Robert R. Nathan.

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NATIONAL WEALTH AND INCOME

SPECIAL COLLECTIONS

A Report by
The Federal Trade Commission

In final response to Senate Resolution No. 451
Sixty-seventh Congress, Fourth Session
agreed to February 24 1923

Especially valuable.
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LETTER OF TRANSMITTAL

FEDERAL TRADE COMMISSION,
Washington, May 25, 1926.

SIR: I have the honor to transmit herewith a Report of the Federal Trade Commission on National Wealth and Income, made pursuant to Senate Resolution 451, sixty-seventh Congress, fourth session.

This is the second and final report made in response to this resolution, the first being a report on taxation and tax-exempt income, which was submitted on June 6, 1924.

By direction of the commission.

(Signed) J. F. NUGENT,
Chairman.

PRESIDENT OF THE SENATE,
Washington, D. C.

SUMMARY

This report on the national wealth and income is submitted in final response to Senate Resolution 451, Sixty-seventh Congress, fourth session. The resolution directs the commission to make an inquiry into and to compile data concerning the total amount of the chief kinds of wealth in the United States, to ascertain the ownership thereof and the encumbrances thereon, including both public and private indebtedness, and to secure statistics for recent years concerning the amount of the annual income or increase in the national wealth in different lines of economic activity and by different classes of the population; and also to obtain information regarding the amount of income exempt from Federal taxation, and to report on the various phases of the inquiry as soon as practicable. An amendment to this resolution instructed the commission to ascertain the aggregate taxes levied by States, counties, municipalities, and other local taxing bodies for the last completed fiscal year and for the corresponding fiscal year five years previous.

A report on taxation and tax-exempt income and public debts was submitted to the Senate on June 6, 1924, in partial response to the above-mentioned resolution.

It was found impossible to complete certain features of the report as planned, on account of a new provision in the appropriation act for the fiscal year 1925–26, which restricted the general purposes for which the appropriation could be used.

This report deals, first, with national wealth, and, second, with national income for continental United States, and it contains some analyses of the various kinds of wealth and income and their distribution among the people.

The total national wealth in 1922 is estimated at about $353,000,000,000, and the total national income for the same year at about $62,000,000,000, increasing in 1923 to about $70,000,000,000. A rate of return on capital comparable to that for business undertakings should not be computed from these figures of wealth and income for 1922, because, first, the income includes wages and salaries, among other shares, and second, the wealth includes large amounts of public property and private possessions which are not lucratively employed. To show the return on business capital would require the collection of much additional data and even then would furnish a rate of return for a single year only.

GENERAL SURVEY OF NATIONAL WEALTH

In computing national wealth certain general questions as to the nature of wealth and the practicability of enumeration are first considered, and particularly the desirability of paying attention to the

material things in which value is embodied rather than to the valuation of property rights.

The estimate of national wealth is shown in general for 1922, with comparisons for most items with 1912, on the basis of the census estimates, but with some modifications. The total amount, as already noted, is about $353,000,000,000 for 1922, which involves an increase over the census estimate of about $32,000,000,000. This difference implies no adverse criticism of the census figures, but depends in part on the addition of values for roads and streets and in part on a modification of the principle of valuing railroads and other public utilities by applying the same principle as that used for real estate. This resulted in increasing such railroad and other public-utility values by about $10,000,000,000. The whole estimate, like that of the census, is practically limited to tangible forms of wealth and takes no account of intangible property of various kinds which depends for its value on tangible wealth.

A more important contribution made by the commission is in the analysis of the total estimate into its chief elements. Thus the total of $353,000,000,000 is found to consist of about $230,000,000,000 for real estate and about $123,000,000,000 for tangible personalty or movables. The figure for real estate includes untaxed as well as taxed realty, and also that belonging to railroads and public utilities. The real estate values, therefore, are found to be about 65 per cent of the total wealth of the country. Of this amount about $42,000,000,000 is for tax-exempt real estate owned almost entirely by the Government (Federal, State, and local). The amount for real estate is analyzed further into its chief components, which are found to be about $122,000,000,000 for land value and about $108,000,000,000 for real estate improvements. Thus land, exclusive of improvements, is estimated at 53 per cent of the total real estate and at 35 per cent of the total national wealth.

The report also makes an approximate division of the total wealth among various uses. Thus it is estimated that about 18 per cent of the total consists of agricultural wealth, about 14 per cent is used in manufacturing and mining, about 13 per cent is held by railroads and other public utilities, and about 12 per cent is held by Federal, State, and local governments. A very large but unascertained portion is employed in wholesale and retail trade, and quite small shares in other lines of business not mentioned above. Probably the largest single share, however, is that composed of town and city dwellings, furniture, and personal effects—wealth possessed and used for personal necessities and enjoyment—which probably is not less than one-fourth of the grand total.

A comparison of the census estimates of wealth for 1912 and 1922 indicates an increase measured in dollars of about 72 per cent. If allowance is made for changes in the purchasing power of the dollar, as indicated by the change in the level of wholesale prices, the increase was only 13 per cent, or a rate only slightly lower than the rate of increase in population. Such price indexes are not especially adapted, however, for use in this manner, and probably tend to exaggerate the changes in the dollar. Such data as are available regarding changes in the quantities of the concrete forms of wealth (as distinguished from the amount in dollars) suggest the probability that 13 per cent is an understatement of the real increase.

DISTRIBUTION OF WEALTH AMONG INDIVIDUALS

On the assumption that the relative values of estates of deceased persons, as recorded in probate courts, constitute an effective sample or cross section of the distribution of wealth, the probate records of 43,512 estates in 24 counties of 13 States were compiled by agents of the commission for the years 1912 to 1923, inclusive. The counties were selected with a view not only to their geographical distribution but also to a proportionate distribution as between counties with city, town, and rural population. For estates which were not probated an estimated average value of $258 was assigned, the average value of the probated estates under $500.

Tabulations based on the records of these 43,512 estates (and 141,446 estates estimated as not probated) cover a total wealth of about $708,000,000 for the 24 counties. About 1 per cent of the estimated number of decedents owned about 59 per cent of the estimated wealth and more than 90 per cent was owned by about 13 per cent of the decedents. The average value for all estates was $3,800, but over 91 per cent of the decedents had estates amounting to less than this average. About 65 per cent of the total number of probated estates were between $1,000 and $25,000 in size. Although the tabulations suggest wide variations in the wealth of individuals and a rather high degree of concentration, a comparison of the estates probated in 1912 with those probated in 1923 indicates that this concentration was greater at the beginning of the period covered by the commission's study than at the end. In 1912 the estates of over $100,000 each amounted to 52.6 per cent of the total value of all probated estates examined, while in 1923 they amounted to only 45.9 per cent of the total.

In the counties having cities of over 50,000 population the average value of the estates probated throughout the whole period was $16,990, while in counties having towns of between 5,000 and 50,000 population it was $10,070, and in rural counties $13,950. Not only the average estate but also the concentration of probated wealth was greatest in the counties with cities. The distribution of wealth was apparently wider in the "town" counties than in either of the other two.

Only about a third of the total value of the 43,512 estates examined represented real estate directly owned. This does not take into account (1) the deductions for mortgage debts, (2) the indirect ownership of realty through ownership of such personalty items as mortgages and stocks and bonds of corporations owning realty, and (3) publicly owned real estate. Mortgages and real-estate notes are classed as personalty. The proportionate direct holdings of real estate were greater for the estates of medium size than for the very large or the very small estates. In estates ranging in size from $2,500 to $10,000 the average distribution between realty and personalty was practically even. Analysis of the data for each type of community indicates that, although realty represented only 30.6 per cent of the total value of estates in "city" counties and 41.9 per cent in "town" counties, it represented 50.6 per cent in rural counties—suggesting greater stability and continuity of existence in rural communities.

Of the personalty included in the total value of the estates more than one-third consisted of corporate stocks, while 14.7 per cent represented bonds, 10.6 per cent real-estate notes, 4.7 per cent other notes, 14.7 per cent cash, and 19.9 per cent miscellaneous. The proportions represented by bonds and stocks were larger for the estates of larger size, while the proportions represented by cash were considerably larger for the smaller estates. The proportions also varied with the type of community, that for bonds averaging less in town and city districts than in rural ones, while that for stocks was somewhat smaller for the rural districts than for the others. The proportion of total personalty represented by cash was largest for the estates in town districts, averaging 32.9 per cent, as against 12.4 per cent for city and 21.1 per cent for rural districts.

A separate study of 540 estates of $1,000,000 and over in New York City, Chicago, and Philadelphia for the years 1918 to 1923, inclusive showed 86 per cent of the number amounting to less than $5,000,000 each, and a total value for the whole 540 of a little over 2 billion dollars. Of the total value 14.4 per cent was for realty. Of the personalty 53.9 per cent was in corporate stocks, 23.8 per cent in bonds, 4.4 per cent in real-estate notes, 3.9 per cent in other notes, 3.6 per cent in cash, and 10.4 per cent in miscellaneous items.

OWNERSHIP OF NATURAL RESOURCES

The money value of the mineral and other natural resources of the United States is not estimated by the Bureau of the Census, and the commission, in the present inquiry, has not attempted to arrive at any definite estimates of its own, although it was possible to make certain rough computations in the case of a few specific resources.

For the purposes of a study of the control or ownership of various natural resources of the United States schedules were addressed to the principal water-power, coal, iron-ore, copper, timber, and petroleum companies. Replies were received from companies controlling over 80 per cent of the estimated total developed water power of the country, while in the case of bituminous coal information was received from companies controlling about 48 per cent of the total reserves available for mining within 40 years. For the other resources these returns were meager, but they were supplemented in some instances by data from other public or private sources.

Only a small proportion of companies were able to assign a value to their reserves. From the valuations reported for each resource (except water power) an average value per unit was computed, which may be applied against the estimated total quantity of the reserve for a rough computation of total value.

For each resource covered the data on quantities owned or controlled, as reported by the companies to the commission or to other agencies for 1922 indicate a distinct concentration of control in the hands of a few large companies. Six companies are shown as controlling about a third of the total developed water power, 8 companies as controlling over three-quarters of the anthracite coal reserves, 30 companies as controlling over a third of the immediate bituminous coal reserves, 2 companies as controlling well over half

of the iron-ore reserves, 4 companies controlling nearly half of the copper reserves, and 30 companies controlling over 12 per cent of the petroleum reserves. It is interesting to note, however, that concentration of ownership in the hands of a few large corporations does not mean concentration in a few individual hands, in view of the development, especially in recent years, of a wide distribution of ownership of corporations through increase in number of stockholders.

AGRICULTURAL WEALTH

The question of agricultural wealth, from a national viewpoint, involves productive capacity as well as money value, so that the quantities of farm products and the area of land under cultivation are of especial significance.

The production of farm animals used for meats and to furnish dairy products shows an increase from 1912 to 1923 of roughly 5 per cent. The stock of animals used on the farm for draft purposes remained practically the same at the end of the 12-year period as at the beginning. There was considerable increase up to the middle of the period, but following this the more general use of tractors caused a falling off again. The combined animal and tractor farm power used for seeding, cultivating, harvesting, and marketing increased about 17 per cent during the period.

Acreage used for cultivation shows an apparently permanent increase of about 10 per cent. The area used for grazing increased about 12 per cent from 1912 to 1919, but fell off again until, at the end of the period, less than 3 per cent more land was being used for this purpose than at the beginning. Average combined crop production per acre shows a falling off of about 10 per cent, but, because of the increased acreage, the total production shows a slight increase.

The total farm wealth, according to the Census Bureau, was $41,000,000,000 in 1910 and $78,000,000,000 in 1920. For the years subsequent to 1920 certain estimates have been made by the Department of Agriculture; that for 1922 was $63,000,000,000. The severe agricultural depression toward the end of 1920 was reflected in heavy declines in the value of farm lands throughout the country. Extensive price data showing the extent of these declines were gathered by the commission and are presented in this report. The agricultural depression, like the immediately preceding boom, was a question of prices rather than of marked changes in physical production of useful commodities. But the fall in prices was none the less serious for the farmer, and perhaps, on that account, even more so.

WEALTH OF CORPORATIONS

The book value of wealth used in corporate business in 1922 is estimated by the commission at approximately $102,000,000,000. This estimate (which does not include such items as good will, patents, trade-marks, etc., or outside investments) was arrived at by adding to the value of land, buildings, and equipment as compiled by the Bureau of Internal Revenue from corporation returns for taxation purposes estimates of the value of inventories, cash, and other movables used in the corporate business. The following estimates for different industries are book values and are not comparable

with those given above, particularly those for steam railroads and other public utilities, which are estimated current values.

The greatest aggregate corporate wealth was that indicated for the group of corporations engaged in manufacturing, amounting to an estimated 33.7 billions of dollars for the 80,234 such corporations reporting to the Bureau of Internal Revenue. Transportation and other public-utility corporations ranked next with an estimated 27.3 billions of dollars for 23,472 corporations. Among manufacturing corporations the greatest total wealth was that of about $10,000,000,000 for those engaged in the manufacture of metal and metal products, including iron and steel. Among the transportation and other public-utility corporations by far the greatest aggregate was that of 17.3 billions indicated for steam railroads. The latter not only greatly exceeded any other corporate industry in total wealth employed but also had easily the greatest estimated wealth per individual corporation, averaging $10,000,000. Electric railroads, which ranked next, had an average of only about 2.2 millions of dollars per corporation.

Fixed assets (land, buildings, machinery, and other equipment) averaged an estimated 66.3 per cent of the total corporate wealth. The proportion varied for different groups and industries, ranging from nearly 87 per cent for the public-utility and service corporations to less than 30 per cent for trading corporations. A comparatively low percentage of fixed assets to total wealth was indicated also for manufacturing corporations which, like trading corporations, have a large part of their investment in stocks of goods or materials.

No general data on the relative wealth invested in corporate business and outside of it (e. g., stocks and securities of other companies) were available from the Bureau of Internal Revenue records. A special study of the balance sheets of 1,660 corporations made by the commission from both public and private sources indicates that, on an average, less than 10 per cent of corporate wealth is invested outside the corporate business and that less than 1 per cent is attributed to good will, appreciation, etc. An exceptionally large proportion of outside investment was an average of 33.9 per cent indicated for the four largest meat-packing concerns. The smallest was an average of 5.6 per cent for 42 petroleum companies.

OWNERSHIP OF CORPORATIONS

Although the wealth devoted to corporate business in 1922 is estimated to represent about a third of the total wealth of the country, it is the relative concentration or dispersion of stock holdings which determines the actual distribution of corporate wealth. In the present inquiry schedules requesting data on the number and kinds of stockholders were addressed to a list of 10,000 corporations selected by the Bureau of Internal Revenue in such manner as to be representative not only of size but of each of the 43 industrial groups into which the bureau's returns are divided for tabulation. Returns were received by the commission from 4,367 corporations with a combined capital stock amounting to over $9,000,000,000, or about 12 per cent of the capital stock of all corporations.

For these 4,367 corporations the average holding of common stock per stockholder was $6,069, while the average of preferred stock was $5,211. The average holdings of common stock per stockholder

ranged from $3,273 for electric light and power companies to $18,957 for manufacturers of lumber and wood products, while the average holdings of preferred stock ranged from $1,486 for service corporations to $9,383 for coal-mining companies. Nearly one-third of all the stockholders reported were holders of not more than $500 worth of stock (common and preferred) each. This proportion of small holders to total holders ranged, however, from 11.7 per cent for electric railroad companies to 53.8 per cent for petroleum mining companies.

Of the total of 1,074,851 common stockholders reported, individuals (not including brokers, trustees, or foreign holders) comprised over 90 per cent. Trustees comprised 3.4 per cent, brokers 1.7 per cent, other corporations 1.1 per cent, nonprofit institutions 0.2 per cent, and foreign holders 1.4 per cent. For preferred stock the proportions were very nearly the same. Although the number of individual stockholders was thus far greater than of all other classes of holders combined, the average holding per individual was lower than that for other classes of holders in nearly all industries. The proportion of the total par value of common stock represented by holdings of individuals was 64.9 per cent, while that for trustee holdings was 10.4 per cent, for broker holdings 11.9 per cent, corporation holdings 10.4 per cent, nonprofit institution holdings 0.9 per cent, and foreign holdings 1.5 per cent. The proportions for preferred stock were very similar to those for the common.

For corporations reporting the information, the stockholdings of officers, directors, and employees were an important part of the holdings of individuals. In the case of many smaller corporations all of the stock was held by officers and directors. Of the total common stockholdings officers and directors held about 10 per cent. They held about 6 per cent of the total preferred stock. In number, however, officers and directors constituted only about 2 per cent of the total common stockholders and only about 1 per cent of the preferred stockholders. The employee stockholders comprised 7.5 per cent of the common stockholders reported and 3.5 per cent of the preferred stockholders, but employee holdings represented only 1.5 per cent of the common stock and less than 2 per cent of the preferred.

In spite of a tendency in recent years toward a lower par value for shares of stock the data reported to the commission indicate that the great majority of corporations still follow the practice of fixing the par value of their shares at $100. Eighty per cent of the companies had par values of $100 for their shares of common stock, while 5.1 per cent had $50, 3 per cent had $25, 4.9 per cent $10, 0.7 per cent $5, and 1.9 per cent $1. The most radical departure from these general proportions was in the case of companies engaged in the manufacture of chemicals and allied substances (principally petroleum and petroleum products). Over 55 per cent of these companies had a $25 par value for their common stock.

WEALTH OF NONPROFIT INSTITUTIONS

The nonprofit institutions included in the commission's study were (1) religious organizations (2) benevolent institutions (3) educational institutions, and (4) miscellaneous foundations and community trusts and public trusts. Estimates based on returns from

the commission's schedules, and on earlier studies of the Census Bureau and other bodies, indicate a total wealth of about 14.5 billion dollars for these institutions in 1922. Of this total, educational institutions had an estimated 7.6 billions, while religious organizations had 3.3 billions, benevolent institutions 2.4 billions, and foundations and community trusts and public trusts 1.2 billions.

The income from those portions of the wealth of nonprofit institutions which are in invested funds amounted to 160 million dollars in 1922, or a return of about 1 per cent on the total wealth of these institutions.

Of the estimated 3.3 billion dollars wealth of religious organizations (all private) about 2.8 billions, or 86 per cent, is in churches, parsonages, and land, while 12 per cent is in outside income-producing investments, and 2 per cent consists of endowments for specific purposes. The average wealth per church member is estimated at $69. The wealthiest single church is the Roman Catholic Church, with 28 per cent of the estimated total church property. In proportion to communicants, however, the Protestant Episcopal Church is the wealthiest with an estimated wealth in church property of $223 per member.

Of the estimated two and a quarter billion dollars of wealth in benevolent institutions for material relief at least one and three-fourths billions is in privately-owned institutions. Over half of the wealth of these private institutions is represented by that of hospitals and sanitariums and about 23 per cent is represented by that of homes for adults or adults and children. Analysis of the wealth of privately-owned benevolent institutions indicates that 61 per cent was in land, buildings, and equipment, 26 per cent in endowment funds, 8 per cent in other property, and 5 per cent in land and buildings bequeathed for a specific purpose.

Of the estimated 7.6 billion dollars of wealth in educational institutions about 3.5 billions is in private schools and colleges, 3 billions in public schools and colleges, 0.8 billion in libraries, and 0.2 billion in museums and historical societies.

Of the estimated 1.2 billion dollars of wealth of miscellaneous foundations, community trusts, and public trusts, only $134,381,000 represents that of public trusts. The 1.2 billions is invested as follows: Bonds, 40.2 per cent; stock, 26.1 per cent; real estate mortgages, 17.4 per cent; and miscellaneous, 16.3 per cent. Over half of the bonds and over 85 per cent of the stocks are industrial issues. The total estimated income from these institutions in 1922 was about $54,000,000, or about 4½ per cent return on the 1.2 billion dollar investment.

NATIONAL INCOME

The amount of national income is derived largely from basic data of the Census Bureau, but they are supplemented by other data. Estimates for noncensus years are based on various indexes of business changes. Thus estimates are presented of the total national income for the six years, 1918 to 1923, together with an analysis of this income according to its derivation from various sources, such as agriculture, manufactures, transportation, etc.

Extensive use is also made of the income statistics of the Treasury Department, which furnish extensive data regarding the incomes of corporations and of such persons as are required to make reports to the Government. However, these reports after 1917 cover the incomes enjoyed by a very considerable proportion of the total population—a seventh, more or less—and are of especial value in showing the differences in individual incomes and the sources from which such incomes are derived.

PERSONAL INCOME-TAX DATA

During the seven-year period 1917–1923 the total income of individuals who received and enjoyed the income reported in the Federal personal income returns ranged from a little over $12,000,000,000 in 1917 to a maximum of over $31,000,000,000 in 1923. The total income for 1920 was nearly 27 billions, the second highest for the period. The commission estimates that during this seven-year period the aggregate population receiving and enjoying the total income reported in Federal income-tax returns ranged from a little over seven million individuals in 1917 to a maximum of over eighteen and one-half millions in 1923, or from 6.8 to 16.7 per cent of the total population of the country. During this same seven-year period the average per capita income of the estimated population receiving or enjoying the income covered by Federal income-tax returns averaged $1,634, and ranged from a minimum of $1,556 in 1920 to a maximum of $1,755 in 1919.

The commission's analysis shows that in 1923 three-fourths of the total income of over 31 billion dollars for that year was received by individuals reporting net incomes of under $10,000, and 3.7 per cent was received by individuals reporting net incomes of $100,000 or over. According to the commission's estimate, the average per capita total income for the aggregate population receiving or enjoying the income in 1923 ranged from $863 for the group reporting a "net income" (income less interest paid and less certain taxes) of less than $1,000 to $1,529,526 for the group reporting a net income of $1,000,000 or over.

GEOGRAPHICAL DISTRIBUTION

In 1923 the New England and Middle Atlantic States (New York, New Jersey, and Pennsylvania) had 43 per cent of the total income reported in Federal income-tax returns, but only 23 per cent of the population of the country. The Mountain States, on the other hand, had about 2.5 per cent of the total income and about 16.6 of the population. The great industrial sections of New England, the Middle Atlantic, and the East North Central States, with 43 per cent of the total population of the country, had nearly two-thirds of the total income reported in the Federal income-tax returns in each year. The New England and Middle Atlantic group of States was the only section of the country in which the estimated average per capita income reported exceeded the average for the country, this average amounting to $1,878 in 1923, as compared with an average of $1,671 for the entire country.

CASH DIVIDENDS

The total amount of cash dividends reported annually in the personal income-tax returns ranged from a little more than two billion to over three and one-eighth billion dollars during the eight-year period 1916–1923. The smallest amount reported was for 1916 and the largest for 1923. The amount of cash dividends reported was nearly 47 per cent larger in 1923, the peak year, than in 1916.

For each of the eight years, 1916–1923, from 37.5 to 43.7 per cent of the cash dividends reported were received by inhabitants of the three Middle Atlantic States—New York, New Jersey, and Pennsylvania. Inhabitants of the important industrial States of the East North Central division ranked second each year, with from 18.7 to 21.7 per cent. The New England States ranked third, with from 12.5 to 14.4 per cent of the totals. Inhabitants of these three geographical divisions reported from 72.5 to 76.1 per cent of the yearly totals during this period.

WAGES AND SALARIES

During the six-year period 1918–1923 wages and salaries constituted a larger proportion of the total personal income reported to the Federal Government than did any other source in each year.

In general, wages and salaries constitute the bulk of incomes up to $10,000, and a decreasing proportion of incomes in the higher income groups, becoming a small part of the incomes of $1,000,000 and over. Business profits, except for the group with incomes of less than $1,000, constituted the next most important source in groups up to $10,000 and were about equal to wages and salaries in the $30,000 to $100,000 group. Investment income, or income from property owned, represented by rents, royalties, interest, and dividends, in general represented an increasing percentage of the total for the various income groups, becoming more important than either wages and salaries or business profits for all groups reporting incomes over $10,000 each.

In general the data reflect high wages, salaries, and profits during the war and postwar period, followed by depressed business profits and other profits, slightly decreased wages, and less full-time employment during the business slump of 1920 and 1921, followed by a sharp recovery in business profits and more nearly full-time employment at higher wage levels during the last two years of the six years covered.

BASIS OF ESTIMATING TOTAL INCOME

The present report also gives information concerning the estimated total income of the people in the years 1918 to 1923. These estimated amounts are divided between wages and salaries for services performed and profits, interest, and rent for those who devoted their time or capital to business enterprise. Estimates of the burden of taxes paid directly by such business enterprises are also made. These taxes do not include, for example, amounts paid by the wage and salary earners, or the income taxes of those who carry on business enterprises under the partnership or unincorporated single proprietorship form, or taxes paid by bondholders or other investors out of the interest or rent received on their investments.

The total income of the people of the United States was estimated by computing the amount of value created by each of the principal groups of industries or lucrative occupations—agriculture, mining and quarrying, manufacturing, mercantile, banking, the various branches of transportation, the telephone, telegraph, and cable service, professional service, personal service, etc. The value created by an industry consists of the excess of the total value of the products or services over all that is paid away to other industries or branches of business for materials, supplies, and service of every description.

In making these estimates use was made of the census data concerning agriculture, manufactures, mines and quarries, street and electric railways, electrical industries, the telephone industry, and the telegraph and ocean-cable industry; of the statistics of the Interstate Commerce Commission concerning steam railroads, water transportation companies, telephone, telegraph, and cable companies; of the mass of data published in the Agriculture Yearbook; and of data from various other sources. It was found necessary, however, to supplement these data by obtaining reports from thousands of representative enterprises in the various industries. Excellent cooperation was received from a large proportion of those addressed, except in the cases of the professional service and personal service businesses, many of which had rather inadequate records for this purpose.

ESTIMATES OF THE TOTAL NATIONAL INCOME

The total income of the people of the United States in 1918 is estimated, in round numbers, at $60,000,000,000. This was a war year. During the two years of rapidly rising prices and wage rates that immediately followed the close of the war the total money income of the people rose rapidly. It is estimated at more than $67,000,000,000 in 1919 and nearly $75,000,000,000 in 1920. When depression paralyzed a large portion of industry and prices and wage rates fell the total money income declined also. According to the commission's estimates, it was less than $53,000,000,000 in 1921, but increased rapidly as business recovered. It is estimated at nearly $62,000,000,000 in 1922 and nearly $70,000,000,000 in 1923.

Thus the estimated income of the people increased nearly $10,000,000,000, or one-sixth, in five years. These estimates do not furnish an accurate measure of the degree to which needs of the people were provided as between the several years. The population increased about 6 per cent during that time. Furthermore, a considerable part of the differences were merely nominal, e. g., a larger flow of money spent for commodities and services at higher prices in 1920, as compared with 1919, and not a corresponding increase in the production of those commodities and services.

It is questionable, however, whether any available index numbers of general prices could be applied to express these estimates accurately in dollars of equal purchasing power. To do this successfully might involve a splitting up of the population for articles for personal consumption on the one side and for articles used in industrial expansion on the other. In ordinary times this would be difficult enough. In a period of rapid and extensive change, such as was the half decade under review, such methods are of uncertain effect. However, taking the cost-of-living index of the Bureau of Labor Statistics as probably

the most available single index, the estimated income revised to equal in purchasing power the 1923 dollar was as follows: 1918, $59,000,000,000; 1919, 61.3 billions; 1920, 61.3 billions; 1921, 50.6 billions; 1922, $63,000,000,000; and 1923, 69.8 billions. The effect of this revision is generally to smooth out the more violent fluctuations which were due in part to rapid price changes. In particular, the specious character of the rapid increase in income in 1919 and 1920 is made evident; this was a period of extraordinary speculative activity and of real scarcity in several important lines of trade.

THE CHIEF SOURCES OF NATIONAL INCOME

Of the total estimated income in 1923, amounting to nearly $70,000,000,000, manufacturing industries contributed 24.1 billions, or 34 per cent. Agriculture came second in 1923 with 9.4 billions, which was 13.5 per cent of the total. Mercantile business made the third contribution in size, which was 8.6 billions, or about one-eighth of the total. Fourth came the personal-service businesses—hotels, barber shops, shoe-repair shops, and a host of others—which furnished 6.3 billions, or 9 per cent of the total income. The professions—law, medicine, engineering, etc.—made the fifth contribution in size, which was 5.2 billions of dollars, or 7.5 per cent of the total. The share that was sixth in magnitude was that of the steam railroads, namely, 4.6 billions of dollars, or 6.7 per cent of the total income in 1923. Mining and quarrying contributed 3.4 billions, or 4.9 per cent of the total in 1923, and ranked seventh. The construction industry's share, 1¾ billions in 1923, ranked eighth and constituted 2.5 per cent of the total income. Commercial banking, so long associated with mercantile trade that the Census of Occupations treats the former as a part of the latter, contributed 1.4 billions of dollars, or 2 per cent of the total income in 1923.

The foregoing are the only groups of industries that contributed a billion dollars or more each to the total national income at any time during this five-year period. There were considerable variations in the proportions of the total, from year to year, for some of the smaller groups.

DIVISION BETWEEN LABOR AND CAPITAL

The proportion in which the total product of the joint efforts of human labor and brains employed at wages or salary, on the one side, and capital and business enterprise on the other, is a matter of great economic interest. In the following statements it should be remembered that the shares are the amounts before deduction of any taxes paid by the recipients of the incomes or by business organizations.

Of the total estimated product of industry, amounting practically to $70,000,000,000 in 1923, the employed personnel of the industries and occupations received 38.2 billions, or 55 per cent, in salaries, wages, or other remuneration for their work; capital and enterprise received the other 45 per cent in profits, rent, and interest. These proportions were about the same as for the entire six years, 1918–1923, combined. The proportions varied, however, from year to year with the changes in general business prosperity. In 1921, a year of very severe industrial depression, labor's share, namely, 31.3 billions

of dollars, while lower in total amount than in 1922 and 11⅛ billions lower than in 1920, was the greatest in proportion, amounting to 60 per cent of the total. In the war year, 1918, labor's share of the total net product of industry was 28.2 billions of dollars, or only 47 per cent of the total; while the share of capital and enterprise was 32.0 billions, or 53 per cent of the total. With the culmination of the industrial boom in 1920 labor's share increased in aggregate amount to 42.9 billions and in proportion to 58 per cent; while the share of capital and enterprise declined in the aggregate to 31.4 billions and in proportion to 42 per cent.

SHARES OF LABOR AND CAPITAL IN DIFFERENT INDUSTRIES

The proportions in which the net product was divided between labor and capital varied greatly from industry to industry. While for industry as a whole labor's share in 1923 was 55 per cent of the total net product, in agriculture the wages of hired labor claimed only 12 per cent. In agriculture, however, the greater portion of the total labor is not hired, but is furnished by the farmers and members of their families and is not compensated by contract money wages. In the professional service businesses wages and salaries of hired workers amounted to only 23 per cent of the total value created by this group of businesses. In this group, however, most of the share designated as going to capital and enterprise, namely, 77 per cent, is the value of the service and advice rendered by trained professional minds. In the banking business, labor's share was 28 per cent. In this business there is a large amount of invested capital per employee as compared with most industries.

Labor's portion of the total net product was above the average of 55 per cent, especially in the mercantile business and in certain public utilities. In the mercantile business and in the telephone industry it was 67 per cent in 1923; in the steam railroad industry, 69 per cent; in the telegraph and ocean cable business, 73 per cent; in water transportation, 77 per cent; and in the construction industry, 90 per cent of the total net product of the industry. Similar variations occurred in the other years under review.

PROPORTIONS PAID IN TAXES

In the foregoing discussion it has been explained that the total income created by each branch of economic or industrial activity has been divided between labor on the one side and enterprise and capital on the other side, without regard to how much either of them might be obliged to pay out in taxes. In the case of labor it is impossible to estimate how much of the salaries and wages go to the Federal, State, and local governments in taxes. The same is true of the taxes paid by investors upon their investments or upon the interest received from them; and of the income taxes paid personally by the owners of unincorporated businesses. However, it was possible to estimate the amount of taxes paid directly by business enterprises to the various governments, because of the fact that they owned taxable real estate or personal property, paid taxes for business privileges, and the like, and, in the case of corporations, because they paid income taxes. These are the taxes of the burden of which business enter-

prise is most conscious, because they figure as deductions from income in their annual financial statements.

Of the total income estimated at $70,000,000,000 in 1923, the taxes paid directly by business enterprises are estimated at 4.4 billions, or 6.3 per cent of the total value of product. Five years earlier the proportion was 7.6 per cent. Whatever the ultimate incidence of their burden through their effect upon prices, the taxes referred to were paid immediately out of the share designated as that going to enterprise and capital. It is appropriate, therefore, to compare them with that share. The taxes in 1923 amounted to 13.9 per cent of the gross return to capital and enterprise. In 1918, the proportion was 14.2 per cent; in 1919, 12.8 per cent; in 1920, 13.6 per cent; in 1921, 17.9 per cent; and in 1922, 12.8 per cent. Business enterprises, it is estimated, paid directly in taxes in these six years nearly $25,000,000,000, which was 13.9 per cent of the estimated gross return to capital and enterprise. However, due to the fact that the amount of taxes levied is in part independent of the earning power of the enterprises in the particular year, the tax proportion varied considerably with changing degrees of prosperity or depression.

CORPORATION INCOME

Of the total number of corporations in the United States the proportion that reported deficits on their income-tax returns was not less than one-third for any year from 1916 to 1923. Even for 1917, the peak year for high corporate net income, 34 per cent of all corporations reported deficits; and for 1921, a year of very low profits, the proportion reporting deficits amounted to 52 per cent of the total, while for the other years the proportions ranged from 34.5 to 44.5 per cent.

The aggregate net income of corporations in 1917 amounted to over 10 billion dollars before deduction of Federal taxes; in both 1916 and 1918 it amounted to over 8 billion dollars, and in 1919 it amounted to nearly 9 billions. For no other year did corporate net income aggregate these high levels. In 1921, a year when the majority of corporations reported deficits, the aggregate corporate net income was only 1.1 billion dollars, but in 1922 it aggregated nearly 6 billion dollars.

The rate of return in 1922 on the aggregate "fair value" of outstanding stock of all corporations as reported by the Bureau of Internal Revenue was 7.9 per cent. For corporations engaged in manufacture the rate of return was 10.5 per cent; for finance corporations the net return amounted to 6.4 per cent; for construction corporations it amounted to 5.6 per cent; while for mining and quarrying corporations it amounted to less than 1.5 per cent.

The rate of net profit on investment in 1922 earned by wealth devoted exclusively to corporate business, regardless of whether contributed by stockholders or borrowed, amounted to 6.4 per cent for corporations in the aggregate. For mining and quarrying corporations a net loss of less than one-tenth of 1 per cent was shown, but for the other groups of related industries the rates of return ranged from not quite 1 per cent for corporations engaged in agriculture and related industries to 13.3 per cent for finance corporations.

The gross income of corporations from business operations in 1922 amounted to about 126 billion dollars, according to the commission's estimate, based for the most part on data reported by the Bureau of Internal Revenue. The greatest amount of gross income from business operations, aggregating an estimated total of nearly 46 billion dollars, was for the group of corporations engaged in manufacture, followed by trading corporations with nearly 30 billions, finance corporations with over 22 billions, and transportation and other public utility corporations with 15 billions.

For the groups of corporations engaged in mining and quarrying an aggregate net loss, amounting to one-tenth of 1 per cent of gross income from operations, is estimated for 1922; but for the other groups of industries the estimated ratios of net to gross income from operations ranged from 1 per cent for corporations engaged in construction to 9 per cent for corporations engaged in transportation and other public utilities. For steam railroads the ratio amounted to nearly 15 per cent; and for manufacturers of stone, clay, and glass products it amounted to 10 per cent.

For each of the seven years from 1916 to 1920, 1922 and 1923, from 36.9 to 42.3 per cent of the aggregate annual net income of corporations, after deduction of deficits, was credited to the three Middle Atlantic States—New York, New Jersey, and Pennsylvania. The proportion in 1921 was in excess of 101 per cent, due to the fact that net deficits were reported for several other territorial divisions. The Middle Atlantic States, together with the East North Central States of Ohio, Indiana, Illinois, Michigan, and Wisconsin, and the New England States, are credited with about three-fourths of the aggregate corporate net income for the seven years from 1916 to 1923, exclusive of the year 1921.

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NATIONAL WEALTH AND INCOME

PART I. NATIONAL WEALTH

CHAPTER I

ORIGIN, SCOPE, AND METHOD

Section 1. Origin and scope.

THE SENATE RESOLUTION.—This report is presented in response to Senate Resolution No. 451 of the Sixty-seventh Congress, fourth session. Part I of this report deals with the wealth of the people of the United States. Part II, dealing with income, is also included in this volume.[1]

With respect to national wealth, the resolution directed the commission—

> to make an inquiry into, and to compile data concerning the total amount of the chief kinds of wealth in the United States, including land, improvements, movables, and other tangible and intangible goods, and also the ownership thereof and the various liabilities incumbent thereon, including public and private debts of various kinds, corporation stocks, and other choses in action.

It was found impossible to complete certain features of the report as planned, on account of a new provision in the appropriation act for the fiscal year 1925–26, which restricted the general purposes for which the appropriation could be used. This fact also made it necessary to limit considerably the collection of data on certain subjects as well as the analysis of the results obtained.

IMPORTANCE OF INFORMATION CONCERNING THE DISTRIBUTION OF WEALTH.—The present Secretary of Commerce recently made the following statement regarding the importance of having adequate information concerning the distribution of wealth and income, which is unreservedly indorsed by this commission:[2]

> I am deeply interested in your discussion tonight because I am convinced that one of the continuous and underlying problems of sustained democracy is the constant and wider diffusion of property ownership. Indeed I should become fatalistic of ultimate destruction of democracy itself if I believed that the result of all of our invention, all our discovery, all our increasing economic efficiency and all our growing wealth would be toward the further and further concentration of ownership. In the large vision we have a wider diffusion of ownership today than any other nation in the world. It has been so since the beginning of the Republic. In our enormous growth in wealth there have been periods when the tendencies were toward concentration of ownership and other periods when economic forces (and public action) made toward greater diffusion. Certainly the forces of diffusion were dominant during the great migration which occupied the West.

[1] Another volume, treating of taxation, tax-exempt income, public debts and public expenditure, was transmitted to the Senate on June 8, 1924.

[2] Proceedings of the Academy of Political Science, April, 1926, pp. 137–139.

And again I have the impression that one of the byproducts from the economic shift of the last war has been still another period of increasing diffusion of ownership of property. Our high real wages during the past three years, with consequent general expansion of savings, have, I believe, also marked another period of wider diffusion of property ownership.

It is appropriate that the evidences and the tendencies in this matter should be earnestly examined. We are all fundamentally interested that our economic forces, our public and private policies, should be so directed that with our increasing wealth the tendencies of diffusion of ownership shall be greater than the tendencies of concentration. And if we would grow in standards of living it is equally important that we shall maintain this dominant tendency without destruction of the moral, spiritual and economic impulses of production.

We are woefully lacking in actual facts upon this most important question. From the vast fund of statistical information in the nation we can only indicate tendencies, and then only with some uncertainty. Aside from our inability to determine more than bare tendencies we are unable from the information we have to make the proper and necessary distinction between distribution of wealth, diffusion of ownership, and diffusion of control of wealth—all equally important in any consideration of social as well as economic questions.

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In the matter of distribution of wealth as distinguished from diffusion of ownership we have but little fact basis upon which to proceed outside of the income tax statistics. While they show superficially that diffusion of wealth is increasing yet the exemptions are such as to destroy much of their statistical usefulness. Again we have little information as to the diffusion or concentration of the control of wealth as distinguished from ownership. My impression is that the establishment of the Federal Reserve System and the effect of the Restraint of Trade laws and the inheritance taxes all tend to make for diffusion in this direction also. But at every turn in study of distribution of wealth and of ownership or control we are confronted with a woeful lack of accurate data.

One of the first requisites for adequate economic discussion, and thus the development of any economic or social policy, must be the determination of the economic fact. We can adduce economic argument, we can point out economic tendencies, but until we have so searching an examination of these questions that we can evaluate them in actual quantities, whether it is dollars or goods, we shall be far afield from the truth. I have seen forty economic arguments in opposition destroyed by one single affirmative argument when quantitative determination was attached to each of them.

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SCOPE OF THE INVESTIGATION.—The language of the resolution is very broad. It would be impossible, as well as undesirable, for the commission to deal independently and comprehensively with the subject of wealth entirely by means of its own resources; this would involve a considerable degree of duplication of the work of the Census Bureau, which recently published an estimate of the aggregate national wealth as of 1922. There is occasion, however, since the commission approaches the subject from several different points of view, for the use of data additional to those published by the Census Bureau. In compiling data for an inventory of national wealth as of any recent year no single agency could be expected to do better than the Census Bureau, which has available the results of censuses of manufactures, electrical industries, and agriculture, as well as a permanent organization and staff experienced in such work. Any survey and inventory of national wealth must be based largely upon the census enumerations.

The commission has not, therefore, attempted any general original inventory of the items of national wealth, but, in addition to undertaking some special interpretative studies, has reviewed the categories of the census estimate of 1922, introduced certain additional items and presents somewhat different results for a few of them. In certain respects the commission can carry its analysis further,

since it can disregard the rather traditional requirement of distributing results by States. Much of the attempt to distribute particular categories of wealth among the States is easily misinterpreted, since it is not always easy to distinguish between the ideas of wealth and property or ownership. The ownership of much of the physical wealth in some of the newer States rests in the hands of residents of the large financial centers.

In addition to a general survey of the wealth of the Nation, the present report undertakes certain special studies supplementary to the general survey. No suggestion is intended that these special studies are comprehensive of the topics that might be considered of most interest. Close limitations of time and means have made it necessary that such topics be dealt with according to the accessibility of information as much as according to their intrinsic interest. As a means of ascertaining the distribution of the total national wealth, the commission has taken a substantial sample of the estates probated during the period 1912 to 1924. One of the most important problems of national wealth relates to the so-called natural resources, of which coal, petroleum, iron and copper ore, timber, and water power are specifically studied in this report. Agricultural wealth, as the foundation of the economic organization, is studied not only from the standpoint of decennial census enumeration of value but also more especially from the standpoint of annual material output as the basic fact regarding earning power from which its value is derived. The wealth of corporations, which now embraces a large proportion of the total wealth of the country, is studied both with respect to the amounts in different branches of the industry and to the kinds of wealth, such as real estate, inventories, cash assets, etc. While the amount of wealth owned by corporations is large, the ownership of corporations themselves is shown to be generally distributed among many stockholders. Finally, the wealth of religious organizations, educational institutions, and other philanthropic foundations is estimated, and some details are presented regarding the kinds of wealth so held and employed.

Section 2. Nature of wealth.

Since, especially as regards the more permanent forms of wealth and those that yield income, the individual is more interested in property rights than in the actual wealth, it is natural to inquire why, in an attempt to inventory national wealth, the property point of view is generally disregarded and the more materialistic conception adhered to. One reason for this is the fact that the material wealth can be traced more fully and comprehensively than the property rights relating to it. Largely as a consequence of this, if evidences of property rights are included in an enumeration of wealth, the wealth in the possession of others to which these property rights relate may also be counted, involving duplication.

Another reason for choosing the wealth basis is the fact that property rights can not be valued always at their face value and sometimes can not be assigned any definite value. An even more important reason why the property point of view is less available is the fact that some property is a lien, not on material wealth but on personal services and personal earnings.

INTANGIBLES.—The development of modern methods of doing business through corporate organizations has greatly increased the importance of intangible forms of wealth. But the fact that they have thus become more important as business assets does not of itself warrant their inclusion in an inventory of national wealth.

A merchant by reason of his long-continued conduct of a business on a high plane may establish among his customers a reputation causing them to deal with him by preference. He thereby adds to the value of his business an element not represented in the value of his stocks of goods nor in that of the premises where he conducts the business, and such good will may be salable at a considerable price.

PROPERTY AND WEALTH.—Definitions of property describe it as a "right and interest a person has in wealth to the exclusion of others." Property is a distinctly legal conception. But in ordinary speech the word is applied to the concrete things to which property rights relate as well as to the rights themselves. Hence the quite common notion that property and wealth are synonymous. Wealth consists especially of material things having economic value that are transferable from one to another owner. A house and lot are wealth. The deed to them is not wealth but merely evidence of title and the means of proving property or ownership. Wealth is the source of the services of goods and of income. Property is a means of controlling the receipt of the income and enjoyment that wealth yields.

PROPERTY IN OBLIGATIONS.—The inclusion of debts as wealth of the creditor leads naturally to a duplication in an inventory of wealth. A mortgage is created by a conveyance of property from the debtor to the creditor with the condition usually that the debtor shall remain in undisputed possession of the wealth so long as he lives up to certain contract requirements as regards payments of interest and principal. Mortgage indebtedness, therefore, evidently implies concrete wealth against which the debt applies. The term "lien" is somewhat more general, although it includes mortgages. In the case of a lien there need not be the formal conveyance of the property, although security for the payment of the obligation is specified. The lien, therefore, is more easily extended to cover services, earnings, expectations, etc. In other words, it may apply to wealth not yet in existence. This phase of the development of property in obligations is especially important in connection with an estimation of a national total on a property basis, because the tendency is toward an increase in the extent to which credit and obligations are not based on concrete property already in existence.

The foregoing considerations throw some light on the question of whether the public debt should be included as a part of the people's wealth. So far as such debt may be regarded as a lien on existing wealth the only objection to its inclusion would be the resulting duplication. But any consideration of the incidence of taxation will suggest that the public debt can not be said to be payable entirely, or even in major part, out of existing wealth. It will be gradually paid off out of taxes, the incidence of which will be mainly upon incomes and earnings.

OTHER INTANGIBLE VALUES.—In copyrights and patent rights are found very different kinds of property in intangibles. They are based on the theory that the grant of patents for inventions encourages their development and in the long run increases the wealth of the country through increasing productive capacity. That the patentee has for a limited time a monopoly right to a large share of the immediate increase in production resulting from his invention compels the public to share with the inventor the benefits of the invention.

In the case of copyrights the same principle applies, although the material wealth of the country may not be increased by the encouragement given to authors and artists who produce largely ideas rather than material things. But wealth is often given in payment for services which may or may not be embodied in material goods.

The creation by public grant of exclusive rights that may obstruct wealth creation rather than contribute to it are comparatively few at the present day. No attempt is made, however, to estimate the amount of such intangible property.

Section 3. Limitations of national wealth estimates.

An inventory of national wealth that confines itself to material categories of things having economic value falls short, by omission, of intangible values that are of great economic importance. This shortcoming, nevertheless, is minor in comparison with what may by some be improperly expected of such an estimate. A favorable climate, abundant natural resources, physical health and racial stamina, individual industry and enterprise, honest and efficient civil government, the diffusion of education and mental and moral culture, are more important than wealth. Some persons would include some of these items as national wealth, but their importance is of an entirely different character. If they contribute to existing wealth, their contributions, so far as actually realized are included. Too much should not be expected of an inventory of mere wealth.

The inadequacy of an inventory of national wealth appears in the consideration of differences between the various kinds of goods and services. The concrete goods that constitute wealth are themselves valued because of the services they render. They are, of course, valued more highly if the services continue to be rendered through a long period. But in some cases the value of the material goods is exhausted by a single service rendered once for all. The material embodiment of the value of such goods is transitory and their share in the total of national wealth is less in proportion to their importance than is that of durable goods. Still further removed from the latter are the personal services of which the value is not embodied in material goods at all. This class of values does not appear in an inventory of national wealth. The perishable goods do appear, but the class is not represented in proportion to its importance, because goods of this nature constitute a stream that is continually replenished as well as continually used up so that the element of value actually existing at any moment of time is small in comparison with the values needed, for example, in the course of a year.

Most of the wealth inventoried, therefore, consists of durable goods which render services through a long period of time. Because these bulk largest in the total of wealth, it is easy to get the notion

that they are in some sense more truly wealth than the more evanescent consumable goods. If it is true that the welfare of a nation is greater in proportion to its possession of large stocks of durable goods, this is chiefly because it is presumable that such a nation possesses perishable goods and skilled personal services in due proportion to its stock of permanent forms of wealth, and therefore is better off, not merely because it has the durable goods but because it has, as well, a due proportion of other goods and services.

Section 4. The measurement of wealth.

THE VALUATION OF BUSINESS ASSETS.—In a commercially-minded age wealth is naturally thought of as salable "assets." The notion of salability ought not to be carried too far in its application to the measurement of national wealth. In matters of economic valuation, however, if some substitute for the sales test is applied, it is largely because in the long-run average the substitute is a better measure of value than the individual sale, which is practically always affected by special conditions.

A suggestion of the necessary requirements for a measure of national wealth is implied in the way in which the property of governments should be valued. The valuation of government-owned wealth is not ordinarily complicated by questions as to debts, since usually the public debt is analogous to a general lien on revenues from taxes instead of a mortgage on specified concrete property or revenue. The sufficiency of a test by sale or salability also is generally recognized to be inadequate. Some kinds of government-owned wealth could be sold, but the prices obtainable by their sale would not be a reliable measure of their value.

The national wealth includes government-owned wealth plus the concrete wealth of private citizens as measured and totaled according to some generally applicable standard of value. Obviously, the measure of value must be related to commercial or exchange value, and yet the correctness of the amount obtained can not always be tested by actual sale. The possible recourse under such circumstances is to value items of wealth that are not readily salable on the basis of cost of production or construction. An objection to this is the fact that the construction in many cases occurred some years ago when unit costs were different from what they are at present; also that there is a degree of depreciation and obsolescence to be taken into account wherever the structure has been in use for some time. The cost, therefore, must be modified so as to represent cost of reproduction less depreciation in order to be comparable with values determined by sale. The cost of reproduction thus determined and qualified is more nearly equivalent to salable value than original cost.

THE VALUATION OF REAL ESTATE.—The largest element in the total wealth of the United States is real estate. The implications of the methods used to obtain a value for real estate are, therefore, controlling in relation to what sort of a measure of value should be adopted in an estimate of national wealth as a whole.

The starting point of the estimate of real estate values is estimates made by local assessors, under the supervision of municipal and State tax boards, for purposes of local and State taxation. It is known that these assessed values not only vary greatly from State to State,

and even from county to county within a State, but also that they very rarely represent the full true value of the property assessed. Improved administration of tax laws, however, has promoted the development of methods of comparing and checking assessments which make them increasingly better indexes of value. One of the important problems of State tax administration is equalization of assessed values as between the different counties or other units of tax administration in a way to prevent some counties escaping their fair share of the tax burden through low assessment. From this point of view it makes no difference whether the assessment is 30 per cent or 60 per cent or 100 per cent of the true value, but it is highly important that it be at a constant level throughout the State.

It is important to note the character of the test adopted to determine what the true value is, both with reference to equalization and with reference to fuller assessment. This is the comparison of values on actual sales with the assessed value of the parcels of real estate thus transferred. In making such comparisons forced sales are in general disregarded, and some others where the money paid may not be presumed to represent actual values. The real estate priced by transfer in any particular year is a small per cent of the total value of real estate, but it has been found possible in ordinary years to obtain figures of the nature described for a very considerable absolute amount. Wherever such figures are obtainable the Census Bureau has used them in determining the ratios of assessed to true value for the individual States. Some county assessors as well as State tax commissions check their results by compiling figures of sales in relation to assessed values, and at least in one State such sales comparisons are regularly published by the tax board.

The valuation of real estate is not only of particular importance, but also of particular interest, because of the inclusion of two very different elements of value—one, land, and the other, improvements on the land. The land is not produced by human effort. It can not, therefore, be valued on the basis of cost of production or cost of reproduction. In attempting to value on the basis of sales (or on any other basis), it is impossible, except by estimation, to separate the element in the price paid for the land from that paid for the improvements on the land. The methods of subdividing the combined value, however, are sufficiently accurate for statistical purposes. It is important to note that their separate valuation by well-considered methods contributes much to the correctness of the combined assessment.

Valuation by Way of an Engineering Inventory.—The value of the railroads is an item of great importance in total national wealth because of the nature of the problems of valuation involved, as well as because of the size of the item.

There is a large element of land value included in the railroad item, as indeed might be expected from the fact that the railroads are a sort of highway. In the case of private enterprises, other than railroads and other public-service corporations, the element of land value is included by the Census Bureau under the head of taxed real estate. The reason for the inclusion of land along with other elements of value in the case of railroads is partly administrative. Assessments of railroad and public-service-corporation property are

generally made by State tax agencies rather than by local assessors, because of the complexity of the problem of assessment and because of the difficulty of securing uniformity of method throughout a State, except through centralized assessment; hence, it is as easy to make the separation between other taxed real estate and quasi-public corporation real estate as it would be difficult to separate the assessed value of real estate used by manufacturing enterprises from that of real estate devoted to other purposes. As regards the land element in railroad property, it is important to note that the criterion generally adopted is the value of adjacent land used for other than railroad purposes.

As regards railroad construction costs, much the greater part of them were incurred years ago under conditions of costs for materials and labor very different from those prevailing at present. It should be obvious, therefore, that the book values of the railroads based upon original entries at dates of construction or acquisition of property are not reliable measures of their present value, and especially are not comparable with such elements of value as have been assigned to the separately assessed real estate by a very different method. As the two enter into a common national total, they should be referred to a common measure. The valuation of railroads on the basis of cost of reproduction involves the compilation of physical statistics of plant and the application to the elements of the plant of unit prices appropriate to present conditions of construction. Fortunately the valuation work of the Interstate Commerce Commission has proceeded far enough to make it possible to arrive at an estimate of the total value of railroads on the basis of the present value of the land and of cost of reproduction less depreciation for other elements in railroad property.

The problem of valuing the properties of privately owned public utility enterprises generally is the same in nature as the problem of valuing the railroads and should be dealt with by the same methods.

THE DOLLAR UNIT OF MEASUREMENT.—In order to arrive at a total of national wealth it is necessary to have a common measure of the elements entering into the total. No such common measure of elements of wealth is to be found among units of quantity or physical units. Where a physical unit can be obtained it is doubtless much more easily understood than a monetary measure, but the only available common measure for a miscellaneous total like that of national wealth is the monetary unit. The employment of the dollar unit in economic valuation is obvious and unavoidable.

But it is also obvious that the dollar sign can not be simply accepted at its face. It is not accepted for assessed values. The book values of a corporation's balance sheet may be equally unacceptable, although they do not always err on the same side of the truth as (substantially) do assessed values. Where the value of an article is in dispute the standard applied is generally that of impersonal determination by the market, and the valuation arrived at by other means is subject to critical qualification in reference to its conformity to such a test. It is generally recognized that the true test of economic value is what the thing to be valued will actually bring when sold for cash under normal business conditions in an actively competitive market. But substitutes for such actual sale must usually be found where any comprehensive appraisal is undertaken.

An embarrassing feature of the use of the money unit of value in arriving at a total of national wealth is the changing character of the unit. These changes do not affect the validity of the unit as a measure of value as of a particular time, though this requirement that all the elements be valued at one time may itself create some difficulties. Comparisons for different periods, however, may be misleading to those who do not take account of changes in the value of the dollar.

It is therefore important to accompany the comparative data by some numerical corrective for changes in the value of money. This may be accomplished by the use of price index numbers. For particular elements entering into the total it may also be even more effectively accomplished through comparisons made on the basis of physical statistics, showing, for example, the increase in the number of buildings of various classes instead of merely the increase in the value of such structures. Some illustrations are given, in section 8 of the next chapter, of changes between different dates for certain kinds of wealth on the basis of physical units.

Chapter II

A GENERAL SURVEY OF WEALTH IN THE UNITED STATES

Section 1. A national inventory.

The Determination of Fundamental Inventories.—The task of estimating national wealth divides itself naturally into two parts, one of which is the making of a comprehensive physical inventory of the items of wealth, and the other the pricing of these items for their combination into a total amount of wealth in terms of dollars.

The making of a physical inventory supposes an enumeration of the concrete things comprising the national wealth. This task is analogous to the enumeration of the population. But it is obvious that an actual count of the things having value in the possession of the people of the United States as comprehensively as the population is counted in the decennial enumeration is impossible. A comprehensive enumeration of small articles of value would obviously not be worth while, even if physically possible. The method of sampling instead of that of comprehensive enumeration is indicated in such cases. As regards the more important elements or articles entering into the total, it is fortunate that there are other reasons for attempting to ascertain their quantities than merely the desirability of an estimate of national wealth. It is for these other reasons that the Census Bureau is given the work of compiling censuses of manufactures, agriculture, electrical industries, etc., from time to time. The results of such censuses are, of course, utilized in making the estimate of national wealth.

An estimate of the national wealth from the viewpoint of a problem in enumeration raises a question as to the nature of the things that it is practicable to count. Obviously material things, especially such as are bulky, durable things, and things that are worth appropriating, will be most easily found and identified in the process of enumeration. But it happens that these are just the kind of things that constitute most of the wealth. There are, indeed, some articles of high value in small bulk which can easily escape enumeration, but such articles are mainly consumable goods, and are less significant elements in the total of national wealth than their high unit value might suggest. Their actual enumeration may be out of the question, but it is possible that they can be fairly estimated by the sampling method, which may be applied to the determination of the value of such personal effects.

The Pricing of the Items.—Pricing the items of the inventory is a problem separate in principle from the problem of making the enumeration. In practice, however, the items entering into the total are often obtained in the first instance in the form of an amount of

value. In that case the pricing of the items ceases to be a separate step, except so far as it may be desirable to check the total value by way of a sample enumeration of accessible physical units for which prices can be separately determined. The fact that it may be necessary sometimes to resort to the dollar measurement unit in the details of the inventory should not be permitted to obscure the fact that an estimate of national wealth implies an inventory and rejects the uncritical acceptance of aggregate money values when determined by various and frequently inconsistent methods.

The commission does not attempt to pass upon the work of the Census Bureau, at least in so far as it relates to the inventory phase of the estimate of national wealth. As regards the pricing of the elements entering into the total, however, certain departures from the census method are considered.

The analysis of the task of inventorying national wealth and of pricing the inventory items throws some light on another problem of importance for the estimate. Some important items of wealth which are tangible and easily enumerated are omitted by the census, not because they are not wealth, but because it is believed that their value is reflected elsewhere in the total, and, therefore, should not be taken into account separately for such particular items. This is the theory applied to public roads and streets and similar facilities which are made available to the public without charge. Without attempting to decide whether this theory is entirely correct or not, it is believed worth while, for the purpose of the present report, to assign a value to public roads and streets. If the value in question is reflected elsewhere, that is, in the item for real estate, it is clear that if affects the land values in this item rather than the value of improvements on the land. If the value of public roads and streets separately inventoried should be deducted from the value of real estate, then the deduction should be made from the land value element.

Because of the intrinsic interest of an analysis of real estate values into land and improvements, an attempt is made in the following section to arrive at a separate figure for these two elements, based on the total value estimated by the census. With such a separation independent judgment may be exercised as regards the inclusion or exclusion of the value of public highways in the total wealth.

Summary of 1922 Census Results and of the Commission's Extensions.—The following table sets forth the items of the census estimate of national wealth of continental United States for 1922, and puts alongside the census's figures certain commission estimates supplementary thereto.

TABLE 1.—*Census estimate of national wealth*[1] *as of December 31, 1922, with Federal Trade Commission extensions*

[Thousands of dollars]

Item	Census estimates	Commission estimates[2]
Real property and improvements, taxed[3]	$155,908,025	
Real property and improvements, exempt	20,505,819	
Land and improvements in streets and public roads:		
Rural public roads		$6,860,000
Streets, pavements, and public-owned underground structures in city streets		13,500,000
Other highway structures not in tax-exempt item		1,500,000
Movable equipment of farms and factories:		
Livestock	5,807,104	
Farm implements and machinery	2,604,428	
Manufacturing machinery, tools and implements	15,782,280	
Motor vehicles	4,467,407	
Public service enterprises:		
Railroads and their equipment	19,950,900	26,000,000
Street railways	4,877,630	7,000,000
Telegraph systems	208,990	265,000
Telephone systems	1,745,774	2,450,000
Pullman cars, etc.	545,415	700,000
Electric light and power stations privately owned	4,229,347	6,600,000
Other[4]	3,812,389	
Products, merchandise, etc.:		
Agricultural products	5,465,798	
Manufactured products	28,422,848	
Imported merchandise	1,540,665	
Mining products	739,205	
Furniture and personal effects	39,816,081	
Gold and silver coins and bullion	4,278,164	
Total	320,908,862	63,795,000
Census items unmodified		289,240,882
Total	320,908,862	353,035,882

[1] For continental United States, excluding Alaska.
[2] Net addition to census estimate is $32,232,000.
[3] Except real estate of public service enterprises.
[4] Includes pipe lines, shipping and canals, and privately-owned waterworks.

This table contains in the second column the results of estimates made in succeeding sections of this chapter. For roads and streets they are entirely additional to the census data. For the other entries they are alternative to census results. The differences are a matter of difference of viewpoint and do not imply incorrectness in the census figures.

The aggregate amount of wealth for 1922, as shown by the census figures, is $321,000,000,000. If the alternative figures given by the commission in the foregoing table (which are developed in the following sections of this chapter) are taken, the net addition for 1922 would amount to $32,000,000,000, and would give a total of $353,000,000,000 for the total wealth of continental United States. Based on the estimated population at the end of 1922, this total was equal to $3,210 per capita.

It is not practicable to split up these figures of total wealth according to their principal uses in a comprehensive and exact way, but certain data showing their distribution and rough estimates of the division of certain totals may throw a little more light on their significance. According to the decennial census of 1920, the value of all farm property was about 78 billions, but in 1922 it is estimated by the Department of Agriculture to have shrunk to about 63 billions. The census of 1920 gives the "capital" employed in manufacturing industry at 44 billions and in mining and quarrying at 7 billions.

There was probably comparatively little change for 1922. According to the foregoing estimates of the commission, the value of railroads and other public utilities in 1922 was 46 billions. This gives a total of 160 billions, which embraces most of the business property, except wholesale and retail trade, the construction industry, banking, hotels, office buildings, and similar lines of business. Adding to this the value of roads and streets, 22 billions, and of tax-exempt real estate, 21 billions, which are owned almost wholly by the Government (Federal, State, or local) or by philanthropic institutions, gives a further total of 202 billions. The remainder of 150 billions, it is estimated, consists of business and residential real estate amounting to about 72 billions, household furniture and personal effects (census figure) of 40 billions, and a balance of 38 billions, consisting chiefly of other movable goods such as merchandise in wholesale and retail trade, vehicles for business and pleasure, etc.[1]

According to these estimates, agricultural wealth comprises about 18 per cent of the total, manufacturing and mining about 14 per cent, railroads and other public utilities about 12 per cent, and Government property (Federal, State, and local) about 11 per cent. A large but unascertained portion is employed in wholesale and retail trade, and quite small shares in other lines of business not estimated above. Doubtless the largest single share, however, is that composed of town and city dwellings and furniture and personal effects—i. e., wealth possessed and used for personal necessities and enjoyment, which probably is not less than one-fourth of the grand total.

Section 2. Amount of wealth in real estate.

IMPORTANCE OF REAL ESTATE.—In the census estimates of national wealth for 1922 the specific real-estate items constitute percentages of the total as follows:

Taxed real estate [2]	48.6
Tax-exempt real estate	6.4
Combined	55

The fact that these items account for 55 per cent of the total is one measure of the importance of this kind of property. It should be noted that some of the other items in the census list include real estate, the amounts for which are estimated below.

It is of interest to consider some characteristics of real estate which contribute to its importance. Real estate is one of the most permanent forms of wealth. This is true of improvements as well as of the land itself. Real estate is also one of the oldest forms and was for long almost the only form of wealth yielding income to the owner independently of his exertions. It is still of major importance as a source of income from property, although modern mechanical developments have somewhat modified its extraordinary position in this respect. Its restricted possession was the main support of all

[1] The estimate of 72 billions for real estate is found by deducting from the total estimated real estate of 230 billions (see the following section), 33 billions for agriculture (as estimated for 1922 by the Department of Agriculture), 33 billions for railroads and public utilities (as explained in section 3), 6 billions for mining and quarrying, and 24 billions for manufacturing (based on the proportion of real estate to total assets for corporations in these industries, 34 per cent and 54 per cent, respectively, as indicated in Chapter VI below), together with the amounts for roads and streets, 22 billions, and tax-exempt real estate, 21 billions, a total of 158 billions.

[2] Except that of public service enterprises. (See Table 1, p. 28.)

aristocratic society and government till within the last two centuries. Ease of acquisition and diffused ownership of farm lands have been the foundation of republican institutions in the United States.

AMOUNT OF REAL ESTATE IN PUBLIC SERVICE PROPERTIES.—Because of the general practice of the States to assess railroads and other public-service enterprises separately, this being done without distinction of real estate from other elements of such property, and because there are other (and probably much better) methods of valuing such property than State assessments, the Census Bureau treats the real estate of such corporations differently from other real estate. Considerations of administrative convenience may properly be decisive where the interest of a statistical compilation is in the total obtained rather than in the classifications used in the supporting detail. But it is evidently of much interest to determine comprehensively the share of real estate in the total wealth. This involves an estimated subdivision of the public utility items.

In the following tabular statement such estimates are presented in a form to show not only real estate separately, but also the latter as subdivided into land and improvements. The method consists fundamentally in determining the proportionate distribution of fixed capital investment and applying proportions so obtained to the value of such classes of wealth (which are for fixed capital) as independently estimated. The same data are used later (p. 34) for the analysis of total real estate into land and improvements.[1]

TABLE 2.—*Real estate values in the wealth of public utilities, 1922*

	Per cent of fixed capital in—			Corresponding amounts of real estate (millions of dollars)			
	Real estate		Other	1922 census basis		Basis of commission's estimates	
	Land	Improvements		Land	Improvements	Land	Improvements
Railroads and their equipment	16	62	23	2,003	12,340	3,000	16,120
Street railways	9	56	35	429	3,219	530	4,620
Telegraph systems	3	40	57	6	82	9	116
Telephone systems	3	40	57	62	826	74	980
Pullman cars, etc	7	8	85	30	44	49	66
Electric light and power plants	10	50	40	433	2,165	550	2,750
Pipe lines	5	90	5	26	449	25	450
Shipping and canals	25	25	50	736	736	738	738
Privately owned water works	5	90	5	13	235	18	225
Total				4,722	20,040	5,003	26,153

[1] The ratios were obtained as follows: For the railroads land is shown separately in the basic valuation data of section 6. The proportions for other items are based on the distribution of similar valuation data between the various fixed capital accounts according to the experience of the Valuation Division of the Interstate Commerce Commission. For street railways and central electric light and power stations the ratios are based upon the detailed fixed capital accounts reported to the New York State Public Service Commission, but with more weight attached to upstate than to New York City companies. Installations made prior to the adoption of prescribed uniform accounts are seldom thus distributed. This fact impairs the quality of the estimate, but any underestimate for land might be more serious if the older acquisitions were included at cost. All the fixed capital of the American Telephone & Telegraph Co. is similarly classified, and, as further subdivided for certain items by the use of New York data, the proportions found are applied to the telegraph companies as well as to all telephone companies. These basic New York data are not small in amount. For the Pullman item Interstate Commerce Commission data are used. The estimates for the remaining items are based on less definite data.

With the aid of such estimates it is possible to determine approximately the proportion of real estate in the total wealth of the United States.

THE PROPORTION OF ALL REAL ESTATE IN THE TOTAL.—By the addition of the amounts estimated above for real estate values with respect to taxed real estate, exempt real estate, roads, streets and bridges, railways and other public utilities (see Tables 1 and 2) the total estimated value for all real estate is $230,000,000,000 out of a total national wealth of $353,000,000,000, as estimated by the commission, or 65.1 per cent of the total wealth in 1922.

As respects the division of real estate among the different uses the estimate in the preceding section is the best that can be made from the available data without further research.

Section 3. The land value in real estate.

DISTINCTIVE CHARACTER OF LAND VALUE.—Real estate consists of land and improvements. These two elements are fundamentally different in character. Land value, whether due to advantages of site or to the extent to which the land is a depositary of natural resources, is not produced by human effort. Its value depends on the use which can be made of it, not on production cost in any sense. While most of the increase in prices paid for land in business sections of large cities may be attributed to intensiveness of use of the sites, at least some of the high value results from the necessities of users rather than the social value of the uses.

The value of real estate is increased by transportation facilities and improved accessibility. But it is generally the value of the land, not that of the improvements, which is directly affected. Improvements on the land are valued on a different basis and are substantially worth the cost of reproduction less depreciation, including in the latter especially deductions for obsolescence and inadequacy.

A leading expert appraiser of real estate describes his method of determining the value of a parcel as a matter of deciding what sort of improvement the site should have in order to be of maximum suitability, regardless of how the land happens to be improved at the time. The cost of such improvement of maximum suitability to the site can be very definitely estimated, and the value of the land is the difference between the value of the parcel so improved and the cost of the improvement.

Especially in the United States real estate improvements become more or less obsolete rather rapidly. These factors in the situation complicate the problem of valuing improvements where the assessor is inclined to assume that a thing is worth what was paid for it, even though a new purchaser would not pay that much. But a proper checking of assessed values, by way of comparison with sales, should prevent the overvaluation of improvements.

SEPARATION OF LAND VALUES.—Figures showing the separation of the value of lands and the value of improvements on the lands for the United States as a whole do not exist, although there appears to be a growing tendency to assess the two separately. The best methods of assessment tend to yield separate values even where the practical interest is only in the combined value. In other words, the applica-

tion of independent methods of appraisal to the two elements and, in particular for the land by itself, contributes to the accuracy of the combined figure.

As regards the separation of the value of land and of improvements outside the cities, it is perhaps not possible to have as much confidence in the result as it is within the cities. But the lenient assessment of improvements on agricultural land probably means a more nearly correct subdivision of the assessment between land and improvements than might appear. As regards timber and mineral lands, the difficulties of fair assessment are great. But it appears to be the practice of State tax administrators in States where these elements of land value are important to supervise closely the methods of assessment in a way which would indicate that the results are fairly uniform and fairly good.

The census publishes no figures for the true value of assessed real estate by counties. It publishes such figures for each State. The method of arriving at the State figures involves an assumption as to the ratio of assessed value to true value for the counties, although not for each specific county.

The census finds that satisfactory ratios of assessed to true value are obtainable for a certain number of counties in a State. Perhaps for one-third of the total number it can obtain ratios of assessed to true value that it is willing to accept as representative of the actual facts. In general, a weighted average of these ratios for the selected counties is applied as valid for the State as a whole, and the assessed value for the State, excluding railroads and other public utility corporations, is raised in this ratio. The commission has used the ratios for the selected counties as they stand, and has used their general average ratio for the other counties to derive true assessed values for all the counties of each State from the State reports. In some States, however, the Census Bureau has found that the ratios of assessed to true value reported by State officers are satisfactory and comprehensive for the State as a whole. In other States other variations of method are employed appropriate to the particular circumstances. The method of arriving at county real-estate values adopted by the commission has correspondingly varied.

The commission found that a satisfactory separation of real estate assessments into land values and improvement values is to be had for 23 States by counties from State tax reports.[4] In addition a similar separation has been obtained for certain large cities in States where the separation for the State as a whole is not to be had. It happens that the States where the division of real estate into land and improvements has been obtained, are not, on the whole, the most populous States. On the other hand, the great mining States west of the Mississippi, where a separation by estimation on the basis of comparison with similar counties in other States would be rather unreliable, are mainly included in the list of those where the separation is reported. At the other extreme, a reported separation has been obtained for most of the large cities. Of the total taxed real estate to be distributed in this way, 55 per cent is distributed on the basis of reported assessment data, and the division for the rest of the

[4] The States for which the separation is based on such reports are shown in Appendix, Table 1.

country is estimated. In a few cases ratios have been used for a date other than as of the end of 1922.

Where it is necessary to make the separation between land and improvements for the counties of a State according to the analogy of conditions in other States, ratios have been brought over and used as estimates on the basis of similarity in respect to three controlling factors in the situation. These factors are population per square mile, average annual rainfall, and the presence or absence of mineral resources as indicated by the production of coal, oil, iron, and other metals. Other factors affecting the appropriateness of the ratios for particular counties are, of course, taken into account wherever known. So far as practicable, among the States for which the division in question is reported one is preferred, for the selection of known ratios to be applied in States where the division is not reported, according to the smallness of the extent to which the assessed value has to be raised in order to arrive at a true value. But not much weight can be given to this factor in the selection in comparison with the requirement that each State for which estimated ratios must be used should, so far as possible, be worked on the basis of ratios obtained for adjacent States or States having similar conditions as regards agricultural development and the various other factors.

PROPORTION OF LAND VALUE IN ALL REAL ESTATE.—The interest of the subject warrants a liberal degree of estimation of the ratio of land to total real estate for the minor items if necessary in order to make the estimate of land value comprehensive. The element of arbitrariness in the segregation of land value for taxed real estate outside the public utilities is small. There are comparatively satisfactory provisional means for dealing with the public utilities. The problem of the division of exempt real estate values can not at present be so well met.

Separation by the method described shows 60.7 per cent of the value of taxed real estate attributable to land and 39.3 per cent to improvements. This general result, together with some analysis, is shown in Table 3.

Even where the assessment of exempt real estate is systematically done, the State tax authorities do not divide the total between land and improvements. But exempt real estate is in general improved real estate, except as regards public lands. The ratio of improvements to land is probably higher in the Eastern and Central States while in the States west of the one hundredth meridian it is probably much lower. Whether these divergent influences substantially compensate each other is another question. The admittedly imperfect method here adopted applies the ratios for taxed real estate for the United States as a whole to the total for exempt real estate.

For the public utility group, including the steam railroads, the amounts are shown in Table 2. Other elements are provided for in the separation of taxed real estate into land and improvements.[1]

[1] The line between land and improvements can not be sharply and logically drawn any more than the line between real estate and personality. The interest of the analysis here is purely economic, and the terms "movables" and "nonmovables" would be more descriptive than realty and personalty. Improvements in land are often so sunk in it as not to be separately measured, but the theoretical distinction between them is important. It should be remembered also that only the division of a certain amount of fixed capital is in question here.

The estimated amounts (in millions of dollars) for land and improvements in the total wealth of the country both for the census and commission data are given in the following table:

TABLE 3.—*Estimated amounts of wealth in land and improvements in the United States based on data of the census and of the commission, 1922*

[In millions of dollars]

	Total real estate	Land	Improvements	Per cent	
				Land	Improvements
Real estate, taxed	$165,909	$94,624	$61,285	60.7	39.3
Exempt real estate	28,506	12,447	8,059	60.7	39.3
Public utilities (including railroads):					
Census	24,772	4,782	20,010	19.1	80.9
Commission	32,146	5,993	26,153	18.6	81.4
Streets and public roads	23,260	9,100	12,760	41.7	58.3
Total:					
Census	207,187	111,803	95,384	53.6	46.4
Commission	230,411	122,164	108,247	53	47

The foregoing statement of the estimates for land and improvement values, whether taken on the basis of the census total or including the additions made by the commission, indicates that the total land value is a little over half of the value of real estate. On the basis of the commission's estimate it comes to about 122 billions in 1922. This is 53 per cent of the total real estate value and about 34.6 per cent of the total estimated wealth.

VARIATIONS IN THE PROPORTION OF LAND VALUES.—The land value element appears to be especially high where natural resources, including fertility of the soil, are particularly important. City ground values do not appear to affect the ratio decisively, doubtless because there is a parallel development of the intensiveness with which the land in cities is improved as the land itself increases in value per square foot. With reference to these points of interest, certain data used in the general estimate are shown separately for the counties containing large cities, for the counties classed as mineral counties and for certain agricultural regions.

The following table, which is for taxed real estate only, shows results for such special groups of counties as well as for the United States as a whole, together with such auxiliary data as indicate something of the character of the estimates underlying the final figures or are intrinsically interesting.

TABLE 4.—*Division of estimated value of taxed real estate between land and improvements for the United States and for certain groups of counties, 1922*

(Amounts of value in thousands)

Items	Reported	Estimated	Total
For counties containing cities of over 300,000 population:[1]			
Number of counties	25	2	25
Population 1920	19,057,786	2,596,676	22,354,461
True value of realty	$35,835,411	$4,902,894	$41,696,305
Per cent distribution	85.8	11.7	100
Per cent land in realty	53.2	42.7	51.9
For counties containing cities of from 100,000 to 300,000 population:[2]			
Number of counties	20	15	35
Population 1920	5,682,019	2,351,478	8,033,497
True value of realty	$9,705,075	$5,121,478	$14,877,153
Per cent distribution	65.5	34.4	100
Per cent land in realty	38.1	41.1	39.1
For certain mineral counties:[3]			
Number of counties	53	84	137
Population, 1920	2,311,213	5,090,213	7,401,426
True value of realty	$3,444,321	$7,183,429	$10,627,753
Per cent distribution	32.4	67.6	100
Per cent land in realty	74.7	54.4	60.9
For certain counties in the Corn Belt:[4]			
Number of counties	39	76	115
Population, 1920	530,363	1,171,751	1,698,134
True value of realty	$1,690,730	$3,466,132	$5,092,802
Per cent distribution	31.5	68.5	100
Per cent land in realty	84.9	83.1	83.7
For certain counties in the Cotton Belt:[4]			
Number of counties	51	54	105
Population, 1920	1,050,862	1,262,797	2,313,659
True value of realty	$515,838	$640,193	$1,255,531
Per cent distribution	40	51	100
Per cent land in realty	79.7	74.3	77.0
For all counties in the United States:			
Number of counties	1,160	1,900	3,062
Population, 1920	50,020,000	54,782,000	105,711,000
True value of realty	$86,210,127	$70,089,498	[5]$155,908,625
Per cent distribution	54.7	45.3	100
Per cent land in realty	60.6	62.8	60.7

[1] Population at least 50 per cent urban in 1920.
[2] Mineral products estimated at $5,000,000 or more per year.
[3] Population less than 15 per cent urban in 1920 in Illinois, Iowa, Indiana, Kansas, Missouri, Nebraska, and Ohio.
[4] Population less than 15 per cent urban in 1920 in Alabama, Louisiana, Mississippi, and Texas.
[5] Real property and improvements taxed.

The general result shows three-fifths of the value of locally taxed real estate to be land value. Although the most populous cities show a higher ratio of land to improvements than those of medium size, the ratio for the largest cities is barely over one-half. For cities from 100,000 to 300,000 it is not quite two-fifths. The presence of mineral resources contributes to a high ratio of land to improvements.[6] But the group of Corn Belt counties shows the highest ratio, with land accounting for four-fifths of the value of real estate. The Cotton Belt counties show nearly as high a ratio.

If the ratio of land value to real estate value could be shown by the various branches of production, such a development of the analysis presented in the above table would be very interesting. The extreme ratio for the value of land to the total value of real estate employed in any branch of production would apparently be obtained for mining industries.

[6] The difference between the ratios for mineral counties where the segregation is estimated and where it is reported may be due to the predominance in the latter of coal counties in States east of the Mississippi.

Section 4. Exempt real estate.

GENERAL CONSIDERATIONS.—The commission has attempted no general valuation of exempt real estate, and is not prepared to suggest any amendment of the census estimate of $20,500,000,000. Satisfactory figures for the value of government-owned real estate are not at present easy to obtain, and assessments of such exempt property are not always very carefully made. Federal Government records contain elaborate data as to original costs of Government property, but seldom indicate present value, and the same is presumably true of real estate owned by State and local governments. In addition there are large amounts of real estate of philanthropic and various nonprofit institutions exempt from taxation on general grounds, and sometimes also of business enterprises exempted in order to induce them to locate in a particular place.

A large part of the area of the United States is still owned by the National Government. The valuation of land in the public domain is difficult to determine. Some of it doubtless gets into the census total of exempt real estate, but the problem of valuing public lands is exceptionally difficult. A large part of the public domain has no economic value at all. There are no insuperable difficulties of method involved in the valuation of the timber on the public domain, but the valuation of minerals presents all sorts of difficulties. The commercial value and the exploitation of minerals are largely dependent on market conditions, and these are bound to change greatly with the progress of time. A computation of a value for mineral lands that are under present conditions not economically workable is problematic. Practically it is best to assign to such as are not at present susceptible of profitable exploitation no value at all.

REASONS FOR EXEMPTION.—The general theory of exemption from taxation may be briefly stated. Where wealth is used for a public function of such recognized importance that the State would perform the function entirely at its own expense rather than let the work go undone it is regarded as in the public interest that no taxes be levied on the property so used, because if the exemption be considered a contribution to the support of the enterprise the State benefits by having to bear but a small fraction of the expense instead of the entire burden.

Since the line of distinction between public and private functions can not be sharply drawn, it is easy to expand the strict principle above stated so as to exempt almost any meritorious enterprise that benefits a large element in the population. A criterion by which enterprises having a public purpose only ostensibly or in minor degree can be ruled out is whether their operation is for profit.

Profit-making enterprises, however, are sometimes exempt from local taxation for a term of years in order to encourage their location in the town. Such practices tend to develop into the competitive granting of favors to the disadvantage of the public.

CLASSIFICATION BY GROUNDS OF EXEMPTION.—The State of New York publishes very full data for assessed values of exempt real estate in the reports of the tax commission. The aggregate amount (in round figures) in 1923 was $3,730,779,000, which may be compared with $3,430,587,000 in 1922 and with $2,063,585,000 in 1912. The classification of this exempt real estate according to use or purpose is shown in the following table:

TABLE 5.—*Percentages of assessed values of tax-exempt real estate in New York, by use or purpose, 1912, 1922, and 1923* [1]

Use or purpose	1912	1922	1923	Use or purpose	1912	1922	1923
Educational	41.2	37.6	36.7	Defensive	1.6	4.3	4
Agricultural	.1	0.0	0.0	Public utilities	0.7	27.6	26.6
Religious	13.4	10.7	10.2	Administration buildings	1.0	5.7	5.3
Fraternal and benevolent	1.1	1.2	1.2	Miscellaneous	22.3	5	9.4
Charitable	.2	1.4	1.3				
Curative	6.2	4.1	4.1	Total	100	100	100
Protective	5.7	2.4	2.2				

[1] Reports of the New York State Tax Commission.

Over one-third of the exemption is for purposes classed as educational; over one-tenth for such as are classed as religious. Curative uses account for about 4 per cent. Next in rank to the educational group are public utilities, with a share not much under 30 per cent.

The "new buildings" exemption, appearing in 1922 and 1923 only and amounting to 7 per cent in the latter year, is designed to foster building to cure the housing shortage and belongs in the doubtful zone of exemption policy.

The large item under public utilities is mainly for public works, but some element relates to property of private corporations. But the classification by ownership for exempt real estate in New York is given, not here, but in Table 6.

A similar classification for exempt property in Connecticut is shown in Appendix Table 2. In this case personalty is included, but according to the general indication for data where the separation can be made, this element would amount to only about 8 per cent and probably does not appreciably distort the proportions if taken to apply to real estate.

In a classification for Rhode Island (Appendix Table 3), likewise including personalty, ownership and use descriptions are mingled. Town or city property accounts for one-third of the total. "Exempt by charter" (over 3 per cent) suggests an antiquated privilege, but the 4 or 5 per cent "exempt by vote of city or town" may mean a modern one.

CLASSIFICATION ACCORDING TO OWNERSHIP.—The New York classification by ownership is shown for certain years in the following table:

TABLE 6.—*Percentages of assessed values of tax-exempt real estate in New York by ownership, 1912, 1922, and 1923* [1]

Ownership	1912	1922	1923	Ownership	1912	1922	1923
United States	5.2	5.5	5.2	Villages	1.3	0.4	0.4
State	4.5	4	5.3	School districts		1.1	1.1
Counties	1.4	1	1	Private ownership	29.2	23.5	23.3
Cities	59	65.3	59.7				
Towns	.1	.8	.5	Total	100	100	100

[1] Reports of the New York State Tax Commission.

No very remarkable changes occurred in the distribution of ownership of exempt real estate in the 10 years, though there was a considerable increase and then a recession in the share of cities, which have

about one-third of the total. The low point for private ownership was reached in 1921, at 22 per cent. The recovery of this item since is evidently due to the exemption of new buildings to meet the housing shortage. The Federal Government has on the whole merely held its own, at a fraction over 5 per cent of the total, with a tendency to increase latterly, especially if allowance be made for the "new buildings" exemption.

The data for ownership of exempt property in Connecticut (Appendix Table 4) shows the Federal Government as owner of only 3 per cent of the total. Cities (including towns and boroughs) own scarcely half as large a share of the total as in New York. "Corporations and associations" account for nearly half.

For a group of 17 cities[1] with a population of 3,493,381 exemptions in 1922 amounted to $906,000,000 of assessed values, distributed as follows: Governmental, 52.7 per cent; educational, 21.6 per cent; religious, 10.5 per cent; benevolent and charitable, 5.3 per cent; all other, 9.9 per cent; total, 100 per cent. In these data, also, it appears that the chief reason for exemption is the avoidance by the Government of collecting taxes from itself. Such a statement, however, is subject to qualification. Some municipal enterprises are not so strictly of a Governmental character as to be entitled to exemption under the prevailing theory.

REAL ESTATE OWNED BY THE FEDERAL GOVERNMENT.—Federal land and buildings, as tabulated by the office of the Chief Coordinator of the Bureau of the Budget, amount to $1,322,500,000, for property outside the District of Columbia, as valued on the basis of cost (except as regards the Navy Department). The grouping is by Federal departments and establishments, with all Federal property in the District of Columbia added.

TABLE 7.—*Official values of land and buildings of Federal Government, 1926*

	Land values	Building values	Total
In the District of Columbia			[1] $375,000,000
Departments, outside the District of Columbia:			
Treasury	$50,630,000	$214,410,000	264,848,000
War	92,705,000	715,238,000	767,943,000
Navy	21,651,000	139,720,000	161,289,983
Interior	427,000	1,502,000	1,929,000
Agriculture	253,000	1,355,000	1,608,000
Commerce	1,753,000	24,800,000	26,643,000
Labor	203,000	1,294,000	1,497,000
Justice	167,000	3,203,000	3,370,000
Shipping Board	14,254,000	60,305,000	74,502,000
Veterans' Bureau	2,014,000	16,761,000	18,775,000
Grand total	183,757,000	1,178,757,000	1,697,514,000

[1] The District Commissioners estimate this at $400,000,000.

The values for the holdings of the Navy Department are appraisals. Substantially all others in this list are original costs. Much of the land included was reserved from the public domain or donated, and in such cases does not affect the above totals. There are certain items not included above, such as public lands and locks and dams or waterways.

[1] Albany, N. Y.; Allentown, Pa.; Binghampton, N. Y.; Cambridge, Mass.; Davenport, Iowa; Des Moines, Iowa; Easton, Pa.; Jamestown, N. Y.; Johnstown, Pa.; Milwaukee, Wis.; Philadelphia, Pa.; Reading, Pa.; Syracuse, N. Y.; Utica, N. Y.; Waltham, Mass.; Worcester, Mass.; and Yonkers, N. Y.

An examination of the figures available relating to property supervised by the Treasury Department indicates that the average combined cost of land and buildings (excluding cases where the land is entered at no or nominal cost) per square foot of office space used (excluding storage and furnace rooms and the like) has increased from $8.41 for the 10-year period ending in 1899 to $16.40 in 1922. The average cost per square foot for the 35-year period from 1880 to 1915 was $10.40. Most Government buildings, and perhaps especially those of less recent date, are of very solid construction and not subject to much depreciation for wear and tear. Land values have certainly greatly appreciated. It has been impossible in the time available to classify the property in detail according to date of acquisition. Much was acquired recently for war purposes. But a fair appraisal might easily double the value of all not thus recently acquired, and some of the latter has appreciated.

The items in New York State included in the above total amount to $132,000,000. But the assessed value of Federal Government real estate, according to the New York tax administration, was put at $193,734,591 in 1922. Raised in the ratio of assessed to true value used by the census for taxed property in New York (84.8 per cent), this figure becomes $228,461,000. This is 179 per cent of the New York State item ($132,000,000) included in the above table. A 79 per cent increase in the total of $1,698,000,000 brings it up to $3,040,000,000.

The public domain amounts to 185,733,242 acres, exclusive of Alaska, and is estimated by the Interior Department to be worth an average price of $1.25 per acre. These lands can therefore be entered at $232,417,000. Government locks and dams are estimated by the Interior Department to be worth $198,196,000. Appropriations by the Federal Government and contributions by States and municipalities for river and harbor works have amounted to $1,133,528,835, to and including the year 1922. Much of this has been expended for maintenance, and large sums were used for purposes which have no present value. There appears, however, to be no means of estimating the value of existing harbor works. All are exempt from taxation.

If the $431,000,000 for public lands and locks and dams should be raised in a somewhat similar ratio to that of other real estate the total of Federal Government real estate would amount to over $3,500,000,000. A moderate estimate of value in the river and harbor works would easily raise the total to over $4,000,000,000.

Reconsideration of the Total of Exempt Real Estate.—Assessed value of exempt real estate in the States of New York, Pennsylvania, New Jersey, Rhode Island, Massachusetts, and Minnesota shows a total of $5,147,000,000 in 1922. Raised in the proportion of the ratios of assessed to true values for the several States, the figure becomes $6,967,000,000. The per capita figure is $232. The predominance of eastern States with large urban populations may suggest that the proportion for the country as a whole is smaller. On the other hand, not only is the public domain in the newer States, but some of the most expensive of Federal public works are not in the more populous States.

The amount above estimated for Federal-owned real estate ($4,000,000,000) accounts for 20 per cent of the $20,506,000,000 for exempt real estate estimated by the census for 1922. This ratio is much

higher than that for any State where a specific ratio is independently obtainable, as, for example, New York, 5.65 per cent; Connecticut, 3 per cent; and Rhode Island, 7 per cent.

The foregoing figures suggest that the census estimate for exempt real estate is an underestimate as regards Federal-owned property. There may be a general tendency to underassessment where tax receipts are not involved, and perhaps especially a failure to increase assessments as the value of land and of existing improvements appreciates. But the commission has no data adequate to the revision of the exempt real estate total.

Section 5. Public roads and streets.

VALUATION DESIRABLE WHETHER ADDED TO THE TOTAL OF NATIONAL WEALTH OR NOT.—Public roads and streets are not assessed and are, therefore, not included in real estate as valued by the census. The reasons for the Census Bureau's omission of these elements of national wealth are stated as follows:[1]

> The values of such public improvements as street pavements and sewer systems are omitted from the tables for the reason that such properties, as a rule, have value in use only and not in exchange, and because of the fact that in most cities a part or all of the cost of such improvements is assessed against property presumably benefited by the improvement, such presumption doubtless being taken into account by officials in determining assessed valuations for purposes of taxation.

It is not essential whether the cost of street improvements is assessed upon abutting real estate or not. It is important in general that the use of such public facilities should be available on other than a profit-making basis, and as a result the values of the real estate served by them are greatly increased. The construction of railways also creates real estate values, and has been even more conspicuous for this effect than the construction of highways. It is not even a clear difference that the public pays for the railway service and not for the highway service, since interest on highway bonds and expenditures for maintenance must be met out of taxes. The fact that the amount of increase in benefited real estate values has no definite relation to the expenditure for street improvements might be used as an argument against the omission of such improvements in their entirety. In any case it would seem worth while to estimate their value. The argument with regard to duplication of values is more effective perhaps against the reckoning of a land value for public highways than it is against the reckoning of an improvement value.

ITEMS OMITTED IN CENSUS ESTIMATE.—The chief items omitted in the census estimate are rural public roads, urban streets, and publicly owned structures in or under the streets, such as pavements, water mains, and sewers. Other such structures are substantially owned by private corporations and are included in the census totals under such heads. In the large cities the underground structures are probably considerably more costly than the street pavements together with their foundations.

The Census Bureau includes an item for privately owned waterworks systems, but none for the same facilities where publicly owned, except so far as they may be included under exempt real estate. The water mains are doubtless not assessed and are, therefore, not in-

[1] Wealth, Public Debt, and Taxation, 1922, Estimated National Wealth, p. 6.

cluded under exempt real estate; pumping stations and reservoirs, on the other hand, are evidently included under exempt real estate, if publicly owned, and probably under public utilities if privately owned.

RURAL ROADS.—The Bureau of Public Roads of the United States Department of Agriculture has compiled and published a survey of rural public roads as of January 1, 1922, which gives the total mileage of rural roads.[9] The aggregate length on January 1, 1922, is given as 2,941,294 miles. From inquiries made of State officials data were obtained regarding the average width of such rural roads. The estimated total area computed from these data was 19,149,936 acres. The land values of this area were computed for each State on the basis of the average value of farm land per acre as derived from the census of 1920, modified by the Department of Agriculture data for the lower land values in 1922. The computation worked out to a total land value for rural roads of $850,000,000.

The above-mentioned publication of the Bureau of Public Roads also shows the character of improvements in the form of pavements. By applying costs per mile to the different types of construction shown for which the mileage is thus obtainable, it is possible to estimate the total value of rural-road improvements in 1922. Cost of construction per mile for recent dates may also be obtained from annual reports of the Bureau of Public Roads, where total costs for completed projects, classified in substantially the same way as are the mileage survey figures, are given.[10] The products of mileage times costs per mile thus obtained yield an estimated value of rural public road improvements in excess of $6,000,000,000. This computation does not specifically allow for depreciation, but the valuation assigned is conservative enough so that no deduction appears to be necessary on this account.[11] On the whole the $6,000,000,000 appears to be an underestimate of the value of rural public-road improvements as of December 31, 1922.[12]

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[9] United States Department of Agriculture, Departmental Bulletin 1179, Rural Highway Mileage, Income and Expenditures, 1921 and 1922, Mar. 14, 1923.

[10] Averages for the various types of road construction were computed for all Federal-aid projects completed as of June 30, 1922, and similarly for such projects completed during the fiscal year 1923 and during the fiscal year 1924. The reason for using these several dates is to obtain average costs for recent construction not affected unduly by the high prices prevailing just after the war. Even so, the figures may be affected too much by such high prices, since the projects completed in 1923, for example, were constructed under contracts let some time previously. The use of these differing averages, however, does not substantially affect the total value obtained by applying them to the mileage as of Jan. 1, 1922. The costs as computed on the basis of 1923 figures are somewhat greater than those computed on the basis of figures for 1922 and prior years, while the costs computed on the basis of 1924 figures are somewhat less. The total obtained is in all cases in excess of $6,000,000,000, the lowest figure being slightly less than this, if no allowance is made for the value of bridges. But with this item included, on an admittedly inadequate basis, the total in all three cases exceeds $6,000,000,000.

[11] As some of the roads have been constructed for some time, not only is depreciation a factor but the difference between pre-war costs and more recent costs might be considered to affect the estimate. The latter factor, however, is not objectionable, since the proper basis of valuation is cost of reproduction rather than original cost. It is difficult specifically to allow for depreciation, but it should be noted that the mileage for the different classes of improved roads is as of Jan. 1, 1922, instead of as of the end of the year, as in the case of other items entering into the total of national wealth. Furthermore, it is questionable whether the method adopted makes sufficient provision for permanent expenditures on country roads very slightly improved. The total surfaced mileage given in the survey is 388,000, while earth roads account for 2,554,000 miles. For the latter mileage an element of value is allowed only where the road is described as earth to definite grade with permanent drainage structures. No allowance is made for the roads described as "partly graded and drained earth," as well as for "unimproved earth." It is probable that those roads described as "partly graded and drained" have to a large extent merely been plowed and scraped. But in the case of these roads, and even of the unimproved earth roads, there may have been considerable expenditure for permanent improvements in the form of culverts and bridges.

[12] In the national parks there are certain forest roads upon which considerable construction expenditures have been made, but probably not enough to affect appreciably the total valuation of roads for the country as a whole. At any rate no attempt is made to include them in this estimate.

CITY STREETS, INCLUDING SEWERS AND WATER MAINS.—The Bureau of Public Roads makes a survey of city streets, as well as of rural roads. These data, together with supplementary figures furnished by city officials, give the length and average width of streets for all cities having more than 100,000 population. From census data of land values by counties the rural land values were excluded and on the basis of value per acre for city land thus derived the value of the land included in the streets was computed. A similar method was used for cities between 10,000 and 100,000 population, taking, however, a sample of about 30 per cent (based on population). For cities and towns less than 10,000 the data were comparatively slight and the estimate a rough one, but the bulk of the estimated value is found in the cities having more than 100,000 population (over 60 per cent) and very little in the towns with less than 10,000 inhabitants (less than 12 per cent). The total length of streets is taken at 176,000 miles, with an area for right of way amounting to over 1,318,000 acres.

The total land value for city streets computed in this manner is in round figures, $8,250,000,000.

The Bureau of Public Roads also furnishes data with regard to the construction costs of city streets. These figures are not yet printed, but they have been examined for use in the present inquiry. They show, among other things, city pavements by type in terms of square yards for all the important cities of the United States, and, in fact, for all from which returns could be obtained. The total square yards of pavement is 1,173,000,000; and there are in addition 641,000 miles of unsurfaced city streets included in the returns. The returns may not be quite comprehensive, but presumably the omissions are unimportant, at least as regards the surfaced streets. For medium-sized cities $3 per square yard appears to be a conservative figure for the highest type of pavement with good concrete foundations, including labor. This is a little below contractors' prices for the District of Columbia in the year 1923 for sheet asphalt.[13] There are some more expensive types of pavement, but very little of such pavement is being laid at the present time. For the various less expensive types of pavement than sheet asphalt a fraction of $3 per square yard has been used corresponding to the ratio of the cost of that type of pavement to the cost of sheet asphalt as shown in Federal-aid projects. The total cost of the pavement on surfaced streets for the square yards existing January 1, 1921, is thus estimated to be a little over $2,000,000,000.[14]

In addition to the street pavement the mileage of unsurfaced city streets should be considered. It is assumed that these city streets are nearly all graded and drained with installation of water mains and sewers. On the basis of the cost of grading and draining for rural roads this expenditure for the unsurfaced city streets can be

[13] The report of the engineer department of the District of Columbia for the year ended June 30, 1923, page 2, gives the following "prices paid under contracts for roadway pavements":

Sheet asphalt with 6-inch concrete base (2½-inch asphalt surface, 2-inch binder before compression):

A. Natural pitch lake asphalt	$3.21
B. A reduced oil asphalt	3.11
Vitrified block with 6-inch concrete base	3.21

[14] The difference in time between Jan. 1, 1921, and Dec. 31, 1922, will mean considerable additions to the paved street surfaces which should more than balance the amount of a specific allowance for depreciation, which is not made in this computation.

estimated at approximately $500,000,000. It is probable that the grading and draining of a city street involves more expenditure than the work that is similarly described when done on a country road; hence the figure of half a billion dollars is low, even if it be assumed that some of these city streets are hardly more than surveyed. The paved streets also have been graded and with greater expense and care than rural roads. On the basis of their indicated mileage, with a somewhat more liberal allowance for costs per mile than in the case of the latter, this item amounts to $250,000,000.

Cost of water mains and sewers can be arrived at by the use of a ratio to the cost of street pavements. It is assumed that the type of sewer and water-main construction used will vary in a somewhat similar way with the permanency and expensiveness of the type of pavement used and that the cost of these two items combined is about equal to the cost of pavements. For this item, therefore, $2,500,000,000 (equal to pavements plus grading and draining for unpaved streets) is allowed. The total for city-street improvements thus becomes $5,250,000,000.

OTHER HIGHWAY IMPROVEMENTS.—Bridges have been mentioned above as an item in part taken into consideration in connection with rural roads, but probably inadequately covered. The roads that have been otherwise little improved frequently will be carried over rivers by comparatively expensive bridges. The estimate for city streets, furthermore, makes no provision for bridges, and some of the bridges and viaducts thus disregarded are very expensive structures. Expenditures for bridges (contracts let) seem to be about parallel with those for sewers and for water works, and an estimate is therefore ventured that existing highway bridges, not included in taxed or exempt real estate and not elsewhere provided for, have a value, as of the end of 1922, of $1,500,000,000.

Combining the foregoing estimates for roads, streets, and bridges, the total amount is $21,850,000,000, of which $9,100,000,000 is for land and $12,750,000,000 is for improvements.

Section 6. Valuation of steam railroads and other public-service enterprises.

BOOK COSTS.—In the 1922 census estimate of national wealth the figures used for the steam railroads and for the property of other public-service corporations are book costs of plant and equipment less depreciation reserves. By such a method of valuation no account is taken of the change in the purchasing power of the dollar since most of the expenditures were made, although this is an important factor in an estimate of values based upon sales, such as those for real estate. The item used by the census for the railroads is, therefore, not comparable with most other items in its total. This lack of comparability is particularly important in the 1922 estimate, because of the very marked change in price levels in the decade preceding 1922. Book-cost figures are not reliable measures of the value of a corporation's property, as they are often inflated. Neither are they satisfactory for railroad corporations in particular, partly because their capital accounts date in large part from a period many years back, and partly because they too often in part represent exaggerated values placed on securities issued in exchange for property instead of actual expenditures for construction and for the purchase of concrete wealth

On the other hand, it is also true that some railroads have made large improvements out of income, the charges for which do not appear in the capital accounts.

The alternative to the use of book cost as a measure of value is reproduction cost. By the reproduction cost method an engineering inventory of the property is made and appropriate prices, as of present or recent date, are applied to each category in the inventory. Such methods of valuation are developed and applied quite generally to public-service enterprises. This method of computing the value of the enterprise gives substantially what would have to be paid by investors at the present time in order to create such a plant. Whether the result obtained by the cost of reproduction method is entirely satisfactory for the purpose of a national inventory depends, in the first place, on whether proper allowance can be made for depreciation due to elapsed life in service of elements of the plant that are still comparatively efficient but will not continue to serve the public and earn a return for so long a time as actually new elements. The valuation should also make allowance for any departure from the implied assumption that the plant would be erected in its present form and at its present location, if it were to be constructed anew. As regards ordinary depreciation, methods of estimating the importance of this element are well developed, and the valuation figures of the Interstate Commerce Commission take this factor into account.

ITEMS FOR WHICH BOOK-COST DATA ARE USED BY THE CENSUS.—In addition to the steam railroads and their equipment, the 1922 census valuation includes book-cost figures as estimates of value for various other items under the general head "Street railways, shipping, waterworks, etc." The subheads for which the book-cost method of valuation is used are street railways, telegraph systems, telephone systems, Pullman and other cars not owned by railroads and privately owned and controlled electric light and power stations. Certain other items in this group are valued by a different method.

The figure for pipe lines was furnished to the census by the Bureau of Mines. For ships the Census Bureau has applied unit prices to statistics of shipping tonnage as a means of valuing vessels in the various class and age groups. This amounts, in effect, to a cost of reproduction less depreciation method. With regard to canals the statement is made by the census that "The values of canals and investment in canalized rivers were taken from a report of the Bureau of the Census for 1916." It appears that the values for canals are practically construction cost data. It appears, also, that the canals constitute a minor element in the total for shipping and canals.

The real estate element in the value of railroads and other public-service corporations is included in the totals referred to in this section and not in the general figures for taxed and exempt real estate.

RESULTS FROM THE INTERSTATE COMMERCE COMMISSION'S VALUATION.—The valuation work of the Interstate Commerce Commission is now far enough advanced to make it possible to use the commission's results to arrive at a total valuation for the railroads of the United States. The Federal Trade Commission has used as a basis for its estimate tentative valuations for a little over 97,000 miles of road and underlying reports for a little over 78,000 miles of road. The roads for which tentative values have been completed are probably largely the smaller roads. In making a selection of roads for

which to obtain data from underlying reports the figures for the larger systems were used by preference. In this way any peculiarity of the sum due to the smallness of the roads for which tentative valuations have been reached tends to be counterbalanced. All prices applied in the determination of the cost of reproduction by the Valuation Division of the Interstate Commerce Commission are prices as of 1914, or strictly as of a period of several years prior to 1914. As a matter of fact, however, price changes during the five-year period ending with 1914 were negligible as compared with what they have been since, so that it is fair to use the figures as relating to 1914 prices. The inventories, however, are of various years, from 1914 down to 1919, in all cases as of June 30.

If the inventories were all as of June 30, 1914, the method of arriving at a present valuation would be to apply present unit prices to the inventories and add to the total thus obtained the expenditures for additions and betterments to plant and equipment made since 1914. The fact that some of the inventories are of later date makes it necessary to subtract something from the increases in capital accounts shown by the reports of the Interstate Commerce Commission in order to obtain a correct figure to add to the inventory data priced as of 1922. An examination of the mileage figures indicates a static condition of railroad development as regards miles of line between 1912 and 1922, so that it may be assumed that additions and betterments as obtained from figures showing the increase of investment in road and equipment, less increase in depreciation reserves, do not involve additions of mileage.

The use of such figures of book value, however, to supplement the reproduction inventories and bring them down to the 1922 date may appear to be inconsistent with the reproduction theory of valuation. It does constitute an element of inconsistency, but in proportion as book cost figures are recent they tend to approximate more nearly to reproduction cost figures and may, therefore, be used as a substitute for the latter. Unfortunately, the book value figures in question run back somewhat into a period when prices were quite different from what they were in 1922. But the element of distortion involved is small, especially as only a part of the additions and betterments prior to 1920 need to be used for the purpose of the 1922 estimate.

The total valuation arrived at by the method described is a trifle over $26,000,000,000. This figure provides for depreciation, because the reproduction costs taken from the Interstate Commerce Commission's valuation data are for such costs less depreciation and because the additions to fixed-capital accounts are reduced according to appropriations made to depreciation reserves. The estimate does not include anything for working capital, in this respect following the census rule. Materials and supplies and cash used by the railroads are covered under other heads in the estimate of national wealth. This commission's estimate for the railroads does include a small allowance for going value on the basis of the relative importance of this element in the 97,000 miles of road for which tentative values have been arrived at. According to these data, the amount in question is 3.4 per cent of the combined value of land and cost of reproduction of structures and equipment. By the estimate above made the census 1922 figure of $19,951,000,000 for the value of the railroads is increased 30 per cent.

THE IMPORTANCE OF PRICE INDEXES IN THIS ESTIMATE.—Theoretically the value of inventoried railroad property should be brought down to date by the use of a price index for railroad materials of construction and railroad-construction labor. Instead of using such a special price index, the wholesale price index of the Bureau of Labor has been employed. This has not been done unadvisedly, however. In practice the Interstate Commerce Commission, in connection with its valuation as of the present date of the various railroad systems with reference to the application of the recapture clause of the transportation act of 1920, has found it satisfactory to use the wholesale price index of the Bureau of Labor, and such procedure has been acceptable to the railroads.

The general wholesale price index number of the Bureau of Labor for 1922 was 149, as compared with an index for 1914 of 98.[15] Certain groups of commodities that are of particular interest for railroad construction and equipment are metals and metal products and building materials. For the metals the index number of 1922 was 122 as compared with 85 in 1914. For building materials the 1922 index number was 168 as compared with 92 in 1914. As regards construction labor, although no appropriate index of the change in wages is at hand, it is doubtless true that the change since 1920 has been favorable to wages as compared with wholesale prices. Such considerations as these suggest that the $26,000,000,000 arrived at above is to a considerable extent an underestimate of the value of the railroads, according to the strict principles of cost-of-reproduction valuation.

The $26,000,000,000 of wealth represented by the railroads is the amount available and in use for the service of the public. The railroads did not cost the investors anywhere nearly as much as $26,000,000,000. The public is less dependent on railroad service than it was a generation ago. The development of the automobile has seriously affected the earning power of the railroads in certain sections, particularly as regards their passenger service. The importance of the railroads for local freight service, also, has been affected. As a result of these developments, which have by no means completely worked themselves out as yet, it may become necessary to regard some railroads as worth considerably less than their fair cost of reproduction, because of their having become more or less obsolete.

REVALUATIONS FOR OTHER PUBLIC SERVICE ENTERPRISES.—Book cost for street railways, telegraph systems, telephone systems, Pullman and other cars not owned by railroads, and privately owned central electric light and power stations and transmission lines should be similarly increased. The ratio will vary, of course, according to the character of the property, and possibly according to the way in which the accounts of the corporations have been kept. But in general it would mean a considerable increase in the book cost figures used by the census.

An examination has been made of recent decisions of public utility commissions in the various States where cases have come up involving the valuation of such properties. On the basis of such data, all too meager it must be admitted, ratios have been obtained for each type

[15] An index for the period of the calendar year is deemed preferable to one as of Dec. 31, 1922.

of property referred to. The appropriate ratio for street railways appears to be approximately 45 per cent. That for telephone and telegraph systems may be taken at 40 per cent. For Pullman and other cars, not owned by the railroads, a ratio identical with that for the railroads, that is, 30 per cent, may be used. For privately owned central electric light and power stations a suitable ratio appears to be 30 per cent. In all these cases round numbers are employed, because of the approximate character of the ratio. The basis of all these ratios is so small and so uncertain that it is open to anyone to obtain figures which will give a better estimate.

By way of explanation of the variation in the ratios above used, it is worth noting that in proportion as the existing property has been recently installed, owing to rapid growth of the plant or to replacement of obsolete machinery, book value tends to approximate reproduction value. The class of property above listed that is on the whole most new, or least old, is doubtless the property of the central electric light and power stations. The telegraph and street railway properties are probably the oldest. It is possible, also, that the ratios are affected by the extent to which franchise values and other items of property, not properly included in an estimate of national wealth, have been brought indirectly into the capital accounts. Such factors tend, however, to reduce instead of increase the ratio used to raise book values to reproduction values. It may, therefore, be inferred, either that such factors affected all classes of public-service corporations in nearly the same way, or else that this factor has been overshadowed by the great changes in price levels that have occurred in the past decade.

The revised valuations for the public-service enterprises discussed in this section are shown in Table 1, p. 28.

Section 7. Other items in the 1922 census estimate.

There are several forms of movable wealth specified in the census enumeration which have not been discussed in the previous sections of this chapter. It is of interest to pass them in review in order to consider how far the method of estimation is consistent with that adopted for real estate and with that applied throughout this chapter.

MONEY.—The census estimate of national wealth contains no figure for the value of money as such. The amount entered is for gold and silver coin and bullion, amounting to $4,270,000,000. In general in the present report the estimates made are of the value of wealth and not of the value of property rights. This point of view seems to justify the noninclusion of money in the total except so far as it is gold or silver coin. Such coin is unquestionably wealth. A greenback, on the other hand, being a promise to pay, is property rather than wealth.

MANUFACTURING EQUIPMENT.—One of the large items in the census total is manufacturing machinery, tools, and implements. According to the principles stated in Chapter I, the present value of the equipment of a manufacturing plant is not its book cost. A proper criterion of the value of such equipment is what it would cost to purchase or reproduce, with due allowance for depreciation, pro-

vided the same sort of equipment would actually be installed under present conditions. But, in such a reference to "present" value, it should be noted that it takes time to replace the equipment and the price per unit should be an average for some such period of time. In a general way the census estimate most nearly approximates perhaps a book cost figure, although the description of the way the figure is arrived at indicates that its relation to book cost is somewhat indirect.

There is a difference between the book cost of manufacturing equipment and the book cost, for example, of the railroads as regards their relation to present value. For movable equipment and implements subject to frequent replacement the average age of an installation, as of any particular date, is likely to be very few years. If it is, for example, five years, the book cost of the installations will be, on the average, as of five years previous to the date of valuation. In the case of certain kinds of implements and equipment there may be practically no difference between present value and book cost properly depreciated because of the shortness of the period during which the articles have been in use, especially if no radical changes in price levels have occurred during the period. The undepreciated book value of such equipment would tend to exceed its present value by an amount approximating depreciation, if prices have not changed. During a period of rising prices the undepreciated book values might not be too high or might even be too low. Taking such equipment in 1922, the aggregate book values may have been priced low enough to fully offset any depreciation not allowed for.

It should be noted in this connection that the item for manufacturing equipment is exclusive of all real estate, the real estate used by manufacturing industries being included in the category of taxed real estate.

Agricultural Movables.—With regard to farm implements and machinery the situation is like that for manufacturing equipment.

As regards livestock, the facility with which sales values can be determined and applied to an enumerated number of animals is such that this item is doubtless on a sales value basis, which is even better than a cost of reproduction basis.

Automobiles.—Motor vehicles are given a separate value in the census estimate of 1922. In 1912 they were not separately considered, but instead were included with clothing, furniture, vehicles, etc. They are valued by applying to their number a price that makes proper allowance for depreciation. This method of valuation is entirely consistent with the inclusion of such an item in the total along with the true value of real estate, etc.

Products and Merchandise.—As regards the products of agriculture and of mines, etc., and merchandise, imported and other, there are no theoretical difficulties in the way of correct valuation. Prices for all the more important products are easily obtained. The units to be used in a proper inventory are not so easy to determine. As a matter of fact, enumeration for these commodities is scarcely possible, and indirect methods of estimating quantities and values are naturally adopted. Unfortunately the estimate may too often be directly an estimate of value instead of an estimate of the quantities

to which prices can be applied to obtain values. Changes in the purchasing power of money affect this general group of goods very promptly, and this situation is one reason why the quantities and the prices should, if possible, be determined independently.

CLOTHING, FURNITURE, AND PERSONAL EFFECTS.—The large but miscellaneous item of clothing, personal adornments, furniture, horse-drawn vehicles, and kindred property is the only one still to be considered in the census list. The method adopted for determining the value of this group of goods in the census of 1922 was radically changed from that used previously.

The increase, on the face of the census table, in the 10 years was over 212 per cent. Since motor vehicles were included in this category in 1912, the actual increase between the two estimates is much greater than 212 per cent. There were nearly a million motor cars registered in 1912, so the item is by no means inconsiderable. The comparison suggests that either the 1912 figure is too low or the 1922 figure too high. It is believed that the error is rather in the 1912 figure, because the method used in 1922 was better than that of 1912. According to the Bureau of Labor wholesale-price indexes, both clothes and clothing and house-furnishing goods increased in price at conspicuously high rates between 1912 and 1922, the indexes being, respectively, 97 and 181 for the former and 94 and 176 for the latter. The per capita value of clothing, furniture, etc., according to the 1922 estimate as computed, amounts to $362.

The method of valuing such personal effects, by the census in 1922, on the basis of returns from questionnaires, probably means that values are too close to costs—that is, that depreciation is not duly allowed for. The 1922 figure is believed to be comparable with and properly included in the total with the other elements of national wealth as set forth in this chapter.

Section 8. Ten-year changes for various classes of wealth in quantities and in dollars.

THE INCREASES IN DOLLARS.—According to the census estimates, the total wealth of this country in 1922, as shown above, was $321,000,000,000, while in 1912 it was estimated at only $186,000,000,000. A large part of this increase was due to the depreciation of the dollar, but, disregarding this depreciation, the nominal increase was 72 per cent during this decade. Increases of particular items from 1912 to 1922 in both absolute and relative terms, for the census data and also for the figures as modified by the commission, are shown for convenience of reference in Table 8.

TABLE 8.—*Increases in national wealth in terms of dollars, 1912 to 1922*

[Thousands of dollars]

Form of wealth	Increase in amount		Per cent increase in 10 years	
	Census	Commission	Census	Commission
Real property taxed	$58,985,219	(1)	60.9	
Real property exempt	8,192,298	(1)	66.5	
Rural public roads		[2] $6,850,000		(2)
City streets		[2] 13,600,000		(2)
Bridges, etc.		[2] 1,500,000		(2)
Movable equipment of farms and factories:				
Livestock	[3] 487,285	(1)	[3] 9.9	
Farm implements, etc.	1,236,413	(1)	90.4	
Manufacturing machinery, etc.	9,691,309	(1)	159.1	
Motor vehicles	(4)	(4)	(4)	
Public service enterprises:				
Railroads	3,602,208	9,851,409	23.5	61.0
Street railways	281,073	2,409,437	5.1	52.8
Telegraph systems	[3] 19,387	61,747	[3] 8.7	27.7
Telephone systems	864,341	1,369,647	61.4	126.6
Pullman cars, etc.	422,052	576,637	342.1	467.4
Electric power stations (private)	2,180,744	3,401,387	101.5	162.1
Other [4]	1,670,387	(1)	78.0	
Products, merchandise, etc.:				
Agricultural	225,776	(1)	4.3	
Manufactured	13,728,986	(1)	98.4	
Imported merchandise	722,034	(1)	37.8	
Mining products	[3] 85,159	(1)	[3] 10.5	
Furniture and personal effects	31,625,183	(1)	[5] 247.9	
Gold and silver coin and bullion	1,601,512	(1)	63.5	
Total (excluding roads and streets)	134,504,198	144,885,821	72.2	77.8

[1] Where the viewpoint and inquiries of the commission do not suggest a figure different from that of the Census Bureau, the entry is not repeated.
[2] Not computed for 1912; amounts for this item not included in computing the total increase.
[3] Decrease.
[4] Value in 1912 not reported. Value for 1922, $4,567,497. (See footnote 8.)
[5] Includes pipe lines, shipping and canals, privately owned waterworks, and irrigation enterprises.
[6] Without the increase in the value of motor vehicles included in 1922, the per cent increase amounts to 212.1.

