1943	September 1942	August 1943
Southern Pine Mills:			
Average Weekly Production per unit	222,702	273,578	243,851
Average Weekly Shipments per unit	244,757	314,416	252,119
Average Unfilled Orders per unit, end of month	1,482,516	1,742,571	1,430,954

NOTE: From Southern Pine Association.

SEPTEMBER RETAIL SALES OF INDEPENDENT STORES IN TEXAS

(By Districts)

	No. of Establishments Reporting	Percentage Changes: Sept., 1943 from Sept., 1942	Sept., 1943 from Aug., 1943	Year, 1943 from Year, 1942
TOTAL TEXAS	952	+26	+17	+30
TEXAS STORES GROUPED BY PRODUCING AREAS:				
District 1-N	68	+11	+ 8	+28
Amarillo	23	− 6	+13	+33
Pampa	10	+18	− 1	+18
Plainview	15	+37	+(a)	+27
All Others	20	+29	+13	+24
District 1-S	24	+56	+23	+45
Lubbock	14	+55	+29	+43
All Others	10	+61	+ 7	+49
District 2	81	+15	+ 7	+25
Abilene	17	+26	+15	+38
Wichita Falls	13	+ 6	− 3	+17
All Others	51	+12	+ 6	+22
District 3	38	+12	+12	+18
District 4	228	+31	+21	+38
Cleburne	10	+44	+30	+44
Dallas	37	+42	+31	+47
Ft. Worth	26	+13	+ 4	+31
Sherman	12	+22	+16	+14
Temple	14	+24	+24	+29
Waco	21	+24	+23	+47
All Others	108	+29	+16	+29
District 5	94	+27	+18	+25
District 6	41	+24	+10	+25
El Paso	21	+27	+11	+25
All Others	20	+(a)	− 1	+28
District 7	53	+19	+10	+21
San Angelo	12	+21	+15	+26
All Others	41	+16	+ 2	+19
District 8	151	+21	+16	+25
Austin	15	+28	+30	+18
San Antonio	42	+20	+18	+30
All Others	94	+22	+ 3	+18
District 9	105	+27	+21	+27
Beaumont	10	+ 9	+13	+35
Houston	43	+34	+28	+27
All Others	52	+13	+ 3	+25
District 10	26	+25	+ 4	+34
District 10-A	42	+42	− 3	+28
Brownsville	10	+83	−(a)	+62
All Others	32	+20	− 5	+24

(a) 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.

SEPTEMBER RETAIL SALES OF INDEPENDENT STORES IN TEXAS

	Number of Establishments Reporting	Percentage Changes in Dollar Sales: Sept., 1943 from Sept., 1942	Sept., 1943 from Aug., 1943	Year 1943 from Year 1942
TOTAL TEXAS	952	+26.4	+17.1	+30.2
STORES GROUPED BY LINE OF GOODS CARRIED:				
APPAREL				
Family Clothing Stores	28	+41.7	+26.5	+52.4
Men's and Boys' Clothing Stores	33	+45.5	+40.3	+51.6
Shoe Stores	12	+14.8	+63.8	+43.4
Women's Specialty Shops	33	+37.3	+29.9	+60.1
AUTOMOTIVE*				
Motor Vehicle Dealers	70	+27.8	− 3.6	+19.1
COUNTRY GENERAL	93	+13.6	+ 6.7	+21.7
DEPARTMENT STORES	61	+31.1	+26.2	+42.3
DRUG STORES	119	+22.6	− 2.7	+27.1
DRY GOODS AND GENERAL MERCHANDISE	28	+30.1	− 0.4	+22.3
FILLING STATIONS	22	+31.5	− 0.4	+45.7
FLORISTS				
FOOD*				
Grocery Stores	43	+19.8	− 0.4	+17.4
Grocery and Meat Stores	85	+25.0	+ 8.6	+22.1
FURNITURE AND HOUSEHOLD*				
Furniture Stores	58	+13.1	− 2.8	+25.3
JEWELRY	21	+16.9	+ 5.4	+36.1
LUMBER, BUILDING, AND HARDWARE*				
Farm Implement Dealers	10	−18.9	+ 5.8	−10.5
Hardware Stores	56	− 2.2	− 1.7	− 3.8
Lumber and Building Material Dealers	100	− 2.8	− 9.7	−19.2
RESTAURANTS	22	+10.8	− 0.4	+34.4
ALL OTHER STORES	3	−17.9	+81.9	+12.5
TEXAS STORES GROUPED ACCORDING TO POPULATION OF CITY:				
All Stores in Cities of—				
Over 100,000 Population	149	+29.8	+22.3	+35.2
50,000–100,000 Population	101	+20.8	+13.9	+24.5
2,500–50,000 Population	470	+25.1	+12.7	+29.7
Less than 2,500 Population	232	+18.1	+ 2.7	+13.6

*Group total includes kinds of business other than the classification listed.
Prepared from reports of independent retail stores to the Bureau of Business Research, coöperating with the U.S. Bureau of the Census.