It should be noted that no increase is computed for or including the value of road and street improvements because the computation of 1912 data for this form of wealth was not undertaken.

IMPORTANCE OF CHANGES IN PRICE LEVELS.—On the face of the census estimate for 1912 and 1922 national wealth increased 72 per cent in the 10-year period. It would be quite erroneous to infer from this, however, that the people of the United States were on the average 72 per cent better off than they were 10 years before. The obvious reason why the increase is not to be taken at its face is the very considerable change in the value of the dollar.

According to the wholesale price indexes [16] of the Bureau of Labor, it appears that prices increased between 1912 and 1922 in the ratio of 99 to 149, or between 1913 and 1923 in the ratio of 100 to 154. These price indexes are for calendar years, while the estimates of wealth are as of the end of the year 1922. Therefore, the comparable

[16] For purposes of comparing amounts of wealth wholesale price indexes have been used, and for income, cost-of-living indexes.

increase in prices may be taken to be the mean of the two indicated ratios, or about 52 per cent.[17]

If the dollar figures increased 72 per cent, and 52 points of this increase must be attributed to a change in the value of the dollar, then the increase in actual wealth as measured in terms of dollars of 1912, was only in the ratio of 152 to 172 or 13 per cent in the 10 year interval, 1912 to 1922. Such a rate of increase is a little less than the rate of increase in population.

The amounts added to the national wealth as of 1922 on the basis of the estimates of the commission are largely for items not valued in the 1922 estimate, which, therefore, do not contribute to the 10 year increase as such. For the items modified by the commission in Table 1 for which there is a corresponding figure for 1912 available for a rough comparison, the commission has added $10,382,000,000. Including this as proper increase for the 10-year period, the per cent increase in terms of dollars is 78, and the per cent increase after allowing for the indicated change in the value of the dollar is 17. The latter figure is barely in excess of the rate of increase of population in the same period.[18]

No exact significance, however, should be attached to this modification of the rate of increase in national wealth. The index used, while serviceable to correct extreme dollar changes, and probably the best one at hand for this purpose, was not devised specifically for measuring changes in value of fixed forms of wealth. Commodity price indexes are much more subject to sudden and sharp fluctuations than the value of land, buildings, installations of heavy machinery and most other kinds of durable goods, and, therefore, tend to misrepresent the changes in the dollar values of such goods.

SIGNIFICANCE OF INCREASE IN LAND VALUES.—The increase of wealth in land values is always of special interest. So far as the

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[17] While it is generally recognized that for comparison between different times, wealth in terms of dollars needs to be qualified with reference to changes in price levels, it is generally assumed that changes in rates of wages will be correlated with changes in price levels, whether as cause or effect, and will work in the same direction, though with a lag. The interest rate is another possible factor in the situation, and one that probably operates independently of the course of commodity prices. As a matter of fact rates of interest on money, as indicated by terms obtainable for commercial credit, were not any higher in 1922 than in 1912. But values influenced by money rates would doubtless be affected by average conditions for some time back and, therefore, so far as the rate-of-interest factor is important, values in 1922 might be expected to be considerably affected by the high rates of interest and of earnings on capital generally prevailing for some years prior to 1921.

The general effect of higher interest rates would apparently be to check increases in values and they would, therefore, operate against the effect of changes in commodity prices and wages from 1912 to 1922. This would apply especially to the valuation of real estate. Rents have tended upward along with prices of commodities. But with interest rates high, as well as rents, the price that a buyer is willing to pay for the source of the income would not increase in proportion to the rise in net rentals. Buyers of real estate would not be willing to pay as many "year's purchase" with general interest rates higher.

Such a tendency to check increases in value applies to various forms of wealth in direct relation to their durability. An increase in the tendency to value more highly, or increasingly to overvalue, present as compared with future goods would tend to hold in check the tendency to an increase in prices of real estate and thus to check the increases in the value of this form of national wealth. It is not possible to determine how important this effect upon the 1922 total may be. Among other qualifying considerations is the possibility that for goods immediately consumable there is an opposite effect of the same factor, though only in part compensating the checking effect on prices of the more durable goods, this effect flowing from the stimulation of demand for the former, because of indifference even to rather large inducements to save. If commodity price indexes included real estate and other durable capital goods and assigned them a weight in the total proportionate to their importance in an estimate of national wealth, there might be no occasion to consider the change in the rate of interest in this connection, but they do not, nor indeed is it to be expected of them. The reference to interest rates in the present connection amounts merely to a suggestion that the qualification of the dollar increase in national wealth by reference to price indexes may itself need qualification in the reverse direction.

[18] The nature of these particular increases appearing on the commission's estimates may be illustrated by the change made in the 1922 figures for the railroads. According to the census, the increase for this form of wealth was 23 per cent, while the Federal Trade Commission's revision of the 1922 figure would result in an increase of 61 per cent. The latter comparison is made with the two terms on a different basis. But the book-cost figure for 1912 was as of a date when prices had not been changing so greatly as in the following decade, and was probably much nearer reproduction cost than that of 1922.

increase is due to the mere bidding-up of ground values (the so-called unearned increment) it does not mean the possession of more abundant means of livelihood or enjoyment, but rather the opposite.

The census shows for the item of taxed real estate (which in 1922 comprehended about 68 per cent of the total) an increase of 61 per cent in value during the 10 years from 1912 to 1922. Before considering the meaning of this increase, allowance should be made for the change in the value of the dollar. A reduction of this percentage of increase in real-estate values as indicated by the change in wholesale prices, noted above, gives an estimated increase in true value of only 6 per cent. No data are available to show whether the increase for land alone (i. e., excluding improvements) was greater or less than 6 per cent on this basis, but no probable inference from the data would give a large increase in land values.

While it would not alter the situation in 1922, it might be argued that the advance in realty values had lagged behind the general advance in prices, but all the available data (some of which are presented in Chap. V) indicate that agricultural real estate reached the highest dollar values about 1920 and that these values have been lower ever since. For urban real estate, however, the dollar values of 1922 may not have been completely adjusted to the 1922 price level.

INDEXES OF INCREASE IN WEALTH DERIVED FROM PHYSICAL STATISTICS.—An increase in the number of dollars an individual or a nation possesses, or an increase in the number of dollars' worth of goods, as already indicated, amounts to something only in so far as the dollars will bring more in exchange or the dollars' worth of goods more utilities. So far as physical means of measuring wealth can be used, the true increase in wealth is better expressed in terms of physical measurement, or of quantities.

Satisfactory physical statistics by means of which comparisons can be made between 1912 and 1922 can be had for only comparatively few important items. The reasons for this are various. Forms of wealth serving the same purpose in consumption and enjoyment (or in production) change considerably in the course of a decade, so that things labeled with the same name are not entirely amenable to measurement in terms of the same unit at the different dates. It is also often not possible to obtain adequate statistical records of the quantities of particular forms of wealth in existence in 1912 for comparison with 1922. Even when such figures are obtainable as, on their face, permit of direct comparison, it is sometimes necessary to qualify the results with reference to changes in the character of the article for which statistics are obtained or in the measurement as above noted. Figures presented in the following table are, of course, fragmentary, partly because such statistics are not obtainable for many forms of wealth and partly because difficulties of definition make some available figures not worth much. The following table presents such figures of wealth in terms of physical quantities as have been found accessible and otherwise fairly satisfactory.

TABLE 9.—*Indexes of quantities of specified kinds of wealth in 1912 and 1922, and for other specified periods* [1]

Item	1912	1922	10-year per cent increase
Steam railroads:			
Miles of first track owned (thousands) [2]	247	250	1.5
Miles of all track operated (Interstate Commerce Commission) (thousands)	371	409	10.3
Capacity of locomotives (millions of pounds)	[3] 1,747	[4] 2,401	37.5
Capacity of freight cars (millions of tons)	[5] 83.0	[6] 98.8	19.1
Number of passenger cars (thousands)	51.6	56.8	10.2
Street and electric railways:			
Miles of first track (thousands)	41.0	43.9	7.8
Number of electric locomotives	277	404	45.8
Number of passenger cars (thousands)	78.2	77.3	1.6
Number of cars, freight, baggage, etc. (thousands)	17.9	22.0	23.0
Sailing, steam, and gas vessels (thousands of gross tons)	7,714	18,453	139.3
Central electric light and power stations:			
Horsepower of prime movers (thousands)	7,538	20,796	169.5
Kilowatt capacity of dynamos (thousands)	5,185	14,313	177.1
Telephone systems:			
Miles of wire (thousands)	20,248	37,296	84.0
Number of telephones (thousands)	8,730	14,947	64.4
Telegraph and cable systems:			
Miles of single wire (thousands) [7]	1,814	1,853	2.2
Nautical miles of ocean cable (thousands)	87.7	78.7	13.4
Number of cotton spindles (millions)	31.8	34.9	17.0
Number of motor vehicle registrations (thousands)	944	12,238	1,196.4
Farm animals:			
Number of cattle (millions)	58.0	66.1	14.0
Number of sheep (millions)	52.4	36.3	−30.5
Number of swine (millions)	65.4	58.3	−10.8
Number of horses (millions)	20.5	19.1	−7.1
Number of mules (millions)	4.4	5.5	25.3
Producing capacity:			
Bituminous coal (millions of tot tons) [8]	658	488	25.1
Pig iron (millions of gross tons) [9]	30.9	51.1	28.1
Steel ingots and castings (millions of gross tons) [9]	33.6	58.1	45.0
	1914	1919	
Electrolytic copper (millions of pounds) [10]	1,778	2,780	[11] 55.9
	1909	1919	
Power used in manufactures, prime movers (millions of horsepower) [12]	18.7	29.5	58.0
Improved acres of farm land (millions) [13]	478.5	503.1	5.1
	1914	1921	
Rural public roads: [14]			
Miles of surfaced roads (thousands)	257	389	[15] 72.4
Miles of earth roads (thousands)	2,188	2,554	[15] 23.9

[1] Statistical abstract, unless otherwise noted.
[2] Switching and terminal roads omitted.
[3] Railroads of Classes I, II, and III.
[4] Railroads of Class I.
[5] Excludes of railroad company service, 214,329 and 284,002 miles, respectively.
[6] Geological Survey, Coal in 1922, p. 485.
[7] Compiled from Iron and Steel Directory 1908, 1910, and 1920, taking 1912 as mean of 1908 and 1916.
[8] Engineering and Mining Journal.
[9] Assuming no increase 1912 to 1914 or 1919 to 1922.
[10] Census of Manufactures, 1920.
[11] Census of Agriculture, 1920.
[12] Bureau of Public Roads.
[13] For 10 years at 7-year rate.

It will be noted from cursory examination of the table that many of the figures showing the largest rates for increase are for items comparatively unimportant in 1912, and in some cases not very important in 1922. This is true, for example, of the number of electric locomotives of electric railways, which increased 45 per cent. On the other hand, the increase in the number of motor-vehicle registrations by practically 1,200 per cent is not due to the smallness of the business in 1912, in which year already almost 1,000,000 motor

cars were in use. There was an increase in the facilities offered by the railroads in excess of the increase of population so far as relates to transportation of freight. The tractive power of locomotives increased 37 per cent and the capacity of freight cars 19 per cent, while the number of passenger cars increased only 10 per cent. It is possible to explain this as due to a less demand for passenger service because of the use of motor vehicles. It is doubtful whether any particular change in the capacity of steam-railroad passenger cars has occurred, such as might affect the significance of the computed per cent increase.

As regards the number of passenger cars reported for electric railways, for which the increase was only 1½ per cent, a considerable qualification of this result with regard to a change in the size of passenger cars is probably necessary.[19] If the condition as regards increased capacity of cars that holds for New York City holds for the country generally, then the facilities for such service offered by the street railways increased 10 per cent by reason of the increase in the capacity of cars, in addition to the 1 per cent increase due to an increase in the number of cars. It is doubtless true, however, that the street-railway industry is in a comparatively static condition, and not developing as rapidly as population. The competition of other means of transportation, specifically the motor vehicle, of course, is a large factor in this result. The mileage of improved public roads has evidently increased at a much greater rate than population. This development has been stimulated by the rapidly increasing use of automobiles.

The increase in the tonnage of vessels was obviously due largely to the needs of the war and represents, to a considerable extent, wealth that will have to be written off from the national assets sooner or later.

Electric light and power stations are evidently in a highly dynamic condition as regards their development. The conveniences of electric light and power in the household are increasingly used, but much of the development of the industry may be attributed to the large extent to which electric power has displaced other forms of power in manufactures, together with a large increase in the quantity of power so used.

The rate of increase in the number of telephones and the miles of telephone wire is much greater than in population. Telegraph companies are comparatively static as regards their development.

Manufacturing capacity for textiles, as indicated by the increase in the number of cotton spindles, developed at a rate slightly in excess of the increase in population. The 58 per cent increase in the horsepower of prime movers used in manufactures represents not merely increase in manufacturing industry but the displacement of hand processes by those using mechanical power and probably, also, the rapid development of certain lines of manufacture (certain appli-

[19] For New York City the change in the capacity of street-railway passenger cars can be definitely determined. As to the importance of this element in the total it is worth noting that in 1922 the street-railway companies in New York City alone possessed 13,407 cars, or about 18 per cent of the total shown for the United States as a whole. For this group of street-railway cars the average capacity increased from 45 seats per car in 1912 to 49 seats in 1922. Data for car-seat-miles of street-railway passenger cars compared with car-miles show slightly larger figures of capacity in both years as a result of the tendency to use more intensively and more continuously the cars of larger capacity. On this basis the increase in the weighted average capacity of cars active is from 46 to 52, or 11 per cent. These data are from the 1922 annual report of the Transit Commission of the State of New York, pp. 215 and 219.

cations of chemistry in particular) requiring an especially large use of power.

Bituminous-coal producing capacity increased 25 per cent and that of electrolytic copper 57 per cent, that of pig iron 28 per cent, that of steel ingots and castings 48 per cent.

In three out of five classes of farm animals covered by the table there was a decrease. The number of mules increased in 10 years as well as that of neat cattle. How far this result needs to be qualified with reference to changes in the weight of domestic animals in 10 years has not been computed. It should be remembered, also, that comparisons of individual years for farm animals show changes that are largely the result of year-to-year fluctuations rather than of significant general trends. Improved farm lands increased only 5 per cent, but there may have been a greater increase in capital used per acre.

It is impossible to compute a general index of the increase in wealth for the 10 years covered by the census figures from such physical statistics as those presented above. It is possible, however, to infer that the increase in the quantity of wealth is much exaggerated by the mere dollar figures. On the other hand, this increase as modified by taking account of changes in the value of the dollar may possibly understate the real increase due to imperfections in the index, when used for this purpose. In a general way the indications of these statistics of increase in quantities of particular forms of wealth suggest the possibility of a considerably larger rate than that computed by the use of price indexes.

Conclusion.—Consideration of the various data throwing light upon the accuracy and significance of the 1922 estimates as compared with those of 1912 shows the limited meaning of the dollar unit in this application. In terms of the quantity of goods yielding economic satisfactions, the people of the United States did not make any very remarkable gain as between 1912 and 1922, but wealth increased, apparently, at a somewhat greater rate than the rate of increase of population. Doubtless the increase would have been still greater but for the great waste in wealth caused by the war, but time has not permitted an estimate of this waste.[20]

[20] On the other side of the account are certain property rights resulting from investments and loans abroad which were doubtless a considerable asset in 1922, whereas they were of little importance in 1912. They are not considered above because they are property rather than wealth items and because whatever existing wealth is back of them is located in foreign countries. A recent estimate by T. B. Goldsmith, of the Bureau of Foreign and Domestic Commerce (Commerce Reports, July 20, 1925), shows a total (exclusive of amounts owed the United States Government by foreign governments) of $6,520,000,000.

Chapter III

DISTRIBUTION OF WEALTH AMONG INDIVIDUALS

Section 1. Methods of estimate and source of data.

The ultimate interest in a study of wealth lies in its relative distribution among the human beings who create and utilize it. The actual degree of the differences in the material possessions of different individuals has, no doubt, been a matter of speculative concern throughout the whole period of history, but the collection of accurate data on these differences has generally been impeded by the expense, as well as by the reluctance of many persons to disclose their personal affairs. It is generally through taxation or the transfer of property and the right of a taxing or transferring authority to receive information or to appraise for tax purposes that approximate information of the wealth of individuals becomes a matter of available record.

Methods of Estimate.—From income-tax returns, for example, it is possible to estimate the relative distribution of wealth through computing the approximate capital or principal on which each taxed income was earned. The value of this method is limited by the fact that many kinds of individual wealth are either nonincome producing or produce untaxed income not required to be reported. Also a large proportion of the income reported is from personal service and does not represent any sort of return on monetary investment. Another and more direct method of estimate is from property tax returns, but these involve bases of appraisal and limits of exemption which vary so widely in different tax jurisdictions as to make comparable data difficult to obtain.

While both of the above-mentioned methods (capitalizing income and analyzing property tax returns) have been used for estimating the distribution of wealth,[1] a third and more often employed method has been the compilation of the values of estates of deceased persons as recorded in county probate courts by administrators or executors. These are public records. The theory of this method, which is the one employed by the commission in the present study, is that the probate records, covering the wealth of all classes and conditions of decedents, constitute an effective sample or cross-section of the distribution of wealth. Probate records not only cover all classes of decedents having estates, but also afford perhaps the only complete official statement of the total value of each estate. In both scope and accessibility, therefore, these records seem to offer the best available criterion of the personal distribution of wealth. In the use of this method, however, it is fair to point out that the total

[1] Property tax returns were utilized by the Massachusetts Labor Bureau in 1873 for a classification of the property owned by about half the population of the State. A similar inquiry was made in Michigan in the eighties of the last century. Probate records in New York State were utilized by Charles B. Spahr in 1892, and the Massachusetts Labor Bureau in 1895 made an exhaustive study of probate records in that State for three different periods. This latter method was employed in England by Porter in his "Progress of the Nation" as early as 1838, p. 57.

number of individuals in the United States is so great and the variances in their economic conditions are so wide that to secure data on a sufficient number and variety of probated estates to provide a completely satisfactory sample of distribution at this time was a task beyond the facilities at the commission's immediate command. It is believed, however, that in the present study the commission has assembled a greater and more carefully selected number of individual probate records than have heretofore been used for this purpose, and that it is a sufficiently good sample to give an approximately correct picture of the facts.

SOURCE OF DATA.—For the present study agents of the commission secured data for a total of 43,512 estates from county probate court records in Massachusetts, New Hampshire, Maryland, District of Columbia, North Carolina, Georgia, Texas, Oklahoma, Kansas, Idaho, Iowa, Wisconsin, and North Dakota.[1] The counties visited were selected with a view not only to their geographical distribution but also in such a way as to be fairly representative of three general population types, viz, rural, town, and city. In some States work was discontinued because it was found that the records were comparatively incomplete or so arranged as to make the work of compilation unduly expensive. For each county taken a report on every estate probated in the 12-year period 1912–1923, inclusive, was made. In several instances records disclosed only the decedent's gross estate without deduction of outstanding obligations against the estate, and it was not possible to arrive at a figure for the net or actual estate. These instances result in some exaggeration of the size of estates shown but do not seriously alter the proportionate distributions shown. In other instances it was possible to secure only the total estate without division as between realty and various kinds of personalty. Consequently, the tabulations of total estates in this chapter include a slightly larger number of estates than do those of the different kinds of property held. In some of the counties visited no value at all was recorded for realty, with the result that no figure for the total estate could be secured. In these cases the county was omitted.

In these statistics of probated estates the wealth is distinguished as respects realty and personalty in the legal sense. Personalty includes both tangible movables and intangible property such as stocks, bonds, mortgages, notes, etc. This intangible personalty is not treated as an item of wealth in the census estimates of the national total, nor in the general estimates of this report, because its value depends almost entirely upon tangible wealth already included in the estimates. The chief exceptions are foreign securities which have become important only in the last few years.

In addition to the data on estates in general, special and detailed information on all reported estates of $1,000,000 and over was secured for a 6-year period, 1918–1923, inclusive, from probate records embracing the cities of New York, Philadelphia, and Chicago. This information has been incorporated into a special study of "large fortunes." The information secured was supplemented with data obtained by the estate tax division of the Bureau of Internal Revenue.

[1] The counties included are as follows: City—Chatham, Ga.; Shawnee, Kans.; Oklahoma, Okla.; Bristol, Mass.; District of Columbia. Town—Merrimack, N. H.; Bonneville, Idaho; Burleigh, Ward, N. Dak.; Pitt, Northampton, Wake, N. C.; Travis, Johnson, Denton, Tex. County—Cecil, Md.; Randall, Tex.; Iowa, Green, Price, Wis.; Bingham, Idaho; Carroll, Iowa; Stark, Williams, N. Dak.

Section 2. Distribution of total estates.

The 43,512 estates for which data were secured embraced all those probated for the period 1912–1923, inclusive, in 24 counties of 13 States and represented a combined value of $671,322,676, or a little over one-fifth of 1 per cent of the total wealth of the United States in 1922, as estimated by the Census Bureau.[1]

DISTRIBUTION BY SIZE GROUPS.—Although the total number of estates probated in the 24 counties was 43,512, the total number of persons dying in the same counties during the period covered was about 259,908.[2] Of these, 184,958[3] were 21 years of age or over and this number is used as a basis for estimating unprobated estates. The fact that the estates of only 43,512 were probated indicates that the remaining 141,446 died, leaving estates so small that they were not probated. To these latter, for the purpose of arriving at proportions of distribution, the average value of estates in the lowest size group (under $500) tabulated was assigned. This average was $258 per estate.

The number and amount of the reported estates in each of a selected series of size groups, together with the percentage of estates in each group both to the total estates probated and to the estimated total both probated and unprobated, are shown as follows:

TABLE 10.—*Distribution of wealth in United States as indicated by estates of 43,512 decedents in selected counties (1912–1923)*

Size group	Number of estates	Value of estates	Average value	Per cent of total estates		Per cent of total probated estates	
				Number	Value	Number	Value
Not probated [1]	[2] 141,446	$36,493,068	[2] $258	76.5	5.2	.....	.....
Under $500	6,099	1,574,622	258	3.3	0.2	14.0	0.2
$500 to $1,000	4,834	3,393,144	702	2.6	.5	11.1	.5
$1,000 to $2,500	8,780	14,190,579	1,616	4.7	2.0	20.2	2.1
$2,500 to $5,000	7,572	26,933,713	3,557	4.1	3.8	17.4	4.0
$5,000 to $10,000	6,446	45,160,884	7,006	3.5	6.4	14.8	6.7
$10,000 to $25,000	5,518	85,233,837	15,446	3.0	12.0	12.7	12.7
$25,000 to $50,000	2,221	77,830,066	34,930	1.2	11.0	5.1	11.4
$50,000 to $100,000	1,105	70,040,226	63,615	.6	10.7	2.5	11.2
$100,000 to $250,000	651	97,329,624	149,522	.4	13.8	1.5	14.0
$250,000 to $500,000	178	60,326,705	337,015	.1	8.5	.4	8.8
$500,000 to $1,000,000	76	52,529,811	684,453	(3)	7.4	.2	7.8
$1,000,000 and over	44	130,913,033	2,975,296	(3)	18.5	.1	19.5
Total probated	43,512	671,322,676	15,428	.....	.....	100.0	100.0
Total all estates	184,958	707,816,744	3,827	100.0	100.0	.....	.....

[1] Estimated from census mortality tables.
[2] Decedents who left no estate for probate were presumed to have had as much property as the average of the lowest group namely, $258 each.
[3] Less than one-tenth of 1 per cent.

The foregoing table shows that about 1 per cent of the estimated number of decedents owned about 59 per cent of the estimated wealth and that more than 90 per cent was owned by about 13 per cent of this number. Of course, the number of persons who enjoyed the use of this wealth was larger than the number of decedents taken, as they

[1] Estimated from census mortality reports.

probably supported on the average more than one dependent person. The average value for all estates was $3,800, but more than 91 per cent of the number had estates amounting to less than this average. The greatest number of probated estates fell within the $1,000 to $2,500 group, while the total value was greatest for probated estates in the $1,000,000 and over group. About 65 per cent of the total number of probated estates were included in the size groups from $1,000 to $25,000.

Although the table suggests a wide variance in the wealth of individuals and a rather high degree of concentration, there are indications that this concentration was greater at the beginning of the period than at the end. For comparative purposes the relative distribution of the probated wealth examined for the year 1912 and that for the year 1923 is shown as follows:

TABLE 11.—*Relative distribution of wealth in 1912 and 1923, as indicated by probate data* [1]

Size group	Number of estates		Value of estates		Per cent of total number		Per cent of total value	
	1912	1923	1912	1923	1912	1923	1912	1923
Under $500	469	402	$119,353	$124,775	16.4	11.1	0.3	0.2
$500 to $1,000	380	406	955,070	287,433	12.6	9.7	.6	.4
$1,000 to $2,500	899	817	983,490	1,334,301	21.0	19.6	2.4	2.0
$2,500 to $5,000	465	781	1,716,089	2,507,014	17.0	17.6	4.2	3.9
$5,000 to $10,000	370	643	2,013,269	4,535,909	13.0	15.6	6.5	6.9
$10,000 to $25,000	316	623	4,822,559	9,411,982	11.1	15.0	11.9	14.2
$25,000 to $50,000	140	242	4,900,955	8,464,678	4.9	5.8	12.3	12.8
$50,000 to $100,000	64	136	3,090,454	9,804,680	1.9	3.3	9.2	13.7
$100,000 to $250,000	42	62	6,464,171	9,634,211	1.5	1.5	16.0	14.8
$250,000 to $500,000	12	27	4,135,571	8,713,762	.4	.6	10.2	13.2
$500,000 to $1,000,000	4	9	2,521,047	6,193,199	.1	.2	6.2	9.4
$1,000,000 and over	2	2	8,105,326	5,599,634	.1	.1	20.2	8.5
Total	2,884	4,100	40,401,630	66,226,984	100.0	100.0	100.0	100.0

[1] This table is based altogether on records of probated estates and includes no estimate for decedents whose estates were not probated.

This table indicates an apparent trend toward a somewhat wider distribution. In 1912 about 29 per cent of all the probated estates amounted to less than $1,000 each, while in 1923 only 20.8 per cent were less than $1,000. Furthermore, in 1912 the estates of over $100,000 each amounted to 52.6 per cent of the total value of all estates probated, while in 1923 they amounted to only 45.9 per cent of the total.

DISTRIBUTION IN VARIOUS TYPES OF COMMUNITIES.—The extent or degree of concentration of wealth in different sections of the United States varies less with the geographical location of that section than with the economic type or structure of the communities comprising it. Based on conditions of population these communities are of three general types: (1) The rural or agricultural community; (2) the town or suburban, and (3) the large city. For the present study each of the 20 counties for which probate data were secured is assigned to one of the three types, as follows:

(1) Counties with no town of over 5,000 population.

(2) Counties whose largest town has a population of from 5,000 to 50,000.

(3) Counties containing cities of more than 50,000 population.

Of the 24 counties covered 9 belonged to the first or rural type, 10 to the town type, and 5 to the city type. The five counties of the last-named type were those embracing the cities of Savannah, Ga., Topeka, Kans., Washington, D. C., Oklahoma City, Okla., and Fall River, Mass.

The number and value of the probated estates of each size group are shown for each of the three types of counties, as follows:

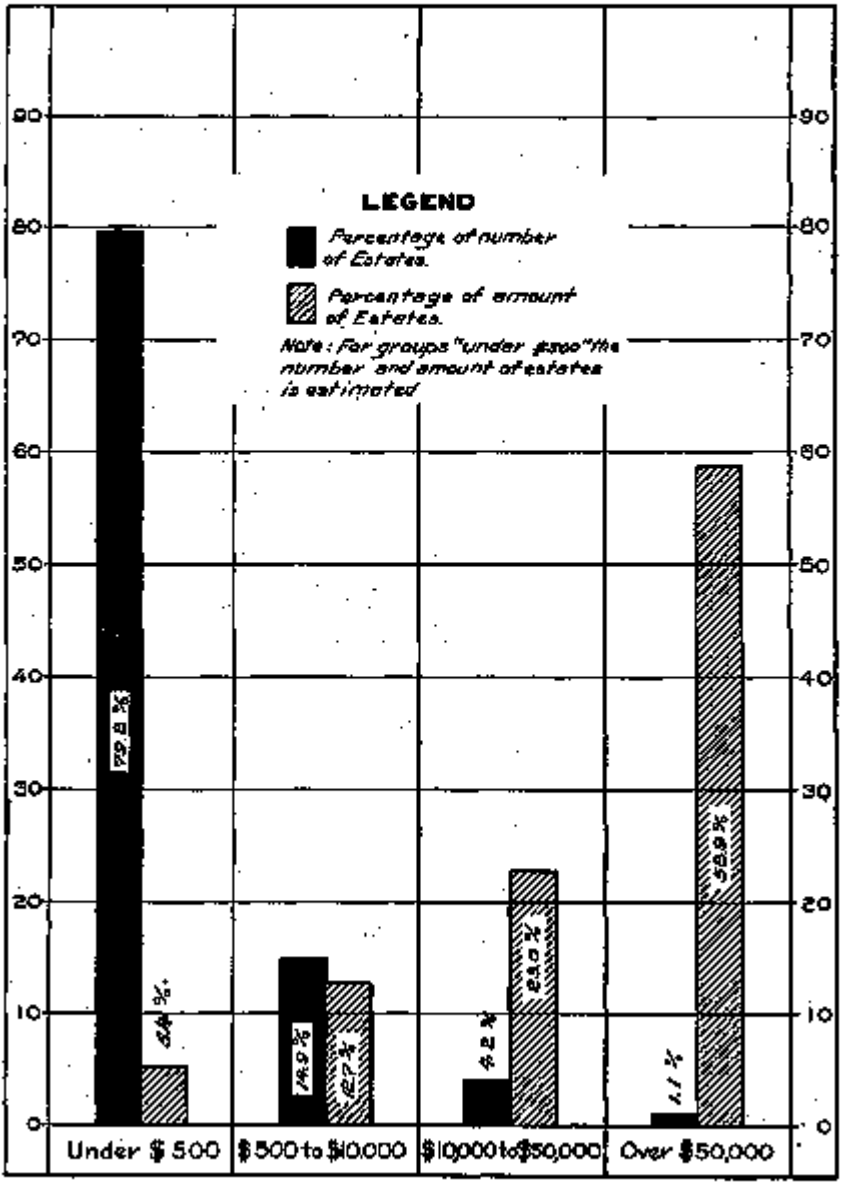
TABLE 12.—*Relative distribution of wealth in different types of communities as indicated by probate data (1912–1925)*

Size group	Number of estates			Values of estates			Per cent of total number			Per cent of total value		
	Country [1]	Town [2]	City [3]	Country [1]	Town [2]	City [3]	Country [1]	Town [2]	City [3]	Country [1]	Town [2]	City [3]
				Thousands	*Thousands*	*Thousands*						
Under $500	881	1,008	4,760	391	$268	$1,219	7.9	12.7	15.2	0.2	0.3	0.2
$500 to $1,000	354	881	3,609	257	616	2,515	8.4	10.8	11.5	.4	.8	.5
$1,000 to $2,500	718	1,787	6,313	1,190	2,853	10,148	17.0	21.8	20.1	2.1	3.6	1.9
$2,500 to $5,000	487	1,503	5,382	2,456	5,363	19,114	16.3	18.9	17.2	4.2	6.7	3.6
$5,000 to $10,000	980	1,234	4,539	4,847	8,609	31,711	16.1	15.5	14.5	8.2	10.7	6.0
$10,000 to $25,000	807	999	3,719	12,922	14,939	67,372	19.2	12.5	11.9	22.0	18.6	10.8
$25,000 to $50,000	391	364	1,476	13,822	12,495	51,613	9.3	4.6	4.7	23.5	15.6	9.7
$50,000 to $100,000	194	153	759	13,296	10,211	62,533	4.6	1.9	2.4	22.6	12.7	9.8
$100,000 to $250,000	45	76	529	6,285	11,233	79,089	1.1	.9	1.7	10.6	14.0	14.9
$250,000 to $500,000	6	21	158	2,284	7,390	51,089	.1	.3	.5	3.9	9.2	9.6
$500,000 to $1,000,000	2	7	67	1,373	4,122	46,533	(4)	.1	.2	2.3	5.2	8.7
$1,000,000 and over	.....	1	43	.....	2,033	128,880	.....	(4)	.1	.....	2.6	24.2
Total	4,213	7,957	31,342	58,779	80,126	532,412	100.0	100.0	100.0	100.0	100.0	100.0

[1] Counties with no town of over 5,000 population.
[2] Counties whose largest town has a population of from 5,000 to 50,000.
[3] Counties with cities of over 50,000 population.
[4] Less than one-tenth of 1 per cent.

The average value of the estates probated in city districts was $16,990, in town districts $10,070, and in country districts $13,950. The relatively greater wealth of individuals in the city districts is also indicated by the fact that only 2.6 per cent of the value of estates probated in city districts was in estates of less than $2,500, while estates of less than this amount represented 4.7 per cent of the total value of town estates and 2.7 per cent of that of country estates. The table indicates that not only the average estates but also the concentration of probated wealth was greatest in cities. In the city districts covered eight-tenths of 1 per cent of the probated estates embraced 42.5 per cent of the total value and 9.6 per cent of the estates represented 77 per cent of the total value. In the town districts 1.3 per cent of the estates had only 31 per cent of the total value and about 8 per cent had 59.3 per cent of the value. In the country districts 1.2 per cent of the estates embraced 16.8 per cent of the value and 15.1 per cent represented 62.9 per cent of the value. Apparently the distribution of wealth was wider in towns than in city or country. The differences between city and country were more marked with respect to distribution of wealth among the population than with respect to average amount.

Diagram 1 **PERCENTAGE OF TOTAL NUMBER AND TOTAL VALUE OF ESTATES FOR SPECIFIED SIZE GROUPS IN 24 SELECTED COUNTIES, 1912–1923.**



Section 3. Relative distribution of realty and personalty.

Of the 43,512 probates examined 41,788 reported real property separately from personal property. The total value of these 41,788 estates was $645,019,000, of which $215,280,900, or only 33.4 per cent, was in real estate directly owned. The total value of real estate directly owned would be 33.4 per cent, therefore, of the $311,000,000,000 of total individual property, as indicated by the probate data. This would amount to about $104,000,000,000. Such a method of estimating the total realty is not permissible, however, because considerable portions of the realty are represented by property reported as in intangible personalty, e. g., stocks or bonds of transportation and manufacturing corporations, etc., owning extensive real estate or in real-estate mortgages. Hence the percentage of the total estimated as realty is much too low, taken on the basis of tangible wealth of the whole country. The relative distribution of realty and personalty within each size group for the probates examined was as follows:

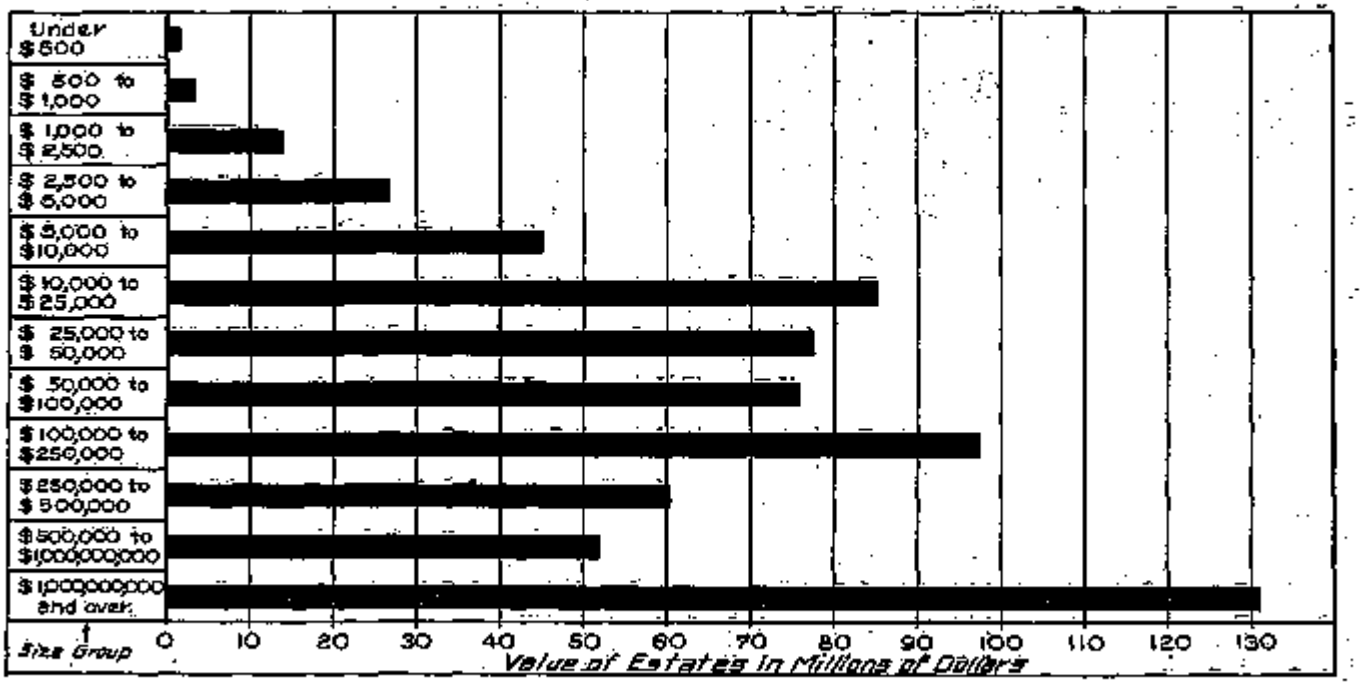
TABLE 13.—*Relative distribution of realty and personalty as indicated by probate data (1912—1923, inclusive)*

Size group	Number of estates	Total value	Value of realty	Value of personalty	Per cent of realty to total estate
Under $500	5,903	$1,540,250	$268,351	$1,276,905	17.4
$500 to $1,000	4,055	3,271,735	863,366	2,408,359	26.3
$1,000 to $2,500	8,428	13,069,060	5,433,175	8,235,484	39.7
$2,500 to $5,000	7,285	25,040,825	12,920,825	13,020,000	49.8
$5,000 to $10,000	6,140	43,154,103	20,721,407	22,432,705	48.0
$10,000 to $25,000	6,247	81,323,207	36,396,437	44,927,800	44.7
$25,000 to $50,000	2,110	73,774,097	31,864,910	41,909,781	43.2
$50,000 to $100,000	1,040	72,227,323	29,262,023	43,965,300	39.1
$100,000 to $250,000	625	92,204,206	28,054,575	64,569,631	30.7
$250,000 to $500,000	172	57,827,548	16,477,797	41,849,751	28.5
$500,000 to $1,000,000	73	50,103,760	9,008,050	41,100,110	18.0
$1,000,000 and over	45	128,890,100	24,410,378	104,469,722	18.9
Total	41,788	645,019,072	215,281,900	429,737,172	33.4

The table indicates a greater relative direct holding of real estate by the groups of moderate wealth than by those of great wealth or by those of little or no wealth. In estates ranging in size from $2,500 to $10,000 the average distribution of property between realty and personalty was practically even. For all other estates the average amount of realty was considerably less than the personalty. If the fourth size group ($2,500 to $5,000) be taken as a center, it will be noted that the proportion of realty to total estate decreases with each succeeding smaller or larger size group, with the exception of the very largest size group, whose proportion is fractionally greater than that of the next largest. The fact that the proportionate realty holdings of the wealthier groups are small does not necessarily mean that these groups control a relatively lesser share of the total realty because, as already pointed out, their holdings of stocks and bonds, which are listed as personalty, include the issues of many corporations owning a great deal of realty, while land mortages must also be considered.

The table indicates, also, that in spite of their proportionately smaller direct holdings of realty, the estates of $10,000 and over, constituting about 22 per cent of the total number, embraced 80 per cent of the total realty reported.

Diagram 2 **AMOUNT OF ALL PROBATED ESTATES IN 24 SELECTED COUNTIES OF 13 STATES, BY SIZE GROUPS, DURING TWELVE YEARS, 1912-1923.**



RELATIVE REALTY IN VARIOUS TYPES OF COMMUNITIES.—Analysis of the probates examined for each type of community (city, town, and country) indicates that although realty directly held represented only 33.4 per cent of the average total estate in all districts it represented 50.6 per cent of the total in country districts. The relative realty and personalty reported for each type of community is shown as follows:

TABLE 14.—*Relative distribution of realty and personalty in different types of communities as indicated by probate data (1912–1923, inclusive)*

Type of community	Number of estates	Value of estates	Value of realty	Value of personalty	Per cent of realty to total estate
City	31,342	$532,417,751	$163,157,997	$309,259,754	30.6
Town	6,346	54,789,262	22,650,065	31,889,197	41.0
Country	4,100	57,862,069	20,273,828	28,638,221	50.6
All estates	41,788	645,019,072	215,281,900	429,737,172	33.4

In the country districts the realty directly held slightly exceeded the personalty, while in city and town districts the opposite was the case. The sharp distinction between the relative ownership of realty in town and city districts and in country districts suggests the greater stability and continuity of existence in rural communities compared with that in the city or town.

Section 4. Distribution of personalty.

More than one-third of the total personalty for which detail could be secured consisted of corporate stocks. Of the 43,512 probates examined 18,771 reported separately the several principal forms of personalty, i. e., stocks, bonds, real-estate notes, other notes, cash, and miscellaneous items. The total personalty so reported amounted to $282,795,165, of which corporate stocks represented 35.4 per cent; bonds, 14.7 per cent; real-estate notes, 10.6 per cent; other notes, 4.7 per cent; cash, 14.7 per cent; and miscellaneous items, 19.9 per cent. The realty of corporations is doubtless greater than the amount of corporation bonds, while real-estate notes represent, of course, indirect interest in realty. The relative distribution of each of these items of personalty is shown as follows:

TABLE 15.—*Relative distribution of personal property as indicated by probate data (1912–1923)*

Size group	Number of estates	Total personalty	Percentage distribution of personalty						
			Stocks	Bonds	Real-estate notes	Other notes	Cash	Miscellaneous	Total
Under $500	2,886	$962,341	2.3	2.2	1.1	2.2	71.3	20.9	100.0
$500 to $1,000	1,967	1,230,883	3.5	3.1	2.7	3.8	71.2	16.2	100.0
$1,000 to $2,500	3,391	4,137,061	4.3	4.3	4.5	4.6	63.6	17.7	100.0
$2,500 to $5,000	2,557	6,604,824	9.7	6.1	5.1	5.2	54.5	16.4	100.0
$5,000 to $10,000	2,770	11,434,646	12.3	8.5	12.6	5.2	46.5	15.9	100.0
$10,000 to $25,000	2,612	23,872,462	22.3	9.8	14.8	6.6	24.1	12.9	100.0
$25,000 to $50,000	1,108	28,798,507	32.5	13.0	14.1	4.8	21.5	14.1	100.0
$50,000 to $100,000	600	27,088,029	37.1	13.9	15.6	4.3	16.7	12.4	100.0
$100,000 to $250,000	402	43,218,841	41.9	17.7	12.9	4.3	12.4	10.8	100.0
$250,000 to $500,000	115	27,507,200	48.4	19.7	11.3	5.5	7.6	9.5	100.0
$500,000 to $1,000,000	51	28,348,485	49.2	21.7	6.5	2.6	5.2	14.8	100.0
$1,000,000 and over	30	85,001,365	35.1	13.6	7.2	5.1	2.5	36.5	100.0
Total	18,771	282,795,165	35.4	14.7	10.6	4.7	14.7	19.9	100.0

The table indicates that for each size group, except that embracing estates of $1,000,000 and over, the proportion of total personalty represented by stocks and bonds varied directly with the average size of the estate, the larger proportion of stocks and bonds appearing for the larger size groups. Stocks and bonds, for example, averaged only a little over 2 per cent each of total personalty in estates of less than $500, but these percentages increased directly with each next larger size group until they were 49.2 per cent for stocks and 21.7 per cent for bonds in the group embracing estates of from $500,000 to $1,000,000. By contrast, the proportion of total personalty represented by cash varied inversely with the size of estates. It was largest for the smallest size group, representing 71.3 per cent of total personalty, and smallest for the largest size group, representing only 2.5 per cent.

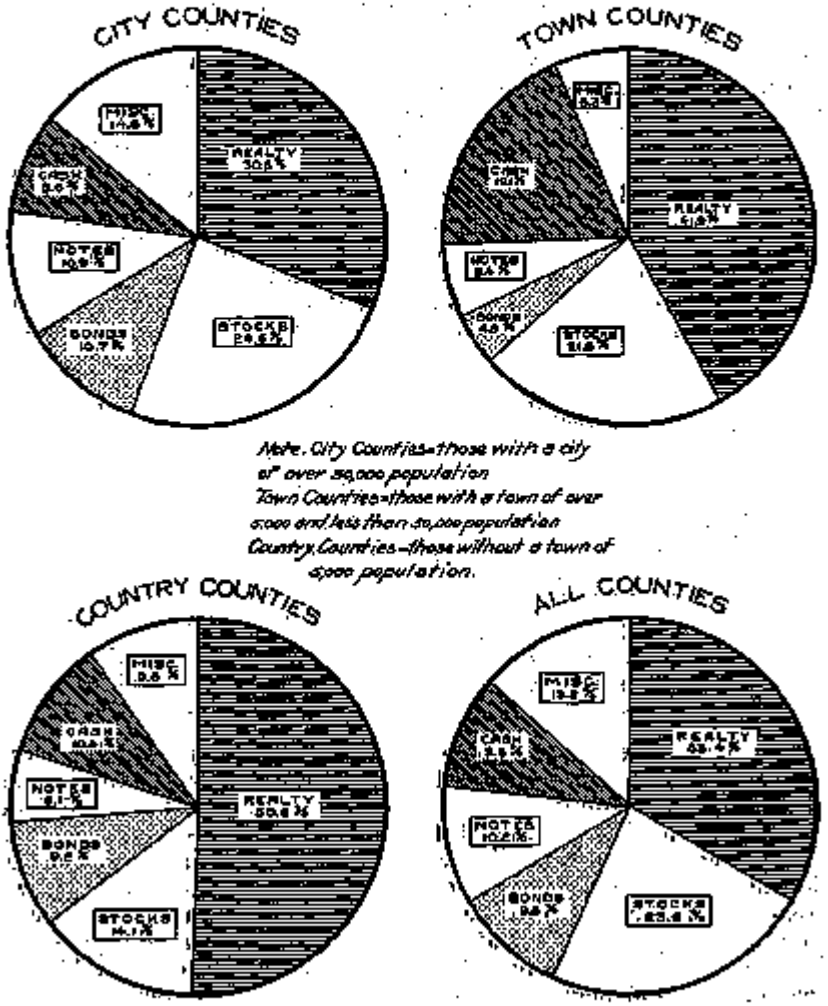
DISTRIBUTION OF ITEMS OF PERSONALTY IN DIFFERENT TYPES OF COMMUNITIES.—Apparently the wealth of those who live in rural districts is usually invested differently from that of residents of city or town districts. As already pointed out (see page 64), the average realty slightly exceeded the personalty in country districts for the estates examined by the commission, while in the city and town districts the opposite was true, the personalty considerably exceeding the realty. Analysis of the items of personalty reported in probates suggests a similar divergence between country districts and other districts. The relative distribution of items of personalty in each type of community, as indicated by the probates examined, was as follows:

TABLE 16.—*Relative distribution of personal property in different types of communities as indicated by probate data (1918–1923)*

Type of community	Number of estates	Total personalty	Percentage of distribution of personalty						
			Stock	Bonds	Real estate notes	Other notes	Cash	Miscellaneous	Total
City	12,662	$248,806,780	38.4	15.4	11.4	4.4	12.4	21.9	100.0
Town	4,797	29,041,044	36.6	7.7	4.1	7.6	32.9	10.9	100.0
Country	821	5,448,841	23.6	18.6	9.5	2.9	21.1	19.3	100.0
Total	18,771	283,706,165	36.4	14.7	10.9	4.7	14.7	19.6	100.0

As the table indicates, the percentages of total personalty represented by bonds averaged less for the estates in town and city districts than for those in country districts, amounting to only 7.7 per cent for town districts and 15.4 for city districts, as compared with 18.6 per cent in country districts. On the other hand, the proportion of total personalty represented by corporate stocks, which was greater than that of any other item in the case of all three types of communities, was somewhat smaller for the country districts than for the town and city ones. Real-estate notes represented 11.4 per cent of the total personalty reported for cities, 9.5 per cent of the total for country districts, and only 4.1 per cent of the total for towns. Conversely, the proportion of total personalty represented by cash was much larger for the estates in town districts, averaging 32.9 per cent, as against 12.4 per cent for cities and 21.1 per cent for country districts.

Diagram 3 **PERCENTAGES OF REALTY AND SPECIFIED KINDS OF PERSONALTY FOR 43,512 PROBATED ESTATES IN 24 COUNTIES, CLASSIFIED AS CITY, TOWN AND COUNTRY COUNTIES, 1912–1923.**



Note. City Counties=those with a city of over 50,000 population
Town Counties=those with a town of over 5000 and less than 50,000 population
Country Counties=those without a town of 5000 population.

Section 5. Estates of $1,000,000 and over.

In addition to the data on estates in general, as set forth in the preceding sections, a special analysis was made of all estates of $1,000,000 and over which were probated in New York City, Philadelphia, and Chicago during the six-year period, 1918 to 1923, inclusive. A total of 540 estates in this category were examined, of which 401 were in New York, 59 in Philadelphia, and 80 in Chicago. The total probated value of the 540 estates was $2,084,543,474. The estates, tabulated on a basis of their relative sizes, were as follows:

TABLE 17.—*Estates of $1,000,000 and over probated in New York, Philadelphia, and Chicago, 1918–1923, inclusive, grouped on a basis of size*

Size group	Number of estates	Value of estates	Per cent of total number	Per cent of total value
Under $2,500,000	347	$521,704,498	64.3	25.0
$2,500,000 to $5,000,000	119	416,809,517	22.0	20.0
$5,000,000 to $10,000,000	42	283,567,629	7.8	13.6
$10,000,000 to $25,000,000	23	331,744,077	4.3	15.4
$25,000,000 to $50,000,000	4	142,537,203	.7	6.9
$50,000,000 to $100,000,000	4	295,615,248	.7	14.2
$100,000,000 to $250,000,000	1	102,554,439	.2	4.9
Total	540	2,094,543,474	100.0	100.0
Average		3,860,290		

Eighty-six per cent of the estates were less than $5,000,000 in amount, and these estates represented 45 per cent of the total value of all the estates of this category examined.

The total value of the 401 estates in New York City was $1,655,470,376; that of the 59 in Philadelphia, $136,589,551; and of the 80 in Chicago, $292,483,547. The average estate for New York was $4,128,000, for Philadelphia, $2,315,000, and for Chicago, $3,656,000.

As indicated in Table 10 (see p. 58), estates of $1,000,000 and over represented 18.5 per cent of the total value of all estates for the sample taken by the commission. In so far as the relative distribution of wealth indicated by the probate data is representative, the total wealth in the hands of individuals possessing $1,000,000 or more would be 18.5 per cent of $311,000,000,000 or about $58,000,000,000.

Since the Federal estates tax became a law in 1916 all estates of $50,000 or over have been reported to the Bureau of Internal Revenue for taxation. From September 9, 1916, through the year 1923 there were 1,841 estates of $1,000,000 or over reported, with a total value of 4.6 billions of dollars. Since the estates examined by the commission in New York, Philadelphia, and Chicago for a somewhat shorter period numbered 540 and amounted in value to a little over $2,000,000,000, it is apparent that a sufficiently large proportion of the total available material was secured to warrant the basing of conclusions thereon. It was not possible to use the estate tax returns exclusively for the present study because of the high exemption and because no analysis of these returns for relative realty and personalty was made by the bureau prior to 1922.

RELATIVE REALTY AND PERSONALTY.—Of the $2,084,543,474 represented by the 540 estates of $1,000,000 and over which were examined by the commission, $299,339,496, or 14.4 per cent, represented the valuations assigned to realty. This compares with 33.4

per cent represented by realty in the case of estates in general. (See Table 18.) The lower relative percentage of realty directly held by the estates of $1,000,000 or over, as already pointed out, does not necessarily mean a lower actual holding of realty, because a great number of the stocks, bonds, and mortgages in these large estates which are listed as personalty represent either a direct or indirect participation in realty ownership. The amounts of personalty and realty reported for the 540 estates, grouped on a basis of size, were as follows:

TABLE 18.—*Relative distribution of realty and personalty in 540 estates of $1,000,000 and over, 1918–1923, grouped on a basis of size*

Size group	Number of estates	Total value	Realty	Personalty	Per cent of realty to total estate
Under $2,500,000	347	$521,704,494	$74,897,151	$446,807,343	14.4
$2,500,000 to $5,000,000	119	415,800,517	47,619,579	368,189,941	11.5
$5,000,000 to $10,000,000	42	288,857,682	38,943,517	244,614,165	13.7
$10,000,000 to $25,000,000	23	321,744,077	76,776,578	244,969,599	23.9
$25,000,000 to $50,000,000	4	148,527,405	8,654,681	134,872,724	9.0
$50,000,000 to $100,000,000	4	295,015,280	49,512,943	246,102,317	15.7
$100,000,000 to $250,000,000	1	102,564,489	2,926,559	99,647,889	2.9
Total	540	2,064,543,474	299,829,496	1,785,203,978	14.4

In general the proportion of realty directly held to total estates was larger for the estates under $25,000,000. Of the 540 estates, 104, or 20 per cent, included no realty at all.

Although the Federal estates tax returns were not classified separately for realty and personalty by the Bureau of Internal Revenue for the whole period 1916 to 1923, such separations were made for the years 1922 and 1923. Of the 661 estates of $1,000,000 and over re-reported to the bureau for these two years the total value was $1,751,715,965 and the value of realty was $246,287,394, or 14.1 per cent. This compares strikingly with the 14.4 per cent of realty to total estate shown above for the 540 estates examined by the commission.

The personal property listed in the probates of these estates included both tangibles such as cash and other miscellaneous items and intangibles such as stocks, bonds, and notes. The great bulk of the personalty was in stocks and bonds as indicated in the following analysis by size groups:

TABLE 19.—*Relative distribution of personal property in 540 estates of $1,000,000 and over, 1918–1923, grouped on a basis of size*

Size group	Number of estates	Total personalty	Percentage distribution of personalty						Total per cent
			Stocks	Bonds	Real estate notes	Other notes	Cash	Miscellaneous	
$1,000,000 to $2,500,000	347	$446,807,343	52.4	24.0	6.1	2.7	3.9	10.3	100.0
$2,500,000 to $5,000,000	119	368,189,941	50.0	25.4	4.3	2.4	5.1	6.2	100.0
$5,000,000 to $10,000,000	42	244,614,165	58.1	10.8	2.9	2.2	3.2	13.8	100.0
$10,000,000 to $25,000,000	23	244,969,599	50.4	28.4	3.1	1.8	3.0	13.8	100.0
$25,000,000 to $50,000,000	4	134,872,724	49.3	28.4	11.8	3.6	1.0	7.8	100.0
$50,000,000 to $100,000,000	4	246,102,317	64.8	9.2	2.1	5.1	4.0	14.8	100.0
$100,000,000 to $250,000,000	1	99,647,889	29.1	45.7	.1	22.6	.1	2.4	100.0
Total	540	1,785,203,978	53.9	23.8	4.4	3.9	3.5	10.4	100.0

Of the total personalty listed in the 540 estates, 53.9 per cent was in stocks and 23.8 per cent in bonds, leaving only 22.3 per cent for all other items. This compares with an average of 35.4 per cent of personalty in stocks and 14.7 per cent in bonds for estates in general as shown in Table 16. (See p. 65). The item of cash, which Table 15 shows as representing 71.3 per cent of personalty for the smallest estates of less than $500 and 14.7 per cent for estates in general, was only 3.6 per cent of the personalty of the estates of $1,000,000 and over.

The Federal estates tax returns for 1922 and 1923 show a total personalty of $1,505,428,571 for 661 estates. Of this total, 51.9 per cent represented the value of stocks and 22.8 per cent the value of bonds. This compares very closely with the 53.9 per cent of stocks and 23.8 per cent of bonds in the personalty of the 540 estates examined by the commission.[4]

[4] In this, as in other branches of this inquiry, the limitations of time restricted the study both as to size of sample and as to the application of more elaborate methods of analysis. So far as the wide fluctuation of the dollar value during this period is concerned it may be noted that the average wholesale price index for the period 1913-1925 is about the same as that for the year 1922.

Chapter IV

OWNERSHIP OF NATURAL RESOURCES

Section 1. Methods of valuing natural resources.

The value of the mineral and other natural resources of the United States is not estimated by the Bureau of the Census in its 1922 report on "Wealth, public debt, and taxation," and the commission, in the present inquiry, has not attempted to arrive at an estimate of its own (although it was possible to make broad estimates in the case of a few specific resources).

The conditions under which a natural deposit or product assumes or changes value are so variable and so problematic as to make almost any measurement of its value unsatisfactory. Factors dependent altogether upon the future and not capable of present determination enter into any attempt at valuation. In the case of exhaustible resources the value tends to increase (up to a certain point) as the quantity remaining decreases, presuming a continuous demand. Changes in future demand, new mining methods or methods of production, inventions, discoveries of additional quantities of the resource, increases in market price adequate to warrant the utilization of reserves once commercially unavailable, possible (and quite probable) inaccuracies in the estimates of the quantities—all limit almost hopelessly the reliability of valuations placed on a natural resource.

The corporations or individuals who own portions of these natural resources are, of course, obliged to assign some value to them for bookkeeping and tax purposes. The widely varying methods of valuation employed are eloquent of the unsatisfactory nature of any valuation at all. Some companies base their estimates on the original cost of the properties without regard to subsequent depletion or changes in demand. Others assign what they call a "fair market value" based on some recent sale of neighboring or similar properties; a great many companies use the values assigned by tax assessors; others base their valuations on the selling price of the product or on the profit earned thereon per unit or on the mining royalties paid. All of these methods are open to serious limitations. As stated, the "original cost" method makes no allowance for the increment of value attaching to the reserves as the result of ever-increasing demand and scarcity. Assessed valuation varies so widely from section to section and often differs greatly from sales value, that it does not serve either as a uniform or an adequate basis. Sales prices, assuming a willing seller and a willing buyer, where obtainable are a fair valuation for the properties sold but so small a proportion of the total lands containing the resource changes hands within a reasonably short period of time, and the content even of contiguous properties

varies so widely that it is dangerous to apply sales prices to properties not covered by the specific sales. Royalty values are, themselves, necessarily based on some other of the various methods of valuation. Capitalization of earnings from operating properties plays an important part in market price when properties are sold, and has been advocated and used by certain investigators in making their estimates. But earnings vary widely from year to year, hence, when used as a basis, the average over a considerable period of time should be used to eliminate, so far as possible, the influence of temporarily high or low earnings. For undeveloped properties, the earning capacity of which is unknown, some other basis must, of course, be used.

For the purposes of a study of the control or ownership of various natural resources of the United States, the commission addressed schedules to all of the principal listed water-power, coal, iron-ore, copper, timber, and petroleum companies. These schedules called for data on the value and quantity of the particular resource owned or controlled by the company. In the case of water power, replies were received from companies controlling over 80 per cent of the estimated total developed horsepower of the country, while in the case of bituminous coal information was received from companies controlling about 48 per cent of the total United States reserves available for mining within 40 years. For anthracite coal the returns were meager, but were supplemented with fairly complete data secured in 1923 by the United States Coal Commission. Returns were also very poor from copper companies, but satisfactorily inclusive information was subsequently secured from a tabulation of data on reserves reported to Weed's "Mines Handbook." In the case of iron ore, timber, and petroleum, replies received were fragmentary and have been tabulated merely as a matter of interest on which no conclusions may be based.

Only a small proportion of the companies replying to the commission's schedule were able to assign a value to their reserves. A sufficient number of valuations were reported, however, in the case of each resource (except water power) to indicate an average value per unit which it was possible to apply against the estimated total quantity of the reserve for a very broad estimate of total value.

For each resource covered, the data on the quantities of reserves owned or controlled, as reported by the companies to the commission or to other agencies, indicate a distinct concentration of control in the hands of a few large companies. Six companies are shown as controlling about a third of the total developed water power; 8 companies as controlling over three-quarters of the anthracite coal reserves; 30 companies as controlling over a third of the immediate bituminous-coal reserves; 2 companies as controlling well over half of the iron-ore reserves; 4 companies controlling nearly half of the copper reserves; and 30 companies controlling over 12 per cent of the petroleum reserves.

In this connection, however, it is interesting to note that concentration of ownership in the hands of a few large corporations does not necessarily mean concentration in a few individual hands. The tendency in recent years toward a wider distribution of the ownership of corporations through increases in number of stockholders is discussed in Chapter VII. Tables 78 and 81 of the chapter show that the average number of common stockholders per company for

mining and quarrying companies is 1,013 and that 42.9 per cent of the stockholders own $500 worth or less each. For electric light and power companies (which are the principal owners of developed water power) the average number of common stockholders per company is 1,362 and 38.2 per cent of the stockholders own $500 worth or less each.

Section 2. Water power.

The United States Geological Survey in 1924 estimated the potential water-power resources of the United States at 34,818,000 [1] horsepower and the developed water-power capacity at 9,086,958 [2] horsepower. Water power, unlike other natural resources, is continuously available and its potential future use is in nowise impaired by present use. Its availability is, however, not constant but varies with climatic conditions throughout the year, so that the horsepower of a stream at one time may greatly exceed that at another time. The estimated 34,818,000 potential horsepower represents power available 90 per cent of the time. The survey estimates an additional 20,212,000 horsepower which is available 50 per cent of the time. This makes a total of 55,030,000 available half of the time.

The 34,818,000 potential water horsepower available 90 per cent of the time, if fully developed, would have been more than sufficient to supply the 29,504,792 horsepower used by manufacturing plants having products valued at $5,000, or more each in 1919.[3] Assuming the same rate of increase in horsepower used for manufacturing in the five years following 1919 that occurred between 1914 and 1919, the manufacturing requirements in 1924 would amount to about 36,000,000 horsepower. The water power applied directly to manufacturing—that is, by water wheels which transmit motion directly without conversion into electricity—was only a small part of the total water power used. In 1919 it amounted to only 1,765,263 horsepower, or about 6 per cent of the total power required by manufacturing plants and only 19 per cent of the total water power development of the country. This 1,765,263 horsepower does not include any hydroelectric power purchased for use in manufacturing. Water power used thus directly in manufacturing is located principally in the northeastern and eastern part of the country.[4] This direct use has been decreasing, being replaced by power derived from hydroelectric, carboelectric [5] or internal combustion power plants wherever power from such sources is cheaper or more reliable. It should be remembered also that the electric power developed by the use of fuels is much greater than the hydroelectric power and that such carboelectric power is not considered in this connection. Most of the large hydroelectric plants are also equipped to generate electric power with steam, with the result that their investments in these respects are not readily separable. For this reason no attempt is made in this discussion to estimate the value of these water-power resources.

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[1] Horsepower available 24 hours per day during 90 per cent of year at 70 per cent efficiency in plant and equipment.

[2] This represents the total developed capacity of plants of 100 horsepower or more. Full utilization of water-power resources generally requires the installation of capacity much in excess of the potential capacity of streams, water storage in certain periods being relied upon to make up deficiencies in stream flow.

[3] "Census of Manufactures, 1923," p. 11.

[4] "Abstract of the Census of Manufactures, 1919," pp. 469-470.

[5] The term carboelectricity is applied to electric power generated by the use of fuel as distinguished from electricity produced by water power

GEOGRAPHICAL DISTRIBUTION OF POTENTIAL WATER POWER.—In spite of the fact that the estimated potential water horsepower of the country is apparently adequate to supply the total present power demands for manufacturing, the geographical distribution of this water-power capacity makes its use to this degree unlikely. The New England, Middle Atlantic, and East North Central States in which 70 per cent of the country's manufacturing is located have water-power resources representing only a fraction of their power needs for this manufacturing, while the Mountain and Pacific States, with relatively small present requirements for manufacturing, have nearly 70 per cent of the country's estimated water horsepower capacity.

Another factor is that even in those sections most richly endowed with potential water power, the development of many sites can be accomplished only at a cost per unit of power produced which makes their competition with power derived from fuels impossible at present. It is to be expected that water power development will continue wherever its product can profitably compete in cost and reliability with power derived from other sources. In the East and in other regions where coal is abundant, only the most available water power, such as that at Niagara Falls, can be developed profitably to its fullest extent because of this competition. In the West, where the bulk of the potential capacity is found, development is going on rapidly and will doubtless continue as fast as demand can be developed to utilize the power produced, but much of the potential water-power capacity must remain undeveloped for a long time for want of a market. California may prove somewhat of an exception for oil, which now generates the greater part of the power of the State, has possibly reached the peak of its production, and as oil production decreases it may reasonably be expected that water-power development will increase.

The geographical distribution of potential water power in the United States, as reported by the United States Geological Survey in 1924, is as follows:

TABLE 20.—*Estimated potential water power resources of the United States in 1924* [1]

Region [2]	Available 90 per cent of the time		Available 60 per cent of the time	
	Horsepower	Per cent	Horsepower	Per cent
New England	993,000	2.87	1,978,000	3.60
Middle Atlantic	4,317,000	12.40	5,088,000	14.35
East North Central	737,000	2.12	1,391,000	2.43
West North Central	871,000	2.50	1,844,000	3.35
South Atlantic	2,475,000	7.11	4,454,000	8.11
East South Central	1,811,000	2.08	2,091,809	3.54
West South Central	434,000	1.25	555,000	1.01
Mountain	10,735,000	30.83	14,513,000	26.19
Pacific	13,238,000	38.02	21,228,000	38.03
Total United States	34,815,000	100.00	55,038,809	100.00

[1] United States Geological Survey.

[2] New England region embraces Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. Middle Atlantic region embraces New York, New Jersey, and Pennsylvania. East North Central embraces Ohio, Indiana, Illinois, Michigan, and Wisconsin. West North Central embraces Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas. South Atlantic embraces Delaware, Maryland, and District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida. East South Central embraces Kentucky, Tennessee, Alabama, and Mississippi. West South Central embraces Arkansas, Louisiana, Oklahoma, and Texas. Mountain embraces Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada. Pacific embraces Washington, Oregon, and California.

As the table indicates, the Mountain and Pacific States, which have comparatively small coal reserves and are located farthest from the rich coal deposits of the country are most richly endowed with potential water power. The Pacific States alone have nearly 40 per cent of the country's total, and the Mountain and Pacific States combined more than 65 per cent. Of the great coal-producing areas, only the Middle Atlantic region is richly endowed by nature with water power. In this region the major part is along the Niagara and the St. Lawrence Rivers, which together have water-power possibilities it is claimed, equaled nowhere else in the world for their quantity and absence of seasonal fluctuations in stream flow.

Among the individual States (see appendix, Table 5) Washington ranks first in potential capacity, with 4.9 millions, California second with 4.6 millions, New York third with 4 millions, Oregon fourth with 3.6 millions, Arizona fifth with 2.75 millions, Montana sixth with 2.55 millions, Idaho seventh with 2.1 millions, and Utah eighth with 1.4 millions of 24-hour power available 90 per cent of the time. The remaining States have water-power resources estimated at from 765,000 horsepower to 1,000 horsepower each.

GEOGRAPHICAL DISTRIBUTION OF DEVELOPED WATER POWER.—The 9,086,958 developed water horsepower in the United States is equal to about one-fourth of the total potential power available 90 per cent of the time and about one-sixth of the potential power available 50 per cent of the time. The geographical distribution of developed water power in plants of 100 horsepower and over, as reported by the United States Geological Survey for 1924, together with the percentages of total water power developed in each region, are as follows:

TABLE 21.—*Geographical distribution of water power developed and potential, and proportion of potential power developed, for specified regions, 1924* [1]

Region [2]	Potential water power		Developed water power		
	Horsepower available 90 per cent of the time	Horsepower available 50 per cent of the time	Horsepower	Ratio to potential: Available 90 per cent of time	Ratio to potential: Available 50 per cent of time
New England	998,000	1,978,000	1,387,364	1.390	0.701
Middle Atlantic	4,317,000	5,088,000	1,731,881	.401	.304
East North Central	737,000	1,391,000	829,854	1.126	.597
West North Central	871,000	1,844,000	480,738	.528	.249
South Atlantic	2,476,000	4,464,000	1,296,978	.523	.290
East South Central	1,011,000	2,004,000	345,584	.342	.172
West South Central	434,000	888,000	16,727	.030	.019
Mountain	10,736,000	16,513,000	880,783	.082	.057
Pacific	13,238,000	21,960,000	2,130,051	.162	.101
Total United States	34,818,000	55,030,000	9,086,958	.261	.165

[1] United States Geological Survey. [2] For States in each region, see p. 73.

Two of the regions, the New England and the East North Central, have developed horsepower capacity in excess of the estimated potential power available 24 hours a day for 90 per cent of the time. New England, with developments equal to 139 per cent of its poten-

tial power available 90 per cent of the time and 70.1 per cent of its potential power available 50 per cent of the time, is utilizing its water power more completely than any other division. The water-power installations of New England are predominately for industrial plants which use power heavily only during the daytime and build up by water storage during the night to counterbalance any excess use over and above normal stream flow during the day. The same is true of the East North Central region, where the heavy power requirements of the peak-load periods are counterbalanced by off-peak storage, or by use of water power as secondary to steam-generated power. In all other regions the capacity developed is much less than the potential capacity, ranging from about 4 per cent to about 53 per cent of the 24-hour power available 90 per cent of the time.

Among individual States (see appendix, Table 5), New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Michigan, Wisconsin, Minnesota, and Iowa all have installed horsepower in excess of the estimated total power available 24 hours a day for 90 per cent of the time, and Massachusetts, Connecticut, and Michigan have installed horsepower in excess of the estimated 24-hour capacity available 50 per cent of the time. Of other important industrial States, New York, Pennsylvania, Ohio, Indiana, and Illinois have installed horsepower amounting to from 38.5 to 73 per cent of the estimated 24-hour power available 90 per cent of the time, and from 17.9 per cent to 31.1 per cent of that estimated to be available 50 per cent of the time. Many States, some of which have large potential capacities, show little or no development up to the present time, due either to absence of markets or to remoteness of power sites from markets.

UTILIZATION OF WATER POWER.—About 81 per cent of the developed water power of the country is devoted to public utility and municipal uses, and the rest is chiefly used for private manufacturing plants. The division of the total developed capacity between public utilities and all other uses in each region in 1924 was reported by the United States Geological Survey as follows:

TABLE 22.—*Developed water-power capacity devoted to public-utility uses and to all other in 1924* [1]

Region [1]	Public utility and municipal		All other	
	Horsepower	Per cent of total	Horsepower	Per cent of total
New England	644,831	46.6	742,533	53.6
Middle Atlantic	1,408,173	81.3	323,708	18.7
East North Central	625,826	75.4	204,026	24.6
West North Central	376,664	82.0	82,872	18.0
South Atlantic	1,946,728	80.7	250,260	19.3
East South Central	323,516	93.7	21,708	6.3
West South Central	12,515	74.5	4,212	25.2
Mountain	800,987	97.7	19,546	2.3
Pacific	2,069,507	95.8	89,544	4.2
Total United States	7,848,197	80.9	1,735,761	19.1

[1] United States Geological Survey.

[2] For States embraced in each region, see p. 78.

The New England region is the only one with a developed water-power capacity in industrial plants exceeding that developed for public utility purposes. This is undoubtedly due in part to the abundance of water-power sites, none of which is of very large capacity, and to the absence of fuel supplies in the immediate vicinity which early fostered the appropriation and development of the many sites for manufacturing purposes in which the power was belted or geared direct to the machinery to be run. It is perhaps also due in part to the wider use of electricity for home lighting in other sections of the country.

In regions of the country where streams are larger and water-power sites, though fewer in number, have greater potential capacities, the power is often remote from industrial centers, and development has awaited the improvement of electrical generating and transmission systems to make it possible to generate in large units and transmit power over long distances. Consequently development in such regions, particularly in the Mountain and Pacific States, has been conducted by public utility companies either as a supplement to, or as a substitute for, expensive fuel-generated electric power.

WORLD POSITION OF THE UNITED STATES.—Differences in methods of computing, and in the completeness and accuracy of estimates make an exact comparison of the water-power resources of various countries impossible. The potential and developed water power of the world and of the 13 principal water-power using countries of the world are computed by the United States Geological Survey, as follows:

TABLE 23.—*Estimated water-power resources of the world, 1923* [1]

Country	Potential capacity		Developed capacity	
	Horsepower	Per cent	Horsepower	Per cent
United States	35,000,000	7.7	[2]10,000,000	34.5
Canada	18,250,000	4.0	3,227,000	11.1
France	5,400,000	1.2	2,100,000	7.2
Norway	8,600,000	2.1	1,820,000	6.3
Italy	3,200,000	.8	1,800,000	6.2
Japan	4,680,000	1.0	1,594,000	5.5
Switzerland	2,500,000	.6	1,490,000	5.1
Sweden	6,100,000	1.3	1,416,000	4.9
Germany	2,000,000	.4	1,100,000	3.8
Spain	4,000,000	.9	1,000,000	3.5
Brazil	25,000,000	5.5	450,000	1.6
Austria	1,900,000	.4	439,000	1.5
British Isles	250,000	.2	260,000	.9
All others	332,540,000	73.4	2,214,000	7.6
Total	453,000,000	100.0	29,009,000	100.0

[1] United States Geological Survey, "Press Memorandum 687," Mar. 31, 1925.
[2] Includes 9,037,000 known horsepower in plants of 100 horsepower capacity or more and an estimate of 900,000 horsepower in plants of less than 100 horsepower capacity. This accounts for the difference between the above figure and that shown in Table 22.

The United States leads all other countries both in potential and in developed water power, having 7.7 per cent of the world's potential capacity and 34.5 per cent of its total developed horsepower. Brazil ranks second in potential capacity, but is far down the line in development; Canada is third in potential capacity and second in developed horsepower; Norway is fourth in potential capacity and fourth in developed horsepower; and France, fifth in capacity, is third in

developed power. The 13 countries listed have but 26.6 per cent of the world's potential water power, but 92.4 per cent of the world's developed capacity. All other countries, with 73.4 per cent of the world's potential supply, have but 7.6 per cent of the developed water power. For the world, present installed capacity amounts to only 6 per cent of the potential capacity established by minimum stream flow, or only about 3 per cent of the total that may eventually be attained under maximum utilization should it ever become economically advantageous to develop it.

CONTROL OF WATER POWER IN THE UNITED STATES.—Data received by the commission for the year 1923 from 616 companies indicate that about 20 companies control a little more than half of the estimated developed water power of the United States. The 616 companies reporting represent about 20 per cent of the total number of companies reported by the United States Geological Survey as having installations of 100 or more water horsepower each. These 616 companies reported a total of 7,305,335 developed, or about 80.4 per cent of the 9,086,958 total developed horsepower in plants of 100 horsepower or more in 1924. For both developed and undeveloped water power these companies reported a total of 16,552,256 horsepower, or 47.8 per cent of the country's total potential horsepower available 90 per cent of the time.

The data for the 616 companies reporting to the commission were grouped on a basis of the quantity of their developed water power and indicate the extent of concentration existing in the control of the Nation's waterpower resources, as follows:

TABLE 24.—*Control of developed water power in the United States by companies according to specified size groups, in 1923* [1]

Developed horsepower	Number of companies	Developed horsepower reported	Per cent of total		
			Companies	Horsepower reported to Federal Trade Commission	Estimated developed horsepower in United States [2]
300,000 and over	6	2,226,344	1.0	30.5	24.5
100,000 to 300,000	14	2,723,534	2.3	37.3	29.9
25,000 to 100,000	27	1,194,570	4.4	16.3	13.2
5,000 to 25,000	67	743,588	10.9	10.2	8.2
1,000 to 5,000	145	312,317	23.5	4.3	3.4
Under 1,000	357	103,982	57.9	1.4	1.1
Total	616	7,305,335	100.0	100.0	80.4

[1] The companies included in this tabulation represent 80.4 per cent of the estimated total developed water power of the country.
[2] Estimated by U. S. Geological Survey at 9,086,958 horsepower.

For the 616 companies reporting to the commission, the bulk of the developed horsepower is owned by a comparatively small number of large companies. These 616 companies control about 80.4 per cent of the total developed water power of the country. Six

very large companies, or slightly less than 1 per cent of the total number reporting, are shown to have 30.5 per cent of the horsepower reported and 14 others reported another 37.3 per cent of the total. The 47 companies in the three largest groups owned about 84 per cent of the total reported, leaving but 16 per cent owned by the other 569 companies. Similarly, the six largest companies controlled 24.5 per cent of the estimated total United States developed horsepower, while the 14 next largest companies controlled 30 per cent, making a total of 54.5 per cent in the hands of 20 companies.

The information supplied by the 616 companies was further analyzed to indicate the degree of concentration of control in different regions of the United States. Since certain of the companies operate in more than one territorial region, each such company has been counted once for each region in which it operates. This results in a total number of companies for all regions combined larger than the number actually reporting. The total horsepower, however, is the same. The distribution of ownership indicated for various geographical regions was as follows:

TABLE 25.—*Control of developed water horsepower in different geographical regions, by companies, according to specified size groups in 1925*

Developed horsepower	New England				Middle Atlantic			
	Number of companies	Developed horsepower	Per cent		Number of companies	Developed horsepower	Per cent	
			Companies	Horsepower			Companies	Horsepower
100,000 and over					(1)			
100,000 to 200,000					(2)			
25,000 to 100,000	6	273,830	5.2	49.8	12	1,186,142	12.5	87.0
5,000 to 25,000	17	196,002	16.5	35.2	11	165,283	11.4	7.3
1,000 to 5,000	35	68,962	34.0	12.6	23	48,330	23.7	3.5
Under 1,000	45	10,996	43.7	2.4	51	15,625	52.5	1.1
Total	103	549,798	100.0	100.0	97	1,355,384	100.0	100.0

Developed horsepower	South Atlantic				North Central			
	Number of companies	Developed horsepower	Per cent		Number of companies	Developed horsepower	Per cent	
			Companies	Horsepower			Companies	Horsepower
200,000 and over								
100,000 to 200,000	(1)				4	673,257	2.2	57.4
25,000 to 100,000	5	635,615	7.1	76.8	4	234,960	2.2	20.1
5,000 to 25,000	13	152,577	18.6	18.3	18	142,828	8.7	12.2
1,000 to 5,000	15	32,050	21.4	3.9	39	88,225	21.3	7.6
Under 1,000	37	10,390	52.9	1.2	120	31,636	65.6	2.7
Total	70	831,632	100.0	100.0	183	1,171,906	100.0	100.0

[1] One company included in the 25,000 to 99,999 group.
[2] Two companies included in the 25,000 to 99,999 group.

TABLE 25.—*Control of developed water horsepower in different geographical regions, by companies, according to specified size groups in 1923*—Continued

Developed horsepower	South Central				Mountain and Pacific			
	Number of companies	Developed horsepower	Per cent		Number of companies	Developed horsepower	Per cent	
			Companies	Horsepower			Companies	Horsepower
300,000 and over					2	1,288,250	2.0	44.2
100,000 to 300,000	(1)				2	1,060,502	4.1	34.3
25,000 to 100,000					2	384,471	4.1	13.2
5,000 to 25,000	4	405,390	15.4	98.8	10	143,759	6.8	4.9
1,000 to 5,000	5	10,074	19.2	2.1	22	72,380	21.6	2.5
Under 1,000	17	6,428	65.4	1.1	87	20,451	59.8	0.9
Total	26	420,892	100.0	100.0	148	2,916,813	100.0	100.0

[1] Two companies included in the 5,000 to 24,000 group.

More than half of the companies reporting from each of the geographical regions except New England have less than 1,000 horsepower each, but the total horsepower of these companies represents only a small part of the regional total reported, varying from a little less than 1 per cent to more than 2½ per cent of the total installed horsepower. In each region a few relatively large companies have from 50 per cent to about 97 per cent of the total. The only companies having 300,000 horsepower or more operate in the Middle Atlantic States at Niagara Falls, and in the Mountain and Pacific States, where the large water-power resources of the Western mountain ranges and the remoteness from industrial centers favor the development of large public utilities transmitting their power long distances at high voltages. The average horsepower per company was greatest in this mountain and Pacific region, but was nearly equaled by the average for the South Central States, where extensive water-power developments are in progress under conduct of a few large companies.

The companies to whom the commission's schedule was addressed were asked to report also the quantity of undeveloped or potential water-power controlled. Data for the 616 companies reporting indicate an even more marked concentration of control of potential water power in the hands of relatively large companies, as follows:

TABLE 26.—*Control of total developed and undeveloped water power in the United States, by companies, according to specified size groups, in 1923* [1]

Developed horsepower	Number of companies	Developed and undeveloped horsepower	Per cent of total		
			Companies	Horsepower reported to Federal Trade Commission	Estimated potential horsepower of United States [2]
500,000 and over	0	8,310,535	1.5	60.9	23.9
100,000 to 500,000	28	5,005,024	4.6	36.7	14.4
25,000 to 100,000	25	1,223,654	4.1	7.9	3.5
5,000 to 25,000	89	961,708	14.4	5.8	2.7
1,000 to 5,000	151	341,082	24.5	2.0	1.0
Under 1,000	314	101,253	51.0	.6	.3
Total	610	16,062,260	100.0	100.0	47.8

[1] The 616 companies included in the tabulation represent 47.8 per cent of the estimated total potential water horsepower of the country.

[2] Estimated by U. S. Geological Survey at 34,316,000 horsepower.

Nine large companies, as the table indicates, own 50 per cent of the horsepower reported to the commission and about 24 per cent of the total estimated for the United States. The small companies, with less than 1,000 developed horsepower each, representing 51 per cent of the total number of companies reporting, own but six-tenths of 1 per cent of the horsepower reported and only three-tenths of 1 per cent of the total estimated for the United States. Thirty-seven companies, each having 100,000 or more of developed and undeveloped horsepower, control 83.7 per cent of the developed and undeveloped capacity reported and 40 of the estimated United States total.

Analysis of the above data for various geographical regions indicates a similar degree of concentration of control within each region, as follows:

TABLE 27.—*Percentage of control of total potential water power in different geographical regions, by companies, according to specified size groups, in 1923*

Developed horsepower	New England region		Middle Atlantic region		South Atlantic region	
	Companies	Horsepower	Companies	Horsepower	Companies	Horsepower
500,000 and over			(1)		(2)	
100,000 to 500,000	(3)		7.2	71.0	8.6	81.5
25,000 to 100,000	9.7	60.1	4.2	20.2	(4)	
5,000 to 25,000	19.4	20.3	13.4	5.0	28.6	16.0
1,000 to 5,000	34.0	11.2	27.8	2.5	20.0	1.7
Under 1,000	37.9	1.0	45.4	.7	51.4	.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Developed horsepower	North Central region		South Central region		Mountain and Pacific region	
	Companies	Horsepower	Companies	Horsepower	Companies	Horsepower
500,000 and over			(5)		3.4	53.0
100,000 to 500,000	3.2	71.6	11.6	93.4	8.1	28.3
25,000 to 100,000	2.2	9.5			4.0	4.0
5,000 to 25,000	12.0	12.0	(6)		14.0	3.4
1,000 to 5,000	21.3	5.6	24.6	1.5	22.3	1.0
Under 1,000	60.7	1.0	53.9	.1	47.3	.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

[1] One company included in the 100,000 to 500,000 group.
[2] One company included in the 25,000 to 100,000 group.
[3] Two companies included in the 5,000 to 25,000 group.
[4] Two companies included in the 100,000 to 500,000 group.
[5] Two companies included in the 1,000 to 5,000 group.

INCREASE IN CONCENTRATION OF CONTROL IN RECENT YEARS.—Of the 616 companies reporting to the commission, 534 reported their developed water horsepower for the year 1918 as well as for 1923. For the five-year period the total developed horsepower of the 534 companies showed an increase of 54.3 per cent, from 4,216,155 horsepower to 6,504,617 in 1923. The total of 7,305,335 horsepower for 1923 reported by 616 companies, on the other hand, represents an increase of 73.2 per cent over the horsepower reported for 1918 by the 534 companies. That these increases in developed water power dur-

ing the five-year period were greater both in actual amount and in rate for the larger companies is indicated by the following comparison:

TABLE 28.—*Developed water power, by companies, according to specified size groups, in 1918 and 1923* [1]

Developed horse power in 1918 [2]	Number of companies	Developed horsepower		Per cent of increase
		1918	1923	
300,000 and over	3	1,067,321	1,262,335	17.9
100,000 to 300,000	6	1,120,026	2,241,128	100.1
25,000 to 100,000	22	1,121,116	1,745,305	55.7
5,000 to 25,000	53	322,502	705,620	46.0
1,000 to 5,000	122	271,307	455,244	93.9
Under 1,000	327	88,814	115,835	30.1
Total	534	4,230,155	6,526,617	54.3

[1] As reported by 534 identical companies.
[2] The grouping of the companies for both years is based on horsepower in 1918, irrespective of changes in 1923.

Although the smallest percentage of increase was that of 17.9 per cent, shown for the three biggest companies, the large increases shown by the next two size groups as compared with those for the smaller company groups indicates an increased concentration of water power under the control of the larger companies.

The relative concentration of water-power ownership among the 534 companies in 1918 and the 616 companies in 1923 is indicated in the following tabulation:

TABLE 29.—*Percentages of concentration of control of developed water power, by companies, according to specified size group, 1918 and 1923* [1]

Developed horsepower	Number of companies		Per cent of total			
			Companies		Developed horsepower	
	1918	1923	1918	1923	1918	1923
300,000 and over	3	6	0.6	0.9	25.2	33.5
100,000 to 300,000	6	14	1.1	2.3	26.5	37.3
25,000 to 100,000	22	37	4.1	6.0	26.5	16.3
5,000 to 25,000	53	97	9.9	15.7	7.6	10.8
1,000 to 5,000	122	145	22.8	23.5	6.4	4.2
Under 1,000	327	357	61.3	57.9	2.1	1.7
Total	534	616	100.0	100.0	100.0	100.0

[1] Based on data reported to the commission by 616 companies for 1923 and 534 companies for 1918.

A little over 2 per cent of the companies reporting in 1918 controlled 52.4 per cent of the total developed horsepower reported. In 1923 a little over 3 per cent of the companies controlled 67.8 per cent of the horsepower. In the same interval the proportion of control exercised by the smaller companies with less than 5,000 horsepower decreased. The smallest, 84 per cent of the companies reporting in 1918, had 8.5 per cent of the total horsepower reported, while the smallest, 81.4 per cent of those reporting in 1923, had only 5.7 per cent of the total horsepower.

A report of the United States Department of Agriculture made in 1916 indicated that 9 large public-utility interests controlled, through ownership, lease, or management, slightly more than one-third of all the developed water power used in public-service operations in the United States; 18 controlled more than half, and 57 controlled over 72 per cent of the total. In 1924, by a consolidation affecting 2 of the 18 companies mentioned above, and a leasing arrangement affecting 2 others, the original 18 interests were reduced to 16. These 16 companies controlled, in 1924, a total of 4,849,092 installed water horsepower, representing 59.2 per cent of the total water power used in public-service operations in the United States. When the holdings of allied interests of 1 of the 16 companies are added, the total water power owned is increased to 4,787,189 horsepower, or a total of 65.1 per cent of that used in public-utility operations. Thus, according to the department's reports, the control by this small group of large interests has increased markedly during the past eight or nine years.

Section 3. Coal.

The coal reserves of the United States,[1] as estimated in 1922 by the United States Geological Survey, amount to about four and a fifth trillion net tons. Of this supply the estimated quantity within 3,000 feet of the surface (which is the maximum practicable working depth under present methods of mining) was originally about three and a half trillion net tons. From this original reserve, as a result of over 100 years of mining, some sixteen and a quarter billion tons have been produced. The estimated mining losses and wastes, amounting to about one-third of a ton for each ton produced, increase the total exploitation to about twenty-one and one-half billion tons. This represents only a little more than six-tenths of 1 per cent of the original supply and suggests that, even though consumption of coal may continue to increase in giant strides in the future as it has in the past 100 years, the ultimate exhaustion of this national asset is remote.

Of more immediate concern is the fact that the coals of highest rank are being rapidly mined out and will, at the present rate, be exhausted within a comparatively short period, estimated at about 50 years. More than 57 per cent of the original estimated national supply was of the lowest rank (subbituminous and lignite), while only 2 per cent was of the highest rank (anthracite, semianthracite, and semibituminous). The estimated original supply of each of the six grades or ranks of coal in the United States is as follows:

TABLE 30.—*Estimated original quantity of coal of different ranks in the United States* [1]

Rank	Original tonnage	Per cent of total
Anthracite and semianthracite	21,900,000,000	0.8
Semibituminous	50,163,000,000	1.4
Bituminous	1,110,822,000,000	40.8
Subbituminous	1,002,351,000,000	28.2
Lignite	1,037,514,000,000	29.2
Total, all ranks	3,662,810,000,000	100.0

[1] M. R. Campbell, "The Coal Fields of the United States," U. S. Geological Survey, Professional Paper 100-a, 1922.

[2] Excluding Alaska.

VALUE OF COAL RESOURCES.—The lack of data for estimating even approximately the money value of the Nation's natural resources has already been pointed out. In the case of coal, two official estimates which are available differ radically. The first estimate, that of the Census Bureau, is based upon the actual investment in coal mining as reported to the bureau in 1920. The second estimate, which was made by the engineers' advisory committee of the United States Coal Commission, is arrived at by capitalizing the reported average earnings of the coal-mining industry for the years 1920 and 1921 as a basis for the valuation of present operating equipment and of operating reserves sufficient to last not to exceed about 40 years. The remainder of the tonnage in the ground which will be available for production 40 years hence is treated by the engineers' committee as "reserves." The value of these reserves is determined by the application of prices paid in "actual sales of virgin areas where such sales of recent date are available and sufficient to justify their general employment in the estimates, or lacking that on the present value of the reserve coal at the present rates of royalty, but considered as deferred for the life of the operating lands." The total valuation of the committee is the sum of the valuations placed upon "operating properties" and "reserves."[9] The two valuations are as follows:

TABLE 31.—*Estimated value of coal resources of the United States*

Authority	Anthracite	Bituminous	Total
Bureau of Census	$433,898,039	$1,904,450,123	$2,338,348,162
United States Coal Commission:			
Present operations	843,000,000	6,286,214,000	7,129,714,000
Reserve tonnage	142,000,000	5,156,852,000	5,303,060,000
Total	985,000,000	11,443,066,000	12,432,774,000

Notwithstanding the fact that the engineers' committee in its estimates used less than half of the tonnage estimated by the United States Geological Survey as remaining in the ground in 1920,[10] the valuation placed upon operating properties and operating reserves is nearly twice that reported by the Bureau of the Census for anthracite and more than three times that of the census for bituminous coal. These valuations of the engineers' committee are probably excessive because of the fact that the two-year period, 1920–21, for which earnings were capitalized in determining the value of operating properties, occurring at the end of the war-time boom and the beginning of the postwar slump, was too short properly to reflect the effect of widely fluctuating earnings such as those experienced prior to, during, and since the war. In addition, the high value placed upon reserves is undoubtedly due to the application of actual sale values or of royalties paid during or at the end of the war-time inflation for a small portion of the best reserves, to the total tonnages in the various fields, much of which is so inaccessible, or otherwise so undesirable, as to have little or no present market value. This method ignores the

[9] "Valuation of coal-mining properties in the United States." Report of the engineers' advisory committee of the United States Coal Commission, pp. 1–3.
[10] "Valuation of coal mining properties in the United States," engineers' advisory committee of the U. S. Coal Commission, p. 5.

fact that natural resources have money value largely because of their scarcity or relative accessibility rather than because of their abundance. The true value of present operating equipment and reserves more or less definitely attached probably lies somewhere between the census figure and that of the engineers' committee, but nearer to that of the census than to that of the committee.

Schedules addressed to coal companies by the commission in the course of the present inquiry elicited little or no information on the valuations of anthracite reserves. Valuations of their bituminous reserves, however, were reported by 413 companies controlling about 13,000,000,000 tons of reserves. The bases of these valuations varied widely, and the average values reported ranged from less than 1 cent per ton in Montana to over 74 cents per ton in Michigan. The average valuation per ton for the 413 companies was 4.5 cents, and if this is applied to the estimated 32,000,000,000 tons of bituminous available for mining within the next 40 years (see p. 88), a total valuation of $1,440,000,000 would be indicated. This compares with the census estimate of $1,904,450,123 (see Table 31).

World Position of the United States.—In the size and self-sufficiency of its coal resources the United States easily leads the world. Data compiled by the United States Geological Survey in 1922 place the total known coal reserves of the world [11] at some eight and a fifth trillion net tons.[12] The five principal coal owning and producing countries of the world hold the following percentages of this total supply: United States, 51.9 per cent; Canada, 16.8 per cent; China, 13.3 per cent; Germany, 5.7 [13] per cent, and Great Britain and Ireland, 2.6 per cent. With this preponderance of supply the United States provides not only for its own needs but for substantial proportions of the needs of other nations. Annual exports of bituminous coal from this country range from 12,000,000 to 39,000,000 net tons, while shipments of anthracite are normally about 5,000,000 net tons. Practically all of the anthracite exported and about half of the bituminous go to Canada. The remainder of the bituminous shipments go principally to England, Italy, France, Netherlands, Argentina, and Cuba. Imports of coal into the United States consist mainly of about 1,300,000 tons of bituminous shipped from Canada into Western States. These shipments result merely from the greater proximity of Vancouver Island and Alberta coal to these States.

Control of Coal Reserves in the United States.—Although bituminous coal is produced in 31 States of the United States, anthracite is mined, with unimportant exceptions, in Pennsylvania only. Over 95 per cent of the original anthracite deposits of the country was located within an area of about 485 square miles in this State. The relative geographical distribution of anthracite and bituminous deposits is naturally reflected in the ownership and operation of these deposits. In the operation of anthracite coal deposits the United States Geological Survey reports about 175 companies as against a total of over 12,000 companies engaged in bituminous production. Furthermore, the survey shows that 13 large companies produce

[11] Including all kinds of "ranks" within 6,000 feet of the surface which is regarded as the maximum practicable working depth for mining.

[12] Based on figures compiled in 1913 for the Twelfth International Geological Congress, reprinted with revisions by the U. S. Geological Survey, 1922.

[13] Includes reserves of the Saar Valley, now controlled by France, and those of Upper Silesia, the major portion of which are now assigned to Poland.

nearly 80 per cent of the anthracite coal, while bituminous production is more widely distributed.

In the ownership of the coal reserves, data secured by the Federal Trade Commission and the United States Coal Commission indicate a somewhat analogous relative concentration of anthracite and bituminous. Estimates of the Coal Commission attribute control of about 88 per cent of the total recoverable anthracite tonnage to 15 large companies. Contrasted with this, the data furnished the Federal Trade Commission by bituminous coal companies in the course of the present inquiry indicate that about 72 per cent of the recoverable bituminous tonnage is controlled by about 6 per cent of the companies. The bases of these estimates and the detailed analysis of them are recited below.

ANTHRACITE DISTRIBUTION.—As already stated, over 95 per cent of the original supply of American anthracite was located in an area of about 485 square miles in Pennsylvania. The remaining 4 or 5 per cent is widely scattered in Rhode Island, Virginia, Arkansas, Colorado, and New Mexico. The Rhode Island beds are too thin to be commercially valuable at the present time. The deposits of Virginia, Arkansas, Colorado, and New Mexico are being exploited to some extent, but their production is almost negligible in comparison with those of Pennsylvania. The United States Geological Survey estimates that twenty-one of the twenty-two billions of anthracite originally in the ground were in the Pennsylvania area.[14] Of this quantity, the United States Coal Commission data indicate that about 16,340,000,000 gross tons (2,240 pounds) are still in place in the Pennsylvania measures, but that only 8,973,000,000 tons can be recovered under present mining methods, of which only 3,907,900,000 tons are available within the next 40 years. On the 3,907,900,000 tons available within the next 40 years the United States Coal Commission places a valuation of $843,500,000, while a value of $146,400,000 is assigned to the remaining reserve tonnage. As already stated (see p. 83) these valuations are probably very high.

Data secured for the United States Coal Commission in 1923 by D. C. Ashmead, anthracite mining engineer, and made available to the Federal Trade Commission for the present inquiry, indicate that about 78 per cent of the total Pennsylvania anthracite in the ground and an equal amount of the recoverable tonnage is owned or controlled by eight companies closely affiliated in interest with the railroads tapping the anthracite region. This control takes the form either of direct ownership or of control under lease. Thirty years ago, according to an estimate prepared by William Griffith in 1896, which was regarded as authoritative, the so-called railroad coal companies owned or controlled under contract 96.3 per cent of the estimated total anthracite reserves, of which 90.9 per cent was controlled by ownership and 5.4 under contract. Subsequently the Pennsylvania Railroad Co., which was estimated to control 6.2 per cent of the country's anthracite coal reserves, disposed of its anthracite interests, and, in addition, certain contracts (the so-called 65 per cent contracts) by which the railroad coal companies purchased the production of independents at the mine mouth, were declared by the courts to be in restraint of trade and therefore invalid. As a result of these and other occurrences the proportionate control of the railroads has been

[14] M. R. Campbell "Coal Fields of the United States," p. 24.

reduced. The following table, based on the figures of the United States Coal Commission, shows the reported degree of control at present exercised by the eight principal coal companies (known as the "railroad companies") and large independents over the country's future supply of Pennsylvania anthracite:

TABLE 32.—*Control of anthracite coal reserves in the United States, by companies, according to specified groups, in 1923* [1]

Group	Area		Total remaining reserve		Recoverable tonnage [2]	
	Acres	Per cent of total	Tons	Per cent of total	Tons	Per cent of total
Eight "railroad" coal companies	216,626	70.4	13,746,700,000	78.0	6,971,470,000	77.7
Seven large independents	27,905	9.1	1,674,330,000	9.6	863,060,000	9.6
All other [3]	62,985	20.5	2,019,117,000	12.4	1,119,230,000	12.5
	307,536	100.0	16,340,147,000	100.0	8,973,660,000	100.0

[1] From estimates made by D. C. Ashmead for the United States Coal Commission.
[2] Under present mining conditions.
[3] Approximately 160 companies.

As the table indicates, the eight principal companies and the seven interests classed as large independents together control 79.5 per cent of the land area of Pennsylvania anthracite, 87.6 per cent of the total tonnage remaining in the ground and 87.5 per cent of the tonnage recoverable therefrom. Notwithstanding the decreased control of the eight so-called railroad coal companies since 1896, they still control substantially four-fifths of the supply, and, together with a few large independents, control exactly seven-eighths of the estimated recoverable tonnage. Furthermore, the above table shows only the lands and tonnage of the eight companies held for their own operation, or as reserves. In addition they control and lease to others 13,793 acres of land, or 4.5 per cent of the total land area, estimated to contain 188,200,000 tons of recoverable coal, or 2.1 per cent of the total supply, so that their actual ownership and control amounts to 74.9 per cent of the land and 79.8 per cent of the recoverable reserves.

Other things being equal, this proportionate control by the so-called railroad companies will increase as the present reserves near exhaustion. That their supply is being mined out less rapidly in proportion to their holdings than those of the smaller companies is indicated in the following estimate prepared for the United States Coal Commission:

TABLE 33.—*Relative exhaustion of anthracite reserves of railroad coal companies and all others (January 1, 1923)* [1]

Item	Railroad coal companies		All others		Total
	Quantity	Per cent	Quantity	Per cent	
Area of coal-bearing lands (acres)	216,620	70.4	90,960	29.6	307,586
Original estimated tonnage in ground (tons)	16,970,700,000	76.5	4,890,650,000	23.5	20,810,360,000
Produced to end of 1922	1,224,050,000	71.7	770,324,000	28.3	2,721,970,000
Exhausted to end of 1922	3,173,000,000	71.0	1,297,212,000	29.0	4,470,212,000
Remaining in ground	13,740,700,000	78.0	3,893,447,000	22.0	16,340,147,000
Recoverable from reserves	6,971,470,000	77.7	2,002,220,000	22.2	8,973,690,000

[1] From estimates of Dover C. Ashmead for the United States Coal Commission.

The eight railroad companies' holdings, as the table indicates, were estimated to embrace 76.5 per cent of the tonnage originally in the ground, but had produced to the end of 1922 only 71.7 per cent of the total tonnage produced and had borne only 71 per cent of the estimated exhaustion of the region, leaving these companies in possession of 78 per cent of the tonnage remaining and 77.7 per cent of the estimated recoverable supply. Thus as the region approaches exhaustion the control of these leading companies over the supply remaining will continue to increase unless the holdings of all others cease to produce more than their proportionate share of future output.

Of interest in this regard is a tabulation prepared for the United States Coal Commission showing the relative proportions of the present Pennsylvania anthracite supply "Operated" (i. e., now attached to mining operations and workable from them) and "Held in reserve" (i. e., undeveloped), as follows:

TABLE 34.—*Relative proportions of present Pennsylvania anthracite supply operated and held in reserve*

Held by—	Area			Recoverable tonnage		
	Operated	Held in reserve	Total	Operated	Held in reserve	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Railroad companies	57.6	12.5	70.1	59.8	17.9	77.7
Independent companies	20.5	1.0	21.5	13.3	2.2	15.5
Nonoperating companies		8.4	8.4		6.8	6.8
Total	78.1	21.9	100.0	73.1	26.9	100.0

Of the total anthracite area, as the table indicates, 78.1 per cent is in lands that are definitely attached to present mining properties and are for convenience referred to as "operated," although it may not in all cases be completely recoverable from present workings. The remaining 21.9 per cent is held in reserve for future development. Of the recoverable tonnage 73.1 per cent is recoverable from present operations and 26.9 per cent is held for future development. The superior relative position of the eight principal companies as regards reserves is apparent from the fact that these companies, controlling 70.1 per cent of the total area, are operating 57.6 per cent and holding 12.5 per cent in reserve, while the other operating companies, controlling 21.5 per cent of the total area, are operating 20.5 per cent and holding but 1 per cent in reserve. Similarly, of the total recoverable tonnage, the eight companies, controlling 77.7 per cent, are operating 59.8 per cent and holding in reserve 17.9 per cent, while the other operating companies, controlling 15.5 per cent of the tonnage, are operating 13.3 per cent and holding only 2.2 per cent of it in reserve.

CONTROL IN DIFFERENT GEOGRAPHICAL REGIONS.—Two of the four geographical regions in which Pennsylvania anthracite occurs, namely, the northern (or Wyoming) and the eastern middle (or Lehigh) are being rapidly worked out, and it is estimated that within 40 years the burden of absorbing their decreasing production will fall upon the western middle and southern regions, which contain

74 per cent of the estimated recoverable tonnage. The relative concentration of control within each of these regions is shown in the following table:

TABLE 35.—*Control of anthracite deposits in different geographical regions, by specified groups, in 1923*

Region	Total recoverable tonnage		Eight railroad companies			All other operators			Non-operating companies, reserve
	Tons	Per cent of total	Operated	Reserve	Total	Operated	Reserve	Total	
			Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Northern	5,124,800,000	23.7	18.2	1.1	19.3	3.0	.....	3.0	0.8
Eastern middle	181,870,000	2.0	1.4	.2	1.6	.6	.....	.6	.....
Western middle	1,857,220,000	21.8	16.4	1.4	17.8	2.7	[1] 0.1	3.8	.3
Southern field	4,519,000,000	50.4	22.6	16.3	39.0	5.3	2.1	7.0	2.6
Not included in report to United States Coal Commission	192,100,000	2.1	.....	.....	.....	.....	.....	.....	2.1
Total	9,973,990,000	100.0	58.6	17.9	77.7	11.3	2.2	15.5	6.8

[1] Slightly more than five-hundredths of 1 per cent.

The dominance of the eight so-called railroad coal companies in all fields, both in tonnage operated and tonnage held in reserve (i. e., tonnage not definitely attached to, or subject to exploitation from, any present mining operation), is strikingly shown by the foregoing percentages. The table shows that the only field in which any considerable part of the total recoverable tonnage is held in reserve for future development is the southern field. The total held in reserve in all fields amounts, as previously stated, to 26.9 per cent of the total recoverable tonnage. In the southern field alone the tonnage held in reserve represents 20.9 per cent of the total recoverable tonnage, three-fourths of which is controlled by the eight companies.

BITUMINOUS DISTRIBUTION.—Bituminous, subbituminous, or lignite deposits exist in 31 States of the United States, but occur principally in Pennsylvania, West Virginia, Illinois, Ohio, Kentucky, Alabama, and Indiana. Although the estimated total original deposits in the United States are placed at slightly less than three and one-half trillions of net tons, the United States Coal Commission estimates the quantity of present value as only one and one-half trillions and the quantity actually available for mining within 40 years as only about 32,000,000,000 tons. The latter are distributed geographically as follows:

State	Tonnage available for mining within 40 years	Per cent
Pennsylvania	8,920,000,000	27.8
West Virginia	5,540,000,000	17.3
Illinois	4,920,000,000	15.4
Ohio	2,640,000,000	8.3
Kentucky	2,300,000,000	7.2
Indiana	1,840,000,000	5.7
Alabama	1,020,000,000	3.2
All other States	5,320,000,000	16.7
Total	32,000,000,000	100.0

On the 32,000,000,000 tons the Coal Commission placed a valuation of a little over $6,000,000,000, while the remaining trillion and a half tons which will be of value after 40 years are estimated at a little over $5,000,000,000. As already stated (see page 83), these estimates of the Coal Commission greatly exceed those of the Bureau of Census and are probably very high.

Data secured by the Federal Trade Commission from individual coal companies indicate a concentration of ownership of bituminous reserves approaching, though not equaling, that of anthracite reserves. Schedules requesting information on the quantities of recoverable coal owned were addressed to 1,749 bituminous companies (including a few who mine lignite). Replies were received from 499 companies, of which 427 represented a 1923 production of 166,163,362 tons, or about 29.4 per cent of the 564,156,917 tons total United States bituminous output in that year. In tabulating these replies the reserves reported by subsidiary or controlled companies were assigned to the parent company wherever such control could be discovered. It is probable, however, that some of the companies tabulated as "independent" are in fact controlled by other companies, and for this reason the concentration of ownership of coal reserves indicated must be taken as a minimum rather than an actual one.

The data for 499 companies reporting to the commission were grouped on a basis of the quantity of their recoverable tonnage and indicate the extent of concentration existing in the control of the Nation's bituminous reserves, as follows:

TABLE 36.—*Control of bituminous coal reserves in the United States by companies, according to specified size groups, in 1923* [1]

Recoverable tonnage	Number of companies	Recoverable tonnage reported	Per cent of total		
			Companies	Tonnage reported to Federal Trade Commission	Estimated recoverable tonnage in United States [2]
		Thousand tons			
Over 500,000,000	4	5,295,233	0.8	41.0	19.7
100,000,000 to 500,000,000	36	4,705,050	5.2	31.1	[4.9]
75,000,000 to 100,000,000	7	627,821	1.4	4.1	1.9
50,000,000 to 75,000,000	10	611,410	2.0	4.0	1.9
25,000,000 to 50,000,000	29	861,094	5.8	5.4	3.1
15,000,000 to 25,000,000	34	683,141	7.3	4.5	2.1
10,000,000 to 15,000,000	32	380,805	6.6	2.5	1.2
5,000,000 to 10,000,000	68	480,050	13.8	3.1	1.5
Under 5,000,000	280	509,057	57.2	3.3	1.6
Total reported	[3] 499	15,334,267	100.0	100.0	47.0

[1] The companies included in this estimate represent 47.0 per cent of the total United States estimated bituminous tonnage available for mining within 40 years and more than 20 per cent of the total United States bituminous production in 1923.

[2] Tonnage available for mining within 40 years estimated at 32,000,000,000 tons.

[3] The total production reported by 427 of these companies for 1923 was 166,163,362 tons. The 72 companies not reporting production reported a total recoverable tonnage of 1,688,784,000 tons, or about 10.7 per cent of all recoverable tonnage reported.

The recoverable tonnage reported by the 499 companies was equal to 47.9 per cent of the estimated total available for mining within the next 40 years. If the distribution of reserves among these companies be taken as typical of the distribution for all bituminous companies, a very high degree of concentration is indicated. Less than 1 per cent of the reporting companies, as the table shows control 41 per cent of the total tonnage reported, while a bare 6 per cent of the companies control over 72 per cent. The small companies, with recoverable tonnage less than 5,000,000 tons each, comprise over 57 per cent of the total number of companies reporting but control only 3.3 per cent of the reported tonnage. Companies with recoverable tonnage less than 10,000,000 tons each comprise 71 per cent of the total number of companies but control only 6.4 per cent of the tonnage.

The holdings of the 499 companies reporting to the commission are probably more representative for the intermediate size groups than for the largest and smallest size groups, since a somewhat disproportionate number of the largest companies submitted information and many of the smallest companies failed to reply to the commission's schedule. But even though the concentration of ownership indicated may be exaggerated at the extremes, the table indicates that 30 large companies actually control some 11,000,000,000 tons, or approximately 35 per cent, of the estimated total United States tonnage available for mining within the next 40 years. Of these 30 companies the 4 largest control more than 6,000,000,000 tons, or about 20 per cent of the Nation's total.

Control in Different Geographical Regions.—The estimated 32,000,000,000 of tons of bituminous, subbituminous, and lignite available for mining within the next 40 years may be divided into regions as follows:

Region	Recoverable tonnage	Per cent of total
Northeastern (Pennsylvania, West Virginia, Maryland, and Virginia)	15,264,000,000	47.7
Central (Michigan, Ohio, Indiana, Illinois, and Iowa)	9,652,000,000	30.2
Southeastern (Alabama, Tennessee, and Kentucky)	3,712,000,000	11.6
Western[1] (Arkansas, Kansas, Missouri, Oklahoma, Texas, Montana, Colorado, Wyoming, New Mexico, Utah, and Washington)	3,372,000,000	10.5
	32,000,000,000	100.0

[1] Includes 96,000,000 tons from miscellaneous States.

Of these estimated totals for each region the tonnage reported to the commission represented the following proportions: Northeastern, 54.1 per cent; central, 31.2 per cent; southeastern, 52.4 per cent; and western, 62.9 per cent. The companies reporting to the commission have been assembled for each of these regions and their relative proportions of tonnage tabulated as follows:

TABLE 37.—*Control of recoverable bituminous[1] deposits in various producing regions by companies according to specified size groups in 1922*

[In thousands of net tons]

Recoverable tonnage	Northeastern (Pennsylvania, West Virginia, Maryland, and Virginia)				Central (Michigan, Ohio, Indiana, Illinois, and Iowa)			
	Number of companies	Recoverable tonnage reported	Per cent of total		Number of companies	Recoverable tonnage reported	Per cent of total	
			Companies	Tons			Companies	Tons
Over 500,000	4	4,408,218	1.6	54.1				
100,000 to 500,000	10	1,890,284	4.0	22.8	9	1,654,342	7.1	55.0
75,000 to 100,000	3	290,483	1.2	3.4	4	347,126	3.2	11.5
50,000 to 75,000	3	182,547	1.2	2.2	3	184,134	2.4	6.1
25,000 to 50,000	13	425,267	5.1	5.1	8	308,300	7.1	10.2
15,000 to 25,000	18	343,434	7.1	4.2	12	226,821	9.5	7.5
10,000 to 15,000	18	197,616	7.1	2.4	6	62,004	4.7	2.1
5,000 to 10,000	35	232,010	13.8	2.8	11	77,205	8.8	2.6
Under 5,000	149	245,251	58.0	3.0	73	146,702	57.2	4.9
Total	253	8,264,717	100.0	100.0	125	3,007,680	100.0	100.0

Recoverable tonnage	Southeastern (Alabama, Tennessee, and Kentucky)				Western (Arkansas, Kansas, Missouri, Oklahoma, Texas, Montana, Colorado, North Dakota, Wyoming, New Mexico, Utah, and Washington)			
	Number of companies	Recoverable tonnage reported	Per cent of total		Number of companies	Recoverable tonnage reported	Per cent of total	
			Companies	Tons			Companies	Tons
Over 500,000	2	[2] 1,450,481	5.0	74.5	6	1,631,183	5.8	72.1
100,000 to 500,000	1				3	177,051	4.4	8.3
50,000 to 75,000	1	192,938	6.5	16.0	4	119,180	5.0	6.0
25,000 to 50,000	3				5	100,719	7.4	4.8
15,000 to 25,000	4	73,794	8.5	3.8	6	85,242	8.5	3.7
10,000 to 15,000	7	82,407	11.5	4.2	11	82,569	10.2	3.5
5,000 to 10,000	10	70,531	16.4	3.6	33	46,901	28.5	2.3
Under 5,000	33	76,440	54.1	3.9				
Total	61	1,946,591	100.0	100.0	68	2,122,973	100.0	100.0

[1] Includes both lignite and subbituminous.
[2] Groups combined to avoid possibility of identification of individual companies.

The table indicates that, for the tonnage reported, the greatest concentration of ownership exists in the northeastern and southeastern regions. In the northeastern region 14 companies, or 5.6 per cent of those reporting, control 76.9 per cent of the tonnage reported, while four companies, or 1.6 per cent of the total reporting, control 54.1 per cent. The actual tonnage reported by the 14 companies represents 41.6 per cent of the estimated total tonnage of this region available for mining within the next 40 years, while the quantity reported by the four largest companies represents 29.3 per cent of the total available. In the southeastern region seven companies, or 11.5 per cent of those reporting, control 84.5 per cent of the tonnage reported, while three companies alone control 74.5 per cent. The tonnage reported by the seven companies represents 44.3 per cent of the total available tonnage estimated for the region, while that reported by the three largest companies represents 39 per cent.

Section 4. Iron ore.

Iron is widely distributed in the rocks and soil of the earth's crust, but, in order that any mineral matter may be called iron ore, it must contain a substantial percentage of iron. In different parts of the world the percentage of iron in ores actually being mined ranges probably from over 70 per cent to less than 25 per cent. The iron content is only one factor in its availability; other important factors are the composition of the mineral with respect to other substances and the costs of mining and of transporting to the place of consumption. The total available reserve of iron ore in the United States has been estimated recently at about 8,000,000,000 tons.[15] Only a limited amount of this ore is of a high grade, containing 50 per cent or more of iron.

The present rate of production of iron ore in the United States is about 75,000,000 tons a year. The rate of world production is about 170,000,000 annually. At this rate the above-noted iron-ore reserve in the United States would be mined out in somewhat over 100 years unless other large reserves are discovered. There has been a continuous increase in geologists' estimates of the national iron ore reserve. In 1909 the total known reserve was estimated at around four and one-half billion tons, in 1914 at from 5.2 to 7.55 billion and in 1924 at 8,000,000,000 tons. This increase is apparently due in part to the inclusion of lower-grade ore deposits and in part to the discovery of additional ore bodies.

The bulk of the high-grade ores (with 50 per cent or more iron content) is in the States of Minnesota, Michigan, and Wisconsin, known as the lake district, and is being mined out very rapidly. It is estimated that with from fifty to sixty million tons shipped annually from this district this reserve will be depleted in 20 to 30 years, while the reserve of lower-grade direct smelting ore will last another 10 or 15 years. The reserves of the still lower-grade ores are very great, however, and will be utilized as the higher grades are exhausted. It has been estimated that, although the present known reserve of comparatively high-grade ore in the lake district is only about 3,000,000,000 tons, the potential reserve of lower-grade ores eventually available probably exceeds 70,000,000,000 tons.

The estimated available reserve of 8,000,000,000 tons in the United States is distributed by districts and in grades, as follows:[16]

District	Available reserve	Average grade
	Millions of tons	*Per cent of iron*
Lake (Minnesota, Michigan, and Wisconsin):		
High grade	2,000	50
Other	1,000	45
Eastern (New York):		
Magnetite	1,000	55–60
Clinton	1,000	35–45
Southern (Alabama and Tennessee):		
Clinton	1,000	30–40
Brown	1,000	25–40
Others	500	40–60
Western (Utah, Wyoming, California, Texas, and Washington)	500	40–55

[15] Iron Age, November 6, 1924, p. 1204. [16] Iron Age, November 6, 1924, p. 1248.

Although there is a considerable quantity of high-grade ore in the eastern district, which includes the Adirondack region of northeastern New York, the principal high-grade deposits are in the lake district. The southern and western districts are almost entirely lower grade ores. At present the shipments from regions other than the lake district are comparatively small. About 84 per cent of the 1922 shipments came from the lake district, 10 per cent from Alabama, less than 1 per cent from New York State, and 5 per cent from the balance of the country.

VALUE OF IRON-ORE RESERVES.—The value of iron-ore reserves, like that of other natural resources, is essentially conjectural and is limited by the possible future discoveries of ore deposits as well as by the destiny of ore uses and demands. It is further limited by the variations in iron content of different ores and the conditions of production and transportation. An ore reserve of low grade, no matter how abundant, may have comparatively little value; indeed, the fact of great abundance might tend to reduce the total value.

Of the 27 iron-ore companies reporting to the commission, 19 assigned a value to their ore reserves. The value assigned was in each case a mere total and there was little uniformity in the bases of valuation used. Eight companies, representing 88 per cent of the total tonnage for which valuations were reported, based their valuations on estimates of State tax commissions. The per-ton values of these companies ranged from 5 to 69 cents and averaged 48.3 cents. The reserves of two companies were estimated by the Bureau of Internal Revenue at 38 and 42 cents per ton, averaging 39.3 cents. Other methods of estimate were on a royalty basis, on book value, land-tax value, "normal value of $50 per acre," on a basis of probable net profit, and on an "independent engineer's report." The values given under these different methods varied from $1 on the probable profit basis to as low as 4 cents on the "$50 per acre" basis. Three companies did not state the basis of their valuations. The very wide variations of value per ton shown, therefore, and the diversity of method of estimates used make of doubtful merit any estimate of the total value of the national iron-ore deposits based on the returns of these 19 companies. The average value per ton assigned to the reserves of the 19 companies was 47 cents. If this value be applied to the 8,000,000,000 tons of estimated known iron-ore reserves in the United States the resulting total valuation would be $3,760,000,000, but this is apparently much too high.

Of the 19 companies reporting, the larger companies valued their reserves at a higher average per-ton figure than the smaller ones; valuations ranged from an average of 48.6 cents per ton for companies owning over 25,000,000 tons each, to 21.7 cents for companies with less than 1,000,000 tons in reserve, as the following tabulation indicates:

Group (known reserves)	Reported reserves	Reported value of reserves	Average value per ton of reserves
	Tons		*Cents*
Over 25,000,000	920,730,548	$444,471,283	48.6
5,000,000 to 25,000,000	60,040,219	18,474,766	30.8
1,000,000 to 5,000,000	14,713,747	4,919,942	33.4
Under 1,000,000	2,116,360	459,000	21.7
Total reported	997,571,000	468,234,983	47.0

The 19 companies reported ownership of nearly a billion tons, or about 12½ per cent of the estimated total reserves. As the table shows, the valuations were lower for the smallest companies than for the largest ones.

World Position of United States.[17]—The United States is estimated to have the largest iron ore reserve in the world; Brazil and France rank second and third with estimates of seven and one-half and seven billion tons, respectively. The Brazilian reserve is high grade hematite and magnetite ore, with an iron content of 58 to 62 per cent. The French ore, however, is of a lower grade, with a 25 to 50 per cent iron content.

Of the estimated total world reserve of 42.8 billion tons, the United States owns nearly one-fifth, as the following tabulation from the Iron Age shows:

Table 38.—*Iron ore reserves of the world* [1]

Country	Actual reserve	Estimated annual production	Country	Actual reserve	Estimated annual production
	Million tons	*Tons*		*Million tons*	*Tons*
Europe:			Oceanica:		
United Kingdom	2,250	15,000,000	Australia	400	400,000
Norway	350	1,000,000	Borneo	100	
Sweden	2,000	5,000,000	Philippine Islands	100	
Germany	1,000	7,500,000			
France	7,000	35,000,000	Total Oceanica	600	500,000
Spain	700	10,000,000			
Austria	250		South America:		
Russia	1,000	10,000,000	Venezuela	400	00,000
Rest of Europe	700	1,000,000	Chile	300	100,000
			Brazil	7,500	
Total Europe	15,250	86,000,000	Total South America	8,200	100,000
Asia:					
China and Korea	1,000	2,500,000	North America:		
India	600	600,000	Newfoundland	4,000	1,500,000
Japan and Chosen	50	600,000	Canada	200	200,000
			United States	6,000	75,000,000
Total Asia	1,650	3,700,000	Mexico	100	
			Cuba	2,150	1,000,000
Africa:			Porto Rico	800	
North Africa	200	1,500,000			
South and West	200		Total North America	16,350	77,200,000
Total Africa	450	1,500,000	Total reserve	42,500	169,000,000

[1] The Iron Age, Nov. 15, 1924; p. 1285.

In 1922 the United States exported 602,000 long tons of iron ore, but imported 1,124,000 tons, imports thus exceeding exports by almost 87 per cent. For the five years 1918–1922, inclusive, however, the exports were 4,440,000 tons, as against imports of 3,977,000 tons.[18]

Control of Iron-Ore Reserves.—The United States Steel Corporation is by far the most important single factor in the ownership of iron-ore reserves in the United States. Its proportion of the total reserves has been variously estimated at from about one-half to more than three-fourths. In 1912 accountants for a Senate committee (Stanley committee), investigating the organization and the influence of the Steel Corporation, estimated that the total reserves of the United States were 4.5 billions of tons, and that of this total the

[17] Iron Age, Nov. 13, 1924, p. 1280.
[18] Mineral Resources of the U. S. in 1922, United States Geological Survey, p. 54A.

corporation owned 56 per cent, or 2.5 billions of tons.[18] Olin R. Kuhn, of the Donner Steel Co., in an article in the Iron Age of November 6, 1924, states that about half of the ore reserve of the Lake Superior district is to-day owned or leased by the United States Steel Corporation and its largest competitor, the Bethlehem Steel Corporation.

Data on ore reserves reported to the commission were fragmentary. Reports were received from some, but not all, of the ore-owning subsidiaries of the United States Steel Corporation and of the Bethlehem Steel Corporation. More complete reports were received from 25 other companies. Of the 1.7 billions recoverable tonnage reported by the 27 companies, 92.0 per cent was reported by 4 companies, including the 2 principal companies. The relative distribution of reserve tonnage among the reporting companies was as follows:

TABLE 39.—*Control of reported iron ore reserves in the United States, by companies, according to specified size groups, in 1923* [1]

Recoverable tonnage	Number of companies	Recoverable tonnage reported (in millions of long tons)	Per cent of total	
			Companies	Recoverable tonnage reported
Over 25,000,000 each	4	1,538	15.9	92.9
5,000,000 to 25,000,000	10	94	37.0	5.7
1,000,000 to 5,000,000	10	21	37.0	1.3
Under 1,000,000	3	2	11.0	0.1
Total	27	1,655	100.9	100.0

[1] Based on data received by the commission from 27 companies.

The total tonnage reported includes about 20 per cent of the 8,000,000,000 tons of total reserves estimated for the United States.

Section 5. Copper ore.

The total known copper ore reserves of the United States are estimated by the commission, on a basis of data secured from various sources, at over 1,588,000,000 tons. This estimate represents the reserves of 138 companies either reported to the commission or listed in Weed's Mines Handbook. So far as it was practicable to ascertain, these companies have all of the important known reserves in this country.

Thirty-nine per cent of the reserves reported are in Arizona, 25 per cent in Utah, and 11 per cent in Michigan. These three States thus have about three-fourths of the estimated United States total.

At the 1923 rate of copper ore production, amounting to about 45,000,000 tons, the 1,588 million odd tons of estimated known reserve would be entirely depleted in somewhat under 40 years. The average annual production for 1921, 1922, and 1923, however, was only about 28,000,000 tons, at which rate the reserve would not be exhausted for nearly 60 years. As in the case of other mineral ore

[18] Stanley commission accountant's report, Mar. 7, 1912, p. 500.

resources, the estimates of reserves are increasing through discoveries of deposits and through the use of ores with lower metal content which may be made possible by improved mining and refining processes and by economies in production or by increases in price. No estimate has been made as to the potential copper reserves of the country.

VALUE OF COPPER-ORE RESERVES.—Seventeen companies, owning about 10 per cent of the estimated total copper reserve, reported to the commission the valuations which they place on their copper-ore deposits. These valuations ranged from as low as 5 cents a ton to as high as 92 cents a ton, indicating not only ore bodies of widely different character but also widely different opinions as to the basis for determining copper-ore values. The average value per ton of reserve reported was about 84 cents. This value applied to the estimated 1,588,000,000 tons of reserve ore in the United States would give a total valuation of $1,334,187,000.

WORLD POSITION OF THE UNITED STATES.—No adequate statistics are available on the copper-ore resources of foreign countries. In 1915 the United States produced about 60 per cent of the world output for that year. Europe produced 13 per cent, Canada and Mexico 8, South America and Cuba 7 per cent, and other countries 12 per cent. The production of the United States in 1921 was over 13,000,000 tons, in 1922 over 26,000,000, and in 1923 over 45,000,000 tons.

CONTROL OF COPPER-ORE RESERVES.—Only a few of the copper companies to which the commission's schedules were addressed supplied the requested data on the quantity of ore reserves owned or leased. In Weed's Mines Handbook, however, estimates are given for all of the important companies failing to report to the commission. It is believed that practically all of the known reserve tonnage is covered in the estimate below. This estimate, as already stated, amounts to 1,588,000,000 tons owned by 138 companies. Nearly half of the reserve was controlled by four large companies. The relative distribution of control among companies of specified sizes was as follows:

TABLE 40.—*Control of estimated copper-ore reserves in the United States, by companies, according to specified size groups, in 1923* [1]

Recoverable tonnage	Number of companies	Recoverable tonnage reported	Per cent of total	
			Companies	Tonnage
Over 100,000,000 each	4	721,781,000	2.9	45.4
50,000,000 to 100,000,000 each	6	414,000,000	4.3	26.1
25,000,000 to 50,000,000 each	6	192,000,000	4.3	12.1
10,000,000 to 25,000,000 each	12	103,421,000	8.7	10.5
5,000,000 to 10,000,000 each	6	33,811,000	4.3	2.1
Under 5,000,000 each	104	58,894,300	75.4	3.7
Total	138	1,588,317,300	100.0	100.0

[1] Based on estimates of 22 companies reporting to the commission and on estimates for 116 other companies listed in Weed's Mines Handbook.

Four companies holding deposits of over 100,000,000 tons each are estimated to control over 721,000,000 tons, or 45.4 per cent of the total. Six companies owning between 50,000,000 and 100,000,000

tons each account for an additional 26 per cent, while another 6 own 12 per cent. The 16 companies combined, each with ownership of over 25,000,000 tons, therefore, control over 83 per cent of the estimated total reserve. The 110 companies owning less than 10,000,000 tons have in the aggregate about 6 per cent of the reserve.

CONTROL BY REGIONS.—The two principal regions in which copper ore is produced are the Lake region, embracing the State of Michigan, and mountain and coast region, including the States of Arizona, Utah, Nevada, New Mexico, Montana, Idaho, California, Washington, and Colorado. The 121 companies in the mountain and coast region have about 87 per cent of the estimated total reserve, while the 9 companies in the Lake region control 11.4 per cent. The remaining deposits, amounting to 2 per cent, are scattered throughout other States and owned by 8 companies.

The control of estimated copper ore reserves in each of these regions, as indicated by the commission's data, is as follows:

TABLE 41.—*Control of estimated copper ore reserves in principal producing regions, by companies, according to specified size groups in 1926*

Recoverable tonnage	Mountain and coast region (Arizona, Utah, Nevada, New Mexico, Montana, Idaho, California, Washington, Colorado)				Lake region (Michigan)				All other (Tennessee, Georgia, Virginia, Vermont)			
	Number of companies	Recoverable tonnage reported	Per cent of total		Number of companies	Recoverable tonnage reported	Per cent of total		Number of companies	Recoverable tonnage reported	Per cent of total	
			Companies	Recoverable tonnage			Companies	Recoverable tonnage			Companies	Recoverable tonnage
Over 100,000,000	4	721,391,000	3.3	52.4	----	----	----	----	----	----	----	----
50,000,000 to 100,000,000	6	335,500,000	4.1	24.4	[1] 4	145,500,000	44.4	80.5	----	----	----	----
25,000,000 to 50,000,000	12	125,000,000	9.9	9.1	5	35,220,000	55.6	19.5	----	----	----	----
10,000,000 to 25,000,000	7	112,885,000	5.8	8.2	----	----	----	----	[2] 1	27,840,000	37.5	92.5
5,000,000 to 10,000,000	5	28,925,000	4.1	2.1	----	----	----	----	6	2,225,000	62.5	7.5
Under 5,000,000	97	53,269,300	80.2	3.9	----	----	----	----	----	----	----	----
Total	121	1,377,070,300	100.0	100.0	9	180,720,000	100.0	100.0	8	29,911,000	100.0	100.0

[1] Includes one company from preceding group.
[2] Includes two companies from preceding group.

In the mountain and coast region four companies control 52.4 per cent of the estimated reserve and five more control 24.4 per cent, so that practically 77 per cent of the total is controlled by nine concerns. The 97 companies holding less than 5,000,000 tons each control less than 4 per cent. In the Lake region (Michigan) more than 80 per cent of the estimated reserves is held by four companies. This represents a greater concentration than in the mountain and coast region.

Section 6. Timber.

In 1922 the Department of Agriculture estimated that the standing timber in the United States amounted to approximately 2,200,000,000,000 board feet.[20] Of this total, 1,600,000,000,000 was in virgin

[20] U. S. Dept. of Agriculture; Yearbook Separate 896, "Timber, Mine or Crop."

forest (which had originally contained an estimated 5,200,000,000,000 board feet) and 600,000,000,000 was in culled and second-growth stands. In other words, about 30 per cent of the original stand now remains.

The report states that the present rate of removal of all kinds of wood from the forests of the United States is about 60,000,000,000 board feet a year or four times the estimated present annual growth.

The 2,200,000,000,000 board feet of standing timber reported by the Department of Agriculture was distributed geographically as follows:

	M feet
Western States	1,364,000,000
Southern States	501,000,000
Lake States	110,000,000
All other States	233,000,000

VALUE OF STANDING TIMBER.—In 1910 the Bureau of Corporations, Department of Commerce, estimated the value of the privately owned standing timber in the United States at $6,000,000,000.[a] The estimated total stand at that time was 2,800,000,000,000 board-feet. In the present inquiry the schedules addressed by the commission elicited so little information from timber companies that only a very small "sample" for the industry could be secured. Estimates of the values of their timber stands were reported by 215 companies, owning 97,000,000,000 board-feet. The average value per thousand feet reported was $3.34. The bases of valuation varied widely as in the case of other natural resources. The valuations reported by companies in the Western States were lower than those of other sections, averaging only $2.34 per thousand feet as compared with an average of $7.24 for the Lake States, $5.27 for the Southern States, and $3.19 for all other States. If these average valuations per thousand feet are applied to the estimated total timber stands in each geographical region, they indicate a total value of $7,287,650,000 for the timber resources of the United States.

WORLD POSITION OF UNITED STATES.—No adequate data on the actual footage of standing timber in foreign countries were available. The forest lands of the world are estimated at 7.5 billion acres, of which 1.5 billion acres are in North America.[21] The United States forest lands, according to the authors of this estimate, cover 550,000,000 acres, or about 7.3 per cent of the world total. These acreages, however, do not necessarily reflect the relative timber resources of the United States and the world. Canada, for example, is said to contain nearly 597,000,000 acres of forest area, 47,000,000 more than the United States, but the estimated total board footage of standing timber in Canada is only 1,406,000,000,000,[22] as against 2,200,000,000,000 in the United States. Less than half the Canadian forested area carries timber 6 inches and over and only about one-quarter carries saw material (10 inches and up in diameter).

The annual timber consumption of the United States is estimated at 22.5 billion feet or about two-fifths of the world consumption. Of saw-log timber the United States uses nearly half the world's annual consumption of 26,000,000,000 cubic feet and of firewood nearly one-third of the world's consumption.[23]

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[a] Land value not included.
[21] Forest Resources of the World, Zon and Sparhawk.
[22] Commerce Reports—Nov. 3, 1924 (U. S. Department of Commerce).
[23] U. S. Department of Agriculture; Yearbook Separate 886, "Timber Mine or Crop."

CONTROL OF TIMBER RESERVES.—Data received by the commission from timber companies were not adequate to an analysis of the degree of concentration of timber control in the United States. A report of the Bureau of Corporations, Department of Commerce, in 1913 estimated that about 600,000,000,000 board feet of timber were owned by the Federal, State, and local governments. Since these public timber reserves are in most instances being maintained intact it would seem safe to assume that they still amount to 600,000,000,000 feet. This would leave a total of 1,600,000,000 board feet privately owned in the United States at present.

The 1913 report of the Bureau of Corporations contained important data for the year 1910 on the distribution of private ownership of timberlands. A report of the Department of Agriculture in 1920 stated that "the situation as to timber ownership has not changed materially from that reported by the Bureau of Corporations in 1910." This report of the Bureau of Corporations covered companies owning 1,747,000,000,000 feet of timber on nearly 80 per cent of the then estimated total United States stand of timber privately owned. The report showed three large companies owning 13.6 per cent of the timber reported. The holdings of these three companies, the Southern Pacific Co., the Weyerhaeuser Timber Co., and the Northern Pacific Railway Co., were in the Pacific Northwest, in which region they owned over 23 per cent of the estimated standing timber. The holdings of these companies, however, have decreased considerably through sales and cutting, and through the reversion to the Government of its land grant of almost 2,500,000 acres to the Southern Pacific Railroad Co.

Companies owning over 1,000,000,000 board feet each, 195 in number, owned 48 per cent of the 1,747,000,000,000 board feet reported to the bureau. The balance of the holdings was distributed among a very large number of owners. There were 24,000 holdings of less than a billion feet in the States of Oregon and Washington alone.

The 330 timber companies reporting to the commission in the present inquiry owned 168.5 billion board feet, or about 7.5 per cent of the estimated total standing timber in the United States. This sample is not large enough to be considered truly representative but may be analyzed as follows:

TABLE 42.—*Control of reported timber holdings of 330 companies according to specified size groups in 1923* [1]

Board feet	Number of companies	Thousand board feet reported	Per cent of total reported
1,000,000,000 and over	35	111,200,000	66.0
400,000,000 to 1,000,000,000	34	24,760,000	14.7
200,000,000 to 500,000,000	38	19,537,000	11.3
100,000,000 to 200,000,000	68	8,332,000	4.9
50,000,000 to 100,000,000	46	3,127,000	1.8
25,000,000 to 50,000,000	40	1,697,000	1.0
10,000,000 to 25,000,000	20	340,000	.2
5,000,000 to 10,000,000	15	88,000	.1
Under 5,000,000	20	54,000	.1
Total	330	168,508,000	100.0

[1] Includes also estimates of a few companies made in 1913 to the commission.

Section 7. Petroleum.

The most recent estimate of the petroleum reserves of the United States was made in 1921 by a joint committee of the United States Geological Survey and the American Association of Petroleum Geologists. This estimate placed the total reserve at 9,150,000,000 barrels, distributed geographically as follows:

Estimated reserve, 1921

Producing field:	Barrels
Eastern	1,435,000,000
Midcontinent	2,960,000,000
Gulf coast	2,100,000,000
Rocky Mountain	675,000,000
California	1,850,000,000
Nonproducing regions	130,000,000
Total United States	9,150,000,000

Since the above estimate was made about 2,000,000,000 barrels of petroleum or over 20 per cent of the estimated total reserves have been taken out of the ground. With a 1924 production of 707,000,000 barrels the life of the reserve would seem to be very much limited. On the other hand, very large quantities of new production from both old and new fields have been brought in since 1921 (particularly in California) and it is probable that a more recent estimate of the total reserve would be much larger than the 1921 one. The constant new discoveries of petroleum make any estimates of the total reserve of very little value. And even if the reserve were accurately known it would not be possible to estimate its life, since new mining methods promise an increased proportion of oil from each well and the so-called "cracking process" makes possible (if the cost is warranted) a much greater percentage of gasoline extraction from crude oil than at present.

In addition enormous quantities of crude oil are available from the oil-shale deposits which occur in, perhaps, 25 different States of the United States. Estimates prepared for the American Petroleum Institute indicate that the oil recoverable from western oil-shale deposits amounts to 75,136,000,000 barrels. Up to the present time the only oil-shale operations on a commercial scale are being conducted in Nevada and California.

Value of Petroleum Reserves.—As in the case of other national resources, data on the value of petroleum reserves in the United States are difficult to compile because of the lack of uniformity in methods of valuation of petroleum resources and lands. For the 340 producing companies which reported valuations in response to the commission's schedule, no less than 26 different bases were used. About 30 per cent of them employed some form of estimated or assessed value of producing lands, 27 per cent used cost, 26 per cent used market price or value of daily production, 6 per cent book value, while the balance employed various other forms of valuation. The values reported covered reserves of 1,162,000,000 barrels and averaged $0.63 per barrel. If this average is applied to the 9,150,000,000 barrels estimated as the total reserve in 1921 a total valuation of 5.8 billions of dollars is indicated. This compares with an estimate of about 2.4 billions of dollars by the census [1] in 1919. The

[1] Report on Mines and Quarries, 1919, p. 46.

census estimate represents the total capital investment in the producing and nonproducing petroleum and natural gas businesses. If increased by an amount for the cost of new wells drilled in the period 1920–1923, conservatively estimated at 1.8 billion dollars,[25] the census total would amount to 4.2 billion dollars.

WORLD POSITION OF THE UNITED STATES.—The most recent data on the petroleum resources of the world are apparently those reported by David White, of the United States Geological Survey, in 1920,[26] on the basis of estimates prepared by the foreign mineral section of the survey. These estimates covered the general distribution of the principal petroleum reserves of the world, and were computed on a relative basis with the United States reserve taken as a base of 7,000,000,000 barrels. Inasmuch as the United States reserves, as indicated above, are estimated at over 9,000,000,000 barrels, the world estimates based on the lower estimate for the United States may be considered as low. These estimates are as follows:

TABLE 43.—*Estimated relative petroleum resources of the world* [b]

	Per cent
United States and Alaska	16.3
Canada	2.3
Mexico	10.5
Northern South America, including Peru	13.3
Southern South America, including Bolivia	8.2
Algeria and Egypt	2.2
Persia and Mesopotamia	13.6
Southeast Russia, southwest Siberia, and region of Caucasus	13.5
Rumania, Galicia, and western Europe	2.6
Northern Russia and Sagbalen	2.2
Japan and Formosa	2.9
China	3.1
India	2.3
East Indies	7.0
Total	100.0

If, as the table indicates, the United States reserves amount to 16.3 per cent of the total world reserves, then the world total would be over 56,000,000,000 barrels (on a basis of 9.15 billion barrels for the United States).

That the reserves of the United States are being exhausted far more rapidly than those of any other country is indicated by the fact that the 1924 production of this country, amounting to some 707,000,000 barrels, represented 70.3 per cent of the total world production in that year, while, as already shown, the United States reserves are estimated at only about 16.3 per cent of the world reserve.

CONTROL OF PETROLEUM RESERVES.—Schedules covering the ownership or control of petroleum reserves were addressed by the commission to 1,600 companies and individual operators whose combined production of petroleum in 1924 amounted to more than 90 per cent of the country's total output. Of 625 replies received

[25] Oil and Gas Journal, March 20, 1924, p. 34-A.
[26] Annals of the American Academy of Political and Social Science, Vol. LXXXIX, No. 178.
[b] Based on estimates of foreign mineral section of the United States Geological Survey in 1920 with a United States reserve of 7,000,000,000 barrels taken as a base. Most recent estimated United States reserve is over 9,000,000,000 barrels.

only 264 (excluding subsidiary companies) were complete. The petroleum reserves of these 264 companies totaled 1,442,026,430 barrels, or about 16 per cent of the estimated total for the United States. The distribution of these reserves among the 264 companies, according to size groups, was as follows:

TABLE 44.—*Control of reported petroleum reserves in the United States, by companies, according to specified size groups, in 1923* [1]

Recoverable crude petroleum (barrels)	Number of companies	Recoverable crude petroleum reported	Per cent of total	
			Companies	Recoverable reserves reported
		Barrels		*Barrels*
Over 75,000,000	5	664,338,133	1.9	46.5
50,000,000 to 75,000,000	4	240,327,238	1.5	16.7
25,000,000 to 50,000,000	2	60,962,822	.8	4.2
10,000,000 to 25,000,000	10	144,023,046	3.8	10.0
5,000,000 to 10,000,000	9	58,467,446	3.4	4.0
Under 5,000,000	233	163,888,767	88.2	11.4
Federal naval reserves	1	190,000,000	.4	13.2
Total	264	1,442,026,430	100.0	100.0

[1] Based on data for 264 companies reporting to the commission. The reserves of these companies represent about 16 per cent of the estimated total for the United States.

Five companies, as the table shows, controlled 40.5 per cent of the total reserves reported and nine companies had 57.2 per cent of the total. The 233 smallest companies, representing 88.2 per cent of all those reporting, had only 11.4 per cent of the total quantity of recoverable petroleum reported. The 30 largest companies controlled 75.4 per cent of the reported reserves. The reserves of these 30 companies were equal to about 12 per cent of the 9,150,000,000 barrels estimated as the total United States reserve.

The production of petroleum, however, is not dominated by large companies to the same extent as in the refining or marketing of petroleum and petroleum products. The commission's "Report on Gasoline Prices in 1924" shows that the so-called Standard Oil group of companies, while controlling in 1923 nearly half the gasoline output of the country and about two-thirds of the gasoline stocks, produced only 14.4 per cent of the total crude oil for that year.

CONTROL OF PETROLEUM RESERVES IN DIFFERENT REGIONS.—The data on petroleum reserves received by the commission were much more complete for the California field than for others. For this field reserves of 833,000,000 barrels were reported, representing about 45 per cent of the estimated total reserve of 1,850,000,000 for the field in 1921. (See p. 100.) The quantity reported for the eastern field, on the other hand, represented only about 12.5 per cent of the estimated total for the field, while for the Gulf and mid-continent fields combined about 6.8 per cent was reported and for the Rocky Mountain field about 12.3 per cent. The distribution among the reporting companies in the California field was as follows:

TABLE 45.—*Control of reported petroleum reserves in California, by companies, according to specified size groups, in 1923* [1]

Recoverable crude petroleum (barrels)	Number of companies	Barrels	Per cent	
			Companies	Barrels
Over 75,000,000	3	458,604,431	4.0	54.8
50,000,000 to 75,000,000	2	113,500,364	2.7	13.6
25,000,000 to 50,000,000	2	71,729,574	2.7	8.6
10,000,000 to 25,000,000	7	100,648,848	9.3	12.1
5,000,000 to 10,000,000	5	37,027,223	6.9	4.5
Under 5,000,000	56	53,407,985	73.3	6.4
Total	75	833,664,445	100.0	100.0

[1] Based on returns of 75 companies with reserves of 833,000,000 barrels, or about 45 per cent of the estimated total California reserve.

Three companies controlled 54.8 per cent of the total California reserves reported to the commission and 20 companies controlled 93.6 per cent. The reserves of these 20 companies totaled over 780,000,000 barrels, or about 42 per cent of the estimated total California reserve.

Chapter V

FARM WEALTH

Section 1. Utilization of Land Area and Diversity in Agriculture.

Farm wealth is probably the most important of the "chief kinds of wealth in the United States" concerning which the Senate directed the Federal Trade Commission to make inquiry.[1] An analysis of farm wealth is, at least, a first step in the "general accounting with regard to the economic position of this country" held to be "necessary in order to formulate an intelligent policy."[2] Our farms and forests furnish most of our supply of plant and animal products. Whether that supply shall be abundant at a relatively low price, instead of scanty and high in price, depends on the effective utilization of crop, grazing, orchard, and timber land. Almost continuous increases in the quantity, quality, and variety of our food supply make it easy to underrate the vital importance of the farm as a national asset.

Agricultural Utilization of Land Area.—On farmer and forester depends the utilization of the 1,903,000,000 acres of land area in the United States. The entire area devoted to public roads, railroads, and farm roads requires less than 2 per cent of this total area. Marshes, unforested mountains, and other waste land occupy but little more than 2 per cent. The proportional distribution of the 1.9 billion acres according to potential utilization is shown graphically on the diagram opposite.

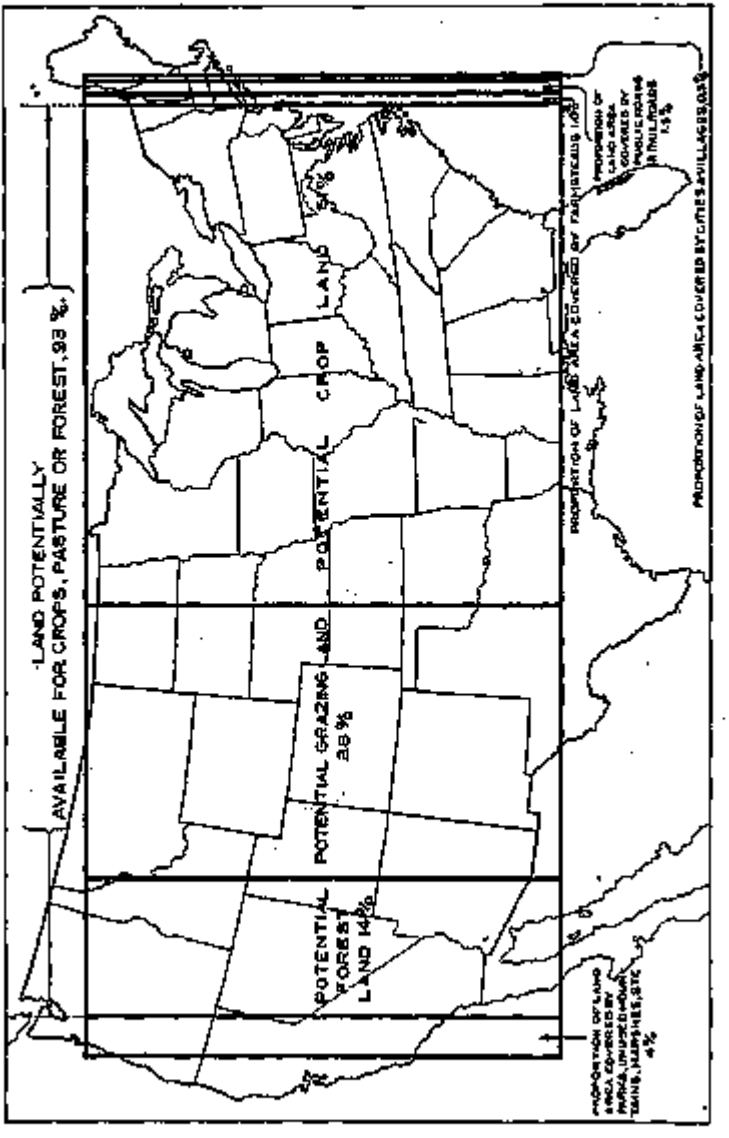
It is needless to say that the farmers of the United States are still leaving in pasture much land that would be cultivated if prices of farm products should advance sufficiently. The area reported under crop from time to time has never been large enough (at no time exceeding 370,000,000 acres) to cover more than one-third of the potential plow land. But most of the potential plow land and all the grazing land is being utilized for pasture.

Some recent adverse aspects of agriculture should be noted. Recent estimates by the United States Department of Agriculture show that total farm wealth in the United States decreased 25 per cent from 1919 to 1924. Estimated cash income of the average farm family in 1921–22 was only $556.[3] The returns show that in 1922 the local, State, and Federal taxes of the 9,092 corporations engaged in agriculture and related industries amounted to 86 per cent of their income. The corresponding figure for all other corporations was only 31 per cent.[4] Taxes on farm lands increased from an average of 31 cents to 69 cents per acre from the fiscal year 1914 to 1922. For a

[1] Senate Resolution 451, Sixty-seventh Congress, fourth session.
[2] Crops and Markets, August, 1924, p. 288.
[3] United States Department of Agriculture, release of Jan. 30, 1926.

Diagram 4

PROPORTIONAL DISTRIBUTION OF THE LAND AREA OF THE UNITED STATES
ACCORDING TO POTENTIAL AGRICULTURAL UTILIZATION.
1,903,312,360 ACRES.



group of Indiana farms, real estate taxes constituted 12 per cent of the net rent in 1919 and 40 per cent in 1923.[4] The percentage of farm bankruptcies to total bankruptcies increased from 6 per cent in 1920 to 19 per cent in 1924.

Although there was little if any increase in the number of our farmers between 1909 and 1924, Department of Agriculture data show that the exchange value of their products increased between 5 and 10 per cent. But in order to obtain the increase in return farm operators increased the quantity of their output between 10 and 15 per cent. In other words, although there was an advance in the economic position of the farmer from 1909 to 1924, it may have cost him more effort.

DIVERSITY IN AGRICULTURE.—Even about a century ago the average farm supplied most of the simple wants of its own occupants. To-day the California farm supplies the eastern farm with dried and canned fruits, the Florida farm supplies the northern farm with citrus fruit, the Middle West distributes its animal products over the entire country, while the East fails to provide the dairy products, fruits, and vegetables required by its dense industrial and commercial population. Although production is thus specialized and localized, the variety of crops increases. About 70 different crops are already of such importance in the United States that the quantity produced is officially estimated each year, and of one of these crops, wheat, 230 different varieties are grown, either because of climatic and soil differences between localities, or because of the milling demand for different kinds of wheat. Variety of products is fully matched by differences in the value of the farms themselves.

Iowa and Illinois usually produce a fourth of the country's corn crop, and Texas, Oklahoma, and Arkansas are producing more than half of our cotton crop, while less than 4 per cent of the country's total area located in the extreme northeast produces 10 per cent of the total hay crop.[5] Nearly half of the farm wealth of the United States, concentrated in the upper Mississippi Valley, occupies little, if any, more than one-sixth of the country's total area. On the other hand, only 3 per cent of the country's farm wealth is found in the 21 per cent of the area occupied by six grazing States in the West. Evidently, under such conditions, the factors that affect success in farming, and determine the valuations placed on farm land, must vary from region to region, and the degree to which any particular factor is responsible for changes, good or bad, can not be determined until the data have been analyzed.

Section 2. Amount of farm wealth.

TOTAL FARM WEALTH, 1920 AND 1922.—In 1920 the value of all farm property, as found by the Bureau of the Census,[6] was $77,924,100,338. It had been $40,991,449,090 at the time of the previous census in 1910. No exactly comparable figure is available for intercensus years, but one that will answer reasonably well may be found by computation. The average value per acre of land and improve-

[4] Wallace, Henry C., "Our Debt and Duty to the Farmer," p. 72.
[5] United States Department of Agriculture, Crops and Markets, December, 1924.
[6] Fourteenth Census, Vol. VI, p. 32.

ments has been estimated by the Department of Agriculture for a series of years prior to and including 1922. Assuming that all farm property will show the same movement in value as land and improvements, which are by far the greater part of it, and applying to the total for 1920, given above, the rate of decline from 1920 to 1922 for land and improvements as shown by the estimates of the Department of Agriculture, gives a round figure of $61,600,000,000 as the total value of all farm property in the latter year.

In the Monthly Supplement for July, 1925, page 236, the Department of Agriculture also has estimated the current value of total capital invested in agriculture as $79,607,000,000 for 1920 and $62,740,000,000 for 1922, the estimates being as of the 1st of January. These values cover land, buildings, livestock, implements, machinery, motor vehicles, and an allowance for cash working capital.

KINDS OF FARM WEALTH.—The Bureau of the Census classifies farm property under the heads: Land, buildings, implements and machinery, and livestock. Land constitutes more than 70 per cent of the total of these, and land and buildings together make up a little over 85 per cent of the total, while livestock and implements and machinery account for a little over 10 and a little under 5 per cent, respectively. The corresponding figures for 1910 held substantially the same relation to the total. In that year buildings constituted a slightly greater part of the combined figure of land and buildings, and livestock was nearly 2 per cent more of the grand total. The relatively greater use of livestock for power purposes doubtless accounts in large part for the latter difference.

The Bureau of the Census does not include in its value of all farm property the value of unsold crop products on hand, nor the value of feed, food, fuel, and other supplies on hand. The value of farm crops raised in 1919 was $14,755,000,000, but just what part of this remained on hand at the time of taking the census is not shown.

GEOGRAPHICAL DISTRIBUTION AND CHARACTERISTICS.—The following table shows the distribution of rural population and farm wealth by geographic divisions. It also shows the farm area and farm wealth per capita of rural population by geographic divisions:

TABLE 46.—*Geographical distribution of farm wealth, 1920*

Geographic division	Rural population	Land in farms	Value of all farm property	Value of land alone	Area and values per capita		
					Land in farms	Value of all farm property	Value of land alone
	Thousands	*Thousands of acres*	*Millions*	*Millions*	*Acres*		
United States	51,400	965,864	$77,924	$54,830	18.6	$1,516	$1,067
New England	1,530	16,901	1,173	488	11.1	764	318
Middle Atlantic	5,860	40,573	3,000	1,652	7.3	797	287
East North Central	8,428	117,735	17,248	12,040	14.0	2,047	1,430
West North Central	7,817	258,973	27,901	21,340	32.9	3,581	2,730
South Atlantic	9,052	97,775	6,133	4,001	10.1	635	415
East South Central	8,890	78,886	4,420	2,910	11.4	641	423
West South Central	7,271	173,469	7,622	5,406	23.9	1,048	744
Mountain	2,121	117,337	4,083	2,802	55.3	1,925	1,321
Pacific	2,005	50,183	5,307	4,167	26.8	2,653	1,989

The following table shows the distribution of rural population, land in farms, value of farm property, and value of farm products by geographic divisions in terms of the relation to the total for the United States:

TABLE 47.—*Geographic distribution of farm wealth, 1920, in terms of percentage*

Geographic division	Rural population	Land in farms		Value of farm property					Value of products	
		Total	Improved	Total	Land alone	Buildings	Implements and machinery	Livestock	Crop	Livestock
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New England	3.0	1.8	1.2	1.5	.9	3.7	2.6	2.0	1.9	3.6
Middle Atlantic	10.9	4.3	5.4	5.1	3.1	11.7	10.6	7.3	6.2	15.4
East North Central	16.4	12.3	17.5	22.1	23.0	25.2	21.9	19.9	19.1	27.0
West North Central	15.2	26.9	34.0	35.9	39.9	27.2	32.3	29.5	24.9	20.7
South Atlantic	18.8	10.2	9.7	7.9	7.3	10.5	7.9	5.1	14.1	7.7
East South Central	13.4	8.3	8.7	5.7	5.3	6.5	4.9	7.2	8.9	6.6
West South Central	14.1	18.1	12.7	9.3	9.8	7.7	5.4	12.7	14.7	6.3
Mountain	4.1	12.2	5.0	5.2	5.1	3.1	5.3	9.1	3.8	4.5
Pacific	4.1	5.9	4.8	6.3	7.6	4.4	6.5	5.1	6.4	6.6

The value of all farm property ranges from $635 per capita of rural population for the South Atlantic group of States to $3,581 per capita for the west north central group. The value of land constitutes the larger part of the value of farm property, the proportion varying somewhat with the area required per capita. The proportion of improved to total farm land also affects the ratio of land value to total value of farm property. For New England and the Middle Atlantic States land is only a little over 40 per cent of the total, but for the Pacific and West North Central groups it is more than 75 per cent. For the other groups it is roughly two-thirds of the total.

Under present farming practice the region west of the Mississippi requires the cultivation of a larger area per capita on the average than that on the east. The average farm land per capita of rural population is 55 acres for the Mountain group and 33 acres for the West North Central group. The average for each of the other groups in this region is between 20 and 30 acres, while for most of the groups in the region east of the river the average is around 10 acres.

For three of the groups of States in the region west of the Mississippi the value of necessary farm property, including land, is $2,000 per capita of rural population or more, and for the West North Central amounts to $3,600. This region also requires more machinery per capita for the operation of the farms than that lying east of the river. The average requirement in this line for the West North Central group is $149 and for the Pacific States $110. The East North Central group requires $93 worth of farm machinery per capita, but for other groups east of the river the requirement is much less.

The following table shows the distribution of farms, with the average acreage per farm, and the average value per acre, by geographic divisions:

TABLE 48.—*Regional distribution of number of farms, average acreage per farm, and average value per acre, by decades, 1890–1920*

[Compiled from Statistical Abstract of the United States]

District	1890	1900	1910	1920
Number of farms:				
New England	139,961	151,883	188,802	156,564
Middle Atlantic	458,506	485,618	468,379	420,147
East north central	1,009,031	1,135,823	1,123,480	1,084,744
West north central	914,971	1,009,744	1,109,048	1,000,951
South Atlantic	740,000	902,225	1,111,881	1,158,976
East south central	655,700	905,313	1,042,480	1,051,000
West south central	431,000	754,853	943,186	906,039
Mountain	49,398	101,327	183,440	244,109
Pacific	96,480	141,581	189,801	234,164
Acreage per farm:				
New England	104.0	107.1	104.4	106.6
Middle Atlantic	91.7	92.4	92.2	95.4
East north central	104.8	102.4	105.0	106.9
West north central	164.8	189.5	209.6	234.3
South Atlantic	133.6	108.4	93.3	84.4
East south central	120.5	89.9	78.2	75.0
West south central	179.7	233.8	170.3	174.1
Mountain	298.9	457.9	324.5	480.7
Pacific	337.9	384.8	370.3	239.8
Value per acre:				
New England	$29.53	$31.13	$43.90	$60.04
Middle Atlantic	55.47	51.51	68.62	97.36
East north central	44.01	48.86	85.41	140.47
West north central	24.96	28.96	58.16	103.93
South Atlantic	13.31	13.94	28.44	62.72
East south central	13.36	14.72	26.78	50.06
West south central	10.79	9.18	22.69	43.94
Mountain	23.07	12.96	20.52	34.60
Pacific	31.40	23.49	54.17	94.51

The South Atlantic and the four central geographic divisions constitute the great farming region of the country. In number of farms the other four regions combined barely equal one of these. The average size of farms for two of these divisions is smaller than for the central farming region, but for the Mountain and Pacific Divisions it is considerably greater. The West North Central Division shows a remarkable increase in the average size of the farm, 1890 to 1920, while the South Atlantic and East South Central show marked decreases.

The five divisions referred to above also have the greater interest from the viewpoint of values per acre. These values are highest for the East and West North Central Divisions, but each of the five divisions shows a greater increase in value than any one of the less important divisions. For one of these five divisions values per acre trebled from 1890 to 1920, for three of them the values more than quadrupled and for the South Atlantic they almost quintupled.

GENERAL CHANGES IN VALUE.—From 1910 to 1920 there was roughly 90 per cent increase in total value of farm property. Buildings showed an increase of around 80 per cent, but land and buildings together showed practically the same increase as the total. In spite of this marked increase, the valuation of farm land, as measured by the purchasing power of money, was less in 1920 than in 1910.[7] The value of farm livestock showed an increase of only about 63 per cent, but the increase in value of machinery and fixtures was over 180 per cent. The low rate of increase for livestock and the high rate for machinery and fixtures were due without doubt to the shifting from livestock to the tractor for farm power.

[7] Yearbook of Department of Agriculture, 1923, p. 544.

Farm products showed a much greater increase in value than farm property. The increase for crop and livestock products combined was 171.8 per cent, the increase for crop products being much the greater. There was considerable variation in the rate of increase for different sections of the country, especially in value of crop products. These products in the northern section showed an increase of 157 per cent, while the increase for the western was over 255 per cent, and for the southern about midway between these two. Increase in value of livestock products was 124 per cent for both northern and southern sections, but was a little over 20 per cent higher for the western.

Index numbers show a considerable increase in mass crop production for 1919 over 1909 and for 1920 over 1910.[5] Figures for 1912 and 1922, however, show almost exactly the same index number. For the first six years of the 11-year period, 1912 to 1922, the simple average of the Department of Agriculture index numbers of mass crop production is 106, and for the last six years of the period it is only 108. Index numbers on page 125 show a little greater difference.

VARIATIONS IN FARM VALUE.—In 1850 there were in the United States 1,449,073 farms, of an average size of 203 acres. By 1880 the number had increased to 4,008,907, but the average size had fallen continuously and was then 134 acres. From that time on the average size increased continuously, with the exception of one decade. In 1920 there were 6,448,343 farms, of an average of 148 acres each. The total number of acres used for farming operations shows an increase in every decade and rose from 293,560,614 in the first year under consideration to 955,883,715 in the last.

The following table shows the number of farms, the acreage per farm, the value per farm, and the value per acre for the country as a whole of all farm property, by decades, 1850 to 1920:

TABLE 49.—*Number of farms in the United States, average acreage, and value per farm and average value per acre, by decades, 1850–1920*

[Compiled from the Statistical Abstract of the United States]

Year	Number of farms	Acreage per farm	Value per farm	Value per acre	Year	Number of farms	Acreage per farm	Value per farm	Value per acre
1850	1,449,073	203.6	$2,785	$13.51	1890	4,564,641	136.8	$3,623	$25.81
1860	2,044,077	199.2	3,967	19.90	1900	5,737,372	146.2	3,463	24.37
1870	2,659,985	153.3	4,142	27.28	1910	6,361,502	138.1	5,444	40.64
1880	4,008,907	133.7	3,039	22.72	1920	6,448,343	148.2	12,084	81.53

Land and buildings, of course, constitute the greater part of these values in all periods, and remain nearly a constant proportion at between 90 and 85 per cent of the total, the last two decades showing the highest ratio. Figures of value here shown are not strictly comparable one decade with another since changes in the purchasing power of the dollar have not been taken into account. While there is no index available that is directly applicable to land values, such studies of this kind as are available indicate an actual decline in values per acre for 1890 and 1900, as compared with those of 1860. The last two decades both show higher relative values than 1860, but that for 1920 is much lower than for the preceding decade.

[5] Crops and Markets, December, 1921, p. 389. Also see index numbers, p. 125.

Section 3. Ownership and indebtedness.

OWNERSHIP.—The character of farm tenure shows little change in recent years, taking the country as a whole. The total number of farms increased from 6,361,502 in 1910 to 6,448,343 in 1920, with an increase also in the average acreage from 138.1 to 148.2 acres per farm, and a decrease of 1.2 per cent in the number of farms owned or partly owned by operators. The proportion of farms thus owned varies roughly from 47 per cent for the Western South Central group of States to nearly 90 per cent for New England. The Middle Atlantic, the East North Central, the Mountain, and the Pacific groups all show proportions of operator-owned farms ranging from 71 to 83 per cent of total. While the proportion of such farms to the total remains practically the same for the entire United States as at the 1910 census, some of the groups of States show material changes. The Middle Atlantic group shows an increase in the number of such farms during the period of more than 7 per cent, while the Pacific, West North Central, and Mountain groups show decreases of from 3 to 5 per cent. Other groups show little change in the proportion.

Farms operated by managers show an average acreage of 790.8 per farm—a considerably smaller acreage than the census of 1910 showed for such farms. The entire acreage operated by managers—about 5.5 per cent of the total for the country—changed very little during the period. Farms owned by operators and those operated by tenants both increased in size from 1910 to 1920 about 11 acres per farm on the average.

In this connection it is interesting to make a comparison of average value per farm of farms owned by operators and those operated by tenants. This may be done from the following statement which shows such average values by geographic divisions:

TABLE 50.—*Average acreage and average value per farm of land and buildings for farms owned by operators and farms operated by tenants, 1920*

Geographic division	Average acreage per farm		Average value per farm of land and buildings	
	Owners	Tenants	Owners	Tenants
United States	162.2	107.9	$10,150	$9,690
New England	104.9	112.5	5,230	5,978
Middle Atlantic	83.7	109.2	6,977	8,594
East North Central	99.8	120.0	11,148	10,607
West North Central	237.0	219.5	29,454	25,272
South Atlantic	101.6	38.2	6,860	3,427
East South Central	102.7	44.7	4,296	2,508
West South Central	225.7	99.0	7,256	4,973
Mountain	448.8	349.6	11,609	15,460
Pacific	202.0	272.7	16,645	24,406

The above statement indicates that, taking into account the smaller size of tenant farms, such farms show a higher value relatively, not only for the country as a whole but for every group of States, than farms owned by their operators. From these facts the conclusion may be drawn that even in years of exceptional farm prosperity the operator demands a better farm when he rents than when he pur-

chases. In the case of purchase there may be other considerations that offset a poor selling value, but in the case of taking a farm as a tenant the farm must produce the rental and the cost of operation. In other words, it must be a sure producer, which fact will give it a good selling value.

INDEBTEDNESS.—Data on mortgage debt were obtained by the Bureau of the Census in 1920 for 3,535,631 farms—roughly 55 per cent of the total number. Of these, 1,461,306 were reported as mortgaged and 2,074,325 as free from mortgage. Of the mortgaged farms, 1,193,047 reported the amount of mortgage debt on them. The value of these 1,193,047 farms is given as $13,775,500,013 and the mortgage debt as $4,003,767,192, or 29.1 per cent of the value. Distributing this debt over the entire number of farms from which definite information on mortgage debt was received gives an average of $1,132 per farm.

The Bureau of the Census does not secure mortgage data for farms operated by tenants or managers, and it is therefore not possible to estimate accurately from census statistics what proportion of such farms are mortgaged or what the average of such debt is per farm. If it could be assumed that the average of $1,132 per farm for those farms from which definite information was obtained would apply to the entire 6,448,343 farms, it would indicate a farm-mortgage debt of about $7,300,000,000 for the country as a whole. The Farm Mortgage Bankers' Association of America have an estimate of $7,857,700,000 as the total farm-mortgage debt for the same year.[9]

The following tabular statement shows by geographic divisions the number of farms reporting amount of mortgage debt, ratio of number of farms reporting to total number, average value per farm for farms reporting, average mortgage debt per farm, and relation of average debt to average value in 1920:

TABLE 51.—*Relation of mortgage debt to farm value, by geographic divisions*

Geographic division	Number of farms reporting amount of mortgage	Per cent of total	Average value of land and buildings per farm	Average mortgage debt per farm	Per cent of value
New England	49,466	31.6	$6,100	$2,064	33.8
Middle Atlantic	118,441	26.7	6,276	2,278	36.3
East North Central	274,247	25.3	10,736	3,342	31.2
West North Central	266,281	24.8	20,833	5,288	26.5
South Atlantic	103,039	8.9	6,835	1,870	29.5
East South Central	109,619	8.4	5,205	1,606	30.9
West South Central	131,550	13.3	8,627	2,316	26.6
Mountain	74,118	30.4	12,519	3,824	30.4
Pacific	71,196	30.4	15,912	4,736	29.8
United States	1,193,047	18.6	11,547	3,356	29.1

The figures on mortgage debt cover only farms owned by the operators. It has been pointed out above that farms operated by tenants show a higher value relatively than those owned by the operators. These figures indicate that for most sections of the country the average value of mortgaged farms is higher than that of farms having no mortgage debt. This is not true in the two sections of

[9] Report of Farm Mortgage Banker's Association of America, 1924, pp. 10, 11.

very high priced land—the West North Central and the Pacific—nor is it true of the East North Central.

New England and the Mountain and Pacific groups show the greatest proportion of farms mortgaged, while the South Atlantic and East South Central show the least. The relation of debt to value shows little variation among the groups. If any conclusion may be drawn from the showing, it probably would be that those sections which have their production sufficiently diversified to give a nearly continuous stream of products to market are able to get larger loans relative to the value of their property than sections producing a single crop.

Section 4. Prices of farm land per acre, 1912–1922.

Data of actual sales of farm land compiled by the commission from reports of field agents indicate a marked increase in the average price for the entire country from 1912 to 1920, with considerable decline in the next two years and a continued slight decline thereafter. While the sample used is not large enough to secure accurate averages, it does give averages which probably correctly indicate the trend. The sample covers sales in 34 counties distributed over 9 States in different sections of the country and a cross section of sales in the State of Ohio. The result of this study is shown in tabular form in the following statement:

Period	Number of sales	Average price	[illegible]
1913–1914	638	$[illegible]	
1915–1917	677	77	
1918–1920	672	116	
1921–1922	403	91	
1923–1924	406	92	

It will be noted from this statement that there was not only a great increase in the selling price of farm lands from the beginning to the middle of the period, but also that there was a much more active market at the middle of the period. The price trend obtained by this compilation is confirmed by figures compiled by the Department of Agriculture in studies of farm-land values. The simple averages of their yearly averages for the same periods are shown in the last column of the statement. These averages differ from those of the actual selling prices, and the movement from one period to the next is as great as that of actual prices in only one case, but it is always in the same direction.

Sales Prices of Farm Land in Iowa.—For three counties for which data were obtained for each period the prices of particular tracts, leaving out of account sales that were believed not to be representative, ranged in the 12 years covered from $23 to $450 an acre. The average price of the combined sales of these three counties shows an increase in each period over the preceding except for the last, which shows a decrease. Averages for particular counties show a marked variance from those for the three combined, the figures for only one county—Polk—agreeing in movement with the

combined figures. The combined figures also show a lag, which possibly is normal, behind economic conditions. The following table shows the figures for the State summarized by counties and those for these three counties combined:

TABLE 52.—*Average selling prices of farm land per acre in certain counties in Iowa, based upon 1,744 sales, for the period 1912–1924*

County	1912–1914	1915–1917	1918–1920	1921–1922	1923–1924
Mahaska	$125	$178	$172	$192	$209
Polk	120	173	209	273	204
Warren	98	143	242	190	125
Guthrie	103		221	306	
Dallas	123		240	287	
Stone	134				
Green			277		
Jasper	131				
Jasper-Adair			223	217	138
Marion	109				
Madison-Boone			250	131	
Mahaska-Polk-Warren	104	171	207	225	204

More detailed information is given in Appendix Table 6. The above table shows that there was a marked increase in the price of Iowa farm land from 1915 to 1917, the increase for the three counties, [illegible]r which a record of sales was secured being over 64 per cent. Dur[illegible] the next three years there was a further increase, the average [illegible] almost double that for the 1912–1914 period. Notwithstand[illegible] unprecedented decline in the prices of agricultural products [illegible]an in the last half of 1920 and continued through 1922, [illegible]ices continued high through 1924.

[illegible]ICES OF FARM LAND IN MINNESOTA.—For the purpose of [illegible]g assessed values the Minnesota Tax Commission obtains [illegible] of sales of real estate in every county in the State. These [illegible]assified as sales of "platted" and sales of "unplatted" prop[illegible] The consideration shown is said to be actual value in most [illegible]s. Unplatted property corresponds very closely to farm lands [illegible] platted to city property. From these records the Federal [illegible]rade Commission had abstracts made of the most important items [illegible]r four periods for each of 13 counties, selecting counties whose [illegible]ombined results, it is believed, will average nearly the same as the entire State. In the following table the number of sales of unplatted or acreage property, the acreage sold, and the consideration received are summarized by counties and for the 13 combined.

TABLE 53.—*Average selling prices of farm land per acre in certain counties in Minnesota, based upon 9,061 sales, for the period 1912–13 and 1918–1923*

County	1912–13	1918–19	1920–21	1922–23	County	1912–13	1918–19	1920–21	1922–23
Benton	$38	$66	$110	$92	Meeker	$66	$88	$130	$91
Blue Earth	78	127	165	137	Mower	75	121	149	126
Cottonwood	64	111	149	110	Pope	40	63	80	86
Dakota	67	107	133	121	[illegible]	93	158	180	140
Faribault	83	128	174	133	Yellow Medicine	58	103	132	105
Hennepin	120	143	173	295	Average	68	109	138	116
Le Sueur	89	142	197	137					
McLeod	77	133	160	120					

Appendix Table 7 gives more detailed information. No data were secured for the years 1914–1917. A marked increase is shown for each county. In many cases prices in 1920 and 1921 were more than double those for 1912 and 1913. There was a sharp decrease in 1922 and 1923 as a result of the depressed conditions in agriculture which were especially severe in the wheat States.

The area included in these sales totaled 407,000 acres for 1912–13, 258,000 acres for 1918–19, 309,000 acres for 1920–21, and 55,000 acres for 1922–23. The peak price was reached in 1920–21, in which period the average price was more than double that of 1912–13. Sales figures for the period 1920–21 were not used by the tax commission in establishing assessed values, as "members of the commission felt that sales recorded during these two years did not, in many instances, because of inflated and speculative values, typify the actual value of the property that changed ownership."[10] In the period 1922–23 the price fell off about one-sixth, the number of sales decreased 75 per cent, and the acreage sold more than 80 per cent.

SALES PRICES OF FARM LAND IN NORTH DAKOTA.—For this State some sales were found for each of five counties. While not very many were obtained for any one county, the number for the State as a whole is well distributed over the different periods. The prices for specific tracts range over the 12-year period from $6 to $135 an acre. The average price for the five counties combined reaches the peak in the war period, declining nearly 50 per cent in the next, and then showing a marked advance again in the last. The figures for Cass County exercise a preponderating influence on the combined averages, and it is therefore necessary to examine those for other counties in detail to get a correct view of the situation. These figures are summarized by counties in the following table:

TABLE 54.—*Average selling prices of farm land per acre in certain counties in North Dakota, based upon 157 sales, for the period 1912–1924*

County	1912–1914	1915–1917	1918–1920	1921–1922	1923–1924
Cass	$57	$92	$90	$75	$52
Wells	23	37	33	28	35
Trail	60	58	57	40	46
Hettinger	17	25	22	18	16
Burleigh	16	17	23	23	.....
Average	36	38	49	25	43

More detailed information is given in Appendix Table 8. The above table shows considerable fluctuation in prices. There was little change in Burleigh County, while the average for Hettinger and Trail Counties was lower in 1923 and 1924 than 10 years earlier.

SALES PRICES OF FARM LAND IN IDAHO.—For Idaho prices for five counties range for the 12 years from $10 to $500 per acre and the average price for the five combined shows an increase in the second and third periods and a decrease in the fourth and fifth. Average prices for two of the five counties agree with this movement and those for two of the other three counties are not greatly at variance with it. Few sales were found for the last two periods and possibly some of

[10] Report of the Minnesota Tax Commission, 1924, p. 16.

those were forfeiture sales, although it was intended to throw such sales out. The following table shows the figures for the State summarized by counties and those for the first five counties combined:

TABLE 55.—*Average selling prices of farm land per acre in certain counties in Idaho, based upon 607 sales, during the period 1912–1924*

County	1912–1914	1915–1917	1918–1920	1921–1922	1923–1924
Canyon	$126	$121	$195	$155	$148
Twin Falls	130	204	305	204	200
Bonneville	130	140	224	169	150
Bingham	83	115	168	190	114
Gooding	70	120	187	104	92
Lincoln and Jerome	89		135	135	150
Cassia			288	213	
Minnedoka			219	362	
Clearwater and Lewis	103	106	94		60
Average, first five counties	106	140	212	165	140

More detailed information is given in Appendix Table 9. In Idaho there was a steady and rapid increase in the prices of farm lands from 1912 to 1920, followed by a drastic decrease from 1921 to 1924. The average for the five counties for which there was a record of sales in each period, was 96 per cent higher for the 1918–1920 period. The decrease in prices during the severe agricultural depression following 1920 reduced the average to $146, which was only $6 more than the average for the three years 1915–1918.

SALES PRICES OF FARM LAND IN OHIO.—In this State county recorders furnish to the secretary of state each year a summary of the realty transactions brought into their offices for recording. Among other things this summary shows the number of acres of agricultural lands in the county sold within the period covered for a consideration other than $1 and the total amount of such consideration and the average price per acre for the county. The following statement shows for different years (periods 1918–1920 and 1921–22) the range of the different average prices and the simple average of them for the States:

TABLE 56.—*Average selling prices of farm land per acre in the State of Ohio for the period 1912–1924*

	Per acre		Per acre
1912–1914	$64	1921–22	$85
1915–1917	72	1923–24	74
1918–1920	85		

Appendix Table 10 gives some more details concerning the sales of farm land in Ohio. The above table indicates that there was a steady increase in prices of farm lands in Ohio from 1912 through 1920; that the average for 1921 and 1922 combined was the same as for the three-year period 1918–1920, while the depression beginning in 1920 led to a sharp decline which reduced prices almost to the level of 1915–1917.

SALES PRICES OF FARM LAND IN KENTUCKY.—For this State some figures were obtained for each period for six counties. Prices found here range from a dollar an acre to $498 an acre, and the combined figures show a high average price in the war period with a consider-

able decline and then an advance to the highest point in the last period. Here again prices for different counties show different movements, those of only one county agreeing with the combined movement. The summary of these figures by counties is shown in the following table:

TABLE 57.—*Average selling prices of farm land per acre in certain counties in Kentucky, based upon 917 sales, for the period 1912–1924*

County	1912–1914	1915–1917	1918–1920	1921–22	1923–24
Fayette	$83	$94	$169	$173	$148
Franklin	10	20	71	38	104
Graves	41	44	57	64	62
Henderson	41	64	71	78	96
Owen	13	28	49	64	44
Pike	10	15	22	23	21

Appendix Table 11 gives more detailed information. For all of the counties there was a rapid increase in farm-land prices from 1912–1920, the average for the period 1918–1920 being about double that for the three years 1912–1914. In some counties there was a sharp break in prices in 1921 and 1922, while in others the highest average was not reached until later.

SALES PRICES OF FARM LAND IN NORTH CAROLINA.—A good series of sales were obtained for the counties of Guilford and Wake in this State and some figures for Northampton and Pitt. For the first two counties the samples are well distributed over the five periods, and in each county the average price shows an advance in every period over the preceding. For the other counties the data obtained are not sufficiently numerous to warrant conclusions as to average price or price movement. For the State as a whole, based on these four above-named counties prices show a range of from $7 to $278 per acre. The average price is highest in the last period, being 125 per cent above that of the first. Each period except the fourth shows an advance over the preceding. The figures for this State are summarized in the following table:

TABLE 58.—*Average selling prices of farm land per acre in certain counties in North Carolina, based upon 400 sales, during the period 1912–1924*

County	1912–1914	1915–1917	1918–1920	1921–23	1923–24
Guilford	$22	$36	$53	$68	$78
Wake	26	37	45	55	58
Northampton	66	85	98	88	83
Pitt	43	60	130	96	154

Appendix Table 12 gives more detailed information. For three of the four counties the average for the years 1923 and 1924 was higher than for any other period.

SALES PRICES OF IDENTICAL TRACTS.—It was thought at the outset of this study that figures for sales of identical tracts in successive periods might give a better idea of the trend of value than a large series of prices selected at random. The attempt was therefore made to get such information, but it was found almost impossible to do so

in a short time. Quite good records of sales were obtained for Idaho and Texas and some for North Carolina. These are summarized in the following table:

TABLE 59.—*Average prices per acre for identical tracts of farm land for five periods, 1912–1924*

State	Number of tracts	1912–1914	1915–1917	1918–1920	1921–22	1923–24
Texas	3	$77	$100	$137	$111	$114
Do	6	25	37	40	49	
Do	4		103	142	128	126
Do	12	30	46	67		
Do	7		40	46	55	
Do	5			138	133	113
Do	14	38	48			
Do	15		47	76		
Do	9			42	57	
Do	5				133	118
Idaho	1	85	135	200		250
Do	1	148	170	450	275	
Do	7	84	128	184		
Do	7		142	280	202	
Do	13	85	125			
Do	38		124	211		
Do	13			241	187	
Do	1				213	188
North Carolina	1	30	36	118		
Do	1		29	85	58	
Do	3		45	125		
Do	2	48				126
Do	1		163			273

More detailed information is shown in Appendix Table 13.

The data summarized in these tables are not sufficiently numerous to warrant any final conclusion from the showing. In so far as trends are indicated they agree roughly with those shown by more numerous figures taken at random, and the base figures are burdened with the same defects as those. As already noted, factors other than earning power often have the greater weight in finally determining the selling price of farm land. For particular tracts the price paid in one of a series of sales of the tract is often far out of line as compared with the value based on earning power. It may be much too high or much too low, but in either case it tends to throw out of line any average price in which it is included, and yet it may be a bona fide price. An example of this characteristic is found in the second of the four tracts in Idaho, which was sold in each of four periods. The price of $450 per acre in the third period seems too large. If that price is right, the drop in the next period to $275 seems too great, and yet both prices appear to have been the actual consideration for the respective sales.

The figures for tracts sold in two periods for Texas and Idaho are probably sufficiently numerous to give a correct impression of the movement of prices of identical tracts in those localities between each of the two periods they cover, although they do not, of course, give the correct average level of price for the locality. It will be noted that for Texas for the second, third, and fourth periods these figures in each case show an advance over the preceding period, while those in the fifth period show a decline. The figures for Idaho show an advance to the middle period and a decline in each of the two following.

Section 5. Physical indexes of farm values.

The changes in farm values during recent years have been markedly affected by the radical economic disturbances caused by the war, which have manifested themselves particularly in wide fluctuations in the real value of the dollar. For this reason it is important that dollar values, even where such values have been corrected by price indexes to allow for changes in purchasing power, should be compared with changes in the number of physical units such as livestock, farm machinery, and acreage of crops. Whether such data measure stocks of goods on hand or changes in the quantity of output, they reflect fundamental changes in farm wealth.

FARM LIVESTOCK.—The Bureau of the Census places farm livestock in three groups—domestic animals, poultry, and bees. There are seven classes of domestic animals, but horses, mules, cattle, sheep, and swine constitute nearly the entire group in point of value. In fact, in value these five classes of animals make up more than 94.8 per cent of the total value of livestock. Poultry is an important group, consisting almost entirely of chickens (96.5 per cent), but detail statistics for this group were not published by Department of Agriculture until 1920, so it is here omitted from the discussion.

Farm livestock falls naturally into two general classes—animals that are kept a number of years and used for farming operations, or in a sense as invested capital, from a which regular return is expected, and those that are produced for income and constitute the return on other investment. Horses and mules are used practically entirely for the first purpose. Dairy cattle and sheep kept for fleece production fall into this class also, but are not nearly so exclusively kept for this purpose as horses and mules. The principal animals falling into the other class are hogs and beef cattle. For the first of these classes the number and character of animals on hand is the index of agricultural conditions, while for the second class it is the number and character of animals produced.

The reports of the Department of Agriculture indicate that the combined number of horses and mules used on the farm has not greatly changed on the whole in the last 15 years, being a little over 24,000,000 at the beginning of 1910 and a little under that number at the beginning of the past year (1924). During the years of war activity the number ran somewhat higher, and in 1918 and 1919 reached nearly 26,500,000, but dropped off again immediately after the war. The net exports of horses and mules combined do not exceed 35,000 in number in normal years, and as only between one and two thousand are slaughtered for food,[1] practically the entire production is used to replenish the stock of work animals. That the number used for farm power does not show an increase is due probably to the increased use of gasoline engines in one way and another. The stock of dairy cattle shows an increase of around 4,000,000, or of nearly 20 per cent, during the period. The stock of sheep shows a marked decline.

Apparently no very good total of annual production of the meat-producing animals is obtainable. A figure that will be considerably under the total may be obtained by adding to the net exports the number slaughtered under Federal inspection and adding or sub-

[1] Yearbook of United States Department of Agriculture, 1923, p. 1012.

tracting the gain or loss in stock on farms. This total of stock on farms as reported by the Department of Agriculture is not very satisfactory, but as it is rectified by census count every 10 years, an average for a number of years will probably be approximately correct. Taken in this way the cattle production for the years 1914 to 1923, inclusive, shows an increase of about 7 per cent over the increase for the years 1910 to 1919, inclusive. The average number produced found in this way is a little under 10,100,000 for the period 1910–1919 and a little over 10,800,000 for the period 1914–1923. As stated above, these figures are too small for the total production of the country and should be increased by the number slaughtered on farms and in abattoirs not having Government inspection. If calves which are slaughtered immediately after weaning, as is often the case with dairy herd calves, be left out of account, the production for 1919 as reported by the Bureau of the Census was 15,475,929 head. This is 143 per cent of the average figure for the period 1914–1923. It is probable that nearly the same ratio would hold for the period 1910–1919 and that the annual production in that period would therefore average around 14,400,000 head.

Working out the production of hogs in the same way gives an average production of roughly 37,000,000 head for the first 10-year period and of nearly 40,000,000 for the last period. These figures again are too small by the number slaughtered on farms and elsewhere, not under Government inspection. Probably around 16,000,000 hogs are required to provide pork products for export, as indicated by the exports statistics of pork products in the Yearbooks of the Department of Agriculture. This would leave the products of from 21,000,000 to 24,000,000 of the number stated above for home consumption. Assuming that the products of all of these hogs are consumed by the urban population and that the rural population will use about the same quantity relatively, it would require from 20,000,000 to 25,000,000 hogs to supply the rural population. This would give an average annual total production of about 57,000,000 hogs for the first 10-year period and about 65,000,000 for the last period. It may be noted that these conclusions are in a reasonable degree of agreement with the estimates of the Department of Agriculture as given in the Yearbook for 1923. (See p. 1010.)

Using the same method to determine the annual production of sheep gives an average annual production of 13,800,000 for the first period and of 12,700,000 for the last. Assuming that the number of sheep killed not under Federal inspection may be properly estimated by the same method as in the case of cattle, the figure of production for the first 10-year period would be about 17,500,000 and for the last about 16,400,000. It may be noted again that this last figure is in reasonable degree of agreement with the average of figures given for recent years by the Department of Agriculture (Yearbook, 1923, p. 1010).

This method of comparing production of livestock in past years does not give a rate of increase or decrease per annum nor for the period, but it does indicate that some change in the quantity produced has taken place that should affect the value of land devoted to agriculture. It is possible there has been an increase of 10 per cent

in number of hogs killed from 1912 to 1922 and of about 7 per cent in number of cattle. Sheep show a decrease of possibly 10 per cent for this period. Weighting these rates by the relative values of the different classes of animals gives an average increase for all three classes of roughly 5 per cent.

FARM MACHINERY.—No very good statement of the quantity of the different kinds of farm machinery in use has been found, except the table published by the Department of Agriculture (Yearbook, 1923, p. 1156), and this covers only three years. The quantity of other than power producing farm machinery is not of great importance at this point, however, since, unless there is a great increase in intensive farming, or a great change in the division of farm acreage among crops, the machinery requirements will tend to vary from time to time somewhat according to the acreage cultivated. On the other hand, the changing quantity of power producing machinery is very important because the power thus developed takes the place of, or adds to, that produced by farm animals.

POWER-DEVELOPING MACHINERY.—In Table 60 given herein (p. 122) which was computed indirectly from statistics compiled by the Department of Agriculture, are the estimated numbers of tractors in use for farm work on January 1, each year, 1916 to 1923, inclusive, and their estimated power development stated in equivalent number of horses.

In computing the number of tractors in use it is assumed that the average life of a tractor will be five years, or that 20 per cent of the tractors on hand at the beginning of one year will have to be replaced by new machines for use the next year. These machines range from the garden or pony tractor developing about one horsepower to the traction engine, used for threshing, silage cutting, etc., and developing in some cases as much as 35 horsepower. In computing the equivalent of work done by tractors in number of horses, it is assumed from some information of the work done with such machines and of the character of machines used that, on the average, a tractor will do the farm work of about 10 horses.[12]

COMBINED HORSEPOWER USED ON FARMS.—In the following table this tractor equivalent as of the beginning of each year is combined with the number of horses and mules on farms January 1 each year as shown by the reports of the Department of Agriculture. For want of data colts which are too young to do farm work have not been deducted from farm animals, and power trucks for marketing crops have not been included with tractors.

[12] Compare with estimate in Agricultural Engineering News, August, 1924, p. 170.

TABLE 60.—*Farm power for seeding, cultivating, harvesting, and marketing, stated in numbers of horses or estimated equivalent*

Year	Tractors		Horses	Mules	Total	Index number
	Number	Equivalent in horses				
1910			19,833,000	4,210,000	24,043,000	100.0
1911			20,277,000	4,328,000	24,605,000	102.3
1912			20,609,000	4,302,000	24,871,000	103.4
1913			20,567,000	4,350,000	24,963,000	103.8
1914			20,962,000	4,469,000	25,511,000	105.7
1915			21,196,000	4,479,000	25,674,000	106.8
1916	11,128	111,000	21,156,000	4,593,000	25,860,000	107.6
1917	27,910	238,000	21,210,000	4,723,000	26,211,000	109.0
1918	71,750	718,000	21,455,000	4,873,000	27,146,000	112.9
1919	153,577	1,539,000	21,482,000	4,954,000	27,975,000	116.4
1920	339,264	3,393,000	19,786,000	5,427,000	27,786,000	115.6
1921	370,390	3,704,000	19,205,000	5,456,000	28,367,000	118.0
1922	359,517	3,595,000	19,058,000	5,467,000	28,215,000	117.4
1923	396,396	3,963,000	18,629,000	5,483,000	28,080,000	116.8

This table shows an increase in farm horsepower for the indicated purposes of about 17 per cent from 1910 to 1923. The year 1921 shows an increase of 18 per cent and there was a slight falling off in the following two years due to a decline in purchase of tractors. These figures will be adverted to again further on.

CROP ACREAGE AND PRODUCTION.—The reports of the Department of Agriculture give figures of production and acreage planted or harvested for many years for a number of the crops which are most important in value of product and in acreage used. By interpolating the acreage and production of some of the least important of these for a few years earlier than shown by the department, it has been possible to estimate figures of acreage and yield per acre which are believed to be reasonably accurate for a total of 24 crops for the 12 years 1912 to 1923. The acreage devoted to these 24 crops, as reported by the Department of Agriculture, ranged from about 320,000,000 in 1912 to nearly 356,000,000 in 1918.[13] In 1919 around 355,000,000 acres were used for these crops. This is more than 97 per cent of the land in harvested crops, as reported by the Department of Agriculture for the year 1919,[14] and in that year the combined farm value of these crops was $13,435,392,000, or 95 per cent of the estimated total value of all crops.[15] The census placed a higher value on farm crops for the year 1919, but the value of the crops used above is roughly 91 per cent even of the higher census figure. This relation apparently will hold at least roughly through the entire period under consideration.

PRODUCTION PER ACRE FOR ALL CROPS.—The following statement shows index numbers of production per acre for the years 1912 to 1923, inclusive, for 23 crops combined and for 24 crops combined. In one case the apple crop is excluded and in the other it is included. The statement is presented in this way partly because the apple crop is the only fruit crop included and partly because the 1919 figure of acreage devoted to apple orchards was the only one readily

[13] See Appendix Table 14.
[14] Yearbook, 1923, p. 427.
[15] Department's estimate $14,681,391,000, Yearbook, 1920, p. 804, plus $18,150,000 to cover farm value of Louisiana sugar cane, and $28,350,000 to cover value of sugar cane raised for sirup.

available. It takes a number of years to develop an apple orchard to the point of worth-while production, and as the useful life of such an orchard is at least from 25 to 50 years, the total acreage could not have changed much during this period. The 1919 figure of acreage has therefore been interpolated both backward and forward to fill out the entire period.

TABLE 61.—*Index numbers of average combined production per acre for the principal crops, 1912–1923* [1]

Year	23 crops	24 crops	Year	23 crops	24 crops
1912	112.4	112.6	1918	99.1	99
1913	93	95.8	1919	101.3	101
1914	105.9	106	1920	110.2	110.2
1915	115.3	115.3	1921	96.8	96.6
1916	98.4	98.4	1922	103.5	102.5
1917	102.4	102.2	1923	103	102.9

[1] For all the more important crops the base of these index numbers is the 1909–1913 average production per acre as reported by the Department of Agriculture. For four of the less important crops the 1914–1920 average is used; and for the three others an average as near 1914–1920 average as could be obtained is used, the average for the earlier years not being available in these cases.

These figures were obtained by finding the index numbers of production per acre for each crop included in the group, multiplying them by the corresponding acreage and dividing the sum of the products for each year by the total acreage of the group for the year.

If the figures be considered in three four-year periods the second period shows a marked reduction from the first in average productivity. There was some recovery in the third period, but the average of the first period was not attained again. The figures shown do not take account of labor or horsepower used and deficiency relatively in one or both of these probably largely accounts for the low productivity of the second period. Taken altogether, the indicated changes in productivity are not sufficient alone to greatly affect the value of the land as determined by earning power.

PRODUCTION PER ACRE BY GROUPS OF PRODUCTS.—By splitting the products up into groups quite a different showing is obtained. The following table gives the index numbers of combined production for those products used mostly as food, for those used mostly or largely as feeds, and for cotton, tobacco, and broomcorn:

TABLE 62.—*Index numbers of average combined production per acre, 1912–1923*

Year	Foods [1]	Feeds [2]	Cotton, tobacco, and broomcorn	Year	Foods [1]	Feeds [2]	Cotton, tobacco, and broomcorn
1912	116.1	114.2	105.0	1918	102.8	99.3	88.0
1913	100.0	88.7	102.4	1919	85.7	109.3	80.4
1914	111.1	102.9	115.0	1920	93.9	117.7	98.4
1915	113.2	119.1	94.3	1921	90.4	103.6	89.9
1916	94.3	104.3	97.1	1922	95.9	108.9	78.7
1917	96.4	105.9	88.8	1923	91.9	110.4	78.2

[1] Winter wheat, spring wheat, rye, buckwheat, Irish potatoes, sweet potatoes, rice, beans, peanuts, sugar beets, sugar cane, sorghum for sirup, sugar cane for sirup, and apples.
[2] Corn, oats, barley, tame hay, wild hay, kaffirs, and flaxseed.

Wheat and rye control the first group, the acreage devoted to these crops being 81 per cent in 1912 and 83.7 per cent in 1923 of the total for the group. These crops show an expansion in acreage of nearly 33 per cent during the period, while that used for other food crops increased only about 11 per cent.[15] Corn, oats, and hay control the second group. But all the products in this group, except flaxseed, interchange and supplement each other so much as feeds that changes in production of particular products mean very little. The figures do indicate that the acreage used for fodder or roughage products have been increased materially, while that used for the production of grains has remained about the same throughout the period. The increase in fodder acreage is doubtless due to the increase in number of dairy cattle. Cotton controls the third group, the acreage used for this crop being roughly 95 per cent of the total for the group.

The average production per acre for the first group shows a marked decline in the second period and no recovery in the third, the index numbers for the three periods being 103.8, 92.1, and 92, respectively. The second group shows some decline in the second period, but a more than complete recovery in the third. The third group, with index numbers of 103.7, 88.6, and 81.3 for the three periods in order, shows a 15-point decline in the second period and a further loss of more than 7 points in the third.

Different factors operate in different areas to produce these combined results, but some may be pointed out as being more important probably than others. The figures in the food group, as already noted, are controlled by the figures for wheat. At the outbreak of the World War there was a sudden expansion of roughly 25 per cent in wheat acreage, and by 1919 this had increased to nearly 50 per cent of the acreage used before the war. A great part of this increase was in winter-wheat area and consisted of lands which on a big scale may be farmed cheaply but which owing to deficiency in rainfall do not give large yields per acre. In the spring-wheat area, owing to unfavorable seasons, a good crop was obtained in only one year of each of the last two periods.

The figures in the third group are controlled by the cotton crop, and production of this crop has been affected by the increasing inroads of the boll weevil and also by the migration of colored farm labor after the war. These forces have been partly responsible for a shifting of the cotton area to the westward.

Mass Production and Farm Value.—The figures just given show a decreasing production per acre farmed for some products and but slight increases for others, giving a slight decrease in combined production per acre of all products considered. This, however, does not take account of changes in acreage used, which shows a considerable increase during the period. The following table shows the index numbers of acreage used and the index numbers of mass production for the years 1912 to 1923, inclusive. For the index number of acreage the figure for 1912 is used as a base. The index numbers of mass production are found by multiplying the acreage used each year for the 24 crops by the corresponding index number of production per

[15] See Appendix Table 14.

acre and dividing the products thus obtained by the 1910–1914 average of these products.

TABLE 63.—*Index numbers of crop acreage used and of mass crop production, 1912–1923*

Year	Crop acreage used	Mass crop production	Year	Crop acreage used	Mass crop production
1912	100.0	110.0	1918	111.1	107.8
1913	101.6	95.2	1919	110.0	109.8
1914	101.8	105.6	1920	109.0	117.8
1915	104.0	118.4	1921	109.2	103.1
1916	105.1	101.2	1922	109.7	119.2
1917	108.5	108.5	1923	110.8	119.5

These figures show the changes in acreage used stated in terms of percentage and the changes in quantity of total production stated in the same way. If the figures be considered in four-year periods the first and second show practically the same average of mass production, while the third shows some increase. In these figures the element of value is entirely eliminated, and while they do not cover all crop products of agriculture, they embrace so large a part of the total that they may be considered thoroughly representative of that total.

It is pertinent now to consider the changes that have taken place in the farm value per acre of these products. It is not possible, readily at least, to get figures of net return to the farmer, but the figures of farm value per acre of products, as reported by the Department of Agriculture, may be studied and may be combined and presented in such a way as to show the trend.

The following table shows the average farm value per acre for the 24 crops combined, the index numbers of this value per acre, and the index numbers of values of the mass crop. The average value per acre in this table is obtained by dividing the estimated gross farm value of the 24 crops for each year as shown in Appendix Table 15, page 345, by the corresponding acreage as shown in Appendix Table 14.

TABLE 64.—*Average farm value per acre of 24 crops combined and index numbers of the value per acre and of the total value of the crop, 1912–1923*

Year	Average value per acre	Index numbers of value per acre	Index numbers of value of the total crop	Year	Average value per acre	Index numbers of value per acre	Index numbers of value of the total crop
1912	$15.44	100.0	100.0	1918	$34.55	210.2	232.6
1913	15.53	102.4	104.0	1919	37.85	230.2	256.3
1914	15.81	102.3	104.2	1920	24.93	151.5	165.4
1915	17.87	107.5	112.8	1921	15.46	94.6	103.4
1916	23.44	142.0	148.9	1922	20.42	124.8	137.0
1917	33.54	206.3	223.5	1923	21.93	130.5	143.5

When it is considered that farming does not generally give a very large return on investment, these figures indicate the probability of some loss on the average in farming operations in 1920 and a heavy loss in 1921. The indicated average return per acre is lower for 1921 than for any other year in the period, and the index numbers

of value of the mass show a lower value for the crop as a whole for this year than for any other except the first.

The figures as presented above cover all crops combined. Again, if they be broken up into groups a somewhat different showing is made. The following table shows the average combined value per acre of the crops used principally for food, of those used principally for feed for stock, and of cotton, tobacco, and broom corn:

TABLE 65.—*Average value per acre of three groups of crops, by groups, 1912–1923*

Year	Foods	Feeds	Cotton, tobacco, and broom corn	Year	Foods	Feeds	Cotton, tobacco, and broom corn
1912	$17.45	$13.99	$38.57	1918	$30.27	$28.08	$63.31
1913	17.34	14.42	28.50	1919	35.38	31.20	32.64
1914	20.38	14.09	19.80	1920	29.61	20.98	27.02
1915	19.55	15.01	20.45	1921	19.30	12.01	20.98
1916	27.90	18.80	43.52	1922	18.90	16.71	47.25
1917	30.29	28.10	62.47	1923	20.00	18.58	52.24

The third group shows a much higher average value per acre. It should be remembered, however, that cotton is the principal product in this group and that more labor is required in caring for and harvesting a crop of cotton, as cultivated in most sections, than in caring for and harvesting wheat or corn, which are the controlling products in the other groups. One man and his family can hardly take care of more than 40 acres of cotton, while one man and his family can easily take care of 80 acres of corn, and, with a little help, of double as much wheat.

The following table shows the index numbers of value per acre of these same groups:

TABLE 66.—*Index numbers of value per acre of combined crops of foods, of feeds, and of cotton, tobacco, and broomcorn, 1912–1923*

Year	Foods	Feeds	Cotton, tobacco, and broom-corn	Year	Foods	Feeds	Cotton, tobacco, and broom-corn
1912	100.0	100.0	100.0	1918	224.9	200.4	216.9
1913	99.3	103.1	99.4	1919	202.6	223.4	223.8
1914	116.7	107.1	66.1	1920	169.6	150.0	134.3
1915	112.6	110.9	85.8	1921	110.5	84.5	107.3
1916	159.8	134.4	142.4	1922	108.2	119.4	172.4
1917	225.0	201.3	212.8	1923	114.6	132.8	189.3

For the first two groups the movements were similar, although the peak was reached in a later year for the second. Considering the figures in three four-year periods, the averages for the two groups are close together for these periods. The values for the second group show a much more abrupt decline and a considerably greater drop in total from the peak than those for the first group. This appears to have been fully reflected in the slump in land values in those sections that depend entirely or practically on the corn crop. The third group shows an average for the first period that was 12 per cent

under normal, with 1914 showing only two-thirds of normal. The other two periods show the same movement as the second group but with values reaching a much higher peak and showing a much greater total drop. This movement was reflected in the very depressed condition of cotton farming in 1920 and 1921.

The next table gives the index numbers of total farm value of these same groups of crops. The showing in this table is not different from that in the preceding except for the first group. For this group the acreage cultivated increased somewhat steadily and with a larger production the peak of total value falls in 1919, as it does in value per acre for the other groups.

TABLE 67.—*Index numbers of total farm value of combined crops of foods, of feeds, and of cotton, tobacco, and broomcorn, 1912–1923*

Year	Foods	Feeds	Cotton, tobacco, and broom-corn	Year	Foods	Feeds	Cotton, tobacco, and broom-corn
1912	100.0	100.0	100.0	1918	208.7	211.2	232.7
1913	108.0	101.8	107.1	1919	232.2	232.0	295.0
1914	122.5	104.8	70.8	1920	220.2	154.7	143.2
1915	144.0	112.0	79.3	1921	152.9	90.2	90.6
1916	183.4	138.6	146.0	1922	152.0	124.1	109.0
1917	244.8	221.3	211.8	1923	145.8	190.4	210.7

Section 6. Segregation of land area of the country according to use.

In round numbers the land area of the United States, exclusive of Alaska and insular possessions, is 1,903,000,000 acres.[17] By far the greater part of this area is or can be made productive. Probably not to exceed 50,000,000 acres, or about 3 per cent of the total, is unproductive, and even much of this will yield mineral products. The greatest single use to which the land area of the country is put is for pasturage or grazing purposes, which require around 50 per cent of it. Timbered area takes up from 25 to 30 per cent or more of the total, and land used for cultivated crops between 15 and 20 per cent. There is a considerable duplication between timbered and pastured area, but even after eliminating this duplication pasturage, timber and cultivated land will account for between 80 and 90 per cent of the total. Other important uses are for farmsteads and lanes, public roads, and cities and villages. The following table shows the segregation of the land area of the country according to primary use for the years 1912 to 1923:

[17] For 1920 it is reported as 1,903,216,380. Fourteenth Census, vol. 5, pt. 2, p. 17.

TABLE 68.—*Segregation of the land area of the United States according to primary use*

[Millions of acres]

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Areas that change from year to year:												
Cropped lands	330	336	336	346	346	358	366	365	349	360	361	362
Privately owned forest area—65 per cent saw timber	407	401	396	390	385	380	377	372	366	364	361	360
National forest area, 60 per cent saw timber	138	139	137	137	135	134	134	133	135	139	136	137
Pasture or grazing lands	844	822	813	834	835	891	930	944	872	845	845	863
National park and monument lands	6	6	6	6	6	6	6	6	5	5	6	6
Railway right of way	4	4	4	4	4	4	4	4	4	4	4	4
Total	1,728	1,708	1,692	1,717	1,744	1,773	1,817	1,834	1,744	1,716	1,718	1,728
Duplication area	148	148	148	148	148	148	148	148	148	148	148	148
Net total	1,581	1,560	1,544	1,569	1,596	1,625	1,669	1,675	1,596	1,568	1,565	1,580
Areas that remain nearly constant throughout the period:												
Farmsteads and lanes	27	27	27	27	27	27	27	27	27	27	27	27
Public roads	20	20	20	20	20	20	20	20	20	20	20	20
Lands in cities and villages	10	10	10	10	10	10	10	10	10	10	10	10
Rocky peaks and rock outcrops	20	20	20	20	20	20	20	20	20	20	20	20
Arid and marsh lands	77	77	77	77	77	77	77	77	77	77	77	77
Total	154	154	154	154	154	154	154	154	154	154	154	154
Grand total utilized	1,735	1,714	1,698	1,723	1,750	1,779	1,823	1,830	1,750	1,721	1,718	1,734
Waste, idle, and fallow	168	189	205	180	153	124	81	73	153	182	185	169
Total land area of country	1,903	1,903	1,903	1,903	1,903	1,903	1,903	1,903	1,903	1,903	1,903	1,903

NOTE.—See Appendix Table 16 for further detail and notes.

The areas shown in the second group in this table, except arid and marsh lands, are not important in the matter of extent as compared with the larger areas shown in the first group. Arid and marsh lands apparently are not productive at present, but 30,000,000 acres of the arid lands are said to have a possible use as grazing lands when wells and tanks have been established within the area.[18] The figures used in this group are those established as of 1919 by the Department of Agriculture. There would of course be some change in extent from year to year, but such changes would probably not be great enough to affect the figures shown.

NATIONAL PARK AND MONUMENT LANDS.—Certain areas of the country, because of the grandeur or unusual character of their natural features or because of historic interest attaching to the locality, have been set aside as permanent national parks and monuments. These areas change slightly from time to time but amount in total for each year to the round figure shown in the table.[19]

RAILWAY RIGHT OF WAY.—The figure of land used for this purpose was found for each year by assuming an average width of right of way of 120 feet and applying this to the total mileage reported by the Interstate Commerce Commission for main and branch lines. Stated in round numbers, the figure remains constant.

[18] Yearbook, 1929, p. 369.

[19] For detail see Appendix Table 17.

NATIONAL FOREST AREA.—Lands set aside under act of Congress to insure a future supply of timber range from a total of 138,000,000 acres in 1919 to 139,000,000 acres in 1913. Changes take place in this area from time to time due to the elimination of lands that are not forested or suitable for forestation and the addition of cut-over lands for reforestation.[30] The changes, however, are not on the whole very great, and in this study the principal interest in this area is in its use for grazing purposes to which reference will be made again.

PRIVATELY OWNED FOREST AREA.—A large part of the forest area of the country is in private lands. The acreage used in this report was found by taking the figure of privately owned forest area as shown in the special report of the Forest Service as of June 1, 1920.[31] and adding to it the national forest area shown for that year. This method of finding total forest area leaves out of account about 7,000,000 acres of State and municipal forest lands, but still gives a total of over 20,000,000 acres more than indicated by the Department of Agriculture.[32] The estimate of timber stand for other years is then obtained by assuming that each year's cut of lumber will be at the average stand for the region in which cut. This was reported by the Bureau of Corporations as 32,000 board feet per acre for the Pacific Northwest; 6,100 board feet per acre for the Southern Pine region; and 5,600 board feet per acre for the Lake States.[33] Dividing the figures of lumber cut for each of these regions for each year in the period by the corresponding figure of average stand a figure of estimated acreage cut is obtained for each year.[34] By taking the total of 503,000,000 acres obtained for 1920 and adding back the estimated area cut in each preceding year, the estimated stand for these is found, and by subtraction the estimated stand for each year since 1920 is found.[35] Then, by taking the national forest area out for each year, the approximate privately owned area is determined. In this connection the interest in privately owned timber area is in the use that is made of such area for grazing purposes and in the extent of area released for other purposes each year by the removal of the timber. The area cut shows a gradual, but not regular, decrease through the period, the low figure being about 3,500,000 acres in 1921, as compared with a high figure of 5,500,000 acres in 1912. This decrease in area cut is due partly to a decrease in quantity of lumber cut, but partly also to a shifting of the lumber industry from the Southern Pine region to the Pacific Northwest, where the stand is much heavier.

PASTURE OR GRAZING LANDS.—This use requires a greater extent of territory than any other to which land is put in this country. In order to determine what the requirements for this purpose were from year to year a preliminary computation was made as of the year 1919, in order to compare with similar estimates made by others, by taking the reported or estimated requirements per head of stock, or similar figures, for the several regions, roughly averaging them for each region, and then applying to each such average the number of

[30] For detail see Appendix Table 18.
[31] Timber depletion, etc., report of the Forest Service in response to Senate Resolution 311, p. 33.
[32] Agriculture Yearbook, 1923, p. 416.
[33] The Lumber Industry—Standing Timber, p. 168.
[34] It is assumed that the stand for the Lake States will apply to all regions other than the Southern Pine and the Pacific Northwest.
[35] For detail see Appendix Table 19.

stock to be pastured or grazed in the region. The sum of the areas obtained in this way was 1,120,000,000 acres. It was then found that according to the Department of Agriculture "the area of land in the United States used for grazing, excluding crop land pastured part of the year, is about 1,055,000,000 acres."[36] This has been accepted as the correct figure of grazing acreage for the year 1919, and using it as a base, the requirements for other years have been computed by assuming that the requirement for this purpose would vary practically directly with the number of cattle and sheep to be grazed or pastured. Mules and horses are pastured also, but as they work a considerable part of the time the unit of area per animal actually used for them would be much smaller proportionately than for cattle and sheep. Hogs require some pasturage, but very little compared with the other animals mentioned, probably not exceeding 10,000,000 acres in total. It is believed, therefore, that cattle and sheep taken together furnish the best index of the requirements. The figures used for this purpose were the numbers on hand January 1 of each year, and sheep were assumed to graze one-half as much per unit as cattle, which is somewhat higher than the results shown in studies made by the Department of Agriculture.[37] Since any error in method is carried through the period in parallel, the results obtained are believed to be fairly accurate approximations of the area used for this purpose. In Table 68 (p. 128) 111,000,000 acres of this area is included each year in that under the head of national forest, that being the primary use of the area, and 148,000,000 more is shown as pasture lands and also included under other heads, largely under that of privately owned forest area. It was impossible accurately to locate the lands used in this way in different years, so the duplication was allowed to go in and has been deducted at the foot of the table.

Cropped Lands.—There are three of the classes of lands shown in Table 68 that are used entirely for agricultural purposes. Of these, crop lands are the most important from the standpoint of earning power. The area used for farmsteads is so small that even if the earning power be considerably larger per acre the result will be smaller in total, and the earning power per acre is so much smaller per acre for grazing land that the total falls short of that for cropped lands.

The area devoted to this purpose is found by taking that shown in reports of the Department of Agriculture as used for each of 24 important crops and adding to the total of these for each year a round figure of 10,000,000 acres to cover other crops. For the year 1919 it was possible to find reports for other crops (in some cases estimates) totaling 6,706,000 acres. It was assumed that 3,300,000 acres, or roughly 50 per cent more, would cover cropped area that had not been found. The attempt was made to get only harvested areas where possible and to count only one use of the land during the year. This method gives almost exactly the same figure in total for the year 1919 as that given for harvested crops by the Department of Agriculture.[38]

This cultivated area has been divided roughly into that used for the growing of food crops, that used for the growing of feed crops,

[36] Agricultural Yearbook, 1923, p. 305.
[37] Agricultural Yearbook, 1923, p. 410.
[38] Agricultural Yearbook, 1923, p. 410.

and that used for growing fiber and other crops.[29] In cases where the products of a crop would fall in two of the groups the area has been placed with the areas of that group in which it was believed it would fall based on the value of its principal product. The area used for feed crops is much greater in extent than that used for either of the other groups of crops. In fact, it ranges from about two and one-half to nearly four times as great as that used for foods and in most years is more than two times as great as that used for both other classes of products.

The following table shows the extent of three areas and the total in hundreds of thousands of acres:

TABLE 69.—*Approximate crop acreage of the United States used for production of foods, of feeds, of fiber, and of miscellaneous product and total, 1918–1923*

[In hundreds of thousands of acres]

Year	Foods	Feeds	Fibers	Crops for which acreage is not reported[1]	Total
1912	501	2,264	357	100	3,302
1913	641	2,227	385	100	3,353
1914	673	2,206	382	100	3,361
1915	702	2,278	330	100	3,410
1916	676	3,324	350	100	3,455
1917	640	2,476	359	100	3,575
1918	802	2,375	380	100	3,657
1919	643	2,249	300	100	3,052
1920	783	2,325	282	100	3,501
1921	508	2,307	321	100	2,506
1922	821	2,341	350	100	3,612
1923	750	2,367	307	100	3,023

[1] For the year 1910 acreage figures for enough of the smaller crops were found to total 0,706,000,000 acres. It was then assumed that 50 per cent added to this would cover crops for which acreage was not found. The figure was then taken as a round 10,000,000 and added in each year to the sum of the figures for the different groups. Most of this miscellaneous cropped land is used for food production.

As shown in the above table, the areas devoted to different uses remain fairly constant throughout the period, except for that used for foods, which shows a marked increase in the period of the war, and while there was some decrease in the years following, it remained greater than at the beginning of the period. The year 1917 shows a considerably greater area used for feeds than other years. This was due to the very large corn acreage of that year; the great extent of acreage used for pasturage in this and the three following years was noted above. It is probably impossible to say just what proportion of cultivated lands should be permitted to lie entirely idle and rest or whether crop rotation will entirely take care of this need. It seems probable, however, that in the years 1918 and 1919 the country was closely approximating complete utilization of its land area. The most efficient use was not necessarily being made of the different areas, but, according to existing customs, use was being made of practically all the land in the country in those years. This fact may have had a bearing on what appeared to be inflated prices of farm lands in certain sections in the years immediately following.

[29] See Appendix Table 14.

Chapter VI

WEALTH OF CORPORATIONS

Section 1. Method of estimating corporate wealth.

The book value of wealth used in corporate business in 1922 is estimated by the commission at approximately $102,000,000,000.

This estimate was arrived at by adding to the value of land, buildings, and equipment, as compiled by the Bureau of Internal Revenue from corporation returns for taxation purposes,[1] estimates of the value of inventories, cash, and other movables used in the corporate business (except good will, patents, etc.). For 54,862 corporations, owning nearly one-fifth of the total fixed assets of all corporations, the Bureau of Internal Revenue furnished the commission data showing separately and by industries the value of inventories and the value of land, buildings, and equipment. The ratios between these two classes of investment, thus indicated for the different industries, were applied to the total value of land, buildings, and equipment owned by all corporations within the various classes reported, to arrive at estimated inventory values for all corporations comprising each class. The total amount of cash and other movables included in the estimate was taken at 8 per cent of the combined value of fixed assets and inventories. This estimate of 8 per cent was based on data secured from State tax records and other sources[2] for 1,660 corporations of various sizes and activities. The aggregate value of net current assets (exclusive of inventories) at the end of 1922 for these corporations equalled about 8 per cent of the aggregate value of their plants and inventories combined.

In thus estimating the wealth employed in corporate businesses at $102,000,000,000, no account has been taken of such items as good will, patents, trade-marks, etc. While these items may in some instances represent large capital expenditure, yet as already stated, they are of value only to the extent that they may be the means of ultimately diverting to, or creating for, their owners tangible wealth or services. The commission's estimate also excludes investments outside the business of the corporations. It seems a safe assumption that such investments are for the most part in the stocks and bonds of other corporations, and that their inclusion would generally result in duplication.

Another, but less convenient, measure of the wealth of corporations is the aggregate market value of capital stock, and bond and mortgage debts. This, however, does not exclude outside investments. For the year 1922 the Bureau of Internal Revenue reported $71,000,000,000 as the par value of stock of corporations reporting par value of shares, and $5,000,000,000 as the so-called "fair value" of stock of corporations reporting no par value of shares and no stock value. The bureau reported $75,800,000,000 as the aggregate "fair value"

[1] Reported by the Bureau of Internal Revenue in "Statistics of Income," 1922, pp. 40–41.
[2] See p. 134.

of all corporate stock. This "fair value" as defined by the bureau,[1] is—

> the value of the entire outstanding stock of the corporation considered as a going concern, giving due consideration to the present worth of the assets, tangible and intangible, the earning capacity, dividends disbursed, the market value of shares, and other factors that affect values generally.

The bureau also shows that other contributions to corporate capital represented by bonds and mortgages amounted to $22,700,000,000 in 1922, making a total of $98,500,000,000 for fair value of capital stock outstanding and the capital represented by bond and mortgage debts. This total may be compared with the $102,000,000,000 estimated by the commission as representing the wealth in corporate use. The former figure should be the higher, as it includes outside investments. The small discrepancy may indicate somewhat exaggerated book values.

The bulk of the wealth employed in certain lines of business activity is owned by corporations, while in others partnerships or individual ownership predominate. For example, most of the wealth employed in manufacturing and transportation is owned by corporations, while much of the wealth devoted to trade is owned by partnerships and individuals, and almost all of the wealth employed in farming is owned by individuals.

Section 2. Relative wealth of corporations in different industrial groups.

Returns filed with the Treasury Department for the capital stock tax in 1922 indicate a total of 366,690 business corporations in the United States. In reporting the fair value of the stock of these corporations the Bureau of Internal Revenue groups the corporations on a basis of the type of industry in which they were engaged, as follows:

TABLE 70.—*Corporations reporting to Bureau of Internal Revenue for 1922, grouped on a basis of the type of industry in which engaged*[1]

Groups	Number	Per cent
Agriculture and related industries	8,706	2.4
Mining and quarrying	18,384	5.1
Manufacturing	80,294	21.9
Construction	9,888	2.7
Transportation and other public utilities	23,472	6.4
Trade	86,530	23.6
Public service	21,533	5.9
Finance	85,418	23.3
Inactive concerns	21,581	5.9
All other	10,369	2.8
Total	366,690	100.0

[1] Compiled from Statistics of Income, 1922, pp. 40, 41.

In point of number, trading corporations, it will be noted, rank first, with 23.6 per cent of the total, closely followed by finance corporations (i. e., banks, trust, and insurance companies, stock, bond, loan, and realty-holding companies, etc.) with 23.3 per cent, and manufacturing companies with 21.9 per cent. These three lines of

[1] "Statistics of Income," 1922, p. 37.

corporate activity thus account for nearly 69 per cent of the total number of corporations in the country.

In the special compilation of the value of the assets for 54,862 corporations which the Bureau of Internal Revenue prepared for the commission during the course of the present inquiry, data were presented separately for each of the above-mentioned groups and for the more important of the specific industries embraced in certain groups. On this basis it was possible for the commission to arrive at estimates of the tangible wealth of corporations in each group, as follows:

TABLE 71.—*Estimated value of wealth used in corporate business for specified groups of industries in 1922*

Groups	Land, buildings, and equipment [1]		Inventories and other current assets, net [2]		Total	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
	Millions		*Millions*		*Millions*	
Manufacturing	$16,205	20.0	$15,394	44.6	$33,631	32.9
Transportation and other public utilities	23,632	34.8	3,697	10.7	27,329	26.7
Finance [3]	3,906	12.1	2,984	8.8	11,892	11.6
Trade	3,409	5.0	8,006	23.3	11,465	11.2
Mining and quarrying	8,492	12.5	1,613	4.7	10,076	9.8
Construction	1,668	2.8	1,205	3.8	2,875	2.8
Agriculture and related industries [4]	1,107	1.7	770	2.2	1,877	1.8
Service [5]	1,205	1.0	193	.6	1,448	1.4
Inactive	8		14		22	
All other	1,201	1.8	403	1.5	1,694	1.7
Total	67,896	100.0	34,501	100.0	102,399	100.0

[1] Reported by the U. S. Bureau of Internal Revenue, Statistics of Income, 1922, pp. 40, 41.
[2] Estimated by the Federal Trade Commission. See page 139 for method.
[3] Includes banks and trust companies, stocks and bonds, loan, realty-holding, etc., insurance and all other finance.
[4] Includes farming, logging, fishing, ice harvesting, etc.
[5] Includes domestic service (hotels, etc.), amusements, business service, educational, curative, legal, engineering, etc.

Practically one-third of all the wealth used in corporate businesses is employed in manufacturing operations, according to the table. Second in importance come the transportation and other public-utility corporations with 26.7 per cent of the total corporate wealth. Trading corporations and financial corporations, both of which exceed in number those engaged in manufacturing and transportation, rank considerably below them in the amount of wealth employed. The wealth used in trading corporations represented an estimated 11.2 per cent of the total corporate wealth, while that of financial corporations represented 11.6 per cent. This reversal of rank is expressive of the greater relative concentration of operations in the manufacturing and transportation industries. The estimated total wealth employed in manufacturing corporations is about $33,651,000,000, while that in transportation and other public-utility corporations is estimated at about $27,329,000,000. However, the value of fixed assets (land, buildings, and equipment) attached to transportation and other public-utility corporations considerably exceeds that for manufacturing corporations, amounting to an estimated $23,632,000,000 as against $16,205,000,000 for the manufacturing corporations.

It is of interest to note that the $162,000,000,000 estimated as employed in corporate business represents nearly one-third of the total wealth of the United States as estimated by the Census Bureau. This wealth of corporations embraces, no doubt, the principal portion of the value of the Nation's exhaustible natural resources, together with a large part of the value of land and buildings used for commercial and industrial purposes.

Section 3. Wealth of manufacturing corporations.

The estimated wealth in manufacturing corporations is $33,651,000,000. Since the total number of such corporations reporting to the Bureau of Internal Revenue in 1922 was 80,234, the average wealth per corporation was about $419,000. Although the value of fixed assets greatly exceeds the value of net current assets (inventories, cash, etc.), in most types of corporations, the two values are very nearly equal in the case of manufacturing corporations, amounting to an estimated $18,265,000,000 for fixed assets and $15,386,000,000 for inventories, cash, etc. This unusually large investment in movables is indicated further by the fact that, although the total wealth of manufacturing corporations is 32.9 per cent of the wealth of all corporations, the wealth of manufacturing corporations invested in movables represents 44.6 per cent of the wealth so invested for all corporations.

Corporate Wealth in Specific Manufacturing Industries.—The compilations prepared for the commission by the Bureau of Internal Revenue, covering 54,862 corporations, included separate data for the more important specific industries in the manufacturing group. On this basis, and after the method employed in estimating the wealth of all corporations (see p. 132), it was possible to estimate the wealth employed in each of these specific manufacturing industries as follows:

Table 72.—*Estimated value of wealth used in corporate business for specified manufacturing industries in 1922*

Industry	Land, buildings, and equipment[1]		Inventories and other current assets, net[1]		Total	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
	Millions		*Millions*		*Millions*	
Metal and metal products	$5,396	32.0	$4,129	26.8	$9,525	29.6
Food products	2,665	14.7	2,364	15.3	5,044	15.0
Textile products	1,991	10.9	2,407	15.6	4,398	13.1
Chemicals and allied substances	1,963	10.7	1,269	8.1	3,232	9.6
Lumber and wood products	1,293	7.1	1,211	7.9	2,504	7.5
Paper, pulp, and products	814	4.5	396	2.6	1,210	3.6
Stone, clay, and glass	802	4.4	376	2.6	1,178	3.5
Leather products	276	1.5	602	3.9	878	2.6
Printing and publishing	466	2.5	247	1.6	713	2.1
Rubber products	343	1.9	293	1.7	636	1.8
All other manufactures	1,763	9.6	2,146	14.0	3,928	11.7
Total	18,265	100.0	15,386	100.0	33,651	100.0

[1] Computed from values reported by the Bureau of Internal Revenue.
[2] Computed from values estimated by the Federal Trade Commission. (For explanation of method of estimating, see p. 132.)

Nearly 30 per cent of all corporate wealth devoted to manufacturing in 1922 was used in the manufacture of metal and metal products, according to the table. Of the approximate $10,000,000,000 so engaged, it is estimated by the commission that considerably over $4,000,000,000, were employed in the vast steel business [4] of the country.

Next in rank to the corporate wealth in metal manufactures comes that in the manufacture of food products, estimated at more than $5,000,000,000, or 15 per cent of the total. This estimate includes the wealth employed in the great meat-packing industry, estimated at a minimum of $853,000,000.[5]

The corporate wealth employed in the textile industry is estimated at close to four and one-half billions, or 13.1 per cent of the total in all manufactures. This compares with an estimated $669,000,000 of corporate wealth engaged in cotton and wool textile manufacture in Massachusetts alone according to data prepared for the commission by the Massachusetts State Bureau of Labor and Statistics.

After metals, foods, and textiles, the most important manufacturing investment is in chemicals and allied substances (including petroleum refining corporations [6]) employing an estimated three and one-fourth billions, and in lumber and wood products employing an estimated two and a half billions. The estimated corporate wealth employed in these five industries (metals, food, textiles, chemicals, and lumber) thus represents three-quarters of the estimated total for all manufacturing corporations and almost one-quarter of the total for all corporate enterprises in 1922. The five industries also employ an estimated three-quarters of all the wealth represented by fixed assets (land, buildings, and equipment) of all manufacturing corporations and nearly one-fifth of that represented by fixed assets of all corporate enterprises. Their proportion of the total wealth in movables (inventories, cash, etc.) is even greater, amounting to an estimated one-third of that for all corporate enterprises.

Section 4. Wealth of transportation and other public utility corporations.

Wealth employed in transportation and other public utility corporations is estimated at $27,000,000,000, or more than one-fourth of the total for all corporate enterprises. This is second only to the wealth in manufacturing corporations. The total number of these corporations reporting to the Bureau of Internal Revenue in 1922 was 23,472, which means an average wealth per corporation of $1,163,000. This compares with an average of $419,000 for manufacturing corporations. In the ownership of land, buildings, and equipment these public-utility corporations rank ahead of the manufacturing corporations, with a total of over twenty-three and one-half billions of dollars, or nearly 35 per cent of the total for all corporations. In the value of its inventories, cash, and other movables, however, estimated at about 3.7 billions, the public-utility

[4] See Table 7a, p. 142. Includes United States Steel Corporation, Bethlehem Steel Corporation, and 102 other companies.

[5] See Appendix Table 20.

[6] It is not possible to identify all the wealth employed in the petroleum industry with that of any single industrial group, because a large proportion of the petroleum corporations are integrated, i. e., engaged in producing, transporting, refining, and marketing. Data prepared by the American Petroleum Institute in 1924 indicate a total of at least four billions of corporate wealth engaged in the production, refining, and marketing of crude petroleum. (See Appendix Table 2b.) In addition, the wealth employed by pipe-line transportation corporations in 1922 was $420,000,000, according to data prepared from Interstate Commerce Commission records.

corporations rank below both manufacturing and trading corporations. This difference results from the fact that the indicated proportion of movable to fixed assets for public-utility corporations is smaller (with one exception) than that for any other group.

CORPORATE WEALTH IN SPECIFIC PUBLIC UTILITIES.—Nearly 75 per cent of the estimated total wealth employed in public-utility corporations represents the wealth used by railroads. The estimated corporate wealth in railroads and other specific public utility industries is estimated by the commission as follows:

TABLE 73.—*Estimated value of wealth used in corporate business for specified transportation and other public-utility industries in 1922*

Industry	Land, buildings, and equipment[1]		Inventories and other current assets, net[2]		Total	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
	Millions		*Millions*		*Millions*	
Steam railroads	$16,634	81.9	$2,762	74.4	$17,385	62.6
Electric railroads	2,014	8.6	187	5.1	2,201	8.1
All other railroads and combinations	386	1.5	30	.8	265	1.4
Telegraph, telephone, and radio companies	1,225	5.2	125	3.4	1,360	4.8
Electric light and power companies	1,154	4.9	125	3.4	1,279	4.7
Gas companies	1,006	4.6	134	3.6	1,290	4.5
All other transportation and public-utility companies	3,144	13.3	345	9.3	3,489	12.8
Total	23,032	100.0	3,097	100.0	27,229	100.0

[1] Reported by the Bureau of Internal Revenue.
[2] Estimated by the Federal Trade Commission. (For explanation of method of estimating, see p. 132.)

The total estimated corporate wealth employed in railroads was $20,000,000,000, according to the above table. Of this amount the wealth used in steam railroads represented an estimated 17.4 billions, while that in electric railroads represented 2.2 billions. Of the total value of land, buildings, and equipment owned by public utilities, railroads owned an estimated 72 per cent. They owned 80 per cent of the estimated value of the movable assets. While railroads are credited with one-fourth of the total amount of wealth in land, buildings and equipment reported for corporations of all classes, they are credited with less than one-eleventh of the estimated total wealth in inventories, cash, and other net current assets of corporations of all classes.

Telegraph, telephone, and radio companies, electric light and power companies, and gas companies together owned about one-seventh of the estimated wealth of public-utility corporations in 1922.

Under "All other transportation and public-utility companies" in the above table, are included water transportation companies, cartage and storage companies, waterworks, etc.

There are wide discrepancies between the values of public utilities estimated on this basis and those shown in Table 1, but the commission did not have time to investigate and to fully determine the reasons for these differences.

Section 5. Wealth of mining and quarrying corporations.

The wealth of mining and quarrying corporations is estimated at about 10.1 billions of dollars, or nearly 10 per cent of the total esti-

mated for all corporations. Since the total number of mining and quarrying corporations reported was 18,884, the average wealth per corporation may be estimated at $535,000. The estimated value of land, buildings, and equipment for these corporations is about 8.5 billions, or 12.5 per cent of the total for all corporations. The value of inventories, cash, etc., is estimated at 1.6 billions, which is only 4.7 per cent of the total for all corporations. The proportion of fixed assets to total wealth, thus, is considerably above the average.

CORPORATE WEALTH IN SPECIFIC MINING OR QUARRYING INDUSTRIES.—Metal mining and oil and gas mining are the two most important of the mining and quarrying industries and together employ an estimated 62 per cent of the total wealth in the group. The corporate wealth in these two and other specified mining and quarrying industries is estimated as follows:

TABLE 74.—*Estimated value of wealth used in corporate business for specified mining and quarrying industries in 1922*

Industry	Land, buildings, and equipment [1]		Inventories and other current assets, net [2]		Total	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
	Millions		*Millions*		*Millions*	
Metal mining	$2,409	28.5	$743	46.0	$3,152	31.2
Oil and gas mining	2,718	32.1	340	21.1	3,058	30.4
Coal mining	2,128	25.2	284	17.6	2,412	24.0
All other mining and quarrying	1,209	14.2	246	15.3	1,455	14.3
Total	8,462	100.0	1,613	100.0	10,075	100.0

[1] Values reported by the Bureau of Internal Revenue.
[2] Values estimated by the Federal Trade Commission. (For explanation of method of estimating, see p. 132.)

The estimated corporate wealth devoted to metal mining and that devoted to the mining of oil and gas were nearly equal in 1922, according to the above table. The estimated value shown for each is in excess of $3,000,000,000, or nearly one-third of the total estimated corporate wealth in mining and quarrying. The corporate wealth devoted to coal mining amounted to an estimated 2.5 billions of dollars in 1922, or close to one-quarter of the total. Thus metal mining, the mining of oil and gas, and coal mining accounted for about 85 per cent of the estimated corporate value of all wealth in mining and quarrying. The estimate for oil and gas mining does not include corporations in petroleum refining, as these are classed as manufacturing corporations.

The estimated net value of inventories, cash, and other current assets amounted to 16 per cent of the estimated total wealth devoted to the industry. In the case of the oil and gas mining corporations and the coal-mining corporations, however, it amounted to only about 11 per cent of the respective totals for those particular industries, while for metal mining corporations it amounted to 23.5 per cent of the total.

Of the total value of land, buildings, and equipment owned by all mining and quarrying corporations, 32 per cent is credited to oil and gas mining companies, 28.5 per cent to metal mining companies, and 25 per cent to coal-mining companies.

Section 6. Wealth of financial and other types of corporations.

WEALTH OF FINANCIAL CORPORATIONS.—Under "Financial corporations" are included banks and trust companies, companies engaged in selling stocks and bonds, loan companies, realty-holding companies, insurance companies, etc. The wealth devoted to the business of corporations of this kind in 1922 is estimated at about 11.9 billions of dollars, or over 11.5 per cent of the estimated total wealth devoted to all corporate business. Of this amount about 1.7 billions are devoted to trust companies alone, according to a compilation prepared by the United States Mortgage & Trust Co.[1] Since the number of finance corporations reporting to the Bureau of Internal Revenue in 1922 was 85,413, the average wealth per corporation must have been about $139,000, or considerably less than the average for corporations of all classes. If, however, the deposits held by these finance corporations were included as a part of their wealth employed, the average would be very materially increased. The wealth of trust companies, for example, would be 12.2 billions instead of 2.2 billions. In the ownership of land, buildings, and equipment, finance corporations rank third among the groups shown in Table 71, with 13.1 per cent of the total. The estimated net value of inventories, cash, and other current assets credited to the group, however, amounts to only 8.6 per cent of the total estimated for corporations of all classes.

WEALTH OF CONSTRUCTION CORPORATIONS.—The corporate wealth devoted to construction in 1922 is estimated at about $3,000,000,000, or 2.8 per cent of the estimated wealth devoted to all corporate business. The total number of construction corporations reporting was 9,888, which indicates an average wealth per corporation of about $293,000. Of the estimated wealth of these corporations, a little over half is represented by land, buildings, and equipment, which comprise about 2.3 per cent of the total value of land, buildings, and equipment for all corporations. Of the total estimated net value of inventories, cash, and other current assets for all corporations, that of construction corporations comprised an estimated 3.8 per cent.