SEPTEMBER 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	51	49.2	54.0	63.1	56.3	.9	.9
Stores Grouped by Cities:							
Austin	6	42.9	46.9	73.4	64.6	.9	1.1
Dallas	8	58.1	62.3	63.9	58.1	.7	.7
El Paso	3	42.7	44.9	64.3	53.0	1.3	1.9
Fort Worth	5	50.0	53.5	54.3	54.5	1.0	1.0
Houston	6	44.9	61.1	63.0	51.6	1.3	1.1
San Antonio	3	39.0	42.1	67.2	60.0	.9	1.0
Waco	5	47.4	50.0	57.7	49.1	1.0	1.0
All Others	51	41.9	45.6	70.2	57.8	.9	.9
Stores Grouped According to Type of Store:							
Department Stores (Annual Volume Over $500,000)	18	47.6	54.0	63.1	57.3	1.0	1.0
Department Stores (Annual Volume under $500,000)	8	42.0	43.1	64.8	54.9	.9	.9
Dry-Goods-Apparel Stores	2	42.1	49.1	65.5	56.7	1.5	1.6
Women's Specialty Shops	13	57.5	56.6	61.5	53.5	.5	.4
Men's Clothing Stores	10	44.5	52.9	69.0	56.6	1.1	1.4
Stores Grouped According to Volume of Net Sales During 1942:							
Over $2,500,000	13	44.1	52.0	64.8	60.8	1.1	1.0
$2,500,000 down to $1,000,000	9	49.3	50.0	64.5	55.2	0.9	1.1
$1,000,000 down to $500,000	7	37.4	46.3	66.8	61.3	1.1	1.1
Less than $100,000	22	36.4	43.7	67.0	56.5	2.0	1.8

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.

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	3,446	4,740	4,275	4,051	3,452	2,629				
1942*	2,341	2,076	2,131	3,311	4,396	4,358	3,937	3,684	3,602	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	1,823‡	2,327‡	2,391‡	2,758‡	2,763‡	1,999‡				
1942*	745	700	1,014	1,312	1,812	2,305	2,476	2,324	1,911	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	1,633	2,120	1,943	1,896	1,405	1,019				
1942*	1,308	1,302	1,644	2,204	2,756	2,674	2,580	2,048	1,604	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	88,540	115,788	154,491	142,700	143,120	124,558	93,186				
1942*	75,435	77,913	83,621	105,047	143,707	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.
‡Includes ice cream, sherberts, ices, etc.
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.

SEPTEMBER, 1943, CARLOAD MOVEMENTS OF POULTRY AND EGGS

Shipments from Texas Stations

*Destination	Cars of Poultry: Chickens (September)		Cars of Poultry: Turkeys (September)		Cars of Eggs: Shell		Cars of Eggs: Frozen (September)		Cars of Eggs: Dried (September)		Cars of Eggs: Shell Equivalent†	
	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942	1943	1942
TOTAL	10	25	3	6	31	18	35	53	79	120	733	1,084
Intrastate	1	8	0	0	31	16	19	9	17	0	205	34
Interstate	9	17	3	6	0	2	16	44	62	120	528	1,050
Receipts at Texas Stations												
TOTAL	1	9	0	0	64	46	4	15	0	4	72	108
Intrastate	0	6	0	0	12	15	2	4	0	4	16	55
Interstate	1	3	0	0	52	31	2	11	0	0	56	53

*The destination above is the first destination as shown by the original waybill. Changes in destination brought about by diversion factors are not shown.
†Dried eggs and frozen eggs are converted to a shell-egg equivalent on the following basis: 1 rail carload of dried eggs=8 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.

TEXAS CHARTERS

	September 1943	September 1942	August 1943
Domestic Corporations:			
Capitalization*	$ 805	$ 258	$ 818
Number	37	33	42
Classification of new corporations:			
Banking-Finance	2	0	2
Manufacturing	3	4	4
Merchandising	3	6	7
Oil	1	2	5
Public Service	0	1	0
Real Estate Building	15	9	11
Transportation	1	4	2
All Others	12	7	11
Number capitalized at less than $5,000	12	19	16
Number capitalized at $100,000 or more	2	0	2
Foreign Corporations (Number)	14	14	9

*In thousands.