WEALTH OF CORPORATIONS ENGAGED IN AGRICULTURE AND RELATED INDUSTRIES.—The corporate wealth devoted to agricultural and related industries in 1922 is estimated at about $2,000,000,000, or nearly 2 per cent of the estimated wealth devoted to all corporate business. The "related industries," which include logging, ice harvesting, fishing, etc., account for close to one-half billion of the estimated $2,000,000,000, while the remaining 1.5 billions were devoted to the business of corporations engaged in farming. The number of corporations engaged in agriculture and related industries, as reported to the Bureau of Internal Revenue, was 8,796, indicating an average wealth per corporation of about $216,000.

WEALTH OF SERVICE CORPORATIONS.—Service corporations include hotel companies, amusement companies, companies engaged in the sale of educational service, business service, engineering service, etc. The corporate wealth devoted to this group in 1922 is estimated at about 1.5 billions of dollars. This group employs an estimated 1.4 per cent of the wealth devoted to all corporate business. It

[1] See Appendix Table 20.

includes 21,533 corporations with an average wealth of about $70,000 per corporation. This average is lower than that of any other corporate group.

Of the 1.5 billion dollars of wealth credited to service corporations, the value of land, buildings, and equipment comprised 87 per cent.

WEALTH OF TRADING CORPORATIONS.—The corporate wealth devoted to the business of trading in 1922 is estimated at about 11.5 billion dollars. This is 11.2 per cent of the total estimated wealth used in all corporate business. Trading corporations embrace the whole body of distributors, including wholesalers, jobbers, retailers, brokers, etc. The importance of this group is greater than its indicated proportion of total corporate wealth, the nature of the business obviating the necessity of a large fixed investment. For example, in this group alone do the estimated net current assets (inventories, cash, etc.) exceed the fixed assets (land, buildings, and equipment). The estimated total fixed assets for the group amount to only 3.4 billions of dollars as against a total of 8.1 billions for the current assets. As a result the group ranks fifth in the ownership of land, buildings, and equipment, with only 5 per cent of the total for all corporations, but ranks second, according to the commission's estimates, in the wealth represented by the net value of inventories, cash, and other current assets, with 23.3 per cent of the total.

Section 7. Analysis of comparative wealth of groups and of specified industries.

A comparative analysis of the data presented in the preceding sections indicates that steam railroads outrank any other specific industry in the estimated amount of wealth employed, having about 17.4 billions of dollars or 17 per cent of the $102,000,000,000 total for all corporations in 1922. Next in rank come manufacturers of metal and metal products with close to 10 per cent of the total, followed by manufacturers of food products with 5 per cent of the total, and manufacturers of textile products with nearly 4.5 per cent of the total. Estimates for each of the specified industries compare as follows:

TABLE 75.—*Analysis of estimated wealth used in corporate business for specified groups of industries in 1922*

Industry	Estimated total wealth	Per cent of group total	Per cent of grand total	Average wealth per corporation	Per cent of fixed assets [1] to total wealth
	Billion dollars			Thousand dollars	
Manufacturing	38.0	100.0	22.9	418.8	54.5
Metal and metal products	10.0	26.6	6.8	612.5	53.0
Food products	6.0	15.0	4.9	368.7	54.0
Textile products	4.4	12.1	4.3	431.4	45.5
Chemicals and allied substances	3.2	9.5	3.1	503.0	62.5
Lumber and wood products	2.5	7.5	2.4	356.7	52.0
Paper, pulp, and products	1.2	3.6	1.2	690.8	60.7
Stone, clay, and glass	1.2	3.5	1.2	304.1	66.7
Leather products	.9	2.6	.9	413.4	33.3
Printing and publishing	.7	2.1	.7	85.3	71.4
Rubber products	.6	1.8	.6	913.2	58.6
All other manufactures	3.9	11.7	3.8	390.5	46.1
Transportation and other public utilities	37.3	100.0	26.7	1,163.1	84.4
Steam railroads	17.4	53.0	12.0	10,017.3	88.9
Electric railroads	2.2	6.1	2.1	2,182.5	90.0
All other railroads and combinations	.4	1.4	.4	1,178.9	90.2
Telegraph, telephone, and radio companies	1.3	4.3	1.3	293.3	92.3
Electric light and power companies	1.3	4.7	1.3	509.6	92.3
Gas companies	1.2	4.5	1.2	1,474.2	91.7
All other transportation and public utility companies	3.5	12.8	3.4	278.1	89.6
Trade	11.5	.....	11.2	122.9	29.6
Finance	12.9	.....	11.6	139.2	74.6
Mining and quarrying	10.1	100.0	9.8	534.6	94.2
Metal mining	5.2	51.3	5.1	1,244.6	78.8
Oil and gas mining	3.1	30.4	3.0	514.0	87.1
Coal mining	2.4	24.0	2.3	494.3	97.5
All other mining and quarrying	1.4	14.3	1.4	353.0	85.7
Construction	2.9	.....	2.8	263.2	55.2
Agriculture and related industries	1.9	.....	1.9	316.0	68.2
Service	1.5	.....	1.4	69.6	86.7
Inactive	[2].0	.....	.....	1.0	34.4
All other	1.7	.....	1.7	164.1	70.6
Grand total	162.4	.....	100.0	270.3	66.3

[1] Land, buildings, and equipment.

[2] $23,000,000 represented.

The table indicates that the highest proportions of fixed assets (land, buildings, and equipment) to total wealth exist in the transportation and public utility group, amounting to 92.3 per cent for electric light and power companies and to an exactly equal per cent for telegraph, telephone, and radio companies, as against an average of 66.3 for all corporations. The lowest percentage for fixed assets was one of 29.6 per cent for trading corporations. Next lowest was the manufacturing group, with an average of 54.5. Within this group the lowest ratio was that of 33.3 per cent for the corporations manufacturing leather products.

The steam railroad corporations not only greatly exceed any other corporate industry in total wealth employed, amounting to 17.4 billions of dollars, but also they have by far the greatest estimated wealth per individual corporation, averaging $10,017,300. Next in rank to steam railroads come electric railroads, with an average of $2,182,500 per corporation. The lowest averages appear for service

corporations, with $69,600, and printing and publishing corporations, with $85,300.

Section 8. Analysis of investment of wealth owned by corporations.

Neither the data prepared for the commission by the Bureau of Internal Revenue nor that published in the bureau's "Statistics of Income" indicated the relative amounts of corporate wealth invested outside the corporate business or the valuation of such assets as good will, appreciation, trade-marks, etc. The analysis in the preceding sections is based on wealth actually employed in the corporate business and does not include wealth invested in other enterprises. Neither does it include good will, appreciation, trade-marks, etc.

From balance sheets for some 1,660 corporations of various sizes and activities secured by the commission either from published sources or from the tax returns made to State governments, it has been possible to analyze the relative investment of over $15,000,000,000 of corporate wealth. From the data for these 1,660 corporations also was computed the ratio between fixed and movable assets which was applied in making the estimates of total wealth in corporate use presented in the preceding sections of this chapter.

The relative wealth invested in the corporate business and invested outside, together with the wealth in good will, appreciation, etc., and the total corporate wealth owned are shown for the 1,660 corporations as follows:

TABLE 76.—*Analysis of investment of wealth owned by 1,660 corporations in specified industries, 1922* [1]

Industry	Invested in corporate business		Outside investment		Good will, appreciation, etc.		Total [2]
	Amount	Per cent	Amount	Per cent	Amount	Per cent	
	Million dollars		*Million dollars*		*Million dollars*		*Million dollars*
104 steel companies	3,884.1	91.2	365.9	8.6	6.7	0.2	4,257.7
42 petroleum companies	4,165.1	94.4	249.3	5.6			4,414.4
218 oil and natural gas companies (Pennsylvania)	172.7	79.9	43.4	20.1			216.1
33 natural gas companies (Texas)	32.7	91.3	2.5	7.0	.6	1.7	35.9
38 pipe-line companies	429.2	76.3	62.0	11.2	[3] 70.6	12.5	562.6
304 bituminous coal companies (Pennsylvania)	753.0	83.6	147.3	16.4			901.4
122 anthracite coal companies (Pennsylvania)	403.5	79.5	103.1	20.4			506.0
26 telephone and telegraph companies	1,913.4	92.9	146.3	7.1			2,059.2
180 lumber companies (Louisiana)	150.2	91.9	13.1	8.0	.2	.1	163.5
4 largest tobacco companies	312.3	67.9	117.3	25.4	30.9	6.7	461.5
4 largest rubber and tire companies	465.8	89.6	44.8	8.1	12.5	2.3	553.1
4 largest 5 and 10-cent stores	100.1	65.1	52.1	33.9	1.6	1.0	153.8
4 largest meat packers	770.0	91.3	62.0	7.4	11.2	1.3	844.1
Total	13,690.0	89.8	1,412.0	9.3	134.3	.9	15,125.8

[1] For sources from which figures were obtained, see Appendix Table 20.
[2] Total of capital stock, long-time debts, reserves, and surplus.
[3] Appreciation.

A more detailed analysis of the balance sheets of these 1,660 corporations, together with a statement of the sources of information in each case, is shown in Appendix Table 20. The table above indicates about 90 per cent of the total corporate wealth as actually employed in the corporate business. Of the wealth of steel companies,

large meat packers, natural gas companies in Texas, lumber companies in Louisiana, telephone and telegraph companies, and petroleum companies, over 90 per cent was invested in the business, while outside investments ranged from 5.6 per cent to 8.6 per cent. Of the total wealth of large rubber and tire companies, nearly 90 per cent was invested in the business and slightly over 8 per cent was in outside investments. Nearly 80 per cent of the wealth of anthracite coal and of oil and natural gas companies in Pennsylvania, and over 83.5 per cent of the wealth of bituminous coal companies in Pennsylvania, was invested in the business. For pipe-line companies about 76 per cent of the total wealth is shown as invested in the business, while 12.5 per cent was made up of appreciated values. The lowest proportion of total wealth devoted to the business was that of 65.1 per cent shown for the four large 5 and 10 cent stores. For the four large tobacco companies nearly 68 per cent is shown as invested in the business and over 25 per cent was in outside investments.

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Chapter VII

OWNERSHIP OF CORPORATIONS

Section 1. Basis of commission's estimates.

The wealth devoted to corporate business in 1922, as estimated in the preceding chapter, amounted to nearly one-third of the estimated total wealth of the United States. Since corporations themselves are, of course, owned by their stockholders, the relative concentration or distribution of stock holdings for various classes of corporations determine, strictly speaking, the real concentration or distribution of corporate wealth.[1] That the ownership of stock in corporations has become much more widely distributed in recent years and that large proportions of the stock of a great many large corporations are now held by employees and customers are apparent from data received by the commission. Robert S. Binkerd, vice chairman of the committee on public relations of the eastern railroads, stated at the annual meeting of the Academy of Political Science on March 9, 1925, that the number of stockholders in certain selected major corporations[2] had increased 99 per cent in the last seven years from 2,537,105 in 1918 to 5,051,499 in 1925. Of this increase 52 per cent was in stock purchased by the general public, 34 per cent in stock purchased by customers, and over 13 per cent in stock purchased by employees.[3]

In his book on Industrial Ownership, Robert S. Brookings, founder of the Institute of Economics, says:[4]

> The change taking place within the last 40 years in the organization of business and modifying the essential character of the corporation as a business unit by the wide distribution of the ownership of its capital among the public promises to be one of the most important within modern history.

For the purposes of the present inquiry, schedules requesting data on the number and kinds of stockholders were addressed by the commission to a list of 10,000 corporations which was furnished by the Bureau of Internal Revenue. These 10,000 corporations were selected in such manner as to be representative of each of the 43 industrial groups into which the returns received by the bureau were divided in 1921 for the purposes of its "Statistics of Income." To this end the average investment of all corporations in each industrial group was ascertained and the proportion of the number of companies in each group to the total number in all groups. The list of

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[1] The wealth of corporations as indicated by their assets represents the investment not only in capital stock but also the investment of capital obtained by the issuance of bonds and other long-time obligations. The corporate assets are subject to such liens as may have been imposed by the issuance of bonds, mortgages, and the like, and to the extent of the value of such liens and of other debts the value of the stockholders' interest falls short of the total value of the corporate assets. In its study of the distribution of ownership of corporations, however, the commission has regarded such ownership as resting solely in the stockholders.

[2] Viz, railroads, express and Pullman service, street railways, gas, electric light, and power companies, packers, 10 oil companies, 5 iron and steel companies, and 10 high-grade miscellaneous manufacturing and distributing companies.

[3] Commercial and Financial Chronicle, Apr. 4, 1925, pp. 1672-1673.

[4] Industrial Ownership: Its Economic and Social Significance, p. 1.

10,000 corporations was then selected in these proportions from the 43 groups. Care was exercised so to select companies in each group that the variations in investments of the companies chosen should reflect as nearly as possible the variations in the investments of all companies in the group. The list included a proper representation of banks and insurance companies as well as of other business corporations.

Returns received from 4,367 of the 10,000 corporations to whom schedules were addressed form the basis of the tabulations and comparisons in the present chapter. While the number of corporations is small in comparison with the total number of corporations in the United States, the method employed in their selection makes them, it is believed, fairly representative. The capital stock of the 4,367 corporations comprised 12 per cent of the capital stock of all corporations. For some of the industries covered in the commission's analyses, the percentages of total capital stock represented by the corporations making returns were considerably under this average and in other cases they were considerably above the average. The proportions for the different industries were as follows:

TABLE 77.—*Proportion of total number of corporations and of total capital stock represented by the companies reporting data on ownership for 1922*

Industries	Proportion of total number of corporations	Proportion of capital stock
	Per cent	*Per cent*
Agriculture and related industries	0.8	0.9
Mining and quarrying	.7	7.3
Coal mining	.8	12.5
Petroleum mining	.8	7.4
Other mining and quarrying	.4	5.8
Manufacturing	1.7	10.5
Food products	1.0	12.6
Textile products	1.8	3.4
Leather products	1.9	6.1
Rubber, rubber goods, etc	2.0	5.1
Lumber and wood products	1.7	2.8
Chemicals and allied substances [1]	.1	43.3
Metal and metal products	.1	8.9
Other manufacturing	2.8	27.1
Construction	1.9	1.7
Transportation and other public utilities	1.5	21.4
Steam railroads	2.8	32.5
Electric railroads	2.4	0.1
Electric light and power	1.8	19.3
Gas	2.7	29.4
Telegraph and telephone	2.3	8.0
Other public utilities	1.1	1.6
Trade	1.1	3.2
Service	.3	1.4
Finance	1.4	4.2
All industries	1.2	11.9

[1] Mostly petroleum refining.

The total par value of the common stock reported by the 4,367 companies was $7,490,907,000, while that of the preferred stock was $1,574,726,000, a great number of the smaller companies reporting no preferred stock. The common stock reported was held by 1,074,851 stockholders, the average holding per stockholder amounting to $6,969. The preferred stock was held by 302,171 stockholders, with average holdings of $5,211. The average value of outstanding

common stock per corporation was $1,715,000, while the average preferred stock outstanding was $361,000. Since the returns of these 4,367 corporations represent merely a "sample" and the actual number and amounts reported by them are of interest chiefly in respect to their relative values, the discussion in the succeeding sections of this chapter is based upon percentages.

The size of the commission's "sample," it will be noted, ranges for different industries from less than 1 per cent to more than 43 per cent of the total capital stock. The sample is largest, and, by that token, probably most representative, in the case of manufacturing corporations and public utilities. It amounts to over 43 per cent of the capital stock for manufacturers of chemicals and allied substances, comprised largely of petroleum-refining companies, to nearly 35 per cent for steam railroads, almost 30 per cent for gas companies, close to 20 per cent for electric light and power companies, and 12.5 per cent each for companies engaged in coal mining and for companies engaged in the manufacture of food products.

Section 2. Average distribution of corporate stock holdings in various industries.

Data on outstanding capital stock and on number of stockholders, as reported to the commission for the year 1922 by 4,367 representative corporations, indicate, as already stated, that the par value of the average common-stock holding is $6,969, while that of the average preferred-stock holding is $5,211. The average amount of stock per stockholder, together with the average number of stockholders per corporation and the average value of outstanding stock per corporation, are shown for various industries, as follows:

TABLE 78.—*Average distribution of corporate stock holdings in various industries* [1]

Industries	Average par value per stockholder		Average number of stockholders per corporation		Average par value of total outstanding stock per corporation	
	Common	Preferred	Common	Preferred	Common	Preferred
Agriculture and related industries	$9,450	$1,813	15	2	$148,000	$3,000
Mining and quarrying	4,432	4,998	1,013	127	4,479,000	585,000
Coal mining	9,142	6,985	327	11	2,989,000	1,084,000
Petroleum mining	3,464	3,271	1,064	287	3,686,000	776,000
All other mining and quarrying	4,241	1,943	1,834	9	7,777,000	17,000
Manufacturing	6,331	6,391	254	101	2,307,000	647,000
Food products	4,101	7,115	339	62	1,392,000	443,000
Textile products	12,416	7,967	29	11	362,000	89,000
Leather products	6,101	3,602	128	106	845,000	387,000
Rubber, rubber goods, etc	3,857	2,894	206	602	794,000	1,705,000
Lumber and wood products	18,857	3,700	13	5	250,000	18,000
Chemicals and allied substances [2]	11,642	3,891	11,700	763	136,548,000	2,969,000
Metal and metal products	11,810	6,058	3,025	3,493	35,729,000	15,064,000
All other manufacturing	10,883	5,102	132	97	1,436,000	506,000
Construction	9,525	8,186	11	2	107,000	14,000
Transportation and other public utilities	6,799	5,484	1,153	339	7,839,000	1,858,000
Steam railroads	9,647	8,870	6,000	1,330	57,402,000	11,780,000
Electric railroads	3,936	4,045	890	98	3,502,000	396,000
Electric light and power	3,273	2,283	1,202	734	3,447,000	1,675,000
Gas	4,514	2,909	1,748	1,462	8,063,000	4,079,000
Telegraph and telephone	3,857	2,271	374	20	1,441,000	46,000
Other public utilities	6,103	2,000	69	8	424,000	23,000
Trade	10,487	2,820	21	10	221,000	28,000
Service	5,295	1,486	20	9	106,000	14,000
Finance	3,855	2,430	118	8	453,000	18,000
All industries	6,969	5,211	246	69	1,715,000	361,000

[1] Based on data received from 4,367 representative corporations. [2] Mostly petroleum refining.

The average holding of common stock ranged from $3,273 per stockholder for electric light and power companies to $18,957 for manufacturers of lumber and wood products, while the average holding of preferred stock ranged from $1,486 for service corporations to $9,883 for coal-mining corporations. As a group, the trading corporations exceeded all others in the average holding of common stock, while the construction group ranked first for holdings of preferred stock. The lowest average holding for common stock was $3,654 for financial corporations, while that for preferred stock was the $1,486 for service corporations already mentioned.

The only industries in which the average holding of common stock did not exceed the average holding of preferred stock were coal mining, food manufacture, steam railroads, and electric railroads. In almost every industry the average amount of common stock outstanding per corporation was much larger than that of preferred, and, in spite of a much larger average number of holders of common stock per corporation, the average size of holding for common stock was generally larger than for preferred. The concentration of ownership, however, was less on the average with respect to common stock than for preferred.

AVERAGE HOLDINGS OF DIFFERENT CLASSES OF HOLDERS.—Since the stock of corporations is usually held by different classes of individuals or organizations and for different purposes, the corporations reporting to the commission were requested so to classify their returns as to indicate the stock held by (1) individuals living in the United States other than trustees or brokers, (2) trustees, (3) brokers, (4) corporations, (5) nonprofit institutions, and (6) foreign holders. In each instance the number of stockholders, as well as the amount of stock held, was requested. The average par value of stock holdings in 1922 in each of the foregoing classes, as indicated by the returns of the 4,367 corporations reporting, was as follows:

TABLE 79.—*Average holdings of common and preferred stocks by various classes of stockholders, for corporations reporting, 1922*[1]

Class of holder	Average par value per stockholder	
	Common stock	Preferred stock
Individuals[2]	$4,955	$3,870
Trustees	21,069	14,771
Brokers	48,926	31,589
Corporations	62,445	22,489
Nonprofit institutions	25,041	16,084
Foreign holders	7,590	8,870
All classes	6,909	5,211

[1] Based on returns of 4,367 representative corporations.
[2] Exclusive of brokers, trustees, and foreign holders.

The average holding of common stock was largest in the case of corporations and smallest in the case of individuals. The average for preferred stock was greatest in the case of brokers and smallest in the case of individuals. The only class whose average holding of preferred stock exceeded its average of common stock was the foreign

holder. The excess of average holdings of common stock over preferred stock was greatest in the case of corporation holders.

AVERAGE HOLDINGS OF OFFICERS AND DIRECTORS AND OF EMPLOYEES.—In addition to the foregoing data on classes of stockholders the corporations to whom schedules were addressed were requested to report the amount of stock held by officers and directors and by employees. Not all of the 4,367 corporations reporting gave this information, and for this reason the averages computed are not as representative as in other cases. For the corporations reporting adequate information the average holding per person of officers and directors amounted to $34,843 for common and $34,264 for preferred stock. The average holding per person for employees amounted to $1,419 for common and $2,803 for preferred stock. The average holding for officers and directors was thus considerably above that for other individual holders while the average for employees was well below that for other individuals. The average reported holdings for officers and directors and for employees, by the various industrial groups, were as follows:

TABLE 30.—*Average individual[1] holdings of common and preferred stock and average holdings of officers and directors and of employees for corporations reporting, by industries, 1932*

Industries	Common stock			Preferred stock		
	Officers and directors	Employees	Individuals[1]	Officers and directors	Employees	Individuals[1]
Agriculture and related industries	$23,897	$2,570	$10,049	$11,177	.....	$2,229
Mining and quarrying	38,138	1,430	2,686	63,040	$1,747	3,797
Manufacturing	77,483	1,472	7,021	48,342	2,472	4,426
Construction	29,010	2,772	6,468	10,060	2,228	7,833
Transportation and other public utilities	25,616	712	4,188	13,049	904	3,403
Trade	29,111	5,100	6,557	11,836	2,892	2,382
Service	16,252	901	4,775	8,447	1,157	1,284
Finance	12,739	1,240	8,113	10,061	1,466	2,128
All industries	34,843	1,419	4,955	34,264	2,803	3,579

[1] Includes officers, directors, and employees, but excludes brokers, trustees, and foreign holders.

The average individual holding of common stock by officers and directors, as shown by the above table, was highest in manufacturing corporations, amounting to over $77,000. In the other industrial groups the averages ranged from nearly $13,000 to $38,000. The highest average holding for officers and directors of preferred stock, amounting to nearly $64,000, is shown in mining and quarrying corporations; the averages in the remaining industrial groups ranged from about $8,500 to over $48,000.

The average holding of common stock by employees varied widely, ranging from $700 in companies engaged in transportation and other public utilities to $5,000 in trading companies. The average holdings for preferred stock ranged from $900 in companies engaged in transportation and other public utilities to $3,500 in manufacturing companies.

NUMBER OF SMALL STOCKHOLDERS.—While the average holding for all industries amounted to $6,969 for common stock and $5,211 for preferred, the data for the 4,367 representative corporations reporting to the commission show that nearly one-third of all corporate

stockholders in 1922 held not more than $500 worth of stock each. In some industries the proportion was in excess of one-third, while in others it was less, as indicated in the following tabulation:

TABLE 81.—*Proportion of persons holding stock (common and preferred) of $500 or less to total number of stockholders, 1922*

Industries	Per cent of total stock-holders
Agriculture and related industries	37.1
Mining and quarrying	42.0
Coal mining	20.7
Petroleum mining	53.8
Other mining and quarrying	37.4
Manufacturing	32.1
Food products	32.3
Textile products	20.8
Leather products	41.6
Rubber, rubber goods, etc	41.7
Lumber and wood products	15.5
Chemicals and allied substances [1]	41.5
Metal and metal products	26.1
Other manufacturing	27.2
Construction	20.7
Transportation and other public utilities	23.5
Steam railroads	20.7
Electric railroads	11.7
Electric light and power	38.2
Gas	19.1
Telegraph and telephone	28.9
Other public utilities	30.5
Trade	35.9
Service	42.2
Finance	30.0
All industries	30.4

[1] Mostly petroleum refining.

The proportion of persons holding $500 or less of preferred and common stock to the total number of stockholders averaged 30.4 per cent and ranged from 11.7 per cent for electric railroads to 53.8 per cent for petroleum-mining companies. In general, it was greatest for the mining and the service groups of corporations and lowest for the construction and public utility groups. The low per cent of small stock holdings in certain groups does not necessarily mean a relatively heavier degree of concentration of stock ownership in those groups as compared with other groups. It may result merely from a relatively greater investment per stockholder.

Section 3. Relative holdings of various classes of stockholders.

Analysis of the data of the 4,367 representative corporations reporting to the commission indicates that individuals as a class far exceeded all other classes of corporate stockholders both in number and in value of stock holdings. Of the total number of stockholders reported, individuals (not including brokers, trustees, or foreign holders) comprised over 90 per cent and held about 65 per cent of the total par value of common stock and nearly 68 per cent of the preferred.

The relative holdings of the various classes of stockholders were as follows:

TABLE 82.—*Numbers and proportions of various classes of holders of common and preferred stock, 1922*

Class	Common stock				Preferred stock			
	Number of stockholders		Value of stock holdings		Number of stockholders		Value of stock holdings	
	Number	Per cent	Amount	Per cent	Number	Per cent	Amount	Per cent
Individuals[1]	990,634	92.2	$4,599,439	61.9	275,073	91.0	$1,067,094	67.3
Trustees	30,049	2.6	782,612	10.4	10,518	3.5	158,359	9.9
Brokers	18,370	1.7	891,474	11.9	4,300	1.4	137,728	8.7
Corporations	12,464	1.1	777,979	10.4	6,810	2.3	149,987	10.2
Nonprofit institutions	2,740	.2	70,456	.9	934	.3	14,975	.9
Foreign holders	14,585	1.4	109,839	1.5	4,476	1.5	50,703	2.5
Total	1,074,851	100.0	7,490,907	100.0	302,171	100.0	1,574,746	100.0

[1] Exclusive of brokers, trustees, and foreign holders.

The table indicates very similar class distributions for common stock and for preferred stock. In each instance the preponderance of individual holdings is apparent. The proportion of total stockholders represented by individuals is considerably greater than the proportion of total value of stockholdings so represented, indicating a relatively lower average holding by individuals than by other classes. In all other classes the proportion of total stockholders was less than the proportion of total stock value.

INDIVIDUAL STOCKHOLDERS.—The average par value per stockholder of corporate stock held by individuals was lower than that for other classes of holders in nearly all industries. The proportion of the total reported stock and of the total number of stockholders, however, was far larger for individuals than for any other class, as Table 82 indicates. The proportionate number and holdings of individual stockholders to total stockholders are shown for the various industries as follows:

TABLE 83.—*Individual stockholders'* [1] *proportionate number and holdings of common and preferred stock, by industries, 1928* [2]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	88.9	92.9	83.5	75.6
Mining and quarrying	60.0	89.4	91.6	91.5
Coal mining	68.7	71.9	87.6	91.3
Petroleum mining	49.4	66.4	94.3	91.3
Other mining and quarrying	64.0	91.5	90.7	93.6
Manufacturing	90.9	78.9	93.9	91.6
Food products	79.7	80.6	96.5	92.5
Textile products	88.6	77.0	93.2	89.9
Leather products	80.6	71.3	94.0	94.4
Rubber, rubber goods, etc	85.8	78.1	95.0	97.2
Lumber and wood products	92.5	94.3	96.7	97.3
Chemicals and allied substances [3]	68.9	58.1	94.1	91.8
Metal and metal products	90.7	78.8	92.5	85.4
Other manufacturing	96.0	78.0	88.9	93.2
Construction	97.5	91.5	97.1	95.3
Transportation and other public utilities	50.3	57.2	91.3	89.8
Steam railroads	51.2	48.3	89.9	83.5
Electric railroads	69.7	66.3	90.9	88.2
Electric light and power	77.3	83.5	90.3	95.9
Gas	70.2	84.3	89.4	94.6
Telegraph and telephone	76.0	62.9	91.0	96.5
Other public utilities	71.4	88.9	90.0	97.2
Trade	88.4	82.5	93.5	93.3
Service	88.9	97.4	95.2	95.2
Finance	79.2	88.0	92.9	97.0
All industries	64.9	67.8	92.2	91.0

[1] Includes officers, directors, and employees, but does not include brokers, trustees, or foreign holders.
[2] Based on data furnished the commission by 4,247 representative corporations. (See p. 146.)
[3] Mostly petroleum refining.

The table indicates that the proportion of the total par value of common stock held by individuals in the aggregate ranged from about 50 per cent for petroleum-producing corporations to 97.5 per cent for construction corporations. The proportion of the par value of preferred stock held by individuals in the aggregate ranged from 48.3 per cent for steam railroads to nearly 94.3 per cent for manufacturers of lumber and wood products.

Individuals comprised over 90 per cent of the total number of holders of common stock in the case of all industries listed in the above table, with the exception of steam railroads, gas, agricultural, and coal-mining companies. The proportions for steam railroads and gas companies were slightly below 90 per cent, that for agriculture was 83.5 per cent, and that for coal mining was 87.5 per cent. Individuals also comprised over 90 per cent of the holders of preferred stock in case of all industries, with the exception of textiles and textile products, agricultural, electric railroads, metal products, and steam railroads. For textiles and textile products the proportion was slightly under 90 per cent, and for the other named industries the proportions ranged from 75.6 per cent to over 88 per cent.

While the foregoing data indicate a very wide distribution of corporate stock among individuals, it was not possible, from the information supplied by the corporations, to analyze the proportions owned by different individual stockholders or the extent to which control of the stock was held by a few individuals. (See, however, Table 78, p. 146.)

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A striking illustration of increases in recent years in the ownership of corporate stocks by the smaller-income classes is contained in reports of the Bureau of Internal Revenue, which indicate for the years 1916 to 1922, inclusive, the proportions of total corporate dividends received by individuals of various income classes, as follows:

TABLE 84.—*Corporate dividends received by individuals of specified income classes, by years, 1916 to 1922* [1]

Income class	1916	1917	1918	1919	1920	1921	1922
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Under $5,000	1.8	7.8	13.6	13.3	13.8	22.7	18.4
$5,000 to $25,000	23.6	28.2	32.8	34.0	37.7	35.9	34.5
$25,000 to $100,000	30.4	30.3	29.4	28.7	31.7	27.0	29.7
$100,000 to $500,000	24.5	21.0	15.4	15.6	12.2	10.2	12.2
$500,000 to $1,000,000	6.4	5.1	3.2	3.1	2.1	1.3	2.2
$1,000,000 and over	13.3	8.4	4.6	3.8	2.7	2.0	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Computed by the Federal Trade Commission from figures compiled from Statistics of Income, United States Bureau of Internal Revenue.

From 1916 to 1921, according to the returns, dividends received by individuals with incomes of less than $5,000 a year increased from 1.8 per cent of the total to 22.7 per cent, falling off to 18.4 per cent in 1922. The proportion of total dividends received by individuals with incomes of from $5,000 to $25,000 also increased from about 23.6 per cent in 1916 to 37.7 per cent in 1920, falling off to 35.9 per cent in 1921 and 34.5 per cent in 1922. For the higher income classes, constant decreases, with but few exceptions, are shown in the proportions of total dividends received for each of the years from 1916 to 1921. Increasing completeness of returns in the low-income class and a tendency to adjust investments in the higher brackets are probably important factors in this result.

BROKER STOCKHOLDERS.—About 12 per cent of the total amount of common stock reported to the commission was held by brokers. Next to individuals, brokers led all other classes of stockholders in this respect, although in number they were exceeded by trustees. They were also exceeded by trustees and by corporations in the value of preferred stock held and in number of holders for this class of stock. Broker ownership of stock is, of course, generally transitory and often nominal for the convenience of clients. It is transferred eventually, in most cases, to one of the other classes of holders. In the case of the large corporations whose stocks are listed on stock exchanges and traded in extensively, broker ownership represents a much more important proportion of the total than is here indicated for all corporations.

The proportionate number and holdings of broker stockholders to total stockholders are shown for the various industries as follows:

TABLE 85.—*Brokers' proportionate number and holdings of common and preferred stock, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	(2)	(2)	(2)	(2)
Mining and quarrying	19.3	8.5	2.7	1.3
Coal mining	10.1	6.3	2.7	1.4
Petroleum mining	19.1	10.9	2.1	1.3
Other mining and quarrying	24.0	.....	3.1	.....
Manufacturing	10.6	4.5	2.5	1.4
Food products	12.2	3.2	1.1	2.0
Textile products	3.0	2.5	2.5	2.1
Leather products	15.7	14.0	4.4	1.4
Rubber, rubber goods, etc	.1	1.0	.9	.4
Lumber and wood products	.4	.2	.2	.2
Chemicals and allied substances [3]	5.9	1.8	1.9	1.4
Metal and metal products	17.8	5.6	4.2	1.9
Other manufacturing	13.4	4.0	4.0	1.2
Construction	.7	(2)	.4	(2)
Transportation and other public utilities	14.5	13.4	1.3	1.6
Steam railroads	17.2	17.2	1.8	3.1
Electric railroads	6.9	2.8	.5	1.1
Electric light and power	6.3	2.4	.5	.2
Gas	2.2	2.2	.8	.5
Telegraph and telephone	2.8	.2	.6	(4)
Other public utilities	5.4	.1	1.4	.2
Trade	4.5	4.6	1.7	.5
Service	(2)	(2)	(2)	(2)
Finance	1.5	.2	.3	(4)
All industries	11.0	8.7	1.7	1.4

[1] Based on data furnished the commission by 4,307 representative corporations. (See p. 146.)
[2] No appreciable amount held.
[3] Mostly petroleum refining.
[4] Less than one-tenth of 1 per cent.

The table indicates that broker holdings are more important for mining and quarrying corporations and for public utilities than for other corporate industries. Brokers held over 19 per cent of the par value of the common stock and 8.5 per cent of the par value of the preferred stock of corporations engaged in mining and quarrying. Their holdings were heaviest in petroleum-producing corporations, amounting to about 19 per cent of the common and nearly 11 per cent of the preferred stock. Of the stock of transportation and public utility corporations, brokers held 14.5 per cent of the common and nearly 13.4 per cent of the preferred. Their holdings in manufacturing corporations were largest in the case of manufacturers of metal and metal products, amounting to nearly 18 per cent of the common stock; although only slightly over 5.5 per cent of the preferred. Brokers held over 17 per cent of the par value of both the common and the preferred stocks of steam railroads.

In number, broker stockholders did not exceed 4.5 per cent of the total holders of common stock or 3.5 per cent of the total holders of preferred stock in any of the industries covered by the table.

TRUSTEE STOCKHOLDERS.—Nearly 10.5 per cent of the total par value of the common stock of corporations was held by trustees. Of the preferred stock, trustees held 9.9 per cent. Trustee stockholders represented 3.4 per cent of the common stockholders and 3.5 per cent of the preferred.

The proportionate number and holdings of trustee stockholders to total stockholders in various industries were as follows:

TABLE 36.—*Trustees' proportionate number and holdings of common and preferred stock, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	3.5	5.1	2.2	0.7
Mining and quarrying	4.6	13.0	3.9	4.5
Coal mining	8.7	19.3	6.8	5.3
Petroleum mining	1.9	8.2	1.8	4.3
Other mining and quarrying	5.4	.5	5.3	.4
Manufacturing	7.3	9.9	1.6	2.9
Food products	4.3	7.4	.6	3.6
Textile products	4.9	11.2	2.6	5.1
Leather products	1.8	4.6	.6	2.2
Rubber, rubber goods, etc	12.6	8.9	2.3	1.1
Lumber and wood products	2.7	.2	1.6	.3
Chemicals and allied substances [2]	9.9	6.3	2.1	4.2
Metal and metal products	8.0	12.0	1.3	2.1
Other manufacturing	5.0	10.4	2.1	3.3
Construction	.7	.3	1.3	2.0
Transportation and other public utilities	15.4	9.7	4.5	4.2
Steam railroads	16.3	11.6	4.6	6.4
Electric railroads	17.4	20.0	1.9	8.5
Electric light and power	7.3	3.3	1.6	2.5
Gas	17.4	2.9	7.5	1.3
Telegraph and telephone	11.9	11.3	6.2	2.8
Other public utilities	6.8	5.6	5.5	1.9
Trade	2.8	3.2	1.1	1.5
Service	5.1	6.5	1.9	3.0
Finance	10.4	3.2	4.9	.9
All industries	10.4	8.9	3.4	3.5

[1] Based on data furnished the commission by 4,307 representative corporations. (See p. 146.)
[2] Mostly petroleum refining.

The heaviest proportionate holdings of trustees were in transportation and other public-utility corporations. Trustee stockholders held nearly 17.5 per cent of the common stock of electric railroads and of gas companies, close to 16.5 per cent of the common stock of steam railroads, and nearly 12 per cent of that of telegraph and telephone companies. Of the preferred stock trustees held 20 per cent in the case of electric railroads, nearly 19.5 per cent in coal-mining companies, over 11.5 per cent in steam railroads, and nearly 11.5 per cent in telegraph and telephone companies. For the remaining industries the proportions of stock held by trustees ranged from less than 1 per cent to about 12 per cent for common stock and for preferred stock.

In number trustees comprised 7.5 per cent of the total holders of common stock of gas companies, nearly 7 per cent of the total holders of common stock of coal-mining companies, and a little over 6 per cent of the total holders of common stock of telegraph and telephone companies. For the remaining industries the proportions of trustee holders ranged from one-half of 1 per cent to slightly over 4.5 per cent. Trustees represented over 8.5 per cent of the total holders of preferred stock of electric railroads and nearly 6.5 per cent of the total holders of preferred stock of steam railroads. For the remaining industries the proportions ranged from less than one-half of 1 per cent to nearly 5.5 per cent.

CORPORATION STOCKHOLDERS.—A little over 10 per cent of the stock (common and preferred) of corporations reporting to the commission was owned by other corporations. In arriving at this proportion none of the stock of corporations was considered where 50 per cent or over of such stock was owned by another corporation, since, in such cases, the ultimate ownership or majority ownership is in the stockholders of the holding company. The proportionate number and holdings of corporation stockholders to total stockholders are shown for the various industries as follows:

TABLE 87.—*Corporations' proportionate number and holdings of common and preferred stock of other corporations, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	5.2	(2)	1.5	(2)
Mining and quarrying	13.9	6.3	.6	0.7
Coal mining	5.3	2.2	2.0	.8
Petroleum mining	28.6	10.8	.6	.6
Other mining and quarrying	0.4		.4	
Manufacturing	10.5	0.7	.9	3.1
Food products	2.0	0.0	.7	1.4
Textile products	2.4	5.3	1.0	.9
Leather products	1.3	6.4	.6	.6
Rubber, rubber goods, etc	.4	11.6	.4	.3
Lumber and wood products	3.8	5.1	1.1	1.7
Chemicals and allied substances [3]	16.0	16.3	.8	1.2
Metal and metal products	3.7	3.1	1.1	10.0
Other manufacturing	10.5	7.8	1.2	1.0
Construction	.0	3.2	.8	1.8
Transportation and other public utilities	10.5	14.4	1.3	1.6
Steam railroads	11.0	15.7	1.5	2.6
Electric railroads	5.9	3.2	.5	1.1
Electric light and power	0.7	0.5	.5	.6
Gas	0.4	5.5	.8	.9
Telegraph and telephone	0.0	24.0	.2	.7
Other public utilities	13.2	4.7	1.0	.8
Trade	5.8	5.4	3.3	4.5
Service	2.9	5.9	2.7	1.7
Finance	7.3	9.0	1.6	.5
All industries	10.4	10.2	1.1	2.3

[1] Based on data furnished the commission by 4,207 representative corporations. (See p. 146.) Does not include subsidiary corporations.
[2] No appreciable amount of stock held.
[3] Mostly petroleum refining.

A larger proportion of the common stock of companies engaged in petroleum production and of companies engaged in the manufacture of chemicals and allied substances (principally petroleum products) was owned by other corporations than was true in the case of any of the other industries covered. Of the par value of common stock of companies engaged in petroleum production corporations owned about 28.5 per cent, and of the par value of the common stock of manufacturers of chemicals and allied substances they owned 16 per cent. They also owned nearly 11 per cent of the par value of preferred stock of petroleum-producing corporations and over 15 per cent of the preferred stock of petroleum-refining companies. The proportion of the total number of stockholders represented by corporation holders was slightly over 1 per cent in the case of preferred stock of petroleum-refining companies and less than 1 per cent for the common stock of both these industries and for the preferred stock of petroleum-production companies.

Corporations also held over 11.5 per cent of the common and nearly 17 per cent of the preferred stock of steam railroads. While holding close to 25 per cent of the preferred stock of telegraph and telephone companies, they held only 6 per cent of the common stock of these companies. They owned 11.5 per cent of the preferred stock of companies engaged in the manufacture of rubber, rubber goods, etc., but less than one-half of 1 per cent of the common stock of these companies. The proportion held of the common stock of the other industries ranged from less than 1 per cent to about 9 per cent, while the proportions of preferred stock ranged from slightly over 2 per cent to 9.5 per cent.

The proportion of the total number of stockholders represented by corporation holders was greatest in the case of the preferred stock of companies engaged in the manufacture of metal and metal products, amounting to 10 per cent. In no other industry or group of industries did it exceed 4.5 per cent for either common or preferred holders.

FOREIGN STOCKHOLDERS.—The proportionate stock holdings of foreign residents were very small, averaging only 1.5 per cent for common stock and only 2.5 per cent for preferred. Similarly, foreign stockholders represented only 1.4 per cent of the total common stockholders and only 1.5 per cent of the preferred. Many foreigners, of course, were obliged to sell their stocks during the war.

The proportionate number and holdings of foreign residents to total stockholders are shown for the various industries as follows:

TABLE 88.—*Foreign residents' proportionate number and holdings of common and preferred stock, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	2.5	2.0	12.8	23.7
Mining and quarrying	.4	1.7	.8	1.8
Coal mining	.3	.3	.3	.5
Petroleum mining	.6	3.4	1.2	2.3
Other mining and quarrying	.3		.5	
Manufacturing	.9	.8	1.9	.7
Food products	1.1	.6	2.0	.4
Textile products	.3	3.8	.6	1.6
Leather products	.3	.1	.3	.2
Rubber, rubber goods, etc	.2	.2	.7	.3
Lumber and wood products	.3	.2	.3	.2
Chemicals and allied substances [2]	.4	.3	.0	.7
Metal and metal products	.6	.3	.7	.5
Other manufacturing	1.6	1.1	3.5	.9
Construction	.6	(3)	.4	(3)
Transportation and other public utilities	2.5	4.4	1.4	2.4
Steam railroads	2.9	5.0	1.0	3.8
Electric railroads	.1	(3)	.1	.1
Electric light and power	1.0	1.0	.5	.6
Gas	1.5	4.8	1.0	2.0
Telegraph and telephone	1.3	(3)	.9	(3)
Other public utilities	1.6		.0	
Trade	.4	.1	.3	.2
Service	.1	(3)	.2	(3)
Finance	.6	2.4	.0	1.5
All industries	1.5	2.5	1.4	1.5

[1] Based on data furnished the commission by 4,367 representative corporations. (See p. 146.)
[2] Mostly petroleum refining.
[3] No appreciable amount of stock held.

Foreign residents held about 3 per cent of common and 5 per cent of the preferred stock of steam railroads. They also held 2.5 per cent of the par value of common and 2 per cent of the par value of preferred stock of corporations engaged in agriculture and related

industries. Their holdings of common stock of electric light and power companies, manufacturers of food products, telegraph and telephone companies, and of gas companies ranged from 1 per cent to 1.5 per cent of the total; and their holdings of the preferred stock of electric light and power companies, petroleum production companies, companies engaged in the manufacture of textiles and textile products, finance, and gas companies ranged from 1 per cent to about 5 per cent. For no other industry did the proportions of either common or preferred stock held by foreigners exceed six-tenths of 1 per cent of the total.

With the exception of agriculture and related industries, the proportion of total stockholders represented by foreign holders did not exceed 2 per cent for common stockholders or 4 per cent for preferred stockholders in the case of any of the industries or industrial groups covered by the table. In the case of agriculture and related industries nearly 13 per cent of the holders of common stock and nearly 24 per cent of the holders of preferred stock were foreigners. The proportions were less than 1 per cent for all but four of the industries in the case of common stockholders and all but five in the case of preferred stockholders.

NONPROFIT INSTITUTION STOCKHOLDERS.—Although nonprofit institutions are estimated to own 4.6 per cent of the total wealth of the United States (see Chapter VIII), they held less than 1 per cent of the value of corporate stock reported to the commission. As has been pointed out in Chapter VIII, institutions of this nature apparently have their funds principally invested in bonds and mortgages rather than in stocks.

The proportionate number and holdings of nonprofit institutions as compared with total corporate stockholders are shown for various industries as follows:

TABLE 89.—*Nonprofit institutions' proportionate number and holdings of common and preferred stock, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	(2)	(2)	(2)	(2)
Mining and quarrying	1.5	0.2	0.1	0.2
Coal mining	0.4	.1	.7	.2
Petroleum mining	.4	.3	.2	.2
Other mining and quarrying	(3)		(3)	
Manufacturing	1.0	1.1	.1	.3
Food products	.1	.2	.1	.1
Textile products	.3	.3	.1	.4
Leather products	.2	1.6	.1	.2
Rubber, rubber goods, etc	(3)	.3	.1	.2
Lumber and wood products	.2	(3)	.2	.3
Chemicals and allied substances [4]	1.8	0.2	.2	.6
Metal and metal products	1.2	.2	.1	.1
Other manufacturing	.4	.7	.2	.4
Construction	(3)	(3)	(3)	(3)
Transportation and other public utilities	.8	.9	.3	.4
Steam railroads	.7	1.1	.3	.6
Electric railroads	(3)	2.1	.1	.9
Electric light and power	1.4	.2	.1	.2
Gas	1.3	.3	.5	.2
Telegraph and telephone	1.2	(3)	.5	(3)
Other public utilities	.5	.5	.5	.1
Trade	.1	.1	.1	(3)
Service	(3)	.3	(3)	.1
Finance	1.0	.1	.5	.1
All industries	.9	.6	.2	.3

[1] Based on data furnished the commission by 4,367 representative corporations. (See p. 140.)
[2] No appreciable amount of stock held. [3] Less than one-tenth of 1 per cent.
[4] Mostly petroleum refining.

Nonprofit institutions held nearly 6.5 per cent of the common stock of coal-mining companies and over 19 per cent of the preferred stock of companies engaged in the manufacture of chemicals and allied substances. With these exceptions, however, their holdings ranged from less than 1 per cent to slightly over 2 per cent. The comparatively large percentages held of the preferred stock of corporations manufacturing chemicals and allied substances represent the various Rockefeller foundations and institutions whose endowments are principally in Standard Oil stocks.

The number of nonprofit-institution stockholders did not comprise as high as 1 per cent of the total number of stockholders, either common or preferred, in the case of any of the industries covered by the table.

Stock Holdings of Officers and Directors.—The proportions of corporate stock held by individuals included stock held by officers and directors of the company and by employees. The holdings of officers and directors were reported by most of the 4,367 corporations furnishing the data for the commission's estimates. The data received indicate that holdings of officers and directors were an important part of the holdings of individuals. In the case of a great many of the smaller corporations all or most of the capital stock was held by officers and directors. Of the total common stock holdings of individuals, amounting, as already shown, to 65 per cent of all common stock reported, officers and directors held about one-sixth, or 10 per cent, of the grand total. Of the total preferred stock holdings of individuals, amounting to 68 per cent of the total, nearly one-twelfth, or close to 6 per cent of the grand total, was held by officers and directors. On the other hand, while individuals as a class comprised about 92 per cent of the total number of common stockholders, only about 2 per cent of the grand total were officers and directors. Similarly, individuals comprised 91 per cent of the holders of preferred stock, but only about 1 per cent of the grand total were officers and directors.

The proportionate stock holdings of officers and directors to total stock holdings are shown for the various industries as follows:

TABLE 90.—*Officers' and directors' proportionate number and holdings of common and preferred stock, by industries, 1928* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	55.9	61.2	23.1	10.0
Mining and quarrying	4.5	5.2	.5	.5
Coal mining	5.4	9.4	2.0	1.2
Petroleum mining	6.3	2.7	.5	.2
Other mining and quarrying	1.5	5.2	2.2	2.9
Manufacturing	13.0	9.8	1.8	1.1
Food products	17.5	5.3	1.2	2.7
Textile products	42.9	17.2	14.0	5.3
Leather products	44.7	6.1	3.5	.9
Rubber, rubber goods, etc	30.0	2.1	2.1	.7
Lumber and wood products	56.9	37.3	28.4	6.8
Chemical and allied substances [2]	5.3	.3	.1	.3
Metal and metal products	11.4	12.0	.4	.2
Other manufacturing	22.7	10.6	3.6	1.3
Construction	67.6	46.3	32.2	19.9
Transportation and other public utilities	2.1	.7	.0	.3
Steam railroads	1.2	.1	.2	.1
Electric railroads	5.4	3.4	.6	1.5
Electric light and power	4.3	1.8	.4	.1
Gas	1.4	.4	.3	.1
Telegraph and telephone	5.3	12.4	.2	4.6
Other public utilities	22.4	24.7	7.1	4.3
Trade	48.4	19.7	17.4	4.4
Service	49.7	21.0	16.2	3.8
Finance	22.0	23.1	6.3	3.1
All industries	10.7	5.8	2.1	.9

[1] Based on data furnished the commission by a large number of representative corporations. (See p. 148.)
[2] Mostly petroleum refining.

The proportions of total capital stock represented by the holdings of officers and directors ranged from one-tenth of 1 per cent of the preferred stock of steam railroad companies to 67.6 per cent of the common stock of construction companies. The proportion for companies manufacturing lumber and wood products was 56.9 per cent of the common stock and 37.3 per cent of the preferred; the proportion for agricultural companies was 55.9 per cent of the common stock and 61.2 per cent of the preferred. The relatively large proportions of stock held by officers and directors in the above-named industries and also in service and trade corporations result from the fact that corporate stock in these industries or groups is more closely held than in the remaining industries or groups. As indicated in Table 78 (p. 146), the average number of common-stock holders in the construction, lumber, agricultural, service, and trade groups of corporations was much smaller than the average for other corporations. Of the total common-stock holders of construction companies 32.2 per cent were officers or directors; of the common-stock holders of lumber and wood companies 28.4 per cent were officers or directors; for agricultural companies the proportion was 23.1 per cent; for service companies, 16.2 per cent; for trade companies, 17.4 per cent; and for textile manufacturing companies, 14 per cent.

STOCK HOLDINGS OF EMPLOYEES.—Ownership of stock by employees is urged by many as a solution of the often sharp antithesis of interest between so-called capital and so-called labor. The buying of corporation stocks by employees is undoubtedly increasing and is encouraged in many large corporations by installment purchase

arrangements and other devices to bring the employee into a participation in the corporation ownership. Not all of the corporations reporting to the commission were able to give information regarding stock holdings of employees, but the data on this subject which were received indicate that employees comprised 7.5 per cent of the common-stock holders reported and 3.5 per cent of the preferred-stock holders, but had only 1.5 per cent of the common stock and less than 2 per cent of the preferred. The average stock holdings per employee stockholder were relatively small, as Table 80 (p. 148) shows.

The proportionate number and holdings of employee stockholders to total stockholders in various industries were as follows:

TABLE 81.—*Employees' proportionate number and holdings of common and preferred stock, by industries, 1922* [1]

Industries	Total par value of stock		Total number of stockholders	
	Common	Preferred	Common	Preferred
	Per cent	*Per cent*	*Per cent*	*Per cent*
Agriculture and related industries	0.6	(2)	2.3	(2)
Mining and quarrying	.3	1.0	.8	3.0
Coal mining	1.0	2.0	5.6	11.0
Petroleum mining	.1	(3)	1.0	.1
Other mining and quarrying	(3)	1.2	.1	2.6
Manufacturing	2.8	3.5	17.9	5.5
Food products	6.5	.0	21.2	4.1
Textile products	1.7	1.5	4.8	4.3
Leather products	3.8	4.0	31.6	22.1
Rubber, rubber goods, etc	4.0	.6	25.6	2.0
Lumber and wood products	2.2	2.0	8.1	8.3
Chemicals and allied substances [4]	1.8	1.6	32.7	5.6
Metal and metal products	2.6	1.6	2.7	.4
Other manufacturing	2.9	5.9	13.9	7.4
Construction	2.3	2.2	7.9	11.7
Transportation and other public utilities	.3	.3	3.2	1.6
Steam railroads	.1	(3)	.5	.1
Electric railroads	4.3	.1	10.5	.3
Electric light and power	.6	2.2	3.6	5.4
Gas	.4	(3)	(2)	.3
Telegraph and telephone	.3	.3	1.1	1.0
Other public utilities	.3	.1	1.6	.4
Trade	4.6	4.9	9.4	5.5
Service	.4	1.8	2.4	2.3
Finance	.7	.9	2.1	1.5
All industries	1.5	1.9	7.5	3.5

[1] Based on data furnished the commission by representative corporations. (See p. 146.)
[2] No appreciable amount of stock held.
[3] Less than one-tenth of 1 per cent.
[4] Mostly petroleum refining.

Employees' proportionate holdings of stock ranged from 6.5 per cent of the common stock of companies manufacturing food products to less than one-tenth of 1 per cent of the preferred stock of steam railroad companies, gas companies, and petroleum-production companies. Of the total value of stock of all companies reporting, employees had 1.5 per cent of the common and 1.9 per cent of the preferred. Employees, as the table shows, represented a much larger proportion of the total number of stockholders than they did of the total value of stock, or, in other words, the average holding per employee stockholder was comparatively small. This contrasts with the average holdings of officers and directors, which were relatively very large. The proportion of employee stockholders to total stockholders ranged from 31.6 per cent of the common-stock holders of companies manufacturing leather products to less than one-tenth

of 1 per cent of the common-stock holders of gas companies. The proportionate number of employee holders of common stock was greater for the manufacturing group of industries than for any other group, but the proportionate holdings of employees was greatest in the trade group in the case of both common and preferred stock.

Section 4. Relative par values per share.

The apparent increase in distribution of stock ownership in recent years has been accompanied, and perhaps furthered, by a tendency toward a smaller par value per share of stock. Although a great majority of stocks still have a par of $100, there is an increasing number of issues with pars of $50, $25, $10, $5, or $1. Also stock of no par value is often issued in States where such practice is allowed. The Bureau of Internal Revenue reported for the year 1922 over $71,000,000,000 as the par value of common and preferred stock of companies reporting par value of shares and about $5,000,000,000 as the fair value of the capital stock of companies reporting no par value of shares and no capital stock value.

The advantage in a small par value per share is principally psychological. Prospective purchasers of stock are found often to prefer 100 shares of stock of a par value per share of $10 rather than 10 shares of stock of a par value per share of $100. Many companies, in order to induce the purchase of their stock by the public or by customers or employees, find it to their advantage to have a low par value per share.

Data received by the commission from the 4,367 corporations described heretofore indicate that the great majority of corporations still follow the practice of fixing the par value of their shares at $100. The proportionate number of companies in various industries with par values of $100, $50, $25, $10, $5, and $1, respectively, for their common stock was as follows:

TABLE 92.—*Percentages of number of companies with specified par values of common stock, by industries, 1922* [1]

Industries	Par values per share						
	$100	$50	$25	$10	$5	$1	All other
Agriculture and related industries	76.1	4.2	2.6	7.0	1.4	.....	8.5
Mining and quarrying	80.0	6.5	2.4	4.8	3.2	24.2	8.9
Coal mining	78.1	12.2	.....	.....	.....	2.4	7.3
Petroleum mining	23.8	5.8	5.8	7.7	5.8	46.1	5.8
Other mining and quarrying	58.1	.....	.....	5.5	2.3	16.1	16.1
Manufacturing	79.5	5.5	2.8	4.8	.6	.7	6.0
Food products	82.8	5.7	2.7	3.4	1.1	.4	4.0
Textile products	83.8	6.4	3.8	3.3	.....	.....	3.0
Leather products	86.4	7.4	2.4	2.4	.....	.....	2.4
Rubber, rubber goods, etc.	75.1	8.8	8.3	8.3	.....	.....	.....
Lumber and wood products	70.0	9.1	1.7	7.4	.....	.9	4.1
Chemicals and allied substances [2]	44.4	.....	55.6	.....	.....	.....	.....
Metal and metal products	88.4	3.3	3.3	.....	.....	.....	25.0
Other manufacturing	77.4	5.2	2.2	5.9	.7	1.2	7.4
Construction	82.8	1.0	4.0	2.0	.....	5.1	5.1
Transportation and other public utilities	70.0	9.1	8.9	6.8	.8	2.3	2.1
Steam railroads	88.9	8.9	.....	.....	.....	.....	2.2
Electric railroads	77.3	9.1	9.1	4.5	.....	.....	.....
Electric light and power	73.9	10.9	2.2	4.3	.....	8.7	.....
Gas	59.1	13.6	18.2	.....	.....	4.5	4.8
Telegraph and telephone	64.4	9.6	12.5	10.6	1.0	.....	1.9
Other public utilities	87.4	7.8	2.7	2.2	1.5	2.5	2.8
Trade	84.0	3.4	1.9	4.8	.4	1.4	3.6
Service	77.4	2.8	4.0	9.6	.....	2.4	3.4
Finance	83.3	5.2	2.2	4.1	.9	1.9	2.4
All industries	80.0	5.1	3.0	4.9	.7	1.9	4.4

[1] Based on figures furnished the Federal Trade Commission by 4,367 corporations.
[2] Mostly petroleum refining.

Eighty per cent of all the companies reporting had common stock with a par value of $100 a share. The most conspicuous departure from this general practice of valuing shares at $100 was shown for companies engaged in production of petroleum and petroleum products. Forty-six per cent of the petroleum mining companies had common stock with a $1 par value per share, and another 31 per cent had shares of par values other than $100. Of the companies engaged in the manufacture of chemicals and allied substances (mostly petroleum products) 56 per cent had common stock with a $25 par. These relatively lower par values per share for petroleum companies have no doubt been a factor in the large distribution of petroleum stock issues in recent years. The low par value per share is more popular among the companies with large stock issues than among the smaller ones which are often closely held by a few individuals. This is indicated by the fact that, although 80 per cent of the number of corporations reporting had a par value of $100 a share for their common stock, only 66.7 per cent of the total share value reported by all corporations was represented by shares with a $100 par value. The proportionate stock values represented by shares of various par values are shown for each industry as follows:

TABLE 93.—*Percentages of total reported common stock outstanding with specified par values, by industries, 1922* [1]

Industries	Par values per share						
	$100	$50	$25	$10	$5	$1	All other
Agriculture and related industries	79.7	4.8	6.8	6.5	1.9		0.3
Mining and quarrying	22.4	10.8	3.6	.4	4.2	3.7	44.8
Coal mining	65.2	24.2				.1	.5
Petroleum mining	24.1	9.7	10.6	1.1	12.1	7.8	34.7
Other mining and quarrying	22.2		.1	(2)	2.2		75.4
Manufacturing	49.5	3.2	33.6	1.0	(2)	.1	12.6
Food products	83.3	.6	4.3	3.0	.1	(2)	8.1
Textile products	84.3	3.6	3.6	1.6			7.8
Leather products	31.4	64.5	.9	.8			2.4
Rubber, rubber goods, etc	50.0	19.3	2.5	28.2			
Lumber and wood products	90.7	2.7	.7	5.6		.7	6.6
Chemicals and allied substances [3]	23.7		76.3				
Metal and metal products	56.7	5.8	4.2				33.3
Other manufacturing	68.8	5.4	7.0	1.5	(2)	.3	22.0
Construction	81.0	1.4	2.1	1.3		6.4	8.8
Transportation and other public utilities	85.2	8.0	3.2	.1	(2)	.1	2.4
Steam railroads	90.1	7.1					2.8
Electric railroads	88.5	5.0	4.7	1.8			
Electric light and power	65.4	11.7	21.7	.3		.9	
Gas	37.4	35.2	26.3			.1	1.5
Telegraph and telephone	95.6	1.9	1.4	1.0	(2)		.1
Other public utilities	67.6	12.0	9.3	3.0	1.3	2.1	4.7
Trade	84.5	1.3	.6	2.3	.1	.5	10.7
Service	83.7	2.6	3.2	5.8		3.3	1.4
Finance	93.4	2.1	.7	1.7	.4	.3	1.4
All industries	66.7	5.9	15.9	.7	.3	.4	10.1

[1] Based on figures furnished the Federal Trade Commission by 4,267 representative corporations.
[2] Less than one-tenth of 1 per cent.
[3] Mostly petroleum refining.

Over 76 per cent of the common stock of companies manufacturing chemicals and allied substances (petroleum products) was comprised of shares valued at $25 par each. Of the common stock of the petroleum-mining companies over 12 per cent was comprised of shares with a par value of $5 each, 10.5 per cent of shares with a par value of $25 each, nearly 35 per cent of shares with par values not

specifically covered by the table, and only about 24 per cent of shares with a $100 par value. For manufacturers of leather and leather products 64.5 per cent of the reported share value was comprised of shares of $50 par value. For gas companies over 35 per cent was comprised of shares of $50 par value, and nearly 26 per cent of shares of $25 par value each. The smallest departure from the ordinary par value of $100 is shown for the stock of finance, telephone and telegraph, and transportation companies.

For preferred stocks the departure from the $100 par value per share was somewhat less pronounced. This fact corresponds with the fact that common stocks are generally more widely distributed than are preferred. The data received by the commission indicate that about 86 per cent of the companies had a par value of $100 a share for their preferred stock, as compared with 80 per cent for common stock. Of the total preferred stock value represented by the returns over 90 per cent was in stock with a $100 par, as compared with about 67 per cent of the total common stock value.

The relative numbers of companies reporting various par values per share of preferred stock are shown for each industry, as follows:

TABLE 94.—*Percentages of number of companies with specified par values of preferred stock, by industries, 1922* [1]

Industries	Par values per share						
	$100	$50	$25	$10	$5	$1	All other
Agriculture and related industries	25.0	25.0	25.0	25.0			
Mining and quarrying	63.1	21.0		5.3	5.3	5.3	
Coal mining	50.0	25.0					
Petroleum mining	33.3	33.3			16.7	16.7	
Other mining and quarrying	66.7			33.3			
Manufacturing	91.4	2.6	.6	3.9	.3		1.3
Food products	90.6	5.0		3.8			1.2
Textile products	95.0	2.5	2.5				
Leather products	100.0						
Rubber, rubber goods, etc	100.0						
Lumber and wood products	90.0			10.0			
Chemicals and allied substances [2]	100.0						
Metal and metal products	100.0						
Other manufacturing	90.1	2.3	.5	4.7	.5		1.9
Construction	84.6	7.7				7.7	
Transportation and other public utilities	77.4	8.5	6.7	2.8	.9	.9	2.8
Steam railroads	82.4	17.6					
Electric railroads	71.4			14.3			14.3
Electric light and power	94.7		5.3				
Gas	70.0	10.0	10.0			10.0	
Telegraph and telephone	71.9	15.6	6.3	3.1			3.1
Other public utilities	71.4		14.2	4.8	4.8		4.8
Trade	88.6	2.9	1.2	5.2		1.2	.6
Service	86.7	3.3	6.7				3.3
Finance	72.5	8.8	5.6	7.7	1.1	2.2	2.2
All industries	83.7	4.8	2.3	4.4	.5	.8	1.5

[1] Based on figures furnished the Federal Trade Commission by 4,367 representative corporations.
[2] Mostly petroleum refining.

The proportionate number of companies with preferred stock of $100 par value per share averaged 91 per cent for the manufacturing group and averaged over 75 per cent in the case of each of the other groups except agriculture, mining and quarrying, and finance. Of the agricultural companies, 25 per cent had preferred stock of $50 par value per share, 25 per cent had preferred stock of $25 par value per share, and another 25 per cent had preferred stock of $10 par value per share. The most conspicuous departure, however, from

the practice of valuing shares at $100 was shown for companies engaged in petroleum mining, over 33 per cent of which had preferred stock valued at $50 par per share, nearly 17 per cent had preferred stock valued at $5 par per share, and nearly 17 per cent had preferred stock at $1 par per share.

The proportions of total reported preferred stock value comprised by shares with par values of $100, $50, etc., are shown for various industries, as follows:

TABLE 95.—*Percentages of total reported preferred stock outstanding with specified par values, by industries, 1922* [1]

Industries	Par values per share						
	$100	$50	$25	$10	$5	$1	All other
Agriculture and related industries	10.0	54.3	28.6	6.6			
Mining and quarrying	59.4	35.7		.2	3.6	0.1	
Coal mining	84.9	15.1					
Petroleum mining	31.8	50.6			17.4	.2	
Other mining and quarrying	93.3			27.7			
Manufacturing	90.0	.2	(2)	.5	(2)		0.3
Food products	98.9	.3		.5			.2
Textile products	99.3	.6	.1				
Leather products	100.0						
Rubber, rubber goods, etc	100.0						
Lumber and wood products	87.9			12.1			
Chemicals and allied substances [3]	100.0						
Metal and metal products	100.0						
Other manufacturing	97.6	.4	.1	.9	(2)		.3
Construction	93.2	1.4				5.3	
Transportation and other public utilities	83.6	11.6	1.4	.1	(2)	(2)	.5
Steam railroads	85.8	14.2					
Electric railroads	63.6			.8			33.4
Electric light and power	89.4		10.6				
Gas	92.2	6.9	.9			.1	
Telegraph and telephone	73.3	13.6	4.4	8.2			.5
Other public utilities	83.3		32.7	.5	.9		7.7
Trade	90.1	6.9	.2	2.1		.2	.6
Service	90.3	2.4	3.3				4.0
Finance	87.1	4.5	2.2	4.0	1.5	.2	.5
All industries	95.2	3.1	.7	.4	.2	(2)	.4

[1] Based on figures furnished the Federal Trade Commission by 4,337 representative corporations.
[2] Less than one-tenth of 1 per cent.
[3] Mostly petroleum refining.

The proportion of total reported preferred stock value comprised by shares valued at $100 par ranged from 100 per cent for four manufacturing industries covered by the table to 10 per cent for corporations engaged in agriculture and related industries. Of the preferred stock of the latter corporations nearly 55 per cent was comprised of shares valued at $50 par each and over 28 per cent of shares valued at $25 par each. Of companies engaged in petroleum production over 60 per cent of the preferred stock was comprised of shares valued at $50 par each.

CHAPTER VIII

WEALTH OF NONPROFIT INSTITUTIONS

Section 1. Wealth and income of nonprofit institutions.

Nonprofit institutions, as discussed in this chapter, embrace organizations or institutions existing for some public purpose other than the earning of a money income on investment. These include principally religious organizations, benevolent and educational institutions, foundations and community trusts, and public trusts.

Information secured by the commission through schedules or from published reports indicates that the total wealth of these nonprofit institutions in 1922 may be estimated at about fourteen and a half billion dollars, or slightly more than 4½ per cent of the estimated total wealth of the United States. Estimates for the four principal kinds of institutions in 1922 are as follows:

Class of institution	Estimated wealth
Religious organizations	$6,272,000,000
Educational institutions	7,057,000,000
Benevolent institutions	2,423,000,000
Foundations and community trusts and public trusts	1,207,000,000
Total	14,519,000,000

The income from those portions of the wealth of nonprofit institutions which are in invested funds amounted to about $160,000,000 in 1922. This represents a return of only about 1 per cent of the estimated total wealth of these institutions.

In most instances neither the income nor the property of nonprofit institutions is subject to taxation. The total of all the taxes, national, State, and local, collected in the United States in 1922 amounted to nearly $8,000,000,000, or nearly 2½ per cent of the total wealth of the country. If nonprofit institutions were required to pay taxes at this rate (2½ per cent of their total wealth) these taxes would amount to over $350,000,000, or more than twice the amount of the estimated income from their invested funds. This income itself, if taxed at corporation rates, would yield the Federal Government about $19,000,000. A substantial part of the productive investments of these institutions, however, is in tax-free Government bonds and would not be taxable in any case.

Section 2. Sources of information.

In so far as it was possible to do so without conducting an actual census, data for the purposes of the study in this chapter were secured directly from the institutions themselves through schedules or letters requesting financial information. In numerous instances, however, owing to the lack of adequate records or the failure of institutions to respond to the commission's requests, statistics gathered by other governmental agencies or by private organizations were used

to supplement the original data at hand. It is believed that the estimates arrived at are fairly accurate, although they are in every instance only approximations. Since the method of estimate used in arriving at all totals is stated in the text below, the relative authority and value of each estimate can easily be judged.

RELIGIOUS ORGANIZATIONS.—A census of religious organizations is taken by the Bureau of Census each 10 years. There have been six of these in all, of which the most recent was taken for the year 1916.[1] The census includes only "organizations of religious worship," omitting such institutions as the Y. M. C. A., American Bible Society, etc., which are largely conducted by church interests but have no direct financial dependence upon any church. The many parochial schools of the churches, of which those of the Catholic Church are doubtless the most important, are also omitted. In estimating the wealth of churches in 1922 (see p. 168), the Bureau of Census data for 1916 were used to supplement incomplete data for 1922 secured by the commission. Neither the Bureau of Census nor the commission, however, was able to secure any adequate information for the Christian Science Church, and it was necessary to omit this very large church from the total estimates. In 1906, the most recent year for which data were accessible, the value of the church buildings of the Christian Science Church was about eight and one-half millions of dollars.

EDUCATIONAL INSTITUTIONS.—The Bureau of Education of the Department of the Interior publishes a biennial statistical and financial survey of educational institutions. The bureau's most recent report, at the inception of the present inquiry, was for the year 1920, and this report was used to supplement data for 1922 secured by the commission through schedules and letters to public and private educational institutions. The institutions covered include not only schools and colleges but museums, historical societies, and libraries as well. Neither the commission nor the Bureau of Education secured any data on the parochial schools of various religious denominations, and it was necessary to assign an estimated value to these based on their number and on the average value of other schools. (See p. 183.)

BENEVOLENT INSTITUTIONS.—The Bureau of Census' survey of benevolent institutions for the year 1910 was the most recent available data on this subject at the inception of the present study. Information for the year 1922 was requested by the commission of all of the institutions embraced in the census report and by application of the returns received against the 1910 data estimates for 1922 were reached. (See p. 178.) In the case of private benevolent institutions these estimates do not, however, provide for the probable increases in the number of institutions, as no data of this sort were available.

FOUNDATIONS AND TRUSTS.—Apparently no census or survey of the wealth of foundations, community trusts, or public trusts has been made heretofore. The commission's estimates, therefore, are based wholly upon returns from its own schedules which were addressed to all cities with a population of more than 30,000 and to 124 listed foundations or community trusts. Data were received from most of the larger foundations and from more than half of the cities addressed. (See p. 174.)

[1] "Religious Bodies, 1916," U. S. Census Bureau.

Section 3. Wealth of religious organizations.

WEALTH OF RELIGIOUS ORGANIZATIONS.—The total wealth of all religious organizations in the United States in 1922 is estimated at $3,271,558,000 on a basis of returns received by the commission.[2] This is slightly more than 1 per cent [3] of the total estimated wealth of the country.

About $2,820,222,000, or 86 per cent; of church wealth is invested in church property, i. e., churches, parsonages, etc., and the land upon which they are built. Of the remainder, $387,084,000, or 12 per cent, consists of funds invested by the various churches in outside income-producing enterprises. The remaining $64,252,000, or 2 per cent, consists of endowments and other funds or property given or bequeathed with the condition that the income therefrom be used for specific purposes.

The total church membership in the United States in 1922, as reported in the Year Book of Churches, was 47,407,000. On this basis the wealth of religious organizations amounted to $69 for each church member, of which $59 represented church property, $8 outside investment, and less than $2 endowments or special bequests. During the six-year period 1916 to 1922, while the population of the United States was increasing 7 per cent, the total membership in religious organizations increased 13 per cent and the wealth of churches, according to the commission's estimate, increased 48.8 per cent. This would seem to indicate that, in proportion to population, church membership is on the increase, but that the wealth of churches is increasing at a much greater rate than is church membership. The increase indicated in church wealth, however, results in considerable part from the decrease in the value of the dollar.

The largest single religious denomination, both in property and in membership, is the Roman Catholic Church.[4] Its membership embraced over 38 per cent of the estimated entire church membership of the country in 1922 and the estimated value of its church property represented 23 per cent of the total church property. In proportion to its size, however, the Protestant Episcopal Church is the wealthiest of all, its church property alone being estimated at a value of $223 per member.[4]

SOURCE OF DATA AND METHOD OF ESTIMATE.—The data upon which the commission's estimates of the wealth of religious organizations in 1922 are based were secured principally from reports

[2] See footnote 2, Table 90, p. 169, for method of estimates.

[3] This percentage may be compared with the "tithe" or tenth of every man's income to which the Scriptures refer.

[4] According to the Year Book of Churches, 1923, the membership reported for the Roman Catholic, Eastern Orthodox, and Latter Day Saints represents the total constituency and includes all those who by birthright, affiliation, or sympathetic interest as well as actual enrolled membership hold some form of the denominational religious faith. Protestant denominations, as a rule, report only communicant membership. No regular plan of enrollment appears to be followed by Jewish synagogues, some counting only heads of families and others only heads of families who are pew holders. An estimate of the "1922 population of the United States as members and adherents of some form of religious faith" is contained in the yearbook as follows:

Protestant	77,938,470
Eastern Orthodox	450,054
Latter Day Saints	604,032
Jewish	1,500,000
Roman Catholic	18,194,894
	96,723,410

[4] No data were available for 1916 nor 1922 on the Christian Science Church. The latest available statistics are for the years 1890 and 1906 and show a very rapid increase in membership, property, and value per member between these years.

supplied by a number of the larger denominations of the country. Requests for financial data were sent to 219 religious organizations. Many of these were able to furnish the desired information for their complete organization throughout the United States while others kept no central records. In the case of the latter class it was necessary subsequently to send requests to each financially autonomous subdivision, and over 500 returns were received eventually from various dioceses, conferences, classes, individual congregations, etc.

For the year 1916 Bureau of Census data covering the wealth of all religious bodies were available. The data received by the commission for 1922 did not cover all religious bodies nor the total wealth of each religious body, the proportion of the total covered varying with each denomination. The method used in estimating the total church property (churches, parsonages, etc., and lands pertaining to them) in 1922 was to establish for each of the churches or subdivisions reporting to the commission ratios of increase or decrease between the 1922 wealth reported and the 1916 wealth reported. These ratios of increase or decrease, applied to the total wealth of each church and of all churches as reported to the census, made possible an estimate of totals for 1922 for all churches and for all of each church. The reliability of these estimates varies with the proportion of 1916 total church property owned by those portions of the churches which reported to the commission for 1922. These proportions for the various reporting churches were as follows: Presbyterian, 4.60 per cent; Methodist, Baptist, Lutheran, and Congregational, each 100 per cent; Protestant Episcopal, 29.53 per cent. Owing to the fact that only 1.14 per cent of the Roman Catholic Church reported, the average percentage of increase of all other churches was applied to the 1916 census figures for this church. This estimate for the Roman Catholic Church is apparently very conservative, as the portion of its wealth which was actually reported indicated an increase of over 80 per cent, whereas the average for all other churches was only 48.8 per cent. The total church property reported to the commission which was available for establishing the ratios of increase or decrease in all church property represented over 42 per cent of the census total for 1916.

The method employed in estimating the total value of church property for each State was to apply to the census total for the State in 1916 the uniform ratio of increase (48.8 per cent) indicated for the total of all churches or subdivisions reporting to the commission.

The method used in estimating the total amount of funds invested in outside enterprises by the various denominations was on a membership basis as there were no comparable data on value. Organizations representing about 45 per cent of the total church membership of the country reported to the commission on funds invested, and these reports were considered as amounting to 45 per cent of the total of such outside investments for all churches and were increased accordingly. In the various classifications of investments the percentages of actual reported figures were used to arrive at a distribution of the estimated totals.

Wealth of Church Property.—The total investment of all churches in the United States in church property (churches, parsonages, etc., and the land upon which they are built) increased in value from $1,895,447,000 in 1916 to $2,820,222,000 in 1922, or 48.8

per cent, according to estimates based on data received by the commission. During the same period the total church membership increased 13.1 per cent from 41,927,000 in 1916 to 47,407,000 in 1922. That the former increased in greater proportion than the latter is expressed also in the fact that the investment per member in 1922 was $59.49 as against $45.21 in 1916, a difference of $14.28, or 31.6 per cent. The value of church property owned in 1916 by seven of the larger denominations which reported to the commission and the commission's estimate of this value in 1922, as well as the percentage of increase, are stated in the following table:

TABLE 96.—*Indicated distribution of church property (land and buildings) in 1922, and percentage of increase over 1916*

Churches	Value of church property in 1916 [1]	Estimated value of church property in 1922 [2]	Per cent increase [2]
Roman Catholic	$435,545,000	$648,091,000	48.8
Methodist	370,420,000	535,924,000	44.7
Presbyterian	215,998,000	336,762,000	55.9
Baptist	212,384,000	320,284,000	53.6
Protestant Episcopal	163,385,000	249,422,000	80.9
Lutheran	128,104,000	189,945,000	48.3
Congregational	90,139,000	147,735,000	63.9
All other	256,473,000	382,058,000	48.9
Total	1,866,447,000	2,820,222,000	48.3

[1] Bureau of Census Report—Religious Bodies—1916, Part 1, p. 19.

[2] The commission requested information in questionnaire form from 218 religious organizations in the United States. Reports were received from most of the larger denominations and over 500 from dioceses, conferences, classis, individual congregations, etc., whose central organizations did not have available the desired information. As explained on p. 168, the increases in value of church property reported were applied to the total 1916 Bureau of Census figures for the various denominations. The proportion of the total denominational figures reported by the various organizations and upon which the percentages of increase were figured are shown on p. 168. In the case of the Roman Catholic Church only 1.14 per cent reported. This small proportion showed an increase of 81.8 per cent, but was not considered representative, and for this reason the average increase for the other denominations was applied in the case of this church.

The Roman Catholic Church, as indicated in this table and Table 97, held 23 per cent of the total church property in 1916 and in 1922. The value of property of this church increased during the period from $435,545,000 to an estimated $648,091,000. The church embraced 37.5 per cent of the total membership of all churches in 1916 and increased this proportion to 38.2 per cent in 1922. The indicated investment per member in church property in 1916 amounted to $27.70 and in 1922 to $35.80, an increase of $8.10, or 29.2 per cent.

The Methodist Church ranked second to the Catholic in investment in church property in both 1916 and 1922, although its percentage of the total membership in 1916 was but 17.1 and in 1922, 17.4. Thus, its investment per member was $51.69 in 1916 and $64.87 in 1922, an increase of 25.5 per cent. The total investment of this church increased from $370,420,000 in 1916 to an estimated $535,924,000 in 1922, or 44.7 per cent. This percentage, however, is smaller than the average increase of 48.8 per cent for all churches.

The Presbyterian Church, with only about 5 per cent of the total membership, ranked third in investment shown in both years. The value of its church property amounted in 1916 to $215,998,000, or 11.4 per cent of the total, and in 1922 to an estimated $336,762,000, or 12 per cent.

The membership of the Baptist Church in 1916 was 7,153,000, or 17.1 per cent of the total membership of all churches, and in 1922,

8,167,000, or 17.2 per cent, the small percentage increase indicating a growth in membership slightly more rapid than the average for all churches. The church investment, however, increased less than the average, which resulted in a per member investment increase of only 34.6 per cent from $29.69 in 1916 to $39.95 in 1922. This $10.26 increase in value per member was the lowest of any of the churches (except the Roman Catholic, which was estimated on an average basis).

The Protestant Episcopal Church was fifth in the estimated amount of investment in church property in both 1916 and 1922, its per cent of the total being 9.1 in 1916 and 8.8 in 1922. The membership of this church was only 2.6 per cent of the total church membership in 1916 and 2.3 per cent in 1922, but its indicated average investment per member was the largest of any of the churches, amounting to $167.78 in 1916 and $223.10 in 1922. Although this increase of $55.32 was one of the highest in dollars, it represented a gain of only 33 per cent. It is of interest to note that this church, in spite of its high investment per member, decreased in proportion to the total in both membership and investment.

The Lutheran Church, having 5.9 and 5.3 per cent of the total membership of all churches in 1916 and 1922, respectively, owned 6.8 and 6.7 per cent of the estimated total church property in the two years. Its average investment per member was $51.92 in 1916 and $75.50 in 1922, a gain of $23.58, or 45.4 per cent, as against the average of 31.6 per cent for all churches.

The Congregational Church, with but 791,000 members in 1916 and 838,000 in 1922, owned about 5 per cent of the church property in each year and increased its per member value from $113.92 in 1916 to $176.30 in 1922, $62.38, or 54.8 per cent.

All other churches, whose combined membership was 5,278,000 in 1916 and 5,999,000 in 1922, showed an aggregate investment of $259,473,000 in 1916 and $386,058,000 in 1922. This resulted in an increase of $15.20 in the average investment per member.

These foregoing and other comparisons and proportions of interest in regard to investment in church property are shown in the following table:

TABLE 97.—*Estimated membership and property per capita of all churches, in 1916 and 1922*

[In thousands]

Churches	Memberships, 1916 [1]	Per cent of total membership in 1916	Memberships, 1922 [2]	Per cent of total membership in 1922	Per cent [3] of total value of church property in 1916	Per cent [3] of total value of church property in 1922	Investment per member in church property, 1916	Investment per member in church property, 1922	Per centage increase in investment per member
Roman Catholic	15,722	37.5	16,105	33.2	23.6	23.0	$27.70	$35.80	29.2
Methodist	7,106	17.1	8,262	17.4	19.5	19.9	51.60	64.37	25.5
Presbyterian	2,256	5.3	2,402	5.1	11.4	12.0	96.74	140.20	45.4
Baptist	7,153	17.1	8,167	17.2	11.2	11.0	20.60	29.66	44.6
Protestant Episcopal	1,093	2.6	1,116	2.3	9.7	8.8	167.78	223.10	33.0
Lutheran	2,468	5.9	2,516	5.3	6.8	6.7	51.92	75.50	45.4
Congregational	791	1.9	838	1.8	4.7	5.2	113.92	176.30	54.8
All other	5,278	12.6	5,999	12.7	13.7	13.7	49.16	64.36	30.9
Total	41,927	100.0	47,407	100.0	100.0	100.0	45.21	59.40	31.4

[1] Bureau of Census—Religious Bodies, 1916, Part I.
[2] Yearbook of the Churches, 1923.
[3] For actual values see Table 99, p. 169.

GEOGRAPHIC DISTRIBUTION OF CHURCH WEALTH.—A geographical analysis of census data and data secured by the commission indicates that the North Atlantic States have the largest total value of church property as well as the highest amount per church member. In this group the ratio of total church membership to total population was also largest. The group includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

The relative value of church property in each region in 1916 and the estimated increases in 1922 are shown as follows:

TABLE 98.—*Indicated distribution of church property by geographical groups, 1916 and 1922*

Group	Value of church property		Church membership		Value of church property per church member		Per cent of total church property in 1922
	1916 [1]	1922 [2] (Estimated)	1916	1922	1916	1922	
	Thousands	*Thousands*	*Thousands*	*Thousands*			
North Atlantic [3]	$814,200	$1,211,600	13,420	14,180	$60.65	$79.82	43.0
South Atlantic [4]	196,700	291,270	5,664	6,405	34.56	45.48	10.3
South Central [5]	173,000	257,445	7,236	8,183	23.91	31.46	9.1
North Central [6]	610,032	907,662	13,060	14,783	46.74	61.50	32.2
Western [7]	102,360	152,266	2,551	2,582	40.12	53.55	5.4
Total United States	1,895,447	2,820,222	41,927	47,427	45.21	59.49	100.0

[1] Religious bodies—Census of 1916, Part I, page 19.
[2] The basis of this estimate of the commission is explained on p. 168.
[3] Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
[4] Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia.
[5] Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.
[6] Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.
[7] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

In 1922 the North Atlantic States had 28.3 per cent of the population of the country and 32 per cent of the church membership. This compares with an indicated 43 per cent of the total value of church property, or $79.82 per member, shown for these States in the table. The South Atlantic group, which comprises 13.2 per cent of the population and 13.5 per cent of the total church membership of the country, had 10.3 per cent of the estimated total value and an average value per member of $34.56 in 1916, and $45.48 in 1922. The south central group, comprising 18 per cent of the population and 17.3 per cent of the membership, had an indicated 9.1 per cent of the total church property and an average value per member of $23.91 in 1916, and $31.46 in 1922. The north central group, with 32.1 per cent of the population and 31.2 per cent of the total church membership in 1922, had an indicated 32.2 per cent of the value of church property and an average investment per member of $46.74 in 1916, and $61.50 in 1922. The western group, embracing only 8.6 per cent of total population and 6 per cent of membership, had an estimated 5.4 per cent of the value of church property and an average value of $40.12 in 1916, and $53.55 in 1922.

WEALTH IN INVESTED FUNDS.—The total outside investment of all religious organizations in 1922, according to the commission's estimate, amounted to $387,084,000, or 11.81 per cent of the estimated total wealth of religious organizations in this country.[1]

For about 70 per cent of the total investments reported to the commission there was reported also the nature of the investment. Using these reports as a basis, it is possible to estimate the distribution for all churches as follows:

Type of investment	Reported to Federal Trade Commission	Federal Trade Commission estimate for all churches	Per cent of total
Bonds	$96,641,000	$147,082,000	38.2
Stocks	12,022,000	39,570,000	10.3
Mortgages	45,914,000	145,040,000	37.6
Real estate	12,328,000	38,070,000	10.1
Miscellaneous securities	730,000	2,323,000	.6
Cash	4,051,000	12,890,000	3.3
Total classified investments	122,634,000	387,084,000	100.0

It is apparent from this tabular statement that bonds and mortgages are the favorite form of church investment, comprising 75.7 per cent of the total classified investment. This is natural, since comparative safety of investment is always a first requisite for nonprofit institutions. The nature of church investments is further shown by an analysis of those reports to the commission which gave the particular type of stocks and bonds held. This analysis shows that about 92 per cent of the bonds were railroad, other public utility, and governmental, while only 8 per cent were industrial. These reported may be tabulated as follows:

TABLE 99.—*Distribution of reported church investments in securities* [1]

Type of securities	Stocks		Bonds	
	Amount reported	Per cent of total	Amount reported	Per cent of total
Railroad	$5,242,000	41.6	$16,539,000	43.1
Governmental			13,018,000	30.8
Public utilities (other than railroads)	528,000	4.2	4,798,000	12.5
Industrial	2,833,000	22.5	3,032,000	8.1
Other	4,018,000	31.8		
Total	12,622,000	100.0	38,388,000	100.0

[1] Amounts shown are those actually reported to the Federal Trade Commission.

In addition to the funds reported invested by churches, individual congregations reported endowment funds amounting to $52,609,000 and land and buildings valued at $11,643,000 given or bequeathed

[1] Fifty-two denominations with an aggregate membership exceeding 21,000,000, and representing about 45 per cent of the total church membership, reported endowments and invested funds amounting in 1922 to $174,187,000. The commission based its estimate of the total outside investment of all the churches upon the proportion of membership represented in this figure, and increased the amount reported in ratio of this proportion to the entire church membership.

with the understanding that the income therefrom be used for specific purposes. As the nature of the bequests generally takes the matter of investment of principal or use of income entirely out of the church's jurisdiction, they have not been included with other property or productive investments. The total value of these properties may be estimated at about $250,000,000.

DISTRIBUTION OF INCOME.—The reports received by the commission indicate that 40 per cent of the income of churches in 1922 was used for ministerial pensions and other relief and 33 per cent for the support of foreign and home missions. The income reported and the several uses to which it was applied are as follows:

TABLE 100.—*Distribution of reported church income* [1]

Type of expenditure	Amount reported [2]	Per cent of total
Home missions (including church building)	$30,802,000	17.7
Foreign missions	20,295,000	11.6
Home and foreign missions (not segregated)	6,556,000	3.8
Ministerial and other relief [3]	70,271,000	40.3
Church extension, including publication and promotion	20,018,000	11.5
Educational	10,533,000	6.1
Sunday schools	3,830,000	2.2
Unclassified	11,267,000	6.6
Total	174,183,000	100.0

[1] Amounts shown are those actually reported to the Federal Trade Commission.
[2] The amount reported was from denominations having about 45 per cent of the total church membership.
[3] "Relief" is for the most part pensions.

Section 4. Wealth in foundations, community and public trusts.

The total value of foundations and community trusts and of public trusts in 1922, as estimated by the commission, was $1,207,334,000.[1] This is slightly more than one-third of 1 per cent of the total estimated wealth of the country. Of this value $1,072,953,000 represents the estimated funds of foundations and community trusts, and $134,381,000 represents that of public trusts.

A majority of the institutions from which reports were received exist principally for the advancement of education, and over three-fourths of the total income received by them is devoted to that end. Since their scope and organization differ from that of schools and colleges, however, they have been treated separately for the purpose of the present study.

Although the foundation, the community trust, and the public trust are each alike organized on a basis of legal trusteeship, the three differ either in the nature of the trustee or in the nature of his duties. In a foundation the trustees are private individuals or corporations who administer the funds intrusted to them for a restricted and specified purpose. In a public trust a governmental body, usually a city, is made trustee and administers for a restricted and specified purpose. In a community trust the trustees are individuals or corporations who administer the funds for a specified purpose but with a certain degree of discretion allowed them in the event of conditions arising to make unfeasible the original purpose of the donor. The community trust is a comparatively recent development. It is designed to make it impossible that bequests,

[1] For method of estimate see p. 174.

for a specific community purpose should, with the passage of time, become inoperative or unavailing through the appearance of new conditions which the donor was naturally unable to foresee. The community trust plan is substantially as follows:

1. One or more banks or trust companies agree to accept bequests for civic, charitable, or educational purposes and to invest the principal of such funds.

2. A selected group of citizens (the committee on distribution), composed of representatives of the trustee banks and trust companies and of the public, supervises the disbursement of the income, and, under certain conditions, of portions of the principal of the bequests.

3. The committee on distribution employs income customarily for a purpose specified by the donor, but in the absence of such specifications it determines upon the use most conducive to the interests of the community. If originally designated beneficiaries disappear the committee applies the income to such other objects as harmonize with the spirit of the gift and the benefit of the community.[1]

SOURCE OF DATA AND METHOD OF ESTIMATE.—Requests for financial data were addressed by the commission to 124 foundations and community trusts, comprising approximately the total number in the country. Replies were received from 89 of these, or 72 per cent, including 26 replies which contained no data. Nearly all of these latter were submitted by recently organized community trusts to which some bequests had been promised but which had no funds actually in hand at the date of reporting. In estimating the total wealth of the 124 foundations and community trusts listed the total for the 89 which reported has been increased by the ratio which 124 bears to 89. On this basis the $770,081,000 of value reported by the 89 organizations was increased 39.3 per cent to arrive at an estimated total value of $1,072,953,000 for all foundations and community trusts in the United States.

Requests for data on public trusts were sent to all of the 253 cities of the United States with populations of over 30,000 in 1922. Replies were received from 157 cities, or about 60 per cent, of which public trust funds were reported by 69, the remaining 88 stating that they had none. The funds reported amounted to $83,389,000. On the assumption that the 157 cities which replied were representative of all of the 253 cities of over 30,000 population, the total reported by the 157 has been increased by the ratio which 253 bears to 157. Thus, the $83,389,000 reported was increased 61.2 per cent to arrive at an estimated total of $134,381,000 for the 1922 value of public trusts in the 253 cities having a population of 30,000 or over in 1922.

NATURE AND AMOUNT OF INVESTMENTS.—The foundations, community trusts, and public trusts reporting to the commission were requested to state also the nature of the investments to which their trust funds are applied. On a basis of replies received from 89

[1] A celebrated instance of the effect of changing conditions upon the fulfilment of the terms of a trust is that of the Bryan Mullanphy emigrant and travelers' relief fund. Ex-Mayor Bryan Mullanphy, of St. Louis, dying in 1851, during the era of the rush to settle the West, left a third of his property to aid "worthy and distressed travelers and emigrants" coming to St. Louis but bound "bona fide to settle for a home in the West." A few years after his death, however, the railroad was pushed far beyond St. Louis and the number of qualified claimants under the will began steadily to diminish until they practically disappeared. Year by year the bequest has increased until to-day it amounts to nearly a million dollars, but its managing commissioners have remained fettered by the terms set down before the Civil War. Over $600,000 of the fund is now represented by land, buildings, and equipment, while a little less than $100,000 is set aside as an endowment.

foundations or community trusts and 157 cities, the estimated $1,207,834,000 total funds appear to be invested approximately as follows:

TABLE 101.—*Distribution of reported investments of foundations, community trusts, and public trusts in 1928*[1]

(In thousands of dollars)

Item	Foundations and community trusts		Public trusts		Total	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
Bonds						
Governmental	47,042	4.4	60,034	44.7	107,076	8.9
Railroad	84,120	7.8	929	.7	85,049	7.0
Public utility	16,788	1.6	1,506	1.1	18,295	1.5
Industrial	262,419	23.5	749	.6	263,169	21.6
Other and unclassified	19,907	1.9	733	.5	20,640	1.7
Total bonds	429,276	39.2	63,941	47.6	494,209	40.2
Stocks						
Railroad	10,102	1.0	63	.1	10,165	1.0
Public utility	14,913	1.4	1,674	1.2	16,587	1.4
Industrial	269,691	25.1	601	.4	270,192	22.4
Other and unclassified	11,442	1.1	103	.1	11,545	1.0
Total stocks	313,048	29.1	2,441	1.8	314,489	26.1
Total stocks and bonds	732,316	68.3	66,382	49.4	798,698	66.3
Real estate and mortgages	145,926	13.6	64,944	48.3	210,870	17.4
Total	878,242	81.9	131,326	97.7	1,009,568	83.7
Miscellaneous and unclassified	194,711	18.1	3,066	2.3	197,760	16.3
Total	1,072,953	100.0	134,381	100.0	1,207,334	100.0

[1] Estimated for all foundations and trusts on basis of partial returns received by Federal Trade Commission.

As the table shows, about 66 per cent of the total trust funds were invested in stocks and bonds. The percentage of total foundation and community trust funds invested in stocks alone (29.1 per cent) was over twice as great as the percentage invested in real estate and mortgages (13.6 per cent) in spite of the generally acknowledged superior safety of the latter type of investment. In the case of public trusts, however, the safer investment was favored, 48.3 per cent going into real estate and mortgages and only 1.8 per cent into stocks. It is also of interest (as indicating the more conservative investment of public as against private trust funds) that over half of the bond investments of foundations and community trusts were in industrial issues rather than in the safer Government, railroad, or public-utility ones, and that very nearly all of their stock investments were industrial. The public trust investment, in contrast, included practically no stock issues, and of the 47.6 per cent of it invested in bonds very nearly the whole amount was in Government issues. The large proportion of the privately-managed trust funds (foundations and community trusts) invested in industrial stocks and bonds results from the fact that many of these trusts were created by individuals out of earnings of an industrial corporation and are originally endowed in the form of securities of that corporation. A large portion of the

funds of the Rockefeller Foundation, for example, are invested in Standard Oil securities because the original gift of the donor was in the form of these securities.

The estimated investment in stocks and bonds was about 66 per cent of the entire investment of foundations, community, and public trusts. It is quite probable, however, that, in addition, a large part of the 16 per cent of all investments which was listed as miscellaneous and unclassified was actually invested in stocks or bonds. Of the strictly classified investments, 47 per cent were in bonds, 31 per cent in stocks, and 22 per cent in real estate and mortgages. The estimated distribution of classified investments as separate from unclassified investments was as follows:

Item	Amount	Per cent of total	Per cent of total classified
Classified:			
Bonds	$463,560,000	38.4	47.4
Stocks	303,044,000	25.1	31.0
Real estate and mortgages	210,870,000	17.4	21.6
Total	977,383,000	80.9	100.0
Unclassified	229,951,000	19.1	
Grand total	1,207,334,000	100.0	

The foregoing totals are, of course, only estimates, but they are based on reports received from an important proportion of the trust institutions of the country, and it is believed that they are approximately accurate.

The actual value of the 89 foundations and community trusts which reported to the commission was $770,081,000, while that of the public trusts for the 157 cities was $83,389,000. Sixty-seven per cent of the total funds reported by the 89 foundations and community trusts was owned by four organizations—the Rockefeller Foundation, the General Education Board, the Carnegie Corporation of New York, and the Sailors' Snug Harbor. These four owned 68 per cent of the total bonds reported, 97 per cent of the stock, 82 per cent of the real estate, 87 per cent of the cash, and about 3 per cent of the miscellaneous and unclassified investment. It is of interest to note that 67 per cent of the bond and 90 per cent of the stock investments of these four institutions were in industrial issues.

INCOME FROM INVESTMENTS.—The total estimated income in 1922 from all foundations, community trusts, and public trusts was $54,813,000, or about 4½ per cent of the $1,207,334,000 invested. The average rate of return indicated for public trust fund investments was 8 per cent, while that for foundations and community trusts was only 4.2 per cent. The high rate of return on public trust funds[1] is particularly remarkable in view of the fact that nearly half of these funds were in Government securities and earned probably no more than 4 per cent.

The actual income (on which these estimates are based) reported to the commission by 89 foundations and community trusts was

[1] The high rate of return on public trusts is due to the fact that about three-fourths of the reported total was from the Girard Estate, Philadelphia, with practically all its investment in real estate, yielding over 6 per cent.

$32,021,000, while that reported for public trust funds of 157 cities was $6,692,000. The rate indicated for three of the four above-mentioned organizations owning 67 per cent of the total foundation and community trust funds averaged 5 per cent, as compared with the general average of 4.2 per cent.

As already pointed out, the indicated income of 8 per cent on the total value of public trusts was almost twice as high as that of foundations and community trusts. If the average yield of the Government bonds in which $37,253,000 of this total was invested was 4 per cent, the income therefrom would amount to $1,490,000. This would leave an income of $5,202,000 on the remaining $46,136,000 of public trust funds and would indicate an average rate of return thereon of over 11 per cent. The major portion of this remaining $46,136,000, as already stated, was invested in real estate and mortgages.

DISTRIBUTION OF INCOME.—The organizations from which data on wealth were requested were also asked to state the disposition made of the income which they received in 1922. The distribution indicated for the $38,713,000 of income reported by foundations, community trusts, and public trusts was as follows:

TABLE 102.—*Distribution of reported income of foundations, community trusts, and public trusts in 1922*

[In thousands of dollars]

Object	Foundations and community trusts [1]	Per cent	Public trusts [2]	Per cent	Total	Per cent of total
Charity	2,123	6.7	120	1.8	2,245	5.8
Hospitals	6		55	.8	60	.2
Education	24,240	76.7	5,037	84.2	29,388	77.2
Cemetery upkeep			131	2.0	131	.3
Medals, prizes, etc	302	1.2	9	.1	401	1.0
Local improvements, including parks, etc			78	1.2	78	.2
All other	6,250	10.4	662	0.9	6,912	16.3
Total income	32,021	100.0	6,692	100.0	38,713	100.0

[1] Represents returns from 89 organizations.
[2] Represents returns from 157 cities.

The table illustrates the preponderant proportion of trust fund income devoted to educational purposes, amounting to 77 per cent of the total income in 1922. Foundations and community trusts devoted 76 per cent and public trusts 84 per cent of their income for education.

Section 5. Wealth of benevolent institutions.

Benevolent institutions in this section include those both publicly and privately owned[10] for defective, dependent, and delinquent persons; institutions and societies for the care and protection of children; homes for adults or adults and children; hospitals and sanitariums; dispensaries; and institutions for the blind and deaf. It is estimated by the commission that the minimum total wealth

[10] Due to the form of Bureau of the Census reports, the classifications of publicly and privately owned institutions each includes some institutions properly belonging to the other, but they may be taken as substantially correct.

of these institutions in the United States in 1922[11] was over two and a quarter billions of dollars, or over $22 per capita of population.[12] This amounts to about three-fourths of 1 per cent of the total wealth of the country as estimated by the United States Census Bureau. Of the total wealth of these institutions at least one and three-fourths billions represents those privately owned.

Source of Data and Method of Estimate.—In 1910 the Bureau of the Census received financial data from 3,871 of the privately-owned benevolent institutions in the United States. In the present inquiry the commission requested data from 2,678,[13] or nearly 50 per cent of the total number of these institutions. Schedules were sent to institutions located in 13 States,[14] representing all sections of the country. The information requested included the value of land, buildings, and equipment owned; other property owned, including cash or securities; endowment funds; and land and buildings given or bequeathed for a specific purpose or purposes. The commission's estimate of the wealth of privately-owned benevolent institutions in 1922 is based on schedules received from 1,260 institutions, or about 23 per cent of the total number listed by the Bureau of the Census in 1910. The estimate was arrived at by applying to the 1910 census figures for the entire United States [15] the average percentage of increase in 1922 over 1910 for the 23 per cent reporting to the commission.

Similar information regarding publicly-owned institutions was secured from officials of 14 States.[16] Since these 14 States in 1916 owned over 51 per cent of the total value of State-owned benevolent institutions reported to the census for all States, the 1922 value of this property for all States was estimated by applying the average percentage of increase in 1922 over 1916 for the 14 States to the 1916 census figures for each other State.

Wealth of Private Benevolent Institutions.—The total value of property and investments of privately-owned benevolent institutions in the United States in 1922 is estimated[17] at $1,848,759,000. This represents an investment of $16.92 per capita, or slightly more than one-half of 1 per cent of the total wealth of the country.

The total value of 3,871 of these institutions which reported to the Bureau of the Census for the year 1910, amounted to $643,878,141. No data for 1916 were secured by the census. The 1922 value estimated by the commission shows an increase over 1910 of 114.7 per cent, or an average of 9.5 per cent per year. Of the various classes of institutions the societies for protection and care of children

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[11] Method of estimate is explained on p. 178.

[12] This does not include the value of all institutions owned by the United States Government.

[13] Not including any dispensaries, a majority of which are owned and operated by hospitals.

[14] Alabama, California, Georgia, Illinois, Kansas, Massachusetts, Minnesota, Nebraska, New York, Ohio, Pennsylvania, Texas, and Washington.

[15] See footnote, p. 178.

[16] Alabama, Arkansas, Colorado, Delaware, Florida, Illinois, Maine, Massachusetts, Minnesota, Nebraska, Nevada, New York, Ohio, and Pennsylvania.

[17] Although the report on benevolent institutions, 1910, of the Bureau of the Census covers not only the value of land, buildings, and equipment (p. 77), but also the value of invested funds (p. 78), the data on invested funds do not lend themselves to comparison with data obtained by the commission. The estimate of total value (property and investments) of privately-owned benevolent institutions in 1922, therefore, is based upon the increase in the value of tangible property alone (land, buildings, and equipment) for institutions from which the commission obtained reports. The average percentage of increase in such value for each class of institution was applied to the total value for that class in 1910 as reported to the Bureau of the Census. But since the census figures themselves cover only 3,871 out of the 5,468 institutions in the country the commission's estimates for the various classes of institutions have been further increased by the respective per cent by which the total number of existing institutions of each class exceeds the number reporting to the census. The commission's estimates do not take into consideration the increase in number of such institutions since 1910.

showed 268 per cent increase, hospitals, and sanitariums 151 per cent, homes for adults or adults and children 135 per cent, institutions for blind or deaf 36 per cent, and institutions for care of children only 21 per cent. The following table indicates the manner of arriving at estimated totals and compares these totals for each class of institutions:

TABLE 103.—*Estimated value of private benevolent institutions, 1910 and 1922, by classes of institutions*

Class of institutions	Total value of 3,871 institutions reporting to Bureau of Census in 1910		Per cent of increase, 1922 over 1910	Total value of all institutions (5,406)	Per cent of total	Number of institutions	Average value per institution
	1910	1922		1922			
	Bureau of Census figures [1]	Federal Trade Commission estimate [2]		Federal Trade Commission estimate [3]			
Institutions for care of children	$133,932,000	$161,077,000	21.0	$204,431,000	11.1	1,151	$178,000
Societies for protection and care of children	6,727,000	24,753,000	268.0	62,647,000	3.4	205	306,000
Homes for adults or adults and children	158,318,000	371,731,000	134.8	430,073,000	23.3	1,435	300,000
Hospitals and sanitariums	306,621,000	767,043,000	150.7	1,029,727,000	56.2	1,918	542,000
Dispensaries	5,720,000	[4] 12,021,000	110.2	57,983,000	3.1	574	101,000
Institutions for blind or deaf	33,160,000	45,067,000	35.9	53,098,000	2.8	125	425,000
All classes	643,878,000	1,382,692,000	114.7	1,848,759,000	100.0	5,408	342,000

[1] Bureau of the Census, Benevolent Institutions, 1910.
[2] Percentage of increase in physical property of 1,260 institutions reporting to both census and Federal Trade Commission, applied to census figures for total wealth of 3,871 institutions in 1910.
[3] Percentage of increase over 3,871 institutions based on excess of number of institutions of each class over number reporting to the census.
[4] Bureau of the Census figures for 119 dispensaries increased by total average increase.

As the table indicates, over half of the total estimated wealth of privately owned benevolent institutions in 1922 was represented by that of hospitals and sanitariums, while about 23 per cent was represented by that of homes for adults or adults and children, 11 per cent by institutions for care of children, and about 3 per cent each by 904 institutions of the other three classes. Hospitals and sanitariums represent not only the greatest number of privately-owned benevolent institutions but also the greatest unit values, averaging $542,000 per institution, while homes for adults or adults and children averaged $300,000; institutions for care of children, $178,000; societies for care and protection of children, $306,000; dispensaries, $101,000; and institutions for the blind and deaf, $425,000. The average value for all classes was $342,000 per institution.

Analysis of the nature of the wealth of privately-owned institutions reported to the commission indicates that 61 per cent was in land, buildings, and equipment, 26 per cent was in endowment funds, 8 per cent in other property, and the remaining 5 per cent in land and buildings given or bequeathed for a specific purpose. The actual amounts of each form reported to the commission by 1,260 institu-

tions, representing 35 per cent of the estimated total wealth of privately-owned benevolent institutions, are as follows:

Item	Amount	Per cent
Land, buildings, and equipment owned	$388,912,009	69.7
Other property, including cash or securities not included under endowments	50,514,479	7.9
Endowment funds	170,170,743	29.6
Land and buildings given or bequeathed for special purposes	30,092,039	4.8
Total	640,295,810	110.0

Of the $50,000,000 reported as "other property" only $39,000,000, or 78 per cent, was income producing. The reports indicate that from the $170,000,000 in endowment funds an income of $8,000,000 in 1922 was derived. This amounts to a rate of about 4.7 per cent.

WEALTH OF PUBLIC BENEVOLENT INSTITUTIONS.—The total value of public benevolent institutions in 1922 is estimated by the commission at $574,493,000, or $5.26 per capita. These institutions are of four classes, viz: (1) Institutions for the feeble-minded, epileptic or insane; (2) institutions for the deaf, dumb, or blind; (3) institutions for the tuberculous, deformed, inebriate, or leprous; (4) institutions for criminals or dependents. In 1916 there were, according to the Bureau of the Census, 553 of these institutions. This number had increased to 720 in 1922, the largest increase occurring in class 4. The increase in this class, which amounts to 44 per cent, compares with an increase of only about 8 per cent in the population of the United States and suggests one source of the large increases in State expenditures in recent years. The increases in the other classes are more nearly in proportion with the increase in population.

The following table compares the estimated values of public institutions for 1916 and 1922 by classes:

TABLE 104.—*Estimated value of public benevolent institutions, 1916 and 1922, by classes*

[In thousands of dollars]

Class	1916			1922			Per cent of increase in value
	Bureau of the Census figures			Federal Trade Commission estimates			
	Number reporting	Value	Per cent of total value	Total number	Value	Per cent of total value	
1. Feeble-minded, epileptic or insane	190	$213,619	56.3	221	$290,791	50.6	36.1
2. Deaf, dumb, or blind	74	22,550	5.9	96	36,219	6.3	60.6
3. Tuberculous, deformed, inebriate, or leprous	50	13,979	3.6	60	22,516	3.9	72.5
4. Criminalistic or dependent	239	129,555	34.2	343	225,167	39.2	73.4
Total	553	379,063	100.0	720	574,493	100.0	51.5

As the table indicates, over half of the value of public benevolent institutions in both 1916 and 1922 was represented by the value of institutions of class 1. The value of institutions of class 4 represented 34 per cent of the total in 1916 and 39 in 1922; of class 2,

about 6 per cent in each year; and of class 3, between 3 and 4 per cent. The greatest growth in value for the period was shown for institutions of class 4, with an increase of 73 per cent from 1916 to 1922. The increase for institutions of class 3, however, was 72 per cent, while that for institutions of class 2 was 61 per cent and that for institutions of class 1 was only 36 per cent. The increases in total value of these institutions would undoubtedly be considerably larger if all Federal-owned institutions were included. This is especially true in the case of institutions of class 1 (for feeble-minded, epileptic, or insane), a great number of which were established by the United States Veterans' Bureau after the war.

WEALTH OF BENEVOLENT INSTITUTIONS BY GEOGRAPHICAL REGIONS.—The minimum total wealth of all benevolent institutions in the United States is estimated at over 2.4 billions of dollars. One-half of this is owned by institutions in the North Atlantic group of States.

Owing to the method of estimating, the total wealth of private institutions (see p. 178), data by States for all of the 5,408 such institutions were not available, and the commission's State estimates represent only the 3,871 institutions covered by the census of 1916. The combined State estimates, therefore, are about 19 per cent, or $4.26 per capita, below the total for the United States. These estimates are shown in Appendix Tables 21 to 25, inclusive.

The estimated value of 3,871 private and 720 public benevolent institutions in 1922, distributed by geographical divisions, is shown in the following table:

TABLE 105.—*Total estimated value of benevolent institutions reported in each geographical region of the United States in 1922*

Group	Public institutions	Private institutions [1]	Total	Per capita value
North Atlantic	$219,267,440	$872,640,525	$1,091,817,974	$35.63
South Atlantic	45,820,400	110,410,686	156,231,002	10.83
North Central	186,580,260	280,930,028	467,510,288	13.32
South Central	65,454,110	47,147,019	112,601,129	5.73
Western	57,380,202	71,544,976	128,925,278	13.66
United States	574,492,526	[1] 1,382,593,235	1,957,065,761	17.92

[1] 3,871 institutions only. Total number is 5,408.

As the table indicates, the North Atlantic group ranks first not only in total value of benevolent institutions but also in value per capita. In this group, which embraces 56 per cent of the total value of all institutions, the institutions in New York State alone (see appendix table p. 351) account for 48 per cent of the group total value and 27 per cent of total for the entire United States. In per capita value of benevolent institutions, however, that of the District of Columbia is more than double that in any of the States. This high per capita value for the District ($108.98) comes principally from the comparatively large value of its private benevolent institutions, reflecting, no doubt, the very large per capita wealth of District residents. New York State ranks second with a per capita value of $48.73, while Massachusetts comes third with $44.12. These two States are the only ones with per capita values above $30. The lowest States

in per capita value are Oklahoma with $3.01; Georgia with $3.07 Alabama, $3.29; and Florida, $3.49. It is of interest to note that as a rule the low per capita values are shown for States in which the private institution value is less than the public. The South Central group, which has only an average per capita value of $5.84, is the only group in which public institutions are of greater value than the private, the value of public institutions in this group representing 58 per cent of the group total value. In the North Atlantic group, with a per capita value of $35.63, the value of public institutions is only 20 per cent of the total.

The ranking State in the Western group in per capita value of benevolent institutions is Colorado with $18.86. California ranks second with a per capita value of $15.53, and Oregon third with one of $14.69. These States and Washington are also the ranking ones in the group in total values. The total for California, however, exceeds that of Colorado by about 3 to 1.

The only two States which show total values of less than $3,000,000 are Wyoming with $1,327,000 and Nevada with $1,068,000. Nevada, however, ranks seventeenth in the United States in per capita value, while Wyoming ranks thirty-eighth (not including the District of Columbia).

WEALTH IN PHYSICAL ASSETS—LAND, BUILDINGS, AND EQUIPMENT.—As already pointed out, 61 per cent of the wealth of the 1,260 private institutions reporting to the commission was represented by the value of their physical properties, i. e., land, buildings, and equipment. The remainder was represented by endowments, cash and securities, and properties devoted for a specific purpose. No data on the value of physical properties for public institutions were available.

The commission's estimate of the physical wealth of all private institutions of each class is as follows:

TABLE 106.—*Estimated value of land, buildings, and equipment of private benevolent institutions, by classes, 1910 and 1922*

Class	Estimated total for 3,807 institutions reporting to the census				Per cent increase 1922 over 1910	Estimated total for all institutions (5,408) [3]
	1910 as reported to the census	Per cent of total	1922 as estimated by Federal Trade Commission [1]	Per cent of total		
1. Institutions for care of children	$93,310,000	19.8	$113,453,000	11.1	20.9	$141,828
2. Societies for care and protection of children	3,738,000	.8	13,720,000	1.4	268.9	41,970
3. Homes for adults or adults and children	112,379,000	23.7	253,300,000	25.3	134.2	309,647
4. Hospitals and sanitariums	232,841,000	49.2	582,216,000	57.2	150.7	780,688
5. Dispensaries	4,540,000	1.0	[2] 9,709,000	1.0	----------	52,775
6. Institutions for blind or deaf	20,206,000	5.5	34,621,000	3.5	35.9	47,512
Total	472,510,000	100.0	1,020,976,000	100.0	116.1	1,384,997

[1] Estimated on basis of increase in 1,260 institutions reporting both to Census and Federal Trade Commission.
[2] Bureau of the Census estimate increased by 115.4 per cent, the average increase in classes 1, 2, 3, 4, and 6.
[3] Percentage of increase over 3,807 institutions based on excess of total number of institutions of each class over number of that class reporting to Census.

As in the case of the total values, the commission's estimates have not taken into consideration the increase in number of institutions

since 1910. The average increase of 115 per cent shown for all classes in the estimated value of physical properties, therefore, probably represents in large part an increase in value rather than in quantity of property owned.

Hospitals and sanitariums, as the table shows, owned 49 per cent of the total physical wealth in 1910 and 57 per cent in 1922. Homes for adults or adults and children were next in importance with about 25 per cent in each year. The physical wealth of these two classes increased in substantially greater proportion than that of any other, with the exception of that of societies for care and protection of children, which, though unimportant in proportionate physical value, showed a very large increase of 268 per cent in 1922 over 1910.

Section 6. Wealth of educational institutions.

The wealth of educational institutions in the United States in 1922 is estimated by the commission at about $7,600,000,000 [18] or nearly 2½ per cent of the total wealth of the country. These institutions include public and private schools, universities, and colleges; libraries, museums and historical societies. Under public schools are included only public graded and high schools, all other schools, from kindergarten to university [19] being classed as private.

The estimated value of each class of institution in 1922 is as follows:

Class of institution	Estimated value, 1922
Private schools and colleges	$3,574,961,000
Public schools	3,034,730,000
Libraries	807,421,000
Museums and historical societies	229,920,000
Total	7,647,122,000

This estimated total of $7,647,122,000 represents a per capita wealth of over $70 for each individual in the United States. Eighty-seven per cent of the total consists of wealth of private and public schools and colleges, which, with a school population of the United States of approximately 25,000,000 represents an investment of about $264 per pupil.

Source of Data and Method of Estimate.—Requests for data on investment and property were addressed by the commission to the educational boards of every State and to all of the educational institutions listed in the educational directory of the United States Bureau of Education. Requests were also sent to 1,747 libraries and to 299 historical societies, museums, etc. In response to these requests, information was supplied by 36 States, by over 1,600 private educational institutions, 1,035 libraries, and 65 societies and museums. In estimating the total 1922 value of public schools (graded and high only) in the 12 States not reporting, values reported for these States in 1918 by the United States Bureau of Education were increased by the percentage of increase shown for public schools in the remaining 36 States. This percentage was arrived at by com-

[18] For method of estimate see p. 183.

[19] Including State universities and normal schools which, although financed in part from public funds, frequently draw substantial proportions of their income from private funds and endowments.

paring the data for these States in 1922, as reported to the commission, with similar data for 1918 as reported to the Bureau of Education.

In estimating the value of all other schools and of colleges the total value reported by those institutions submitting data and those for which information could be secured from published and other statistics was supplemented by an estimated value for 9,693 additional institutions for which no data were available. The latter comprised principally the 6,536 parochial schools of the Catholic Church and the 2,823 schools of other religious denominations. In estimating the 1922 value of these 9,693 institutions the 1918 figures of the Bureau of Education for 2,058 private high schools and academies were used. The calculated average value of these institutions in 1918 was increased by about 53 per cent (the percentage by which public school value increased from 1918 to 1922) to secure an average value in 1922 applicable to each of the 9,693 unreported institutions.

In estimating the value of libraries the average value indicated for those supplying information was multiplied by the total number of libraries listed. A similar method was used in estimating the value of the 299 historical societies, museums, etc., listed.

WEALTH OF PUBLIC SCHOOLS.—The public graded school and the public high school are the bedrock of America's educational system. Their total value in 1922, as estimated by the commission, was a little over three billions of dollars, or about 40 per cent of the total wealth of all educational institutions and less than 1 per cent of the total wealth of the United States. The value of public schools per capita of population has increased 45 per cent from $19.15 in 1918 to $27.78 in 1922. In so far as the heavy increases which occurred in State expenditures during this period came of an extension of their public school systems it is difficult to criticise such expenditures. Of the estimated total wealth of public schools in 1922 about $2,754,000,000, or over 90 per cent, represented the value of lands and buildings.

WEALTH OF PUBLIC SCHOOLS BY GEOGRAPHICAL REGIONS.—In the total value of its public schools in 1922 the north-central region ranked highest, although the ranking individual States were New York, Pennsylvania, and Illinois. (See Appendix, Tables 26 to 30.) A more equitable comparison is that of the relative school wealth per capita of population, and on this basis the western region leads. The most pertinent basis of comparison, however, is that of the increases in per capita value which have occurred in each region or State and in this respect the Southern States (South Atlantic and Middle Atlantic) apparently lead all the rest.

The estimated value of public schools in each region in the years 1918 and 1922, together with the relative increases in per capita value, is shown in the following tables:

TABLE 107.—*Total estimated value of public schools in each geographical region of the United States in 1918 and 1922*

Region	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 [1] (as reported by United States Bureau of Education)	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
North Atlantic	$667,356	$1,031,328	$23.04	$33.60	45.8
South Atlantic	116,602	199,402	8.04	13.48	68.0
North Central	775,803	1,124,551	23.74	33.05	37.9
South Central	189,085	324,888	10.04	16.53	64.6
Western	212,706	350,000	24.76	38.13	53.9
United States	1,960,509	3,034,730	19.35	27.78	45.1

[1] Fiscal year ending June 30.

The table indicates that the North Central States include the greatest wealth in public schools, amounting in 1922 to $1,124,551,000, or 37 per cent of the United States total. The States in this region have 32.1 per cent of the total United States population. The individual States with highest values (see Appendix) were New York with $401,241,000, Pennsylvania with $243,410,000, and Illinois with $225,011,000. The comparison of more significance, however, as regards actual distribution of educational wealth, is that of the wealth per capita of population and in this measure the Western States lead all the rest with an average of $38.13 in 1922, while the Southern States (South Central and South Atlantic) have an average of only $16.53 and $13.48 per capita, respectively. That the comparative poverty of educational facilities in the South, however, is being rapidly improved is indicated by the fact that these States show the greatest increases in school wealth per capita during the period 1918 to 1922, the average increase for the South Atlantic States being 56 per cent and that for the South Central States 64.6 per cent. The highest per capita wealth for any particular State was that of $45.79 for New Jersey. The District of Columbia was second with $45.64, while the lowest was $7.87 for Mississippi. The latter State, however, increased its per capita school wealth 190.4 per cent in the period from 1918 to 1922.

WEALTH OF OTHER SCHOOLS AND COLLEGES.—The total estimated value in 1922 of colleges and schools other than public graded and high schools is $3,575,000,000.[20] This total may be classified roughly as follows:

Land	$520,000,000
Buildings	1,681,000,000
Equipment	338,000,000
	2,539,000,000
Endowments	1,036,000,000
Total	3,575,000,000

[20] For method of estimate see p. 153.

Of the slightly more than a billion dollars in endowments estimated, five universities hold $219,000,000, or about 22 per cent of the total, as follows: [21]

Harvard	$64,000,000
Columbia	56,000,000
Yale	40,000,000
Chicago	32,000,000
Leland Stanford	27,000,000
Total	219,000,000

The income from endowment funds reported to the Bureau of Education for 1917–18 [21] indicates an average rate of interest received of 5.69 per cent. At this rate the 1922 estimated total endowments of over $1,000,000,000 would yield an annual income of about $60,000,000.

Wealth of Libraries and Museums.—The estimated total wealth of libraries in the United States is $807,491,000,[21] of which $604,458,000 is in physical assets and $203,033,000 is endowments. The chief value of the physical assets of libraries is in books. Equipment, including books, accounts for 43 per cent; buildings 31 and grounds 26 per cent of the physical value.

The museums, historical societies, etc., are valued according to the commission's estimate, at $230,000,000.[22] Fifty-eight per cent of this value is in endowment funds and the balance in physical assets.

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[a] Figures are approximate.
[21] Bureau of Education Bulletin, 1919, No. 94, p. 342.
[22] For method of estimate see p. 183.

PART II. NATIONAL INCOME

CHAPTER IX

METHOD AND SCOPE

Section 1. Preliminary survey.

This part of this report analyzes certain published statistical data on income issued by the Treasury Department and presents estimates of the total income of the people of continental United States during each year of the six-year period from 1918 to 1923.

The most important existing data on income are those shown by the published Statistics of Income of the Treasury Department in connection with the income tax, although the income-tax returns are made by only a small fraction of those who are gainfully employed. These Treasury statistics constitute a very important source of information, and by careful analysis are capable of yielding valuable information not hitherto available.

There is no census of incomes in the United States. But while only a portion of the income of individuals is covered in the Statistics of Income published by the Treasury Department, every corporation is required by law to file an income-tax report each year, and all business partnerships are also required to file reports. The latter, however, are used only as a check upon the reports filed by the partners individually. Every individual whose income does not come from tax-exempt sources[1] and exceeds a certain specified amount, even if the statutory personal deductions preserve him from taxation, is also required by law to file a report, but to a certain extent the income of members of the same family may be covered in one report. But, as already stated, these reports cover only a part of the individual or family income of the people of the United States. The Census of Occupations shows that in January, 1920, there were nearly 42,000,000 gainfully occupied persons in the United States, but there were less than 7,260,000 individual income-tax reports filed for that year, and there were more reports filed for that year than for any earlier year. Of course many of the individual income-tax reports filed cover the incomes of two or more individuals; for example, where husband and wife both earn incomes, or where there are several members of one family, one or more of them being minors, who are industrially employed, only one report may be made to cover the incomes of all. It seems likely, however, that this consolidation accounts for only a small portion of the more than 35 millions of gainfully employed persons who do not file separate reports. Furthermore, many of the reports filed come not from the gainfully employed but from persons whose incomes are derived wholly from investments.

Estimates made by the commission, based upon an analysis of data published by the Bureau of Internal Revenue, indicate that for the six-year period 1918–1923 the total incomes reported in the Federal

[1] The salaries and wages of State, county, and municipal officials and employees are exempt from the Federal income tax, regardless of the amount of the salary or wage. Income derived wholly from certain sources—e. g., income derived from interest on State, county, and municipal bonds, and certain Federal bonds—is exempt from Federal taxation.

income-tax returns were received or enjoyed by about 11 to 17 per cent of the total population of continental United States.[3] The largest proportion was for 1923, the year in which the maximum number of returns were filed. Any measurement or estimate of the national income, to be complete, must include the incomes not reported as well as those reported to the Internal Revenue Bureau.

There are also certain classes of income that are exempt from taxation. One of these, income from investments in the obligations of the State and local governments in the United States and certain Federal bonds, was discussed in a previous report[4] under this resolution.

Internal evidence in the income-tax statistics, it is alleged, also suggests that there is a considerable failure to report fully incomes just over $50,000 or else a considerable understatement of them.[5]

Personal incomes may be placed in six classes, according to the manner in which they arise, viz: (1) From personal services rendered as a continuing member of an organization; (2) from interest or rent, which represent income from invested capital; (3) from business profits or dividends, also from invested capital but not generally made definite in accordance with a contract; (4) from the sale of mechanical inventions and literary productions; (5) from royalties on the sale of books and patented articles; (6) from fees (including "admission" fees) for professional and personal services offered to the public. The last four classes are alike, in that the income depends entirely on the demand of the public for the merchandise, commodity, or service, and the ability to furnish these on such terms as to leave a net income. In the first two classes the income and the service, for a longer or shorter period, is made definite by contract for the mutual convenience of the parties.

The first of these classes of income includes "wages," "salaries," "bonuses," and the like. It includes nearly three-fifths of all income and varies in different industries from one-eighth to 98 per cent of the value created by the industry. It probably includes the great bulk of the individual incomes that are too small to necessitate report for income-tax purposes.

It is likely that a large proportion of the single proprietorship businesses, composing classes (3) and (6) above, also did not net large enough incomes to require their proprietors to report. For 1922 income-tax reports were filed by 382,883 corporations, 287,959 partnerships, and 906,348 individual proprietorship businesses, a total of 1,577,190 businesses. An analysis of the principal business directories and leading credit-rating books was made in order to arrive at an estimate of the number of single proprietorship businesses in the United States. The rating books omit the names of a large portion of the restaurants, barber shops, shoe-repair shops, etc., and practically all of the professional-service businesses, such as those of lawyers, physicians, dentists, public accountants, and consulting engineers. It is not unlikely that there are a million individual

[3] See p. 192.
[4] Federal Trade Commission, Taxation and tax-exempt income.
[5] This suggestion arises from graphically charting the amounts of income reported in the different income groups. If in constructing such a chart the distances on the base line represent, not the sizes of the incomes but the logarithms of those sizes; and if the vertical distances represent, not the amounts of income reported of the various sizes but the logarithms of those amounts, there would result what may be called a double logarithmic chart. The form of the graph is very nearly that of a straight line. In the region that represents incomes of $50,000 and a little more, however, the graph dips under the straight line. This dip has suggested to certain analysts that there was an understatement of incomes of these sizes.

proprietorship businesses that are not included in the mercantile rating books, and that there are between a million and a half and two million of such businesses that do not file income-tax reports. It is estimated by the commission that there were 4,500,000 businesses of all kinds in the United States in 1922.

It would, therefore, have been interesting and enlightening if reports could have been obtained from a large sample of individual proprietorship businesses so chosen as to be representative of the whole mass—those with small incomes as well as those with incomes large enough to require reports. It would also have been instructive to have obtained data concerning the wages and salary incomes of a similarly chosen large sample of commercial and industrial employees. By sorting these into comparatively narrow income groups very important information could have been obtained not only as to the average salary or wages income, but as to the range of such incomes and the numbers of individuals receiving such incomes of the various sizes.

Investigation, however, indicated that the cost of obtaining such information relative to a 6 per cent sample would probably exceed $80,000. The funds were not available and the project of collecting such information was abandoned.

Section 2. Method of estimating income.

The method chosen for estimating the income of the people of the United States was that of estimating the amount of value created by industry in each of the calendar years under review, because this method enabled use to be made of the data published by the censuses of manufactures and other pertinent official statistics. It also enabled the commission to avoid the collection of original data, except to supplement existing information. The value product of an industry, or value created by it, is not the whole value of its products or services. The values represented, for example, by the raw materials used and by the transportation service necessary to bring them to the place of use are values created by other industries. To take the gross value of the product of each industry would involve, of course, a tremendous duplication on this account.

The value product of an industry, or value created by it, therefore, as previously stated, may be defined as the excess of the gross value of its product over all that portion of its cost of acquisition, production, sale, delivery, etc., that was paid away to other businesses.

The two shares into which the value product of industry has been divided for the purpose of this inquiry are: (1) Wages, salaries, and other remuneration for services; (2) the share left to those who put their time and money into business enterprise and take the risks inherent therein. Taxes, the share going to Government, trench on both the foregoing shares, and are considered separately.

The second share mentioned above consists not only of profits and losses of the business proprietors but also of the interest on the borrowed capital and rent of property and equipment that was leased to other business organizations. It might have been interesting to subdivide this second share into leased capital, borrowed capital, and proprietor's capital, but it was not deemed expedient to attempt the separation.

The second share designated above is not wholly net, because taxes are not deducted. Moreover, out of the rentals received deductions should be made to cover any depreciation incurred. However, depreciation probably is only a small percentage of the total amount assigned to this share. Neither has any deduction been made from the second share on account of uncollectible debts. As the value was actually created, the only question was as to who obtained the benefit of it. Ordinarily this item probably amounts to not more than one-half of 1 per cent of the total value created by industry, and it was impracticable to allocate it. But it should also be noted that from this point of view wages are not strictly net either, as various special expenses are involved in connection with most occupations which might otherwise be avoided.

Section 3. Limitations of estimates.

Any consideration of the scope of an inquiry into national income involves the application of economic theory in some of its most abstract and recondite phases, but theoretical discussions have been excluded generally in the presentation of these estimates. Such theoretical discussions would tend to show, of course, how difficult it is to draw the line between what is income and what is not income on the basis of any general principle. In practice the line will be drawn variously, depending on purposes and circumstances. The national income as estimated here includes few, if any, items that would be seriously challenged. On the other hand there are a number of other items that might be included. Some estimates, for example, attempt to include the economic value of services rendered by the housewife in providing for meals and in care of children. Some estimates include what is called "imputed interest"—that is, the estimated potential yield of wealth which is used by the owner without expense to him, but which could be loaned to another for compensation (interest).

Among the items not included, but which have strong claims for inclusion, is the rent of dwelling houses received from the occupier by a landlord. While omitted under the original plan, it seemed desirable to make a rough estimate of the net income from such rentals without making any theoretical argument for or against exclusion.

A study by the Bureau of Labor Statistics of the budgets of 12,096 workingmen's families in 1918 and 1919 showed that on the average these families spent 13 per cent of their incomes for rent.[5] This is the latest information available as to the proportion of personal income spent for rent. It is assumed that rent is not paid for farm dwellings. Hence to obtain a basis to which to apply the above stated percentage, the total value product as previously estimated, less the value-product of agriculture, was taken. This selection errs in the direction of overstatement, because the base includes corporate savings as well as individual incomes. This is counteracted in part by the omission of the wages of agricultural labor.

The estimated value-product of industry other than agriculture was $46,000,000,000 for 1918, 53.2 billions for 1919, 65.6 billions for 1920, 45.9 billions for 1921, 52.3 billions for 1922, and 60.4 billions for 1923. Thirteen per cent of these amounts constitutes the estimated total money rent paid for dwellings and apartments in the

[5] Cost of living in the United States, 1924.

respective years. These estimates are $6,000,000,000 in 1918, 6.9 billions in 1919, 8.5 billions in 1920, $6,000,000,000 in 1921, 6.8 billions in 1922, and 9.9 billions in 1923. Not all of these amounts constituted values created by the business of renting dwellings and apartments, however. There was depreciation and maintenance of the buildings. In the case of a large portion of the apartment houses there were fuel and water, also expense of lighting lobbies, halls, and stairways. In many cases there was power consumption for operating elevators and there were other expenses paid away to other industries. Reports of apartment houses to this inquiry indicate that 59.9 per cent of the gross rental income was consumed by depreciation and expenses paid away to other businesses in 1918. The like percentages for other years were 58.2 per cent in 1919, 43.7 per cent in 1920, 46 per cent in 1921, 46.9 per cent in 1922, and 40.7 per cent in 1923. The average for all six years was 48.7 per cent. This is probably high for dwellings, because their tenants furnish all of the fuel, light, and, in most cases, the water. It is commonly claimed that the annual rental of a dwelling should be 10 per cent of the investment. Depreciation should probably be figured at 3 to 4 per cent of the investment in the building, or 2½ to 3 per cent of the total investment in site and building. This would amount to from 25 to 30 per cent of the annual rent. Repapering, repainting, and the like may average another 5 per cent of the rent. Individual dwelling houses probably greatly outnumber apartments; so that the average percentage of gross rent that consists of expenses paid away to other industries is probably nearer that for dwellings than that for apartment houses. It is assumed that the average for dwellings and apartment houses together is 40 per cent, or that, on the average, 60 per cent of the gross rent constitutes value added by the business itself (including what is paid to the Government).

The foregoing data for apartment houses indicate, however, that the proportion varied from year to year. It is assumed that while 40 was the average expense percentage for all six years, the percentages for the several years varied in proportion to those for apartment houses. On this basis the percentages of value-product to gross rent were estimated at 47 per cent in 1918, 49 per cent in 1919, 56 per cent in 1920, 53 per cent in 1921, 62 per cent in 1922, and 69 per cent in 1923. Application of these percentages to the gross rental of dwellings and apartments as estimated above gives the following estimates of the values added by this business: 2.82 billions of dollars in 1918, 3.38 billions in 1919, 5.62 billions in 1920, 3.78 billions in 1921, 4.22 billions in 1922, and 5.38 billions in 1923.

CHAPTER X

PERSONAL AND CORPORATE INCOME REPORTED TO THE UNITED STATES TREASURY

Section 1. Distribution of income among individuals paying Federal income tax.

The ultimate interest in a study of income lies in its relative distribution among the individuals who receive and enjoy it. Statistics published by the United States Bureau of Internal Revenue furnish a basis for estimating the number of individuals who receive or enjoy the total income reported in the Federal income-tax returns. During the seven-year period 1917–1923 this total income ranged from a little over $12,000,000,000 in 1917 to a maximum of over $31,000,000,000, in 1923. The total income for 1920 was nearly $26,000,000,000, the second highest for the period. The commission estimates that during the seven-year period 1917–1923 the aggregate population receiving and enjoying the total income reported in Federal income tax returns ranged from a little over 7,000,000 individuals in 1917 to a maximum of over 18,600,000 in 1923, or from 6.8 to 16.7 per cent of the total population of the country. During this same seven-year period the average per capita income of the estimated population receiving or enjoying the income covered by Federal income-tax returns averaged $1,634 and ranged from a minimum of $1,556 in 1920 to a maximum of $1,755 in 1919.

The total income reported in income-tax statistics, the commission's estimate of the aggregate population receiving and enjoying that income, the estimated per capita income, and the proportion of the estimated total population included are shown in the following table for the period 1917–1923:

TABLE 108.—*Total personal income reported to Federal Government, percentage of estimated total income, and estimated population [a] receiving or enjoying reported income, by years, 1917 to 1923*

Year	Total personal income reported to Federal Government [b]	Per cent of total income estimated by commission [c]	Population receiving or enjoying reported income		
			Number of population [d]	Average income per capita	Per cent of total population of United States
1917	$12,077,099,284		7,064,713	$1,709	6.8
1918	17,745,741,473	29.5	11,174,307	1,588	10.7
1919	22,437,635,825	33.3	12,784,606	1,755	12.1
1920	26,690,269,853	35.7	17,148,549	1,556	15.9
1921	23,328,781,932	44.4	14,590,481	1,599	13.4
1922	24,871,908,354	41.3	15,459,522	1,609	14.0
1923	31,107,427,030	44.5	18,612,482	1,678	16.7
Total	158,258,843,751	[e] 38.7	96,834,660	1,634	12.9

[a] As dependents or otherwise.
[b] Statistics of Income, Treasury Department. "Total income" apparently represents net income before deducting "interest on personal indebtedness, taxes on dwellings, and personal property and other taxes not reported elsewhere; also miscellaneous deductions, not including contributions." See 1917 report, p. 13.
[c] Per cent of total income of all the people as estimated by the commission, see p. 221.
[d] Estimated by the Federal Trade Commission.
[e] Average for six years, 1918–1923.

The total income shown above for each year was compiled from the annual reports of Statistics of Income published by the United States Bureau of Internal Revenue. From statistics contained in different statements and tables in those reports it was possible for the commission to estimate quite accurately the aggregate population receiving or enjoying the total income reported. Apparently not all of those reporting incomes in excess of $1,000,000 annually make a deduction for personal exemption and dependents. The aggregate population was estimated by adding to the minimum number of individuals represented by the different types of returns (viz, two for each joint return, one for each single return, etc.), the number of dependents claimed for returns having a deduction for dependents. The number of dependents was estimated by deducting from the total reported as "personal exemption, and credit for dependents," the amount of personal exemption allowable for each type of return, and then dividing this remainder by the amount allowed for each dependent.

The above table shows that from 1917 to 1920 the total income reported in Federal income-tax returns increased 121 per cent and that the estimated aggregate population receiving and enjoying it increased 142 per cent. Each of these totals was considerably smaller in 1921 and 1922 than for 1920, but larger than for the earlier years; while they were much larger for 1923 than for the previous peak year 1920. The estimated average income per capita of those receiving and enjoying the total income reported in the Federal income-tax returns fluctuated considerably during the 7-year period. The estimated proportion of the total population receiving and enjoying this income increased steadily from 6.8 per cent in 1917 to 15.9 per cent in 1920. The percentages for 1921 and 1922 were both higher than for any preceding year excepting 1920, while that for 1923 was the highest for the period.

It is estimated by the commission that during the 6-year period 1918–1923 the total income reported in the Federal income-tax returns constituted from over 30 to 45.6 per cent of the total income of all the people of the United States. The lowest percentage was for 1918 and the highest for 1921. The average for the period was 38.7 per cent.

DISTRIBUTION OF INCOME BY INCOME GROUPS.—An analysis of the total income reported in Federal income-tax returns for 1922 and 1923 shows that in each year three-fourths of the total income of nearly $25,000,000,000 in 1922 and over $31,000,000,000 in 1923 was received by individuals reporting a net income of under $10,000, and that 4.4 per cent in 1922 and 3.7 in 1923 were reported by individuals having net incomes of $100,000 or over. According to the commission's estimate, the average per capita total income for the aggregate population receiving or enjoying the income in 1922 ranged from $1,213 for the group reporting a net income [2] of less than $1,000 to $1,616,302 for the group reporting a net income of $1,000,000 or over, while in 1923 it was only $863 for the lowest income group and $1,529,526 for those reporting net incomes of $1,000,000 or over.

[2] Under the law certain "general deductions" are made from the "total income" reported in income tax returns to obtain the "net income." In 1922 these "general deductions" amounted to nearly 68 per cent of the "total income" for the group reporting net income of less than $1,000.

The following table shows the total income reported in Federal income-tax returns, the aggregate population receiving and enjoying this income, as estimated by the commission, the average income per capita of those receiving or enjoying it, and the proportions of total income and of estimated population receiving or enjoying the total income, by income groups, for 1922 and 1923:

TABLE 109.—*Estimated population*[1] *receiving or enjoying the total personal income reported to the Federal Government, by income classes, in 1922 and 1923*

Net income	Total personal income[2]		Estimated population		Average income per capita
	Amount	Per cent	Number	Per cent	
1922					
Under $1,000	$763,054,689	3.1	628,903	4.1	$1,213
$1,000 to $3,000	9,071,148,005	36.9	7,519,001	43.6	1,286
$3,000 to $10,000	8,226,978,111	33.1	6,777,763	43.8	1,214
$10,000 to $30,000	3,118,397,328	12.5	441,862	2.9	7,057
$30,000 to $100,000	2,000,982,250	8.0	83,045	.5	23,836
$100,000 to $300,000	652,005,901	2.6	7,171	.1	90,923
$300,000 to $1,000,000	272,299,633	1.1	781	(3)	372,563
$1,000,000 and over	108,005,441	.7	104	(3)	1,616,362
Total	24,871,968,354	100.0	15,450,522	100.0	1,609
1923					
Under $1,000	483,959,988	1.5	560,561	3.0	863
$1,000 to $3,000	10,924,578,640	35.1	10,588,597	56.9	1,032
$3,000 to $10,000	12,337,365,459	39.5	8,770,840	36.4	1,821
$10,000 to $30,000	4,080,398,597	13.1	594,477	3.2	6,864
$30,000 to $100,000	2,163,269,533	7.0	90,133	.5	24,002
$100,000 to $300,000	669,964,901	2.2	7,074	(3)	94,694
$300,000 to $1,000,000	278,454,303	.9	677	(3)	411,366
$1,000,000 and over	178,454,563	.6	117	(3)	1,529,620
Total	31,107,427,030	100.0	18,612,482	100.0	1,671

[1] As taxpayers, dependents, or otherwise.
[2] Compiled from Statistics of Income, United States Bureau of Internal Revenue.
[3] Less than one-tenth of 1 per cent.

The table shows that in each year the largest proportion, almost 39 per cent, of the total income was received by those having a net income of from $1,000–$3,000, that over three-fourths of the total was reported by the first three groups which had a net income of less than $10,000 per return, and over seven-eighths by the four groups with net incomes under $30,000 per annum.

In 1922 the proportion of the estimated total population[3] receiving or enjoying the income reported in Federal income-tax reports was much larger than the proportion of the total income for the three smallest income groups, i. e., for net incomes under $10,000 per annum, while the opposite was true for the higher income groups. For example, the income groups under $10,000 had three-fourths of the total income and 96.5 per cent of the estimated population receiving or enjoying the income. In 1923 the proportion of the estimated total population receiving or enjoying this income was much larger than the proportion of the total income reported for net incomes under $3,000 per annum, while the opposite was true for those reporting net incomes in excess of $30,000.

The estimated total income per capita for the three lowest groups did not differ greatly in 1922, due to the fact that the returns for the

[3] See p. 193 for method of estimating.

group having a net income under $1,000 were for unmarried individuals without dependents, and those for the $1,000–$3,000 group included many such returns, while the $3,000–$10,000 group had a high proportion of joint returns and of dependents. For the other groups, the average per capita varied from $7,057 in 1922 and $6,864 in 1923 for the $10,000–$30,000 group to over $1,600,000 for the 104 individuals in 1922 and $1,529,526 in 1923 for the 117 individuals enjoying a net income in excess of $1,000,000 per annum. In 1923 the estimated average per capita total income was considerably lower than in 1922 for those reporting net incomes under $3,000 per annum.

DISTRIBUTION OF INCOME BY TERRITORIAL SECTIONS.—From the income-tax returns it is possible to estimate the relative distribution of the total income reported by sections of the country. The Territories of Alaska and Hawaii are included with the Pacific States. Both in 1922 and 1923 the New England and North Atlantic States reported about 43 per cent of the total income, but only 38 per cent of the estimated population receiving or enjoying this income, while the Mountain States had about 2.5 per cent of the total income and about 3.3 per cent of the estimated population.

The following table shows the total income reported in income-tax returns, the population as estimated by the commission receiving or enjoying this income, the estimated per capita income, and the proportions of total income and estimated population, by the principal geographical regions, in 1922 and 1923:

TABLE 110.—*Total personal income reported to Federal Government and estimated population*[1] *receiving or enjoying it, by geographical divisions,*[2] *in 1922 and 1923*

Geographical divisions	Total personal income	Estimated population	Percentage of— Total income	Percentage of— Estimated population	Estimated income per capita	Ratio of estimated to total population
1922						
New England and Middle Atlantic	$10,733,948,709	5,939,102	43.2	33.4	1,807	10.0
South Atlantic	1,931,729,764	1,208,830	7.7	8.2	1,525	8.7
East North Central	5,486,954,829	3,504,088	22.0	22.7	1,560	15.6
East South Central	690,835,886	482,097	2.8	3.1	1,433	5.3
West North Central	2,809,937,691	1,474,285	8.1	9.5	1,363	11.5
West South Central	1,279,182,599	870,344	5.1	5.6	1,470	8.1
Mountain	633,093,281	508,504	2.5	3.3	1,235	14.3
Pacific	2,127,143,766	1,414,270	8.6	9.2	1,511	22.4
Total	24,871,908,354	15,459,522	100.0	100.0	1,609	14.0
1923						
New England and Middle Atlantic	12,302,011,972	7,083,173	52.8	38.1	1,878	22.8
South Atlantic	2,484,573,034	1,490,110	8.0	8.0	1,667	10.2
East North Central	7,224,275,832	4,535,931	23.2	24.4	1,593	20.0
East South Central	838,181,004	586,673	2.7	3.1	1,429	6.5
West North Central	2,290,707,262	1,601,307	7.4	8.6	1,434	12.4
West South Central	1,469,439,120	964,327	4.7	5.2	1,523	9.0
Mountain	764,322,911	597,132	2.4	3.2	1,280	16.6
Pacific	2,728,314,940	1,763,824	8.8	9.4	1,556	27.4
Total	31,107,427,030	18,612,482	100.0	100.0	1,671	16.8

[1] As dependents or otherwise.

[2] The New England and Middle Atlantic region includes the New England States and New York, New Jersey, and Pennsylvania; the South Atlantic includes West Virginia, the District of Columbia, and all States south of New Jersey which border upon the Atlantic; the East North Central States embrace Wisconsin, Michigan, Illinois, Indiana, and Ohio; the East South Central region consists of Kentucky, Tennessee, Mississippi, and Alabama; the West North Central region is made up of North and South Dakota, Minnesota, Iowa, Nebraska, Kansas, and Missouri; the West South Central region covers Arkansas, Louisiana, Oklahoma, and Texas; the Mountain section includes Montana, Wyoming, Idaho, Utah, Nevada, Colorado, Arizona, and New Mexico; and the Pacific region includes Alaska and Hawaii in addition to the three Pacific Coast States.

The total income and the estimated population receiving or enjoying it were larger for each section of the country in 1923 than in 1922.

The great industrial sections of New England, the Middle Atlantic, and East North Central States, with 35 per cent of the total population of the country, had nearly two-thirds of the total income reported in the Federal income-tax returns in each year. The New England and Middle Atlantic group was the only section of the country in which the estimated average per capita income reported exceeded the average for the country, being $1,807 in 1922 and $1,878 in 1923, as compared with an average of $1,609 in 1922 and $1,671 in 1923 for the entire country. The second highest estimated average income per capita was for the East North Central States, amounting to $1,560, or $49 below the average for the entire country for 1922, and for the South Atlantic States in 1923, with $1,667, which was only $4 below the average. The lowest estimated per capita average was for the Mountain States in both years, with only $1,225 in 1922 and $1,280 in 1923.

Although the average for the Pacific States (including Alaska and Hawaii) was low, a much larger proportion of the total population than for any other section, viz, 22.4 per cent in 1922 and 27.4 per cent in 1923, received or enjoyed the benefits of income reported in the Federal income-tax returns. The second highest proportion, 19.6 per cent in 1922 and 22.8 per cent in 1923, was for the New England and Middle Atlantic States, while the lowest was for the West and East South Central States, with only 8.1 and 5.3 per cent, respectively, in 1922 and 9 and 6.5 per cent, respectively, in 1923.

Amount and Territorial Distribution of Cash Dividends.—The amount of cash dividends reported annually in the personal income-tax returns ranged from a little more than $2,000,000,000 to over $3,000,000,000 during the eight-year period 1916–1923. The smallest amount reported was for 1916 and the largest for 1923. The following table shows the aggregate amounts reported for these eight years:

Table 111.—*Aggregate amount of cash dividends reported in personal income-tax returns, by years, 1916–1923*

Year	Amount	Index	Year	Amount	Index
1916	$2,130,468,625	100.0	1920	$2,735,845,795	128.5
1917	2,848,842,499	133.3	1921	2,476,952,399	116.0
1918	2,468,749,244	115.6	1922	2,664,218,681	124.7
1919	2,456,774,825	114.8	1923	3,126,503,482	146.3

The amount of cash dividends reported was 46 per cent larger in 1923, the peak year, than in 1916. The previous peak year, 1917, was 33 per cent larger than 1916.

During the eight-year period 1916–1923, from 37.5 to 43.7 per cent of the cash dividends reported were received by inhabitants of the three Middle Atlantic States—New York, New Jersey, and Pennsylvania. Inhabitants of the important industrial States of the East North Central division ranked second each year, with from 18.7 to 21.7 per cent. The New England States ranked third with from

12.5 to 14.4 per cent of the total. Inhabitants of these three geographical divisions reported from 72.5 to 76.1 per cent of the total. The following table shows these percentages in detail.

TABLE 112.—*Percentages of cash dividends reported in income-tax returns, by geographical divisions, by years, 1918–1923*

Geographical division	1916	1917	1918	1919	1920	1921	1922	1923
New England	12.8	12.3	13.8	13.4	14.1	14.4	13.5	12.5
Middle Atlantic	43.7	42.0	41.1	39.1	37.5	40.9	39.5	38.8
South Atlantic	6.5	7.7	6.7	7.2	7.2	7.0	7.1	7.5
East North Central	19.8	18.7	19.5	20.7	20.9	19.7	21.4	21.7
East South Central	1.4	2.0	2.0	2.1	2.0	1.9	1.9	2.4
West North Central	5.9	6.4	6.6	6.7	6.8	6.8	6.0	6.2
West South Central	2.8	3.0	3.0	3.1	3.3	2.5	2.8	3.0
Mountain	1.6	2.0	1.7	1.7	1.5	1.8	1.4	1.7
Pacific	4.7	5.4	5.6	6.0	6.7	6.4	6.4	6.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The above table indicates clearly that the great bulk of corporation stockholders, approximately three-fourths, are inhabitants of the great industrial States in the northeastern section of the country. The East South Central and the Mountain divisions have the smallest percentages. While there was some fluctuation in the percentages for the different divisions from year to year, no change in the geographical distribution of corporation stock ownership is indicated during the period. Appendix Table 31 gives the corresponding amounts for each geographical division for this eight-year period.

Section 2. Sources of personal incomes.

Data published by the Treasury Department show the total income reported by all individuals making personal returns for the years 1918 to 1923. In each year the total income reported is classified by sources. In the following analysis the total income has been classified to show for each year for which the data are available, the proportion of the total personal income reported by individuals whose incomes fall in specified income groups, and for each group the proportion that is derived from four broad sources, namely, (*a*) Wages and salaries; (*b*) business and partnership profits; (*c*) profits from sales of real estate, capital assets, and capital net gain; and (*d*) rents, royalties, interest, and dividends. Fiduciary income, representing at most 3.5 per cent of the total income reported by any income group and but 1 per cent of the total income for all groups, is shown separately by the Treasury Department for but two years—1922 and 1923. In the following tables income from this source has been combined with rents, royalties, interest, and dividends for 1922 and 1923. The complete analysis of personal income by sources for the six years, 1918 to 1923, upon which the ensuing discussion is based, will be found in Appendix Table 32.

Table 113, below, shows the total number of personal returns and the total income reported for each of the six years, 1918 to 1923.

TABLE 113.—*Personal income reported to Federal Government and number of returns made, by years, 1918 to 1923*

Year	Number	Index (1918=100)	Total	Index (1918=100)
1918	4,420,114	100.0	$17,045,761,473	100.0
1919	5,332,700	120.6	22,437,685,825	126.4
1920	7,259,944	164.2	25,690,269,853	150.4
1921	6,002,170	149.6	23,328,781,932	131.5
1922	6,787,481	153.4	24,871,908,354	140.1
1923	7,698,321	174.0	31,107,427,030	175.3

During the three years from 1918 to 1920, inclusive, there was a sharp increase from year to year, both in number of returns and in total income reported. Business depression in 1921 caused a reduction in number of returns and in total income, notwithstanding the fact that the data for that year include statistics for reported net incomes of less than $1,000. Since 1921 both number of returns and total income reported have again been on the increase. Both reached their maxima for the six years in 1923, when the index for number of returns was 174 and that for total income reported was 175. In terms of percentage increases over 1918, returns increased 64 per cent in number and incomes 50 per cent in amount from 1918 to 1920. In 1921 both returns and income reported showed sharp decreases which were more than recovered in 1923, when returns increased to a number 74 per cent greater than that for 1918 and total income to an amount 75 per cent greater than 1918.

INCOME DERIVED FROM SPECIFIED SOURCES.—Table 114 shows the amounts of the total income reported that were derived from specified sources or groups of sources, together with index numbers showing for each source of income the relative increases or decreases based on 1918=100.

TABLE 114.—*Personal income reported to Federal Government according to sources of income, by years, 1918 to 1923*

Year	Wages and salaries	Business and partnership profits	Profits from sales of real estate, stocks, bonds, etc.	Rents, royalties, interest, and dividends	Total
1918	$8,267,391,550	$4,330,209,018	$291,185,704	$4,847,914,601	$17,745,761,473
1919	10,785,692,651	5,708,980,697	999,364,287	4,973,648,190	22,437,685,825
1920	15,270,373,364	4,906,784,819	1,090,542,719	5,492,568,961	26,690,269,853
1921	13,813,169,165	3,707,504,018	462,858,673	5,345,249,176	23,328,781,932
1922	13,693,092,791	4,260,898,491	901,351,580	5,919,665,492	24,871,908,354
1923	14,776,807,456	6,823,006,078	1,272,007,950	8,235,004,048	31,107,427,030
INDEX NUMBERS (1918=100)					
1918	100.0	100.0	100.0	100.0	100.0
1919	130.1	131.6	343.2	102.6	126.4
1920	184.7	113.1	350.5	113.3	150.4
1921	167.1	85.4	100.0	110.3	131.5
1922	165.3	98.3	340.5	122.1	140.1
1923	178.7	157.2	437.0	169.9	175.3

Wages and salaries, constituting a larger proportion of the total than any other source in each year, increased sharply in 1919 and 1920 and then decreased in 1921 and 1922. Business and partner-

ship profits, which showed an increase of 31.6 per cent in 1919 over 1918, were affected sharply by the business depression of 1920 and 1921. In the latter year they were but 85 per cent as large as in 1918. Business recovery in 1922 and 1923 brought about increases in the amounts reported from these sources until in 1923 they were 57 per cent greater than in 1918. Profits from sales of real estate, stocks, bonds, etc., were least in 1918 and largest in 1923. They fluctuated widely from year to year, increasing sharply in 1919 and 1920 as compared with 1918, decreasing in 1921, and again increasing very sharply in 1922 and 1923, when they were nearly four and four-tenths times as great as those reported for 1918. The total for rents, royalties, interest, and dividends, representing investment income, shows less fluctuation from year to year than any other source, the tendency for the entire six-year period being to increase from year to year, except in 1921, when there was a slight decrease. This decrease was more than regained the following year, and in 1923 the amount of profit reported from this source was over 70 per cent greater than that for 1918. The data contained in tables 113 and 114 are graphically summarized in chart. (Opposite p. 201.)

In general the data reflect high wages, salaries, and profits during the war and post-war period, followed by depressed business and other profits, slightly decreased wages, and less full-time employment during the business slump of 1920 and 1921, followed by sharp recovery in business profits and more nearly full-time employment at permanently higher wage levels during the last two years of the six years covered. From 1918 to 1920 income from wages and salaries increased relatively more than any other source and held their gain better through the slump of 1921 than business profits. Property income, represented by rents, royalties, interest, and dividends, more consistently showed gains in amount from year to year than any other source of income.

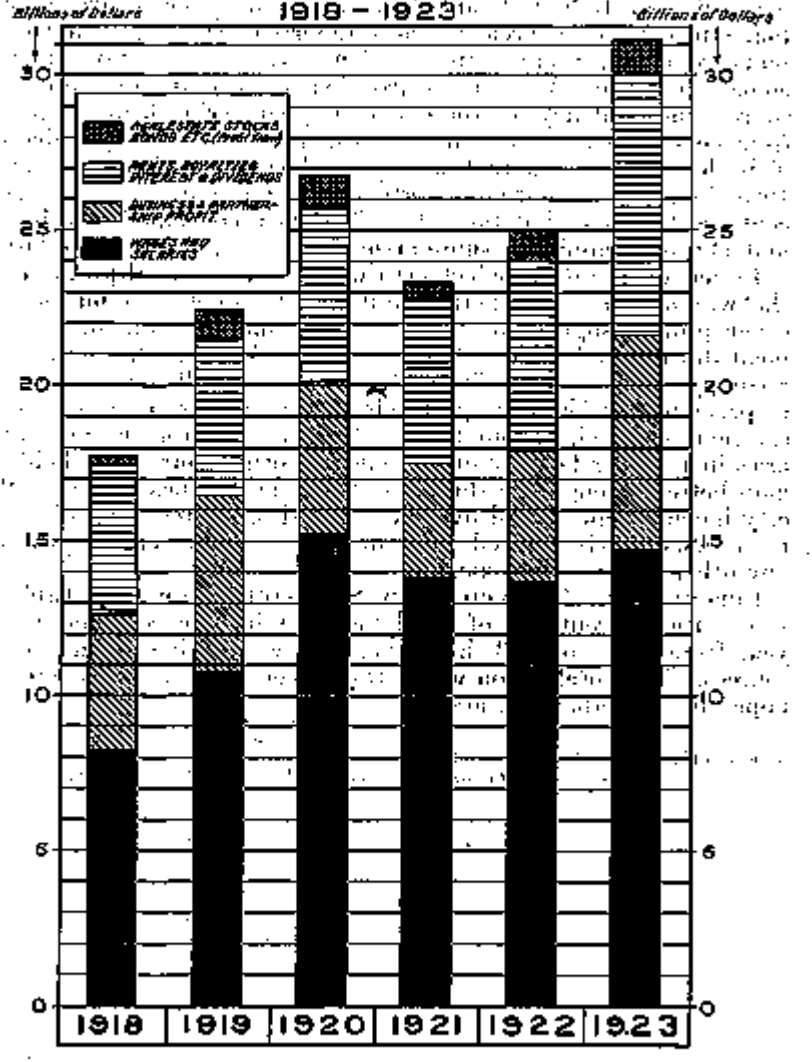
PERCENTAGES DERIVED FROM SPECIFIED SOURCES.—Table 115 shows the percentages of total personal income reported in each year from 1918 to 1923, inclusive, that was derived from specified sources. The totals upon which the percentages are based are those appearing in Table 114, above.

TABLE 115.—*Percentage distribution of personal income reported to Federal Government, according to sources of income, by years, 1918 to 1923*

Year	Percentages of total derived from—			
	Wages and salaries	Business and partnership profits	Profits from sales of real estate, capital net gain, etc.	Rents, royalties, interest, and dividends
1918	46.6	24.5	1.6	27.3
1919	47.0	25.4	4.5	22.2
1920	57.2	18.4	3.8	20.6
1921	59.2	15.6	2.6	22.9
1922	55.1	17.1	4.0	23.8
1923	47.5	21.0	4.1	20.5

Diagram 5

AMOUNTS OF TOTAL PERSONAL INCOME REPORTED IN FEDERAL INCOME TAX RETURNS FOR SPECIFIED KINDS OF INCOME, YEARS, 1918 – 1923



Wages and salaries increased during the first four years of the period from 46.6 per cent in 1918 to 59.2 per cent of the total in 1921 and dropped to 55.1 per cent in 1922 and 47.5 in 1923. Total wages reported in 1923 were more than $1,000,000,000 greater than in 1922, the precentage decrease being due to the greater increases shown by business profits, profits from sale of capital assets, and income from investments. (See p. 198.) Notwithstanding the fact that business and partnership profits showed the effect of the depression in 1920, wages and salaries were not proportionately decreased, hence they reached their maximum percentage of total income reported in 1921, the year in which the percentage derived from business and partnership profits was smallest.

Business profits represented roughly from 16 to 25 per cent of the total personal incomes reported, the proportion being largest in 1918 and 1919 and smallest in 1921. Investment income, including income from rents, royalties, interest, and dividends, constituted from 20.6 to over 27 per cent of the total in different years, 1918 being, as in the case of business profits, the year in which the proportion was largest and 1920 the year in which it was least. Profits from sale of real estate, stocks, bonds, etc., representing capital assets, fluctuated from year to year, within limits of from 1.6 per cent to 4.5 per cent of the total, 1918 being the year of minimum and 1919 the year of maximum proportions.

Section 3. Distribution of total income by sources and size groups.

The following table shows by income groups the percentages of total number of returns and of total incomes derived from specified sources. The total number of returns and the total income covered is the same as that in the preceding discussion. A detailed analysis of the number of returns and income by sources will be found in Appendix Table 32.

The income groups in the table below are based upon the net personal income as reported to the Federal Government in income-tax returns.

TABLE 116.—*Percentage distribution of personal income reported to Federal Government, according to sources of income and size groups, by years, 1918 to 1933*

Income group and item	Percentages of total for each group—					
	1918	1919	1920	1931	1932	1933
Number of returns:						
Under $1,000				6.1	5.9	4.2
$1,000 to $3,000	68.1	64.5	72.2	70.9	67.8	62.2
$3,000 to $10,000	28.3	30.4	26.1	21.4	23.3	29.6
$10,000 to $20,000	2.9	3.3	2.5	2.2	2.4	2.9
$20,000 to $100,000	.6	.7	.1	.3	.5	.5
$100,000 to $300,000	.1	.1	(1)	(1)	.1	(1)
$300,000 to $1,000,000	(1)	(1)	(1)	(1)	(1)	(1)
$1,000,000 and over	(1)	(1)	(1)	(1)	(1)	(1)
Wages and salaries:						
Under $1,000				2.3	2.0	1.2
$1,000 to $3,000	52.9	48.4	56.4	56.0	54.3	48.5
$3,000 to $10,000	32.3	35.1	31.3	30.4	32.3	37.2
$10,000 to $20,000	9.1	9.3	8.1	7.4	7.5	9.2
$20,000 to $100,000	4.6	4.5	3.5	2.9	3.2	3.2
$100,000 to $300,000	1.1	1.1	.6	.4	.6	.6
$300,000 to $1,000,000	.3	.2	.1	.1	.1	.1
$1,000,000 and over	.1	(1)	(1)	(1)	(1)	(1)
Business and partnership profits:						
Under $1,000				4.2	3.9	1.9
$1,000 to $3,000	24.7	19.1	22.1	25.8	26.9	29.4
$3,000 to $10,000	46.2	46.9	44.0	41.2	42.3	46.9
$10,000 to $20,000	12.8	15.2	13.1	16.1	15.2	12.5
$20,000 to $100,000	7.9	10.3	11.0	9.4	8.9	6.7
$100,000 to $300,000	4.0	5.1	3.5	2.5	2.7	1.3
$300,000 to $1,000,000	1.6	1.9	1.1	.8	.8	.3
$1,000,000 and over	.8	.5	.2	(1)	.2	(1)
Profits from sales of real estate, stocks, etc.:						
Under $1,000				8.4	3.2	.6
$1,000 to $3,000	15.4	14.1	13.0	14.8	9.3	12.2
$3,000 to $10,000	44.0	40.0	38.9	44.0	28.0	35.6
$10,000 to $20,000	23.5	21.3	22.3	21.2	19.9	19.2
$20,000 to $100,000	10.5	12.6	8.0	9.6	17.4	12.5
$100,000 to $300,000	3.9	5.0	1.4	1.4	9.5	7.7
$300,000 to $1,000,000	1.9	1.7	.4	.5	6.7	5.3
$1,000,000 and over	.8	3.8	.5	.1	6.0	5.7
Rents, royalties, interest, and dividends:						
Under $1,000				7.9	4.5	2.8
$1,000 to $3,000	16.9	14.0	17.7	18.0	17.6	19.4
$3,000 to $10,000	29.6	30.1	30.7	32.3	29.0	37.1
$10,000 to $20,000	20.0	21.8	22.9	20.4	20.9	19.7
$20,000 to $100,000	17.6	18.3	18.7	15.5	17.2	13.3
$100,000 to $300,000	8.5	8.6	6.6	4.5	6.2	4.3
$300,000 to $1,000,000	4.3	4.2	2.8	2.0	2.7	2.0
$1,000,000 and over	3.1	2.4	1.6	1.1	1.8	1.2
Total income:						
Under $1,000				4.0	3.1	1.6
$1,000 to $3,000	34.2	31.9	40.5	42.2	38.9	35.1
$3,000 to $10,000	35.9	37.7	34.2	32.2	33.1	39.6
$10,000 to $20,000	13.2	14.5	12.5	12.1	12.5	13.1
$20,000 to $100,000	9.0	9.5	8.3	6.9	8.0	6.9
$100,000 to $300,000	3.9	4.0	2.4	1.7	2.6	2.2
$300,000 to $1,000,000	1.8	1.6	.8	.6	1.1	.9
$1,000,000 and over	1.0	.8	.4	.3	.7	.6

[1] Less than 0.05 of 1 per cent.

From 62 to 72 per cent of the personal returns in different years showed total incomes of from $1,000 to $3,000 each, and this group, together with the group reporting from $3,000 to $10,000, each account for from 91 to 97 per cent of the total number of returns in different years. From 32 to 42 per cent of the total income reported falls in the group having incomes of from $1,000 to $3,000. The group having incomes of $3,000 to $10,000, with less than half as many returns, accounts for from 32 to nearly 40 per cent of the total income. Together these two groups have from about 70 to nearly 75 per cent of the total income reported. In the higher income groups a relatively small number of returns account for a relatively large part of the total income.

From 48 to 57 per cent of the total wages and salaries reported are accounted for by the group having incomes of from $1,000 to $3,000, and the two groups having incomes of $1,000 to $10,000 account for approximately 85 per cent of all wages and salaries reported.

Between 40 and 50 per cent of all business profits shown were reported by the $3,000 to $10,000 income group and from 19 to 29 per cent by the $1,000 to $3,000 group.

From 28 to 54 per cent of the profits from sales of real estate and capital assets were reported by persons having incomes of $3,000 to $10,000. The next largest proportion falls in the $10,000 to $30,000 income group. These two groups account for from 50 to 75 per cent of the profits from this source in each year.

From 29 to 37 per cent of the income from rents, royalties, and dividends fell in the $3,000 to $10,000 group and 20 to 23 per cent in the $10,000 to $30,000 group. These two groups together account for approximately 50 per cent of the income from these sources. The bulk of the remaining 50 per cent was reported by the comparatively small number of personal returns falling in the large income groups. In the $30,000 to $100,000 group from one-tenth to six-tenths of 1 per cent of the total number of returns accounted for from 13.8 per cent to 18.7 per cent of the income from these sources. In the higher income groups, as shown in Appendix table 32, income from these sources constituted a large proportion of the total for the groups, but in the aggregate represented but a small percentage of the total reported by all groups.

PROPORTION FROM SPECIFIED SOURCES BY INCOME GROUPS.—From statistics published by the Treasury Department it is possible to show for all returns grouped by size of incomes the proportions of the total personal incomes reported that were derived from specified income sources. Table 117 shows the percentages of the total reported by specified income groups that were derived from the five general sources named above for each of the five years from 1918 to 1922, inclusive. Statistics for incomes under $1,000 each have been published by the Treasury Department only for the years 1921, 1922, and 1923. The income groups specified in the table are based on net taxable incomes. The percentages shown are based on total incomes reported.

TABLE 117.—*Percentage distribution of total income by sources and by income classes, 1918–1923*

(Income classes based on net taxable income)

Income classes and years	Wages and salaries	Business and partnership profits	Profits from sales of real estate, capital assets, capital net gain	Rents, royalties, interest, and dividends
Under $1,000:				
1918				
1919				
1920				
1921	84.3	10.5	4.1	45.1
1922	30.8	21.7	4.2	37.3
1923	37.5	20.5	2.2	33.8
$1,000 to $3,000:				
1918	100.0	17.2	0.7	18.1
1919	72.6	15.5	1.9	10.2
1920	79.7	18.1	1.2	9.0
1921	79.3	9.7	.7	10.3
1922	74.8	11.4	1.0	10.8
1923	85.8	13.4	1.4	14.5
$3,000 to $10,000:				
1918	42.6	32.0	2.0	22.6
1919	45.0	31.7	4.7	17.7
1920	52.4	23.7	6.0	17.0
1921	50.1	20.3	2.7	20.0
1922	53.3	21.0	3.4	20.9
1923	44.6	27.0	3.7	24.3
$10,000 to $30,000:				
1918	32.1	23.8	2.9	41.4
1919	31.7	22.3	8.7	33.1
1920	34.2	24.5	6.5	34.8
1921	33.4	21.2	3.5	42.0
1922	33.1	20.0	6.3	39.7
1923	33.4	20.8	6.0	39.8
$30,000 to $100,000:				
1918	23.5	21.5	1.0	53.0
1919	23.0	27.7	6.4	42.0
1920	24.4	24.7	3.7	47.2
1921	24.5	21.0	2.7	51.2
1922	21.0	19.0	8.0	52.3
1923	21.7	17.8	7.0	52.5
$100,000 to $300,000:				
1918	12.0	25.2	1.8	59.3
1919	13.5	32.9	6.6	48.0
1920	12.5	27.2	2.2	57.1
1921	14.3	22.3	1.5	61.9
1922	11.8	17.6	14.5	56.2
1923	12.4	13.6	14.7	59.3
$300,000 to $1,000,000:				
1918	7.2	26.1	1.3	65.4
1919	6.9	30.9	4.8	58.3
1920	7.0	23.7	1.9	67.4
1921	6.0	20.4	1.4	73.2
1922	4.0	12.1	23.5	60.5
1923	7.0	8.0	24.0	61.0
$1,000,000 and over:				
1918	2.4	12.2	1.3	84.1
1919	1.7	14.7	20.3	63.5
1920	3.5	10.4	4.8	82.8
1921	4.4	6.5	.6	88.5
1922	2.9	5.8	35.1	56.2
1923	2.5	2.4	40.7	54.4

In general wages and salaries constituted the bulk of incomes up to $10,000 and a decreasing proportion of incomes in the higher income groups, becoming almost negligible in the incomes of $1,000,000 and over. Business profits constituted the next most important source in groups up to $30,000 and are about equal to wages and salaries in the $30,000 to $100,000 group. In the $1,000,000 and over group they fell sharply in importance in the the last three years, amounting in 1921 to 6.5 per cent, in 1922 to 5.8 per cent, and in 1923 to but 2.4 per cent of the total. Investment income or income from property

owned, represented by rents, royalties, interest, and dividends, in general represents an increasing percentage of the total for the various income groups, becoming more important than either wages and salaries or business profits for all groups reporting incomes over $10,000 each. The exception to this generalization to be noted is that in the lowest income group income from rents, royalties, interest, and dividends constituted the largest proportion of the total reported in two of the three years for which statistics were available for the group. This is one of the most interesting figures shown in the table. Details are not available to explain the character of this income, but it may be conjectured that it was composed very largely of room rent (a single room or part of a room, not rented in the way of business), rents of small tracts of land, and of interest from savings banks or small investments in interest-bearing securities. Starting with the $1,000 to $3,000 group, property income represented about 10 per cent of the total, but increased progressively to as high as 88.5 per cent in one year in the small group of incomes of over $1,000,000 each. Profits from sales of real estate, stocks, and capital assets generally represented only a small part of the total income reported by the lower income groups, but in certain years represented from 15 to 41 per cent of the total income of certain of the large income groups. Income from this source, it will be recalled, varied widely in amount from year to year, as shown in the analysis of total income previously discussed. For certain groups its fluctuation from year to year was very marked. (See Appendix Table 32.)

Chart (opposite p. 207) is a graphical analysis of the total income reported during the six-year period, as shown by sources for each of the income groups discussed above. Generalizing from the tables and chart, it will be noted that whereas in the lower income groups wages and salaries constitute the bulk of income, in the medium to large income groups they yield place to income from rents, royalties, interest, dividends, and business profits, while in the very large income groups properties and securities owned become the predominant sources of income.

Section 4. Territorial distribution of personal income.

The following table, based on data published by the Treasury Department, shows for the years 1922 and 1923 the territorial distribution of total income and the proportion of the total for each territorial division derived from wages and salaries, business and partnership profits, profits from sales of real estate, stocks, etc., and income from rents, royalties, interest, and dividends. In the table the territorial divisions adopted by the Bureau of the Census have been used, except that New England and the Middle Atlantic States have been combined to form a single division in which incomes arise mainly from trade and manufacture.

Diagram 6 SIX YEAR AGGREGATE OF PERSONAL INCOME REPORTED IN FEDERAL INCOME TAX RETURNS FOR *Specified Kinds of Income, by Income Groups, 1918 to 1922.*

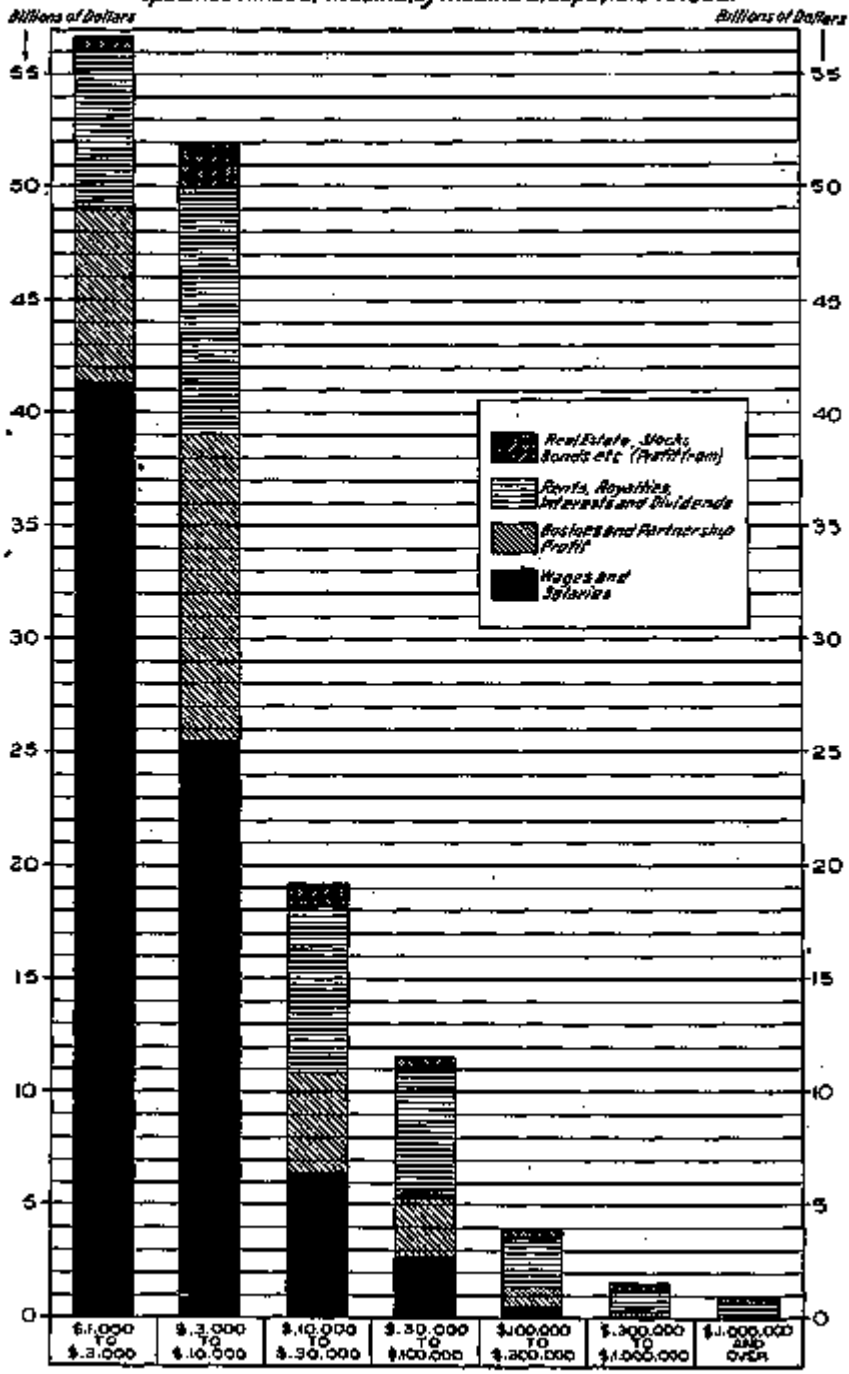


TABLE 128.—*Income received from specified sources, by territorial divisions, 1922–23*

	Wages and salaries		Business and partnership profits		Real estate profits, capital net gain from sale of assets, etc., stocks, etc.		Rents, royalties, interest, and dividends		Total income	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
1922										
New England and Middle Atlantic	$5,637,105,477	41.2	$1,777,324,157	41.7	$468,184,172	49.3	$2,831,384,902	47.9	$10,733,948,708	43.3
South Atlantic	1,110,748,980	8.2	316,842,371	7.4	64,905,063	6.6	433,182,339	7.3	1,931,729,764	7.8
East North Central	3,157,052,207	23.1	880,449,338	20.6	207,049,930	20.9	1,220,505,359	20.7	5,465,056,829	22.0
East South Central	411,391,006	3.0	134,491,576	3.2	17,434,629	1.8	127,518,635	2.2	690,835,836	2.8
West North Central	1,150,738,013	8.4	873,676,644	5.8	41,727,322	4.2	443,795,712	7.5	2,009,937,691	8.1
West South Central	655,340,448	4.8	287,664,811	5.7	57,463,865	5.8	278,693,595	4.7	1,279,162,509	5.2
Mountain	392,858,368	2.9	104,538,186	2.5	10,159,044	1.9	156,437,605	1.9	623,063,201	2.5
Pacific	1,145,368,954	8.4	386,809,077	9.1	93,931,165	9.5	467,529,373	7.9	2,093,797,669	8.4
Total United States and Alaska	13,667,603,591	100.0	4,263,855,635	100.0	989,855,200	100.0	5,909,247,811	100.0	24,830,368,257	100.0
Hawaii	26,389,200		3,042,330		1,496,380		10,417,681		41,346,097	
Grand total	13,693,993,791		4,266,898,491		991,351,580		5,919,665,492		24,871,908,354	
1923										
New England and Middle Atlantic	6,272,985,498	42.6	2,685,767,452	39.4	554,714,310	43.7	3,789,164,712	46.1	13,302,611,972	42.8
South Atlantic	1,195,944,228	8.1	552,736,176	8.1	102,374,693	8.1	633,517,917	7.7	2,484,573,024	8.0
East North Central	3,554,740,807	24.1	1,584,631,236	23.3	292,551,797	23.0	1,792,351,892	21.8	7,224,275,822	23.3
East South Central	407,512,189	2.8	195,855,440	2.9	28,706,015	2.3	200,607,415	2.5	833,181,064	2.7
West North Central	1,075,345,980	7.3	547,671,793	8.0	58,585,696	4.6	615,293,763	7.5	2,296,707,262	7.4
West South Central	633,420,249	4.1	406,217,990	5.9	55,911,459	4.4	373,899,431	4.6	1,468,439,129	4.7
Mountain	388,203,358	2.7	192,489,530	2.8	18,740,647	1.5	164,800,256	2.0	764,323,811	2.5
Pacific	1,218,100,866	8.3	650,965,574	9.6	168,329,598	12.4	641,634,399	7.8	2,669,226,436	8.6
Total United States and Alaska	14,746,349,184	100.0	6,814,715,191	100.0	1,269,914,235	100.0	8,217,359,910	100.0	31,048,338,520	100.0
Hawaii	30,458,272		8,291,785		2,693,715		17,644,738		59,088,510	
Grand total	14,776,807,456		6,823,006,976		1,272,607,950		8,235,004,048		31,107,427,030	

Personal returns covering the United States and Alaska but not including Hawaii for 1923 showed marked increases over the preceding year both in number of returns and total income reported. For 1922, 6,775,884 returns covered a total of $24,830,562,257, and for 1923, 7,685,900 returns reported $31,048,338,520, representing an increase of 13.2 per cent in number of returns and 24.8 per cent in total income reported. There were, however, no striking changes in the proportions of the total income reported by different territorial divisions. In both years about 43 per cent of the total was reported from the New England and Middle Atlantic section. The East North Central States, also an industrial region, reported 22 per cent of the income for 1922 and 23 per cent of the total for 1923. These two sections together furnished about 62 per cent of the returns for both years. These returns covered 64 per cent of the total income for 1922 and 66 per cent for 1923. For each of the remaining divisions the proportions of the total ranged in both years from 2.5 per cent for the Mountain States to about 8.5 per cent for the Pacific States. Thus it will be noted that the bulk of the total personal income reported for taxation arises in the northern and eastern industrial and commercial areas. The percentages of the total income for the various territorial divisions that were derived from specified sources are very similar to those for total income, and therefore require no special discussion.

The following table shows the average total income per return for each of the territorial divisions and the amount and percentages of the total that were derived from each of the four specified groups of sources for the years 1922 and 1923.

TABLE 119.—*Average income per return according to specified sources, by territorial divisions, 1922–23*

	Wages and salaries		Business and partnership profits		Real estate profits, capital net gain from sale of assets, etc., stocks, etc.		Rents, royalties, interest, and dividends		Total income	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
1922										
New England and Middle Atlantic	$3,119	52.5	$658	16.6	$182	4.6	$1,064	26.4	$4,034	100.0
South Atlantic	2,055	57.8	583	16.4	120	3.4	797	22.4	3,565	100.0
East North Central	2,023	57.8	604	16.1	133	3.8	781	22.2	3,501	100.0
East South Central	2,019	62.5	650	10.5	96	2.6	625	18.5	3,281	100.0
West North Central	1,847	57.2	600	18.6	67	2.1	712	22.1	3,226	100.0
West South Central	1,331	61.2	604	22.5	160	4.5	778	21.8	3,573	100.0
Mountain	1,790	63.0	476	16.8	88	3.1	485	17.1	2,839	100.0
Pacific	1,396	64.0	641	18.0	155	4.5	772	21.2	3,458	100.0
Total	2,017	55.0	629	17.2	146	4.0	872	23.8	3,654	100.0
1923										
New England and Middle Atlantic	2,092	47.1	897	20.2	187	4.2	1,256	28.5	4,442	100.0
South Atlantic	1,973	48.2	909	22.2	168	4.1	1,044	25.5	4,094	100.0
East North Central	1,909	49.2	850	21.9	159	4.1	962	24.8	3,879	100.0
East South Central	1,784	48.6	864	23.4	125	3.4	908	24.6	3,691	100.0
West North Central	1,630	45.8	829	23.3	91	2.6	938	26.3	3,482	100.0
West South Central	1,696	43.2	1,088	27.6	140	3.6	907	25.4	3,925	100.0
Mountain	1,623	50.8	806	25.2	89	2.6	687	21.5	3,185	100.0
Pacific	1,680	45.7	902	24.4	218	5.9	887	24.0	3,696	100.0
Total	1,919	47.5	880	23.0	160	4.1	1,066	26.4	4,040	100.0

The average total income per return for 1922 amounted to $3,664, and for 1923, $4,040, an increase of 10 per cent. For 1922 the range for different territorial divisions was from $2,839 per return for the Mountain States to $4,034 for the New England and Middle Atlantic region. In 1923 the range was from $3,195 for the Mountain to $4,442 for the New England and Middle Atlantic States. The average per return increased for all regions in 1923 by percentages varying from 6.9 per cent for the Pacific States to 15 per cent for the South Atlantic States.

Of the total income per return wages and salaries, which constitute the largest single source of personal incomes, represented approximately 10 per cent less for every division in 1923 than in 1922. In 1922 the proportion of the total derived from this source ranged from 51.2 per cent in the West South Central States to 63 in the Mountain States. In 1923 the proportion ranged from 43.2 per cent for the West South Central States to 50.8 per cent in the Mountain States.

Rents, royalties, interest, and dividends represented the next largest proportion of the total income in most sections ranging in 1922 from 17.1 per cent in the Mountain States to 26.4 per cent in the New England and Middle Atlantic States, and in 1923 from 21.5 per cent to 28.5 per cent, the divisions having the minimum and maximum proportions being the same as in the preceding year.

Business and partnership profits, representing in most divisions a slightly smaller proportion of the total income, ranged in 1922 from 16.1 per cent for the East North Central region to 22.5 per cent in the West South Central States, and in 1923 from 20.2 per cent for the New England and Middle Atlantic States to 27.6 per cent for the West South Central States.

Profits from sales of real estate, stocks, and bonds, etc., represented in 1923 from 2.6 per cent for the West North Central States to 5.9 per cent for the Pacific States.

There are marked decreases in the amounts of wages and salaries reported per return in 1923 as compared with 1922 in every region. Business and partnership profits and rents, royalties, interest, and dividends, however, showed pronounced increases per return in all divisions, and profits from sales of real estate, stocks, bonds, etc., showed smaller gains in amount in all but two divisions. The increases in average per return in all regions for 1923, therefore, are due to increased income from business and property more than counterbalancing decreases in wages and salaries.

Although wages and salaries represented the highest percentage of total personal income for the Mountain States in both years, in actual amount per return the New England and Middle Atlantic region exceeded all others in average wages and salaries in both years. For the Mountain States wages and salaries were less in amount than in any other region, amounting to $1,790 in 1922 and $1,623 in 1923. This corresponds with the fact that this division shows a very low average total income per return, only $2,839 in 1922 and $3,195 in 1923, as against $3,664 in 1922 and $4,040 in 1923 for the country as a whole.

The amount per return received from rents, royalties, interest, and dividends was greatest in the New England and Middle Atlantic region in both years, amounting to $1,064 in 1922 and $1,266 in 1923. Other divisions showing high averages per return in both years were

the South Atlantic States with $797 per return in 1922 and $1,044 in 1923, the East North Central States with $781 in 1922 and $962 in 1923, and the West South Central States with $778 in 1922 and $997 in 1923. The comparatively large amounts derived from these sources in the New England and Middle Atlantic section are partly the result of the large proportion of people who rent either living or business quarters in this region of large city population, but also due in part to interest and dividends from large accumulations of capital. The same is true of the east north central division. In proportion to the total income the New England and Middle Atlantic section derived 26.4 per cent of its personal income in 1922 and 28.5 per cent in 1923 from rents, royalties, interest, dividends, etc., while only 17.1 per cent in 1922 and 21.5 per cent in 1923 were derived from these sources in the Mountain States.

Business and partnership profits, the third largest source of income for the country as a whole, furnished a smaller proportion of personal incomes in the eastern part of the country than in other sections in both years. The fact that only a comparatively small proportion of the total incomes of individuals in the industrial sections is derived from this source is due primarily to the importance of wages and salaries as a source of income but also to the fact that a large proportion of business enterprises in these sections is incorporated and their profits appear in personal income returns as dividends rather than as profits derived directly from business.

Personal incomes reported for taxation purposes are largest and most numerous in the manufacturing and business section east of the Mississippi and north of the Ohio and Potomac Rivers, and less both in number and amount in the agricultural, grazing, mining, and lumbering sections of the South, the Middle West, and the West. Wages and salaries in all parts of the country account for more than half of the total income of individuals. They are largest in amount in the highly industrialized northeastern part of the country and decrease westward to the Mountain States, but are larger in amount on the Pacific coast than in the adjoining mountain section. Rents, royalties, interest, dividends, etc., representing the second largest source of income, were largest in amount per return in the New England and Middle Atlantic States, and least in the Mountain States. Business and partnership profits were highest per return in the West South Central States, where a higher percentage of the businesses probably is unincorporated, and least in the Mountain States. It is quite noticeable that, although the amounts per return from specified sources vary considerably from one territorial division to another, the proportions derived from each of the sources mentioned generally do not vary widely as between divisions, nor do they, except in a few instances, deviate greatly from the percentages for the country as a whole.

The comparatively high average income reported for the New England and Middle Atlantic States corresponded to a comparatively large average amount for wages and salaries and with an even more marked advantage in income from rents, interest, and dividends. Inhabitants of this region, as is well known, have large investments in other parts of the country. The fact that the South Atlantic States took the second rank in the foregoing respects is also a matter of special interest.

Section 5. Income of corporations.

The great bulk of business activity in the United States is carried on by corporations. The commission estimates that the wealth devoted to corporate business in 1922 was $102,000,000,000, or nearly one-third of the total in continental United States.[4] The income of corporations, therefore, represents a vast source of wealth, but the net profits inure to the benefit of a multitude of owners of corporate securities. (See Ch. VII.) Reports of the United States Bureau of Internal Revenue show that the amount of income in the form of corporate dividends received by persons in the United States averaged over two and one-half billion dollars per annum for the 8-year period from 1916 to 1923, and that interest paid by corporations averaged over two and three-quarter billion dollars per annum for the 7-year period from 1917 to 1923.[5] The earnings of corporations, however, were much higher than the amount of cash dividends distributed to investors, as is indicated in the discussion and tables which follow.

Corporations Reporting Profit or Loss.—While during the progress of the World War and since its termination several of the years have been prosperous ones for corporations in general, not all corporations, even during years of comparatively great prosperity, succeeded in earning additional wealth for their stockholders. The number of corporations reporting net income and the number reporting deficits, with the proportion of each to the total, are shown in the following table for each of the years 1916 to 1923:

Table 120.—*Number of corporations reporting net income and number reporting deficit, by years, 1916 to 1923*

Years	Number of corporations			Proportion reporting net income	Proportion reporting deficit
	Total	Reporting net income	Reporting deficit		
				Per cent	*Per cent*
1916	341,263	206,984	134,269	60.7	39.3
1917	351,420	232,079	119,347	66.0	34.0
1918	317,570	202,001	115,518	63.0	36.4
1919	320,108	200,634	119,564	65.5	34.5
1920	345,505	203,233	142,352	58.8	41.2
1921	350,397	171,239	185,158	48.0	52.0
1922	382,883	212,535	170,348	55.5	44.5
1923	398,033	233,330	165,594	58.5	41.5

As shown by the above table, of the total number of corporations the proportion that reported deficits was not less than one-third for any year from 1916 to 1923. Even for 1917, the peak year for high net income, 34 per cent of all corporations reported deficits; and for 1921, a year of very low profits, the proportion reporting deficits amounted to 52 per cent of the total, while for the other years the proportions ranged from 34.5 per cent to 44.5 per cent.

[4] See p. 215.

[5] Reports on Statistics of Income, United States Bureau of Internal Revenue, show dividends reported by individuals reporting to that bureau, as follows: 1916, $2,130,468,025; 1917, $2,848,862,499; 1918, $2,408,748,244; 1919, $2,453,774,826; 1920, $2,734,845,765; 1921, $2,476,952,399; 1922, $2,664,219,081; 1923, $3,126,503,483. The reports on Statistics of Income also show interest paid by corporations as follows: 1917, $2,150,242,894; 1918, $2,633,840,868; 1919, $2,207,694,543; 1920, $2,835,249,934; 1921, $3,141,311,388; 1922, $3,069,112,305; 1923, $3,277,625,971.

AGGREGATE AMOUNTS OF NET INCOME AND OF DEFICITS.—The aggregate amounts of net income and the aggregate amounts of deficit of corporations, together with the ratios of deficits to net income, are shown in the following table for each of the years 1916 to 1923:

TABLE 121.—*Aggregate net income and aggregate deficit of corporations, together with ratios of deficit to net income, by years, 1916 to 1923*

[Amounts in millions]

Years	Net income [1]	Deficit [1]	Ratio of deficit to net income	Combined net income		
				Statutory net income	Tax-exempt interest and dividends	Total
1916	$3,760	$667	7.5	$8,169		$8,169
1917	10,731	930	5.9	10,101		10,101
1918	8,382	690	8.8	7,672	$566	8,238
1919	9,411	996	10.6	8,416	554	8,970
1920	7,903	2,029	25.7	5,874	751	6,625
1921	4,335	3,878	89.4	458	698	1,156
1922	6,964	2,194	31.5	4,770	1,497	6,067
1923	8,322	2,014	24.2	6,398	1,325	7,024

[1] For years 1916 to 1922, inclusive, the figures shown are exclusive of items representing tax-exempt interest and dividends received, the totals of which are shown in next to the last column. All figures are before the deduction of Federal taxes.

The aggregate net income of corporations in 1917, according to the above table, amounted to over $10,000,000,000. This was the peak year for high aggregate corporate net income; both in 1916 and 1918 it amounted to over $8,000,000,000, and in 1919 it amounted to nearly $9,000,000,000, but for no other year did corporate net incomes aggregate these high levels. For the years 1909 to 1915, inclusive, the aggregate net incomes of corporations, without deduction for the deficit of corporations that lost money, ranged from 3.5 billion dollars up to 5.3 billions;[6] while for 1921, as shown by the above table, the aggregate net income after deduction of deficits, amounted to only about 1.1 billion dollars.

The ratios of aggregate deficit of corporations reporting deficits to aggregate net income of corporations reporting net income ranged from 5.9 per cent to 10.6 per cent for the years of highest net incomes, viz, 1916 to 1919. For 1920 and 1922 the ratios amounted to 25.7 per cent and 31.5 per cent, respectively, while for 1921, the year of extremely low aggregate net income, the ratio was over 89 per cent.

RATE OF RETURN ON THE STOCKHOLDERS' INVESTMENT BY INDUSTRIES.—The total net income of corporations in 1922, before deduction of Federal taxes, as shown by the preceding table, amounted to nearly $6,000,000,000. When applied to the fair value[7] of outstanding capital stock of all corporations reported by the Bureau of Internal Revenue a return on investment of 7.9 per cent is shown. This income includes the net income accruing to the benefit of stockholders; it differs from net profits earned in the corporate business, referred to on a succeeding page, in that interest paid was deducted while income from outside investments was added as part of net income. The detailed figures for income covering the year 1922 are

[6] United States Bureau of Internal Revenue Statistics of Income, 1918, p. 16.
[7] For definition of term "fair value" see footnote numbered 1 to Table 122, p. 213.

the latest reported by the Bureau of Internal Revenue, while data on fair value of capital stock were not reported for prior years.

The following table shows the net income of corporations, including those reporting deficits, and the rate of return on fair value of outstanding capital stock as reported by the Bureau of Internal Revenue, for groups of related industries and for certain specific industries in 1922.

TABLE 122.—*Net income of corporations and rate of return on "fair value" of outstanding capital stock, for groups of related industries and for certain specific industries, 1922*

[Amounts in thousands]

Industries	"Fair value" of outstanding capital stock [1]	Net income [2]	Rate of return on fair value of capital stock
			Per cent
Agriculture and related industries	$1,200,077	$11,247	0.9
Mining and quarrying	7,473,746	101,144	1.4
Manufacturing:			
Food products, beverages, and tobacco	3,842,402	333,531	8.7
Textiles and textile products	1,032,010	470,338	29.2
Leather and leather products	1,072,385	66,442	6.2
Rubber and rubber goods	430,762	18,570	3.8
Lumber and wood products	851,079	107,494	17.0
Paper, pulp, and products	835,427	65,540	7.4
Printing and publishing	573,632	170,052	16.6
Chemicals and allied substances [3]	3,787,510	488,302	12.9
Stone, clay, and glass products	897,190	113,067	12.6
Metal and metal products	10,262,640	693,320	6.8
All other manufacturing	3,226,036	325,062	10.1
Total manufacturing	27,913,410	2,917,694	10.5
Construction	832,201	46,440	5.6
Transportation and other public utilities	13,109,967	1,043,410	8.8
Trade	3,640,637	735,926	8.5
Service	1,253,414	98,462	7.9
Finance	14,081,265	961,112	6.4
All other	1,280,880	31,655	2.5
Grand total	75,783,007	5,907,199	7.9

[1] This "fair value," as defined by the Bureau of Internal Revenue, is "the value of the entire outstanding stock of the corporation considered as a going concern, giving due consideration to the present worth of the assets, tangible and intangible, the earning capacity, dividends disbursed, the market value of shares, and other factors that affect values generally." (Statistics of Income, 1922, pp. 37-43.)

[2] Comprises reported deficits. Figures include income from outside investments; interest paid deducted. Compiled from "Statistics of Income," 1922, pp. 19-23.

[3] Composed largely of refiners of petroleum.

The rate of return in 1922 on the aggregate "fair value" of outstanding capital stock of corporations engaged in the different industrial groups ranged from slightly less than 1 per cent for corporations engaged in agriculture and related industries to 10.5 per cent for the group of corporations engaged in manufacture. An amount equal to less than 1.5 per cent of the fair value of outstanding capital stock is shown as the net income of mining and quarrying corporations; construction corporations with 5.6 per cent and finance corporations (i. e., banks, insurance and trust companies, stocks and bonds, loans, realty holding, etc.), with 6.4 per cent also had aggregate net incomes below the average of 7.9 per cent shown for all corporations combined.

For the specific manufacturing industries covered by the table the highest rate of return on fair value of outstanding capital stock, amounting to 29.2 per cent, is shown for textiles and textile products,

followed by printing and publishing with 19.6 per cent, and lumber and wood products with 17.6 per cent.

The rates of return on "fair value" of outstanding stock, as shown in the above table, exceeded the rates of return on the investment devoted to the corporate business, as shown in Table 123, following, in the case of a majority of the industrial groups and specific industries covered. The margin of difference was especially great for textile manufacture. It was also quite large for manufacture of lumber and wood products, construction, and for other industries. The differences in rates are due, of course, to the differences in the amounts of investment applying in each case, and also to the differences in the corresponding incomes derived from the respective investments. With respect to the "fair values" of outstanding stock estimated by the Bureau of Internal Revenue, shown in the above table, it should be remembered that these figures do not represent merely par value of stock plus surplus but include adjustments for earning capacity, dividends disbursed, market value of shares, present worth of assets, etc. (See footnote 1 to Table 122.)

RATE OF RETURN ON TOTAL INVESTMENT IN CORPORATE BUSINESS BY INDUSTRIES.—The amount of net profit earned by the total wealth devoted to corporate business in 1922, before deduction of Federal taxes, amounted to over 6.5 billion dollars, or 6.4 per cent on the investment. In arriving at net profits derived from the total investment devoted to the corporate business income from sources outside of the corporate business was excluded; interest paid, however, was not deducted but left in as profit, since the investment in the corporate business represents borrowed funds as well as the stockholders' investment.

The following table shows net profits before deduction of Federal taxes earned in corporate business in 1922 (including corporations reporting deficits), together with rate of profit on estimated investment, for groups of related industries and for certain specific manufacturing industries:

TABLE 123.—*Net profits from investment in corporate business and rates of return on investment, for groups of related industries and for certain specific industries, 1922.*

[Amounts in thousands]

Industries	Investment in business [1]	Net profits from business [2]	Rate of return on investment
			Per cent [3]
Agriculture and related industries	31,937,249	318,100	0.9
Mining and quarrying	10,074,877	[4] 5,010	(4)
Manufacturing:			
Food products, beverages, and tobacco	5,043,631	338,411	6.7
Textiles and textile products	4,393,375	480,331	11.1
Leather and leather products	877,624	72,065	8.3
Rubber and rubber goods	609,600	35,350	5.8
Lumber and wood products	2,503,873	178,234	7.1
Paper, pulp and products	1,210,461	69,146	5.7
Printing and publishing	713,037	153,689	21.6
Chemicals and allied substances	3,212,281	429,239	13.4
Stone, clay, and glass products	1,177,735	117,673	10.0
Metal and metal products	9,974,608	675,842	6.8
All other manufacturing	3,929,400	292,691	7.4
Total manufacturing	33,050,941	2,853,699	8.5
Construction	2,874,664	31,294	1.1
Transportation and other public utilities	27,329,257	1,349,703	4.9
Trade	11,465,327	692,308	6.0
Service	1,459,120	48,904	3.4
Finance	11,891,471	1,580,996	13.3
All other	1,715,969	19,520	1.1
Grand total	102,399,065	6,589,505	6.4

[1] Estimated by the Federal Trade Commission. The investment shown above includes all the investment in plant and equipment, inventories, and other current assets, net, which are used in the immediate business, but excludes all investment outside the immediate business, such as stocks and bonds of other companies, Government securities, etc.

[2] Compiled from the reports on "Statistics of Income" of the Bureau of Internal Revenue. Income from outside investments excluded; no deductions for interest paid. Comprises deficits.

[3] Minus.

[4] Less than one-tenth of 1 per cent loss.

The investment figures shown in the above table were arrived at by the commission by adding to the value of land, buildings, and equipment as compiled by the Bureau of Internal Revenue from corporation returns for taxation purposes estimates of the value of inventories, cash, and other movables used in the corporate business (except good will, patents, etc.). For 54,862 corporations, owning nearly one-fifth of the total fixed assets of all corporations, the Bureau of Internal Revenue furnished the commission data showing separately and by industries the value of inventories and the value of land, buildings, and equipment. The ratios between these two classes of investment, thus indicated for the different industries, were applied to the total values of land, buildings, and equipment owned by all corporations within the various classes reported, to arrive at estimated inventory values for all corporations comprising each class. The total amount of cash and other movables included in the estimates was taken at 8 per cent of the combined value of fixed assets and inventories. This estimate of 8 per cent was based on data secured for 1,660 corporations of various sizes and activities, the aggregate value of whose net current assets (exclusive of inventories) at the end of 1922 equaled about 8 per cent of the aggregate value of their plants and inventories combined.

The rate of net profit on investment in 1922 earned by wealth devoted exclusively to corporate business, regardless of whether contributed by stockholders or borrowed, as shown by the above table for groups of related industries, ranged from not quite 1 per cent for agriculture and related industries to 13.3 per cent for finance corporations. For the group of corporations engaged in mining and quarrying a net loss of less than one-tenth of 1 per cent of investment is shown.

The percentage of net profit shown for the manufacturing industry as a whole, amounting to 8.5 per cent, was well above the average of 6.4 per cent shown for all corporations combined. For specific manufacturing industries, corporations engaged in printing and publishing earned over 21.5 per cent as the net return on investment in the business; while for corporations engaged in the manufacture of chemicals and allied substances, most of which were composed of petroleum refiners, the return on investment amounted to nearly 13.5 per cent; for corporations engaged in the manufacture of textiles and textile products, over 11 per cent; and for corporations engaged in the manufacture of stone, clay, and glass products, 10 per cent.

GROSS INCOME AND NET PROFITS BY INDUSTRIES.—The gross income of corporations from business operations in 1922 amounted to about $126,000,000,000, according to the estimate of the commission, based for the most part on data reported by the Bureau of Internal Revenue for that year. Such data as were used by the commission in estimating gross income for 1922 were not available for any other year. As shown in Table 123 (p. 215), the net profit of corporations from business operations in 1922, before deduction of Federal taxes, amounted to about 6.5 billion dollars, or 5.2 per cent of the estimated gross income of $126,000,000,000.

The gross income from business operations as estimated by the commission, together with the net profits earned in the business and the ratio of net operating profit to gross operating income, are shown in the following table for groups of related industries and for certain specific industries covering the year 1922.

TABLE 124.—*Gross and net income from operations, and ratio of net income to gross income, for groups of related industries and for certain specific industries, 1922*

[Amounts in thousands]

Industries	Gross income from operations [1]	Net profit from operations [2]	Ratio of net to gross income
Agriculture and related industries	$785,279	$18,100	2.3
Mining and quarrying	4,640,388	[3] 5,040	[3].1
Manufacturing:			
Food products, beverages, and tobacco	5,969,952	338,411	5.8
Textiles and textile products	4,636,303	400,331	7.2
Leather and leather products	1,472,468	72,986	5.0
Rubber and rubber goods	930,141	35,350	3.8
Lumber and wood products	2,411,469	178,294	7.4
Paper, pulp, and products	1,150,680	69,148	6.0
Printing and publishing	2,272,330	154,689	6.8
Chemicals and allied substances	4,112,492	429,228	7.0
Stone, clay, and glass products	1,162,682	117,673	10.1
Metal and metal products	10,196,610	675,842	6.6
All other manufacturing	4,200,936	202,491	4.8
Total manufacturing	45,773,178	2,253,493	4.2
Construction	3,264,153	31,294	1.0
Transportation and other public utilities:			
Steam railroads	5,733,181	843,703	14.7
All other	9,333,993	506,000	5.4
Total transportation and other public utilities	15,067,174	1,349,703	9.0
Trade	29,736,214	692,308	2.3
Service	3,751,040	48,904	1.3
Finance	22,313,750	1,680,996	7.1
All other	616,434	19,220	3.2
Grand total	125,344,704	6,889,865	5.2

[1] The figures for gross income from operations shown for all industries, with the exception of transportation, and other public utilities, are estimates of the Federal Trade Commission based on partial information given for the respective industries by the Internal Revenue Bureau in "Statistics of Income" for 1922, pp. 18–25. In that report the gross sales and gross profits from sales are stated for those companies reporting the information; also the "Profit from operations other than amounts reported as gross sales" for those companies not reporting gross sales. In estimating the amount of gross sales for companies that failed to report the information, it was assumed by the commission that the same ratios between gross profit from sales and gross sales as shown for companies that reported both items was applicable to the groups of companies in the different industries that reported only gross profit from sales, and on these bases estimated totals were arrived at for all companies in the several groups. With respect to transportation and other public utilities, the proportion of the entire industry that failed to report gross sales was so great that a different method for estimating gross sales was deemed advisable. Accordingly, the gross income for steam railroads was ascertained from a report of the Interstate Commerce Commission, and from the same and other sources data were obtained upon which to base estimates of gross sales for electric railroads, water transportation companies, telephone, telegraph and radio companies, and express companies and the Pullman Co. For local transportation, cartage and storage companies, gas companies, waterworks, and all other, an arbitrary estimate of about five and one-half billion dollars was added to complete the total for the industry.

[2] The figures for net profit from operations, except for steam railroads, were compiled by the Federal Trade Commission from data reported by the Internal Revenue Bureau in "Statistics of Income" for 1922, pp. 20–22. The net income shown for steam railroads is that reported by the Interstate Commerce Commission; and the figure shown for "All other" transportation and public utility companies was obtained by deduction.

[3] Minus.

The greatest amount of gross income from business operations, aggregating an estimated total of nearly 46 billion dollars, is shown in the above table for the group of corporations engaged in manufacture, followed by trading corporations with nearly 30 billions, finance corporations with over 22 billions, and transportation and other public utility corporations with 15 billions. For the other groups of related industries the estimated totals ranged from $785,000,000 for corporations engaged in agriculture and related industries to 4½ billion dollars for mining and quarrying corporations. Of the specific manufacturing industries covered by the table, the greatest amount of gross income, amounting to an estimated $10,000,000,000, is shown for manufacturers of metal and metal products, followed by

manufacturers of food products, beverages and tobacco with nearly $9,000,000,000, manufacturers of textiles and textile products with close to $7,000,000,000, and manufacturers of chemicals and allied substances, the most important portion of which group is composed of refiners of petroleum, with over $6,000,000,000.

For the group of corporations engaged in mining and quarrying an aggregate net loss, amounting to an estimated one-tenth of 1 per cent of gross income from operations is shown, but for the other groups of industries the estimated ratios of net to gross income from operations ranged from 1 per cent for the construction group to 9 per cent for the transportation and other public utilities group. For steam railroads the ratio amounted to nearly 15 per cent, and for manufacturers of stone, clay, and glass products it amounted to an estimated 10 per cent.

TERRITORIAL DIVISION OF CORPORATE NET INCOME.—As shown in Table 121, page 212, the aggregate annual net income of corporations after deduction of deficits, but before deduction of Federal taxes, ranged from 1.1 billion dollars to 10.1 billion dollars during the eight-year period 1916–1923. 1916, 1917, 1918, and 1919 were all banner years for high aggregate corporate net income. The aggregate for 1917, the peak year in the history of American corporations for high net income, was nearly one-fourth greater than that for 1916 and about one-eighth greater than the amounts shown for 1918 and 1919. At the other extreme the aggregate net income for 1921 was only about one-ninth of that shown for 1917.

In the following table the percentage distribution of aggregate corporate net income, after deduction of deficits but before deduction of Federal taxes, is shown by territorial divisions for each of the years 1916 to 1923, inclusive.

TABLE 125.—*Percentage distribution of the aggregate net income of corporations as reported in income-tax returns, by territorial divisions, 1916–1923*

Territorial divisions	Per cent							
	1916	1917	1918	1919	1920	1921	1922	1923
New England States	9.1	11.2	10.9	10.6	5.8	6.6	8.5	8.2
Middle Atlantic States	41.2	38.9	39.5	38.3	41.8	101.7	39.9	41.3
East North Central States	22.7	25.1	24.9	25.2	26.2	[1] 1.7	27.4	26.9
West North Central States	7.2	7.8	7.1	7.9	7.4	18.8	7.4	5.9
South Atlantic States	6.7	7.0	7.2	7.1	7.9	18.6	7.4	7.4
East South Central States	1.9	2.1	2.1	2.1	2.3	[1] 2.8	2.7	2.4
West South Central States	2.5	2.7	2.7	2.3	2.7	[1] 21.4	.9	1.1
Mountain States	2.2	2.1	1.6	1.3	.8	[1] 32.7	.6	.8
Pacific States [2]	3.3	4.1	3.7	4.0	4.2	13.0	6.5	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Net deficit.
[2] Alaska and Hawaii also included.

During the eight-year period from 1916 to 1923 from 36.1 to 101.3 per cent of the aggregate net income of corporations, after deduction of deficits, was credited to the three Middle Atlantic States—New York, New Jersey, and Pennsylvania. The proportion was in excess of 100 per cent in 1921, due to the fact that net deficits were reported for several of the territorial divisions, with the result that the aggregate corporate net income reported for the above-mentioned States was greater than that reported for the country as a whole.

The next most important territorial division covered by the above table is the East North Central group of States, composed of Ohio, Indiana, Illinois, Michigan, and Wisconsin. Excepting the year 1921, the percentages of aggregate corporate net income reported for this region ranged from 23.7 to 27.4. Third in importance was the New England group of States, with percentages ranging from 5.6 to 11.2 for the eight-year period. Thus, in years of corporate prosperity about three-fourths of the aggregate corporate net income, after deduction of deficits, was credited to the territory in the northeastern corner of the country embraced by the three territorial divisions above named.

As shown by the table, the territorial division represented by the Mountain States, viz, Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada, was credited with less than 1 per cent of corporate net income in 1923, 1922, and in 1920, although for the earlier years the proportions ranged from 1.3 to 2.2 per cent.

Section 6. Importance of income-tax data.

While most of the information given in this chapter has been compiled by the commission from different statements appearing in various parts of the Statistics of Income, published by the Treasury Department, certain data, as noted in the text, were especially prepared by the courtesy of that department for the use of this commission.

In this connection it seems pertinent to point out what extremely important information is available in these reports and to suggest the desirability of a much more liberal appropriation for such statistical work, in order that these valuable data may be more completely analyzed and published. Certain important statistics, it appears, that were formerly published are not now compiled, on account of lack of funds for the work.

The data that this commission has particularly in mind are such as are presented in the last section of this chapter, concerning the results of business operations. The figures regarding corporations which have been first compiled and presented in an instructive form in the present report could be greatly amplified and given in more detail by the Treasury Department. Such statistics could be made to embrace data regarding nonincorporated businesses also. As to such details, a more specific analysis of trade, both wholesale and retail by the different branches of business, would offer a large and valuable field for study. The data could also be analyzed and presented by the geographical grand divisions of the country, but a compilation by States is probably not practicable.

Such information, if compiled and issued as promptly as available, would have great value as a guide to the initiation and management of business undertakings and as a guide to individual investors, both large and small; such information would save the country and its citizens many millions of unnecessary losses annually through improvident investment in branches of business which are unprofitable because overdeveloped. Such illjudged investment causes great losses not only to investors but also to labor through increased irregularity of employment and to other lines of business through bad debts. The aggregate loss to the whole community amounts to many millions of dollars and could be materially reduced by a better knowledge of the general facts regarding business conditions.

The revenue act of 1924 did not require corporations to report the amount of capital invested in the business. It is possible, however, by analysis of the balance sheet in the tax return to show the investment of the company, or the entire investment in the business. Such information is frequently desired by Congress and would be of great value to the business world.

CHAPTER XI

TOTAL NATIONAL INCOME

Section 1. The estimated total income of the United States.

In the succeeding chapters of this part estimates are made of the total value created by each of the principal groups of economic or industrial activities in the United States and of the portions thereof, before deducting Federal, State, and local taxes, that went to the personnel of the industries as remuneration for their services and to those who furnished the capital and skill with which to initiate and carry on these enterprises. The purpose of this chapter is to present the general results of these estimates which show total income of the people of the United States.

The estimates of the total value created in the United States and the total income reported in Federal personal income-tax returns for the period 1918 to 1923 are as follows:

TABLE 126.—*Estimates of the total annual income of the people of the United States and the income reported in personal income-tax returns with index numbers based upon 1918 as 100 for the six-year period, 1918–1923*

Year	Estimated total income		Income reported in personal income-tax returns		Per cent of total
	Amount	Index number	Amount	Index number	
1918	$60,228,000,000	100	$17,716,000,000	100	29
1919	67,391,000,000	112	22,428,000,000	126	33
1920	74,764,000,000	123	26,090,000,000	150	35
1921	52,807,000,000	87	23,230,000,000	131	44
1922	61,738,000,000	103	24,872,000,000	140	40
1923	69,833,000,000	116	31,167,000,000	175	45
Average	64,249,000,000	107	24,384,000,000	137	38

It is interesting to compare the general movement of this estimated total income for the six-year period with the income reported to the Treasury Department.

The trends of the two sets of figures are similar in the sense that they agree as to increases or decreases in each year. The increases for the income shown in the tax returns were much greater in 1919 and 1920 than for the general estimates, while the fall in 1921 was not so pronounced. Though both increased in the two following years, the increases were not similar. For total amounts of income 1923 showed the maximum for the tax returns and 1920 for the general estimate.

The estimated total annual income of the people of the United States during the six-year period, 1918–1923, ranged from about $53,000,000,000 in 1921, to almost $75,000,000,000 in 1920. Although there was a rapid recovery from the depression of 1921, the total for 1923, the second largest for the period, was about $5,000,000,000 less than the 1920 total. The six-year average was over $64,000,000,000.

The income reported to the Federal Government in personal income-tax returns increased from less than $18,000,000,000 in 1918 to over $31,000,000,000 in 1923, a gain of 75 per cent as contrasted with a 16 per cent increase for the total income.

The decrease in the total income resulting from the depression of 1921 was much greater than for the income reported for Federal taxation. From 1920 to 1921 the total income fell off $22,000,000,000 or about 30 per cent, as compared with a decrease of $3,300,000,000, or about 18 per cent for the income reported in personal income-tax returns.

The proportion of the total national income reported in Federal income-tax returns increased from 29 per cent in 1918 to 45 per cent in 1923.

COMPARISON WITH ESTIMATES OF NATIONAL BUREAU OF ECONOMIC RESEARCH.—Similar estimates of the income of the people of the United States were made by the National Bureau of Economic Research for the years 1909 to 1918. It used two methods of estimating. The estimate for 1918 [1] made on the basis of personal incomes received, was $62,000,000,000. The estimate that was made for 1918 by a method practically the same as the one used in this inquiry was 60.4 billions.[2] Both of these are nearly the same as the commission's estimates of 60.2 billions. But there were some differences, however, in the items considered as national income.

In making the estimate of 60.4 billions of dollars as the value product of all industry in 1918 the National Bureau of Economic Research was practically without data either on mercantile business or on the professional and personal-service businesses. Thus the National Bureau estimate for 1918 includes $12,442,000,000 for the value product of these and possibly other "unclassified industries." The present estimate includes slightly under 14 billions of dollars for the three specified groups. The latter estimate, however, includes $754,000,000 of taxes, which the former does not include, their place being taken by an estimated value product of government.

In making its estimates of the value product of the manufacturing industry the National Bureau did not have certain data collected by the commission through reports from hundreds of manufacturing companies regarding factory repairs and depreciation and the cost of stationery, supplies, light, etc., used in selling and general administrative divisions, which constitute costs paid away to other industries. These made differences of from $2,000,000,000 to $4,000,000,000 in the manufacturing estimates in the census years.

The National Bureau's estimate also includes an estimate of $1,238,000,000 as the rental value of urban dwellings that are occupied

[1] National Bureau of Economic Research, Income of the United States, New York, 1922, p. 231.

[2] For convenience in reference the total estimates by years, according to this method were as follows:

Year	Estimate	Year	Estimate	Year	Estimate
	Millions		*Millions*		*Millions*
1909	$28,775	1914	33,936	1918	60,386
1910	31,765	1915	38,309	1919	67,254
1911	31,188	1916	45,418	1920	74,158
1912	33,534	1917	53,850	1921	62,736
1913	35,580				

The estimates for 1909 to 1918, inclusive, were published in the "Income in the United States"; those for 1919 to 1921 were published in a recent volume, "Income in the Various States."

by their owners. The National Bureau also allowed interest on the investment in stocks of consumption goods to the extent of $1,271,000,000. No allowance for either item has been included in the estimates presented by this inquiry. There is no particular objection to the former item. The allowance of interest, not as a share of value already created but as an additional item of created value is, however, of dubious advisability.

But even if the estimate of the National Bureau were put on the same basis as the estimate in the present inquiry, the difference would not exceed, probably, 2.7 billions of dollars, or about 4.5 per cent of the total. Such a degree of agreement tends to confirm the general accuracy of both calculations.[1]

CHANGES IN TOTAL INCOME, 1918–1923.—The total national income, as estimated for 1923, amounted to nearly $70,000,000,000, showing an increase of about ten billions over the estimate for 1918. The maximum estimate for the period, however, was nearly seventy-five billions in 1920, while the minimum, in 1921, was only fifty-three billions. Thus there was a very rapid increase from sixty billions in 1918 to seventy-five billions in 1920, followed by an abrupt decline of over twenty-two billions in 1921, from which point the estimate increased during the two succeeding years by about seventeen billions.

The increase in estimated income between 1918 and 1923, as shown above, was about 16 per cent. This does not necessarily mean, however, that the wants and needs of the people were more abundantly provided for in 1923 than at the beginning of the half decade. The degree of provision for these things depends not only upon the total money income but also upon the number of people whose needs are to be supplied by means of it and upon the prevailing prices at which the various commodities are available for purchase. Population increased during this period by about 6 per cent, but there were great fluctuations in prices.

The year 1918 was a period of war and of production restricted largely to war materials and so-called essential articles. To a considerable extent it was also a year of price fixing and wage-rate setting by governmental authority. In 1919, however, industry returned to the peace-time basis, and most of these restrictions were removed. It was a year of rapidly rising prices and wage rates. The total income of the people rose to over $67,000,000,000, an increase of nearly one-eighth in one year.

The upward movement in prices and wage rates did not culminate, however, until near the end of 1919, or in many cases until early in 1920. Although demand and the volume of business slackened considerably during the first half of 1920, prices and wage rates were fairly well sustained throughout the year. Indeed, in some industries the peak was not reached until the second half. In consequence,

[1] For years subsequent to 1918, Benjamin M. Anderson, of the Chase National Bank of the city of New York, made estimates for certain recent years by applying to a certain estimate of the National Bureau of Economic Research for 1919 ($60,300,000,000), index numbers based on Bureau of Labor Statistics prices, and on production and transportation statistics ("The Income of the American People and the Ratio of Foreign to Domestic Trade, 1890–1924"). The following tabular statement gives Doctor Anderson's estimates. (No estimates for 1920 and 1921.)

Anderson's estimates

1918	$62,500,000,000	1922	$49,800,000,000
1919	60,300,000,000	1923	57,700,000,000

although the volume of business was reduced and there was some depression during the last six months of 1920, nevertheless the total money value created by industry in that year rose to nearly $75,000,000,000.

The year 1921, however, was one of extraordinarily severe depression. The Department of Labor estimated that at one time during the year 5,750,000 workers were out of employment. Not only that, but a considerable portion of those who continued on the pay rolls worked only two to four days a week. This year was marked by a severe reduction in prices especially for agricultural products, and to a considerable extent by a reduction in wage rates. The estimated total income dropped from seventy-five billions in 1920 to about $53,000,000,000 in 1921.

With the partial recovery of business in 1922, the estimated total value created by industry in the United States rose to nearly $62,000,000,000, and it continued to grow with the further improvement in business, so that in 1923 it amounted, according to this estimate, to nearly seventy billions.

Section 2. Estimates equalized for changes in purchasing power.

As stated above the estimate of national income reckoned in dollars does not always give a reliable indication of the changes in national well-being; and this is true of the period 1918–1923 here under consideration. The changes in the general price level, whether indicated by indexes of wholesale prices or of the cost of living to workingmen's families, show a marked variation in the value of the dollar.

It would be extremely difficult, however, to construct index numbers of prices that would properly measure the changes in general purchasing power of the total incomes estimated above. Wholesale prices indices will not serve because a very large portion of these estimated incomes is spent at retail for commodities for personal and household consumption, and retail prices do not closely parallel wholesale prices in short periods of time. Index numbers of the changes in the cost of living will not serve because a considerable portion of this total income is saved and spent in the purchase of equipment and additional plant that constitute industrial expansion. Probably no one price index could be constructed that would adequately serve the purpose, and measurement of the comparative purchasing power of these incomes would involve the splitting up of the total income into the parts spent for the various classes of purposes and by various groups of individuals and the application of appropriate indices to each part.

Were it practicable to divide up the total income and devise and apply appropriate indices in ordinary times, however, it is extremely doubtful whether it would be humanly possible to obtain the data necessary to construct index numbers of sufficient accuracy to be useful in a period of such rapid and violent change as occurred between 1918 and the early part of 1920 and as occurred during 1920, 1921, and 1922. The month to month changes were large, and it would be practically impossible to determine the proportions in which the spending of each portion of the year's income was distributed in time through the year in which earned or how far the spending lagged over into the next year. However, as such a computation will inevitably be made in any case, it is perhaps better to show the result on the

best basis available. This basis seems to be the cost-of-living index of the Bureau of Labor Statistics. That index, based upon 1923 as 100, is as follows:

	Index		Index
1918	102	1921	104
1919	110	1922	98
1920	122	1923	100

Applying this index to the total estimated income, with 1923 as the base year, the following results are obtained:

Year	Original estimate	Estimate of equalized purchasing power	Year	Original estimate	Estimate of equalized purchasing power
	Billion dollars	*Billion dollars*		*Billion dollars*	*Billion dollars*
1918	59.2	58.0	1921	52.5	50.5
1919	67.4	61.3	1922	61.7	63.0
1920	74.3	61.3	1923	69.3	69.3

The general effect of correcting the dollar estimates of income on account of changes in purchasing power is to smooth out in large part the extremely violent fluctuations of the original estimate due to sharp changes in prices, and to this extent, no doubt, it is important and necessary in considering real national income, even though it is admitted that a precise method of correction has not yet been developed by statistical science. These revised estimates tend to show the specious character of the extremely high incomes for 1919 and 1920 which were due to speculative activity and scarcity of commodities in certain lines rather than to extraordinary prosperity. They also evidence a large real decrease in the production of wealth in the depression year 1921.

Section 3. Estimates of national income by industries and occupations.

The foregoing estimated total income in dollars is found by adding together the several estimates for the various groups of economic and industrial activity which are set forth by years in the following table:

TABLE 127.—*Estimated total value created by specified kinds of economic activity in million dollars, 1918–1923*

Kind of activity	1918	1919	1920	1921	1922	1923
Agriculture	$14,200	$14,157	$9,226	$8,057	$9,413	$9,433
Mining, manufacturing, and construction	23,625	25,382	34,404	13,057	23,295	29,371
Transportation and communication	5,379	5,823	6,691	6,591	6,956	7,445
Mercantile	5,600	7,731	8,280	6,859	8,164	8,541
Professional and personal service	8,304	9,972	11,396	10,599	10,555	11,520
Banking and other	3,059	3,824	3,717	3,787	3,934	3,423
Total	60,223	67,391	74,284	52,607	61,735	69,833

Of the total estimated income in 1923, amounting to nearly $70,000,000,000, mining, manufacturing, and construction activities contributed about 29.4 billions; professional and personal-service enterprises added 11.5 billions; agriculture was third with 9.4 billions; mercantile enterprises, including both wholesale and retail, ranked fourth, with 8.6; transportation and communication industries were

fifth, with almost 7.5 billions; and banking and other activities had a total of 3.4 billions. The total for each of the above groups of economic activities was higher for 1923 than for 1918, with the single exception of agriculture.

The relative contributions of these different groups of economic activity fluctuated considerably during the six-year period. The changes from year to year may be readily seen from the following table, which gives their percentage relations to the total for each year:

TABLE 128.—*Percentages of the contributions of specified kinds of economic activity to the total national income, 1918–1923*

Kind of activity	1918	1919	1920	1921	1922	1923
Agriculture	23.7	21.0	19.4	13.7	15.2	13.5
Mining, manufacturing, and construction	39.1	39.2	46.4	34.2	37.7	42.0
Transportation and communication	8.9	8.0	8.0	12.5	10.6	10.7
Mercantile	9.4	11.5	11.2	13.2	13.2	12.4
Professional and personal service	13.8	14.8	10.0	20.3	17.2	18.6
Banking and other	6.1	4.9	5.0	7.1	6.9	4.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

The most important variations occurred in the agricultural industry, whose contribution to the total national income during the six-year period ranged from about 24 per cent in 1918 to not quite 13 per cent in 1921. The range for the mining, manufacturing, and construction group was not so great, namely, from a minimum of 34.2 per cent in 1921 to 46.1 per cent in 1920. Professional and personal service enterprises ranged from 13.8 in 1918 to 20.3 in 1921. Transportation and communication, mercantile, professional and personal service, and banking and other groups had their largest p oportion of the total in the depression year 1921, while mining, manufacture, and construction and agriculture had their lowest percentage in that year.

Section 4. Estimates for different groups of economic enterprise equalized for changes in purchasing power.

The estimates for the principal groups of economic enterprise adjusted for changes in the purchasing power of the dollar show more accurately the changes in their well-being from year to year than do the unadjusted estimates. The following table shows the original estimate and the estimate adjusted for changes in purchasing power as shown by the cost-of-living index of the Bureau of Labor Statistics:

TABLE 129.—*Comparison of the commission's original estimates of the national income with these estimates adjusted for changes in purchasing power for the principal lines of economic enterprise, 1918–1923*

Group	Year	Original estimate	Estimate of equalized purchasing power
		Billion dollars	*Billion dollars*
Agriculture	1918	14.2	13.9
	1919	14.2	12.9
	1920	9.2	7.8
	1921	6.7	6.4
	1922	9.4	9.5
	1923	9.4	9.4
Mining, manufacture, and construction	1918	23.5	23.1
	1919	28.4	24.0
	1920	34.5	28.3
	1921	18.9	17.3
	1922	23.3	23.8
	1923	28.4	28.4
Transportation and communication	1918	5.4	5.3
	1919	5.8	5.8
	1920	6.7	5.5
	1921	6.6	6.3
	1922	6.7	6.8
	1923	7.4	7.4
Professional and personal service	1918	8.3	8.1
	1919	10.0	9.1
	1920	11.9	9.7
	1921	10.7	10.3
	1922	10.6	10.8
	1923	11.5	11.5
Mercantile	1918	6.7	6.6
	1919	7.7	7.0
	1920	8.8	6.8
	1921	6.9	6.7
	1922	8.2	8.3
	1923	8.8	8.8
Banking and miscellaneous enterprises	1918	3.1	3.0
	1919	3.3	3.0
	1920	3.7	3.1
	1921	3.7	3.6
	1922	3.6	3.7
	1923	3.4	3.4

The income for agriculture was larger in 1918 and 1919 on both bases than for any other year of the six-year period ending in 1923, but on the adjusted basis 1923 was the most prosperous year of the period for the mining, manufacture, and construction, transportation and communication, mercantile, and professional and personal service groups. For the banking and miscellaneous enterprise group 1922 was the best year on the adjusted basis.

Section 5. Division of the national income between labor and capital.

The proportions of the total value of product going to labor and to capital and enterprise for the principal groups of economic enterprise vary greatly from group to group. Agriculture shows by far the largest proportion for capital and enterprise, the percentage ranging from a maximum of almost 92 per cent in 1918 to a little over 83 per cent in 1920. The reason for the high proportion shown for capital and enterprise is because most of the labor in agriculture is furnished by the farmers themselves or by members of their families. The smallest proportion paid for hired labor was in 1918, when there was a shortage of help due to the war; while the largest amount and the highest percentage was for 1920, when farm wages were high.

The transportation and communication group shows the largest proportions of the total value of product going to labor during the four years 1918–1921, the range being from about 71 to nearly 84 per

cent; while the mercantile group had the highest percentages in 1922 and 1923—namely, about 72 per cent in 1922 and almost 67 per cent in 1923.

The following table shows the amounts and percentages of the total value of product divided between labor and capital for the principal groups of economic enterprise, covering the period 1918–1923:

TABLE 130.—*Estimates of the total national income and the shares of labor and capital for the principal kinds of economic enterprise, 1918–1923*

Enterprise	Amounts in millions			Per cent	
	Total	Labor	Capital	Labor	Capital
Year 1918					
Agriculture	$14,219	$1,170	$13,043	8.3	91.7
Mining, manufacture, and construction	23,525	13,903	9,532	59.5	40.5
Transportation and communication	5,378	3,839	1,539	71.4	28.0
Mercantile	5,660	3,567	2,093	63.0	37.0
Professional and personal service	8,394	3,739	4,505	45.0	55.0
Banking and miscellaneous enterprises	3,059	1,849	1,210	60.4	39.6
Total	60,145	28,163	31,982	46.8	53.2
Year 1919					
Agriculture	14,157	1,350	12,801	9.6	90.4
Mining, manufacturing, and construction	26,382	15,715	10,667	60.6	40.4
Transportation and communication	5,824	4,339	1,485	74.5	25.5
Mercantile	7,731	4,834	2,897	62.5	37.5
Professional and personal service	9,972	4,457	5,515	44.7	55.3
Banking and miscellaneous enterprises	3,924	2,001	1,323	60.2	39.8
Total	67,290	32,702	34,688	48.6	51.5
Year 1920					
Agriculture	9,226	1,546	7,680	16.8	83.2
Mining, manufacturing, and construction	34,464	22,329	12,136	64.8	35.2
Transportation and communication	6,691	5,592	1,099	83.6	16.4
Mercantile	8,280	5,961	2,320	71.9	28.1
Professional and personal service	11,886	5,141	6,745	43.3	56.7
Banking and miscellaneous enterprises	3,717	2,323	1,394	62.5	37.5
Total	74,204	42,881	31,383	57.8	42.2
Year 1921					
Agriculture	6,607	1,097	5,570	16.6	83.5
Mining, manufacture, and construction	17,736	12,597	5,149	70.0	28.4
Transportation and communication	6,591	4,496	2,106	68.1	31.9
Mercantile	6,939	5,223	1,716	75.3	24.7
Professional and personal service	10,606	4,927	5,889	46.1	54.0
Banking and miscellaneous enterprises	2,707	2,111	1,596	56.0	43.1
Total	52,336	31,381	21,005	59.9	40.1
Year 1922					
Agriculture	9,413	1,965	8,348	11.3	88.7
Mining, manufacture, and construction	23,296	15,854	7,542	67.2	32.8
Transportation and communication	6,656	4,352	2,304	65.4	34.0
Mercantile	3,154	5,898	2,256	72.3	27.7
Professional and personal service	10,456	4,544	5,942	43.9	56.1
Banking and miscellaneous enterprises	3,634	2,105	1,529	57.9	42.1
Total	61,739	38,718	28,021	54.6	45.4
Year 1923					
Agriculture	9,432	1,132	8,301	12.0	88.0
Mining, manufacture, and construction	29,372	19,194	10,178	65.8	34.7
Transportation and communication	7,444	4,859	2,585	65.3	34.7
Mercantile	8,641	5,763	2,878	66.7	33.3
Professional and personal service	11,520	4,990	6,521	43.4	56.6
Banking and miscellaneous enterprises	3,433	2,249	1,184	65.5	34.5
Total	69,342	38,196	31,047	54.7	45.3

The smallest amount received by labor during the six-year period 1918–1923 was a little over $28,000,000,000, which was not quite 47 per cent of the total income. The largest amount received by labor was nearly $43,000,000,000, in 1920, but labor received the largest proportion of the national income—almost 60 per cent—in 1921. The proportions going to labor and capital in 1922 and 1923 were almost the same—approximately 55 per cent to labor and 45 per cent to capital and enterprise.

If a comparison is made between these estimated percentages of the total income going as wages or salaries with those reported by the income tax data, the figures appear to be fairly consistent with each other. The following statement compares the above percentages of total income with the wages and salaries percentages of all income-tax returns.

Year	Per cent of total estimated income	Per cent of all tax returns	Year	Per cent of total estimated income	Per cent of all tax returns
1918	47	47	1921	60	59
1919	49	48	1922	55	55
1920	56	57	1923	55	48

In this connection it may be considered, for example, that a large amount of farm income is not included in the tax returns, and of this income the percentage going to labor is undoubtedly very low, while there is likewise a large portion of manufacturing labor not covered by the tax return for whom the percentage of wages income is probably quite high.

Section 6. Proportions paid in taxes.

In the foregoing discussion it has been explained that the total income created by each branch of economic or industrial activity has been divided between labor on the one side and enterprise and capital on the other side, without regard to how much either of them might be obliged to pay out in taxes. In the case of labor it is impossible to estimate how much of the salaries and wages go to the Federal, State, and local governments in taxes. The same is true of the taxes paid by investors upon their investments or upon the interest received from them; and of the income taxes paid personally by the owners of the unincorporated businesses. However, it was possible to estimate the amount of taxes paid directly by business enterprises to the various governments because of the fact that they owned taxable real estate or personal property, paid taxes for business privileges, and the like, and, in the case of corporations, because they paid income taxes. These are the taxes, the burden of which business enterprise is most conscious, because they figure as deductions from income in their annual financial statements.

Of the total income estimated at $70,000,000,000 in 1923, the taxes paid directly by business enterprises are estimated at $4,400,000,000, or 6.3 per cent of the total value of product. Five years earlier the proportion was 7.6 per cent. Whatever the ultimate incidence of their burden through their effect upon prices, the taxes referred to were paid immediately out of the share designated as

that going to enterprise and capital. It is appropriate, therefore, to compare them with that share. The taxes in 1923 amounted to 13.9 per cent of the gross return to capital and enterprise. In 1918, the proportion was 14.2 per cent; in 1919, 12.8 per cent; in 1920, 13.6 per cent; in 1921, 17.9 per cent; and in 1922, 12.8 per cent. Business enterprise, it is estimated, paid directly in taxes in these six years nearly $25,000,000,000, which was 13.9 per cent of the estimated gross return to capital and enterprise. However, because of the fact that the amount of taxes levied is in part independent of the earning power of the enterprises in the particular year, the tax proportion varied considerably with changing degrees of prosperity or depression.