Note: Compiled from records of the Secretary of State.

CEMENT

(In Thousands of Barrels)

	August, 1943	August, 1942	July, 1943
Texas Plants			
Production	821	1,103	832
Shipments	811	1,136	778
Stocks	770	216	760
United States			
Production	11,673	17,605	11,880
Shipments	12,625	21,282	12,411
Stocks	20,590	15,295	21,536
Capacity Operated	56.0%	85.0%	56.0%

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

SEPTEMBER 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	5,467	5,118	1,309	1,874	1,272	1,041	1,432	2,075	9,480	10,108
Total Intrastate Omitting Fort Worth	429	771	97	166	53	51	221	564	800	1,552
TOTAL SHIPMENTS	5,896	5,889	1,406	2,040	1,325	1,092	1,653	2,639	10,280	11,660

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	45,499	42,960	6,840	8,781	12,772	9,176	10,487	9,837	75,598	70,754
Total Intrastate Omitting Fort Worth	6,084	4,822	1,535	985	579	231	804	975	9,002	7,013
TOTAL SHIPMENTS	51,583	47,782	8,375	9,766	13,351	9,407	11,291	10,812	84,600	77,767

*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.

COMMODITY PRICES

	Sept., 1943	Sept., 1942	Aug., 1943
Wholesale Prices:			
U.S. Bureau of Labor Statistics (1926=100%)	103.1†	99.6	103.1
Farm Prices:			
U.S. Department of Agriculture (1910–1914=100%)	*	163.0	193.0†
U.S. Bureau of Labor Statistics (1926=100%)	123.5†	107.8	123.5
Retail Prices:			
Food (U.S. Bureau of Labor Statistics (1935–1939=100%)	*	126.6	137.2‡
Dept. Stores (Fairchild's Publications, January, 1931=100%)	113.1	113.1	113.1

†Preliminary.
*Not available.
‡Revised.

TEXAS COMMERCIAL FAILURES

	September 1943	September 1942	August 1943
Number	0	5	0
Liabilities*	0	89	0
Assets*	0	14	0
Average Liabilities per failure*	0	18	0

*In thousands.
NOTE: From Dun and Bradstreet, Inc.

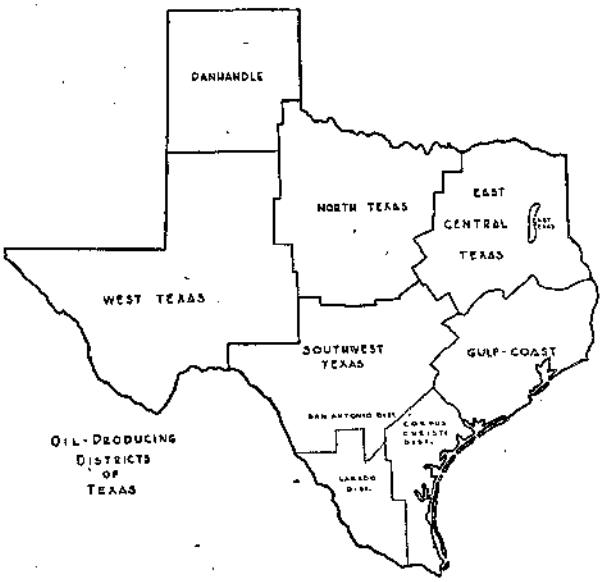
PETROLEUM

Daily Average Production (In Barrels)

	September 1943	September 1942	August 1943
Coastal Texas*	483,200	313,900	474,350
East Central Texas	130,550	84,500	129,900
East Texas	379,050	344,550	371,000
North Texas	140,550	135,500	140,400
Panhandle	103,350	85,150	96,050
Southwest Texas	260,400	163,100	238,850
West Texas	325,050	203,900	258,400
STATE	1,822,150	1,330,600	1,708,950
UNITED STATES	4,327,400	3,857,500	4,214,150

Gasoline sales as indicated by taxes collected by the State Comptroller were: August, 1943, 118,582,993 gallons; August, 1942, 115,856,000 gallons; July, 1943, 113,474,525 gallons.

*Includes Conroe.
Note: From American Petroleum Institute. See accompanying map showing the oil-producing districts of Texas.



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