Chapter XII

AGRICULTURE

Section 1. Estimated value created by agriculture.

In estimating the value created by the agricultural industry it is necessary to estimate the gross values of the various classes of agricultural products that were either sold off the farm or consumed as human food on the farm, and then estimate and deduct those operating costs of farmers that consist of payments to other businesses. Because stocks of products on farms, especially livestock, may be built up through production in any year of more than was sold, or may be depleted by selling more than was produced, the estimates of the gross value sold or consumed as human food must be adjusted to take account of the changes in these inventories.

The products of agriculture may be treated conveniently under the following heads: (1) The larger meat animals slaughtered; (2) dairy products; (3) poultry; (4) eggs; (5) wool and mohair; (6) honey and wax; (7) horses and mules sold off farms; (8) vegetable crops. The first seven all consist of animals or animal products.

Section 2. Estimated value of the larger meat animals slaughtered.

There is room for considerable latitude in estimating the values of these animals. Beeves, calves, sheep, lambs, goats, kids, and even horses are slaughtered on the farm, in retail slaughter houses, and in wholesale slaughter houses. The census of agriculture states the number of animals slaughtered on farms in 1919, but not the value, and does not state the number and value sold off farms. It does give an estimate of the total farm value of animals slaughtered on or sold off farms in that year. However, this estimate, $3,511,000,000, is less than a half billion dollars in excess of the figure given by the census of manufactures as the cost of animals slaughtered for their own account by wholesale slaughter houses. Inasmuch as these wholesale houses also slaughtered for others, animals of nearly $154,000,000 cost, while the farm value of animals slaughtered on farms must have been between $700,000,000 and $800,000,000, not to mention the slaughter in retail houses, or the value of horses, cows, and mules that were sold off the farms for purposes other than slaughter, this estimate by the census of agriculture seems very low.

Consequently it has been necessary in this inquiry to estimate the farm value of the larger meat animals that were slaughtered in the census year as well as in the other years under review. The process is long, roundabout, and tedious, and will not be described at this point. Those who are interested are referred to the Appendix, tables 33 to 39. The results are presented in Table 131.

TABLE 131.—*Estimated aggregate farm values of cattle, calves, sheep, lambs, hogs, goats, and kids slaughtered for food, by years, 1918 to 1923*

Year	Indices of aggregate values slaughtered [1]	Estimated farm values [2] (millions)	Year	Indices of aggregate values slaughtered [1]	Estimated farm values (millions)
1918	100.95	$4,556	1921	48.76	$2,213
1919	100.00	[2] 4,513	1922	55.20	2,497
1920	76.46	3,363	1923	58.80	2,670

[1] For derivation see appendix, Tables 28 to 30.
[2] For derivation see appendix, Table 30.

According to these estimates, the total farm value of all the larger meat animals slaughtered in continental United States was greatest in 1918, when it amounted to $4,556,000,000. It was only a few millions less in 1919. With the appearance of the industrial depression, which was especially severe and prolonged in agriculture, the estimated total farm value of these animals dropped nearly a billion dollars in 1920 as compared with the preceding year, and fell even more in 1921, so that in the last named year their estimated total value was only $2,213,000,000. The estimate for 1922 showed an increase of less than $300,000,000 over the preceding year, and the estimate for 1923, $2,670,000,000, was only 58.8 per cent as great as that for the census year 1919.

Section 3. The value of dairy products sold off farms or consumed on farms as human food.

Estimating this also presents certain difficulties even for the census year 1919, because of certain facts: (1) While the census of agriculture states the quantities and values of butter, butterfat, cream, and cheese produced or sold in 1919, it does not state the quantities of milk devoted to those purposes; nor is the quantity of milk consumed on farms either as human food or as animal food or both stated; (2) while it is possible to estimate the quantities of milk represented in the reported production of butter, butterfat and cream, there is no basis except pure conjecture on which to estimate the quantities and values of skim milk and buttermilk used for human as distinguished from animal food. However, an estimate was made. Detailed description of the process may be found in the appendix, Exhibit 1. (See p. 360.)

The Agriculture Yearbook publishes estimates of the values of various dairy products sold or made in the census and other years. From these estimates, indices have been derived of the values of dairy products in the other years under review as compared with the value in 1919. Description of their derivation may also be found in the appendix, Exhibit 1. (See p. 360.)

The results of these processes and the indices are presented in Table 132.

TABLE 132.—*Estimated value of dairy products sold off farms or consumed by farm families as human food, by years, 1918 to 1923*

Year	Value of dairy products sold and of butter, cheese, and buttermilk made [1]	Index numbers of total values	Estimated total value sold or consumed
1918		[2] 88.05	$1,669,000,000
1919	$1,900,000,000	100.00	[3] 1,878,000,000
1920	1,934,500,000	104.20	1,904,000,000
1921	1,529,500,000	90.10	1,605,000,000
1922	1,302,000,000	71.40	1,342,000,000
1923	1,821,400,000	90.00	1,610,000,000

[1] Estimates by the Department of Agriculture. See Yearbook of Agriculture, 1922 and 1923.
[2] In the absence of data for 1918, the index for that year is the percentage of the estimate for that year by the National Bureau of Economic Research ("Income in the United States," vol. 2, pp. 43 and 44), to its estimate for 1919.
[3] Central estimate of the value of dairy products.

According to these estimates the total value of dairy products sold off farms or consumed as human food on them in 1918 was $1,669,000,000. The value of these products increased during the next two years and amounted to over $1,900,000,000 in 1920. The effect of the depression is shown in a reduction of the total value of these products to about $1,500,000,000 in 1921 and a further reduction to about $1,340,000,000 in 1922. In 1923 the total value of these dairy products increased to slightly more than $1,600,000,000.

Section 4. Poultry production.

The census of 1920 states there were reported as raised in 1919, 405,488,930 chickens, valued at $332,256,763. Because of the number of chickens reported as being on farms that did not report the number of chickens raised, the census estimates that the total farm value of chickens raised was $386,240,367. The number reported as sold off farms was only 140,811,045, valued at $119,722,603. Inasmuch, however, as the total number of chickens reported as remaining on farms on January 1, 1920, was only 359,537,127, it is evident that, unless there was a tremenduous proportionate increase in the number of chickens on farms as compared with the beginning of 1919, there must either have been a larger sale or a large consumption of chickens as food for farm families or a large noneconomic death rate among old chickens. Comparison of the egg production of 1919 with that of 1909 and of later years indicates that there was not more than a nominal increase in the total number of chickens.

Therefore, the statistics of chicken and other fowl production rather than the statistics of sales are taken as probably the more accurately representing the net production of poultry.

The census of 1920 shows the number and value of all fowls on farms on January 1, 1920; but, excepting chickens, it does not show the number and value of fowls raised during 1919. If, however, it may be assumed that the same proportion held for the values of chickens and of all fowls raised during 1919 as for the respective values on farms on January 1, 1920, the total value of all fowls raised during 1919 may be estimated at $412,600,000.

The Agriculture Yearbook for 1923 estimates the number and value of chickens raised each year, commencing with 1919. If it may be

assumed that the values of all fowls raised varied in the same proportions, value indices may be derived for the later years as in Table 133.

The Yearbooks do not give estimates for 1918, however. The estimate for that year by the National Bureau of Economic Research[1] was 89.1 per cent of its estimate for 1919. Making use of that index, the net value of poultry produced in the various years is estimated as shown in Table 133.

TABLE 133.—*Estimated total value of all poultry sold off farms or consumed as food for farm families, by years, 1918 to 1923*

Year	Estimated value of chickens produced [1]	Indices of total values of poultry produced	Estimated total value of poultry produced
1918		[2] 89.1	$367,500,000
1919	$388,248,000	100.0	412,500,000
1920	412,734,000	106.8	440,500,000
1921	262,234,000	101.5	419,000,000
1922	378,480,000	97.0	404,000,000
1923	430,461,000	108.2	449,000,000

[1] Estimates by the Department of Agriculture. (See Agriculture Yearbook for 1923, p. 1038.)
[2] Percentage of estimate for 1918 to estimate for 1919, by National Bureau of Economic Research, "Income in the United States," vol. 2, p. 46.

According to these estimates the total farm value of all poultry produced in the United States in 1918 was $367,500,000. The total increased in 1919 and 1920 and amounted to nearly $441,000,000 in the latter year. It fell to $419,000,000 in 1921 and to a little over $404,000,000 in 1922, two years of severe agricultural depression. Although 1923 was also a year of severe depression in agriculture, the estimated total value of poultry produced advanced to $449,000,000.

EGG PRODUCTION.—The census of 1920 states that there were reported as produced in 1919, 1,571,329,190 dozens of chicken eggs, valued at $626,776,926. Because more than a half million farms reported chickens on hand on January 1, 1920, but did not report egg production for 1919, the census estimates the total chicken egg production for that year to have been 1,654,044,932 dozens, valued at $661,082,803.

Of these eggs, 1,010,813,258 dozens, valued at $404,562,912, were reported as sold. The actual quantities and values were probably larger. However, the statistical problem involved here is not to estimate merely the total income from sales, but the total farm value of eggs either sold off farms or consumed as human food on them.

To this end it must be remembered that every chicken raised accounts for one egg. Due to the mortality among young chickens and the spoilage during incubation from infertility and other causes, the actual ratio of eggs used to chickens raised is much higher. How much is not known; but following the lead of the National Bureau of Economic Research, a 2 to 1 ratio is assumed.

The estimate of the net production of eggs is shown in Table 134.

[1] Income in the United States, vol. 2, p. 45.

TABLE 134.—*Estimated total value of eggs sold off farms or consumed as human food by farm families, by years, 1918 to 1923*

[Quantities in million dozens]

Year	Quantity of eggs produced [1]	Number of chickens raised [2]	Number of eggs used in producing chickens [3]	Quantity of eggs sold or used as food	Average farm price per dozen (cents) [4]	Estimated total value (millions)
1918						[5] 525
1919	[5] 1,554	39.44	79	1,475	40.88	844
1920	1,647	39.56	79	1,568	44.03	690
1921	1,888	45.31	92	1,796	29.26	525
1922	1,971	48.07	97	1,874	25.28	474
1923	2,196	54.52	109	2,087	27.27	570

[1] Department of Agriculture, Crops and Markets, February, 1924, p. 49.
[2] Allowing 2 eggs for each chicken raised, and rounding off.
[3] The same proportion to the estimate for 1919 as the estimate for 1918 made by the National Bureau of Economic Research is to its estimate for 1919; see Income in the United States, vol. 2, p. 46.
[4] Census of 1920, Vol. V, p. 677.

According to these estimates, the total value of chicken eggs sold off farms or consumed as human food on them in 1918 was $525,000,000. The total value increased during the next two years so that it was $690,000,000 in 1920, but it was again $525,000,000 in 1921 and declined to $474,000,000 the next year. The total value of eggs sold or used as human food increased again in 1923 when its estimated amount was $570,000,000.

Section 5. Miscellaneous agricultural products.

VALUE OF WOOL AND MOHAIR PRODUCED.—The census of 1920 states the value of wool and mohair produced on farms in 1919 at $124,007,000. Of this, $3,589,000 was the value of mohair.

The Agriculture Yearbook estimates both the aggregate production of fleece wool each year and the weighted average farm price of it, but does not show the production or value of mohair. Desk sheets of the Division of Livestock Estimates of the Department of Agriculture, however, give estimates of these values. These data have been furnished to this inquiry for 1919 to 1923, respectively.

The Agriculture Yearbook shows 256,870,000 pounds of fleece wool produced in 1918 and gives 57.9 cents as the average price realized per pound by the farmer. According to these data, the total value realized by farmers for their wool crop in that year was $148,700,000. This value may be used with those for 1919 to 1923, respectively, obtained from the desk sheets. The resulting estimates are shown in Table 135.

TABLE 135.—*Estimates of the value of wool and mohair produced, by years, 1918–1923*

[Values in thousands]

Year	Estimates by the Department of Agriculture			Index	Estimated total value of wool and mohair produced
	Wool	Mohair	Total		
1918	[1] $146,700			[1] 1.182	$146,080
1919	[2] 125,728	$3,629	$129,318	[1] 1.000	124,607
1920	[2] 91,387	2,788	94,675	[1] .732	90,773
1921	[2] 36,582	1,170	37,752	[1] .292	36,210
1922	[2] 60,323	2,124	68,447	[1] .529	66,600
1923	[2] 87,284	3,671	90,946	[1] .703	87,177

[1] Value of 250,870,000 pounds of fleece wool, at average farm price of 57.9 cents, as per Yearbook of Agriculture.
[2] Ratio of value of wool in 1918 to value of wool in 1919.
[3] Values supplied by Department of Agriculture from desk sheets.
[4] Ratios of total sales into total value in 1919.

According to these estimates, the farm value of wool and mohair produced in the United States was over $145,000,000 in 1918. The value of these products diminished rapidly during the next three years to $124,000,000 in 1919, $91,000,000 in 1920, and to only a little over $36,000,000 in 1921. The value of these products increased during the last two years of the half decade comparison, being nearly $66,000,000 in 1922 and over $87,000,000 in 1923. In any event, however, wool and mohair are relatively unimportant items in the total value of agricultural products.

VALUE OF HONEY AND WAX PRODUCED.—The census states amounts for the values of honey and wax produced on farms in census years. The census itself states, however, that those amounts may be wide of the truth for several reasons. Beekeeping is relatively so rare that the census enumerators probably forgot to make the inquiries in a considerable proportion of the cases. Where the questions were asked and bees found, the farmers in a large proportion of the cases had not kept production or sale records and were not able even to make a good estimate.

Hence, the present estimates probably contain a large percentage of error. However, the whole amount involved is only in the 'teens of millions, and the errors make no appreciable effect upon the final results which deal with billions of dollars.

The Agriculture Yearbook does not publish estimates of the value of honey and wax produced. Estimates for 1919 to 1923, respectively, were, however, obtained from desk sheets of the Division of Crops and Livestock Estimates of the Department of Agriculture. On the basis of these and the census of agriculture, estimates were made as in Table 136.

TABLE 136.—*Estimates of the value of honey and wax sold off farms or consumed as human food on farms, by years, 1918 to 1923*

[Values in thousands]

Year	Value produced, estimates of the Department of Agriculture [1]	Indices of values produced	Final estimate
1918		[2] 1,125	$16,085
1919	$12,798	1,000	[3] 14,280
1920	15,956	1,245	17,800
1921	8,565	.670	9,560
1922	9,858	.771	11,000
1923	10,210	.799	11,400

[1] Furnished by Department of Agriculture. Division of Crops and Livestock Estimates, from desk sheets.
[2] Interpolated by assuming the same proportion of value in 1918 to value in 1919 for all other animal products.
[3] Census valuation. See text for comment on accuracy.

According to these estimates, the value of honey and wax produced was almost a negligible item in the total of all agricultural products. Its greatest amount came in 1920, when it was less than $18,000,000, and its smallest less than $10,000,000 in 1921. Over the half decade it diminished from a little over $16,000,000 in 1918 to $11,400,000 in 1923.

Section 6. Value of horses and mules sold off farms.

The Agriculture Yearbook gives the value of horses and mules on farms as of January 1 each year and for each year from 1919 to 1923 the values of horses and mules produced. Under another topic account is taken of the changes in livestock inventories. Hence, it is necessary in this connection to estimate the value of horses and mules sold off farms.

By adding the production of each year to the inventory at the beginning of the year and subtracting the inventory value at the end results are obtained that constitute estimates of the values sold. The data furnished these estimates for the six years 1919 to 1924. By multiplying the yearly receipts of horses and mules at the principal markets in 1918 and 1919 by their average prices, values are obtained for these receipts. By comparing the total values in 1918 with the total in 1919 a ratio is obtained that permits an estimate to be made for the former year. The results are shown in Table 137.

TABLE 137.—*Estimates of the values of horses and mules sold off farms, by years 1918 to 1923*

[Values in millions, numbers in thousands]

Year	Value on farms Jan. 1 [1]	Value produced [2]	Value sold	Number received at principal markets	Weighted average prices [3]	Indices of values
1918	$2,875		[4] $359	1,216	$130	1,215
1919	2,788	$206	293	1,067	121	1,000
1920	2,743	169	273			
1921	2,266	188	645			
1922	1,820	195	625			
1923	1,772	177	249			
1924	1,634					

[1] Values 1918 to 1922, respectively, from Yearbook of Agriculture, 1921, p. 634; values for 1923 and 1924 from the Yearbook for 1923, p. 1010.
[2] Yearbook of Agriculture, 1923, p. 1010. The value for 1923 is a preliminary estimate.
[3] Yearbook of Agriculture, 1923.
[4] This amount is 1.215 times the amount for 1919.

According to these estimates, the value of horses and mules sold off farms was $359,000,000 in 1918. That was a war year, during which such animals were being purchased in large quantities for use in the military organizations of the United States and its European associates. The value of horses and mules sold declined during the next two years and amounted to $273,000,000 in 1920. The estimates indicate a relatively large increase in the money value of these animals during the next biennium. The estimated value sold in 1921 was $645,000,000; in 1922, $625,000,000. This large increase, which accompanied a large decline in the inventory value of all livestock during 1921 and in the inventory value of horses and mules in both years, may have been caused by the efforts of certain farmers to obtain cash funds during the severe agricultural depression and by the financial failure of others or their abandonment of farming. The total value of such animals sold off farms dropped to $249,000,000 in 1923.

Section 7. Variations in the inventories of livestock on farms.

The livestock slaughtered on farms or sold off them may fall short of or may exceed the value of the livestock produced. In the one case the gross value of livestock produced exceeds the value slaughtered or sold; in the other it falls short. Hence, the gross value figures obtained by dealing with sales and slaughter must be adjusted by taking into account the inventory changes.

The census enumeration of all livestock on farms, including poultry and bees as well as cattle, sheep, hogs, goats, horses and mules, gave total valuation of slightly over $4,925,000,000 in 1910 and slightly over $8,013,000,000 on January 1, 1920. The Agriculture Yearbook estimates do not include goats, kids, bees or poultry, other than chickens, except on January 1, 1920, and January 1, 1924, nor chickens prior to January 1, 1920. Its valuation for milk cows, other cattle, swine, sheep, horses and mules April 15, 1910, was $4,910,975,000; and on January 1, 1920, was $8,165,194,000. The census valuation of all animals, including goats, poultry and bees, was 1.002 times the Agriculture Yearbook estimates for 1910 and 0.9814 times the estimate for 1920. Since the average annual change in this ratio is only 0.00106 points, no adjustment need be made for this varying degree of accuracy of yearbook valuations.

Accordingly indices have been found, taking January 1, 1920, as the base. The index numbers for January 1, 1918, and January 1, 1919, were formed by comparing yearbook valuations of milk cows, other cattle, sheep, swine, horses and mules. The yearbook valuations on which the index numbers for later years were based include the value of chickens also.

These index numbers were applied to the census valuation as of January 1, 1920, to estimate the probable values of all animals on farms at the other dates shown in Table 138. The successive differences between these inventory values constitute the required increases or decreases which are shown in the table.

TABLE 138.—*Estimated variations in the value of livestock inventories on farms, on January 1, by years, 1918 to 1924*

[Values in millions]

Year	Valuations of— Milk cows, other cattle, sheep, hogs, horses, and mules [1]	Valuations of— Milk cows, other cattle, sheep, hogs, horses, mules, and chickens [2]	Ratios of values in specified years to census year	Estimated value of all domestic animals on farms [3]	Estimated increase or decrease of inventory [3]
1910	$4,911				
1918	8,284		1.015	$8,140	+$580
1919	8,828		1.032	8,078	−557
1920	8,165	$8,516	1.000	[4] 8,013	−2,023
1921		6,371	.748	6,093	−1,140
1922		5,148	.615	4,890	+370
1923		5,543	.651	5,220	−260
1924		5,208	.619	4,960	

[1] Compiled from Agriculture Yearbook, 1923, various pages.
[2] Products of $8,013, by the respective ratios in third column.
[3] Successive differences between the values; those marked with a plus sign represent increases, those with a minus sign represent decreases.
[4] Census valuation; includes goats, kids, bees, and all poultry as well as the animals named in first column.

According to these estimates there were tremendous decreases in the value of livestock on farms during the three years 1919 to 1921, inclusive. The decrease of more than $2,000,000,000 in 1920 and of more than $1,000,000,000 in 1921 affect very largely the estimates of the total value created by agricultural industry in those years. The latter year was one of great reduction in the prices of agricultural products. Question arises as to how much of these reductions in inventory values was caused by a reduction in the number of animals on the farms and how much was caused by the decline in prices. Index numbers of the number and value of the various kinds of animals on farms are shown in appendix Tables 40 and 41.

The tables referred to show that during 1919 the number of sheep and hogs on farms was reduced about one-fifth and their farm prices 10 to 15 per cent. These account mainly for the decrease of $657,000,000 in the total inventory value in that year.

There was no marked reduction in the number of animals on farms during 1920. There was, however, a general and large decline in the prices that could be realized by the farmer—13 per cent for horses, 21 per cent for mules, 25 per cent for milk cows, 28 per cent for other cattle, 32 per cent for hogs and 40 per cent for sheep. Evidently the $2,000,000,000 reduction in inventory value in 1920 was due mainly to "price deflation."

On the whole, the number of animals increased during 1921. A further large decline in prices, however, converted this into an inventory loss of $1,140,000,000.

Section 8. Gross value of all vegetable crops.

The census states the gross value of the recorded vegetable crops produced in 1919 at $14,755,000,000. The Agricultural Yearbook puts the value at $15,423,000,000. The former is 95.67 per cent of the latter. It is assumed that the census figure, being the result of an enumeration, is the more nearly correct; also that the same

corrective factor should be applied to the yearbook values for other years. The resulting probable values of the recorded crops are shown in the third column of Table 139.

To these have been added a few millions to represent the values of produce from nonrecorded gardens. The amount for 1919 is chosen on rather arbitrary assumptions. The amounts are assumed to vary from year to year in proportion to the values of the recorded crops.

The Agriculture Yearbook, 1923, pp. 1144–1145, presents estimates of the gross values of all crops, of animal products, and of all agricultural products not fed to livestock. It assumes that there is fed to livestock 75 per cent of the barley, 85 per cent of the corn, 90 per cent of the grain sorghums, 80 per cent of the oats, 20 per cent of the rye, 6 per cent of the wheat, 85 per cent of the hay, 100 per cent of the forage, 10 per cent of the potatoes, and 15 per cent of the sweet potatoes. These evidently are rough percentages. The three sets of values referred to imply certain values of produce fed to livestock. The same corrective factor, 95.67 per cent, has been applied to these as was applied to the yearbook figures for gross values. The result is the set of estimates shown in the sixth column of Table 139.

The seed requirement has been estimated by multiplying the yearbook figures for the acreage of each crop by its figures for the average amount of seed required per acre and valuing these at the average price prevailing for the preceding harvest.

Deduction of the feed and seed requirement gives the value of crops sold off the farm, shown in the last column of the table.

TABLE 139.—*Estimated value of crops sold off farms or consumed for human food on farms, by years, 1918 to 1923*

[Amounts in millions]

Years	Gross value of crops; estimate of Department of Agriculture [1]	Gross value of crops [2]	Value of nonrecorded gardens [3]	Total value of all crops	Value of crops fed to livestock [4]	Cost of seeds used [5]	Net value of all crops
1918	$14,381	$13,716	$92	$13,808	$5,603	$304	$7,905
1919	15,428	[2] 14,755	99	14,854	5,713	427	8,729
1920	10,909	10,437	99	10,700	4,200	412	6,094
1921	6,834	6,534	45	6,579	2,373	214	4,052
1922	8,846	8,456	57	8,515	3,316	210	5,188
1923	9,233	8,822	64	8,886	3,503	210	5,453

[1] Agriculture Yearbook, 1923, p. 1145.

[2] $\frac{14,755}{15,422}$ or 95.67 per cent of values in the first column.

[3] Based upon 707,000 farm gardens (per census of 1919) and Farm Bulletin 681, in which W. C. Funk shows that the average garden produced 362 in 1909. This would give a valuation of $37,200,000 for farm gardens in that year. It is assumed that the values of farm gardens in 1918 to 1923, respectively, bore the same proportions to the values of the recorded crops as in 1909.

[4] 95.67 per cent of the difference between the aggregate gross values of crops and animal products and the aggregate excluding crops fed to livestock, as shown in Agriculture Yearbook for 1923, p. 1145.

[5] Estimated on the basis of the acreage planted as per the Agriculture Yearbooks, the average seed requirements per acre as per data furnished by the Department of Agriculture, and the average prices of the products in the preceding year as per various publications of the Department of Agriculture.

[6] Census of 1920, Vol. V, p. 700.

According to these estimates, the total value of all vegetable crops, including gardens in cities and villages, increased from

$13,803,000,000 in 1918 to $14,854,000,000 in 1919, then declined to $6,679,000,000 in 1921. It rose during the last two years of the half decade and amounted to $9,586,000,000 in 1923. Even this amount, however, was more than one-third less than the amount for 1919.

A very considerable portion—about 40 per cent in value—of all the crops raised on farms is fed to livestock and becomes represented in livestock values, or in dairy and poultry products. Seed requirements also cause the net available products to fall short of the total produced.

It is estimated that the value of vegetable crops sold off farms or consumed as human food on them in 1918 was about $7,900,000,000. The value of these products increased to more than $8,700,000,000 in 1919, but declined to less than $6,100,000,000 in 1920 and to less than $4,100,000,000 in 1921. During the last two years of the half decade, the value of these products increased and amounted to nearly $5,700,000,000 in 1923. Even this amount, however, was more than $2,200,000,000, or 28 per cent less than at the beginning of the 5-year period.

Section 9. Summary of estimates of all farm products.

Table 140 brings together all these estimates of the values of the various farm products. These estimates do not include any amount for increase in farm values due to improvements. It is believed that this is not an important omission. The National Bureau of Economic Research estimated these improvements at $405,000,000 in 1918, $520,000,000 in 1919, and $177,000,000 in 1920.[1] There may have been a certain amount of farm improvement in the ensuing three years. However, there was an exceedingly severe depression in the agricultural industries during those years—so severe that in the principal agricultural States west of the Mississippi River over one-fourth the farmers either lost their farms through foreclosure, or abandoned them, or retained them only through the leniency of their creditors who could not have recovered their loans had they taken the farms.[2] Therefore, it is inferred that such improvements as were made on certain farms were counterbalanced by the deterioration of others to such an extent that on the whole there was no net improvement.

TABLE 140.—*Estimated gross value of all farm products sold off farms or consumed as human food on farms, by years, 1918 to 1923*

[Amounts in millions]

Years	All farm products	Large meat animals slaughtered	Dairy products	Poultry and eggs	Wool and mohair	Honey and wax	Horses and mules sold	Increase or decrease in livestock inventory	All vegetable crops
1918	$18,074	$4,556	$1,069	$893	$146	$16	$360	+630	$7,906
1919	15,283	4,643	1,890	1,037	124	14	293	−657	8,729
1920	11,062	3,663	1,905	1,131	91	18	273	−2,013	6,094
1921	8,308	3,213	1,905	914	38	10	245	−1,142	4,092
1922	10,990	2,507	1,343	878	66	11	625	+370	5,190
1923	11,076	2,670	1,617	1,019	87	11	240	−209	5,083

[1] National Bureau of Economic Research, "Income in the United States," Vol. II, p. 55.
[2] Federal Trade Commission report on "Taxation and Tax-exempt Securities," p. 124.

The total value of agricultural products sold off farms or consumed as human food on them in 1923 is estimated at $11,076,000,000. For 1918, the beginning of the half decade, the estimate was $16,074,000,000, or practically five billions of dollars more. According to these estimates, the total value of these products declined year by year until 1921. The amount was a little less than $16,000,000,000 in 1919, a little more than $11,000,000,000 in 1920, and only $8,300,000,000 in 1921. There was recovery in the total value during the last two years under review, so that it amounted to nearly $11,000,000,000 in 1922 and a little more than $11,000,000,000 in 1923.

Section 10. Payments made by farmers to other industries.

Seed requirements have already been covered by giving the net values of the crops. The principal deductions from the foregoing results that must be made in order to arrive at the estimate of the net value product are for cost of fertilizer; for depreciation and maintenance of agricultural equipment, saddles, harness, and automobiles used for farm business; the automobile operating expenses; and interest on bank loans.

For the most part it is possible to estimate the items of maintenance and depreciation only as these are represented by their substitutes, namely, the purchase cost of new implements, saddles, harness and automobiles.

ESTIMATED VALUE OF SADDLES AND HARNESS PURCHASED.—Data on this subject are very meager. Description of the data and the process of using them to make the estimates may be found in the appendix, Exhibit 2 (see p. 362). Table 141 presents the data, the process, and the results in tabular form.

TABLE 141.—*Estimated value of harness and saddles used on farms, by years, 1918 to 1923*

Year	Indices of		C	D	E
	A Wholesale prices harness, calf [1]	B Employment [2]	Indices of total values A×B	Census of manufactures	Preliminary estimate of value of harness and saddles [3]
1918	0.911	0.8573	0.8721		$73,000,000
1919	1.000	1.0000	1.0000	$83,715,000	83,715,000
1920	.946	.9348	.8750		78,240,000
1921	.577	.7216	.4164	34,164,000	34,858,000
1922	.550	.8463	.4650		41,513,000
1923	.512	.8787	.4578	42,122,000	46,021,000

[1] Wholesale Prices, Bureau of Labor Statistics.
[2] Monthly Labor Review, Bureau of Labor Statistics.
[3] Column C multiplied by the census total for 1919.

TABLE 141.—*Estimated value of harness and saddles used on farms, by years, 1918 to 1923*—Continued

Year	F Ratio estimate enumerated amount E÷D	G Per centage of correct amount in column E	H Final estimate of value of harness and saddles E÷G	I Estimated value of harness and saddles used on farms [1] (69.33 per cent of H)
1918		[1] 92.23	$39,105,000	673,993,000
1919	100.00	100.00	83,713,000	77,282,000
1920		[2] 107.78	97,002,000	62,749,000
1921	115.50	115.50	80,154,000	27,956,000
1922		[2] 111.22	37,325,000	34,482,000
1923	100.55	100.55	42,123,000	38,592,000

[1] The census total for 1920 indicates the percentage of horses and mules on farms to be 92.23 of the total for the United States.
[2] Interpolated along a straight line.

According to these estimates, shown in the last column of the above table, the value of saddles and harness used on farms was an item varying in the tens of millions of dollars. It fluctuated greatly from more than $77,000,000 in 1919 to less than $28,000,000 in 1921, and was slightly less than $39,000,000 in 1923.

THE COST OF FERTILIZER USED BY FARMERS.—The census shows the value of fertilizers produced in the United States at $281,114,000 in 1919, $180,375,000 in 1921, and $183,089,000 in 1923.

There are neither quantity, price, nor value indices extant on which to base estimates for the noncensus years. Hence, an indirect process had to be resorted to. Description of it may be found in the appendix, Exhibit 3, page 362. However, the basic data, process, and results are presented in tabular form in Table 142.

TABLE 142.—*Estimated value of fertilizer consumed on farms, by years, 1918 to 1923*

(Amounts in thousands)

Year	Inspected slaughter in 1,000,000 pounds [1]				Index		
	Cattle and calves	Hogs	Sheep and lambs	Total	Quantities [2]	Price [3]	Value [4]
1918	5,078	7,433	405	12,916	104	113.6	123.8
1919	5,378	7,360	500	13,435	100	100	100
1920	4,616	6,700	438	10,847	81	117.3	95
1921	4,189	6,008	450	10,698	80	71	56.3
1922	4,382	6,504	383	11,220	86	81.3	69.9
1923	5,202	8,566	447	14,264	106	81.6	86.3

[1] Obtained from issues of Survey of Current Business (February numbers).
[2] May, 1923, issue of Survey of Current Business gives indices of quantities for various years. Those of 1918 are for cattle, hogs, and sheep, 100, 101, and 91, respectively. These, when used against quantities (pounds) for 1919 give above quantities.
[3] Weighted averages of the wholesale price indices of six ingredients reported by Department of Labor, Bureau of Labor Statistics, "Wholesale Prices" various numbers.
[4] Obtained by multiplying indices of prices by those of quantities.

TABLE 142.—*Estimated value of fertilizer consumed on farms, by years, 1918 to 1923*—Continued

Year	Preliminary estimate of values produced	Corrective factor	Corrected estimated values	Census year values [3]	Excess of imports over exports [4]	Values
1918	$346,650	[2] 0.9362	$324,187		$466	$324,463
1919	[5] 281,144	[2] 1.0000	281,144	$281,144	−8,851	272,190
1920	267,087	[2] 1.0648	284,304		14,598	298,902
1921	159,690	[2] 1.1296	180,370	180,370	14,671	194,941
1922	148,726	[2] 1.0646	158,302		28,483	186,345
1923	183,587	[2] .9973	183,089	183,089	43,333	226,412

[1] Values obtained and reported by the census of manufactures.
[2] Obtained from the various issues of Commerce and Navigation.
[3] These factors were obtained by straight-line interpolation.
[4] Census compilation used as base in estimating other values in column.
[5] Ratio of amount reported by the census to the corresponding amount in the preceding column.

According to these estimates the value of fertilizer used on the farms of the United States in 1918 was a little less than $325,000,000. It fluctuated considerably during the half decade, falling as low as $187,000,000 in 1922, and amounted to something over $226,000,000 in 1923.

THE COST OF AGRICULTURAL IMPLEMENTS USED UP.—The census of manufactures stated the factory-door value of agricultural equipment sold by manufacturers to dealers in the United States at $471,442,000 in 1920, $222,908,000 in 1922, and $312,000,000 in 1923. It also gives the value so sold in 1921 at a little under $75,000,000. This, however, included only complete machines, omitting all accessories and extra parts. The bulletins give the factory-door value of all such equipment manufactured each year commencing with 1919, and the Statistical Abstract states the value of exports of agricultural equipment. By deducting the latter from the former in 1919 and 1921, estimates of the factory value of such equipment that was sold to dealers in the United States in those years are afforded. They are $264,000,000 and $276,000,000, respectively. These are not exact, because by building up or drawing down inventories of finished stock on hand the values sold may fall short of or exceed the values produced.

A report of this commission [4] indicates that the net sales in the United States of 22 implement companies in 1918 were about $260,000,000. It is estimated that these companies transacted 91.5 per cent of the implement business, hence that the sales of all companies in that year amounted to about $284,000,000.[4]

Data contained in the same report indicate that the prices of agricultural implements to the farmers are normally about 25 per cent above the costs to the retailers, or, taking freight into consideration, about 30 per cent above the prices at the factory door. This percentage was applied and added to the total factory-door values mentioned above.

[4] Causes of the High Prices of Farm Implements (1920), pp. 86, 111, 116, and 120.

Question arises as to the portion of these purchases that provides replacement of equipment used up. In Table 143 the results stated above are summed up and an estimate is made of the total tonnage of agricultural implements sold by the factories to the dealers each year.

TABLE 143.—*Factory values and tonnage of agricultural equipment sold by manufacturers, by years, 1918 to 1923*

[Values in millions, quantities in thousands]

Year	Value in the United States	Sold for export	Total value sold	Per cent of total value sold in United States	Total tonnage originating on railways[7]	Estimated tonnage sold in United States
1918	[1] $284	[2] $30	[3] $317	89.6	1,700	1,518
1919	[1] 264	[2] 41	[4] 305	86.6	1,977	1,711
1920	[1] 471	[2] 67	[4] 538	87.6	3,324	2,911
1921	275	[5] 53	[4] 328	84.0	1,607	1,400
1922	323	[6] 22	[4] 345	91.2	1,720	1,569
1923	312	[5] 49	361	86.3	2,505	2,240

[1] Estimated by subtracting the total reported value exported from the total value manufactured, shown in third column.
[2] Statistical Abstract of the United States for 1920.
[3] Estimated value manufactured. The sales of 23 implement companies, whose business amounted to about 91.5 per cent of the total, were $339,000,000 in 1918 (see report of the Federal Trade Commission on the Causes of High Prices of Farm Implements, pp. 88, 111, 118, and 120).
[4] Value manufactured; value sold not known.
[5] Census bulletins on the manufacture and sale of farm equipment.
[6] Estimated by dividing the total value manufactured in proportion to the values of complete machines sold in the United States and sold for export, respectively.
[7] Interstate Commerce Commission, 'Statistics of Railways,' various years.

It is probable, because of the severe agricultural depression, that the equipment purchased by farmers in 1921, 1922, and 1923 was confined for the most part to replacements. The growing tonnage probably represented replacements that could no longer be deferred. It is likely that the purchases in 1918 were also largely for replacement purposes. On this line of reasoning it is estimated that the average annual replacement need was 1,675,000 tons. Taking the proportion of this tonnage to the total estimated retail value of equipment purchased by farmers in each year, the estimates of the value of agricultural implements used up in the various years result as in the last column of Table 144.

TABLE 144.—*Estimates of the investment in agricultural equipment that was consumed on farms, by years, 1918 to 1923*

[Quantities in thousands, values in millions]

Year	A Estimated tonnage of agricultural equipment sold in United States[1]	B Per cent of 1,675,000 tons tonnage sold[2]	C Total Factory value of equipment sold in United States[3]	D Estimated retail value of equipment bought by farmers[4]	E Estimated consumption of investment in agricultural equipment B×D÷100
1918	1,518	110.3	$284	$369	$407
1919	1,711	97.9	264	343	336
1920	2,911	57.5	471	606	362
1921	1,400	119.6	275	359	429
1922	1,569	106.7	323	290	310
1923	2,240	74.8	312	406	303

[1] See Table 143.
[2] 1,675,000 is the estimated tonnage needed for annual replacement.
[3] Column C×1.30.

INTEREST ON BANK LOANS.—The United States Department of Agriculture sent a questionnaire to banks throughout the country requesting them to report the amount of their personal and collateral loans to farmers outstanding on December 31, 1920. The response from 10,261 banks showed a total of such loans that amounted to nearly $1,587,000,000. On the basis of these reports, the department estimated that the total of such loans held by all banks was in round numbers $3,870,000,000.

The department also gathered information as to the rates of interest on such loans. Applications of the prevailing rates of interest for the respective States to the estimated loans in those States results in an estimate of $317,000,000 as the probable amount of interest that would have been paid on the above-mentioned amount of loans if it had been outstanding continuously throughout the year. As a matter of fact, it is probable that the volume of loans was greater than this during a considerable portion of the year.

In 1924 the department sent out another questionnaire on the same subject, requesting the banks to report as of December 31, 1923. The final estimate on the basis of the reports was not completed at the date of preparing this text. The preliminary estimate, subject to revision, however, and made on a basis strictly comparable with the estimate for 1920, shows personal and collateral loans by banks to farmers amounting to $2,944,000,000. Interest on this amount for one year at the rates found prevailing would be $230,000,000.

These two amounts, as already intimated, probably understate the true amounts of interest paid (or obligated) by farmers to banks for short-time loans. The amount estimated for 1920 was 2.40 per cent of the gross value of all farm products sold off farms or consumed as human food on them; that for 1923, 2.04 per cent. What the course of these interest charges was in 1921 and 1922, which were years of severe financial distress in agriculture, is not known. It is assumed to have changed uniformly from the proportion in 1920 to that in 1923, namely, to 2.28 per cent in 1921 and 2.16 per cent in 1922. For 1918 and 1919 it will probably serve the purpose to assume the same proportions as in 1920, or 2.40 per cent of the gross value. On these assumptions, the amounts paid by farmers to banks as interest on short-time loans are estimated as follows:[6]

1918	$374,000,000
1919	402,000,000
1920	317,000,000
1921	205,000,000
1922	220,000,000
1923	230,000,000

COST OF OPERATING AUTOMOBILES AND TRACTORS FOR FARM PURPOSES.—The Department of Agriculture published in Crops and Markets for January, 1924,[7] the results of a survey in 1923 of the ownership of automobiles by farmers and the costs of operating these. The survey covered one county in Pennsylvania, three in Kansas, four in South Dakota, seven in Montana, two in Colorado, and the Palouse country of Washington and Idaho.

[6] This estimate covers only bank loans to farmers. In addition to this interest would be paid on a considerable amount of indebtedness to merchants furnishing supplies.
[7] Monthly Supplement, p. 3.

This survey showed among other things that the average operating cost of a touring car for the year was $270 in Pennsylvania, $228 in Kansas, $214 in South Dakota, $189 in Montana, $217 in Colorado, and $289 in the Palouse country. The costs included were for gasoline, oil, tires, repairs, license fees, and depreciation.

It is possible by constructing and applying index numbers of the prices of gasoline, oil, tires, etc., to estimate the like costs in other years; and by multiplying the results by the estimated number of cars to which they apply, to form estimates of the total costs of operating farmer-owned automobiles. It is presumed that the Department of Agriculture followed such an appropriate procedure in arriving at its estimates [1] published recently for the crop years 1919–20 to 1923–24, inclusive. These estimates were as follows:

1919–20	$739,000,000
1920–21	805,000,000
1921–22	782,000,000
1922–23	826,000,000
1923–24	846,000,000

The crop year varies with the crop. What the termination of the year used for estimating automobile and tractor operating expense was is not known. It is assumed that the amounts apply to the calendar years 1919 to 1923, respectively.

If, on this basis, the proportion of this class of expense to the total expenses paid to other industries be ascertained for each year, the trend of these proportions will be found to be such as to indicate that in 1918 automobile and tractor operating expense was about 38 per cent of the total. From this is it estimated that this item of expense amounted to $676,000,000 in 1918.

TOTAL EXPENSES PAID TO OTHER INDUSTRIES.—Table 145 summarizes the estimates of amounts paid away to other industries.

TABLE 145.—*Estimated costs paid by farmers to other industries, by years, 1918 to 1923*

Year	Total payments	Implements	Fertilizer	Operating expenses for autos and tractors	Harness and saddles	Interest on bank loans
1918	$1,855	$407	$325	[1] $676	$73	$374
1919	1,920	336	272	[2] 728	77	482
1920	1,835	302	209	[2] 805	63	317
1921	1,638	429	105	[2] 781	29	206
1922	1,577	310	197	[2] 826	34	220
1923	1,643	309	236	[2] 846	39	250

[1] Interpolated by estimating, on the basis of trends, that in 1918 auto and tractor operating expense constituted 38 per cent of the total costs paid away to other industries.
[2] Estimated by United States Department of Agriculture on crop-year basis.

According to these estimates, the total payments by farmers to other industries as a part of the costs of farm products or as deductions from their gross income amounted to $1,855,000,000. These total expenditures were slightly less in 1919 and 1920. They dropped to $1,638,000,000 in 1921, and to $1,577,000,000 in 1922. They increased to $1,643,000,000 in 1923.

[1] Income from agricultural production in the United States, 1919–1924, Table II.

Of the total, the operating expenses for automobiles and tractors constituted by far the largest portion, being more than half in 1923 and more than one-third at the beginning of the half decade. The cost of farm implements used up came second, being a little less than one-fifth of the total. Interest on bank loans and fertilizer costs were nearly the same in 1923.

Section 11. Estimate of the total value created by Agricultural industry.

The previous estimates may now be brought together to produce the estimates of the total value-product of agriculture. This is done in Table 146.

TABLE 146.—*Estimates of the total value created by Agriculture, by years, 1918 to 1923*

Year	Value of products sold off, or consumed as human food on farms	Total operating expenses paid to other industries	Value created by agriculture
1918	$16,074,000,000	$1,855,000,000	$14,219,000,000
1919	14,852,000,000	1,220,000,000	14,152,000,000
1920	11,052,000,000	1,830,000,000	9,226,000,000
1921	8,305,000,000	1,698,000,000	6,607,000,000
1922	10,800,000,000	1,377,000,000	9,413,000,000
1923	11,076,000,000	1,643,000,000	9,433,000,000

According to these estimates, the value created by agricultural industry was $14,219,000,000 in 1918, but only $9,433,000,000 five years later, in 1923. At the depth of the agricultural depression in 1921 it amounted to only 6⅔ billions of dollars.

Section 12. Shares in the value created by agriculture.

The census of agriculture for 1919 [1] reported that in that year the farmers of the United States paid $1,356,000,000 as wages of hired employees. This included not only the actual cash payments but also an estimate of the value of board and lodging furnished to hired hands.

The Department of Agriculture, taking this figure as a base and increasing it 10 per cent to allow for labor contributed toward production by domestic servants, estimates the total hired wage bill for the various crop years as follows:

1919–20	$1,492,000,000
1920–21	1,730,000,000
1921–22	1,103,000,000
1922–23	1,074,000,000
1923–24	1,203,000,000

The crop year differs from the calendar year by varying amounts according to the crop and the region.

The Yearbook of Agriculture published indices of average wage rates paid to hired farm hands when they work. It also published data concerning the acreage sown. If it be assumed that the need and use of hired labor varies with the acreage sown, estimates of the total hired labor bill may be made as in Table 147.

[1] Census of 1920, Vol. V, p. 603.

TABLE 147.—*Estimates of the aggregate wages paid by farmers to hired farm workers, by years, 1918 to 1923*

Year	Indices of wage rates [1]	Indices of acreage sown [2]	Indices of total wages [3]	Estimated total wages
1918	0.8875	1.000	0.8875	$1,178,000,000
1919	1.000	1.000	1.000	[4] 1,326,000,000
1920	1.150	.935	1.149	1,525,000,000
1921	.770	1.035	.809	1,097,000,000
1922	.748	1.055	.795	1,055,000,000
1923	.835	1.059	.885	1,173,000,000

[1] Agricultural Yearbook, 1920, p. 808, and 1923, pp. 1139 and 1146. The index numbers have been converted to a base of unity in 1919.
[2] Indices of wage rates × indices of acreage shown.
[3] Census of 1920, vol. 5, p. 883.

In addition to this hired labor, the farmers themselves and members of their families furnish much labor, indeed probably more than is hired. The Department of Agriculture estimates the value of such labor at $5,314,000,000 in the crop year 1919–20, $6,131,000,000 in 1920–21, $4,089,000,000 in 1921–22, $3,945,000,000 in 1922–23, and $4,428,000,000 in 1923–24. The remuneration for this labor of farmers and members of their families, however, is not separable from the return to the investment in the farm enterprises.

These estimates of the shares in the value created by agriculture are brought together in Table 148, the composite share of the farmers, land owners, and mortgage investors being the residuum after deducting wages from the total.

TABLE 148.—*Estimates of the total value created by agricultural industry and the shares thereof that went in wages of hired workers, rent, bond interest, profit on farmers' investment and remuneration for labor of farmers and their families, by years, 1918 to 1923*

[Millions of dollars]

Year	Total value product	Wages of hired workers	Rent, bond interest, profit, etc.	Year	Total value product	Wages of hired workers	Rent, bond interest, profit, etc.
1918	$14,210	$1,170	$12,943	1921	$6,697	$1,007	$5,6[illegible]
1919	14,157	1,326	12,831	1922	9,413	1,005	8,34
1920	9,226	1,546	7,680	1923	9,433	1,132	8,3

Section 13. Proportions of the various shares to the total value of product.

Table 149 presents the percentages of wages of hired labor and of the combined rent, mortgage interest, and return to the farmers for their investment, enterprise, and labor to the estimated total value created by agricultural industry.

TABLE 149.—*Estimated percentages of the total value created by agriculture, divided between wages of hired labor and in return to all employed capital and the enterprise and labor of the farmers, 1918 to 1923*

Year	Wages	Return to employed capital and the farmers	Year	Wages	Return to employed capital and the farmers
1918	8.3	91.7	1922	11.3	88.7
1919	9.5	90.4	1923	12.0	88.0
1920	16.7	83.3			
1921	15.4	83.6	Average	11.7	88.3

Wages of hired labor claimed only 11.7 per cent of the total value created by agriculture during the six years. The reason for this was that most of the labor in agriculture is furnished by the farmers themselves and by members of their families and is not compensated by contract money wages.

For the last-stated reason the 88.3 per cent shown in the last column as the part of the total that went to employed capital and the farmers was as much a return to the labor of the farmers and their families as it was a return to the capital invested in the farm business.

TAXES.—The amount of taxes payable by agricultural enterprises on real and personal property of farmers are estimated by the Department of Agriculture by crop years as follows:

1919–20	$532,000,000
1920–21	746,000,000
1921–22	797,000,000
1922–23	845,000,000
1923–24	845,000,000

These amounts do not include income tax. The statistics of income, published by the Treasury Department, shows all taxes paid by corporations in agriculture and related industries. While showing the net taxable income of individuals, however, it does not show the amount of taxes paid by farmers. The agricultural corporate income taxes for 1922 were only $6,622,000.[9] This represented gross income of only about $785,000,000 and a net income from the business of only $6,908,000.[10] Less than 105,000 individuals in agriculture and related industries filed reports for that year and their aggregate net income was only $231,290,000.[11] The average net income of these individuals was only about $2,210, which, with the personal deductions, would result in no tax. It may be inferred, therefore, that the amount of Federal income taxes paid by farmers was practically a negligible quantity. The same inference applies to the other years.

The taxes estimated by the Department of Agriculture may, therefore, be taken as the best available estimates for the years 1919 and 1923, respectively. The amount for 1918 is roughly estimated, by observing the trend, at $500,000,000.

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[9] Statistics of Income, 1922, p. 19.
[10] Statistics of Income.
[11] Statistics of Income, 1922, p. 10.

CHAPTER XIII

MINING, MANUFACTURE, AND CONSTRUCTION

Section 1.—Value created by the mining and quarrying industry.

The statistics of the fourteenth census for all mines, quarries, and petroleum and natural-gas wells in continental United States in 1919 were used as a base for estimates for the other five years of the period 1918 to 1923. An attempt was also made to secure material for this study from Poor's and Moody's Manuals, but was abandoned because the published data for different companies were not comparable.

In order to utilize the census data for this period, a questionnaire was mailed to a list of over 2,100 mining, quarrying, and crude petroleum and natural-gas producing companies, so chosen as to be representative of all branches of the industry. They were requested to report for each of the six years, if practicable, the following items: Net sales of products; salaries, wages, and commissions of officers and employees; expenses incurred for work done under contract (in cases of petroleum companies); all rents and royalties, lease rentals and bonuses; interest on bonds and mortgages; all taxes pertaining to the business, including income taxes; and all other operating expenses. They were also asked to report income from dividends and profits of other businesses, interest on bonds and mortgages owned, and rental of sublet premises. Where it was not practicable for them to report for all six years, three years, preferable for the purposes of tabulation, were requested.

About 23 per cent (485) of the companies addressed responded with usable reports, 238 of this number reporting for all six years. A few reported for only the three years specified, but for no year were there fewer than 257 companies reporting.

The total net sales of the 21,280 mining, quarrying, and oil-well enterprises covered by the census amounted to nearly $3,158,500,000 in 1919, of which amount about $1,445,000,000, or something over 45 per cent, was paid to officers and employees as salaries, wages, and commissions.

Using the total value of products in 1919 as given in the census for a base, the following table shows the increase or decrease in the industry during each year as compared with the year preceding it:

TABLE 150.—*Estimated total net sales of the mining, quarrying, and oil-well industry, by years, 1918 to 1923*

Year	Net sales	Sequential ratios	Year	Net sales	Sequential ratios
1918	[1] $3,306,280,117	1.0465	1921	$3,383,602,704	0.6202
1919	[2] 3,158,462,960	1.0000	1922	3,715,311,747	1.0982
1920	5,369,136,690	1.6999	1923	4,974,018,472	1.3389

[1] Because no data were available for 1917, 1918 was compared with 1919.
[2] Reported by Census of Mines and Quarries, 1919, p. 20.

The total net sales of products of the industry increased from a little over $3,300,000,000 in 1918 to nearly $5,000,000,000 in 1923, an increase of about 51 per cent. It will be noted that in 1921, the year of industrial depression, there was a sharp decline from the preceding year of nearly $2,000,000,000 or three-eighths of the volume of business. The peak came in 1920, when the table shows a value of net sales of over $5,300,000,000.

Table 151 shows estimates of the value created by the mining, quarrying, and oil-well industry, and the distribution between wages and salaries, and employed capital.

TABLE 151.—*Estimated value creating by the mining, quarrying, and oil-well industry, and estimated division between wages and salaries, and rents, royalties, interest and profits, by years, 1918 to 1923*

[Amounts in thousands]

Year	Total value	Wages and salaries	Rents, royalties, interest, and profits	Year	Total value	Wages and salaries	Rents, royalties, interest, and profits
1918	$2,446,514	$1,557,173	$1,089,341	1921	$2,092,848	$1,580,890	$505,052
1919	2,461,479	1,445,265	950,214	1922	2,481,067	1,300,410	1,084,461
1920	4,049,334	2,117,700	1,931,944	1923	3,445,913	2,042,573	1,403,340

It will be noted that, as was true of net sales, the total value product increased during the six-year period, though not to such an extent as the total net sales, the total increase being only 30 per cent as against 51 per cent in net sales. Here also the depression of 1921 is clearly indicated by a decrease of about one-half from 1920. In the matter of wages and salaries the lowest point was reached in 1922 when the industry had only partially recovered from the slump of 1921. This would seem to indicate that in the mining industries recovery from the industrial depression was slower than in other industries.

The following table shows the percentages of the estimated total value product represented by the principal shares going to make up that value:

TABLE 152.—*Percentage distributions of the estimated total value product of the mining, quarrying, and oil-well industry between wages and salaries, and rents, royalties, interest and profits, by years 1918 to 1923*

Year	Wages and salaries	Rents, royalties, interest, and profits	Year	Wages and salaries	Rents, royalties, interest, and profits
1918	58.8	41.2	1922	59.3	43.7
1919	69.2	39.8	1923	59.3	40.7
1920	53.3	47.7			
1921	75.8	24.2	Average	59.3	40.7

Salaries, wages, and commissions constituted from one-half to three-fourths of the total value product, and the part that went to employed capital, before the deduction of taxes, ranged from 24 per cent in 1921 to nearly 48 per cent in 1920, the highest proportion for the period.

For comparison of the different branches of this industry a table of net sales of products is given below:

TABLE 158.—*Estimated net sales of products of each important branch of the mining, quarrying, and oil well industry, by years, 1918 to 1923.*

[Amounts in millions]

Branch	1918	1919	1920	1921	1922	1923
Anthracite coal	$325	$304	$446	$422	$302	$570
Bituminous coal	1,531	1,140	1,782	1,174	1,024	1,413
Copper	247	181	156	61	115	224
Gold and silver	70	68	83	50	50	70
Iron ore	168	218	381	114	167	162
Lead and zinc	104	76	97	40	81	73
Petroleum and natural gas	631	932	2,111	1,284	1,659	2,167
Stone quarries	115	147	229	218	262	319
All other not specified	22	26	36	16	22	21
Total	3,306	3,158	5,301	3,384	3,716	4,974

[1] Fourteenth Census of the United States, Mines and Quarries, 1919, p. 20.

Mineral Resources of the United States, published annually by the Geological Survey, places the value of mineral products in each of the six years higher than that shown in the foregoing table.

In 1919, the year of the census upon which the estimated figures were based, the survey showed a value of mineral products of $4,595,370,000, as against the census figure of $3,158,464,000. The difference is undoubtedly due to the fact that many of the products included in the former are manufactured or partly manufactured products and are valued at their sales price rather than the value of the raw product. Examples of this are copper, pig iron, refined lead, platinum, quicksilver, clay products, sand-lime bricks, sulphuric acid, etc.[1]

Bituminous-coal mining outranked all other branches of the industry in importance in 1918 and 1919, but petroleum and natural gas ranked first from 1920 to 1923, and showed estimated total net sales exceeding those of the bituminous-coal business by about three-quarters of a billion in 1923. The anthracite industry ranked third each year of the six-year period, excepting in 1918, when it was fourth. The net sales for stone quarries reflect the boom in the building industry which began in 1920.

[Amounts in millions]

Product	Census of mines and quarries	Mineral resources of the United States	Product	Census of mines and quarries	Mineral resources of the United States
Anthracite coal	$384	$303	Petroleum and natural gas	$932	$893
Bituminous coal	1,140	1,161	Stone quarries	147	223
Copper	181	230	Various	28	*1,487
Gold and silver	68	124			
Iron ore	218	*197	Total	3,158	*4,800
Lead and zinc	76	111			

* Includes items listed in table but not in total of $4,595,370,000.

[1] For example, the differences in the two reports for the Census year, 1919, are indicated below:

Appendix Table 42 shows the proportion of the total value product of the mining, quarrying, and oil-well industry representing wages and salaries, and rents, royalties, interest, and profits, in each of the six years, for each branch of the industry with the average in each case for the six-year period.

The one branch of the industry that appears to be the least remunerative is gold and silver mining. In 1921 the estimated expenses incidental to operating these mines exceeded the income by considerably over $15,000,000. In only two years, 1918 and 1919, was there any estimated surplus, and that was very small—less than $10,000,000 in 1919, or a little over 14 per cent of the total net sales. When these expenses are considered in relation to the total value product of the industry, conditions in the gold-mining business appear even worse. This fact is clearly indicated in the following table showing the estimated proportions of the total value product made up of wages and salaries, and rent, interest, and profits, before the payment of taxes:

TABLE 154.—*Estimated value product of the gold and silver mining industry and estimated division among wages and salaries, and rent, interest, and profit, by years, 1918 to 1923*

[Amounts in thousands]

Year	Value product	Wages and salaries	Rent, interest, and profit	Year	Value product	Wages and salaries	Rent, interest, and profit
1918	$36,733	$29,162	$8,571	1921	$13,466	$27,105	[1] $13,639
1919	41,774	29,174	12,600	1922	24,791	28,005	[1] 3,213
1920	25,046	28,716	[1] 3,670	1923	22,597	29,991	[1] 7,394

[1] Estimated loss.

In 1921, wages and salaries constituted more than twice the total value product. Furthermore, in four of the six years not only was there no share for employed capital according to this estimate but the capital itself was greatly trenched upon in 1921, and to a lesser degree in the other years. There was a small amount available for employed capital in 1918 and 1919.

From the foregoing it would seem that the fascination of gold mining is such that people are willing to sink large amounts of money in the business year after year in the hope that eventually a large profit will be made.

In the copper business the average estimated shares of the value product received by labor and capital for the 6 year period were 52 per cent and 37 per cent, respectively. However, this does not mean that those shares maintained these relative positions during this time. On the contrary, labor's share varied from 43 per cent to 99 per cent of the total value product, while capital's share, before the payment of taxes, varied from 57 per cent to only 1 per cent. Labor's share was smallest in the petroleum and natural gas industry, showing an average of 34.5 per cent of the total value product for the six years, with a range from 27 per cent in 1919 to 52 per cent in 1921.

The percentages of estimated increase or decrease in the total value product of the principal branches of the industry from 1918 to 1923 are shown in the following tabular statement:

Product	Increase, 1923 over 1918	Decrease, 1923 from 1918	Product	Increase, 1923 over 1918	Decrease, 1923 from 1918
	Per cent	*Per cent*		*Per cent*	*Per cent*
Anthracite coal	71.3	.....	Petroleum and natural gas	186.9	.....
Bituminous coal	.....	9.1	Stone quarries	214.2	.....
Copper	.....	41.6	All others, not specified	6.1	.....
Gold and silver	.....	36.8			
Iron ore	.....	27.3	Total mines, quarries, and oil wells	30.2	.....
Lead and zinc	.....	37.4			

Estimated decreases in the gross value of the products took place during the six years of 42 per cent in the case of copper mining, 37 per cent each for the gold and silver mining, and lead and zinc mining industries. The increases in the value of the products of the petroleum and natural-gas producing industry, 186 per cent, and of stone quarries, 214 per cent, reflect the rapid increase in petroleum production and the effect of the building boom and of hard surface road building which has lasted for several years.

TAXES.—The amounts of taxes payable by the enterprises in the mining, quarrying and oil and gas well industries (disregarding taxes payable by employees or lenders of capital) and percentages of the total value product of these industries, are estimated as follows:

Year	Amount of taxes	Per cent of total value product	Year	Amount of taxes	Per cent of total value product
1918	$173,578,000	6.6	1921	$158,570,000	6.8
1919	141,006,000	5.6	1922	112,305,000	4.6
1920	171,091,000	4.2	1923	124,440,000	3.6

DISTRIBUTION OF WAGES AND SALARIES BY OCCUPATIONAL GROUPS IN THE MINING, QUARRYING, AND OIL-WELL INDUSTRY.—Statistics of wages and salaries for the mining, quarrying, and oil-well industry are based on figures given in the census of mines and quarries for the year 1919, the census being taken only every 10 years.[1]

The following table shows the total number of employees, by occupational groups, for each branch of the industry, and the distribution of wages and salaries paid to those employees.

[1] Producing enterprises only have been considered in this section, the operations of nonproducing enterprises being covered in another section of this investigation.

TABLE 155.—*Number of employees and amount of wages and salaries paid by occupational groups of the principal branches of the mining, quarrying, and oil-well industry in 1919*

Branch of industry	Salaried employees and wage earners			Per cent of total employees		
	Officers, managers, etc.	Other clerical	Wage earners	Officers, managers, etc.	Other clerical	Wage earners
Anthracite coal	3,901	3,380	147,372	2.6	2.2	95.2
Bituminous coal	18,106	15,407	545,798	3.1	3.7	94.2
Copper	1,498	1,081	43,717	3.2	2.6	93.2
Gold and silver	1,091	441	10,816	5.9	2.4	91.7
Iron ore	1,245	1,740	45,741	2.5	3.6	93.9
Lead and zinc	903	772	21,884	4.1	3.3	92.6
Petroleum and natural gas	7,904	9,718	93,205	7.2	8.7	84.1
Stone quarries	2,884	2,175	56,132	4.7	3.6	91.7
Variety not otherwise specified	720	381	10,895	6.0	3.2	90.8
Total	39,491	35,700	981,500	3.6	3.4	93.0

Branch of industry	Total salaries and wages			Per cent of total salaries and wages		
	Officers, managers, etc.	Other clerical	Wage earners	Officers, managers, etc.	Other clerical	Wage earners
Anthracite coal	68,848,535	54,140,994	$218,289,473	4.0	1.8	94.2
Bituminous coal	60,334,218	18,834,820	682,605,068	6.7	2.4	90.9
Copper	6,018,974	2,020,767	60,390,194	6.7	4.1	89.2
Gold and silver	2,847,108	595,451	25,731,729	9.8	2.0	88.2
Iron ore	4,198,832	2,737,923	75,718,459	5.1	3.3	91.6
Lead and zinc	2,714,694	1,120,246	30,708,319	7.9	3.2	88.9
Petroleum and natural gas	21,375,372	12,092,986	134,521,247	12.7	7.2	80.1
Stone quarries	7,138,126	2,682,384	58,903,411	10.4	3.8	85.8
Variety not otherwise specified	1,759,300	442,406	11,017,326	13.3	3.4	83.3
Total	104,235,154	45,693,831	1,295,939,226	7.2	3.1	89.7

For the industry as a whole, 3.6 per cent of the employees were officers, managers, superintendents, 3.4 per cent other clerical employees, and 93 per cent were wage earners. Of wages and salaries paid, 7.2 per cent went to officers, managers, and superintendents, 3.1 per cent went to other clerical employees as salaries, and 89.7 per cent was paid to wage earners.

In the distribution of wages and salaries, officers, superintendents, and managers representing 2.5 per cent and 7.2 per cent of the total employees in the iron-mining and petroleum-producing businesses, respectively, received 5.1 and 12.7 per cent of wages and salaries paid in those industries. In the mining of minerals not otherwise specified, officers, superintendents, and managers representing 6 per cent of the total number of employees received 13.3 per cent of the total wages and salaries. In this same industry wage earners, representing 90.8 per cent of the employees, received only 83.8 per cent of salaries and wages paid.

In the two industries cited above, namely, iron mining and petroleum producing, wage earners representing 93.9 and 84.1 per cent, respectively, of the total employees, received only 91.6 and 80.1 per cent of wages and salaries paid.

The following table shows the per capita wages and salaries paid during the census year 1919 in the various branches of the mining, quarrying, and oil-well industry, by occupational groups:

TABLE 156.—*Per capita wages and salaries paid employees of the mining, quarrying, and oil-well industry during the year 1919, by occupational groups*

Branch of industry	Average compensation,[1] occupational groups, and indices							
	Officers, managers, and superintendents	Index No.	Other clerical employees	Index No.	Wage earners	Index No.	All groups	Index No.
Anthracite coal	$2,234	82.5	$1,223	96.6	$1,127	108.1	$1,448	105.4
Bituminous coal	2,771	102.3	1,190	94.2	1,251	94.8	1,397	94.7
Copper	3,360	123.7	1,797	142.3	1,519	115.1	1,537	115.9
Gold and silver	2,620	94.8	1,350	106.9	1,530	115.9	2,590	116.2
Iron ore	3,372	124.6	1,673	124.5	1,358	125.4	1,696	123.9
Lead and zinc	3,821	104.2	1,451	148.9	1,403	100.2	1,463	106.9
Petroleum and natural gas	2,684	99.1	1,244	98.6	1,443	109.3	1,515	110.7
Stone quarries	2,475	91.4	1,196	94.7	1,060	79.6	1,123	82.8
Variety not otherwise specified	2,443	90.2	1,161	91.9	1,011	76.0	1,102	80.5
Average	2,708	100.0	1,263	100.0	1,329	100.0	1,369	100.0

[1] The average of each group for the entire industry is used as the base.

The average of wages and salaries for the entire industry in each occupational group being 100, it can readily be seen where the highest wages and salaries per capita are paid. In the iron-ore mining business both salaried employees and wage earners were paid above the average for the industry with an average for all employees of 124 per cent. However, in individual groups lead and zinc paid the highest salaries in the clerical group, showing 149 per cent of the average for that group. The branch of this industry that seems to have paid the lowest per capita wages and salaries, averaging 80.5 per cent, is the mining of minerals not otherwise specified in each occupational group of which the per cent was low, especially among wage earners, with a per cent of 76.6.

The following table shows the employees in the mining, quarrying, and oil-well industry, by occupational groups and geographical divisions, during the census year 1919:

TABLE 157.—*Percentage distribution of employees and wages and salaries in the mining, quarrying, and oil-well industry, by geographical divisions, for the year 1919*

Geographical divisions	Percentage of employees				Percentage of total wages and salaries			
	Officers, managers, and superintendents	Other clerical	Wage earners	Per cent of United States	Officers, managers, and superintendents	Other clerical	Wage earners	Per cent of United States
New England	5.0	2.0	93.0	0.7	10.7	2.4	86.9	0.7
Middle Atlantic	2.9	2.6	94.5	33.1	6.2	3.3	92.5	34.3
South Atlantic	2.0	2.5	92.0	12.2	3.2	3.0	93.8	11.8
East North Central	3.1	2.9	93.8	19.2	7.4	3.9	89.7	18.3
East South Central	3.0	3.3	93.8	0.5	6.4	3.3	90.3	0.1
West North Central	3.0	3.5	92.0	0.4	7.0	3.6	89.4	0.6
West South Central	3.3	3.8	94.4	0.0	12.7	6.6	80.7	7.2
Mountain	3.8	3.2	92.0	3.3	7.9	5.4	89.6	13.1
Pacific coast	4.2	4.8	90.0	2.6	9.2	3.7	87.1	3.2
Total	3.6	3.4	93.0	100	7.2	3.1	89.7	100

Officers, managers, and superintendents in the New England, South Atlantic, East North Central and East South Central divisions, representing 5, 3.9, 3.3, and 3.9 per cent of their respective groups, received 10.7, 8.2, 7.4, and 8.4 per cent of their total wages and salaries. Other clerical employees' shares were more or less uniform throughout the United States. Wage earners received the lowest compensation in the New England division, where 92 per cent of the total employees received only 86.9 per cent of wages and salaries, and the highest in the Middle Atlantic division, where 94.5 per cent of wage earners received 92.5 per cent of the total wages and salaries. The section in which all employees received the highest pay was the mountain division where 8.3 per cent of the total employees in the United States received 10.1 per cent of all wages and salaries paid.

Section 2. Value created by the manufacturing industry.

A census of manufactures is taken biennially. In these censuses manufacturing is divided into 14 major groups. The census of 1923 included 195,714 manufacturing establishments, employing 10,029,370 salaried officers and employees and wage earners.

The data compiled by these censuses gave the cost of materials and value added by manufacture. However, in the former item were not included such costs paid to other business as ordinary repairs and depreciation applying to the factory, the cost of light, stationery, and other supplies used in the selling and the general administration of the business, interest on bank loans, depreciation of buildings and equipment used in selling and general administration, etc. In consequence the amount given by the census as "value added by manufacture" exceeds the net value created by these industries to the extent of these omitted costs.

It was therefore necessary to supplement the census figures and also to get data for the intercensual years so that estimates might be made. Accordingly requests for information as to the amounts of certain expenses and costs which could not be obtained otherwise were sent to about 6,000 manufacturing concerns selected to cover all kinds of manufacturing and include concerns of all sizes. Although data were especially requested for two specified years, in the majority of cases the companies reported for all six years desired. These estimates are based upon information furnished by 1306 companies in 1923, with aggregate sales of $7,730,000,000. The samples for 1918 consists of 593 companies, whose sales amounted to $2,917,000,000. These are thought to be representative samples and the data are reasonably comparable.

From these reports it has been estimated that the value created by all manufacturing industries in 1919, a census year, amounted to $22,097,431,000, whereas the census figure for that year showed $24,809,093,000 as the "value added by manufacture." This difference is chiefly due to the inclusion in the latter of interest on bank loans and miscellaneous general and selling expenses, which, it is estimated, amounted to about $2,660,000,000. In 1921 the census showed a total value added by manufacture of $18,316,666,000,

whereas this estimate showed the value product as $14,168,862,000. Again this difference could be accounted for by excluding from the former the interest on bank loans, rent of offices, etc., which are estimated at $2,964,427,000, and by repairs and depreciation of factory buildings and equipment, which the Census does not include in cost of materials. The estimate made for 1923 shows a value-product of $24,171,000,000, whereas the preliminary census estimate for total value added by manufacture was $25,853,000,000. This difference of about $1,682,000,000 would probably take care of the variation in the items used.

The following table shows the estimates of the value created by manufacturing in the United States and the portions thereof that went as salaries and as rent, interest on bank loans and profits:

TABLE 158.—*Estimated value created by the manufacturing industry and estimated division between salaries and wages, and rent, interest, and profits, by years, 1918 to 1923*

[Amounts in millions]

Year	Total value created	Salaries and wages	Rent, interest, profits	Year	Total value created	Salaries and wages	Rent, interest, profits
1918	19,344	11,039	8,305	1921	14,168	10,566	3,602
1919	22,097	12,579	9,518	1922	19,167	12,684	6,483
1920	28,486	18,400	10,086	1923	24,172	15,567	8,605

The estimated total value created by manufacture increased from $19,344,000,000 in 1918 to $22,097,000,000 in 1919 and reached its peak of $28,486,000,000 in 1920. Then in 1921 there came the industrial depression, strongly reflected in a decrease of over 50 per cent to $14,168,000,000. The year 1922 showed a rise to $19,166,000,000 and in 1923 the total value reached $24,172,000,000.

The following table shows the estimated total value created by manufacture divided into the fourteen major groups of manufacturing:

TABLE 159.—*Estimated total value created by each of the 14 major groups of the manufacturing industry, by years, 1918 to 1923*

[Amounts in millions]

Industry group	1918	1919	1920	1921	1922	1923
Food and kindred products	$1,203	$1,504	$1,372	$1,070	$1,317	$1,369
Textiles and their products	3,845	4,404	6,032	3,090	4,050	4,364
Iron and steel and their products	4,038	3,952	7,071	2,163	3,057	5,499
Lumber and its remanufactures	984	1,328	1,904	1,010	1,408	1,794
Leather and its finished product	704	1,054	918	718	796	820
Paper and printing	1,077	1,313	2,251	1,261	1,404	1,366
Liquors and beverages	438	346	127	74	234	268
Chemicals and allied products	1,046	1,786	1,706	807	1,497	1,705
Stone, clay, and glass products	776	628	820	504	575	696
Metals and metal products other than iron and steel	351	360	394	435	781	1,061
Tobacco manufactures	252	234	171	277	291	309
Vehicles for land transportation	1,420	1,257	1,625	858	851	1,320
Railroad repair shops	412	474	579	401	524	891
Miscellaneous industries	1,698	2,860	2,953	1,585	1,983	2,700
Total	19,344	22,097	28,486	14,168	19,167	24,171

Iron and steel and their products led the industries in 1923 with a total value created by manufacture of $5,500,000,000, or 22.75 per cent of the total. It led in 1918 also with 20.87 per cent and again in 1920, when it contributed 24.82 per cent of the total. In 1919, 1921, and 1922, however, it yielded first place to textiles.

It is interesting to note how sharply business fluctuations affected the iron and steel industry. In 1919 it showed depression more than manufacturing in general, probably due to the discontinuance of war work, and the fluctuations from years of prosperity to years of depression have been much more violent in the other years also. For instance, the value created by iron and steel manufacturing in 1920 was 79 per cent greater than in 1919 as compared with only 29 per cent for manufacturing in general. In 1921, a depression year, the reduction in the value created by general manufacturing was approximately 50 per cent while the reduction in the value created by iron and steel manufacturing was nearly 70 per cent.

As has been stated, textiles assumed first place among the major groups of manufacturing in the years 1919, 1921 and 1922. In 1919 it accounted for 19.93 per cent of the total value created by manufacture, in 1921 it accounted for 21.81 per cent and in 1922 for 28.69 per cent. In the other years textile manufactures held second rank with reference to the total, and in 1923 the value created by this branch of manufacturing was $4,364,000,000.

Other groups in the manufacturing industry, in the order of their importance in 1923, as indicated by the total value created were: Lumber and its remanufactures, $1,794,000,000; chemicals and allied products, $1,705,000,000; food and kindred products, $1,369,000,000; paper and printing, $1,366,000,000; vehicles for land transportation, $1,329,000,000; metals and metal products other than iron and steel, $1,061,000,000; railroad repair shops, $891,000,000; leather and its finished products, $820,000,000; stone, clay, and glass products, $696,000,000; tobacco manufactures, $309,000,000; liquors and beverages, $268,000,000; miscellaneous industries, $2,700,000,000.

The manufacture of vehicles deserves special mention because, like the iron and steel group, the value created by this industry suffered a very large reduction during the industrial depression and a correspondingly large increase with the recovery of prosperity. For instance, the value created by vehicle manufacture in 1921 was nearly 60 per cent less than in the preceding year and in 1923 it was nearly double that of 1922.

Appendix Table 81 shows for the 14 major groups the value created by the manufacturing industry divided into salaries and wages and rent, royalties, and profits. The percentages of salaries and wages and of rent, interest, and profits to the total value created by each of the 14 major groups of manufacturing industry are shown below:

TABLE 160.—*Percentage distribution of the total value created by the 14 major groups of the manufacturing industry, divided between salaries and wages, and rent interest and profits, 1918–1923*

Industry group	1918		1919		1920		1921		1922		1923	
	Salaries and wages	Rent, interest, and profits	Salaries and wages	Rent, interest, and profits	Salaries and wages	Rent, interest, and profits	Salaries and wages	Rent, interest, and profits	Salaries and wages	Rent, interest, and profits	Salaries and wages	Rent, interest, and profits
Food and kindred products	59.0	41.0	52.9	47.3	77.2	22.8	85.6	14.4	70.3	29.7	59.0	41.0
Textiles and their products	44.0	56.0	45.1	54.9	56.0	44.0	66.6	33.4	57.4	42.6	60.5	39.5
Iron, steel, and their products	67.8	32.2	70.2	29.8	74.5	25.5	81.1	18.9	87.3	12.7	75.5	24.5
Lumber and its manufactures	66.7	33.3	61.5	38.5	59.7	40.3	81.7	18.3	66.0	34.0	61.8	38.2
Leather and its finished products	55.3	44.7	51.7	48.3	63.6	40.4	66.6	33.4	63.1	36.9	62.6	37.4
Paper and printing	67.1	32.9	66.0	34.0	63.0	37.0	72.0	28.0	71.4	28.6	65.4	34.6
Liquors and beverages	15.0	85.0	33.3	66.7	68.3	31.7	112.6	[1] 12.5	12.7	87.3	13.2	86.8
Chemicals and allied products	38.9	61.1	44.4	55.6	54.2	45.8	61.4	38.6	58.2	40.5	51.2	48.8
Stone, clay, and glass products	70.3	29.7	71.4	28.6	65.0	35.0	80.3	19.7	65.5	34.5	62.9	37.1
Metals and metal products other than iron and steel	66.3	34.7	58.3	41.7	70.0	30.0	96.9	3.1	67.9	32.1	66.4	33.6
Tobacco manufactures	65.5	34.5	72.3	27.7	56.4	53.6	59.1	40.9	57.0	43.0	59.0	41.0
Vehicles for land transportation	66.6	33.4	57.7	42.3	63.7	36.3	86.1	13.9	60.1	39.9	58.7	41.3
Railroad repair shops	56.5	43.5	56.3	43.7	64.5	35.5	74.8	25.2	65.7	34.3	61.7	38.3
Miscellaneous industries	57.6	42.4	60.4	39.6	66.2	33.8	69.8	30.2	70.0	30.0	70.0	30.0
Average	57.1	42.9	56.9	43.1	64.6	35.4	74.8	25.4	68.2	33.5	64.4	35.5

[1] Loss.

Salaries and wages varied from 13.2 per cent in the liquors and beverages industry to 75.5 per cent in the manufacture of iron, steel, and their products. For further details as to the distribution percentages in 1923 and the earlier years, reference is made to the table.

The National Industrial Conference Board has published index numbers of the average weekly earnings of all wage earners, also index numbers of wage earners employed. From these there has been obtained the index numbers of the aggregate wages per week in the last half of 1920, the whole of 1921, and the last half of 1922. The aggregate wages per week during the first half of 1921 were 38 per cent less than during the last half of 1920, and for the last half of 1921 they were 47 per cent less.

This decline in the wages and salaries in 1921 is further borne out by the tabulation based on the reports received by this investigation. In 1920 the salaries and wages in the manufacturing industries amounted to $18,400,000,000, but in 1921 to only $10,566,000,000.

In spite of this heavy drop in the amount of the salaries and wages, it is interesting to note the large percentage of the total value product that went to salaries and wages, especially in 1921. The following table shows the proportions of total value product that

went for salaries and wages, and to rent, royalties, bond interest, and profit for the six-year period 1918 to 1923:

TABLE 161.—*Percentage distribution of the total value created by the manufacturing industry between salaries and wages, and rent, interest, and profits, by years, 1918 to 1923*

Year	Salaries and wages	Rent, interest, and profits	Year	Salaries and wages	Rent, interest, and profits
1918	57.1	42.9	1922	66.2	33.8
1919	56.9	43.1	1923	64.4	35.6
1920	64.6	35.4			
1921	74.6	25.4	Average	63.2	36.8

For the six-year period salaries and wages averaged 63 per cent of the total value created by manufacturing while rent, interest, and profits retained only 36.8 per cent. In 1921 salaries and wages comprised 74.6 per cent as against 25.4 per cent for rent, interest, and profits. In no year except 1918 did the latter share equal much over half the share going to salaries and wages and, as has been shown, in 1921 it equaled only a little over a third. In 1918, however, salaries and wages amounted to 57.1 per cent as against 42.9 per cent.

TAXES.—The amounts of taxes payable by manufacturing enterprises (disregarding those payable by employees and lenders of capital) are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$2,493,000,000	13.9	1921	$1,127,000,000	8.0
1919	2,136,000,000	6.6	1922	1,080,000,000	6.7
1920	2,034,000,000	7.1	1923	1,421,000,000	6.9

DISTRIBUTION OF WAGES AND SALARIES BY OCCUPATIONAL GROUPS IN THE MANUFACTURING INDUSTRY.—Statistics of wages and salaries paid by the manufacturing industry in 1914, 1918, 1921, and 1923 were published in the census of manufactures. The following table, based as these data, shows the average wages per factory employee in these years paid by 15 branches of the industry and by miscellaneous manufacturing enterprises.

TABLE 162.—*Average annual wage per factory employee, by major manufacturing groups, in 1914, 1918, 1921, and 1923*

	1914	1918	1921	1923
Transportation, air, land, and water	$738	$1,465	$1,467	$1,589
Iron and steel and their products, not including machinery	662	1,440	1,270	1,484
Railroad repair shops	682	1,490	1,606	1,477
Paper and printing	655	1,167	1,364	1,408
Machinery, not including transportation equipment	667	1,242	1,257	1,381
Rubber products	597	1,222	1,197	1,320
Metals and metal products, other than iron and steel	606	1,177	1,206	1,327
Chemical and allied products	645	1,195	1,303	1,309
Stone, clay, and glass products	614	1,180	1,225	1,293
Musical instruments and phonographs	633	1,194	1,206	1,301
Miscellaneous industries	554	1,078	1,109	1,229
Food and kindred products	565	1,058	1,178	1,196
Leather and its finished products	553	1,040	1,123	1,128
Lumber and allied products	510	995	853	1,033
Textiles and their products	449	920	976	1,017
Tobacco manufactures	435	780	800	823
All manufacturing industries	578	1,157	1,180	1,254

In comparing these amounts per employee for different industries, it should be kept in mind that, as the employment of women and children varies widely, the differences, not only in the average income per employee, but also in the income per family are naturally quite large. In the textile industries, for example, women and children are extensively employed, but only to a comparatively small extent in the iron and steel industry.

The manufacture of vehicles for land, air, and water transportation paid the highest average annual wages for the year 1923, namely, $1,589. This industry also paid the highest wages in 1914, though the amount was much less, and also in 1919. The average wages in 1921, $1,457, were exceeded by those paid by the railroad repair shops.

The average wages in the iron and steel industry came second in 1923 when they averaged $1,484, which may be compared with $682, the average wages in 1914. The average wages in this industry were reduced about 11.8 per cent, as compared with 1919, to $1,279, in the depression year of 1921, and fell to fifth rank. The total value created by this branch of manufacturing industry declined 45 per cent at the same time, and the aggregate amount of wages and salaries paid by this branch fell 36.7 per cent.

Railroad repair shops assumed third place in 1923, and paid average wages of $1,477, while in 1914 the average wage was higher in only one other group. In the depression year 1921, this branch of manufacturing industry paid the highest average wages, namely, $1,606.

The industry that paid the lowest average wages was the manufacture of tobacco, which paid only $823 in 1923. The average annual wages in this industry were the lowest in all the years covered by the comparison.

In spite of the large increases in average wages in the textile manufactures, especially the manufacture of clothing, in recent years, the annual average in this group was next to the lowest of all groups in 1923, namely, $1,017. They were also next to the lowest in all other years except 1921.

The average annual wages per employee for all groups for 1923 were $1,254, as compared with $1,180 for 1921, $1,157 for 1919 and $579 for 1914.

These figures of average wages are the averages paid to employees actually on the pay rolls, and do not show the true average income of all those who regularly depend upon the industry for a living. This is especially true of 1921, when it was estimated by the Department of Labor that at one time there were 5,750,000 unemployed wage earners in the United States. Had the average been computed for all those dependent upon the industry it is not unlikely that a considerable decrease would have been shown, instead of an increase in 1921, as compared with 1919.

The above table also fails to take into consideration the actual purchasing power of a dollar in each of the years discussed. Using 1919 as a base, a series of index numbers of the cost of living was obtained from data published by the Department of Labor.[1] These were applied to the average wage figures previously obtained. The

[1] Cost of living in the United States, 1924, p. 166.

following table represents the foregoing average wages measured in terms of dollars of the same purchasing power as of 1919:

TABLE 163.—*Average annual wages per factory employee, expressed in dollars of the same purchasing power as in 1919, by major manufacturing groups, in 1914, 1919, 1921, and 1923*

	1914	1919	1921	1923
Transportation, air, land, and water	$1,349	$1,493	$1,668	$1,780
Iron and steel and their products, not including machinery	1,247	1,440	1,377	1,634
Railroad repair shops	1,286	1,400	1,729	1,622
Paper and printing	1,197	1,107	1,408	1,462
Machinery, not including transportation equipment	1,210	1,242	1,363	1,321
Rubber products	1,091	1,222	1,256	1,464
Metals and metal products, other than iron and steel	1,151	1,177	1,396	1,451
Chemicals and allied products	1,170	1,104	1,483	1,430
Stone, clay, and glass products	1,122	1,109	1,340	1,424
Musical instruments and phonographs	1,157	1,104	1,300	1,380
Miscellaneous industries	1,043	1,079	1,291	1,354
Food and kindred products	1,033	1,066	1,265	1,294
Leather and its finished products	914	1,040	1,260	1,312
Lumber and allied products	948	995	1,030	1,138
Textiles and their products	806	939	1,060	1,120
Tobacco manufacture	705	789	858	900

Instead of more than doubling from 1914 to 1923, as shown by the money wages paid in all of the groups, the "real" wages, as measured by actual purchasing power, increased on an average only about 30.5 per cent, and in no case did the increase equal 50 per cent. It is important to note, however, that there was in every case an increase and generally a substantial increase in the purchasing power of the wages received.

The following table shows the average annual wages per employee in the manufacturing industries in each of the nine geographical divisions of the United States in 1914, 1919, and 1921, without correction for changes in the purchasing power of the dollar.

TABLE 164.—*Average annual wages per factory employee, by principal regions, in 1914, 1919, and 1921*

Region	1914	1919	1921	Region	1914	1919	1921
Mountain	$813	$1,299	$1,446	West South Central	$846	$1,027	$1,037
Pacific	757	1,236	1,370	South Atlantic	628	882	874
East North Central	638	1,249	1,294	East South Central	445	907	849
West North Central	617	1,093	1,238				
Middle Atlantic	593	1,209	1,233	All regions	579	1,167	1,159
New England	551	1,063	1,084				

The average annual wage by geographical regions of the United States are not available for 1923. In 1921 the highest average wages for the year were paid in the mountain region, where the factory workers averaged $1,446 per annum. The Pacific region took second rank with $1,370. The East North Central came third with $1,294, the West North Central fourth with $1,238, the Middle Atlantic fifth with $1,233, and New England sixth with $1,084. In the West South Central region the average annual wage was $1,037. In the South Atlantic and East South Central regions, in which there appears to be a large proportion both of colored labor and of women and children in factories, the average annual earnings per employee

were $874 and $869, respectively. This comparison, however, would have a clearer meaning and be much more interesting if it could be coupled with a comparison of the cost of living in the various regions which also varies geographically.

Section 3. Value created by the construction industry.

The construction industry may be described as a manufacturing industry that is not carried on in plants of fixed location. Generally each unit of product is specially designed. The industry includes not only the erection of dwelling houses, apartment and office and factory buildings of all kinds, but also the construction of roads, bridges, tunnels, steam railroads, electric railways, pipe lines, ship channels, canals, docks, wharves, sewers, water works, and dams.

Preparation of an estimate of the value created by the construction industry presents many difficulties. The industry is not covered by any census enumeration, except that of occupations, and this does not deal with incomes or values in any form. The statistical abstract of the United States sets forth for each year the gross estimated value of construction for which permits were granted in each of a number of large cities. Obviously, however, large cities are not necessarily representative of all communities in the United States.

Owing to the complicated and lengthy discussion involved in the estimate of the income created by the construction industry the details of the discussion regarding the data and the preliminary estimates are set forth in the appendix. (Exhibit 4, p. 363.) The principal data are certain statistics of financial results of construction corporations published in the Statistics of Income of the Treasury Department, the statistics of the value of construction contracts awarded as compiled and published by the F. W. Dodge Co., and an index of the volume of construction based on shipments of construction materials, published by a trade journal—The Constructor.

Estimates of the volume of construction based on the available statistics of contracts awarded are compared with the specific data for construction corporations, and as a result of comparison and correction a final estimate is arrived at by averaging the first two as shown in the following table:

TABLE 165.—*Estimates of the gross value of construction, by years, 1918 to 1923*

[Amounts in millions]

Year	First estimate [1] A	Gross income of construction corporations [2] B	Second estimate [3] C	Final estimate [4] D
1918	$2,038	$3,700	$5,380	$4,012
1919	4,181	3,827	5,600	4,873
1920	4,108	4,260	6,196	5,152
1921	3,638	3,378	4,910	4,234
1922	4,977	3,264	4,977	4,917
1923	6,168	.....	6,168	6,168

[1] See appendix, table 47, p. 309.
[2] See appendix, table 48, p. 305.
[3] Amounts for 1918 to 1922 are proportional to the corresponding amounts in column B, $4,977,000,000 shown for 1922 in column A being taken as the base.
[4] Average of the estimates in column A with the corresponding estimates in column C.

Column D sets forth the final estimates of the gross value of construction in the entire country. They indicate an increase from a little over $4,000,000,000 in 1918 to $5,168,000,000 in 1923, with an intermediate peak almost as large in 1920, namely, $5,152,000,000. They show a large decrease in gross value of construction in 1921 and a considerable revival. All of this is in harmony with what is known concerning the course of general business prosperity and depression and the course of prices of construction materials and of wage rates.

Compared to the estimate of $4,012,000,000 as the gross value of construction in 1918, the National Bureau of Economic Research [1] estimated $2,766,000,000. That bureau's estimate was a compromise between an estimate based on the contract awards reported by the F. W. Dodge Co. and another estimate. The latter was a composite of estimated construction by railway companies, reported construction by the Federal Government, and an estimate of private building based on the building permits issued by a selected list of large cities. The estimate for the country in the latter connection was made by applying the ratio of the population of the United States to the population of the selected cities rather than the ratio of the increases of population. This estimate apparently omits electric railway, electric power and irrigation plant construction. It also seemingly omits road construction, except to the extent of the Federal aid extended in this connection. There is, therefore, no reason to consider the bureau's estimate superior to the one set forth in this report. Furthermore, the latter at least has the merit of not being less than the gross value of construction work performed by corporations.

Estimate of the Value Product of Construction.—In Appendix Table 44, page 365, are derived the percentages that profits were of gross income in 1918 to 1922, respectively. Gross income exceeds gross construction value, however, because it includes income from other sources. Therefore, the application of those percentages requires that estimates of gross income be formed from the foregoing estimates of gross construction values. This can be done by multiplying the former estimates by the factor 1.025232, which was the ratio of gross income to gross construction values for corporations in 1922.[2] The wages and salary percentages, however, are to be applied to the gross construction value estimates. The results of applying these percentages are presented in Table 166.

Table 166.—*Estimates of the total value created by the construction industry and of the portions divided between salaries and wages, and in profits, by years, 1918 to 1923*

(Amounts in millions)

Year	Total value product	Wages and salaries [3]	Profits [4]
1918	1,324	$1,197	$127
1919	1,884	1,691	193
1920	1,928	1,810	118
1921	1,475	1,434	41
1922	1,648	1,574	74
1923	[5] 1,754	1,464	[6] 17

[1] See appendix, Table 40. [2] See appendix, Table 43. [3] For derivation, see text.
[4] Remainder after subtracting taxes and wages from the estimated total value product.
[5] Income in the United States, vol. 2, p. 106.
[6] See appendix, p. 378.

Wages and salaries were estimated by applying to the gross value of construction the wage and salary percentages found prevailing in Pennsylvania. (See Appendix Table 48, p. 370.)

It is estimated that the total value created by the construction industry of continental United States was, in 1918, $1,534,000,000. It was larger in 1919, and in 1920 reached its maximum of $1,928,000,000. It was less than a billion and a half in 1921 but increased again in both 1922 and 1923, so as to exceed one and three-fourths billions of dollars in the latter year.

A comparison of these estimates of the value added by the industry with the previous estimates of the gross value of the product, shows the remarkable indication that from 62 to 67 per cent of the gross value is represented in the cost of materials, fuel, and other items that are the products of other industries. Using gross income as a base, these payments to other industries amounted to 62.4 per cent in 1918, 62.3 per cent in 1919, 63.5 per cent in 1920, 65.9 per cent in 1921, and 67 per cent in 1922. Considering the trend of the successive differences between these percentages, it was estimated that the proportion for 1923 was slightly less than that for 1922, hence 66.9 per cent was chosen as the most probable percentage applicable to that year. Application of this to the estimated gross income of the construction industry in 1923, namely, $5,298,000,000, gave $3,544,000,000 as the most probable amount paid away to other industries in that year. The difference between these two amounts is $1,754,000,000, which was taken as the most probable amount of the value added by the industry in 1923.

The large amounts that went to the personnel as remuneration for their services, and the highly fluctuating amount of profits are the outstanding features of the division of the total created value among the three cooperating factors.

As to the amounts of profits (before the deduction of taxes) shown, which ranged from $41,000,000 in 1921 to $170,000,000 in 1923, it should be said that the statistics of income show that the individual constructors had an aggregate "net income" of more than $146,000,000 in 1922 and $110,000,000 in 1921. These are to be compared with $74,000,000 and $41,000,000, respectively, shown in the foregoing estimates for the entire industry. On superficial consideration these reported "net incomes" discredit the estimates. However, an important difference between the expenses of incorporated and unincorporated businesses should be remembered. It is altogether probable that the managers of the construction corporations are also their chief, if not sole, stockholders. Because the businesses are incorporated, the managers receive salaries that are fixed by contract and these salaries are included as a part of the operating expenses. The profits of the corporations, therefore, are additional to the salaries of these proprietors. In the case of the unincorporated businesses, on the contrary, the proprietors do not receive salaries. They draw out funds, from time to time, for personal use; but these drawings are accounted for not as business expenses but as proprietors' withdrawals. The so-called profits or "net income" of unincorporated businesses, therefore, include the proprietors' remuneration for their personal work as managers (and in many cases as manual workers also) as well as the profits ascribable to their invested capital. Since the estimates were made with per-

centages derived from the corporate returns, however, they have transferred to "wages and salaries" that portion of the profits of the unincorporated portion of the industry that correspond to the salaries of officers and executives of the corporations. Hence the apparent discrepancy spoken of above does not necessarily contain any real discrepancy.

The proportions in which the total value created by the industry is divided among the two cooperating factors are more interesting than the amounts themselves. These proportions are shown in Table 167.

TABLE 167.—*Percentages of wages and salaries and of profits to the total value created by the construction industry, by years, 1918 to 1923*

Year	Percentage of the total value-product	
	Salaries and wages	Profits
1918	91.1	8.9
1919	89.75	10.25
1920	93.88	6.12
1921	97.2	2.70
1922	95.5	4.50
1923	90.31	9.69
Average	92.82	7.15

Wages and salaries have claimed from 90 to 97 per cent of the total value created by the construction industry. The return to employed capital did not account for more than one-tenth of the total except in 1919. In 1921 it amounted to less than 3 per cent.

TAXES.—The amount of taxes payable by construction enterprises (disregarding those payable by employees and lenders of capital) are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$56,000,000	5.6	1921	$38,000,000	3.6
1919	67,000,000	5.2	1922	30,000,000	1.9
1920	83,000,000	2.3	1923	24,000,000	1.4

CHAPTER XIV.

TRANSPORTATION AND COMMUNICATION

Section 1. Steam railroads.

ESTIMATED VALUE CREATED BY STEAM RAILROAD TRANSPORTATION.—All steam railroad companies in the United States make periodic reports to the Interstate Commerce Commission, consisting of brief monthly reports and extensive detailed annual reports. The data contained in these reports are tabulated and published by that commission in monthly bulletins and in the annual Statistics of Railways.

Thus there is not only a wealth of information covering the whole of the industry, but it is in excellent condition because of the uniformity in meaning of the data furnished by the various companies. Railroad companies not only report on uniform blanks every item on which is carefully defined, but they are required to keep the accounts of the same designations and definitions.[1] The annual Statistics of Railways includes detailed balance sheets and income statements for railway and terminal companies, and, also, information concerning mileage of lines operated, the volume of traffic, the number and compensation of employees and the like.

On December 31, 1923, there were in operation in the United States 235,563 miles of road. Counting the second, third, fourth and all other main tracks, the sidings and yard trackage, there were nearly 386,000 miles. The book value of the total investment [2] in the steam railroad industry, as shown by reports to the Interstate Commerce Commission, was approximately $20,000,000,000.[3] The total operating revenues in 1923 were nearly $6,294,000,000. Of this huge total, about $4,650,000,000 of value was created by the industry itself. The operatives and executives received nearly $3,200,000,000 of it as remuneration for their services, while the capital invested in the industry received in rent, interest, and profits slightly more than $1,443,000,000. From the latter amount the business enterprises had to pay $343,000,000 in taxes.

Table 168 presents the estimates of the total value created by the steam railroad transportation industry of the United States (including the Pullman service) and of its constituent shares in each of the several years under review.

TABLE 168.—*Estimated value created by the steam railroad industry and estimated division between wages and salaries, and rent, interest, and profits, by years, 1918 to 1923*

[Amounts in millions]

Year	Total value product	Wages and salaries	Rent, interest, and profits	Year	Total value product	Wages and salaries	Rent, interest, and profits
1918	$3,716	$2,776	$940	1921	$4,220	$2,984	$1,236
1919	3,939	3,022	917	1922	4,134	2,642	1,392
1920	4,331	3,912	419	1923	4,649	3,198	1,456

[1] Similar statements are true of the reports furnished by other so-called public utility companies, such as telephone, telegraph, gas, water, and electric railway companies, except that with some classes the prescription of accounts is made by the several States, and the reports are not published.

[2] This includes the book values less depreciation of all physical properties used in the industry; also all the cash, current assets and deferred assets less the current and deferred liabilities. It does not include the investments in securities.

[3] This figure excludes all investments by one company in the securities of other companies, also all sinking funds and the deposits in lieu of mortgaged property for the reason either that such investments represent duplication or that the funds were not invested in the railroad industry.

The total value created by the steam railroad transportation industry, inclusive of the Pullman and dining car service was $4,649,000,000 in 1923. Five years earlier it was $3,716,000,000. The increase during the half decade was almost exactly one-fourth.

Many people do not think of the transportation of commodities and passengers as creating value. The development of rapid and relatively cheap transportation has made possible localization of industry and business, whereby advantage could be taken of localities offering special facilities. Consequently the land and water transportation systems are properly to be regarded as a necessary part of a vast, nation-wide system of production. Without relatively cheap transportation of the products of the manufacturing centers to other parts of the country and of food and materials to the manufacturing centers, each community would have had to be nearly self-sufficient.

During 1920 the average number of employees of Class I steam railroads, representing about 90 per cent of the transportation business, numbered 2,023,000. The total number would be about 5 per cent of all the gainfully employed as reported by the census of occupation for that year. During 1919 railroad officials and employees received in salaries and wages an aggregate of $3,022,000,000. The previous year they had received over two and three-fourths billions. In the year following their remuneration reached its greatest aggregate, over $3,900,000,000. As a result of the readjustments that came after the industrial depression which began in 1920, labor's share of the value created by the industry declined nearly one and one-tenth billion dollars during the next two years. This decline took place in spite of the fact that the whole value product declined less than one-fifth of a billion. Most of the difference between these two amounts represented a transfer from labor's share to capital's share, the latter increasing from $123,000,000 to $966,000,000 during the two years. In 1923, labor's share again advanced to nearly three and one-fifth billion dollars.

The share of the value created by the steam railroad transportation industry that went to capital and enterprise fluctuated sharply. In 1918 and 1919 the industry was operated by the United States Railroad Administration. Employed capital's share the first year was $940,000,000. The next year it was $817,000,000. The railroads were returned to the stockholders in March, 1920. Although the total value-product increased nearly a half billion, and wages and salaries increased nearly ninety millions, capital's share dropped to $419,000,000 in 1920. The depression brought a readjustment. The next year, although the total value product of the industry was only $111,000,000 lower, the railroad managements reduced aggregate wages and salaries $928,000,000 and increased capital's share $817,000,000. During the next two years capital's share increased $220,000,000 more.

The book value of the total investment in the steam railroad transportation industry on January 1, 1923, including the Pullman service but excluding the railway express industry, was about $19,298,000,000. Taking into account the income-producing or income-retarding effect of the fresh investments and withdrawals that were made during the year, the $1,113,000,000 estimated as capital's share,

after deducting taxes of $848,000,000, of the total value-product of that year constituted a return for the year of about 5.7 per cent. When the industry was operated by the Federal Government in 1918 and 1919 the rates of return were 3.9 and 3 per cent, respectively. In 1920, the first year after the properties were returned to the companies, the rate of return was only two-thirds of 1 per cent.

Table 169 shows the proportions of the three shares to the total value created by the industry:

TABLE 169.—*Division of the total value created by the steam railroad industry between wages and salaries, and rent, interest, and profits, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Year	Wages and salaries	Rent, interest, and profits
1918	74.7	25.3	1922	68.8	31.2
1919	78.7	21.3	1923	68.7	31.3
1920	90.4	9.6			
1921	70.7	29.3	Average	75.2	24.8

During the six years 1918 to 1923 the personnel of the industry received a little over three-fourths of the value-product in salaries and wages, leaving about one-fourth of the total as the return to all employed capital. In 1920 wages and salaries consumed over 90 per cent and rent, interest, and profits less than 10 per cent of the total.

Question arises as to why the executives and operatives of the steam railroad industry should receive so large a share of the income thus shown. The reason is indicated by the proportion in which the two factors are combined. The average number of employees of Class I railroad and Class I terminal companies in 1922 was 1,645,233. The average capital employed during the year was $18,956,153,000. Thus there was $11,522 of invested capital per employee. This ratio of the capital to the labor factor accounts in part for the proportions in which the income was divided.

WAGES PAID BY CLASS I STEAM RAILROADS.—For statistical purposes the Interstate Commerce Commission designates as "Class I" all steam railroads having annual operating revenues of over $1,000,000 each. Such roads do most of the country's freight and passenger traffic, employ the majority of persons engaged in railroad transportation, and pay more than 90 per cent of the wages and salaries of the industry. The Interstate Commerce Commission compiles data showing for Class I steam railroads the average number of employees, the average number of hours worked per employee, the average daily and hourly rates, and the average earnings per employee for specified groups of employees. In the computation of these averages the hours worked by all salaried executives and clerical, as well as daily and hourly wage workers, have been computed and total wages and salaries paid divided by the total number of hours worked.

Table 170 shows the average number of employees, the average number of hours worked, the average compensation per hour, and the

average compensation per employee by years from 1916 to 1923, inclusive:

TABLE 170.—*Average number of employees, hours worked, and wages paid by Class I steam railways, by years, 1916–1923* [1]

Year ended	Average number of employees	Average number of hours worked	Average compensation per hour	Average compensation per employee
June 30, 1916	1,599,165	3,100.2	$0.276	$854.20
Dec. 31, 1916	1,647,697	3,150.9	.283	891.12
Dec. 31, 1917	1,732,876	3,133.1	.320	1,003.81
Dec. 31, 1918	1,841,575	3,006.0	.458	1,419.34
Dec. 31, 1919	1,813,622	2,980.1	.565	1,683.80
Dec. 31, 1920	2,038,852	2,992.8	.670	1,920.12
Dec. 31, 1921	1,559,513	2,490.1	.667	1,660.28
Dec. 31, 1922	1,626,834	2,650.0	.612	1,622.20
Dec. 31, 1923	1,857,674	2,653.1	.610	1,617.11

[1] From Statistics of Railways in the United States, 1923, p. XIX.

During the war period and the period of Government operation the average number of persons employed increased sharply and reached its maximum of a little over two million persons during 1920. During this year three methods of operation prevailed at different times. In the first two months the roads were under Federal control. From March to August they were privately operated with income guaranteed by the Government, and after September 1, 1920, they were privately operated without guaranty of income. Following return to private operation there was a sharp reduction in number of employees, probably due in part to attempts on the part of management to increase efficiency and in part to the general business depression.

The calendar year 1916 shows the maximum number of hours worked per person, 3,150.9. Although the Adamson 8-hour law became effective January 1, 1917, there was no marked reduction in average number of hours worked during that year. In 1921 not only was the number employed reduced sharply below the maximum of 1920, but the average hours worked per employee were at their minimum, 2,500 for the year. In 1922 and 1923 the average hours worked appear to have assumed stability at about 2,650 hours per employee, an average representing somewhat less than 8 hours per day per man.

During the period covered average wages per hour moved sharply upward from about 28 cents per hour in 1916 to 67.6 cents in 1920, 66.7 cents in 1921, 61.3 cents in 1922, and 61 cents in 1923. Average compensation per employee rose sharply notwithstanding decreased hours, from $850 to $900 per employee in 1916 to $1,820 in 1920 but thereafter decreased and appear to have become stabilized in 1922 and 1923 at about $1,620 per employee.

DISTRIBUTION OF WAGES AND SALARIES BY CLASSES OF EMPLOYEES.—As shown in Tables 168 and 169, it has been estimated that from $2,800,000,000 to $3,100,000,000, representing from 68.7 to 70.7 per cent of the total value product of steam railroads, was paid in salaries during the years 1921 to 1923, inclusive. Of this total from $2,600,000,000 to $3,000,000,000 was paid by class I roads. The following table shows the amounts and percentages of the total paid to employees working on a per diem basis and to employees working on an hourly wage basis for the last six months of 1921 and for the years 1922 and 1923:

TABLE 171.—*Total number of persons employed and total wages and salaries paid on daily and hourly payment basis by class I steam railroads, July, 1921, to December, 1923*

Period covered and group	Employees		Wages	
	Number	Per cent of total	Amount	Per cent of total
July to December, 1921:				
Daily basis	115,097	6.8	$142,117,873	10.6
Hourly basis	1,580,376	93.2	1,203,027,984	89.4
Total	1,695,473	100.0	1,345,145,857	100.0
Year 1922:				
Daily basis	114,700	7.1	285,060,187	10.8
Hourly basis	1,512,036	92.9	2,355,730,818	89.2
Total	1,626,834	100.0	2,640,817,005	100.0
Year 1923:				
Daily basis	121,001	6.5	305,380,730	10.2
Hourly basis	1,736,583	93.5	2,698,690,152	89.8
Total	1,857,074	100.0	3,004,071,882	100.0

About 93 per cent of all railroad employees worked for an hourly wage and received from 89.2 to 89.8 per cent of the total wages and salaries paid. The remaining 7 per cent of the total number of employees received a somewhat larger percentage of the total wages and salaries, from 10.2 to 10.8 per cent in the different periods covered.

Table 172 shows a more detailed analysis of the number employed and the total salaries by classes of employees, as shown by the Interstate Commerce Commission for the same periods:

TABLE 172.—*Analysis of number of employees of and total salaries paid by Class I railroads July, 1921, to December, 1923*

Period covered and group	Employees		Wages	
	Number	Per cent of total	Amount	Per cent of total
July to December, 1921:				
Executives, officials, and staff assistants	15,164	0.9	$38,159,707	2.8
Professional, clerical, and general	274,283	16.2	217,585,387	16.2
Maintenance of way and structures	395,057	23.3	220,074,007	16.4
Maintenance of equipment and stores	480,985	28.4	382,774,305	28.0
Transportation (other than engine and yard)	208,733	12.3	146,134,818	11.0
Transportation (yard masters, switch tenders, and hostlers)	23,532	1.4	24,106,437	1.8
Transportation (train and engine service)	297,690	17.5	315,271,056	23.5
Total	1,695,473	100.0	1,345,145,857	100.0
Year 1922:				
Executives, officials and staff assistants	15,260	.9	77,009,701	2.9
Professional, clerical and general	277,514	17.1	448,771,087	16.7
Maintenance of way and structures	358,895	22.1	381,068,570	14.5
Maintenance of equipment and stores	451,389	27.7	746,074,720	28.2
Transportation (other than engine and yard)	201,978	12.5	265,740,540	10.3
Transportation (yard masters, switch tenders, and hostlers)	23,934	1.4	46,163,221	1.8
Transportation (train and engine service)	297,084	18.3	661,418,600	25.1
Total	1,626,834	100.0	2,640,817,005	100.0
Year 1923:				
Executives, officials and staff assistants	16,088	.9	82,624,674	2.8
Professional, clerical and general	293,491	16.2	447,705,005	14.9
Maintenance of way and structures	393,291	21.4	440,078,253	14.7
Maintenance of equipment and stores	584,573	31.5	909,204,204	30.2
Transportation (other than engine and yard)	213,445	11.4	302,033,038	10.0
Transportation (yard masters, switch tenders, and hostlers)	25,548	1.4	54,651,589	1.8
Transportation (train and engine service)	337,228	18.2	768,287,000	25.6
Total	1,857,674	100.0	3,004,071,882	100.0

Employees engaged in maintenance of way, structures, equipment and stores constituted half or a little more than half of all employed but received only 43 to 45 per cent of the total wages paid in the different periods covered. Those employees engaged on maintenance of way, constituting 21 to 23 per cent of the total number employed, included a large number of unskilled laborers who were relatively low paid, receiving only about 15 per cent of the total wages and salaries.

The next largest group is the transportation service, including the last three groups in the table. This service employed 31 to 32 per cent of the total number of persons and their wages and salaries accounted for approximately 37 per cent of the total paid. Yard masters, switch tenders, hostlers and train crews, representing about 19 per cent of the total number of employees, are paid relatively higher wages than other transportation employees and received from 25 to 27 per cent of the total wages paid.

The professional and general clerical group constituted 15 to 17 per cent of the total number of employees and received practically the same percentages of total wages paid. The executive group, constituting less than 1 per cent of the total number employed, is relatively the highest paid, but the salaries of the group amounted in the aggregate to less than 3 per cent of the total in each of the periods covered.

The predominance of the hourly basis of wage payment has been indicated above. (See Table 171.) The following table shows the percentage distribution of total number of employees and total wages paid by method of payment in each employee group.

TABLE 173.—*Percentage distribution of total number of employees and total wages paid by method of wage payment Class I steam railroads, July, 1921, to December, 1923*

Period covered and group	Daily basis		Hourly basis	
	Per cent of total employees	Per cent of total wages	Per cent of total employees	Per cent of total wages
July to December, 1921:				
Executives, officials, and staff assistants	0.9	2.8		
Professional, clerical, and general	2.8	3.7	13.4	12.5
Maintenance of way and structures	.3	.5	23.0	15.1
Maintenance of equipment and stores	.9	1.7	27.5	27.3
Transportation (other than train, engine, and yard)	1.4	1.2	10.7	9.8
Transportation (yardmasters, switch tenders, and hostlers)	.4	.7	1.9	1.1
Transportation (train and engine service)			17.5	23.6
Total	6.9	10.6	93.1	89.4
Year 1922:				
Executives, officials, and staff assistants	.9	2.9		
Professional, clerical, and general	3.0	3.9	14.0	12.8
Maintenance of way and structures	.3	.6	21.8	14.6
Maintenance of equipment and stores	.9	1.7	29.8	26.5
Transportation (other than train, engine, and yard)	1.0	1.1	10.9	8.7
Transportation (yardmasters, switch tenders, and hostlers)	.4	.7	1.0	1.1
Transportation (train and engine service)			18.3	25.1
Total	7.1	10.8	92.9	89.2
Year 1923:				
Executives, officials, and staff assistants	.9	2.8		
Professional, clerical, and general	2.7	3.5	12.5	11.4
Maintenance of way and structures	.2	.5	21.1	14.2
Maintenance of equipment and stores	.9	1.7	30.6	26.5
Transportation (other than train, engine, and yard)	1.4	1.0	10.8	8.9
Transportation (yardmasters, switch tenders, and hostlers)	.4	.7	1.0	1.1
Transportation (train and engine service)			18.2	25.0
Total	6.5	10.3	93.5	89.8

One group, made up of executives and officers, shows no hourly-wage employees whatever and one group, made up of trainmen, has no daymen in it. All of the other groups have a small proportion of day-wage and a much larger proportion of hourly-wage men. It is quite noticeable in nearly every group that daymen receive a somewhat larger proportion of the total wages paid than do the much larger number of hourly-wage men in the same group. The one exception to this general statement is to be noted in the case of transportation employees other than train, engine, and yard. Daymen of this group representing about 1.5 per cent of the total number of employees received but a little over 1 per cent of the total wages paid. The proportions both of men employed and wages paid shows but little change from year to year of the period covered.

Table 174 shows the average wages paid and the average paid per day or per hour, as the case may be, to daily-wage and hourly-wage workers. The groupings are the same as in the preceding table:

TABLE 174.—*Average total wages per employee on daily and hourly pay basis and average wages per day or hour paid by Class I steam railroads, July, 1921, to December, 1923*

Period covered and group	Daily basis		Hourly basis	
	Average per employee	Average per day	Average per employee	Average per hour
July to December, 1921:				
Executives, officials, and staff assistants	$3,516	$15.70		
Professional, clerical, and general	1,065	4.72	$737	$0.68
Maintenance of way and structures	1,420	5.73	518	.44
Maintenance of equipment and stores	1,488	5.63	780	.62
Transportation (other than engine and yard)	887	3.51	728	.64
Transportation (yardmasters, switch tenders, and hostlers)	1,338	5.45	846	.61
Transportation (train and engine service)			1,068	.79
Average, all groups	1,235	7.45	761	.60
Year 1922:				
Executives, officials, and staff assistants	5,054	16.07		
Professional, clerical, and general	2,120	6.74	1,476	.87
Maintenance of way and structures	2,842	8.88	1,090	.42
Maintenance of equipment and stores	2,961	8.94	1,666	.60
Transportation (other than engine and yard)	1,155	3.28	1,447	.58
Transportation (yardmasters, switch tenders, and hostlers)	2,677	8.45	1,788	.62
Transportation (train and engine service)			2,290	.79
Average, all groups	2,483	7.65	1,558	.59
Year 1923:				
Executives, officials, and staff assistants	5,190	16.20		
Professional, clerical, and general	2,180	8.03	1,405	.57
Maintenance of way and structures	2,805	8.92	1,084	.45
Maintenance of equipment and stores	2,928	8.82	1,513	.50
Transportation (other than engine and yard)	1,160	3.24	1,451	.53
Transportation (yardmasters, switch tenders, and hostlers)	3,065	8.40	1,771	.62
Transportation (train and engine service)			2,278	.79
Average, all groups	2,522	7.64	1,664	.58

In considering the average total wages per employee it should be noted that the amounts for 1921 are for six months only, and, therefore, are about one-half as large as in 1922 or 1923.

Those who are paid on the daily wage basis include persons in higher paid executive and supervisory positions. Consequently the average daily wage and the average earnings per man for the daily wage group are higher than for the hourly wage group. In some groups

the average earnings per man in the daily wage group are twice those of the hourly wage group. One exception to be noted is the transportation other than engine and yard group in which the daymen are paid less per 8-hour day than the hourly men and receive less as their total compensation for the periods shown.

As between different groups of daily-wage employees, the group made up of executives, officials, and staff assistants was the highest paid and transportation employees other than engine and yard comprised the lowest paid group. The second highest paid daily-wage group throughout the period covered was made up of yardmasters, switch tenders, and hostlers. Among hourly-wage men the train and engine men are the highest paid, both per hour and in total compensation received, and the maintenance of way and structures, made up largely of section hands, are the lowest paid.

The average daily wages of the groups made up of executives, officials and staff assistants, professional and clerical and maintenance of way and structures employees have increased slightly since the middle of 1921. The average wages of the remaining daily-wage groups have remained about the same or decreased slightly during the same period. The largest increase in daily wage shown is for executives, officials and staff assistants. The number of such employees has increased from 15,164 to 16,088 but they represent less than 1 per cent of the total number of employees. The result of increasing the number and paying higher wages to the group has been an increase of about $6,000,000 in the total wages received by them, but the percentage of their total wages and salaries to the total for all groups was the same for 1923 as for the last six months of 1921. Average daily wages paid to transportation employees have shown a tendency to decrease slightly since 1921. For all daily-wage groups taken together the average daily wage has increased from $7.45 to $7.64, an increase of 19 cents per day.

Average hourly wages for all but the two last groups have shown a slight tendency to decrease, amounting, however, to but a cent or two per hour. For yardmasters, switch tenders, and hostlers the average has increased 1 cent per hour and for train crews has remained unchanged since the middle of 1921. For all groups the average hourly rate has decreased 1 cent per hour since 1921.

Summarizing briefly, the Class I steam railroads pay total wages and salaries of about $3,000,000,000 to somewhat more than 1,750,000 employees, representing over 4 per cent of the total population gainfully employed. Ninety-three and a half per cent of the wage earners are paid by the hour and received in 1923 slightly less than 90 per cent of the total wages and salaries paid. Hourly wages ranged for different groups from about 43 cents to 79 cents per hour and averaged 59 cents for all groups. Average annual earnings per man working on an hourly basis in 1923 ranged from $1,084 for maintenance of way and structures men to $2,278 for trainmen, and averaged $1,554 for all employees paid on an hourly basis.

The remaining 6.5 per cent of the total number of employees on a daily wage basis were paid higher wages per man in most of the employee groups and received a little more than 10 per cent of the total wages. Their average annual compensation for the year 1923 ranged from $1,160 per man for transportation labor other than train, engine, and yard labor to $5,136 per man for executives, officials, and

staff assistants. Every group but one of the daily wage employees received annually more than $2,000 per man. The average annual compensation for day men in 1923 was $2,522 as against $1,554 for employees paid by the hour. Thus the average pay of the daily wage workers, including executives and others assuming to a greater or less degree the responsibility of directing and supervising the operation and maintenance of the transportation industry, was about $1,000 more per year than that of the much larger number of employees working on the hourly wage basis. Executives, officers, and staff assistants were paid on the average about five times as much during the year as the least skilled hourly wage workers, but this group is so small in number that their total wages represent less than 3 per cent of the total wages and salaries paid.

Section 2. Electric railroads.

VALUE CREATED BY THE ELECTRIC RAILWAY INDUSTRY.—A census of street railways, elevated and underground, urban and of "interurban" electric railways is taken at five-year intervals. It does not include certain electrified portions of steam railways. The last census was taken in 1922.

The census includes cable, gas engine, horse drawn and gravity operated railway also. However, in 1922 there were only 143 miles of such railway compared with 43,789 miles of electric railway lines in the United States. This comparison shows the extent to which electric power dominates the railway industry of the country other than steam railways.

The total value of road and equipment in 1922, as reported by the census, was nearly $5,059,000,000. This valuation represented a slight decrease as compared with the corresponding amount reported in 1917. There was also a slight decrease in mileage of line.

Electric railway companies do not report to any Federal agency except the census, and to the Internal Revenue Bureau unless they do an interstate business. Many States have public utility commissions which exercise a certain regulatory control over the electric railways in their intrastate operations and to which the electric railways make periodic reports. The data in these reports are not tabulated and published, however. So that there are no available governmental data on electric railway operations during noncensus years.

The American Electric Railway Association, however, collects annual reports from its members and publishes extensive data in Aera, a monthly periodical devoted to the interests of the industry. The proportion of the industry represented in these tabulations has increased rapidly. The number of companies that reported for 1917 was not stated. Their total railway operating revenues, however, amounted to $104,700,000 as compared with a census figure of $650,150,000 for the industry as a whole. For 1918 and 1919, 103 companies reported, showing aggregate operating revenues amounting to nearly $193,000,000 for the former year and over $231,000,000 for the latter. By 1922, the number of reporting companies had increased to 288.[4] The operating revenues reported for that year amounted to $539,000,000 compared with $925,477,000 reported by the census for the industry as a whole. The sample represented in

[4] In the 1922 report 225 companies were shown for that year but in the 1923 report data for 288 companies were shown for 1922.

these American Electric Railway Association data increased during the half decade from 16 per cent to 50 per cent of the industry, measured in terms of gross value of the service rendered. In 1923, 288 companies reported, showing aggregate railway operating revenues of nearly $550,000,000.

These American Electric Railway Association data showed taxes chargeable to operations and "operating income," but not wages and salaries. To supply the deficiency a questionnaire was sent to a representative list of these companies, asking them to report their total railway operating revenues, total wages and salaries and total taxes chargeable to operations, including income taxes, for each of the years 1918 to 1923, inclusive. The questionnaire was sent to only 72 companies, distributed in such manner as to obtain a representation of each State. Fifty-seven companies answered. Their aggregate railway operating revenues in 1922 amounted to more than $332,000,000, or considerably more than one-third of the census figure for the whole industry.

METHOD OF ESTIMATING VALUE OF PRODUCT.—The summaries of the data obtained from these various sources and the details of their application in arriving at the estimates of the value product of the industry, in the six years 1918 to 1923, are shown in appendix, Tables 52 to 61. The method of application was as follows:

First, the total railway operating revenues for the years 1918 to 1923 were estimated by applying to the revenues reported by the census for 1917, index numbers derived by comparing the total operating revenues reported by identical lists of companies in successive years. One list of companies was represented in the comparison of 1918 with 1917, another for 1919 with 1918, etc. The immediate results of the comparisons were "sequential ratios;" e. g., a ratio of revenues in 1918 to revenues in 1917, a ratio of revenues in 1919 to revenues in 1918, etc. Successive multiplication of the railway operating revenues for 1917, as stated in the census, by these ratios from 1918 to 1922, afforded a preliminary estimate of the amount of railway operating revenues in each year.

The preliminary estimate for 1922 was compared with the census enumeration for that year and a corrective factor derived. The estimate was $959,168,000; the amount reported by the census was $925,477,000. The difference of $33,691,000 in the estimate was considered an overstatement which was only 3.64 per cent of the enumerated amount, and even this small difference does not pertain to the one year alone, but is the result of an accumulation in the five successive sequential ratios for the years 1918 to 1922.

The probable cause of these differences is that the method of deriving the individual sequential ratios did not provide for taking into account the retarding effect upon the growth in the revenues of the industry of the dissolution of a few companies in small cities and the abandonment of their lines and service. As before stated, the total mileage of track and the total investment in road and equipment in 1922 was, according to the census, slightly less than in 1917. The total operating revenues of the industry increased 42 per cent during the half decade. Apparently, however, this increase was more than accounted for by increases in fare rates and volume of traffic handled by those systems that survived the half decade. The sequential ratio for any year reflected only the change in revenues

of those systems that survived from the preceding year. Hence the estimates made with their use slightly overstated the revenues of the industry as a whole to the extent that the sequential ratios failed to represent in proper proportion the drop to nil of the revenues of those companies that dissolved and abandoned their lines.

The corrective factor for 1922 was the ratio of the census enumeration to the estimate, i. e., of $925,477,000 to $959,168,000. From this ratio were derived corrective factors to be applied to the estimates for the other years.[5]

From the American Electric Railway Association data and from the tabulation of the data reported directly to this inquiry, average percentages to railway operating revenues were computed for wages and salaries, and for net operating income. The latter item was taken to constitute the share of the product of the industry that was available for rent, bond interest, and profits, i. e., the share going to the capital employed in the industry. This was done because the "operating income" seemed to be the amount contributed for these purposes by the industry; any other income available for those purposes came from sources outside the industry and presumably was included in the value-product estimates for other industries. Likewise, any further deductions from income represented only the distribution of these shares, except that any interest on bank loans may have been included in such deductions; but there was no way of determining the amount or proportion of such interest, if any.

These average percentages for the respective years were applied to the railway operating revenues for those years. The results constituted preliminary estimates of the several shares of the value created by the industry.

The preliminary estimates for 1922 were compared with the corresponding enumerated amounts for that year, as stated by the census, and a corrective factor was derived for each of the three shares. These corrective factors were applied to the preliminary estimates for each year in order to make the final estimate. Thus, the preliminary estimates of taxes for 1922 was $60,859,000; the amount reported by the census was $64,788,000. Comparison of the two gave a corrective factor of 1.06456, which means that the correct amount exceeded the estimate by 6.456 per cent. Again, comparison of the estimate of salaries and wages, $441,453,000, with the enumerated amount, $445,680,000, gave a corrective factor of 1.009576. In like manner, the estimate of net operating income was $217,811,000, the enumerated amount was $224,136,000, and the corrective factor was found to be 1.02913.

These same corrective factors were applied to the corresponding preliminary estimates for each year in the period under review. The reason for using the same set of factors for each year was that it was not thought that the differences in the estimates for 1922 were cumulative. There was reason to believe, rather, that they were due to a defect in the samples, whereby not all of the taxes, wages, and salaries, and net operating income of the samples themselves were

[5] Since the preliminary estimate for 1922 was made by multiplying the census enumeration of 1917 successively by five sequential ratios, each of which probably contained an error, a corrective factor to be applied to each of these annual ratios was derived by taking the 5th root of the ratio designated in the text.

ascertained. Many of the electric railway companies not only sell electric energy to municipalities and to private individuals and companies, but even maintain separate electric light and power departments for the purpose. It is known that a portion of the operating expenses, wages and salaries, and operating income reported by the census was properly assignable to these auxiliary operations, but could not be segregated. It is believed, on the other hand, that the taxes and operating income of the companies reporting to the American Electric Railway Association and the wages and salaries of companies reporting to this inquiry pertained rather more exclusively to their transportation business. If this is true, the average percentages derived would be somewhat too small to cover the combined transportation and light and power business of the companies in the industry. Furthermore, these differences would probably exist in about the same proportion in each year. Hence the decision to apply to the estimates for each year the corrective factors found for 1922.

Before presenting the final results, it may be interesting to observe the course of gross railway operating revenues of the industry during the period 1917 to 1923; these are shown in Table 175.

TABLE 175.—*Estimated aggregate railway operating revenues of street and electric railways industry, by years, 1917 to 1923.*

Year	Amount of operating revenue	Index numbers (1917=100) [1]	Sequential ratios (amount in preceding year=1) [2]	Year	Amount of operating revenue	Index numbers (1917=100) [1]	Sequential ratios (amount in preceding year=1) [2]
1917	[3] $650,150,908	100.0	1.0000	1921	[4] 942,382,000	145.0	0.9968
1918	[3] 686,818,000	105.6	1.0564	1922	[3] 926,477,488	142.3	0.9830
1919	[3] 817,178,000	125.6	1.1898	1923	[4] 937,694,000	144.2	1.0132
1920	[4] 943,514,000	145.1	1.1547				

[1] Formed by successive multiplication of the ratios in column three commencing with the ratio for 1918, the decimal point being moved two places to the right in the result.
[2] For derivation, see text and appendix, Table 53.
[3] Census of Electric Railways, 1922, p. 131.
[4] Estimated.

The railway operating revenues of the street and electric railway industry rose rapidly during the three years from 1917 to 1920. In the former year they were, according to the census, a little less than $650,150,000. In the latter year they were, according to the estimate, $943,514,000. This represents an increase of slightly over 45 per cent in the three years. They fell off slightly in 1921, and nearly 2 per cent in 1922, as compared with 1921. In 1923 they increased a little less than 1½ per cent over 1922. Electric railway operating revenues have been nearly stationary in aggregate volume since 1920.

The sequential ratios show the proportions of increase from one year to the next. Thus the revenues in 1918 were 5.64 per cent greater than in 1917; in 1919 they were 18.98 per cent greater than in 1918; and they increased again 15.47 per cent the next year.

As before intimated, the railway operating revenues do not represent the whole of the gross operating revenues of the street and

electric railway companies. A large proportion of the companies also sell electric energy to municipalities and the general public. The revenues from these "auxiliary operations" amounted to nearly $60,000,000 in 1917 and to more than $91,000,000 in 1922.[4] As the purpose in estimating the railway operating revenues was merely to obtain a base in each year from which to estimate the value product of the industry, the revenues from auxiliary operations for the other years were not estimated. The value-product as estimated, however, includes the value created in these auxiliary operations as well as in the transportation operations.

ESTIMATED VALUE PRODUCT.—The estimates of the value product of the street and electric railway industry and its constituent shares are presented in Table 176.

TABLE 176.—*Estimated total value created by the street and electric railway industry and estimated distribution between wages and salaries, rent, interest, and profits, by years, 1918 to 1923*

Year	Total value created	Wages and salaries	Rent, interest, and profits	Year	Total value created	Wages and salaries	Rent, interest, and profits
1918....	$523,162,000	$318,961,000	$203,191,000	1921....	$754,076,000	$470,178,000	$277,898,000
1919....	645,515,000	406,158,000	240,357,000	1922....	734,004,000	445,680,000	289,924,000
1920....	744,142,000	498,849,000	245,293,000	1923....	744,589,000	459,326,000	285,263,000

The estimated total value created by the street and electric railway industry of the United States was a little over a half-billion dollars in 1918. It rose rapidly during the next two years, so that it amounted to more than $744,000,000 in 1920, and increased another $10,000,000 the next year. It decreased nearly $20,000,000 in 1922, and recovered only about half that amount in 1923. The next increase in the total value product of the industry during the half decade was nearly 43 per cent.

During the same period the wages and salaries of the street and electric railway operatives and executives increased from a little under $319,000,000 to over $459,000,000, or 44 per cent. Wages and salaries attained their greatest aggregate in 1920, when they amounted to nearly $499,000,000—a little under a half billion; they declined considerably both in 1921 and 1922, but recovered slightly in 1923.

The portion of the value product of the street and electric railway industry that went to employed capital amounted to more than $203,000,000 in 1918 and to over $285,000,000 five years later. The increase was about 40 per cent. The greatest amount, $289,000,000 was earned in 1922.

According to the Census, the investment in the industry on January 1, 1922, was about $5,100,000,000. Taking into consideration the amount of new investment from outside the industry during the year and the amount of withdrawals in dividends, bond interest, and rentals, the average investment for the year was about $5,010,000,000. On this basis, the $224,000,000 that was available for rent, interest, and dividends in 1922, after deducting taxes of $64,788,000, repre-

[4] Census of Electric Railways, 1923, p. 131.

sented a return of less than 5 per cent. The proportions of the principal shares of the total value created by the industry are more interesting and significant than the absolute amounts themselves. These proportions are shown in Table 177.

TABLE 177.—*Estimated percentage distribution of the total value created by the street and electric railway industry between wages and salaries, and rent, interest, and dividends, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Year	Wages and salaries	Rent, interest, and profits
1918	61.1	38.9	1922	60.7	39.3
1919	62.8	37.2	1923	61.7	38.3
1920	67.1	32.9			
1921	65.2	34.8	Average	62.8	37.2

During the six years 1918 to 1923 the executives and operatives of the industry received in salaries and wages for their services about 63 per cent, or practically five-eighths. The portion available for rent, interest, and profits, before the deduction of taxes, was a little over 37 per cent of the total value created by the industry.

TAXES.—The amount of taxes payable by the enterprises in this industry (disregarding taxes payable by employees or lenders of capital) and percentages of the total value product of the industry are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$48,008,000	9.2	1921	$60,112,000	9.2
1919	57,477,000	8.9	1922	64,788,000	8.8
1920	62,480,000	8.5	1923	65,744,000	8.3

WAGES PAID BY ELECTRIC RAILWAYS.—According to data published by the Bureau of the Census there were in the United States in 1922 some 850 electric railway systems employing in their operation 300,523 persons, or seven-tenths of 1 per cent of the total population gainfully employed. These roads paid to their employees in 1922 a total of $445,680,135 in wages and salaries, or an average of $1,483 per employee, including both salaried executives and wage workers. This average is $71 per employee less than that paid to employees of Class I steam railroads, which amounted to $1,554 per employee for the year 1922.

The following table shows for the census years 1912, 1917, and 1922 the number of employees, total wages and salaries paid, average wages and salaries per employee, and percentages of total number of employees and total salaries paid to specified occupational groups:

TABLE 178.—*Employees and wages and salaries, by occupational groups, for electric railways, 1912, 1917, and 1922*

Group	Number of employees	Amount of wages and salaries	Per cent of total employees	Per cent of total salaries
1912				
Salaried employees:				
Officials	1,927	$5,708,559	0.6	2.8
Managers and superintendents	2,882	5,876,526	1.0	2.7
Clerks, stenographers, etc	18,402	15,043,707	6.6	7.5
Wage earners:				
Conductors and motormen	131,321	95,451,625	46.5	47.5
All other wage earners	127,809	79,218,556	45.3	39.5
Total	282,461	200,890,969	100.0	100.0
1917				
Salaried employees:				
Officials	1,583	5,786,499	.6	2.6
Managers and superintendents	2,889	6,206,507	1.0	2.3
Clerks, stenographers, etc	22,379	20,017,806	7.6	7.5
Wage earners:				
Conductors and motormen	136,184	127,222,144	46.2	47.6
All other wage earners	131,491	108,165,544	44.6	39.7
Total	294,520	267,240,342	100.0	100.0
1922				
Salaried employees:				
Officials	2,017	8,046,893	.7	2.9
Managers and superintendents	3,258	10,403,759	1.1	3.8
Clerks, stenographers, etc	24,864	38,136,439	8.3	8.6
Wage earners:				
Conductors and motormen	130,294	206,600,205	43.3	46.0
All other wage earners	[1] 140,080	[2] 183,506,839	46.6	41.1
Total	300,523	445,690,135	100.0	100.0

[1] Includes 401 motor-bus operators.
[2] Includes $545,173 paid in wages to motor-bus operators whose compensation averaged $1,357 per man.

Over 90 per cent of the employees were wage earners engaged in the operation of cars, power plants, and maintenance of track and equipment. In the different census years from 43 to 46 per cent were conductors and motormen, 44 to 46 per cent were power plant and maintenance men, about 7 or 8 per cent were clerks and stenographers and less then 2 per cent were executives and superintendents.

As in the case of steam roads the executives and superintendents receive the highest average compensation, men engaged in operation of cars come next, the clerical and stenographic force third and all other wage earners receive the lowest average per man. Officials and superintendents, representing less than 2 per cent of the total number of employees received from 4.3 to 5.5 per cent of the total wages and salaries in the different census years, 1922 being the year when their percentage of the total was least.

The clerical and office force, representing in different years from 6.6 to 8.3 per cent of the total number of employees, received from 7.5 to 8.6 per cent of the wages and salaries paid, 1922 being the year of highest percentage both of total number of employees and of total wages and salaries.

Conductors and motormen, representing from 43 to 46.5 per cent of all employees, received in different years, from 46.0 to 47.5 per cent of the total wages and salaries, 1922 being the year when, due to increased use of one-man cars, the percentages, both of total number of employees and of total wages, were least. In 1912 the average

compensation of motormen and conductors was less than that of the clerical office force, but in 1922 the reverse was the case.

In contrast to the three preceding groups, each of which received a greater proportion of salaries than its proportion of the total number of employees, the "all other employees" group, representing from 44.6 to 46.6 per cent of the total number of employees in different years, received but 39.5 to 41.1 per cent of the total salaries and wages.

Since 1912 there has been a marked increase in the average compensation received by all of the occupational groups. The following table shows the average compensation received by each group in each of the three census years and the increases of 1917 and 1922 over 1912 expressed in index numbers (1912 = 100.0).

TABLE 170.—*Average compensation per employee paid by electric railways in 1912, 1917, and 1922*

Group and year	Average compensation	Index number 1912=100	Group and year	Average compensation	Index number 1912=100
Officials:			Conductors and motormen:		
1912	$2,962	100.0	1912	$727	100.0
1917	3,604	121.7	1917	934	128.5
1922	4,435	149.7	1922	1,572	216.2
Managers and superintendents:			All other wage earners:		
1912	1,800	100.0	1912	630	100.0
1917	2,148	119.1	1917	807	128.2
1922	3,068	166.0	1922	1,310	211.3
Clerks, stenographers, etc.:			Average, all employees:		
1912	815	100.0	1912	711	100.0
1917	936	114.7	1917	907	127.5
1922	1,530	187.7	1922	1,483	208.5

During the 10 years, 1912 to 1922, the average compensation for all employees more than doubled, increasing from $711 for 1912 to $1,483 for 1922. The average for 1922 is comparable with the average of $1,554 per employee paid by class I steam roads during the same year. The greater part of the increase, it will be noted, took place between 1917 and 1922.

The largest relative increases are shown by the two large groups made up of conductors and motormen and all other wage earners. The average compensation per man in both of these groups more than doubled. The index numbers for these two groups in 1922 (using 1912 as 100) were 216 and 211, respectively, as compared with 188 for clerks and stenographers, 166 for managers and superintendents, and 149 for officers.

In actual amount, however, the compensation of officers showed the largest increase, amounting in 1922 to $1,473 per year more than the average salary for 1912. For managers and superintendents the average increase, 1922 over 1912, was $1,232; for clerks, stenographers, etc., $715; for conductors and motormen, $845, and for all other wage earners, $690.

In general the movement of wages and salaries for electric railways has been quite similar to that for steam railways, but the average salaries and wages paid are less on electric than on steam roads.

Section 8. Railway express industry.

VALUE CREATED BY THE RAILWAY EXPRESS INDUSTRY.—This industry is a supplement to the railway transportation industry and might have been treated in the section dealing with steam railroads. The express matter is carried in railway cars, most of the transportation costs are borne directly by the railroad companies, and apparently they obtain most of the income.

Formerly there were several express companies—the Adams, the American, the Great Northern, the Northern, the Southern, the Western, and the Southwestern—serving for the most part different areas. When the United States assumed the operation of the railroads in 1918, the Director General caused the formation of the American Railway Express Co. to consolidate the express transportation business and carry it on during the period of Federal control. This company purchased the tangible properties of the Adams Express Co., the American Express Co., the Southern Express Co., and the Wells Fargo & Co., and leased the properties of the other three companies.

At the time of forming this consolidation it was regarded as a temporary war measure. However, at the conclusion of Federal operation, arrangements were made to continue the American Railway Express Co. as the operating organization. This company conducts all of the railway express business of the United States except that conducted, beginning with 1921, by the Southeastern Express Co., which was organized in that year.

The terms of the uniform contract between the American Railway Express Co. and the railroad companies are interesting because they indicate that the major portion of the service is regarded as being rendered by the railway companies. These terms divide the railroads of the country into four groups and provide—

that the gross express transportation revenues accruing on each railroad in the several groups shall be ascertained by crediting to each railroad the express revenue earned wholly thereon, and prorating the revenue accruing on interline traffic; that the expenses incident to the conduct of such business shall be charged to the respective groups in which incurred, and shall be deducted from the gross transportation revenues, leaving an amount termed "income for division" from which shall first be set aside for the express company an amount equaling 2½ per cent thereof, the remaining balance to be designated as "net income for division" to be distributed among the railroads in the group in the proportion that the gross express transportation revenue for the month earned on the line of each railroad bears to the gross express transportation revenues earned on the lines of all such railroads in that group for the month.

As a further consideration, the express company agrees that for each year in which this contract is in force, during which the sum of the amounts set aside for it at 2½ per cent of the "income for division" in the several groups, shall exceed 6 per cent of the average value of the entire property and equipment and other capital of the express company employed in the express business, such excess shall be divided one half to the express company and the other half to the railroads. The express company's one-half proportion of the profit thus accruing shall be accumulated by it until a sum equal to 10 per cent of the value of the entire real property and equipment and other capital of the express company then employed in the express transportation business shall have been reached; after which any profits shall be divided in the ratio of one-quarter to the express company and three-quarters to the railroad companies.[1]

[1] See Poor's and Moody's Manuals, Industrials, 1922, vol. 1, p. 1280.

Thus the express company receives not more than 2½ per cent of what might be called the net operating profit of its business, the other 97½ per cent, and perhaps even more, going to the railroad companies.

Under the operation of this contract in 1920 the American Railway Express Co. collected in charges for express transportation $333,890,026. Out of this it paid for the express privileges $141,829,491, leaving $192,060,535. Revenue from other operations brought this up to $195,665,044. Operating expenses exceeded this amount by $39,144,496. Express taxes amounting to $2,182,462 and uncollectible revenues from transportation brought the deficit up to $41,364,059. In 1921 there was a small surplus of a little over a half million dollars.

Data concerning the operating revenues, total operating expenses, and taxes were obtained from the express companies' reports to the Interstate Commerce Commission. Data concerning wages and salaries for the years 1919 to 1923, respectively, were obtained by inquiry addressed to the companies. For 1918 it was assumed that wages and salaries amounted to 80 per cent of the reported operating revenues. This assumption is justified by the fact that the corresponding proportions for other years fluctuated closely around that percentage. The results may be summed up as in Table 180.

TABLE 180.—*The total value created by the railway express business and the portions thereof that went in wages and salaries and as return to employed capital, 1918 to 1923.*

[Amounts in thousands]

Year	Operating revenues	Wages and salaries	Return to capital and enterprise.	Total value created by the business
1918	$129,441	$103,569	[1] $14,489	$89,080
1919	160,968	110,340	[1] 23,261	98,079
1920	195,571	165,304	[1] 39,321	126,043
1921	187,678	144,042	2,692	146,724
1922	156,388	123,091	2,491	126,492
1923	161,541	126,624	3,186	129,820

[1] Loss.

The operating revenues stated in the first column are not the gross receipts but the remainder after paying for the express privileges.

The total value created by the industry was a little less than $130,000,000 in 1923. A half decade earlier it was only a little more than $89,000,000. Its greatest amount came in 1921, when it was nearly $147,000,000.

Most of the value-product was taken in wages and salaries. Indeed, wages and salaries exceeded the total value created by the business by nearly $14,500,000 in 1918, by more than $23,000,000 in 1919, and by more than $39,000,000 in 1920. Deficits were incurred to the extent of those amounts. There were small amounts left as a return to enterprise and employed capital in 1921, 1922, and 1923. The proportions of the two shares to the total created value are shown in Table 181.

TABLE 181.—*Percentages of the total value created by the railway express business that went to labor and to capital, by years, 1918 to 1923*

Year	Share of labor	Share of enterprise and capital	Year	Share of labor	Share of enterprise and capital
	Per cent	*Per cent*		*Per cent*	*Per cent*
1918	116	[1]—16	1922	97.3	2.7
1919	124	[1]—24	1923	97.5	2.5
1920	131	[1]—31			
1921	98	2	Average	109.5	[1]—9.5

[1] Loss.

During the six years wages and salaries amounted to 9.5 per cent more than the total value created by the railway express business, this excess constituting a liability upon the capital employed in the industry. In every year labor's share amounted to more than 97 per cent of the total created value and exceeded the total value by 16, 24, and 31 per cent in 1918, 1919, and 1920, respectively.

TAXES.—The amounts of taxes payable by enterprises in the express business (disregarding taxes payable by employees or lenders of capital) and percentages of the total-value product of this industry, are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$1,855,984	2.1	1921	$2,120,204	1.4
1919	2,004,222	2.1	1922	2,208,123	1.8
1920	2,194,480	1.7	1923	2,226,580	1.7

The taxes paid by the railway express companies during the six years, 1918 to 1923, inclusive, amounted to 1.8 per cent of the total value created by the industry. They also constituted an additional trenchment upon the capital of the industry to the extent of 12.7 per cent of that caused by the excess of operating expenses over revenues. In 1921, when there was a small surplus after paying operating expenses, taxes took nearly 79 per cent of it. They also claimed nearly 66 per cent of the small surplus in 1922 and 70 per cent of that in 1923.

Section 4. Water transportation industry.

VALUE CREATED BY THE WATER TRANSPORTATION INDUSTRY.—A census of the water transportation industry is taken at 10-year intervals. The last was taken in 1916 and included all operations of vessels of 5-ton net register and over that were American-owned, irrespective of where the operations occurred. It also included vessels engaged in the fisheries, as well as those engaged in transportation as public carriers.

The census shows that in 1916 there were 37,894 such vessels, exclusive of fishing craft. Of these, 14,581 were steam driven, 3,002 were sailing vessels, and 20,311 were unrigged (largely vessels used for towing, etc.). The gross tonnage was 12,250,000, of which over 6,000,000 of tons were steam driven and nearly 5,000,000 unrigged.

According to the census the total reported value of these vessels was a little under $960,000,000, of which over $800,000,000 was the value of steamers.

The gross income earned by these vessels in 1916 was, according to the census, a little under $564,000,000. Of this, over $524,000,000 was earned by the steam or machinery propelled craft and the unrigged. Out of this gross income nearly $141,000,000 was paid as salaries and wages to the industry's 236,382 executives and other employees. Of these employees 153,300 worked on the vessels and received approximately $103,236,000; nearly 19,000 consisted of officers, managers and clerks in the offices on land, and received, in round numbers, $16,300,000; the other 64,700 were stevedores and other employees on land, and received practically $21,325,000 in wages.

The census collected no other information than the above concerning the operating expenses and other outgoes of the industry. The National Bureau of Economic Research [1] arrived at the conclusion that the reported number of employees was approximately correct, but that the amount reported as wages and salaries was a gross understatement. That bureau estimated the wages and salaries of all the land employees at $67,560,000 in 1916, as compared with $37,624,000 reported by the census. It estimated the wages and salaries of vessel employees at $206,100,000, as compared with $103,236,000 shown above. Thus the bureau's total estimate of salaries and wages for 1916 is $273,560,000, which is about $132,800,000 greater than the census enumeration.

The national bureau reasoned that the number of employees was reported with approximate accuracy, and that the assumption of a smaller number of employees would mean a great diminution since 1906, whereas the traffic statistics indicated that their number had rather increased. Its reason for considering wages and salaries to have been grossly understated was that acceptance of the census results implied a decline in the average annual wage during the decade from $665 to $450, whereas the indications from all other industries were that wages and salaries had risen sharply.

The present report does not go into the merits of these contentions, which are merely stated to show that there is difference of opinion on the subject. The method used in preparing this report was to tabulate the gross earnings and wage and salary data from the reports of water transportation companies to the Interstate Commerce Commission for the years 1916 to 1923. Comparison of the gross earnings afforded index numbers of gross earnings for the other years in terms of gross earnings in 1916. Application of these to the census enumeration of gross earnings in 1916 resulted in estimates of the aggregate gross earnings of the industry in the other years. Comparison of the total compensation of executives and other employees, including food, clothing, accident benefits, etc., with the tabulated gross earnings afforded an average percentage of such compensation to gross earnings in each year. These percentages, applied to the estimated gross earnings of the industry, produced estimates of the aggregate remuneration of the industry's personnel.

Similar tabulation was made of the other data needed for estimating the value product of the industry and its distribution among the three

[1] Income in the United States, vol. 2, p. 191.

shares. These tabulations were not confined to reports made to the Interstate Commerce Commission, however, but included data from reports published in Poor's and Moody's Manuals of such other companies as furnished comparable and usable data.

The processes of arriving at the indices, average percentages, and final estimates are shown in Appendix Tables 62 to 68. The first set of results to be presented here is the estimated gross income of the industry in the years 1916 to 1923, which follows:

Year	Estimated gross earnings of all companies	Index numbers of gross earnings	Sequential ratios	Year	Estimated gross earnings of all companies	Index numbers of gross earnings	Sequential ratios
1916	$563,735,267	90.5		1920	$800,977,000	128.6	1.122
1917	670,282,000	107.6	1.189	1921	713,628,000	114.2	.827
1918	623,385,000	100.0	.930	1922	761,370,000	122.3	1.070
1919	767,300,000	123.1	1.231	1923	851,000,000	136.5	1.117

The "sequential ratios" show the proportion between the gross earnings of each year and those of the next preceding year. They were derived from the data tabulated from the reports of the sample lists of companies. The index numbers are based on the gross earnings of 1918 as "100" in order to show directly the growth during the half decade that ended with 1923. The gross earnings shown for 1916 are the amount reported by the census.

According to these estimates the aggregate gross earnings of the water transportation industry increased from $563,700,000 in 1916 to $851,000,000 in 1923. The increase during the half decade was $227,609,000, or 36.5 per cent. The gross earnings fluctuated greatly; thus they were over a hundred million greater in 1917 than in 1916, and after rising to a peak of nearly $861,000,000 in 1920, they declined nearly $149,000,000 the following year.

Table 182 shows those portions of the gross earnings that constituted the value created by the industry.

TABLE 182.—*Estimated value created by the water transportation industry and estimated distribution between wages and salaries and rent, interest, and profits, by years, 1918 to 1923*

Year	Total value product	Wages and salaries	Rent, interest, and profits	Year	Total value product	Wages and salaries	Rent, interest, and profits
1918	$333,585,000	$275,063,080	$57,723,000	1921	$345,049,000	$285,452,000	$59,597,000
1919	395,257,000	345,840,000	49,416,080	1922	392,383,000	299,872,000	92,491,000
1920	458,900,000	422,051,080	36,849,000	1923	462,208,000	354,615,000	107,653,000

The total value created by the water transportation industry was less than a half billion dollars in each year. It amounted to a third of a billion in 1918, and rose to nearly $459,000,000 in 1920. It dropped back almost to the 1918 amount in 1921. With the general business recovery in 1923 it reached its greatest magnitude, over $462,000,000. The net increase during the half decade was about 39 per cent.

The amounts that went to personnel in wages and salaries showed tendencies similar to those exhibited by the total value product. The amount was a little less than $276,000,000 in 1918. In 1920 it

was $422,000,000, which was the maximum. Then wages and salaries dropped to about 285,000,000 in 1921, but rose again to nearly $355,000,000 in 1923. The net increase over the half decade was about 29 per cent.

Rent, interest and profits, before the deduction of taxes, give evidence of having borne the first shocks of the economic changes. This share amounted to about $58,000,000 at the beginning of the half decade. In 1919, notwithstanding a considerable increase in the other share and in the total value product of the water transportation industry, this share decreased to a little over 49,000,000. In 1920, when the other shares reached their greatest amount, the share going to employed capital was only a little less than $37,000,000. In 1921, however, when wages and salaries were greatly diminished, rent, interest, and profits increased to nearly $59,600,000. This share attained its greatest magnitude in 1923, when it was nearly $108,000,000.

In Table 183 the proportions of these shares to the total value created by the industry are shown:

TABLE 183.—*Percentage distribution of the value created by the water transportation industry between wages and salaries and rent, interest, and profits, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Year	Wages and salaries	Rent, interest, and profits
	Per cent	*Per cent*		*Per cent*	*Per cent*
1918	82.7	17.3	1922	76.4	23.6
1919	87.5	12.5	1923	76.7	23.3
1920	92.0	8.0			
1921	82.7	17.3	Average	83.3	16.7

The personnel of the industry received 83.3 per cent, or five-sixths of the total value product. This share rose as high as 92 per cent in 1920 and fell to 76.4 per cent, or a little over three-fourths of the total, in 1922.

Rent, bond interest, and profits, before the deduction of taxes, amounted to 16.7 per cent, practically one-sixth of the total value created by the industry during the six years. It fell as low as 8 per cent of the total in 1920, and reached its maximum of nearly 24 per cent in 1922.

TAXES.—The amounts of taxes payable by the enterprises in the water transportation industry (disregarding taxes payable by employees or lenders of capital) and percentages of the total value-product are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$11,158,000	3.3	1921	16,207,000	4.9
1919	15,606,000	4.0	1922	14,399,000	3.7
1920	19,802,000	4.3	1923	19,148,000	4.1

Section 5. Telegraph and Cable Industry.

VALUE CREATED BY THE TELEGRAPH AND CABLE INDUSTRY.—A census of the telegraph and cable industry is taken at five-year intervals as a part of the census of electrical industries. The census of 1922 included 22 systems, comprising nearly 253,000 miles of pole line and nearly 77,000 nautical miles of ocean cable, not including the telegraph lines operated exclusively by railroad companies. The pole lines contained over 1,853,000 miles of telegraph wire.

The total value of the telegraph and cable service rendered amounted to nearly $147,000,000, of which a little over $76,000,000 was paid to the 68,632 employees for their services. According to census statistics the total capital invested in the business, exclusive of leased premises and equipment, was in round numbers $319,000,000.

These companies furnish annual reports to the Interstate Commerce Commission, which contain practically all of the information needed for estimating the value created by the industry, with the exception of the one important item of the wages, salaries, and other remuneration of personnel. Reports to this commission by 10 companies, whose pay rolls in 1922 amounted to more than 90 per cent of the pay rolls of the entire industry, supplied data for this important item. These two sets of reports afford index numbers that, applied to totals given by the census for 1922, enable estimates to be made for the noncensus years.

The census shows in 1922 the wages and salary bill to have been a little under $76,162,000. These constitute one of the base figures.

The census also shows "operating income" in 1922 amounting to $26,774,038. This is the excess of operating revenues over operating expenses and taxes chargeable against the telegraph and cable industry, inclusive of the Federal income tax. This is a little in excess of the amount available for rent, bond interest and dividends, however, because of an item of "miscellaneous deductions from income" amounting to $947,245, that is deducted later. It appears that this item contains not only the loss from uncollectible revenues, which, while not available for any of the three purposes named, is nevertheless a part of the whole value created by the industry, but also bank interest and other outgoes that constitute payments to other industries. The uncollectible operating revenues in 1922 of the 10 companies whose reports to the Interstate Commerce Commission were analyzed amounted to 90 per cent of their total "miscellaneous deductions" inclusive of these last revenues. If these are a representative sample of the industry, it may be estimated that $94,725 of the above-mentioned item consisted of amounts paid away to other industries, and that the remaining $852,520 consisted of uncollectible operating revenues. Deduction of the former amount from $26,774,308, operating income, gives $26,680,000 in round numbers as the estimated amount available for rent, bond interest, dividends and uncollectible revenues.

For derivation of the indices with which to estimate the corresponding amounts for the other five years, see appendix, Tables 69 to 71. The resulting estimates of the value product of the industry

and the principal shares thereof in the six years are shown in Table 184 following:

TABLE 184.—*Estimated value created by the land telegraph and ocean cable industry and estimated division between wages and salaries, and rent, interest, and profits, by years, 1918 to 1923*

Year	Total value created by the industry	Wages and salaries	Rent, interest, and profits [1]
1918	$93,098,000	$65,500,000	$27,598,000
1919	103,749,000	73,877,000	29,872,000
1920	127,114,000	90,551,000	36,563,000
1921	107,432,000	82,049,000	25,383,000
1922	106,734,000	[2] 73,160,000	33,574,000
1923	114,941,000	83,800,000	31,140,000

[1] Also includes income losses from uncollectible debts.
[2] Census of telegraphs, 1922, p. 8.

Thus it is estimated that the total value created by the telegraph and cable industry of the United States grew from $93,098,000 in 1918, when the industry was operated by the Federal Government, to $114,941,000 in 1923. The increase during the half decade was not nearly in so great proportion as in the telephone industry (see sec. 10). Furthermore, unlike the telephone industry, there was a large decrease in the value product in 1921, as compared with the previous year, a decrease from a little more than $127,000,000 to a little less than $107,500,000.

Under Government operation in 1918 the industry paid a little less than $65,500,000 as wages and salaries. This expense rose to a maximum of over $96,500,000 in 1920. The amount paid to employees declined in 1921 and still further in 1922, but rose to nearly $84,000,000 in 1923.

The second share includes not only rent, bond interest, and profits, and taxes paid directly by the enterprise as such, but also that portion of the earned revenues that was lost through uncollectibility. If the amounts of the last item for the whole industry bore the same proportions to the corresponding amounts lost by the sample of 10 companies in the other years as in 1922 this share would be divisible as follows:

Year	Estimated amounts of uncollectible revenues	Estimated amounts available for rent, interest, and profits	Per cent of capital's share to total value product
1918	$502,000	$31,000,000	28.0
1919	552,000	27,267,000	21.4
1920	331,000	24,010,000	19.4
1921	1,067,000	20,281,000	24.9
1922	868,000	25,337,000	29.3
1923	713,000	23,303,000	26.4

The estimated loss from uncollectibility of earned revenues was considerably less than $1,000,000 in every year except 1921. The amounts available for distribution to those who furnished the industry

with its capital ranged from $20,281,000 in 1921 to $27,252,000 in 1919. They varied in proportion from a little more than 23 per cent to over 31 per cent of the whole value created by the industry.

PROPORTIONS OF THE VARIOUS SHARES TO THE TOTAL VALUE PRODUCT.—While the absolute amounts estimated above are of some interest, and are necessary for combination with the estimates for other industries to ascertain the totals for the nation, the proportions of the shares to the total value product are especially significant. They are shown in Table 185 following:

TABLE 185.—*Estimated percentage distribution between wages and salaries, and rent, interest, and profits of the total value created by the telegraph and cable industry, by years, 1918 to 1923* [1]

Year	Wages and salaries	Rent, interest, and profits	Year	Wages and salaries	Rent, interest, and profits
1918	70.3	29.0	1922	68.4	29.3
1919	67.9	31.4	1923	72.3	25.4
1920	75.9	23.4			
1921	75.0	24.6	Average	72.1	27.2

[1] The two percentages on any line total slightly less than 100 per cent because of the omission of the percentages of uncollectible operating revenues.

For the period as a whole, wages and salaries amounted to 72 per cent of the total value product. The proportion was lowest in 1922, when it was 68.4 per cent. It was highest at the wage and salary rate peak in 1920, when it was nearly 76 per cent. Probably the fact that this share was three-fourths of the total in 1921 was due to inability to reduce the personnel force and rates in proportion to the decline in the volume of business in that year.

Capital's share in 1922 before the payment of taxes was equal to 10.3 per cent of the amount reported by the census as constituting the invested capital. Since the latter amount did not include the premises leased from parties outside the industry, it is probable that the return was not much in excess of 10 per cent of the total capital employed in the industry.

TAXES.—The amount of taxes payable by the enterprises in this industry (disregarding taxes payable by employees or lenders of capital) and percentages of the total value product of the industry are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$3,998,000	6.4	1921	$5,515,000	6.1
1919	6,668,000	6.4	1922	5,504,000	6.3
1920	5,722,000	4.6	1923	7,069,000	6.1

WAGES PAID BY THE TELEGRAPH AND CABLE INDUSTRY.—The "Census of Electrical Industries" for 1922 gives a detailed report of the telegraph and cable industry for that year, showing by occupational groups the total number of employees and the total amount paid in wages and salaries. But for the other census years, 1912 and 1917, only the total number of employees and the total amount paid are reported.

Salaries and wages constitute nearly three-fifths of the total expense of this industry.[1] The increase in the scale of the amounts paid between the census years is interesting to note as compared with the increase in number of employees for same periods of time. Between the census years 1912 and 1917 the scale of amounts paid in wages and salaries increased 58.8 per cent, whereas between 1917 and 1922 the increase was 91.2 per cent. The corresponding rates of increase in number of employees for the same periods of time were 38.3 per cent and 33.1 per cent, respectively.

The following tabular statement shows the total number of employees, classified into officers, managers, clerks, operators, and all other wage earners, for the year 1922; the total and average amounts received by each class; the percentage of each class to the total number employed; and the percentage of amount received by each class to the total amount paid all employees:

TABLE 186.—*Employees and wages and salaries, by occupational groups, for the telegraph and cable industry in 1922*[1]

Occupational group	Number of employees	Total amount paid in wages and salaries	Average salary or wage per class	Percentage of	
				Each class to total number	Each class to total wages and salaries
Officers	90	$734,165	$8,161	0.2	1.0
Managers	1,905	4,604,663	2,843	2.9	6.1
Clerks	20,315	23,470,977	1,173	29.1	30.8
Operators	23,628	29,466,281	1,374	34.4	42.6
All other wage earners	22,934	14,888,637	649	28.4	19.5
Total	68,832	76,161,926	1,110	100.0	100.0

[1] Includes, in some instances, cable employees outside the United States.

Owing to the fact that the business of this industry is in the hands of comparatively few companies, the officers represent a small percentage of the total number employed, about two-tenths of 1 per cent, and, correspondingly, the percentage of the officers' salaries to total salaries appears small, being only 1 per cent, when, as a matter of fact, the average salary paid to the 90 officers in this year was $8,161. The clerks' average salary of $1,173 was the smallest received by any single classification, while the group identified as "All other wage earners," with its average of $649, was the only classification which fell below the total average of $1,110.

Section 6. Telephone industry.

VALUE CREATED BY THE TELEPHONE INDUSTRY.—A census of the telephone industry was taken in 1917 and again in 1922. At the last census there were in the United States more than 57,000 telephone systems and lines separately owned. These operated more than 37,000,000 miles of telephone line and more than 14,000,000 telephones. According to the census, the aggregate investment in plant exceeded $2,200,000,000, and the revenues amounted to nearly $685,000,000. Of the latter, nearly $353,000,000 was paid as salaries and wages to the employees, who numbered slightly more than 312,000.

[1] Census of Electrical Industries, 1922.

Of these telephone systems and lines, nearly 56,000 consisted of farmers' mutual systems and other small systems and lines whose aggregate revenue in 1922 only slightly exceeded $28,000,000. Nearly 96 per cent of all the revenue was received by 1,323 systems. Of these, the "Bell system" alone, comprising 26 regional systems, received more than $565,000,000, or 82½ per cent of the total for all systems.

Most of the 1,323 telephone systems file annual reports with the Interstate Commerce Commission. In 1922 and prior years all companies with revenues in excess of $10,000 supplied financial data in these reports. In 1923 only the 287 companies whose revenues amounted to $50,000 or more reported financial data.

These financial data contained practically all the information needed for estimating the value created by the industry, with the exception of the one important item of the wages, salaries, and other remuneration paid to the industry's personnel. The operating expenses as reported include this item, but, because they are classified on a functional rather than an elementary basis, the wages and salaries are merged with the other expenses of each function.

In consequence it was necessary to supplement the census and Interstate Commerce Commission data by means of a questionnaire to a representative list of telephone companies, in which they were asked to report the total amounts of salaries, wages, and other compensation of personnel included in operating expenses in the years 1918 to 1928. To ascertain whether the reported "taxes chargeable to operations" included the Federal income tax, they were also asked to report the total taxes, inclusive of income tax, and the returns, when compared with their reports to the Interstate Commerce Commission, showed that the Federal income tax had been included.

The plan for using these data was to obtain two sets of indices. One set consists of index numbers of the volume of "operating income" [10] in each of the six years 1918 to 1923 in terms of the volume in 1922, the last being taken as the base, or 100, because it was the year of the telephone census. Application of these index numbers to the aggregate operating income of all telephone companies, as set forth by the telephone census, would afford estimates of the like aggregates for each of the other years.

The second set consists of six parts—a separate part for each of the six years for which the estimate was to be made. Each of these comprises average percentages of taxes, of uncollectible operating revenues of wages and salaries, of interest deductions other than interest on funded debt, and of "miscellaneous deductions from income" to "operating income." Of the basic data for these, all but wages and salaries were compiled from the companies' reports to the Interstate Commerce Commission. In the case of each of these items, the percentage was derived by comparing the aggregate of the particular item for all companies that reported on it with the aggregate operating income reported by the same companies. For example, for 1922 the taxes, interest and miscellaneous deductions percentages are based on data reported by 1,115 telephone companies; the percentage of uncollectible operating revenue is based on data furnished

[10] "Operating income" is the excess of "operating revenues" over operating expenses, "uncollectible operating revenues and taxes chargeable to operations." This practice of charging taxes on profits to cost of operations is logically indefensible, but for the present inquiry this treatment is a matter of indifference.

by 285 companies; while the wages and salaries percentage is based upon the reports of 753 companies, who reported wages and salaries to this investigation and operating income to the Interstate Commerce Commission. Each percentage is based on the largest and best sample obtainable.

The method of using these percentages was as follows: The data for each year were applied to the estimated total operating income of the entire telephone industry for that year, derived by application of the first set of index numbers referred to. The results constituted the estimates for the year in question of the total taxes, total uncollectible operating revenues, total wages and salaries, etc., for the entire industry. These results were then combined in such manner as to show the total value created by the industry and its division into the principal shares. In this combination, the uncollectible operating revenue was added to the operating income and from the total were deducted the interest and the miscellaneous deductions items. This result was called the share of those who furnished the industry with its capital and facilities.[11]

To the taxes as thus estimated should be added the total taxes on telephone messages. For, although these message taxes were not counted either among the operating revenues or taxes of the telephone companies, which collected and transmitted them to the United States Treasury, they were, nevertheless, a part of the total amount of money paid by telephone users for telephone service, and are therefore properly to be included in the measurement of both the gross value of the telephone service and the value created by the industry. Obviously this part of the value product was taken by the Government. The proceeds of these taxes, however, were merged by the local internal revenue collectors with the receipts from taxes on telegraph and cable messages, and were not reported separately. Hence, it was necessary either to estimate them, an unsatisfactory procedure in this case, or to take them into account only as an additional item in the value product of the combined telephone, telegraph, radio, and cable industries. The latter was considered the more satisfactory procedure. In the meantime, the estimates for the telephone industry may be accepted with the mental reservation to the effect that they understate the total value product and the share taken by governments to an extent ranging from a fractional part of $6,000,000 in 1918 to a fractional part of $29,000,000 in 1923.

Estimates of Operating Income in Noncensus Years.—The operating income of all telephone lines and systems with operating revenues in excess of $10,000 in 1922, as reported by the telephone census,[12] was a little less than $132,000,000. If the operating incomes of the smaller companies bore the same proportion to their gross operating revenues as in the case of the above-mentioned systems, the operating incomes of all together amounted to nearly $137,600,000. This figure is the base upon which the other estimates are founded.

In order to estimate the aggregate operating income of the telephone industry in the noncensus years, it is necessary to derive index numbers of their amounts in terms of 1922 as the base or 100. This is done in Table 187 which follows:

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[11] The reason for including uncollectible operating revenues was explained in sec. 1. The other items were deducted because it was assumed they were paid away to other industries.

[12] Census of Electrical Industries, Telephones, 1922, p. 49.

TABLE 187.—*Index numbers of the aggregate operating income of the telephone industry, by years, 1918 to 1923*

(Amounts in thousands)

Year of comparison	Number of companies in comparison	Comparable aggregate operating income		Sequential ratios
		Base year	Compared year	
1918 to 1919	314	$76,560	$81,954	0.9342
1919 to 1920	319	81,975	86,280	.9503
1920 to 1921	329	86,190	109,900	.7843
1921 to 1922	331	109,923	131,061	.8386
1922 to 1923	284	142,587	129,501	1.0986

The "sequential ratios" are derived by dividing the amounts in the base year by the respective amounts for the year compared. The first ratio, 0.9342, for example, means that on the basis of data furnished by a representative sample consisting of 314 telephone companies, whose aggregate operating income shown in their reports to the Interstate Commerce Commission was $76,560,000 in 1918 and $81,954,000 in 1919, it is determined that the operating income of the entire industry in the former year was 93.42 per cent as great as it was in the latter year. The data on the basis of which the percentage of 1919 to 1920 operating income was determined (95.03 per cent) were obtained from a representative sample consisting of 319 companies for the following year, etc.

To properly constitute such representative samples it is necessary to take account not only of the growth of business of companies that operated in both of the years under comparison, but also of that growth of the business of the industry that comes through the organization of new companies with new telephone facilities. Hence, the endeavor was to include in these samples a proper representation of companies that transacted no business in the earlier year of each pair.

The index numbers were formed by letting 100 represent the operating income in 1922 and multiplying this successively by the ratios for each of the other years, for example, the index number for 1923 was derived by multiplying 100 by 1.0986. Application of these index numbers, which are shown below, to the total operating income in 1922, as previously estimated, affords the estimates of the operating income of the industry in the other years. These estimates are shown in Table 188.

TABLE 188.—*Estimates of the total operating income of the telephone industry and index numbers based upon 1922 as 100, by years, 1918 to 1923*

Year	Index numbers of operating income [1]	Estimated operating income in the various years	Year	Index numbers of operating income [1]	Estimated operating income in the various years
1918	68.89	$80,334,000	1921	83.36	$115,201,000
1919	92.40	96,979,000	1922	100.00	137,564,000
1920	95.77	90,478,000	1923	109.80	151,128,000

[1] See text, p. 296, census total of $137,564,000 for 1922 used as base.

This table shows a rather spectacular growth in the operating income of the telephone industry during the five-year period—from a little over $80,000,000 in 1918 to over $151,000,000 in 1923. It should be remembered that this is not the gross income from telephone service, but only the excess of the receipts over operating expenses, taxes, and losses from uncollectible revenues. During 1918 the telephone systems technically were operated by the United States Government. The properties were returned to the companies near the middle of 1919. However, as public utilities, telephone companies are at all times restrained at least as to their rates of charge for service by public control; so that, even after regaining possession of their properties, the companies have not had a free hand like most other businesses in revising their rates. In consequence the increase in operating income after 1918 has been due probably more to increased volume of business and to increased economy of operation than to increased rates. It is especially noteworthy that the operating income increased by leaps and bounds right through the industrial depression, when most other industries were languishing.

ESTIMATES OF OTHER ELEMENTS.—As before intimated, from data furnished by a representative list of companies in each year, average percentage of taxes, wages, and salaries, and other classes of outgo were derived. As these are of interest not in themselves, but only as statistical means to ends, the process of their derivation is shown in Appendix Tables 72 and 73. All that need be said at this point is that the representative samples contained data furnished by from 181 to 1,115 companies.

The net results of the whole process are summed up in Table 189 following:

TABLE 189.—*Estimated value created by the telephone industry, and estimated division between wages and salaries, and invested capital, by years, 1918 to 1923*

[Amounts in thousands]

Year	Total value created [1]	Wages and salaries	Rent, interest, and profits [1]	Year	Total value created [1]	Wages and salaries	Rent, interest, and profits [1]
1918	$286,426	$190,592	$95,834	1921	$455,910	$323,490	$142,414
1919	338,287	235,570	102,717	1922	[2] 552,568	[2] 382,226	170,352
1920	420,711	310,140	110,571	1923	582,115	390,923	191,192

[1] These overstate the realized return to capital to the extent of the uncollectible revenues, for which see the tabular statement and text discussion below, pp. 296 and 299. Taxes paid by the business enterprises are not deducted.
[2] Reported by the census.

Table 189 shows that the total value created by the telephone industry increased from $286,426,000 in 1918 to $582,115,000 in 1923.[13] The growth was steady and rapid throughout the half decade. The share going to the industry's personnel as wages and salaries was nearly $191,000,000 in 1918 and more than twice as much a half decade later. Rent, interest, and profits, or the total share going to invested capital[14] amounted to a little less than $96,000,000 in

[13] The total value product is understated to the extent of the audited taxes on telephone messages (see footnote to Table 189).
[14] This overstates the actual share going to invested capital, due to the inclusion of uncollectible revenues, for which see succeeding paragraphs.

1918 and to nearly twice as much five years later. In short, the whole value product, and each share in it, just about doubled during the five-year period.

The amounts designated as rent, interest, and profits, or capital's share, which include amounts paid directly by the business enterprises in taxes, were not fully realized to the capital employed in the industry. In each year an appreciable portion of it proved uncollectible from the industry's patrons. The amounts of this value, rendered by the industry but retained by its patrons, and the amounts realized to the employed capital are shown in tabular form as follows:

Year	Amount earned by employed capital as previously estimated	Estimated uncollectible reserves	Amounts realized for employed capital
1918	$69,030,000	$1,707,000	$67,323,000
1919	74,001,000	1,909,000	72,092,000
1920	77,420,000	1,726,000	75,692,000
1921	101,933,000	2,480,000	99,453,000
1922	123,994,000	3,803,000	120,241,000
1923	137,481,000	3,914,000	133,567,000

From the foregoing statement it is seen that the amounts actually realized for the employed capital rose rapidly from a little more than $67,000,000 in 1918 to nearly $134,000,000, or twice as much, in 1923. The amount realized in 1922 was a little less than 6 per cent of the amount given by the census as the total invested capital.

While the amounts shown in Table 189 above are in the form needed for combination with the like results for other industries, the facts of greatest significance and interest are not these amounts but the proportions of the several shares to the total. These are set forth in Table 190.

TABLE 190.—*Percentage division of the total value created by the telephone industry between wages and salaries, rent, interest, and profits, and uncollectible revenues, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Uncollectible revenues	Year	Wages and salaries	Rent, interest, and profits	Uncollectible revenues
1918	66.5	32.9	0.6	1922	67.4	32.0	0.6
1919	69.5	29.8	.6	1923	67.2	32.2	.6
1920	74.3	25.3	.4				
1921	69.4	30.0	.6	Average	68.9	30.5	.7

Labor in the broad sense, i. e., including the executive and supervising force as well as the great body of operatives, received in salaries, wages, and other remuneration for their services an average of nearly 69 per cent of the total value created by the industry. Its smallest proportion, 66.5 per cent, came in 1918, when the industry was under Government operation, and its largest proportion, 74.3 per cent, was received in 1920. The reason for this is not apparent. The data already exhibited show that the total telephone business increased right through the depression.

The amount actually realized for remuneration of invested capital in the form of rent, interest, and profits, before deduction of taxes

paid by these enterprises, averaged 30.5 per cent of the total value created by the industry. It was only 25.3 per cent of the total in 1920, and rose as high as 32.9 per cent in 1918 and 32.2 in 1922.

TAXES.—The amounts of taxes paid by the enterprises in this industry (disregarding the taxes payable by employees or lenders of capital) and percentages of the total value product of the industry are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$26,804,000	9.4	1921	$40,481,000	8.7
1919	28,710,000	8.5	1922	47,028,000	9.0
1920	33,161,000	7.7	1923	53,711,000	9.2

WAGES PAID IN THE TELEPHONE INDUSTRY.—Census figures for the telephone industry for the years 1912, 1917, and 1922 show the number of employees and wages and salaries paid in each year by broad occupational groups. For the years 1917 and 1922 the totals shown are for all companies having gross incomes of $10,000 and over, and for 1912 for all companies having gross incomes of $5,000 and over. The following table shows the total number of employees and total wages and salaries paid in each of the census years to officers, managers, clerks, operators, and to all other wage earners:

TABLE 191.—*Number of persons employed and wages and salaries paid by specified occupational groups in the telephone industry, 1912, 1917, and 1922* [1]

Year and group	Employees		Wages and salaries	
	Number	Per cent of total	Amount	Per cent of total
1912				
Officers	1,759	1.0	$3,080,242	3.2
Managers	5,673	3.1	7,301,975	7.7
Clerks	31,327	17.1	22,208,295	23.1
Operators	96,332	52.5	32,474,093	33.8
Other wage earners	48,276	26.3	30,884,864	32.2
Total	183,361	100.0	96,040,541	100.0
1917				
Officers	4,118	1.7	9,213,516	5.4
Managers	5,400	2.5	7,256,208	4.3
Clerks	34,181	14.0	29,908,085	17.7
Operators	138,071	56.0	86,137,870	89.0
Other wage earners	60,814	24.0	56,851,127	33.6
Total	244,400	100.0	169,666,006	100.0
1922				
Officers	5,010	1.7	16,493,106	4.8
Managers	5,210	1.8	6,738,211	2.0
Clerks	47,533	16.4	67,774,917	19.8
Operators	160,558	55.0	138,897,342	40.7
Other wage earners	73,011	25.1	108,534,247	31.8
Total	290,333	100.0	341,537,822	100.0

[1] Based on returns of companies reporting incomes of $10,000 and over for 1917 and 1922 and incomes of $5,000 and over for 1912.

During the 10-year period there was a sharp increase in personnel for the industry. The total figures shown in the table, however, are comparable as to size of companies included for 1917 and 1922 only.

During this five-year period the number of persons employed by companies having gross incomes of $10,000 and over increased from 244,490 to 290,333, an increase of 18.8 per cent. The corresponding increase in wages and salaries was from $169,655,000 to $341,538,000, an increase of 101.3 per cent.

In this industry the largest occupational group is made up of switchboard operators, who represented in different census years from 52.5 to 56.9 per cent of the total number employed. Clerks constituted from about 14 to 17 per cent of all employees; all other employees from 25 to 26 per cent, and officers and managers together, about 4 per cent.

Officers, representing 1 or 2 per cent of the total number of employees, received from 3.2 to 5.4 per cent of the total salaries and wages in different years; managers, representing 2 or 3 per cent, received from 2.9 to 7.7 per cent; clerks, representing 16 or 17 per cent, received from 18 to 23 per cent; and all other employees, comprising about 25 per cent of the employees, received from 32 to 33.6 per cent of the wages and salaries. Operators, representing some 53 to 57 per cent of all employees, were a relatively low-paid group in all three years, receiving about 34 per cent of the total wages and salaries in 1912, 39 per cent in 1917, and about 41 per cent in 1922.

Table 192 shows the average compensation per employee for each of the occupational groups in each of the census years:

TABLE 192.—*Average compensation per employee in the telephone industry, by occupational groups, 1912, 1917, and 1922*

Group	Average compensation per employee [1]			Index number 1912=100		
	1912	1917	1922	1912	1917	1922
Officers	$1,751	$2,237	$3,202	100.0	127.8	182.9
Managers	1,303	1,148	1,867	100.0	88.1	143.2
Clerks	700	878	1,408	100.0	122.8	201.1
Operators	837	476	871	100.0	141.1	248.5
All other employees	640	636	1,488	100.0	146.2	232.5
All groups	534	694	1,176	100.0	132.5	224.4

[1] Based on number of employees and total wages and salaries shown in Table 191.

In every group there was a marked increase in average compensation. In actual amounts per person the officers and managers received the largest average increases, but the increases for the low-paid groups, though less in amounts than for the managerial groups, represent relatively large increases of more than 100 per cent over the average compensation for 1912. For the various groups the average increases during the 10-year period, using the average compensation for 1912 as the base or 100 for each group, are as follow: Officers, 86.9 per cent; managers, 43.2 per cent; clerks, 101.1 per cent; operators, 158.5 per cent; all other employees, 132.5 per cent, and average for all employees, 124.4 per cent. It will be noted that the greater part of the increase for every group took place between 1917 and 1922.

Section 7. Electric light and power industry.

VALUE CREATED BY THE ELECTRIC LIGHT AND POWER INDUSTRY.—A census of central electric light and power stations is taken every five years as a part of the census of the electrical industries.

At the time of preparing this report, the data collected by the census of 1922 were not yet available. In consequence the census of 1917 constitutes the base from which the estimates contained in this section are made.

In 1917 there were in Continental United States 6,542 central electric light and power stations. The aggregate value of the service rendered was nearly $527,000,000, of which a little less than $95,242,000 was paid as wages and salaries to the executives and operatives of the industry. The total investment in plant and equipment at that date was, according to the census, a little over $3,060,000,000.

In addition to the electric energy generated and distributed by central electric light and power stations, electric railway companies sell a considerable quantity, the gross value sold, as reported for 1917, being nearly $59,630,000. Due to the impracticability of separating the wages, salaries and other outgoes that pertained to this portion of the electric railway revenues from those that pertained to their transportation business, the corresponding part of the value created by the electric light and power industry is included with the total estimates for the street and electric railway industry.

In order to make estimates for the six years included in the period under review, it was necessary to derive two sets of index numbers. One consists of a set of indices of gross operating earnings that could be applied to the total for the industry given in the census of 1917, in order to estimate the gross earnings from 1918 to 1923. The other consists of six sets—one for each year—of average percentages to gross operating earnings of taxes, of wages and salaries, of rentals and of all other operating expenses or outgoes, exclusive of bond interest and dividends. It was attempted to obtain data for these purposes at first from the statements published in Poor's and Moody's Manuals. These statements, however, were so lacking in uniformity of arrangement, content and definition, that the attempt was abandoned. Accordingly a simple questionnaire was devised and sent to a representative sample of electric light and power companies.

The response to this questionnaire was excellent. While the letter conveying the request suggested that the companies might prefer to confine their reports to three designated years, 125 companies furnished the data for all seven years. Thirty-six others furnished the data for all of the years that they were in operation. A few reported only for the three designated years. The sample is so representative, that, in the comparison of 1923 with the other years, there was no group that contained less that 136 companies and no group that had aggregate gross earnings in 1923 of less than $422,000,000. The group that afforded the comparison between 1923 and 1917 comprised 136 companies and had aggregate gross earnings from operation that amounted to over $422,000,000 in 1923 and nearly $192,000,000 in 1917. The latter amount is more than 36 per cent of the total operating revenue of the industry in 1917, as reported by the census. The amount reported for 1922 by the 188 companies from which the index for that year was computed, was over 39 per cent of the total amount for the industry, as reported on the advance sheets by the Bureau of the Census. Thus the samples represent approximately three-eighths of the industry.

The basic summaries from which the index numbers and average percentages were derived are shown in appendix, Tables 74 to 79. Estimates showing the growth of the gross earnings of the industry, in the seven years are as follows:

TABLE 193.—*Estimated aggregate gross earnings from operation of the electric light and power industry, by years, 1917 to 1923*

Year	Estimated gross earnings	Index numbers	Year	Estimated gross earnings	Index numbers
1917	[1] $526,604,000	1.000	1921	$965,600,000	1.813
1918	663,812,000	1.120	1922	[2] 1,072,120,000	2.032
1919	694,621,000	1.319	1923	1,237,281,000	2.349
1920	804,607,000	1.540			

[1] Census of 1917, p. 9.
[2] Amount reported on advance releases by the Bureau of the Census.

The gross value of the service rendered by the electric light and power industry is estimated to have increased from a little less than $527,000,000 in 1917 to more than $1,237,000,000 in 1923. This is an increase of nearly 135 per cent. Evidenced by the proportion of companies reporting in this inquiry whose properties were not in existence in 1917, a very considerable portion of the increase was due to the expansion of the industry.

It will also be noticed that, like the telephone industry, the volume of business, measured in terms of gross earnings from operation, continued to increase by substantial amounts right through the industrial depression. The only evidence of a depression is the fact that the increase in gross earnings of 1921 over 1920 was somewhat less than for either the preceding or the following year.

The estimates of the value created by the electric light and power industry and of the three shares in it are presented in Table 194.

TABLE 194.—*Estimated value created by the electric light and power industry and estimated division between wages and salaries, and rent, interest, profits, and uncollectible revenues, by years, 1917 to 1923*

(Amounts in thousands)

Year	Total value created	Wages and salaries	Rent, interest, profits, and uncollectible revenues	Year	Total value created	Wages and salaries	Rent, interest, profits, and uncollectible revenues
1917	$307,768	[1] $95,242	$212,526	1921	$551,683	$192,394	$359,289
1918	337,678	109,503	228,105	1922	635,072	[2] 212,433	422,639
1919	401,078	137,068	263,410	1923	701,290	249,825	511,474
1920	473,192	178,180	295,012				

[1] Census of central light and power stations, 1917.
[2] Reported in advance releases by the Bureau of the Census.

The total value created by the electric light and power industry is estimated at $307,768,000 in 1917 and $337,678,000 in 1918. The estimates made by the National Bureau of Economic Research [15] were $234,331,000 and $256,888,000, respectively. The bureau's estimates, however, include only the privately owned plants, while

[15] Income in the United States, Vol. II, p. 105.

the present estimates include municipally owned and operated plants as well. The bureau treated Government as a separate industry, whereas in this report Government is being treated as a partner in industry. Accordingly there seems no good reason for omitting the value created by Government owned and operated electric plants from the total value created by the industry.

Like the gross earnings, the value product of the electric light and power industry increased by a substantial amount each year, so that the amount in 1923, about $761,000,000 was 147 per cent greater than in 1917. The largest increase was in 1923 as compared with the preceding year, an increase of $126,000,000. It is noteworthy, however, that even in the depression year, 1921, the value created by this industry was over $78,000,000 greater than in the preceding year.

What was said concerning the total value product was true on a smaller scale, but in similar proportions, of each of the shares. The share that was received by the industry's executives and operatives increased from a little over $95,000,000 in 1917 to nearly $250,000,000 in 1923.

Capital's share rose from around $212,000,000 in 1917 to approximately $511,000,000 in 1923. A more significant comparison is that of the proportions of the whole value that went to these two factors, which are shown in Table 195.

TABLE 195.—*Percentage distribution of the value created by the electric light and power industry between wages and salaries, and rent, interest, and profits, by years, 1917 to 1923*

Year	Wages and salaries	Rent, interest, and profits [1]	Year	Wages and salaries	Rent, interest, and profits [1]
1917	30.9	69.1	1922	33.5	66.5
1918	32.4	67.6	1923	32.8	67.2
1919	34.3	65.7			
1920	37.6	62.4	Average	33.9	66.1
1921	34.9	65.1			

[1] These percentages also include the losses of income because of uncollectibility, the amounts of which are not known but probably were of negligible proportion.

The electric light and power industry is remarkable because of the fact that labor receives only about one-third and capital receives about two-thirds of the total value product.

The large proportion obtained by capital is evidently due to the relatively large proportion of the capital to the labor factor in the electric light and power industry. The investment in plant in this industry, according to census data, amounted to $29,000 per employee. The corresponding investment in the telephone industry in 1922 was $7,050 and in the telegraph and cable industry was $4,650. Notwithstanding the large proportion of the value product that went to capital in the electric light and power industry, the amount of this share in 1917 was only about 7 per cent of the reported investment in plant.

TAXES.—The amounts of taxes paid by the enterprises in this industry (disregarding the taxes payable by employees or lenders of capital) and percentages of the total value product of the industry are estimated as follows:

	Amount	Per cent		Amount	Per cent
1917	$30,003,000	8.8	1921	$91,725,000	11.2
1918	37,264,000	11.1	1922	73,128,000	11.8
1919	42,710,000	10.7	1923	85,726,000	11.3
1920	40,550,000	10.5			

Chapter XV

MERCANTILE BUSINESS

Section 1. Basis of estimating value of product.

A few centuries ago each family produced for itself nearly all of the articles it consumed. Their variety was of necessity a narrowly limited one. With the advent of power-driven machinery, rapid transportation, and rapid communication a profound change took place in the mode of organization for production and the immediate objective of industry. Division of labor has been carried to such an extent that with exception of the farmers, a few individuals in other lines, and a remnant of household production, the family no longer produces for itself any important part of the commodities it consumes, excepting as involved in gardening and in cooking and dressmaking. Moreover, industry has largely come to be distributed geographically.

In consequence, immensely important distributing functions have sprung up. Not only must commodities be transported often long distances, but often, because they are produced on a small scale by small industrial units, they must be gathered together in larger aggregates at the producers' end of the transportation line so that they can be moved and handled economically. At the other end it may be necessary to break the lots up again into smaller quantities suitable for handling by those who sell to the ultimate purchaser. On the one end there is the problem of studying markets so as to place commodities most advantageously. On the other end there is the function of studying the sources of the various commodities so as to buy them most advantageously, and of ordering them in due season so that they may be available in proper quantities as needed.

There is thus the wholesale function or service that is concerned with the study of markets or of sources; the assembling into large quantities and the breaking of the large lots up into the smaller lots. This includes not only wholesalers so-called but also the commission merchants and many so-called jobbing enterprises. The last named designation, however, is also applied to the function of taking special and unstandard lots, or lots of unstandard merchandise (such as ready-to-wear suits that are not up to the manufacturer's standard of quality, or lots of some design or merchandise that has gone out of style) and finding a market for them. Somewhat similar to this is the service rendered by the manufacturers' agent. Finally and culminatingly there is the service that consists of having stocks of the various kinds of articles conveniently on hand and furnishing these, in the quantities desired, to the ultimate purchasers—the retail function and service.

All of these may be summed as distributing or mercantile industry. No census of this industry has ever been taken. All corporations are required to file income-tax reports annually, and the data contained

in these reports are published in summary form in "Statistics of Income." Only 131,500 mercantile businesses out of probably several millions were so covered in these statistics in 1922. All partnerships are also required to file income-tax reports for memorandum purposes, but these statistics are not published. An individual whose aggregate taxable income is large enough to subject him to income tax, or exceeds a specified minimum, is also required to report. These, however, report not merely their income from the business but their income from other sources as well. For 1922, only 297,133 individual merchants filed such reports, and the "Statistics of Income" give no details of information concerning them except their net income, which aggregated $891,372,487.[1] There were probably many hundreds of thousands of individual merchants who filed no income-tax reports because their net incomes were not large enough to require it. Furthermore the entire net income of individuals from their partnership enterprises is omitted so far as separate statement for mercantile business is concerned.

The Harvard University Bureau of Business Research has devised systems of accounts for various kinds of retail and wholesale stores, has made arrangements with hundreds of stores in each class whereby they have kept their accounts according to these systems and have made reports to the bureau accordingly. The accounts were carefully defined as to character of items to be included, the purpose being to obtain comparability of items reported by the various stores. The results of each study have been presented in bulletin form. These studies cover the following classes of mercantile business: Department stores in 1920, 1921, and 1923; retail shoe stores in 1919, 1920, 1921, 1922, and 1923; retail jewelry stores in 1919, 1920, 1921, and 1922; retail drug stores in 1919; retail hardware stores in 1919; retail grocery stores in 1919, 1922, and 1923; wholesale grocery stores in 1919, 1920, 1921, 1922, and 1923, wholesale automotive equipment stores in 1923 and wholesale drug stores in 1922. Similar researches have been started by Northwestern University, the University of Nebraska and other institutions.

These are valuable studies of the typical proportions of the various classes of expense, of the gross profit and net profit to net sales, and have been used in making the present estimates. They contain certain defects, however, from the viewpoint of this inquiry. The rental used is in many cases a putative rental and contains the taxes on land and building, insurance, and depreciation pertaining to the building, and putative interest on the investment in the land and building. In consequence the proportions given do not directly permit entire separation of the elements constituting the value product from the expenses paid away to other industries. A supplementary inquiry by this commission to several classes of these distributors furnished data that assist materially in this matter.

The problem, then, becomes that of estimating the total net sales of the retail and of the wholesale branches of mercantile business for each year under review, and of applying to these the distribution percentages obtained from the studies referred to and from reports received directly by this inquiry from certain classes of distributors.

[1] Treasury Department Statistics of Income, 1922, p. 10.

ESTIMATES OF TOTAL NET SALES OF RETAILERS AND OF WHOLESALERS.—Four sets of data constitute the basis of these estimates. The Commonwealth of Pennsylvania imposes an annual tax upon mercantile business that consists of a small flat tax and of a tax upon gross income. From the tax charges the department of internal affairs of that Commonwealth computes the gross income from sales and publishes the results in its annual reports on productive industries. These data are available for 1920 to 1923, respectively. They can be used as a basis for estimates for the entire United States by assuming that the same proportion exists between the sales and population in Pennsylvania as in the entire country. The estimates of the total sales based on these data are shown in Table 196.

TABLE 196.—*Estimate of the total sales of retail and of wholesale mercantile business, based on sales in Pennsylvania, by years, 1920 to 1923*

[Population in thousands, amounts in millions]

Year	Population of Pennsylvania	Population of the United States	Retail sales in Pennsylvania	Estimated retail sales in United States [1]	Wholesale sales in Pennsylvania	Estimated wholesale sales in United States [2]
1920	[3] 8,720	[3] 105,711	$3,023	$24,534	$1,654	$20,069
1921	[4] 8,837	[4] 107,025	2,496	20,260	1,788	21,776
1922	[4] 9,005	[4] 108,939	2,244	27,147	1,357	16,418
1923	[4] 9,116	[4] 110,157	3,393	28,625	1,513	18,288

[1] These amounts are in the same proportion to the corresponding amounts in column 4 as the numbers in column 3 are to the corresponding numbers in column 2.
[2] These amounts are in the same proportion to the corresponding amounts in column 6 as the numbers in column 3 are to the corresponding numbers in column 2.
[3] United States Bureau of the Census, Census of Population, 1920.
[4] Estimated by the commission.

On this basis the retail sales are estimated to have been twenty-four and five-tenths billions of dollars in 1920, thirty and four-tenths billions in 1921, twenty-six and eight-tenths billions in 1922, and twenty-eight and nine-tenths billions in 1923. The wholesale sales are correspondingly estimated at twenty billions, twenty-one and eight-tenths billions, sixteen and two-tenths billions, and eighteen and three-tenths billions of dollars, respectively. The wholesale sales include sales by wholesale, jobbing, and commission merchants but not the sales of manufacturers or other direct producers.

These estimates would indicate that the greatest volume of sales, measured in money values, came in 1921, the depression year. There is good reason to doubt that this was the fact. Prices were much lower in 1921 than in 1920, and the physical volume of business was probably much less, especially than the physical volume in the first half of 1920. Furthermore, it is doubtful because of lower prices, whether the money value was greater in 1922 than in 1920, for the same reasons. The following index numbers of the money volume of sales, which were derived from data published in the monthly Survey of Current Business,[2] also impugn the validity of the estimates based on the Pennsylvania data.

[2] Published by the Department of Commerce.

TABLE 197.—*Index numbers of retail and wholesale sales, by years, 1919 to 1923* [1]

Kind of store	1919	1920	1921	1922	1923
Retail stores:					
23 chains of grocery stores	100	146	130	151	187
5 chains of 5 and 10 cent stores	100	120	124	140	165
10 chains of drug stores	100	121	123	127	144
3 chains of cigar stores	100	133	132	128	135
6 chains of shoe stores	100	120	113	114	123
4 chains of music stores	100	109	85	101	113
4 chains of candy stores	100	138	142	147	176
4 mail-order houses	100	108	72	79	99
349 department stores	100	120	110	111	124
Wholesale stores, Federal reserve districts:					
Hardware, weighted average, 10 districts	100	118	82	80	104
Shoe, weighted average, 8 districts	100	88	58	65	68
Grocery, weighted average, 10 districts	100	113	77	70	88
Drug, weighted average, 7 districts	100	112	97	100	111
Meat	100	----------	56	50	63
Dry goods, weighted average, 9 districts	100	115	83	83	99
American Wholesale Corporation	100	108½	98.7	88	92.3
All wholesale trade	100	112	74	76	83

[1] Survey of Current Business, February, 1923, pp. 123-124, 126, 128, and 130.

According to these indices sales in 1921 were less in total money value than sales in 1920, except for three classes of retail chain stores. These were the 5 and 10 cent stores, the drug stores, and the candy stores. In the financial pinch of industrial depression, patronage might be expected to shift from other stores to the cheap 5 and 10 cent stores. Why the sales of drug and candy stores should have increased is not clear. It is probable, however, that this also represented a diversion of patronage in localities in which new stores in the chains were opened. The sales of the three cigar-store chains show only a slight falling off in 1921. This also may have been due to the establishment of new stores in these chains, diverting patronage from other cigar stores; or it may have been due to a greater use of tobacco by displaced or part-time employees who had more idle time than previously. The other classes of stores all show substantial reductions in the total volume of sales in 1921 as compared with the previous year.

In the comparison of the money volume of business in 1922, with that of 1920, only the chain grocery stores are added to the previously mentioned candy, drug, and 5 and 10 cent stores in the matter of having a larger business in the later than in the earlier year. The wholesale stores showed a smaller volume of values in both 1921 and 1922 than in 1920.

These data are not consistent with those shown for Pennsylvania dealers. Inasmuch as the department of internal affairs of that Commonwealth itself believes that, due to certain defects of organization, control, and verification, there was a large understatement of sales in the earlier years, it may be inferred that the amounts shown for 1920 were much too small. Therefore the estimates for 1922 and 1923 are probably more reliable than those for 1920.

Sec. 2. Estimates based on working-family budgets of 1918 and 1919.

The Bureau of Labor Statistics collected in 1918 and the fore part of 1919 data concerning the expenditures during the preceding year by 12,096 workingmen's families. These families were distributed among 94 cities. The various geographical divisions of the United States were represented by from 7 to 19 cities. The expenditures were classified as "food," "clothing," "furniture and furnishings," "miscellaneous," "fuel and light," and "savings." The first four

of these may be regarded as classes of articles the family would purchase from retail stores. Of the "fuel and light," the electric light and gas bills represent amounts paid to public utilities or manufacturers, leaving the remainder to represent fuel purchased at retail. The details of the expenditures were given in such manner as to permit close approximation of the former, and, therefore, of the latter. The details also permitted the selection of those miscellaneous items that represented retail purchases.

Thus it was possible to obtain totals of money spent in retail purchases by the families in each geographical division. Not only were the numbers of families given, but also the number of persons in the families. Thus it was possible to ascertain the average expenditures per person in the reporting families in each geographical division. These averages were assumed to be typical of the whole population in each division. Objection may be made that, due to the fact that the wealthy and more well-to-do families were not represented, the averages obtained understate the true averages for the entire population. Over against this, however, is the fact that in the mode of selecting the families from which to obtain the budgetary data, newly formed families and others of the lower earning power were practically excluded. Also workingmen's families constitute a large part of the urban population. Furthermore the average farm family probably does not have an income larger than that of the workingmen's families included in the study. These facts make it seem probable that the average expenditures per individual in these workingmen's families were fairly representative of the expenditures by the whole population. And it is noteworthy that the estimates of total retail sales to the entire population based on these data are larger than the estimates based on the reported retail sales in Pennsylvania. It should be borne in mind, however, that the amount of retail sales so estimated includes only articles sold for household or personal consumption. They omit all articles sold at retail for production purposes, such as lumber, cement, hay, grain, feeds, fertilizer, etc.

The averages for the various geographical divisions are shown in Table 198.

TABLE 198.—*Annual expenditures per member of workingmen's families for food, clothing, house furnishings, coal and wood, and miscellaneous retail purchases, by geographical divisions, in 1918–19* [1]

[In dollars]

Division	Food	Clothing	Furniture and house furnishings	Coal and wood	Total retail purchases other than "miscellaneous"	Miscellaneous retail purchases	Total retail purchases
New England	$116.35	$45.85	$11.18	$11.71	$184.19	$20.38	[2] $212.62
Middle Atlantic	119.77	51.78	12.88	9.34	194.69	19.20	209.82
South Atlantic	100.71	49.82	15.76	10.92	183.33	19.20	[2] 202.60
East North Central	108.78	46.72	15.78	10.80	180.09	20.61	[2] 202.60
West North Central	112.41	46.85	14.05	12.53	187.84	20.79	[2] 108.94
East South Central	110.60	48.32	16.28	9.20	183.40	20.79	[2] 108.94
West South Central	100.04	43.85	14.34	5.60	173.60	20.79	[2] 108.94
Mountain	113.78	54.06	18.57	16.30	201.71	25.91	[2] 230.42
Pacific	113.18	52.07	16.60	8.50	190.41	25.91	[2] 230.42

[1] Compiled from U. S. Bureau of Labor Statistics, Bulletin 257, Cost of Living in the United States.

[2] To the average of the bracketed amounts in column 6, weighted in proportion to the estimated population Jan. 1, 1918, was added the amount of miscellaneous expenditures shown in column 7 to arrive at figures shown in the last column.

If the amounts designated in Table 198 as "total retail purchases" may be taken as the retail purchases of articles for household and personal consumption per capita of the entire populations of the respective geographical divisions, these per capita purchases ranged from $198.94 in the South Central States to $220.42 in the Mountain and Pacific States.

The year to which these budgets pertained was not the same for all families represented. Some years ended in 1918, some early in 1919. It is assumed that the variation was such that the number of budgets for years ending in 1919 balanced the number for years ending prior to December 31, 1918, so that the data are assumed to be representative of the calendar year 1918.

The estimated retail sales of articles for personal and household consumption in the entire United States during 1918 may be estimated by multiplying the per capita retail purchases shown in Table 198 by the estimated populations on January 1, 1918, of the respective geographical divisions. The data and results are shown in Table 199.

TABLE 199.—*Estimate of the total retail sales of articles for personal consumption in 1918, based on an analysis of the purchases made by 12,096 workingmen's families*

Region	Retail sales per capita of population	Estimated population, Jan. 1, 1918	Estimate of total retail sales
North Atlantic	$212.63	29,237,461	$6,216,748,000
South Atlantic	202.62	13,789,031	2,789,383,000
North Central	209.60	33,539,637	6,828,508,000
South Central	198.94	18,957,900	3,771,464,000
Western	220.42	8,626,450	1,901,471,000
Total			21,507,564,000

Thus, it is estimated that in 1918 the total retail sales of articles for personal consumption in continental United States amounted to nearly $21,508,000,000. The next step is to obtain index numbers of the change in volume of these sales in the ensuing years. The index numbers of retail sales by various classes of stores shown in Table 197 above (see p. 309) constitute data for connecting aggregate sales in 1919 with sales in 1920 and the following years. Unfortunately, however, these indices do not relate back to 1918, which is the base of the five-year comparison.

However, the United States Bureau of Labor Statistics publishes each month in the Monthly Labor Review the summarized pay-roll data furnished by several thousands of manufacturing companies. These companies give representation to all the more important manufacturing industries and geographical regions. The summaries show for each major group of industries the total amounts of wages paid by the reporting companies for work done during the week that ended nearest the fifteenth of the month. The summaries are comparative in form, i. e., the pay-roll data are given not only for the chosen week in the current month but for the corresponding week in the preceding month and in the corresponding month in the preceding

year. In each summary the comparative data were furnished by identical lists of companies.

A month to month comparison of these total pay rolls gives a fairly good index of the change in the total volume of money received by manufacturing workers, in so far as these changes take place by the expansion and contraction of the volume of employment within, and by raising or lowering of rates of pay by manufacturing enterprises that were operating in both periods being compared. The comparison does not take account of those changes in total money wage incomes that are due to the setting up of new manufacturing businesses or to the bankruptcy of others. The omission of the latter probably is more serious than the former because a bankruptcy may cause real unemployment, whereas the opening of a new factory may mean merely the transfer of workers from one employment to another. It is probable, however, that the Bureau of Labor Statistics data fail to take account of the changes of wage earnings due to a complete shut down of certain plants during the week for which report is being made, or to the resumption of such plants as reflected in the reports for the next month; i. e., it is probable that such plants are omitted from the comparative tabulations for identical companies.

However, these comparative pay-roll data are the best available for the purposes in hand. Money income is the source of funds with which to make retail purchases. If the volume of retail purchases may be assumed to vary in proportion to the volume of these manufacturing wage incomes, the retail purchases in 1919 were 36.4 per cent greater than in the preceding year.

Next to be considered are the indices of total retail sales in 1920 to 1923, respectively, in terms of sales in 1919. Table 197 above shows indices for seven kinds of chain stores, for mail-order houses, and for department stores. If the proportion of the total retail business of the country handled by the respective kinds of store in 1919 were known, these proportions might be applied as weights to the several series of index numbers to form a composite index for all retail trade. These proportions are not known, however. Any other kind of composite index that includes the data for all classes of stores would probably overstate the volume of sales in the later years for the reason that the chain-store movement represents in large part a transfer of patronage from the independent stores and the latter are not represented in the data.

Therefore it has seemed best to base the composite index upon the data for department stores and mail-order houses. The former reflect the urban, suburban and to a certain extent the rural retail trade; the latter reflect rather the rural, and the country village trade, and to a certain extent the retail purchases of the inhabitants of small cities in the agricultural regions. These two sets of index numbers are reproduced in Table 200 and the composite indices are derived by weighting in proportion to the population in cities of 8,000 or more inhabitants for the department store data and to the population outside of such cities for the mail order sales indices.

TABLE 200.—*Index numbers of retail sales and estimates of aggregate retail sales of articles for personal consumption by years, 1918 to 1923*

Year	Indices of department store sales [1] (weight 45,636,000) [2]	Indices of mail order sales (weight 69,075,000) [2]	Composite indices of sales, 1919 as base [3]	Indices of retail sales, 1918 as base	Estimated aggregate retail sales (millions)
1918				100	[4] $21,508
1919	100	100	100	[5] 136.4	29,335
1920	120	103	112.6	[6] 150.6	32,400
1921	110	72	88.7	[6] 121	26,025
1922	111	79	95.1	[6] 127	27,470
1923	124	99	110.0	[6] 150	32,270

[1] See text, Table 197, p. 309.
[2] Census of population, Jan. 1, 1920, population in cities of 8,000 or more inhabitants and outside of such cities, respectively.
[3] Weighted average of the indices on columns 2 and 3.
[4] See total of column 4, text, Table 198, p. 311.
[5] See text for derivation of this index.
[6] Formed by applying to 136.4 the index in column 4 for the year in question.

The last column in Table 200 shows the estimates of the total retail sales of articles for personal consumption in continental United States as based on the workingmen's family budgets, the change in the total wages paid factory workers in 1919 as compared with 1918 and the fluctuations in the sales of department stores and mail order houses in the later years as compared with 1919.

As before intimated the estimates of retail sales based on these workingmen's family budgets omit the sales at retail of articles not used for household or personal consumption. It is therefore necessary to supplement them.

The section dealing with agriculture contains estimates of the amounts of money spent by farmers for agricultural implements, fertilizers, harness and saddles (see p. 242). From data collected by this commission in other investigations it is possible to estimate the sales by retailers of hay, grains, mill feeds and mixed feeds. From the data on the value of establishments manufacturing lumber and other timber products, on the value added by planing mills and so on, and estimates by authorities familiar with the lumber trade that about 60 per cent of the lumber is sold at retail, coupled with index numbers pertaining to lumber production in intercensal years, it is possible to estimate the total sales of lumber and the like by retailers; and so on for each of the principal classes of articles sold at retail. A small added margin to represent the less important omitted articles completes the estimate. The results of this process are shown in Table 201:

TABLE 201.—*Estimated total retail sales of all articles, by years, 1918 to 1923*

[Millions]

Year	For personal consumption	For other than personal consumption	Total	Year	For personal consumption	For other than personal consumption	Total
1918	$21,508	$3,948	$25,456	1921	$26,025	$4,891	$30,716
1919	29,335	5,003	34,338	1922	27,470	6,048	33,518
1920	32,400	5,946	38,346	1923	32,270	5,902	38,172

The total estimates may be compared with those based on the Pennsylvania sales-tax data. The present estimate shows retail sales in 1920 amounting to $38,346,000,000, as compared with $24,524,000,000 estimated on the other basis. For 1921 the present estimate is $30,716,000,000, as compared to $30,399,000,000 on the other basis. The two sets of estimates move in opposite directions. There can scarcely be question that the present estimate more truly reflects the actual trend. The Pennsylvania Department of Internal Affairs is of the opinion that, due to the defects of the system of assessing the taxes in the earlier years, the reported sales grossly understated the facts.[3] For 1922 the present estimate is $32,510,000,000, as compared with $26,787,000,000 based on the Pennsylvania data. For 1923 the present estimate again rises above $38,000,000,000, whereas the estimate based on the Pennsylvania data was $28,925,000,000.

For the reasons already stated, the estimates based on the workingmen's family budgets, factory employee earnings, and sales indices as supplemented by estimates for articles not used in personal consumption will be used in preference to those based on the Pennsylvania data.[4]

Section 3. Wholesale sales.

Table 197 (see p. 309) also shows sales volume indices in 1918 to 1923 for wholesale hardware, shoe, grocery, drug, meat, and dry-goods stores in from 7 to 10 of the Federal reserve districts of the United States. There is, however, no base to which to apply these index numbers. There is, also, as much objection to using the estimates of wholesale sales based on the Pennsylvania data as there is of using the estimates of retail sales based on those data. It is possible, however, that the proportions between the volume of wholesale and of retail sales as reported in Pennsylvania may be representative of the proportions for the country as a whole. These proportions were 81.71 per cent in 1920, 71.64 per cent in 1921, 60.47 per cent in 1922, and 63.22 per cent in 1923. The proportions shown for 1920 seems very large and may be due to a more accurate approximation of that year of the reported to the actual wholesale sales than was the case for retail sales. A similar statement, but in less degree, probably is true of the proportion for 1921. With the change in organization, methods, supervision, and checking control for making the assessments, however, the proportions shown for 1923 may be expected to constitute a closer approximation to the actual proportions.

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[3] Information obtained in personal interview with the auditor general of the Commonwealth of Pennsylvania.

[4] It is interesting to note that the domestic distribution department of the United States Chamber of Commerce, in a pamphlet entitled "Population's Purchasing Power," estimated the total retail sales in the United States in 1923 at $21,048,000,000, which is only about two-thirds the estimate of $32,270,000,000 shown above. The chamber of commerce, in passing from the data for 1918 to its estimates for 1923, took only two changes into account, viz, (1) changes in the retail prices of the commodities purchased by the workingmen's families and (2) estimated changes in the total population. The changes in the fullness of employment, in wage and salary rates, and in the disposition to make purchases were overlooked. It will be remembered that 1918 was a war year, in which luxury production was largely stopped by Government action; in which everybody was urged to economize; in which there were campaigns for raising hundreds of millions of dollars for the Red Cross work, the Y. M. C. A., Jewish Welfare, and other services to the military forces; in which billions of dollars were subscribed for Liberty bonds. Early 1919 was a short period of unemployment due to business uncertainty. Later, however, the restraints were removed. The present estimates have taken account of all of these influences as far as practicable, either directly, as in using the indices of the changes in the volume of factory wages for 1918 to 1919, or indirectly in making use of the sales volume indices.

Application of the proportions for 1923 to the accepted estimates for retail sales results in estimates of wholesale sales amounting to $24,229,000,000 in that year. The index numbers of sales for "all wholesale trade," as computed by the Federal Reserve Board and reproduced in the monthly Survey of Current Business, show that wholesale sales in 1923 amounted in money value to 83 per cent of the sales in 1919. On this basis the wholesale sales in 1919 may be estimated at $29,192,000,000. Application of the other index numbers yields estimates for the intervening years as shown in Table 202.

TABLE 202.—*Estimate of the total sales by the wholesale trade, by years, 1918 to 1923*

Year	Index numbers of sales [1]	Estimated sales (millions)	Year	Index numbers of sales [1]	Estimated sales (millions)
1918		[2] $21,229	1921	74	$21,602
1919	100	29,192	1922	76	21,694
1920	112	32,695	1923	83	[3] 24,229

[1] Department of Commerce, Survey of Current Business, August, 1924, p. 182.
[2] Estimated by taking the same proportion of estimated retail sales as in 1919, namely, 83.8 per cent.
[3] Estimated, on the basis of the proportion of wholesale to retail sales in Pennsylvania in 1923, as 83.22 per cent of the estimated value of merchandise sold at retail.

Section 4. Proportions of net sales income taken by salaries, taxes, and return on employed capital.

The next step consists of ascertaining the portion of this sales income that was required to replace the funds spent for the merchandise and other costs that represent payments to other industries; also the portions required to reimburse the proprietors for the amounts paid in wages and salaries and in taxes.

The Harvard University Bureau of Business Research has made valuable compilations of the proportions between the various classes of expense, other outgo and profit on the one side and net sales on the other. The proportions for retail shoe stores are presented in Table 203 in the form most nearly adapted to the purposes of this inquiry.

TABLE 203.—*Percentages of net sales of wages and salaries, of rent, of taxes, of interest, profits, and bad debts, and of costs paid away to other businesses by retail shoe stores by years, 1919 to 1923* [1]

Year	Number of stores	Salaries and wages	Taxes	Rent	Interest, profit, and bad debts	Cost paid away
1919	107	12.5	0.4	2.3	11.7	72.6
1920	397	13.0	0.5	2.6	4.4	79.9
1921	407	14.3	0.7	3.6	1.4	80.6
1922	421	14.9	0.7	3.3	3.3	77.8
1923	499	14.7	0.6	3.5	4.6	76.7

[1] From the bulletins of the Harvard University Bureau of Business Research.

This table shows that the merchandise sold, the stationery and other supplies consumed, the light and power consumed, and the like—items whose costs were paid to other businesses accounted for

$72.60 out of every $100 of income received from the sale of merchandise in 1919, and for even larger proportions in the later years. Salaries and wages of executives and employees required proportions ranging from $12.50 in 1919 to $14.90 in 1922 and $14.70 in 1923.

The analysis also shows certain proportions required to cover taxes, rent, and interest, profit and bad debts. The taxes referred to, however, were not all taxes. Taxes on land and buildings were omitted, because of the substitution of an allowed rental for costs pertaining to ownership of the land and buildings, where these were owned by the proprietor of the business. Income taxes were also omitted. The item of interest, as shown in the Harvard studies, includes both interest on bank loans and interest on bonded debt, where there was any. In this inquiry interest on bank loans is treated as an item paid to other businesses, while interest on long-time debts is treated as a portion of the total return on all capital employed in the business.

Hence it was necessary to find a means of estimating and transferring the interest on bank loans to costs paid away. To these ends a questionnaire was sent to 708 shoe retailers asking them to report their net sales in each of the years 1919 to 1923, and the total amount of rent, of taxes, of interest on bonds and mortgages and of other interest paid in each year. Usable replies were received from 66 dealers, all of whom furnished the data for 1923. Sixty of them also furnished the information for 1922, 57 of them for 1921, 39 of them for 1920, and 32 for 1919. These samples are not so good as those obtained by the Harvard Bureau of Business Research. Nevertheless they assist in the solution of the problem. The results are presented in Table 204.

TABLE 204.—*Percentages of net sales represented by wages and salaries, rent, and interest, profits, and bad debts of retail shoe stores, by years, 1919 to 1923* [1]

Year	Salaries and wages	Rent	Interest, profit, and bad debts	Costs paid away
1919	12.5	3.37	2.61	73.08
1920	13.0	3.39	3.56	79.44
1921	14.8	4.03	3.54	81.09
1922	14.9	4.43	2.35	78.11
1923	14.7	4.93	3.45	76.02

[1] As modified in the light of reports received by the Federal Trade Commission.

The wage and salary percentages in this are the same as in the preceding table, merely having been carried over. Furthermore, the 66 shoe retailers showed interest on borrowed funds other than long-time debts that amounted in 1923 to 22 cents per $100 of net sales. This was transferred to "costs paid away." Average rental paid amounted to $4.93 per $100 of sales. These adjustments left $3.45 to cover interest on long-time debts, profit and the losses of income from uncollectibility of trade debts. Similar adjustments were made for the other years, except that the bank interest averaged 31 cents per $100 of sales in 1922, 48 cents in 1921, 54 cents in 1920, and 48 cents in 1919.

Although similar questionnaires were sent to other classes of retailers in this inquiry, the one to shoe dealers was the only one that afforded adequate comparison with the proportions shown in

the Harvard University studies. Hence the same proportionate adjustments were made for the proportions shown for department stores, retail drug stores, retail grocery stores, and retail jewelry stores. The desired proportions for 1923 for general stores, retail hardware, retail furniture, and men's furnishings stores were obtained from reports made by those classes of retailers directly to this inquiry. The whole set of proportions is shown in Table 205.

TABLE 205.—*Estimated percentages of retail sales divided among wages and salaries, rent, bond interest, and profits, and in costs paid away to other industries in 1923*[1]

Kind of store	Salaries and wages	Rent, interest, and profits	Costs paid away	Kind of store	Salaries and wages	Rent, interest, and profits	Costs paid away
Department	14.20	7.61	78.29	Furniture	15.92	14.59	69.51
General	7.07	4.89	88.24	Jewelry	10.40	14.41	68.19
Grocery	10.08	4.82	85.42	Drug	18.50	14.02	67.48
Shoe	14.70	8.38	76.92	Hardware	11.74	7.26	81.00
Men's furnishings	15.25	2.89	81.86				

[1] Including uncollectible trade debts, which represent value created but retained by the debtors.

These proportions varied greatly from one kind of store to another. Wages and salaries amounted to only 7 per cent of net sales in the case of the general stores, but twice as much for department stores, which are themselves large general stores in large cities. The difference is no doubt due to the fact that, many of the general stores being small, a large part of the personnel service is furnished by the proprietors and members of their families and is not compensated by salaries. In the retail furniture business wages and salaries accounted for nearly $16 out of every $100 of sales. In the retail jewelry business they claimed $16.40 and in the retail drug trade $18.50 out of each $100 of sales income.

The proportions of net sales available for rent, bond interest, and profits (including uncollectible profits in the form of bad trade debts) were lowest in the case of men's furnishings stores and highest in the case of the furniture and drug stores. It is commonly said that a very large proportion of the men's furnishings stores is not profitable. The large margin in the case of the retail furniture stores may be due to a combination of causes. The merchandise is bulky, requiring considerable storage space, hence rent or investment in store. A large proportion of furniture sales is effected on the installment plan, which requires considerably larger margins than do sales for cash or 30-day account.

The proportions for the other years are not shown in the text but are given in Appendix Table 80.

The next task is to find means of combining these widely varying proportions into a single set that can be applied to the estimated total retail sales of the entire United States. There are extant no data relative to the comparative volumes of sales by these several classes of stores. The nearest approach to such information consists of the expenditures of the 12,096 workingmen's families in 1918 and 1919, published by the United States Bureau of Labor Statistics.[4] These

[4] Cost of living in the United States, 1924.

data refer to a year that was not normal because it was a year of war economy with production limited largely to necessaries and war materials. The proportions, even with the same money incomes and the same prices of commodities would probably have been different in normal peace times. With the unequal advances and recessions in prices and money incomes that have occurred in more recent years, other alterations in the proportions have no doubt taken place, but in which directions and to what extent are not known. However, these are the only data available, and they are better than a simple average or an average based on guessed weights. Table 206 shows the average expenditure per family for the various articles that would be purchased in one or the other of the classes of store mentioned above.

TABLE 206.—*Average expenditures per family made by 12,096 workingmen's families for various kinds of commodities in 1918–19, and the kind of store from which the purchases might have been made* [1]

Kind of article	Average expenditure per family	Kind of store from which purchases might have been made								
		Department	General	Grocery	Shoe	Men's furnishings	Jewelry	Drug	Hardware	Furniture
Men's clothing	$70.73	$70.73	$70.73			$40.54				
Boys' clothing	105.51	105.51	105.51			73.24				
Women's clothing	168.60	168.60	168.60							
Girls' clothing	115.37	115.37	115.37							
Men's shoes	17.57	17.57	17.57		$17.57					
Boys' shoes	90.53	90.53	90.53		90.53					
Women's shoes	35.49	35.49	35.49		35.49					
Girls' shoes	30.54	30.54	30.54		30.54					
Groceries and meats	560.65	560.65	560.65	$560.65						
Drug store articles	17.83	9.43						$17.83		
Hardware	2.15	2.15	2.15						$2.15	
Jewelry and watches	17.11	17.11					$17.11			
Furniture	32.29	32.29								$32.29
House furnishings	38.90	38.90							5.64	
Total	1,342.26	1,330.87	1,275.04	560.65	153.13	121.78	17.11	17.83	7.79	32.29

[1] Tabulated from Cost of Living in the United States (U. S. Department of Labor, Bulletin of the Bureau of Labor Statistics No. 357).

According to this analysis, the expenditures of the 12,096 workingmen's families for clothing, shoes, groceries, meats, medicines, toilet articles, hardware, watches and jewelry, furniture and house furnishings averaged $1,342.26 per family in 1918 for the year ended early in 1919. Of these, articles costing $1,330.87 in the aggregate were of such character as to be sold ordinarily by department stores. This includes groceries and meats. Most department stores probably do not handle meats However, many do, and there was no way of separating the meats; so the whole was included. In like manner, articles costing $1,275.04 were of such character as to be handled by general stores, which are the small city and country crossroad counterpart of the department stores.

Groceries and meats cost $560.65. The inclusion of all meats with groceries probably overweights the grocery store proportions. However, many grocery stores, particularly the chain cash-and-carry stores, do handle meats. And again, there was no means of making the separation and reducing the expenditures for meats to their proper proportions.

The average family expenditures for shoes amounted to $153.12, which might be spent in a retail shoe store, a department store, or a general store as the situation offers.

Of the total amount expended for clothing for the men and boys of the family, $121.78 was of such character that it might have been spent in a department store, a general store or a men's furnishing store. The average family expenditure for furniture was $32.29; for medicines and toilet articles $17.82; for watches and jewelry $17.11; and for hardware $7.79.

The expenditures for hardware include only tools, stoves, ranges, and heaters. All builder's hardware has been omitted. It is probable that most of this is purchased at wholesale by the building contractors. Yet nails, screws, locks, hinges, screening, bolts, and the like are purchased at retail to a considerable extent. However, to what extent is not known; and the omission will probably not have an appreciable effect upon the results.

It probably would be incorrect to use weights in proportion to the possible purchases from the various classes of stores as shown above. While the grocery, shoe, men's furnishings, furniture, jewelry and hardware stores are competitors of the department stores or, with the exception of the jewelry stores, competitors of the general stores, the department stores and general stores are not for the most part competitors with each other. They serve different communities. Hence it seems fitting to adjust the weights assigned to these two classes of stores. This has been done somewhat arbitrarily by multiplying the department store total as shown by the ratio of the population in cities of 50,000 inhabitants or more to the entire population on January 1, 1920; and by multiplying the general store total by the ratio of the population outside such cities to the entire population. This adjustment assigns a weight of 411 to department stores and 884 to general stores. The entire set of weights used was as follows:

	Dollars	Per cent of total		Dollars	Per cent of total
Department stores	411	18.63	Jewelry stores	18	0.82
General stores	884	40.07	Drug stores	17	.77
Grocery stores	561	25.43	Hardware stores	8	.36
Shoe stores	153	6.94			
Men's furnishings stores	122	5.53	Total weights	2,206	100.00
Furniture stores	32	1.45			

Application of these weights to the distribution percentages previously shown for the various kinds of store results in an estimate of 10.45 as the average percentage of wages and salaries to net retail sales, of 0.80 as the average percentage going for taxes, and of 4.83 per cent as the average percentage of net sales that went to all capital employed in the business.

The total sales of retailers in the United States in 1923 were estimated above to have been $38,172,000,000. Combining the foregoing distribution percentages with this amount results in estimates of $3,989,000,000 as the total wages and salaries paid by retailers and $2,149,000,000 as the total shares of all employed capital before

the payment of taxes. The total value created by the retail mercantile industry was the sum of these, or $6,138,000,000.

The average distribution percentages derived above, together with the like percentages for the earlier years, are summed up in Table 207.

TABLE 207.—*Percentages of all retail sales divided between wages and salaries, and in rent, bond interest, and profits, by years, 1919–1923*

Year	Wages and salaries	Rent, interest, and profits [1]	Year	Wages and salaries	Rent, interest, and profits [1]
	Per cent	*Per cent*		*Per cent*	*Per cent*
1919	[2] 8.80	[2] 4.03	1921	11.24	4.04
1919	8.80	4.03	1922	11.12	4.96
1920	10.24	4.12	1923	10.45	5.63

[1] Includes uncollectible trade debts.
[2] Assumed to be the same as in 1919.

Wages and salaries claimed $8.80 out of every $100 of receipts from sales in 1919. During the depression in 1920 and 1921 their share rose above $11. The margin available as a return to all employed capital before paying taxes was lowest in the depression year, 1921, when it amounted to $4.04 out of each $100 of sales income. It was highest in 1923, when it amounted to $5.63 per $100 of sales income.

These percentages are to be applied to the estimated totals of retail sales shown in Table 201 (p. 313). The resulting estimates of the total value created by retail mercantile business and of the two main shares thereof are shown in Table 208.

TABLE 208.—*Estimates of the total value created by retail mercantile business and of the portions thereof divided between wages and salaries and rent, bond interest and profits, by years, 1919 to 1923*

(Millions of dollars)

Year	Total value product	Salaries and wages	Return to capital and enterprise	Year	Total value product	Salaries and wages	Return to capital and enterprise
1919	3,495	2,240	1,255	1921	4,093	3,452	1,241
1919	4,758	3,005	1,718	1922	5,384	3,720	1,658
1920	5,814	3,927	1,887	1923	6,138	3,989	2,149

According to these estimates, the total value created by retail mercantile business was $6,138,000,000 in 1923. Five years previously, a war year, it was $3,495,000,000. In 1920, when the price movement had passed its peak and had commenced to decline under the pressure of public opinion and overall parades, the total value product of retail business amounted to $5,814,000,000. There was a sharp recession the next year, however, a year of acute business depression and unemployment, to less than 4.7 billions of dollars.

Wages and salaries constitute by far the largest share of the total created value in mercantile business as well as in most other classes of industry. Retail mercantile business paid $3,989,000,000 to its hired personnel in 1923. The total fluctuated with general business prosperity and with the general level of prices and wage rates. The total

wage and salary bill was $2,240,000,000 in 1918. It reached a peak, with the peak of prosperity and prices, of $3,927,000,000 in 1920. Depression reduced the total of this share to $3,452,000,000 in 1921—a reduction of nearly one-eighth.

The total share of all employed capital before deducting taxes was $2,149,000,000 in 1923. Five years previously it was $1,256,000,000. This share also rose and fell sharply, even more sharply than labor's share, with the changes in the general level of prices and in business prosperity.

The following table expresses these estimates of the shares of labor and of capital and enterprise in the form of proportions of each to the total value created by this branch of mercantile business.

TABLE 209.—*Percentages of the total value created by retail mercantile business divided between labor and capital and enterprise, by years, 1918 to 1923*

Year	Labor's share	Capital's share	Year	Labor's share	Capital's share
1918	64.1	35.9	1922	64.2	35.8
1919	64.1	35.9	1923	65.0	35.0
1920	67.6	32.5			
1921	73.6	26.4	Average	67.3	32.7

Of the total income available for division between labor and capital during the six years under review labor received practically two-thirds, capital one-third. During three of these years, namely, 1918, 1919, and 1923, labor's share was between 64 and 65 per cent. In 1921, the depression year, when capital bore the first brunt of hard times, labor's share, while falling in absolute amount, rose in proportion to the total to more than 69 per cent.

TAXES.—The taxes payable by retail mercantile business enterprises (disregarding those payable by employees and lenders of capital) are estimated as follows:

Year	Amount	Per cent of total income	Year	Amount	Per cent of total income
1918	$228,000,000	5.6	1922	$214,000,000	4.0
1919	314,000,000	5.5	1923	306,000,000	5.0
1920	252,000,000	4.4			
1921	234,000,000	4.8	Average	250,500,000	5.1

According to these estimates, the taxes paid by retail mercantile establishments averaged, during the six years 1918 to 1923, $256,500,000 a year. For the whole period they took a little over 5 per cent of the total value created by this branch of business. Were the taxes on bond interest and the income tax on profits from unincorporated enterprises included, the proportion would be considerably larger.

Section 6. Expenses of wholesale merchants.

The net sales by wholesale merchants were estimated above. (See p 315.) There remains the task of ascertaining the portions of these that went in wages and salaries, and in rent, bond interest, and profits.

The studies by the Harvard University Bureau of Business Research cover wholesale drug stores in 1923, wholesale dry-goods stores in the South in the same year, and wholesale grocery stores in 1918, 1919, 1920, 1922, and 1923.

The following table sums up the percentages for grocery stores that are of interest in the present inquiry.

TABLE 210.—*Percentages of net sales of wholesale grocery stores that were represented in various classes of expense, outgo, and profit in 1918, 1919, 1920, 1922, and 1923*[1]

	1918	1919	1920	1922	1923
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Wages and salaries	4.12	4.2	4.9	7.85	5.8
Taxes	.20	.2	.3	.29	0.3
Rent	.35	.3	.3	.49	0.5
Interest, profit, and bad debts	3.49	3.65	1.3	2.55	2.6
Costs paid away	91.83	91.05	93.2	88.82	90.8
Cost of merchandise	89.32	89.50	91.7	86.78	88.9
Other expenses	1.51	1.55	1.5	2.00	1.9

[1] Summarized from the Business Research Studies of Harvard University.

These percentages present the same difficulties for the purposes of the present inquiry as did the corresponding percentages for retail businesses. The taxes shown do not include the taxes on land and buildings or, in the case of corporations, the Federal income taxes. The rent shown is the actual rent in the case of leased premises, but is a putative rental in the case the store and site were owned by the business. The item of interest includes interest on bank loans as well as on long-time borrowed funds.

In order to supplement these studies, questionnaires were sent to an extensive list of wholesale grocers. Usable replies were received from 77 wholesale grocers supplying the requested data for all six years, from 3 others who supplied the data for the last five years; from 3 more for the last four years; from other 2 for the last three years, and from 1 who furnished the data for 1922 and 1923. The questionnaires dealt only with net sales, rentals, interest on bonds, mortgages, and long-time notes outstanding and with interest on all other borrowed funds. The results are summarized as follows:

TABLE 211.—*Percentages of net sales of wholesale grocers represented by rent, interest on bonds, mortgages, and long-time notes, and by other interest, by years, 1919 to 1923*

Year	Rentals	Interest on long-time borrowed capital	Other interest
1919	0.24	0.02	0.46
1920	.24	.03	.70
1921	.38	.03	.80
1922	.40	.03	.60
1923	.41	.03	.62

The rentals shown by the Harvard studies were usually the larger, due, as before stated, to the inclusion of a putative rental in case the business owned the occupied premises. The reports to this inquiry

also indicate that all but a negligible portion of the interest consists of interest on bank loans.

Application of the data collected in reports to this commission to the data obtained from the Harvard studies puts the latter in form for use in this inquiry. The revised percentages are presented below:

TABLE 212.—*Percentages of wages and salaries, and of the return on all employed capital to net sales of wholesale grocers in 1918, 1919, 1920, 1922, and 1923*

	1918	1919	1920	1922	1923
Wages and salaries	4.93	4.8	4.9	7.85	5.8
Rent, interest, and profits	3.58	3.69	1.10	2.58	2.78
Costs paid away	91.49	91.51	93.90	89.42	91.42

Wholesalers work on much narrower margins than do retailers. In no year did the wholesale grocers have a margin as great as 11 cents out of each dollar of sales income to cover expenses, taxes, and profits. In three of the years the margin was less than 9 cents and in one only a little more than 6 cents.

In making use of the Harvard studies with reference to wholesale drug store expenses and the expenses of wholesale dry goods stores in the South, it has been assumed that the same proportionate changes should be made in the tax and rental percentages as in the case of the wholesale grocery stores. It has also been assumed that the percentages in other years bore the same proportion to the percentages in 1923 as in the case of the wholesale grocers. This is the best that can be done in the absence of data on the subject. Finally percentages have been interpolated for 1921 according to the trend shown above for retailers. Then to obtain a composite set of percentages to apply to the estimated net wholesale sales the percentages for the three branches of the wholesale trade were weighted with the retail weights used for grocery stores, department stores, and drug stores. The results are shown in Table 213.

TABLE 213.—*Estimated percentages to wholesale net sales, of wages and salaries, of rent, bond interest, and profits and of costs paid away to other industries, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Cost paid away	Year	Wages and salaries	Rent, interest, and profits	Cost paid away
1918	6.22	3.98	89.85	1921	8.20	2.20	89.60
1919	6.09	4.04	89.90	1922	9.92	2.73	87.35
1920	6.19	1.35	92.46	1923	7.32	3.01	89.67

According to these estimates, wholesalers conducted their business on practically a 10 per cent gross margin in 1918, 1919, and 1923. The margin rose above 12 per cent only in 1922 and was only a little more than 7½ per cent in 1920. Wages and salaries ranged from 6 per cent to nearly 10 per cent of the total receipts from sales. The margin left for rent, taxes, bond interest, profit, and uncollectible trade debts was under 4 per cent of the total receipts in all years and was only a little more than 1⅓ per cent in 1920.

These percentages are to be applied to the totals of sales by wholesalers in continental United States as previously estimated. The resulting estimates of the total value created by the wholesale mercantile business of the country, and of the principal shares thereof, are shown in Table 214.

TABLE 214.—*Estimates of the total value created by the wholesale mercantile business and of the portions thereof that went in wages and salaries, and in rent, bond interest, profits, and taxes, by years, 1918 to 1923*

Year	Total value product	Wages and salaries	Rent, interest, profits, and taxes [1]
1918	$2,165,000,000	$1,327,000,000	$838,000,000
1919	2,948,000,000	1,769,000,000	1,179,000,000
1920	2,966,000,000	2,024,000,000	942,000,000
1921	2,246,000,000	1,771,000,000	475,000,000
1922	2,770,000,000	2,172,000,000	598,000,000
1923	2,503,000,000	1,774,000,000	729,000,000

[1] Including uncollectible trade debts.

According to these estimates, the total value created by the wholesale mercantile business of continental United States was $2,503,000,000 in 1923. A half decade previously it was $2,165,000,000. The net increase in money value of the service rendered was less than one-sixth. The greatest money value of the service came in 1919, the first year after the close of the World War, when it was nearly $3,000,000,000.

Wages and salaries in this branch of industry ranged from $1,327,000,000 in 1918, the war year, to $2,172,000,000 in 1922. The total wage and salary bill reached a peak in 1920, when rates of remuneration were at their highest. It fell off more than $250,000,000 in the depression in 1921, and although it rose to a new and higher peak the next year, in 1923 wages and salaries again aggregated almost the same amount as in the depression year.

The share of the total value product of the wholesale mercantile business that went to all employed capital—whether leased, borrowed, or contributed—was $729,000,000 in 1923. A half decade previously it was greater, namely, $838,000,000. It rose to $1,179,000,000 in 1919, but in 1920, when other industries were at their peak, measured in money values, the return to capital employed in the wholesale trade was only $442,000,000. It was somewhat larger even during the depression in 1921 and has continued to increase rapidly since that year.

Interesting as the amounts may be, the proportion in which the whole created value was divided between the two classes of factors is more significant. Table 215 shows these proportions.

TABLE 215.—*Percentages of the total value created by wholesale trade that were received by labor and by capital by years, 1918–1923*

Year	Labor's share	Capital's share	Year	Labor's share	Capital's share
1918	61.3	38.7	1922	78.4	21.6
1919	59.9	40.0	1923	70.9	29.1
1920	81.9	18.1			
1921	78.9	21.1	Average	71.8	28.2

Labor's share during the six years 1918 to 1923 averaged nearly 72 per cent, capital's share 28 per cent, of the total value created by the wholesale trade. During 1918 and 1919 labor's share was only about three-fifths of the total, but during the next three years it fluctuated around four-fifths. In 1923, however, it dropped back to a point midway between the two extremes.

TAXES.—The amounts of taxes payable by wholesale enterprises (disregarding taxes payable by employees and lenders of capital) are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$214,000,000	11.7	1921	$110,000,000	6.1
1919	202,000,000	11.8	1922	107,000,000	4.5
1920	180,000,000	7.7	1923	147,000,000	7.0

Section 6. Summary for wholesale and retail business.

Wholesale business as the term is used in this inquiry includes commission and jobbing business as well as the wholesale trade so-called. Hence a combination of the estimates for the wholesale and the retail branches will constitute similar estimates for the whole distributing industry other than producers who sell directly to the ultimate purchasers. The value created by the latter is inincluded in the estimates for agricultural, mining and manufacturing industries. Table 216 presents the combined estimates.

TABLE 216.—*Estimates of the total value created by all mercantile business and the shares thereof that went in wages and salaries, in taxes, rent, bond interest and profits, by years, 1918 to 1923*

[Millions of dollars]

Year	Total created value	Wages and salaries	Rent, interest, profits, and taxes	Year	Total created value	Wages and salaries	Rent, interest, profits, and taxes
1918	5,600	3,567	2,003	1921	4,030	2,323	1,710
1919	7,731	4,824	2,897	1922	5,154	2,888	2,266
1920	8,280	5,851	2,329	1923	8,641	5,763	2,878

According to these estimates, the total value created by all mercantile industry in continental United States was over $8,600,000,000 in 1923. Five years previously it was a little under $5,700,000,000. It was nearly $9,800,000,000 when prices and wage rates reached their highest levels, which was in 1920. The total value of mercantile service dropped $2,851,000,000 with the industrial depression and reduction in price and wage-rate levels in 1921. There was rapid recovery during the next two years.

Mercantile business paid wages and salaries in 1923 amounting, it is estimated, to $5,763,000,000. The estimate for the half-decade earlier was $3,567,000,000. At the peak of prices and wage rates in 1920, the wage and salary bill amounted to nearly $6,000,000,000. Aggregate wages and salaries were reduced over $1,700,000,000 in 1921, the depression year.

Labor's share of the total value created by mercantile business during the six years, 1918 to 1923, inclusive, was 68¾ per cent. It was between 62 and 63 per cent during the first two years. It increased in proportion to nearly 72 per cent in 1920 and over 75 per cent in the depression year. As business recovered, labor's share of the total dividend dropped back toward the proportion that held at the beginning of the period. The proportions are shown in tabular form as follows:

TABLE 217.—*Percentages of the total value created by mercantile business, divided between wages and salaries and rent, bond interest, and profits, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, profits	Year	Wages and salaries	Rent, interest, profits
1918	63.0	37.0	1922	72.3	27.7
1919	62.5	37.6	1923	66.7	33.3
1920	71.9	28.1			
1921	75.3	24.7	Average	68.75	31.25

TAXES.—Taxes payable by mercantile business enterprises (disregarding those payable by employees and lenders of capital), are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$483,000,000	5.63	1922	$341,000,000	4.19
1919	601,000,000	5.64	1923	479,000,000	5.84
1920	442,000,000	5.35			
1921	362,000,000	5.22	Average	461,500,000	5.49

According to these estimates the taxes paid by the mercantile business enterprises of the United States during the six years 1918 to 1923, inclusive, amounted to $2,769,000,000. This was a little over 6 per cent of the total value created by mercantile business. It also amounted to nearly one-fifth of the entire income left after paying salaries and wages and the other operating expenses.

Chapter XVI

PROFESSIONAL AND PERSONAL ENTERPRISES

Section 1. Value created by professional service businesses.

Professional, semiprofessional, or subprofessional employment may be described as generally requiring scientific, professional education and training and compensated in most cases by fees charged or salary received. In 1920, out of about 42,000,000 persons gainfully employed, it is estimated that nearly 2,144,000, or 1 out of 20, were employed in the professional classifications mentioned. The data presented in this report include accountants, appraisers, adjusters, portrait painters, sculptors, engineers of all kinds, architects, photographers, chemists, assayers, lawyers, musicians, teachers of music, nurses and midwives, physicians and surgeons, dentists, chiropodists, oculists and aurists, osteopaths, chiropractors, healers, etc. Some few classed as professionals, such as actors and showmen, authors, editors and reporters, clergymen, college presidents and professors, designers, draftsmen and inventors, teachers, aeronauts, librarians and semiprofessionals (except healers) and attendants and helpers were omitted, principally for the reason that most of them are employed by other persons, firms, or corporations, and their compensation would be reported by the employers as "salaries and wages" paid. Part of the accountants listed in "clerical occupations," were included. Thus about $75,000 were considered as in the professional classes, or 1 in every 48 persons in the United States.

As there was no census of incomes from professional service, questionnaires were mailed to about 22,000 professional people selected from the classified sections of city and telephone directories, and about 1,307 answers were received which were usable in whole or part. Samples thus obtained were representative in varying degrees, and some of the classes of professionals had many of their number working on salaries or wages and these were asked not to report. Manufacturers found among engineers and chemists were eliminated.

Counts were made of the number of professional enterprises of the various kinds whose names were listed in the business directories of certain selected cities. In making the selection certain cities with populations in excess of 500,000 inhabitants were chosen so as to give proper representation to the earning power of professional businesses in metropolitan centers. Certain cities with populations between 100,000 and 300,000 were also chosen and, to give proper representation to the professional practitioners who serve the rural communities, a number of cities with populations of less than 25,000 inhabitants were selected. In choosing the cities in each class, they were selected so as to give as wide a geographical representation as possible.

The method of estimating the total number of professional businesses of each kind was as follows. The combined population on January 1, 1920, of the chosen metropolitan cities was ascertained from the census, also the total population of all cities in that size

group; and the ratio of the latter to the former was computed. The numbers of professional enterprises of each kind found in the chosen cities were multiplied by this ratio and the results constituted the estimated total numbers of the respective kinds of professional enterprises in all cities of that size group. A similar procedure was followed for the middle size group, except that in obtaining the ratio, the combined population of the chosen cities was compared with the total population of all cities in the range, 25,000 to 500,000. In the case of the small cities, the comparison was of their combined population with the total population not only of all cities below 25,000 but of the rural population as well. The total number of professional enterprises in the United States was estimated by this method at about 870,000. This is within 5,000 of the number given by the census of occupations.

It should be noted that the count is made of professional enterprises rather than of professional persons. A good many persons of professional training work for others on the basis of salary or wages. Wages are also paid to other persons of nonprofessional character. It is possible that the sample returns that were made to the inquiries sent out, as well as the count of professional people made on the basis of business directories, involve some duplication between professional enterprises and professionals working for salary or wages. As, however, the main part of the estimated income as shown below accrues to the professional enterprises, and as a considerable part of the salaries and wages is undoubtedly in the form of wages, it is apparent that such duplication, assuming it exists, must be a comparatively small proportion of the total.

The average gross income of the various classes of professional businesses, which were ascertained from the answers to the questionnaires were used in connection with the total numbers to obtain the grand total for the United States.

This estimated gross income for the year 1923 amounted to $6,092,000,000, and for 1922 to $5,741,000,000, an increase in 1923 of $350,000,000 over 1922. The year 1921 shows an estimated gross income of $250,000,000 more than 1922, but $640,000,000 less than 1920, showing that the depression in 1921 affected the professional businesses. The year 1920 was by far the largest from a remunerative standpoint for the professional businesses, showing an estimated gross income of $6,637,000,000, nearly $1,000,000,000 greater than the year 1919, and $1,360,000,000 larger than 1918.

The value product in the case of professional businesses consists of (1) salaries and wages paid out in the business, (2) rent paid for premises and equipment, together with interest on long-term debts, and the return to the individual, firm, or corporation constituting the professional enterprises for services rendered. There is, of course, little actual money capital employed, the recompense being usually for advice or instruction, or professional personal service. All other business expenses are the part of gross income that is paid for articles and materials used in the business, such as light, heat, stationery, printing, advertising, etc., and these are not a part of the value created by the business as here discussed.

Table 218 presents the estimated total value product created by the professional service businesses from 1918 to 1923, divided between salaries and wages paid, and the return to professional enterprise, as described in item (2) of the preceding paragraph.

TABLE 218.—*Estimated total value created by professional service businesses and estimated division between salaries and wages, and return to professional enterprise, by years, 1918–1923*

[Amounts in millions]

Year	Total value product	Salaries and wages	Return to professional enterprise	Year	Total value product	Salaries and wages	Return to professional enterprise
1918	$3,930	$915	$3,015	1921	$5,072	$1,179	$3,893
1919	4,775	1,104	3,671	1922	4,993	1,095	3,898
1920	5,602	1,345	4,257	1923	5,211	1,179	4,032

The estimated value created by professional service in 1918 was $3,930,000,000, it increased to $4,775,000,000 in the year following the close of the war, and reached the maximum of $5,602,000,000 in 1920. It fell to about $5,000,000,000 in 1921, decreased slightly in 1922, but increased in 1923, reaching a total greater than in 1921, but not as high as 1920 by nearly $400,000,000.

Salaries and wages paid out followed a similar course, beginning with $915,000,000 in 1918 and reaching $1,345,000,000 in 1920, from which they diminished in the aggregate to $1,179,000,000 the following year and to $1,095,000,000 in 1922.

The return to professional enterprise, as previously described, following the trend of total value created, amounted to $4,257,000,000 in 1920, declined in 1921 and 1922, and increased to $4,032,000,000 in 1923. These amounts, it must be remembered, embrace the items of rent and interest paid, as well as the remuneration for services by the various classes of professional persons, firms, and corporations. Thus, this share corresponds in part to the return to employed capital in the treatment of other industries, but represents for the most part the earnings of trained professional minds.

The proportion of total value created represented by wages and salaries paid and return to professional enterprise from 1918 to 1923 is shown in the following table:

TABLE 219.—*Percentage division of the total value created by professional service businesses between and wages and return to professional enterprise, by years, 1918 to 1923*

Year	Salaries and wages	Professional enterprise	Year	Salaries and wages	Professional enterprise
1918	23.3	76.7	1922	21.9	78.1
1919	23.1	76.9	1923	22.6	77.4
1920	24.0	76.0			
1921	23.3	76.7	Average	23.0	77.0

It will be noted that there was very little fluctuation in the proportions from year to year. Salaries and wages paid averaged 23 per cent of the total value product.

The return to the professional enterprise did not vary much over 1 per cent above or below the average of 77 per cent for the six years. The lowest point was in 1920 with 76 per cent and the highest 78.1 per cent in 1922.

TAXES.—The amount of taxes payable by the professional enterprises (disregarding taxes payable by employees or lenders of capital) are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$63,000,000	1.5	1921	$69,000,000	1.4
1919	66,000,000	1.4	1922	76,000,000	1.5
1920	76,000,000	1.4	1923	71,000,000	1.4

Section 2. The value created by personal service industries.

The term "personal service industries," as used in this report, covers enterprises which do not produce material things but render personal service to individuals. Apartment houses, hotels, restaurants, laundries, barber shops, bowling alleys, billiard parlors, theaters, and similar enterprises are included in this class.

The activities of the personal service industry, as a whole, are not covered by the reports of the Census Bureau nor by any other available published information. While it was possible to obtain data from existing sources for certain businesses included in this group, the figures were found to be incomplete and unsatisfactory for the purposes of this inquiry.

In order to supply bases for estimates, a selection of lists of the businesses in each of the principal lines was made, and a questionnaire designed to yield the necessary information was sent. It was requested that the data be supplied for each of the six years, if practicable; otherwise for three designated years. Addresses were secured from the classified sections of city directories. The cities were separated into three classes based upon size, and selected from each of the nine geographical divisions as designated in the reports of the Census Bureau. Over 14,000 questionnaires were mailed, the number sent varying in proportion with the estimated total number engaged in each business.

Only 465 usable reports were received in response to this questionnaire, or less than 4 per cent of the total number sent.

The gross income for 1923, which was used as a base, was estimated by multiplying the average gross income for each line of business by the total number of such businesses in the United States, as shown by the classified sections of directories of 51 representative cities. The number listed in each directory used was multiplied by the ratio of the total population in the geographical division to the corresponding population of the city.

The gross income for years prior to 1923 was estimated by the use of a sequence of ratios. For each classification of business the ratio of the gross income of the concerns reporting for the given year to the gross income of the same companies for the preceding year was calculated and applied to the estimated total gross income for the preceding year.

The estimated total gross income for these industries is presented in tabular form below:

	Gross income (millions)		Gross income (millions)
1918	$7,229	1921	$10,426
1919	9,194	1922	10,455
1920	10,707	1923	11,298

Only a portion of this gross income constitutes value created by this group of industries. The item designated as "all other business expenses" consists of the cost of stationery, office supplies, lighting, etc.—costs paid away to other industries, or values created by them. The excess of the gross income over these costs constitutes the value created by the personal service industries.

Two classes share primarily in this value product. The personnel of the industries claim a portion as wages, salaries, or other compensation for their services. The second is the industries' return to enterprise and capital in the form of rent, of interest on borrowed capital, and of profits. This consists of what was left out of the gross income after deducting wages and salaries and "all other business expenses" (except taxes).

The estimates of these two shares in the total created value were made for each year by applying certain percentages to the estimated total gross income of the year in question. These percentages were the average percentages of each share to the gross income of the enterprises that reported to the commission.

The estimated value created by personal service industries and its division between wages, salaries, and commissions; and rents, interest, and profits, are shown in the following table:

TABLE 220.—*Estimated value created by personal service industries, and estimated division between salaries, wages, and commission; and rents, interest, and profits, by years, 1918 to 1923*

[Amounts in millions]

Year	Total value created	Wages, salaries, and commissions	Rent, interest, and profits	Year	Total value created	Wages, salaries, and commissions	Rent, interest, and profits
1918	$4,374	$2,824	$1,550	1921	$5,034	$3,048	$1,976
1919	5,197	3,353	1,844	1922	5,303	3,240	2,044
1920	6,284	3,790	2,488	1923	6,309	3,820	2,490

It will be noted that the total value created by these industries increased from $4,374,000,000 in 1918 to $5,197,000,000 in 1919, or nearly 19 per cent. The year 1920 shows an increase of $1,087,000,000, or 21 per cent, over 1919. The decline in the next two years, $660,000,000 in 1921 and $31,000,000 in 1922, may be attributed to the business depression that commenced in 1920. In 1923, however, the total created value was $6,309,000,000, an increase of $714,000,000, or 13 per cent, over 1922. This was also a slight increase over 1920, the year before the effect of the depression was apparent.

The divisions of the value created by the industries follow closely the same general trend as that indicated by the total value itself.

This is shown by the following table, which gives the percentages of total created value represented by each of the two divisions:

TABLE 221.—*Percentages of the total value created by personal service industries, represented by wages, salaries, and commissions; and by return to capital and enterprise, by years, 1918 to 1923*

Year	Wages, salaries, and commission	Return to capital and enterprise	Year	Wages, salaries, and commission	Return to capital and enterprise
1918	64.6	35.4	1922	63.5	36.5
1919	64.6	35.5	1923	60.6	39.4
1920	60.4	39.6			
1921	64.9	35.1	Average	62.9	37.1

For the period as a whole nearly 63 per cent went to the employees, while approximately 37 per cent was the proportion going to capital and enterprise. It may be of interest to note that the extreme ranges of the two divisions are shown in the depression years 1920 and 1921. The proportion of wages and salaries varied from 60.4 per cent in 1920 to 64.9 per cent in 1921, while the return to capital ranged from 39.6 to 35.1 per cent in the two years, respectively.

One noticeable feature of this statement is the consistency with which labor and capital maintained their relative proportions from year to year, with the exception of 1920, the commencement of the industrial depression, and 1921, when prices and values were unsettled, and business men were obliged to operate at smaller profit and even with losses in order to hold their organizations together pending the revival of business.

TAXES.—The amounts of taxes payable by personal service enterprises (disregarding those paid by employees and lenders of capital) are estimated as follows:

Year	Amount of taxes	Per cent of total value product	Year	Amount of taxes	Per cent of total value product
1918	$286,000,000	4.8	1921	$347,000,000	6.2
1919	195,000,000	3.8	1922	315,000,000	6.7
1920	401,000,000	6.4	1923	630,000,000	8.8

Chapter XVII

BANKING AND MISCELLANEOUS ENTERPRISES

Section 1. Value created by the banking business.

In another section of this report (see Chapter XV dealing with mercantile business) attention was called to the fact that the high degree of personal and geographical division of labor that characterize modern industry gives great importance to the distributing functions—wholesale, retail, and other forms of mercantile business—and to transportation. Also, because a very large proportion of mercantile and other trade is transacted on a credit basis, the banking function has likewise attained great importance. The banking function in the United States is performed by national banks, State banks commercial banking departments of trust companies, and private banks.

All information on national banks was secured from the reports of the Comptroller of Currency to whom the national banks make periodic reports. For State banks, trust companies, and private banks, it was necessary to select a representative number from each State and to ask them for the desired information. The response to this questionnaire was fairly good; out of the 2,000 sent out there were received about 500 returns that were complete and usable.

Gross earnings from banking operations it is estimated were $1,672,000,000 in 1923 as compared with $1,203,000,000 one-half decade previous. In 1921 gross earnings were $1,843,000,000.

The total value created by the banking business was taken to consist of (1) the salaries and wages earned by its officers and other personnel; (2) rent, interest on bonds, mortgages and deposits, and profits. These two portions and their total are shown in Table 222.

TABLE 222.—*Estimated value created by the banking business and the estimated division between salaries and rent, interest and profits, by years, 1918 to 1923*

[Amounts in millions]

Year	Total value created	Wages and salaries	Rent, interest, and profits	Year	Total value created	Wages and salaries	Rent, interest, and profits
1918	$1,034	$210	$824	1921	$1,401	$366	$1,035
1919	1,203	260	943	1922	1,340	357	979
1920	1,421	338	1,083	1923	1,401	393	1,008

According to these estimates the total value created by the banking business of the United States grew from $1,034,000,000 in 1918 to $1,401,000,000 in 1923. It is noteworthy, however, that, even in the depression year 1921, the value created by the banking business

was nearly $60,000,000 greater than in 1923; also, it was $40,000,000 greater than in 1920, which generally was the peak year for other kinds of business.

Wages and salaries accounted for 393,000,000 of the total value created by the banking business in 1923. A half decade earlier they amounted to $210,000,000. Unlike other industries, the aggregate salaries and wages in the banking business did not reach a peak in 1920 nor suffer a reduction in 1921. On the contrary, they increased continuously throughout the half decade. As already shown above, the total volume of business done by the banks was greater during the depression year, 1921, than during any other year under review.

The second share of the total created value represents the return to all employed capital. This share was lowest in 1918 with $824,000,000. It rose to $1,095,000,000 in 1921 and declined a little in 1923 to $1,008,000,000.

It is interesting to note that this share is made up largely of interest on deposits to customers, and the banking profit, or stockholders' share.

The remainder, or that part that went for rent and interest on bonds, is small in comparison and is of minor consideration. In 1918 out of the $824,000,000, $442,000,000 consisted of interest on deposits by customers and $343,000,000 consisted of the stockholders' profits. In 1923, out of over $1,008,000,000, $576,000,000 went to customers and $432,000,000 to the stockholders.

The banking business is remarkable, because of the fact, as shown in Table 223, that labor receives less than one-fourth and capital receives about three-fourths of the total value product.

TABLE 223.—*Percentage distribution of value product of the banking business between wages and salaries, and the return to capital and enterprise, by years, 1918 to 1923*

Year	Wages and salaries	Rent, interest, and profits	Year	Wages and salaries	Rent, interest, and profits
1918	20.3	79.7	1923	27.3	72.6
1919	21.6	78.4	1922	28.0	72.0
1920	23.8	76.2			
1921	25.0	75.0	Average	24.2	75.7

It will be seen that labor's share of the total increased continuously from 20 per cent at the beginning of the half decade to 28 per cent at the end. This fact, coupled with the continuous increase in the aggregate amount of salaries and wages, probably means that the personnel of the banking business has been somewhat better compensated in recent years than formerly.

TAXES.—The amount of taxes payable by banking enterprises (disregarding those payable by officers, employees, and lenders of capital) are estimated as follows:

Year	Amount	Per cent	Year	Amount	Per cent
1918	$35,000,000	8.2	1921	$138,000,000	9.5
1919	112,000,000	9.3	1922	120,000,000	8.3
1920	124,000,000	8.7	1923	119,000,000	8.5

Statistics covering the usual number of persons employed and total wages and salaries paid by occupational groups in the United States are lacking except in so far as shown by the Bureau of the Census for the total number of bankers and bank officials. Lack of statistics, therefore, makes it impossible to discuss the distribution of wages and salaries paid in the banking business.

According to the census of 1920 there were 161,613 persons classified as "bankers, brokers, and money lenders." Of this number 82,375, or a little more than half the total, were classed as "bankers and bank officials" and the remainder was made up of the following:

Loan brokers and loan company officials	4,385
Commercial brokers and commission men	27,552
Pawnbrokers	1,083
Stockbrokers	29,609
Brokers not specified and promoters	16,604
Total	79,238

From the classifications shown above it is assumed that the totals published by the census do not include all persons in the banking and money-lending business, as it appears that no clerks, bookkeepers, etc., are included. No attempt is made to estimate the total number of persons employed.

Section 2. Value created by miscellaneous other industries and occupations.

The principal industries and occupations have been covered in the other sections. Among the public utilities local storage and warehouse service and water systems were not covered; likewise, taxicab service, drayage, or local express business and the like.

In order to include the omitted public utilities it was assumed that their income bore about the same proportion to the net income of corporations reported by the Treasury Department in "Statistics of Income," as was the case for the utilities that were covered.[1] The percentages of salaries and wages, taxes, etc., were assumed to be the same as the average for the other industries.

Another important item to be estimated consisted of the wages of household and personal servants. The census of occupations for 1920 shows that the number of male cooks, coachmen, and the like was nearly the same in 1920 as in 1910, namely, 231,402 as compared with 231,654. The number of female servants, however, decreased from 1,269,285 to 982,321. It has been inferred from this that fewer people have domestic servants than formerly. This may be true. However, it should be remembered that the census of 1920 was taken shortly after the war which naturally drew former domestic servants into the industries or forcibly ejected them from domestic service, and that there had not been sufficient time for arriving at a new normal with reference to the demand for and supply of such service. Therefore, it may be unsafe to interpret the reduction in numbers from 1910 to 1920 as representing a general trend. A census at the present time would possibly show that an increase in the number of servants had taken place since January

[1] These include steam and electric railways, water transportation, telephone, telegraph, and cable, and electric light and power companies.

1, 1920. Without information later than that of the 1920 census, however, it has been assumed that the numbers have remained the same as at the census date.

The value created by servants is measured not by their money wages alone but includes the value of the food they consume and the shelter and lodging they receive. In the absence of trustworthy data on the subject, these have been assumed to be the equivalent of $500 per year in the case of the female servants and $1,000 per year for the male servants. This makes a total estimate for each year of about $821,000,000.

This is, of course, a very rough estimate. Also, it is wholly a wage and salary item. This estimate combined with those for the omitted utilities gives a miscellaneous item as shown in Table 224.

TABLE 224.—*Estimate of the value created by miscellaneous public utility industries and domestic servants, by years, 1918 to 1923*

(Amounts in millions)

Year	Total value product	Wages and salaries	Return to capital and enterprise	Year	Total value product	Wages and salaries	Return to capital and enterprise
1918	$2,025	$1,639	$386	1921	$2,245	$1,745	$501
1919	2,121	1,741	380	1922	2,288	1,738	550
1920	2,298	1,985	311	1923	2,032	1,855	178

This table, containing only rough estimates, needs no comment, except to point out that approximately one-half the total wages and salaries consist of those estimated for personal servants.

Out of each of the two shares some amount was taken in taxes. The taxes paid by the recipients of the wages and salaries are not known. Those estimated as being paid directly by the enterprises in question were as follows:

Year:	Amount of taxes
1918	$88,000,000
1919	96,000,000
1920	111,000,000
1921	117,000,000
1922	126,000,000
1923	126,000,000

APPENDIX

APPENDIX TABLES

TABLE 1.—*Ratio of land value to total value of realty, by States, 1922*

Ratios based on reported data:		Ratios based on estimates:	
Arizona	0. 8379	Alabama	0. 6787
California	.6781	Arkansas	.7400
Colorado	.6603	Delaware	.3924
Connecticut	.2383	Florida	.7073
Idaho	.7743	Georgia	.6311
Illinois	.6486	Iowa [1]	.7723
Indiana	.6453	Michigan [1]	.5244
Kansas	.8029	Missouri	.6505
Kentucky	.6456	Nebraska	.7877
Louisiana	.5789	Nevada	.8766
Maine	.4115	New Hampshire	.3946
Maryland [1]	.3909	New Mexico	.8474
Massachusetts	.4171	North Carolina	.6046
Minnesota	.8464	North Dakota	.9114
Mississippi	.7462	Ohio	.5966
Montana	.7356	Oklahoma	.7617
New Jersey	.3943	Pennsylvania [1]	.4334
New York [1]	.4533	South Carolina	.5929
Oregon	.8112	Tennessee	.6700
Rhode Island	.3361	Texas	.7234
South Dakota	.9029	Vermont	.3845
Utah	.6350	Virginia	.5016
Washington	.7361	West Virginia	.6393
Wyoming	.6873	Wisconsin	.7060
District of Columbia	.4640		

TABLE 2.—*Assessed values of tax-exempt property (including personality) in Connecticut by class of use, 1914 and 1922* [a]

Class	Assessed values (thousands of dollars) in—		Per cent increase in 8 years	Per cent distribution of assessed values in—	
	1914	1922		1914	1922
Public schools	22,220	48,494	118.2	12.3	17.3
Private schools, colleges, etc	24,207	39,020	61.1	14.4	13.9
Ecclesiastical societies	34,565	47,753	38.2	20.5	17.0
Cemeteries	3,472	3,739	7.7	2.1	1.3
Benevolent and charitable societies, penal institutions, etc	18,071	34,071	82.5	11.1	12.1
Scientific, literary, etc., societies	2,905	5,516	98.7	1.7	2.0
Public libraries	3,687	5,153	39.8	2.2	1.8
Agricultural societies	184	382	108.2	0.1	0.1
Soldiers, sailors, and blind persons	5,559	9,206	65.6	3.3	3.3
Fire departments and hose companies	3,234	5,634	78.0	2.0	2.1
Public buildings not included above	18,870	38,127	104.2	11.1	13.6
Tree plantations	1	34	3,327.8	0.0	0.0
Parks and playgrounds	11,211	20,410	82.1	6.6	7.2
Miscellaneous statutory exemptions	13,830	20,421	8.3	11.2	7.2
Special exemptions by towns and assessors	354	2,631	208.1	0.5	0.9
Total	168,260	280,667	66.9	100.0	100.0

[a] Data from State tax reports for 1916 and 1922.

[1] Partly reported.

[2] Partly estimated.

TABLE 3.—*Assessed values of exempt property (including personalty) in Rhode Island by ownership or occasion of exemption, 1917 and 1922* [1]

Owner of class of exemption	Assessed values (thousands of dollars) in—		Per cent increase in 5 years	Per cent distribution of assessed values in—	
	1914	1922		1914	1922
United States property	5,093	6,047	20.5	6.7	7.0
State property	8,515	11,001	27.7	11.4	11.6
Town or city property	26,715	31,209	21.4	33.9	33.0
School property	9,690	14,374	48.9	12.7	15.2
Church property	11,681	13,741	17.6	14.4	14.5
Professors of Brown University	335	422	25.9	0.4	0.5
Property of military organizations	40	40	0.0	0.1	0.0
Hospital property	3,249	4,388	31.9	4.4	4.7
Exempt by charter	2,629	3,113	18.7	3.6	3.3
Burial grounds	1,328	1,611	18.3	1.8	1.7
Libraries	1,412	1,603	13.5	1.9	1.7
Property of charitable institutions	1,269	1,737	43.7	1.6	1.8
Property exempt on account of poverty	141	117	[2] 16.7	0.2	0.1
Veterans	831	623	[2] 25.0	1.1	0.6
Exempt by vote of city or town	3,741	4,153	9.7	4.9	4.3
Total	76,762	94,688	25.0	100.0	100.0

[1] Sixth and ninth reports of the Board of Tax Commission of Rhode Island, year 1917, and biennial period 1921–22.
[2] Decrease.

TABLE 4.—*Assessed values of exempt property (including personalty) in Connecticut, by ownership, 1914 and 1922.* [1]

Ownership	Assessed values (thousands of dollars) in—		Per cent increase in 8 years	Per cent distribution of assessed values in—	
	1914	1922		1914	1922
Federal	3,981	8,449	112.2	2.4	3.0
State	13,797	23,826	72.6	8.1	8.5
County	3,866	4,916	27.4	2.3	1.7
Town	12,577	14,607	23.0	7.6	5.9
City	41,019	68,497	64.6	24.7	24.4
Borough	1,274	1,304	2.3	.7	.5
School district	5,028	18,768	273.3	3.0	6.7
Fire and other municipal districts	513	5,237	908.5	.3	2.0
Corporations and associations	80,060	122,785	54.6	47.8	44.0
Persons	6,067	9,230	63.2	3.4	3.3
Total	168,200	280,367	66.8	100.0	100.0

[1] Data from Connecticut State tax reports for 1918 and 1923.

TABLE 5.—*Geographical distribution of water power, developed and potential, by States, 1924*

(From United States Geological Survey)

State	Potential water power		Developed water power		
	Horsepower available 90 per cent of time	Horsepower available 50 per cent of time	Horsepower	Ratio to potential: Available 90 per cent of time	Ratio to potential: Available 50 per cent of time
New England:					
Maine	538,000	1,074,000	473,168	0.882	0.441
New Hampshire	188,000	350,000	235,810	1.208	.674
Vermont	80,000	160,000	167,618	2.008	.953
Massachusetts	106,000	235,000	343,039	3.245	1.464
Rhode Island	25,000	40,000	38,188	1.208	.756
Connecticut	65,000	110,000	136,423	2.099	1.240
Middle Atlantic:					
New York	4,010,000	4,060,000	1,542,963	.385	.311
New Jersey	50,000	90,000	18,902	.378	.210
Pennsylvania	257,000	638,000	169,996	.661	.206
East North Central:					
Ohio	55,000	100,000	20,758	.541	.170
Indiana	40,000	110,000	20,199	.730	.205
Illinois	189,000	361,000	85,092	.450	.235
Michigan	168,000	274,000	281,518	1.076	1.028
Wisconsin	280,000	480,000	494,762	1.419	.842
West North Central:					
Minnesota	203,000	401,000	211,800	1.044	.528
Iowa	160,000	396,000	177,280	1.040	.449
Missouri	67,000	162,000	17,970	.268	.118
North Dakota	82,000	193,000	245	.003	.001
South Dakota	65,000	110,000	18,171	.288	.165
Nebraska	183,000	342,000	19,710	.108	.058
Kansas	104,000	251,000	14,504	.138	.058
South Atlantic:					
Delaware	5,000	10,000	3,133	.627	.313
Maryland			7,230		
District of Columbia	186,000	238,000	600	.074	.033
Virginia	459,000	812,000	109,708	.239	.135
West Virginia	355,000	980,000	14,711	.041	.015
North Carolina	340,000	816,000	431,500	.799	.529
South Carolina	429,000	632,000	357,510	.833	.566
Georgia	572,000	958,000	304,304	.037	.380
Florida	10,000	18,000	7,056	.704	.391
East South Central:					
Kentucky	77,000	184,000	1,255	.016	.007
Tennessee	432,000	710,000	128,455	.207	.181
Alabama	472,000	1,050,000	215,863	.457	.200
Mississippi	80,000	60,000			
West South Central:					
Arkansas	125,000	178,000	1,139	.010	.007
Louisiana	1,000	2,000			
Oklahoma	70,000	194,000	1,718	.025	.009
Texas	288,000	514,000	13,820	.068	.027
Mountain:					
Montana	2,550,000	3,700,000	345,040	.135	.093
Idaho	2,122,000	4,052,000	270,018	.128	.067
Wyoming	704,000	1,182,000	7,886	.011	.007
Colorado	765,000	1,570,000	87,978	.115	.056
New Mexico	115,000	186,000	1,322	.011	.007
Arizona	2,759,000	2,887,000	38,760	.014	.013
Utah	1,429,000	1,588,000	115,329	.081	.073
Nevada	300,000	370,000	13,530	.045	.037
Pacific:					
Washington	4,970,000	7,871,000	488,356	.097	.061
Oregon	3,005,000	6,715,000	209,865	.050	.031
California	4,003,000	6,074,000	1,451,830	.315	.218

TABLE 6.—*Range of prices of farm land in certain ascertained sales in Iowa for specified counties and periods, 1912 to 1924*

	Number of sales	Range of prices	Average price per acre [1]
Mahaska County:			
1912-1914	30	$71-$250	$123
1915-1917	28	69- 429	178
1918-1920	28	73- 500	172
1921-22	25	79- 307	192
1923-24	12	80- 300	208
Polk County:			
1912-1914	26	50- 260	126
1915-1917	29	54- 321	173
1918-1920	28	125- 310	208
1921-22	21	115- 460	273
1923-24	20	93- 350	206
Warren County:			
1912-1914	345	23- 365	93
1915-1917	8	65- 225	143
1918-1920	27	57- 350	242
1921-22	5	86- 258	180
1923-24	1	125	125
Guthrie County:			
1912-1914	142	84- 258	163
1915-1920	153	63- 425	231
1921-22	4	283- 375	330
Dallas County:			
1912-1914	110	38- 200	123
1918-1920	109	60- 450	240
1921-22	40	133- 466	257
Stone and Green Counties:			
1912-1914, Stone	132	$50-$300	$134
1918-1920, Greene	40	190- 690	377
Jasper and Adair Counties:			
1912-1914, Jasper	178	41- 373	131
1918-1920, Jasper-Adair	71	110- 400	223
1921-22, Jasper-Adair	14	89- 385	217
1923-24, Jasper-Adair	5	68- 258	138
Marion, Madison, and Boone Counties:			
1912-1914, Marion	147	38- 202	109
1918-1920, Madison and Boone	38	85- 473	250
1921-22, Madison and Boone	1	131	131
Summary for three counties: [2]			
1912-1914	308	23- 258	104
1915-1917	63	64- 429	171
1918-1920	91	67- 340	207
1921-22	51	79- 450	225
1923-24	39	80- 350	204

[1] Simple average of prices per acre.
[2] Mahaska, Polk, and Warren, these counties having had sales in all periods.

TABLE 7.—*Ranges of average prices by townships of all sales of farm land in certain counties of Minnesota, for specified periods, 1912 to 1923* [1]

	Number of sales	Range of average price [2]	Average price per acre [3]
Benton County:			
1912-13	417	$23-$70	$38
1918-19	139	34- 89	66
1920-21	79	51-108	118
1922-23	42	37- 89	68
Blue Earth County:			
1912-13	305	54-106	78
1918-19	186	88-175	127
1920-21	144	96-205	165
1922-23	68	78-182	127
Cottonwood County:			
1912-13	320	50- 82	64
1918-19	222	90-126	111
1920-21	209	121-183	166
1922-23	62	76-148	110
Dakota County:			
1912-13	207	40-124	67
1918-19	158	69-228	107
1920-21	132	23-225	135
1922-23	54	38-203	121
Faribault County:			
1912-13	272	56-103	82
1918-19	192	94-167	128
1920-21	201	140-210	174
1922-23	49	83-228	133
Hennepin County:			
1912-13	310	$74-$434	$120
1918-19	128	103- 220	149
1920-21	134	93- 356	173
1922-23	92	114- 900	265
Le Sueur County:			
1912-13	189	70- 162	88
1918-19	147	118- 280	142
1920-21	162	141- 704	197
1922-23	84	80- 222	127
McLeod County:			
1912-13	129	56- 140	77
1918-19	111	109- 176	133
1920-21	111	118- 230	160
1922-23	57	94- 163	126
Meeker County:			
1912-13	389	42- 93	65
1918-19	281	68- 210	99
1920-21	217	76- 172	130
1922-23	50	98- 147	91
Mower County:			
1912-13	414	61- 87	75
1918-19	155	95- 149	121
1920-21	203	139- 172	149
1922-23	45	98- 200	130

[1] Compiled from records of Minnesota Tax Commission. These records show by townships the number of sales, the acreage sold, and the "consideration," which is said to be the actual price in almost all cases.
[2] The prices shown in this column are average selling prices by townships, data for individual sales not having been obtained.
[3] Simple average of prices per acre.

TABLE 7.—*Ranges of average prices by townships of all sales of farm land in certain counties of Minnesota, for specified periods, 1913 to 1923*—Continued

	Number of sales	Range of average price	Average price per acre
Pope County:			
1912-13	285	$24-$46	40
1918-19	244	35- 93	63
1920-21	205	90-110	89
1922-23	86	25-110	89
Rock County:			
1912-13	144	68-116	93
1918-19	126	116-200	165
1920-21	90	139-263	189
1922-23	23	99-183	140
Yellow Medicine County:			
1912-13	356	$32-$75	$58
1918-19	104	58-131	105
1920-21	131	90-180	132
1922-23	31	80-150	106
State, 13 counties combined:			
1912-13	3,733	22-494	66
1918-19	2,804	34-890	109
1920-21	2,348	32-704	128
1922-23	680	25-600	116

TABLE 8.—*Ranges of prices of farm land in certain ascertained sales in North Dakota for specified counties and periods, 1912 to 1924*

	Number of sales	Range of price	Average price per acre [1]
Cass County:			
1912-1914	12	$36-$75	$57
1915-1917	4	50- 85	62
1918-1920	14	47-135	90
1921-22	1	75	75
1923-24	4	45-110	82
Wells County:			
1912-1914	8	6- 32	23
1915-1917	8	25- 33	27
1918-1920	16	20- 50	33
1921-22	5	21- 34	28
1923-24	9	20- 50	35
Traill County:			
1912-1914	5	31- 85	50
1915-1917	4	50- 66	58
1918-1920	6	20- 92	57
1921-22	1	60	60
1923-24	4	31- 64	46
Hettinger County:			
1912-1914	2	$13-$20	$17
1915-1917	3	19- 35	26
1918-1920	8	0- 44	22
1921-22	13	10- 38	18
1923-24	6	13- 21	18
Burleigh County:			
1912-1914	10	10- 31	19
1915-1917	6	9- 28	17
1918-1920	7	6- 30	22
1921-22	2	16- 28	22
Summary for 5 counties:			
1912-1914	37	6- 85	36
1915-1917	25	9- 66	38
1918-20	51	6-135	49
1921-22	22	10- 75	25
1923-24	22	13-119	42

[1] Simple average of prices per acre.

TABLE 9.—*Ranges of prices of farm land in certain ascertained sales in Idaho for specified counties and periods, 1912 to 1924*

	Number of sales	Range of price	Average price per acre [1]
Canyon County:			
1912-1914	72	$75-$200	$120
1915-1917	67	44- 238	124
1918-1920	120	20- 500	195
1921-22	16	63- 275	185
1923-24	8	68- 400	158
Twin Falls County:			
1912-1914	7	68- 165	130
1915-1917	22	125- 350	204
1918-1920	35	40- 500	305
1921-22	8	41- 300	204
1923-24	4	160- 250	209
Bonneville County:			
1912-1914	7	$60-$250	$120
1915-1917	9	88- 250	140
1918-1920	7	100- 300	224
1921-22	2	125- 213	169
1923-24	3	125- 188	150
Bingham County:			
1912-1914	7	13- 121	68
1915-1917	9	18- 225	115
1918-1920	27	25- 350	188
1921-22	2	192- 200	196
1923-24	5	88- 175	114

[1] Simple average of prices per acre.

TABLE 9.—*Ranges of prices of farm land in certain ascertained sales in Idaho for specified counties and periods, 1912 to 1924*—Continued

	Number of sales	Range of price	Average price per acre
Gooding County:			
1912-1914	8	$10-$138	$70
1915-1917	20	60- 204	126
1918-1920	14	100- 325	187
1921-23	4	80- 100	104
1923-24	4	63- 106	92
Lincoln and Jerome Counties:			
1912-1914	18	25- 160	68
1915-1920	84	45- 218	135
1921-22	10	84- 266	155
1923-24	4	81- 165	150
Cassia County:			
1918-1920	39	32- 700	256
1921-22	3	186- 225	213
Minidoka County:			
1918-1920	69	$44-$552	$219
1921-23	8	111- 325	283
Clearwater and Lewis Counties:			
1912-1914	1	103	103
1915-1917	3	100- 108	106
1918-1920	1	94	94
1923-24	3	64- 88	69
Summary for first 5 counties:			
1912-1914	41	10- 250	103
1915-1917	117	13- 350	140
1918-1920	208	25- 500	212
1921-22	32	41- 300	165
1923-24	24	63- 400	146

TABLE 10.—*Ranges of average prices by counties of all sales of farm land in Ohio, for specified periods, 1912 to 1924*

Period	Range of average prices [1]	Average price per acre
1912-1914	$10-$130	$64
1915-1917	9- 175	72
1918-1920	2- 220	85
1921-22	10- 213	86
1923-24	16- 188	74

[1] Figures are from reports and records of secretary of state of Ohio. These records give only average prices received, by counties. It is therefore impossible to give number of sales and the range shown is the range of average prices. The range of individual prices would of course be much wider.

TABLE 11.—*Ranges of prices of farm land in certain ascertained sales in Kentucky for specified counties and periods, 1912 to 1924*

	Number of sales	Range of price	Average price per acre [1]
Fayette County:			
1912-1914	23	$15-$200	$83
1915-1917	30	40- 235	94
1918-1920	41	52- 406	180
1921-22	23	41- 325	173
1923-24	24	49- 260	168
Franklin County:			
1912-1914	8	5- 15	10
1915-1917	25	5- 108	20
1918-1920	33	14- 269	71
1921-22	11	5- 97	30
1922-23	14	13- 300	104
Graves County:			
1912-1914	22	23- 80	41
1915-1917	21	12- 120	44
1918-1920	19	50- 113	87
1921-22	24	10- 121	54
1922-23	10	21- 106	52
Henderson County:			
1912-1914	15	17- 74	41
1915-1917	21	20- 147	64
1918-1920	42	28- 209	71
Henderson County—Con.			
1921-22	33	$15-$302	$78
1922-23	12	53- 150	96
Owen County:			
1912-1914	45	2- 39	13
1915-1917	81	7- 81	29
1918-1920	65	10- 108	46
1921-22	16	12- 134	54
1922-23	38	10- 134	44
Pike County:			
1912-1914	45	1- 89	10
1915-1917	48	2- 73	15
1918-1920	44	3- 131	22
1921-22	40	4- 65	22
1922-23	8	6- 60	21
Summary for six counties: [2]			
1912-1914	158	1- 200	30
1915-1917	222	2- 236	38
1918-1920	287	3- 468	72
1921-22	280	4- 325	65
1922-23	104	6- 290	81

[1] Simple average of prices per acre.

[2] These counties having had sales in all periods.

TABLE 12.—*Ranges of prices of farm land in certain ascertained sales in North Carolina for specified counties and periods, 1912 to 1924*

	Number of sales	Range of price	Average price per acre [1]
Guilford County:			
1912–1914	34	$12–$71	$22
1915–1917	31	18– 87	30
1918–1920	76	19–111	53
1921–22	14	30–150	68
1923–24	16	17–200	70
Wake County:			
1912–1914	33	7– 65	25
1915–1917	34	10– 95	37
1918–1920	25	6–140	45
1921–22	24	10–200	55
1923–24	22	14–150	50
Northampton County:			
1912–1914	8	12–100	50
1915–1917	21	8– 94	35
1918–1920	3	16–150	93
Northampton County—Continued.			
1921–22	0	$10–$90	$38
1923–24	0	17–169	67
Pitt County:			
1912–1914	6	15–100	43
1915–1917	3	26– 76	50
1918–1920	9	67–213	120
1921–23	3	22– 66	46
1923–24	4	70–278	154
Summary for 4 counties:			
1912–1914	81	7–169	39
1915–1917	89	8– 95	37
1918–1920	113	6–213	68
1921–22	47	10–200	66
1923–24	52	14–278	72

[1] Simple average of prices per acre.

TABLE 13.—*Prices of farm land, based on sales of identical tracts, five periods 1912 to 1924*

TEXAS

(Dollars per acre)

Number of tracts	Acres sold	1912–1914	1915–1917	1918–1920	1921–22	1923–24
Tracts sold in all periods:						
3	283	$77	$106	$137	$111	$115
Tracts sold in four periods:						
6	2,093	20	37	93	49	.....
4	499	.....	103	142	128	130
Tracts sold in three periods:						
13	3,645	30	40	67	.....	.....
7	2,209	.....	40	46	66	.....
5	498	.....	.....	138	133	118
Tracts sold in two periods:						
14	3,655	38	48	.....	.....	.....
12	2,021	.....	47	70	.....	.....
9	3,310	.....	.....	42	51	.....
8	493	.....	.....	.....	133	118
IDAHO						
Tracts sold in four periods:						
1	80	$85	$135	$200	.....	$264
1	40	148	170	450	$274	.....
Tracts sold in three periods:						
7	601	84	120	184	.....	.....
7	470	.....	142	230	203	.....
Tracts sold in two periods:						
12	1,081	86	122	.....	.....	.....
22	2,666	.....	134	211	.....	.....
13	765	.....	.....	241	137	.....
NORTH CAROLINA						
Tracts sold in three periods:						
1	84	$30	$30	$110	.....	.....
1	76	.....	30	86	$88	.....
Tracts sold in two periods:						
3	201	.....	46	126	.....	.....
Tracts sold in two periods not successive:						
2	310	46	.....	.....	.....	$120
1	45	.....	183	.....	.....	278

TABLE 14.—*Acreage of principal crops of the United States*

[Thousands of acres]

Crop	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Winter wheat	28,571	31,699	38,068	41,376	34,709	27,257	37,180	50,494	40,016	43,414	42,358	39,522
Spring wheat	19,243	18,485	17,533	19,151	17,697	17,832	22,051	25,200	21,127	20,282	19,950	18,786
Rye	2,117	2,557	2,541	3,129	3,213	4,317	6,261	6,207	4,400	4,536	6,872	5,107
Buckwheat	841	805	792	769	828	926	1,027	700	701	680	764	727
Potatoes, Irish	3,711	3,668	3,711	3,734	3,595	4,294	4,295	3,542	3,657	3,941	4,397	3,915
Potatoes, sweet	683	625	693	731	774	918	940	941	902	1,066	1,117	993
Rice	723	827	804	803	859	981	1,119	1,063	1,336	921	1,055	992
Beans	900	803	875	929	1,187	1,221	1,744	1,060	835	777	1,074	1,297
Peanuts	900	925	950	975	1,043	1,252	1,865	1,192	1,181	1,214	1,005	894
Sugar beets	558	580	485	611	695	695	594	692	812	515	530	651
Cane, sugar	197	248	213	183	221	244	231	130	183	226	241	229
Cane, sorghum for sirup	400	400	400	400	400	415	375	447	636	518	447	380
Cane, sugar cane for sirup	157	162	167	172	177	182	186	189	174	230	214	220
Total, without apples	58,798	61,784	64,270	72,904	65,176	61,758	77,945	91,957	76,022	78,892	79,743	73,943
Apples	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Total, including apples	59,098	64,084	67,270	75,204	67,476	64,058	80,248	94,257	78,322	80,892	82,043	75,243
Corn	107,083	106,320	106,435	106,197	105,296	116,730	104,467	97,170	101,698	105,740	102,846	104,166
Oats	37,917	38,398	38,442	40,996	41,527	43,053	44,349	40,259	42,491	45,495	40,799	40,833
Barley	7,539	7,499	7,563	7,143	7,757	8,943	9,740	6,720	7,600	7,414	7,517	7,905
Hay, tame	49,530	46,954	49,146	51,108	55,731	53,283	53,755	56,888	58,101	58,760	61,199	60,182
Hay, wild	17,427	16,241	16,752	16,796	16,635	16,213	15,365	17,150	15,787	15,832	16,871	15,722
Kafirs	3,000	3,420	3,700	4,153	3,944	4,159	6,626	5,060	5,120	4,535	5,095	5,775
Flaxseed	2,851	2,291	1,646	1,387	1,474	1,984	1,910	1,503	1,757	1,108	1,113	2,001
Total	225,336	222,704	220,684	227,783	232,364	247,763	237,622	224,850	232,535	238,793	234,158	236,617
Cotton	34,283	37,069	36,833	31,412	34,985	33,941	36,605	32,566	35,878	30,506	33,036	37,420
Tobacco	1,226	1,216	1,234	1,370	1,412	1,518	1,647	1,951	1,980	1,427	1,695	1,820
Broom corn	200	200	200	230	235	345	368	352	276	222	275	496
Total	35,709	38,505	38,266	33,012	36,632	35,704	38,621	34,869	38,113	32,158	35,006	39,738
Grand total without apples	317,845	322,993	323,910	333,701	334,165	345,255	343,691	352,706	346,690	347,543	348,909	349,898
Apples	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Grand total, including apples	320,145	325,293	326,210	336,001	336,465	347,555	356,991	355,006	348,990	349,843	351,209	352,198

NOTE.—Nearly all of these figures for years other than 1919 have the following note: "Figures are estimates of the Department of Agriculture, obtained by applying estimated percentages of increase or decrease to the published acreage of the preceding year, except that a revised base is used for applying percentage estimates whenever new census data are available." Figures for 1919 are census returns.

TABLE 15.—*Estimated farm value of principal crops of the United States, as of December 1, 1912–1923, inclusive*

[Amounts in thousands]

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Food crops:												
Winter wheat	$323,572	$433,905	$575,623	$538,149	$781,906	$937,237	$1,165,935	$1,600,805	$909,291	$571,044	$614,561	$843,825
Spring wheat	231,708	176,127	203,067	304,154	256,062	440,575	715,851	479,251	289,972	153,798	246,678	151,676
Rye	23,536	20,220	37,013	45,063	59,978	104,447	138,536	180,573	76,665	43,014	66,088	90,804
Buckwheat	12,720	10,445	12,892	11,643	13,147	25,631	28,143	21,032	16,885	11,549	13,312	12,984
Potatoes, Irish	212,559	227,908	199,400	221,902	412,333	542,774	491,227	514,355	461,778	388,362	262,608	339,322
Potatoes, sweet	48,264	42,994	41,294	40,980	60,141	92,916	118,533	130,314	117,884	88,894	84,462	95,091
Rice	23,433	23,030	31,849	30,212	36,341	65,879	74,043	111,913	62,836	35,802	38,178	36,686
Beans	22,176	20,429	24,968	26,771	64,686	104,360	91,853	86,611	27,139	24,399	44,429	57,490
Peanuts	28,980	31,060	36,896	36,632	42,462	91,496	79,928	75,094	44,286	33,897	28,229	43,078
Sugar beets	36,406	32,520	30,436	30,900	38,139	44,193	63,750	76,450	99,324	48,392	28,605	49,880
Sugar cane	12,909	80,459	16,446	12,865	30,288	30,894	34,464	16,180	41,883	30,497	27,739	25,618
Sorghum for sirup	16,000	16,000	17,600	17,600	16,560	26,048	29,232	45,632	82,943	26,631	25,986	27,595
Sugar cane for sirup	15,139	11,340	12,692	16,165	20,603	31,119	33,868	36,380	46,140	19,974	20,116	25,534
Total	991,423	1,071,231	1,223,961	1,433,450	1,818,173	2,427,060	3,064,375	3,294,491	2,243,247	1,516,496	1,506,871	1,475,583
Feed crops:												
Corn	1,529,454	1,662,093	1,722,070	1,722,880	2,280,729	3,020,226	2,416,240	3,720,597	2,150,332	1,207,313	1,900,287	2,222,013
Oats	453,469	439,586	499,437	559,506	855,938	1,061,474	1,090,322	833,922	588,311	295,954	478,545	539,284
Barley	115,957	95,731	105,903	118,172	160,849	240,753	284,942	178,060	135,053	64,934	97,761	106,066
Hay, tame	856,895	797,077	779,068	923,644	1,022,930	1,452,768	1,542,494	1,734,083	1,569,235	997,557	1,217,044	1,258,364
Hay, wild	140,735	133,517	137,851	142,558	156,523	204,826	220,497	303,539	196,115	101,911	114,536	127,403
Kafirs	37,502	48,500	46,256	51,157	87,027	99,433	109,381	168,530	127,829	44,575	79,389	90,383
Flaxseed	22,202	21,399	17,318	24,410	35,541	27,182	45,470	31,802	19,838	11,648	28,969	36,733
Total	3,155,914	3,212,912	3,307,299	3,561,927	4,369,304	6,276,927	6,660,525	7,026,535	4,578,744	2,843,842	3,913,523	4,395,274
Fiber and other crops:												
Cotton and cottonseed	[1] 912,554	[1] 973,486	[1] 662,713	[1] 772,110	[1] 1,418,412	1,913,152	2,010,981	2,365,123	1,676,646	789,493	1,342,861	1,736,930
Tobacco	104,063	122,481	101,411	96,291	168,672	300,530	402,264	370,698	325,675	212,728	306,179	298,938
Broom corn	3,450	5,000	5,800	4,789	6,737	16,804	12,770	8,234	4,605	2,758	[2] 4,605	11,138
Total	1,020,067	1,100,917	767,424	873,189	1,593,821	2,230,486	2,425,985	2,864,230	1,410,928	983,979	1,653,645	2,076,016
Total, 23 crops	5,164,654	5,384,060	5,298,684	5,868,566	7,774,298	11,625,082	12,148,906	13,247,256	8,232,919	5,334,307	7,074,039	7,948,873
Apples	97,617	89,286	83,515	69,106	113,069	137,419	146,176	183,084	169,072	119,074	136,140	128,899
Total, 24 crops	5,262,271	5,473,346	5,382,199	5,937,972	7,887,367	11,762,501	12,294,271	13,434,392	8,402,001	5,453,381	7,207,179	8,075,772

[1] Value of cottonseed for these years estimated by Federal Trade Commission.
[2] Should have been 7,514.

NOTE.—In this table figures for all the more important crops are the latest estimates of the Department of Agriculture except for the years 1922 and 1923 and for these years they are the department's first published estimates. Figures in roman type for the less important crops are also from reports of the Department of Agriculture but they have not been taken consistently from the same table for different years. Errors on this account, however, are not large enough to materially affect the totals. Figures in italics are estimates interpolated by the Federal Trade Commission from the best data at hand.

TABLE 16.—*Segregation of the land area of the United States according to primary use*

(Thousands of acres)

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Areas which change from year to year:												
Cropped lands [1]	330,145	338,293	336,210	345,021	346,485	347,555	365,991	365,006	368,990	369,843	361,209	362,198
Privately owned forest area—68 per cent saw timber [2]	406,874	401,515	396,308	391,143	385,574	380,594	376,431	372,287	368,000	364,267	360,730	358,722
National forest area—68 per cent saw timber [3]	138,852	138,852	137,184	135,516	134,502	134,284	134,494	139,948	136,440	136,074	136,251	136,553
Pasture or grazing lands [4]	844,000	822,000	813,000	834,000	868,000	891,000	920,000	944,000	972,000	868,000	845,000	863,000
National park and monument lands [5]	5,031	5,937	5,939	5,819	5,847	5,853	5,812	5,819	5,821	5,821	5,822	5,831
Railway right of way [6]	3,554	3,607	3,630	3,654	3,653	3,653	3,651	3,645	3,641	3,617	3,606	3,603
Total	1,728,557	1,708,194	1,692,271	1,717,333	1,744,347	1,773,278	1,816,580	1,828,068	1,748,592	1,715,622	1,712,618	1,728,904
Duplicated area	148,063	148,062	148,063	148,063	148,063	148,063	148,063	148,063	148,063	148,063	148,063	148,063
Net total	1,580,794	1,560,131	1,544,208	1,569,170	1,596,284	1,625,215	1,668,467	1,679,005	1,597,529	1,567,559	1,564,555	1,579,841
Areas which remain nearly constant through the period:												
Farmsteads and lanes [7]	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000
Public roads [7]	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Lands in cities, towns, and villages [7]	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Rocky peaks and rock outcrops [8]	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Arid and marsh lands [8]	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000
Total	154,000	154,000	154,000	154,000	154,000	154,000	154,000	154,000	154,000	154,000	154,000	154,000
Grand total utilized	1,734,794	1,714,131	1,698,208	1,723,170	1,750,284	1,779,215	1,822,467	1,833,005	1,751,529	1,721,559	1,718,555	1,733,841
Waste, idle and fallow	168,421	189,084	205,007	180,045	152,931	124,000	80,748	73,215	153,386	183,446	184,460	169,276
Total land area of country [9]	1,903,215	1,903,215	1,903,215	1,903,215	1,903,215	1,903,215	1,903,216	1,903,215	1,903,215	1,903,215	1,903,215	1,903,215

[1] Based on detail figures of acreage used, acres harvested when shown, as given in reports of Department of Agriculture, plus 10,000,000 acres added each year to cover crop acreages not shown in detail (see Table 14).
[2] See Table 19.
[3] See Table 18.
[4] In addition to the area shown under this head, roughly 111,000,000 acres of national forest lands are used also for grazing. The method of estimating the total required grazing area is stated in the text, p. 129.
[5] See Table 17.
[6] Assuming that right of way is standard at 120 feet width and applying the resulting figure of 14.5 acres per mile to the mileage of main and branch lines as shown in reports of the Interstate Commerce Commission.
[7] Agriculture Yearbook, 1923, p. 417, assuming practically no change throughout the period.
[8] Census Report, 1920, Vol. VI, p. 17.

TABLE 17.—*National park and national monument areas of the United States, 1912 to 1924*

[Compiled from reports of the Director of National Park Service and sources referred to therein]

Year	National park areas		National monument areas			Total
	Administered by the National Park Service	Administered by the War Department	Administered by the National Park Service	Administered by the Department of Agriculture	Administered by the War Department	
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*
1912	5,219,204	13,913	68,264	629,420	5	5,930,806
1913	5,225,803	13,913	68,264	629,420	5	5,937,405
1914	5,226,803	13,913	70,314	629,420	6	5,939,456
1915	5,421,672	13,913	70,314	302,080	6	5,818,935
1916	5,436,961	13,913	70,304	326,065	6	5,847,339
1917	5,541,987	14,038	71,409	326,065	6	5,962,505
1918	5,604,947	14,038	71,409	326,065	6	6,018,455
1919	5,407,387	14,038	71,409	326,065	6	5,818,905
1920	5,407,387	14,038	73,872	326,065	6	5,821,368
1921	5,407,387	14,038	74,004	326,065	6	5,821,500
1922	5,407,387	14,038	74,004	326,058	6	5,822,493
1923	5,407,387	14,038	75,117	334,848	63	5,830,053
1924	5,407,387	14,038	100,037	338,828	63	5,860,053

TABLE 18.—*Areas of national forest land, by States, years ending June 30, 1912 to 1924*

[Compiled from reports of the Forest Service]

[Thousands of acres]

	1912	1913	1914	1915	1916	1917	1918
Alabama							28
Arizona	12,462	12,686	12,500	12,499	11,780	11,769	11,796
Arkansas	1,299	1,233	1,208	1,208	917	919	919
California	20,801	20,554	20,339	19,875	19,508	19,188	18,895
Colorado	13,277	13,428	13,403	13,199	13,095	13,303	13,355
Florida	396	311	279	299	310	308	398
Idaho	17,978	17,712	17,713	17,718	17,785	17,644	17,487
Kansas	150	144	143	143			
Maine							25
Michigan	85	85	85	85	89	89	89
Minnesota	847	1,188	987	987	1,065	1,048	1,044
Montana	16,127	16,262	14,272	16,272	16,068	16,028	16,016
Nebraska	521	520	198	198	206	206	206
Nevada	5,205	5,355	4,299	5,299	5,286	5,266	5,261
New Hampshire							276
New Mexico	8,810	9,090	8,593	8,503	8,363	8,382	8,334
North Carolina							77
North Dakota	6	7	7	7	6	6	
Oklahoma	61	61	61	61	61	61	61
Oregon	13,659	13,577	13,227	13,222	13,128	13,154	13,117
South Dakota	1,157	1,142	1,134	1,134	1,116	1,103	1,101
Utah	7,288	7,279	7,473	7,472	7,448	7,430	7,494
Virginia							169
Washington	9,836	9,642	9,529	9,829	9,828	9,943	9,943
West Virginia							13
Wyoming	8,369	8,378	8,414	8,414	8,364	8,367	8,378
Total, continental United States	138,351	138,852	137,184	135,510	134,503	134,284	134,494
Alaska	26,048	26,032	26,631	26,631	20,884	20,871	20,848
Porto Rico	33	33	33	33	12	12	12
Total	165,027	165,517	163,848	163,274	155,399	155,167	155,374

TABLE 18.—*Areas of national forest land, by States, years ending June 30, 1912 to 1924*—Continued

[Thousands of acres]

	1919	1920	1921	1922	1923	1924
Alabama	36	50	65	81	97	101
Arizona	11,165	11,368	11,360	11,288	11,204	11,203
Arkansas	902	910	927	944	957	962
California	18,815	18,891	19,173	19,182	19,148	19,138
Colorado	13,281	13,274	13,290	13,291	13,277	13,248
Florida	308	308	318	320	326	338
Georgia		103	134	146	154	168
Idaho	17,007	18,082	18,712	18,753	19,050	19,052
Maine	28	28	32	32	32	32
Michigan	80	86	89	124	124	124
Minnesota	1,044	1,047	1,048	1,048	1,048	1,048
Montana	15,967	15,943	15,917	15,934	15,882	15,872
Nebraska	200	200	206	206	206	206
Nevada	4,971	4,935	4,946	4,970	4,977	4,977
New Hampshire	333	345	383	404	405	407
New Mexico	8,294	8,305	8,383	8,423	8,535	8,521
North Carolina	80	249	313	336	360	302
Oklahoma	61	61	61	61	61	61
Oregon	13,119	13,112	13,133	13,132	13,137	13,178
South Carolina		18	18	18	19	20
South Dakota	1,097	1,090	1,077	1,059	1,058	1,068
Tennessee		114	214	245	241	250
Utah	7,416	7,415	7,421	7,462	7,463	7,404
Virginia	210	319	350	346	482	494
Washington	9,940	9,940	9,940	9,934	9,901	9,909
West Virginia	13	99	99	103	132	198
Wyoming	8,384	8,468	8,409	8,414	8,418	8,427
Pennsylvania						73
Total, continental United States	133,346	135,440	150,074	136,251	130,053	130,835
Alaska	20,575	20,580	20,580	20,574	20,572	20,650
Porto Rico	12	12	12	12	12	12
Total	153,933	156,032	150,000	156,837	157,237	157,506

NOTE.—In addition to the totals shown here, there appear to be 5,559,621 acres in State forest lands; 112,480 acres in State parks; 3,015,894 acres in "lands connected with State institutions, forested lands managed by the State including Federal grant lands of various sorts;" 453,970 acres in municipal and county forests; and a sufficient area of Federal public lands having stands of saw timber to bring the total of all these items up to over 15,000,000 acres.

See p. 940 of Agriculture Yearbook for 1922, and Table 6 on p. 38 of the Forest Service report of June 1, 1920, on Senate Resolution 311.

TABLE 19.—*Computation of acreage of privately owned forest area, 1912–1924*

LUMBER CUT

Region	Average stand per acre (board feet)	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923[1]	1924
		M feet	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*	*M feet*
Pacific Northwest	32,000	8,474,745	9,129,616	8,467,080	8,119,694	9,659,830	9,941,357	9,979,700	10,117,005	12,853,700	8,156,519	12,010,493	13,834,768	11,929,385
Southern pine	6,100	18,118,129	18,312,206	17,800,987	17,980,000	19,617,608	17,165,000	13,775,000	16,078,635	14,361,900	13,538,093	14,383,311	16,325,294	16,239,077
All other	5,600	12,565,539	10,054,168	11,137,956	10,912,562	10,590,421	8,724,882	8,135,734	8,356,436	7,353,200	5,274,262	5,175,094	7,006,483	7,762,523
Total		39,158,414	38,587,009	37,346,023	37,611,556	39,907,251	35,831,239	31,890,494	34,562,076	33,798,800	26,980,864	31,568,888	37,166,540	35,930,986

ESTIMATED ACREAGE CUT

		Thousands of acres	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*	*Thousands of acres*
Pacific Northwest		265	285	263	254	302	311	312	316	377	255	375	432	
Southern pine		2,970	3,602	2,918	3,948	3,210	2,814	2,226	2,636	2,354	2,218	2,358	2,678	
All other		2,244	1,956	1,989	1,949	1,880	1,568	1,463	1,492	1,318	942	924	1,261	
Total, calendar year		5,479	5,243	5,170	5,151	5,398	4,688	4,023	4,444	4,049	3,415	3,657	4,359	4,590
Acreage cut January–June current year		2,739	2,622	2,585	2,575	2,699	2,341	2,012	2,222	2,025	1,708	1,829	2,179	2,250
Acreage cut July–December last year			2,739	2,622	2,585	2,575	2,699	2,341	2,012	2,222	2,025	1,708	1,829	2,179
Total for fiscal year ending June 30			5,361	5,207	5,160	5,274	5,040	4,353	4,234	4,247	3,733	3,537	4,008	4,429

ESTIMATED ACREAGE OF SAW TIMBER

Total acreage of saw timber in United States as of June 30 each year		501,876	496,515	491,908	486,148	480,874	475,934	471,481	467,247	463,000	459,207	455,730	451,722	447,293
Approximate acreage of saw timber in national and State forests, etc.[2]		95,000	95,000	95,000	96,000	95,000	95,000	96,000	95,000	95,000	95,000	95,000	95,000	95,000
Privately owned forest land		406,876	401,515	390,908	391,148	385,874	380,934	376,481	372,247	368,000	364,267	360,730	356,722	352,293

[1] Figures of lumber cut for this year are taken from preliminary figures of the Forestry Service and the figure for all other is slightly too large while southern pine and Pacific Northwest are correspondingly too small. The error is about 8 per cent on "all other" and does not vitiate the figures for the purpose for which used.

[2] See Forester's Rep. on Sen. Res. 311, June 1, 1920, p. 23.

TABLE 20.—*Analysis of investment of groups of corporations engaged in various industries*

(Amounts in millions)

Number of companies	Groups	Total investment: Capital stock	Total investment: Bonds, etc.	Total investment: Surplus and reserves	Total investment: Total	Deductions: Outside investments	Deductions: Appreciation, good will, etc.	Investment in business: Total	Investment in business: Plant and equipment	Investment in business: Inventories	Investment in business: Other (net)
104	Steel companies [1]	$1,848	$962	$1,428	$4,238	$367	$7	$3,884	$3,050	$561	$264
42	Petroleum companies [2]	2,703	300	1,261	4,414	249		4,165	3,114	826	225
215	Oil and natural-gas companies (Pennsylvania.) [3]	131	17	69	216	43		173	143	29	7
33	Natural-gas companies (Texas.) [4]	18	10	8	36	2	1	33	33	1	[5]1
68	Pipe-line companies [4]	449	34	79	562	63	70	429	334	66	40
364	Bituminous coal companies (Pennsylvania) [3]	374	150	377	901	143		758	696	8	52
122	Anthracite coal companies (Pennsylvania) [3]	168	152	187	507	103		404	377	10	17
26	Telephone and telegraph companies [1]	837	646	582	2,065	147		1,918	1,780		139
190	Lumber companies (Louisiana) [6]	79	5	82	163	13		150	122	24	4
4	Largest tobacco companies [6]	340	51	76	461	81	117	313	49	247	17
4	Largest rubber and tire companies [6]	357	186	10	553	48	12	498	282	125	89
4	Largest 5 and 10 cent stores [6]	119	5	30	154	2	52	100	44	40	16
4	Largest meat packers [6]	426	277	142	844	62	11	771	450	202	148
	Total for 1,660 companies	7,038	2,872	4,324	15,184	1,275	270	13,589	10,450	2,123	1,016
43	Smaller meat packers [10]	66	11	28	105	11	7	87			
181	Manufacturers of cotton goods (Massachusetts) [11]							483	254	138	[12]96
144	Manufacturers of woolen and worsted goods (Massachusetts) [11]							186	74	68	[12]44
379	Manufacturers of boots and shoes (Massachusetts) [11]							127	[12]21	44	[12]62
2,372	Trust companies [14]	810		918	[15]1,728						

[1] Includes United States Steel Corporation, Bethlehem Steel Corporation, Youngstown Sheet & Tube Co., Wheeling Steel Corporation, Republic Iron & Steel Co., Colorado Fuel & Iron Co., and 14 other steel companies, for which figures were obtained from "Poor's and Moody's Manual"; also 54 steel companies for which figures were compiled from tax returns in the office of the Auditor General of the State of Pennsylvania.
[2] Includes 12 so-called "Standard" oil companies, and 30 so-called "Independent" oil companies. Compiled by the American Petroleum Institute.
[3] From tax returns in the office of the Auditor General of the State of Pennsylvania.
[4] From tax reports filed with Texas State officials.
[5] Minus figure.
[6] From the records of the Interstate Commerce Commission and tax reports filed with officials of Texas and Oklahoma.
[7] The Bell System. From the annual report of the American Telephone & Telegraph Co., 1922.
[8] From tax records in the office of the Louisiana State Tax Commission.
[9] From "Poor's and Moody's Manual."
[10] From records of the Bureau of Internal Revenue.
[11] Compiled for the commission by the Department of Labor and Industries, State of Massachusetts.
[12] Includes cash, receivables, and sundries, without deduction for payables.
[13] A large part of the machinery in the boot and shoe industry is leased on a royalty basis.
[14] From "Trust Companies of the United States," 1922; published by the United States Mortgage and Trust Co., New York.
[15] Exclusive of deposits, amounting to $10,470,477,613.

TABLE 21.—*Estimated value of benevolent institutions in the north Atlantic group, by States, and the estimated value per capita, 1922*

State	Public institutions	Private institutions	Total	Per capita value
Maine	$4,796,710	$9,134,033	$13,932,743	$17.99
Massachusetts	31,555,800	143,938,091	175,493,861	44.12
New Hampshire	2,684,872	8,191,652	10,876,024	24.37
New Jersey	19,217,293	29,970,846	49,188,139	14.84
Vermont	2,403,800	3,451,531	5,855,391	16.61
Connecticut	8,850,832	24,617,290	33,474,122	23.16
New York	106,711,225	415,364,828	522,076,053	48.73
Pennsylvania	35,870,683	230,019,500	265,890,189	29.57
Rhode Island	7,158,614	7,872,838	15,031,452	24.23
Total	219,257,449	872,560,525	1,091,817,974	35.63

TABLE 22.—*Estimated value of benevolent institutions in the south Atlantic group, by States, and the estimated value per capita, 1922*

State	Public institutions	Private institutions	Total	Per capita value
Delaware	$1,120,594	$1,967,764	$3,088,368	$13.53
Florida	1,578,788	2,000,005	3,578,793	2.49
Georgia	3,925,068	5,200,369	9,125,437	3.07
Maryland	10,906,759	33,664,981	44,571,690	29.93
North Carolina	8,231,823	5,693,768	13,925,591	5.25
South Carolina	4,264,522	2,766,597	7,021,119	4.07
Virginia	5,084,446	14,052,894	19,137,440	8.00
West Virginia	4,863,783	3,232,118	8,095,901	5.30
District of Columbia	5,854,613	41,832,140	47,686,753	108.98
Total	45,820,406	110,410,686	156,231,092	10.83

TABLE 23.—*Estimated value of benevolent institutions in the north central group, by States, and the estimated value per capita, 1922*

State	Public institutions	Private institutions	Total	Per capita value
Illinois	$27,374,499	$67,246,851	$94,621,350	$14.12
Indiana	21,099,400	19,183,513	40,282,913	13.47
Iowa	18,546,228	13,254,751	31,800,979	12.95
Kansas	12,931,106	10,704,742	23,635,938	13.21
Michigan	17,285,730	19,201,503	36,487,033	9.38
Minnesota	21,704,182	19,804,908	41,509,100	14.82
Missouri	12,241,232	29,848,937	42,090,159	12.26
Nebraska	6,741,299	5,937,878	12,679,177	9.86
North Dakota	4,062,316	1,469,512	5,535,828	8.33
Ohio	29,652,181	72,721,355	102,373,536	17.02
South Dakota	4,069,066	2,968,534	7,037,600	10.83
Wisconsin	10,865,930	18,591,155	29,457,085	10.87
Total	185,580,259	280,930,029	467,510,288	13.32

TABLE 24.—*Estimated value of benevolent institutions in the south central group, by States, and the estimated value per capita, 1922*

State	Public institutions	Private institutions	Total	Per capita value
Alabama	$5,350,713	$2,567,186	$7,926,898	$3.29
Arkansas	11,860,724	2,730,732	14,597,456	8.12
Kentucky	9,867,374	9,575,510	19,442,884	7.04
Louisiana	5,858,610	11,176,611	17,035,221	9.28
Mississippi	6,534,011	2,021,780	8,556,700	4.78
Oklahoma	5,460,127	925,684	6,385,811	3.01
Tennessee	5,428,428	8,582,256	14,010,679	5.89
Texas	15,078,228	9,567,262	24,645,480	5.07
Total	65,454,110	47,147,019	112,601,129	5.84

TABLE 25.—*Estimated value of benevolent institutions in the western group, by States, and the estimated value per capita, 1922*

State	Public institutions	Private institutions	Total	Per capita value
Arizona	$1,920,111	$1,070,010	$2,000,021	$8.16
California	22,931,625	34,460,824	57,420,448	16.63
Colorado	5,958,601	12,462,790	18,405,400	18.86
Idaho	2,675,663	1,252,551	3,928,144	3.56
Montana	2,941,645	3,716,061	6,657,610	11.22
Nevada	905,363	72,564	1,067,927	13.79
New Mexico	1,002,527	2,212,442	3,214,969	8.72
Oregon	6,479,220	5,449,126	11,928,354	14.60
Utah	3,616,843	2,921,857	6,437,168	12.73
Washington	7,805,930	7,732,252	15,538,182	11.61
Wyoming	1,140,915	188,111	1,227,026	6.41
Total	57,380,362	71,544,976	128,925,278	13.68

TABLE 26.—*Estimated value of public schools in the north Atlantic region, by States, 1918 and 1922*

State	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 (as reported by U. S. Bureau of Education) [1]	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
Connecticut	$36,428	[2] $39,021	$22.72	$26.93	18.5
Maine	12,001	[3] 16,806	15.83	21.70	37.0
Massachusetts	94,600	145,924	25.05	36.46	45.6
New Hampshire	7,344	[3] 13,028	16.42	29.19	77.8
New Jersey	80,000	[4] 151,790	26.14	45.79	75.2
New York [1]	262,257	401,241	26.74	37.45	45.5
Pennsylvania	183,449	243,410	21.44	27.07	26.3
Rhode Island	12,160	[3] 12,764	20.44	20.50	.6
Vermont	5,123	8,148	14.51	23.12	59.3
Total	687,356	1,031,228	23.64	33.60	42.4

[1] Fiscal year ending June 30. (Value for 1922 estimated by applying average increase for all other States. See text, p. 134.)
[2] Data for school year 1919-20.
[3] Data school year 1921.
[4] Data for school year 1922-23.
[5] No data received by the commission.

TABLE 27.—*Estimated value of public schools in the south Atlantic region, by States, 1918 and 1922*

State	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 (as reported by U. S. Bureau of Education) [1]	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
Delaware [2]	$2,228	$3,400	$10.14	$14.93	47.2
District of Columbia [2]	13,062	19,969	30.99	45.04	47.3
Florida	10,622	18,001	11.38	17.04	55.3
Georgia [2]	16,540	23,790	5.46	8.04	47.0
Maryland	13,800	[3] 22,236	9.68	14.93	54.2
South Carolina [2]	9,840	15,354	5.94	8.72	46.8
North Carolina [2]	14,303	21,894	5.71	8.26	44.7
Virginia	18,862	[3] 39,083	8.31	16.47	98.2
West Virginia [2]	20,246	30,976	14.20	20.30	43.0
Total	118,502	194,462	8.64	13.48	56.0

[1] Year ending June 30.
[2] No data received by the commission. Value for 1922 estimated by applying average increase for all other States. See text, p. 154.
[3] Data for school year 1922-23.

TABLE 28.—*Estimated value of public schools in the north central region, by States, 1918 and 1922*

State	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 (as reported by U. S. Bureau of Education) [1]	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
Illinois	$454,620	$620,012	$24.33	$33.57	38.0
Indiana	67,676	[2] 79,525	23.38	20.00	13.8
Iowa	51,694	86,514	21.75	34.13	56.9
Kansas	30,267	60,112	20.63	33.59	62.8
Michigan	71,018	132,567	20.35	35.03	76.0
Minnesota	63,117	105,775	26.95	42.57	58.0
Missouri	94,210	101,218	27.52	29.49	8.0
North Dakota	15,500	29,905	24.37	44.96	84.6
Nebraska	19,440	54,016	15.18	40.82	168.9
Ohio	126,202	134,822	22.55	22.41	[3] 2.1
South Dakota [4]	13,985	20,010	20.52	30.79	47.9
Wisconsin	60,000	91,070	24.20	33.85	46.3
Total	775,980	1,124,561	23.24	32.06	37.9

[1] Year ending June 30.
[2] Data for school year 1922-23.
[3] Decrease.
[4] No data received by the commission. Value for 1922 estimated by applying average increase for all other States. See text, p. 184.

TABLE 29.—*Estimated value of public schools in the south central region, by States, 1918 and 1922*

State	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 (as reported by U. S. Bureau of Education) [1]	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
Alabama	$15,501	$25,036	$5.09	$10.42	55.3
Arkansas [2]	13,908	21,279	8.06	11.84	46.9
Kentucky	22,881	[3] 27,351	9.64	11.41	19.6
Louisiana	14,072	[4] 32,682	7.02	17.51	124.9
Mississippi	4,850	[4] 14,098	2.71	7.87	190.4
Oklahoma [2]	62,163	79,909	28.47	37.56	42.0
Tennessee	10,388	[3] 23,038	7.29	13.92	91.2
Texas	46,372	90,640	10.75	18.65	73.5
Total	180,095	324,588	10.84	16.53	64.6

[1] Year ending June 30.
[2] No data received by the commission. Value for 1922 estimated by applying average increase for all other States. See text, p. 184.
[3] Data for school year 1921.
[4] Data for school year 1922-23.

TABLE 30.—*Estimated value of public schools in the western region, by States, 1918 and 1922*

State	Estimated total value		Value per capita of population		Increase in per capita value in 1922 over 1918
	1918 (as reported by U. S. Bureau of Education) [1]	1922 (as estimated by Federal Trade Commission)	1918	1922	
	Thousands	*Thousands*			*Per cent*
Arizona [2]	$8,118	$7,827	$16.29	$21.29	30.7
California	90,092	162,385	27.50	43.90	59.1
Colorado [2]	18,800	28,764	29.48	29.48	44.0
Idaho	11,072	15,154	25.65	25.18	[3] 6.5
Montana	16,269	25,575	34.99	44.95	28.5
Nevada	2,420	3,281	30.98	42.38	36.8
New Mexico [2]	4,447	6,803	12.52	13.44	47.3
Oregon	9,541	25,621	12.45	31.56	153.5
Utah	12,865	20,312	29.89	43.31	47.4
Washington	36,597	53,853	27.65	38.14	37.9
Wyoming	3,496	8,306	18.65	40.15	115.3
Total	212,765	359,901	24.78	38.13	53.9

[1] Year ending June 30.
[2] No data received by the commission. Value for 1922 estimated by applying average increase for all other States. See text, p. 384.
[3] Decrease.

TABLE 31.—*Dividends paid by corporations, by geographical divisions, 1918–1923* [1]

Geographical division	1916		1917		1918		1919	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
New England	$273,125,808	12.8	$353,686,787	12.8	$323,303,709	13.8	$329,226,845	13.4
Middle Atlantic	934,795,841	43.7	637,699,123	42.0	965,549,646	41.1	969,790,010	39.1
East north central	417,958,853	19.6	371,806,614	18.7	456,646,316	19.5	508,906,117	20.7
West north central	125,301,621	5.8	127,827,150	6.4	154,119,763	6.6	168,780,714	6.7
South Atlantic	138,468,469	6.6	153,304,814	7.7	156,584,509	6.7	176,278,281	7.2
East south central	29,885,540	1.4	46,097,424	2.0	47,712,001	2.0	50,560,787	2.1
West south central	80,884,149	3.8	59,238,065	3.0	71,638,823	3.0	75,178,494	3.1
Mountain	34,442,020	1.6	39,708,873	2.0	40,040,165	1.7	46,012,842	1.7
Pacific [1]	101,000,370	4.7	108,371,609	5.4	131,970,578	5.5	147,040,645	6.0
Total	2,136,403,565	100.0	1,991,632,349	100.0	2,347,575,295	100.0	2,453,774,828	100.0

Geographical division	1920		1921		1922		1923	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
New England	$384,828,251	14.1	$350,109,515	14.4	$368,663,032	13.5	$446,145,561	12.5
Middle Atlantic	1,024,283,944	37.9	1,012,517,518	40.9	1,081,915,841	39.5	1,381,299,245	38.8
East north central	571,481,314	20.9	468,800,198	18.7	569,685,224	21.4	773,328,833	21.7
West north central	186,528,138	6.8	145,067,909	5.8	160,791,193	6.0	222,126,631	6.2
South Atlantic	197,460,950	7.2	172,260,546	7.0	189,494,386	7.1	265,596,447	7.5
East south central	55,507,295	2.0	47,756,846	1.9	51,769,352	1.9	85,331,859	2.4
West south central	80,629,440	3.3	64,751,867	2.0	73,389,066	2.8	104,913,638	3.0
Mountain	41,040,923	1.5	31,545,466	1.3	37,644,639	1.4	50,919,646	1.7
Pacific [2]	183,030,520	6.7	158,103,496	6.4	170,866,449	6.4	231,254,407	6.2
Total	2,735,845,795	100.0	2,470,952,399	100.0	2,664,219,081	100.0	3,559,924,264	100.0

[1] Compiled from "Statistics of Income," United States Bureau of Internal Revenue.
[2] Includes Alaska and Hawaii.

TABLE 32.—*Distribution of personal incomes, by size of incomes and by sources, 1918–1922*

[From "Statistics of Income," United States Treasury Department]

Income class	Number of returns	Wages and salaries	Business and partnership profits	Profits from sales of real estate, stocks, bonds, etc.	Rents, royalties, interest, and dividends	Total income
1918						
$1,000 to $3,000	3,013,816	$4,303,221,820	$1,078,556,150	$24,631,558	$630,277,150	$6,241,370,704
$3,000 to $10,000	1,251,692	2,709,210,342	2,091,140,536	127,979,388	1,435,100,858	6,364,031,179
$10,000 to $30,000	156,775	751,931,675	554,026,522	86,273,726	990,967,987	2,344,199,912
$30,000 to $100,000	28,333	379,112,138	344,709,678	30,700,995	852,256,204	1,606,779,513
$100,000 to $300,000	3,872	96,592,837	174,751,808	11,301,254	422,386,171	695,041,060
$300,000 to $1,000,000	580	22,731,236	78,677,038	5,880,337	209,099,800	317,088,490
Over $1,000,000	67	4,161,817	21,497,899	2,358,434	146,750,955	176,754,005
Total	4,435,114	8,267,391,560	4,339,259,618	291,135,704	4,847,924,003	17,745,761,473
1919						
$1,000 to $3,000	3,494,613	5,199,548,969	1,093,359,023	149,304,798	726,135,293	7,161,394,083
$3,000 to $10,000	1,619,339	3,685,473,891	2,575,988,881	400,232,590	1,490,499,075	8,459,181,227
$10,000 to $30,000	175,264	1,034,174,123	922,739,100	217,809,700	1,064,330,092	3,239,036,990
$30,000 to $100,000	37,028	488,414,585	587,320,406	135,551,209	906,411,012	2,120,297,571
$100,000 to $300,000	4,847	119,943,400	203,775,700	50,178,505	427,910,905	801,813,570
$300,000 to $1,000,000	614	24,910,228	107,784,400	17,240,204	209,772,308	359,713,450
Over $1,000,000	66	3,230,446	27,692,062	37,998,085	119,589,245	187,248,838
Total	5,332,700	10,755,092,041	5,708,960,097	998,304,287	4,973,648,190	23,487,685,825
1920						
$1,000 to $3,000	5,241,200	8,013,748,569	1,085,807,549	132,115,910	975,090,962	10,206,763,970
$3,000 to $10,000	1,792,558	4,783,328,078	2,159,072,271	349,731,023	1,630,506,188	9,123,133,165
$10,000 to $30,000	180,901	1,230,324,734	880,049,288	224,240,283	1,256,050,918	3,613,105,340
$30,000 to $100,000	30,170	531,366,100	538,282,950	81,315,289	1,030,125,654	2,181,189,100
$100,000 to $300,000	3,294	85,578,571	172,447,350	14,178,339	362,707,344	634,990,484
$300,000 to $1,000,000	302	15,388,704	58,530,232	4,286,414	152,274,498	230,078,754
Over $1,000,000	38	3,949,042	10,024,748	4,537,240	85,510,504	104,043,035
Total	7,259,944	15,270,378,854	4,904,784,340	1,020,542,719	5,492,308,061	26,090,209,853
1921						
Under $1,000	401,549	321,330,288	154,094,005	38,087,402	422,275,723	937,294,468
$1,000 to $3,000	4,062,575	7,201,125,031	960,780,277	98,907,768	1,042,501,559	9,359,404,728
$3,000 to $10,000	1,425,893	4,201,510,003	1,025,120,000	208,532,780	1,507,897,152	7,493,166,076
$10,000 to $30,000	145,192	1,024,041,371	500,780,207	96,214,419	1,093,903,508	2,811,690,503
$30,000 to $100,000	20,815	396,065,070	348,903,006	44,406,719	827,304,050	1,616,460,086
$100,000 to $300,000	2,100	69,162,104	92,627,584	6,402,304	250,089,508	414,081,501
$300,000 to $1,000,000	225	7,497,047	30,420,044	2,008,088	108,009,378	148,001,027
Over $1,000,000	21	2,731,970	4,067,005	357,085	55,047,769	62,193,924
Total	9,052,178	13,813,109,105	3,707,504,918	402,856,073	5,345,240,170	23,828,781,932
1922						
Under $1,000	402,276	280,649,117	165,078,974	31,646,268	284,061,309	763,065,480
$1,000 to $3,000	4,601,979	7,430,428,338	1,100,893,379	92,370,098	1,041,544,190	9,571,149,005
$3,000 to $10,000	1,951,488	4,424,422,371	1,025,258,940	277,221,724	1,710,040,057	8,336,973,111
$10,000 to $30,000	164,954	1,031,346,128	651,201,204	197,486,448	1,238,224,303	3,118,307,223
$30,000 to $100,000	34,263	481,897,133	380,702,744	172,443,822	1,016,831,767	2,050,032,250
$100,000 to $300,000	3,494	78,570,815	114,304,873	94,473,902	360,287,200	642,000,991
$300,000 to $1,000,000	470	15,201,224	33,128,968	35,623,336	100,340,115	272,209,633
Over $1,000,000	57	4,970,800	0,577,820	59,010,364	94,430,401	168,095,441
Total	6,787,481	13,698,992,791	4,268,596,491	901,351,680	5,919,035,402	24,871,903,364
1923						
Under $1,000	365,502	151,429,310	125,570,370	10,290,822	153,580,472	483,960,088
$1,000 to $3,000	4,798,968	7,169,039,160	2,092,220,705	164,636,043	1,098,582,548	10,024,570,040
$3,000 to $10,000	2,277,434	6,057,423,158	3,333,713,252	463,299,387	2,063,300,202	12,327,885,499
$10,000 to $30,000	294,008	1,363,674,408	980,916,691	244,000,629	1,533,004,902	4,060,346,667
$30,000 to $100,000	37,422	495,614,053	388,193,657	171,624,116	1,134,907,677	2,163,389,533
$100,000 to $300,000	3,640	82,849,002	91,346,132	96,103,097	307,972,070	669,364,901
$300,000 to $1,000,000	606	19,368,586	22,821,743	35,793,557	169,479,178	278,454,383
Over $1,000,000	74	4,420,478	4,301,407	72,837,321	97,396,330	178,954,543
Total	7,696,324	15,776,807,445	6,039,006,976	1,272,637,940	6,235,004,848	31,107,427,030

TABLE 32.—*Distribution of personal incomes, by size of incomes and by sources, 1918–1923*—Continued

SIX YEARS, 1918-1923

Income class	Number of returns	Wages and salaries	Business and partnership profits	Profits from sales of real estate, stocks, bonds, etc.	Rents, royalties, interest, and dividends	Total income
Under $3,000	20,972,364	$41,286,709,899	$7,707,097,031	$714,952,764	$7,046,052,521	$56,820,382,690
$3,000 to $10,000	2,947,994	25,492,974,870	13,990,883,948	2,012,037,417	10,891,398,732	51,886,364,976
$10,000 to $30,000	1,021,061	6,441,201,240	4,401,238,238	1,060,158,277	7,231,240,384	19,103,943,329
$30,000 to $100,000	300,218	2,895,121,784	2,588,324,000	626,228,040	5,733,031,457	11,032,722,201
$100,000 to $300,000	21,218	870,951,316	939,157,735	274,724,853	2,207,458,218	3,042,291,842
$300,000 to $1,000,000	2,709	103,812,963	327,208,505	162,776,672	1,006,207,103	1,598,926,727
Over $1,000,000	377	23,164,926	77,090,414	177,024,782	599,902,229	878,082,302
Total	25,165,706	76,577,426,997	29,783,446,870	5,027,910,813	34,714,899,644	146,062,573,068

TABLE 33.—*The number of animals slaughtered in 1919 as reported by the census of 1920*

Kind of animal	Slaughtered in wholesale houses		Slaughtered on farms
	On own account	For others	
Cattle	10,818,511	553,838	1,904,881
Calves	4,396,075	267,602	
Sheep and lambs	13,497,200	209,129	434,006
Hogs	44,520,735	2,296,539	10,900,230
Goats and kids	23,915	0	0

NOTE.—The manufacturing census of 1920 does not state the numbers of animals slaughtered in retail houses. The preceding census gives such data. If it be assumed that the proportions were the same in 1919 as in 1909, the numbers of animals slaughtered by or for retail houses may be estimated as in Table 34 below.

TABLE 34.—*Estimate of the number of animals slaughtered for retail account in 1919*

Kind	Number slaughtered in 1920		Number slaughtered in wholesale houses in 1919 on own account	Estimated number slaughtered on retail account in 1919
	In wholesale	In retail		
	A	B	C	D
Cattle	3,114,902	4,067,022	10,818,511	5,448,933
Calves	2,504,728	2,879,048	4,396,075	5,053,600
Sheep and lambs	12,256,601	7,939,572	13,497,200	2,133,369
Hogs	21,870,016	3,970,435	44,520,735	5,218,720
Goats and kids	22,224	193,340	23,915	96,960

NOTE.—Column D of the above table contains the needed estimate. It is not certain, however, that these are wholly additional to those shown in Table 33. It is possible that some or all of the animals slaughtered in wholesale houses "for others" were slaughtered for retail account. If it be assumed that all were on retail account, the total slaughtered in 1919 may be summed up as in Table 35 below.

TABLE 35.—*Estimate of the total number of cattle, calves, sheep, goats, kids, and hogs slaughtered for food in 1919*

Kind	Number slaughtered		On farms	Estimated total number slaughtered
	In wholesale houses	In retail houses [1]		
	A	B	C	D
Cattle	11,372,350	4,806,000	[2] 1,060,000	17,334,350
Calves	4,783,367	4,808,000	[2] 348,381	10,297,748
Sheep and lambs	13,765,428	1,804,000	434,608	16,005,036
Hogs	46,811,256	2,928,000	36,800,230	86,539,486
Goats and kids	23,915	95,980	0	119,895

[1] The number shown in column D of the preceding table less the numbers slaughtered "for others" in wholesale houses, the results being rounded off to the nearest thousand.

[2] The 1,804,381 cattle and calves shown by the census of 1920 was divided in proportion to the numbers of cattle and calves, respectively, slaughtered on farms in 1919, as shown by the preceding census.

TABLE 36.—*Estimate of the average margin of slaughterer's cost over proceeds realized by farmer for cattle, calves, sheep, lambs, hogs, goats, and kids slaughtered in 1919*

Kind	Relative proportions between freight and other expenses incidental to shipping and marketing animals in 1919		Estimated average freight charges per ton in 1919	Estimated total margin per ton in 1919 [1]	Average weight per head in 1919	Estimated average margin per head
	Freight	Other expenses				
	A	B	C	D	E	F
Cattle	5.5	2.5	$6.40	$9.40	912	$4.33
Calves	5.5	2.5	6.40	9.40	171	.81
Sheep and lambs	6.1	3.2	10.23	16.78	78	.655
Hogs	6.0	5.0	5.83	9.74	210	.9575
Goats and kids	6.1	3.2	10.23	16.78	78	.655

[1] Column C×(A+B)÷A.

NOTE.—The Census of Manufactures states the total cost as well as the total number of animals slaughtered by wholesale slaughterhouses on their own account. From these data it is possible to estimate the average prices per head realized by the farmers and cattle feeders, as follows:

By analyzing the statistics of livestock carried on railroads during the various quarters from 1918 to 1923, inclusive, so as to ascertain the relative quantities to which the various freight rates were applicable, by constructing quarterly index numbers of freight rates on the basis of the changes effected at various dates during this period, and applying these to the average freight charges per ton of freight originating in 1922, the following estimates were made of the average freight rates per ton of livestock originating on the railroads in 1919: Cattle, $6.40; calves, $6.40; sheep, lambs, goats, and kids, $10.23; hogs, $15.83.

The Bureau of Railway Economics, in Bulletin No. 6 (1924), tabulates the receipts from sales, freight charges, and other expenses incidental to shipping and marketing many thousands of carloads of animals sold in the principal 10 markets on 18 marketing days between October 15, 1920, and October 6, 1924. The percentages of freight charges and of the other expenses to gross receipts from sales are shown in columns A and B of Appendix Table 36. For lack of better information it is assumed that the same proportions held in 1919.

The Census of Manufactures (Vol. X, p. 52) also states the average weight on the hoof of the animals slaughtered in the wholesale houses in 1919. These are shown in column E of Table 36. For lack of other information, it is assumed that the same average weights held for animals slaughtered elsewhere.

From these data the average margin between proceeds realized by the farmer and the "cost" to the slaughterer of animals killed in 1919 may be estimated as in column F of Table 36.

TABLE 37.—*Estimate of the average prices per head realized by farmers and cattle feeders in the sale of the larger meat animals in 1919*

Kind of animal	Wholesale slaughter in 1919[1]		Average cost per head	Estimated average margin	Estimated average price realized by vendor
	Number	Cost			
	A	B	C	D	E
Cattle	10,818,511	$1,065,739,460	$96.75	$4.33	$92.42
Calves	4,306,675	96,449,234	21.99	.81	21.12
Sheep and lambs	13,497,309	146,775,008	10.88	.656	10.225
Hogs	44,520,736	1,757,279,014	39.48	.96	38.52
Goats and kids	23,915	144,008	6.025	.655	5.37

[1] Census of 1920, Vol. X, p. 52.

The prices in column E of Appendix Table 37 are the best available estimate of the average prices realized by farmers. If they are in error, they probably are too high rather than too low. For the "cost" of animals to the slaughterhouses probably includes some feed and some other items of stockyard expense as well as the invoice values of the animals.

Combining these average prices with the quantities shown in an earlier table we may make an estimate of the gross farm value of all the larger meat animals slaughtered in 1919 as in Appendix Table 38.

TABLE 38.—*Estimate of the proceeds realized by farmers and feeders for all cattle, calves, sheep, lambs, goats, kids, and hogs slaughtered for food in 1919*

Kind of animal	Estimated total number slaughtered	Estimated price realized per head	Estimated total receipts realized by the vendors
			Millions
Cattle	17,324,350	$92.42	$1,600.0
Calves	10,297,748	21.12	217.5
Sheep and lambs	16,065,080	10.225	164.3
Hogs	66,539,495	38.52	2,561.0
Goats and kids	110,805	5.37	.6
Total receipts realized			4,543.4

NOTE.—The foregoing process yields an estimate of $4,543,400,000 as the amount realized by farmers and cattle feeders in the sale of the larger meat animals slaughtered in 1919. By ignoring these cattle feeders that are not farmers, this becomes the estimate of proceeds realized by farmers. This estimate exceeds by more than $1,000,000,000 the estimate in the census of agriculture for the farm value of all such animals (including horses and mules) slaughtered on farms or sold off farms in 1919.

The next step is to obtain quantity and price indices whereby to pass from this estimate for 1919 to like estimates for 1918, 1920, 1921, 1922, and 1923.

The United States Department of Agriculture, Bureau of Animal Industry, in a bulletin entitled "Meat Production, Consumption, and Foreign Trade in United States, Calendar Years 1907–1923" states the total number of cattle, calves, sheep, and lambs, goats, swine, and horses slaughtered under Federal inspection, and also states the quantities of the meats resulting. It also estimates the numbers of animals slaughtered and the quantities of the meats resulting, other than under Federal inspection. The yearbooks of the Department of Agriculture also give, by months, and in some cases by years, the average farm prices of these animals per hundredweight on the hoof. The correct procedure would be (1) to reduce the weights of the meats produced to animal weights on the hoof, by applying average percentages of dressed weights to live weights; (2) to multiply the live weights by the average farm prices and obtain total farm values in the various years; and (3) farm value indices in terms of 1919 as base or 100 per cent. Application of these indices to the total estimate for 1919 would yield the estimates for the other years.

Unfortunately the average live and dressed weights are not furnished except in 1919 and 1923. Hence the first step has had to be omitted. The derivation of aggregate value index numbers by application of the average farm prices to the total dressed weights is shown in Table 39.

TABLE 39.—*Indices of farm values of cattle, calves, sheep, lambs, and hogs slaughtered in continental United States 1918–1923*

	Total weight slaughtered (million pounds)[1]	Average farm price per hundredweight[2]	Relative values		Indices of aggregate values
			Relative detail (millions)	Total (millions)	
1918					
Cattle	7,320	$9.45	$692		
Calves	796	11.88	91	$2,283	100.25
Sheep and lambs	489	12.40	61		
Hogs	8,554	15.92	1,409		
1919					
Cattle	6,283	9.97	628		
Calves	651	12.74	103	2,247	100
Sheep and lambs	402	11.29	58		
Hogs	8,933	16.23	1,450		
1920					
Cattle	6,483	8.47	547		
Calves	636	11.81	99	1,768	78.45
Sheep and lambs	455	10.18	65		
Hogs	8,193	13.02	1,067		
1921					
Cattle	6,104	6.53	343		
Calves	748	7.87	59	1,006	43.75
Sheep and lambs	601	6.91	35		
Hogs	8,474	7.84	651		
1922					
Cattle	6,747	5.43	306		
Calves	793	7.59	61	1,214	55.2
Sheep and lambs	534	8.85	47		
Hogs	9,182	8.40	770		
1923					
Cattle	6,916	5.59	387		
Calves	571	7.95	69	1,302	58.8
Sheep and lambs	576	8.58	49		
Hogs	11,182	7.13	797		

[1] U. S. Department of Agriculture, Bureau of Animal Industry, "Meat Production, Consumption, and Foreign Trade in United States, Calendar Years 1907–1923," pp. 3–6.

[2] Agricultural Yearbook, 1923, various pages.

NOTE.—These index numbers do not cover the slaughter of goats, kids, and horses. However, the volumes of such meats produced are so small compared with the volumes of meats from the four kinds of animals listed in the foregoing table that their inclusion probably would make no appreciable difference in the results. The principal defect in the data, as before stated, is the fact that dressed weights rather than live weight are being used.

By applying these indices to the estimated total farm value of animals slaughtered in 1919, as previously derived, the corresponding estimates for the other years are made.

EXHIBITS

Exhibit 1

The value of dairy products sold off farms or consumed on farms for human food

The census of 1920, Volume V, page 654, shows 19,675,297 dairy cows 2 years of age or more reported as of January 1, 1920. Of these, 17,090,448 were on farms that reported milk production, the latter aggregating 6,255,748,934 gallons, or 366 gallons per head. If the other 2,584,849 cows yielded a like average, their production may be estimated at 946,153,000 gallons. In addition, 637,978,484 gallons were reported from farms that did not report dairy cows. These, no doubt, were farms that raised cattle principally for beef purposes. These three quantities aggregate 7,839,880,000 gallons as the estimated total production of milk.

The census of 1920, Volume V, page 654, states that 707,666,492 pounds of butter were made on farms in 1919; that 82,247,580 gallons of cream and 532,244,072 pounds of butterfat were sold off farms. The last represents the butterfat content of the milk sold to creameries. Question arises as to how many gallons of milk are represented in these.

The Agriculture Yearbook for 1923, page 910, shows that 20.4 per cent of the milk produced in 1919 was consumed in making creamery butter. Applying this datum to the 7,839,880,000 gallons estimated total production, we arrive at the result that 1,599,000,000 gallons of milk yielded 532,244,072 pounds of butterfat, or that 1 pound of butterfat represents on an average 3.004 gallons of milk. Now the Handbook of Dairy Statistics[1] indicates that 100 pounds of cream contain from 18 to 20 pounds of butterfat. From this and the preceding, it appears that 1 pound of butterfat represents from 5 to 5 5/9 pounds of cream; or that 5 to 5 5/9 pounds of cream represents 3.004 gallons of milk, or that 1 pound of cream represents 0.5407 to 0.6008 gallon of milk. The handbook also states that a gallon of cream that contains 20 per cent butterfat weighs 8.43 pounds. This datum, with the preceding result, indicates that 1 gallon of cream represents from 4.558 to 5.065 gallons of milk. Let us split the difference and call it 4.8115 gallons.

With these average relationships we may interpret the butter, cream, and butterfat production and sale statistics of the census as follows:

	Gallons of milk
2,529,331,413 gallons milk reported sold represent	2, 529, 331, 413
82,247,580 gallons cream reported sold represent	395, 734, 211
532,244,072 pounds butterfat reported sold represent	1, 599, 000, 000
207,859,564 pounds butter reported sold represent	624, 410, 130
Total milk equivalent of dairy products reported sold	5, 148, 475, 754
175,422,420 additional pounds butter made represent	526, 969, 950
Total milk accounted for in sales and products	5, 675, 445, 704
Milk production not accounted for	2, 164, 434, 296
Total estimated milk production	7, 839, 880, 000

The Agriculture Yearbook for 1923 also shows that 3.9 per cent of the total reported milk production in 1919 was fed to calves and 2.9 per cent was wasted, lost, or consumed in inspection. These account for another 533,000,000 gallons.

[1] Department of Agriculture, June 1922, p. 8.

This leaves 1,631,000,000 gallons to be accounted for by other farm use. It is assumed that this was consumed as human food, either as milk or as cream and skim milk. Cheese production might claim part of this. However, it is thought probable that most of the cheese production was from the skim milk residue from butter made on farms and cream sold off farms. To the extent that this is not so, it is thought that the error is largely balanced by the error committed in assigning all of the skim milk and buttermilk residue from cream sold and butter made to farm-animal food.

The next question is as to the price at which to value these 1,631,000,000 gallons of milk, estimated to have been consumed by farm families as human food. One is tempted to value all farm produce consumed as human food at city retail prices, in order to make this portion of the farmer's income comparable with that portion of the city dweller's income that he spends in the purchase of like produce. However, the farmer buys considerable quantities of goods and pays higher prices than does the city dweller because of the additional local transportation. Therefore it is decided to value this home-consumed farm produce at farm prices—in this case at 24.409 cents per gallon, which gives a value of $398,111,000.

The total value of dairy products sold off farms or consumed on them for human food in 1919 may now be resumed as follows:

	Quantity	Value
Butter made.....pounds..	787, 656, 402	$346, 355, 769
Cheese made.....do....	6, 371, 396	2, 218, 025
Milk sold.....gallons..	2, 329, 331, 413	717, 380, 222
Cream sold.....do....	52, 247, 580	111, 900, 929
Butterfat sold.....pounds..	332, 344, 672	306, 392, 150
Home-consumed milk.....gallons..	1, 631, 000, 000	398, 110, 790
Total value of dairy products sold or consumed on farms as human food.....		1, 879, 572, 881

Thus it appears that the total value of dairy products of the farm not wasted or used in feeding animals in 1919 was about $1,879,600,000. The next concern is to derive indices of dairy-products production for the other years in terms of 1919. The Agriculture Yearbook for 1923 contains a table showing among other things the weighted average prices and the aggregate farm values of milk sold, milk consumed on the farm, butter made, cheese made, cream sold, butterfat sold, and buttermilk made. It also shows the values of whey, and of skim milk from butter made and from cream and butterfat sold. It is assumed, however, that these products were fed to farm animals. The value of "milk consumed on the farm" is also omitted from the values used in deriving index numbers, partly because a portion of the milk was fed to calves and partly because the figures given include "the milk equivalent of cream sold for household use." The use of the others in deriving value indices and the application of the latter in estimating the dairy products in other years are shown in Table 132, page 233.

TABLE 40.—*Index numbers of the numbers of the principal domestic animals on farms, January 1 of the years 1918 to 1924, inclusive*

[1920=100]

Year	Milch cows	Other cattle	Sheep	Hogs	Horses	Mules	Indices of total values
1918	98+	162	125−	120	109	90	101.6
1919	99	164	126+	120	109	91	103.2
1920	100	100	100	100	100	100	100
1921	98.5	97−	96	95	97	100.5	74.8
1922	102−	97	93	98	90	101−	90.5
1923	103	99	93+	115	94	101	86.1
1924	104	97	99	110.5	93.5	100+	81.9

TABLE 41.—*Index number of farm prices of the principal domestic animals January 1, 1918 to 1924*

Year	Milch cows	Other cattle	Sheep	Hogs	Horses	Mules	Indices of total values
1918	82	95	113	102.5	103	87—	101.5
1919	91	102.5	111	115.5	102	91.5	103.2
1920	100	100	100	100	100	100	100
1921	75	73	60	68	87+	79—	74.8
1922	60+	55	45	58	73	59.5	60.5
1923	60	58.5	72—	59	79+	68	65.1
1924	51	68	75+	51	67—	57	61.9

EXHIBIT 2

ESTIMATES OF THE VALUE OF SADDLES AND HARNESS PURCHASED

According to the census of manufactures the gross value of saddles and harness produced was $33,713,000 in 1919, $30,164,000 in 1921, and $42,123,000 in 1923.

There are no data dealing directly with the production of these articles in 1918, 1920, and 1922. The Monthly Labor Review shows each month the number of employees who, on the 15th of the month, were on the pay rolls of those harness and saddle manufacturers who furnished a report both for the given month and the preceding month. Both totals of employees are shown so that the ratio of the one number to the other can be computed. If the companies so reporting may be considered to constitute a representative sample of the industry, these ratios constitute month-to-month, or sequential, ratios of change in the volume of employment in existing manufacturing plants. It should be borne in mind that they represent the expansion or contraction of employment only within the established and continuing portion of the industry; they do not reflect those changes in the total volume of employment and production that come about through the entry of new manufacturing organizations or the disappearance of others. Nor do they reflect the fluctuations that are due to change from full-time to part-time operation and vice versa. Nevertheless they constitute the only available indices of fluctuations. They have been used, therefore, as the basis of index numbers of the physical volume of harness and saddlery production.

Quantity multiplied by price equals total money value. Index of quantity multiplied by index of price equals the index of total value. There are, however, no indices of the prices of saddles and harness. The nearest approach are the index numbers of the wholesale prices of harness oak, published by the Bureau of Labor Statistics. These index numbers have been used therefore, after transformation to prices in 1919 as a base.

Table 141, page 243, shows the estimates.

EXHIBIT 3

VALUE OF FERTILIZER PRODUCED

There are neither quantity, price, nor value indices extant on which to base estimates of the value of fertilizer produced in the nonconsus years. However, the Bureau of Labor Statistics publishes the wholesale price indices of six ingredients of fertilizers and the proportions in which they were important in 1913. The weighted averages of these indices are used as a substitute for indices of fertilizer prices. In order to form indices of quantities of fertilizer produced the total poundage of cattle, calves, hogs, sheep, and lambs slaughtered under Federal inspection was compiled. Index numbers were formed by taking the total number of pounds slaughtered in 1919 as the base. The justification of this is that the offal from slaughtered animals is largely used as a fertilizer ingredient. The use of the total poundage slaughtered instead of the difference between gross and net weight contains an error the extent of which depends upon the extent to which the ratio of the dressed weight to weight on the hoof varies. By combination of the price and quantity indices, value indices were formed. These were applied to

the total value reported by the census of manufactures for 1919 to form preliminary estimates. Comparison of these with the values enumerated by the census for 1921 and 1923 afforded a set of corrective factors which led to revised estimates. The latter were again adjusted to take into account the excess of fertilizer imports over exports or the reverse. The process is summed up in Table 142, page 244.

TABLE 42.—*Percentages of the total value product of the mining, quarrying, and oil-well industry represented by wages and salaries, and rents, royalties, bond interest, and profits, 1918 to 1923, inclusive*

Year	Wages and salaries	Rents, royalties, bond interest, and profits	Year	Wages and salaries	Rents, royalties, bond interest, and profits
	Per cent	*Per cent*		*Per cent*	*Per cent*
1918	56.26	43.74	1922	52.84	47.16
1919	58.10	41.90	1923	54.61	45.39
1920	48.71	51.29			
1921	74.95	25.05	AVERAGE (1918–1923)	56.03	43.97

EXHIBIT 4

THE CONSTRUCTION INDUSTRY

The "Statistics of Income," published by the Treasury Department, summarizes the data contained in the income tax reports of corporations engaged in this industry. Except for salaries of officers and executives, these data do not set forth the remuneration of the employees. The data for construction partnerships are not published at all, and for single proprietorships there is shown only the proprietor's net income as defined for taxation purposes.

The F. W. Dodge Co. publishes each year the gross value of construction contracts awarded in a certain area. This area covered during 1918, 1919, and 1920 New England, the Middle Atlantic, and East North Central States, the West North Central States, with the exception of about half each of Kansas and Nebraska, and, in addition, Delaware, Maryland, the District of Columbia, Virginia, West Virginia, Kentucky, and Tennessee. Beginning with May, 1921, the contracts awarded in North Carolina and South Carolina also have been included. This area includes nearly three-fourths of the country's population or two-thirds of the population's annual increase. The statistics of construction contracts awarded, however, do not include building construction in villages and on farms. Furthermore they include only the estimated gross value as per the contracts; they furnish no details as to labor, materials, or other components of these values.

The Constructor, a periodical devoted to the construction industry, publishes each month, in chart form, an index of the "volume of construction." This index is based on reported values of construction materials shipped by correlating shipments to a number of construction companies with a study of the periods within which the same materials were actually used in construction work. The Constructor arrived at the conclusion that there was an average lag of about one month between shipment and use; and that, therefore, statistics of shipments of construction materials when adjusted to a lag of one month furnish a good index to the volume of construction work. Obviously, however, this inference may be accepted only with certain qualifications in mind. The values of materials consumed are an index of the total value of construction work done only if the proportion between the two values does not vary. There are indications, however, that this proportion does vary as wage rates in the industry rise or fall, as the prices of the materials themselves rise or fall, and according to whether construction business is brisk or dull. Therefore, while the statistics of materials shipments should be used, they should not be relied upon exclusively.

Even after the gross value of construction work has been estimated, considerable difficulty is experienced in passing from this to the estimates of the portions that constitute the value added by the industry and that for taxes, in remunera-

tion of personnel, and as a return to the employed capital. The only data that bear on the portion going as wages and salaries consist of those portions of the annual reports of the department of internal affairs, Commonwealth of Pennsylvania, dealing with the activities of the construction industry in that State. The "Statistics of income" show the taxes paid and income netted by construction corporations. In the absence of better data, these must be used as the basis of the estimates.

ACTIVITIES OF CONSTRUCTION CORPORATIONS

Prior to 1922, the "Statistics of income," did not show the detailed composition of the reported gross income of construction corporations. For that year the details were shown as follows: [1]

A. Receipts, taxable income:	
Gross sales	$1,412,215,652
Gross profits from sales	203,496,564
Profits from operations other than amounts reported as gross sales	266,864,062
Interests, rents, and royalties	28,704,242
Miscellaneous income	53,657,319
B. Receipts, tax-exempt income:	
Dividends on capital stock of domestic corporations	4,602,689
Interest on Federal, State, and municipal bonds	2,641,762
C. Total receipts	1,768,685,726

In the statement for 1922 the receipts from tax-exempt income were deducted from "net profits" to arrive at "net income," which was the basis of the income tax. Inasmuch as the "Statistics of income" for earlier years made no such deduction, it is inferred that the "gross income" reported for these years did not include the tax-exempt income.

Inquiry at the Bureau of Internal Revenue elicits the information that a large proportion of the construction companies does not report the gross receipts from construction work but only the amount by which such gross receipts exceed the total cost of the delivered structures. The "cost of goods" sold by construction companies reported in the "Statistics of income" for 1922, was $1,208,719,088. The difference between this amount and the "gross sales" shown above was $203,496,564. This was precisely the amount shown as "gross profits from sales." It is therefore inferred that the item "Profits from operations other than amounts reported as gross sales" which amounted to $266,864,062, represents the gross profits made on the construction work for which gross receipts were not reported. The percentage of this gross profit is not known. If, however, this percentage may be assumed to have been the same as on the construction work represented in the reported gross sales, these gross profits represented additional gross sales amounting to $1,851,936,585. Thus the gross value of construction work done by corporations in 1922 would seem to have been in excess of $3,264,000,000.

Question arises as to what treatment should be accorded the "interest, rents, and royalties" and "the miscellaneous income." Ordinarily bond interest, rent, and royalties received would not be included in the value product of the receiving industry because of being considered a part of the value product of the industry paying them. It must be remembered, however, that these designations were not intended by the Internal Revenue Bureau for the construction industry alone, but are designations in a table only one column of which is devoted to this particular industry. From a consideration of the nature of the construction industry it seems likely that this income is not received from other industries for the most part, but from individuals for whom the construction work is done, or who buy residences from construction companies or who occupy such residences on lease, pending their sale. Such income would be as much a part of the gross income of the industry as is the interest contained in the invoice values of merchandise sold by manufacturers or merchants on 30 or 60 days credit. Accordingly such income and the miscellaneous income have been added to the gross value of construction to arrive at the gross income of construction corporations. There is no doubt a certain amount of error involved in this treatment. However, it can not be more than a negligible percentage.

The gross income thus arrived at for 1922 was 1.903985 times the corresponding reported amount, which omitted the cost of more than half of the construction work. Also this gross income of construction corporations was 1.025282

[1] Statistics of income, 1922, p. 22.

times the corrected amount of gross sales. These ratios apply, strictly speaking, only to the data for 1922. They indicate, however, that large adjustments must be made to the reported gross incomes of the other years in order to approximate the true gross incomes and the gross values of construction. Therefore, in the absence of more accurate information, the same ratios have been applied to the reported data in those years. The results, which pertain to construction corporations only, are shown in the following table:

TABLE 43.—*Estimates of the gross income and gross value of construction work done by construction corporations, by years, 1918 to 1922*

[Amounts in thousands]

Year	Reported gross income [1] A	Estimated total gross income [2] B	Estimated gross value of construction work [3] C	Indices of gross value of construction [4] D
1918	$1,946,300	$3,705,726	$3,011,422	1.10400
1919	2,049,074	3,927,151	3,192,617	1.14111
1920	2,287,454	4,200,460	4,162,142	1.27035
1921	1,773,308	3,376,362	3,293,294	1.00574
1922	1,701,441	3,363,758	3,271,216	1.00000

[1] United States Bureau of Internal Revenue, Statistics of Income, reports for the various years.
[2] Amounts in column A multiplied by 1.903985.
[3] Amounts in column B divided by 1.028253.
[4] The amounts in column C divided by the amount for 1922.

A noteworthy feature of this table is that, so far as the corporation data indicate, the gross income of the industry and the gross value of construction work done in 1922 were less than in any other year of the half decade. As will appear later, this does not accord with the indications given by other data. Nor does it accord with what is to be expected from a knowledge of the construction conditions in 1921 and 1922. It will be recalled that the President's conference of unemployment, which met in September and early October, 1921, urged all governments to advance their construction programs as much as possible so as to relieve the acute distress of from three and one-half to five and one-half millions of industrial workers whom the depression had thrown out of employment. It is generally believed that there was a large response to this appeal and that governmental construction was unusually active during 1922. Prices of materials and wage rates were probably lowered, however. Also there may have been a considerable slackening of private construction.

The estimates for corporations should be used as a check on the estimates for the entire industry made from other data. A further purpose to which the corporation data are to be put is to derive percentages to gross income of the taxes and of the share that went to employed capital. In the latter connection, it is not believed, because of the roving character of the construction industry, that there is an appreciable amount either of bond interest or of rental of leased premises. Hence the share going to employed capital is treated as identical with the proprietors' or stockholders' profits. The required percentages for the years 1918 to 1922, respectively, are derived in the table following:

TABLE 44.—*Estimated percentages to gross income of the taxes paid and profits made by the construction industry by years 1918 to 1922*

[Amounts in thousands]

Year	Estimated gross income of corporations [1] A	Taxes paid by construction corporations [2] B	Profits of construction corporations [1] C	Percentage of gross income	
				Taxes D	Profits E
1918	$3,705,726	$27,370	$80,220	2.6676	1.2491
1919	3,927,151	74,434	72,382	1.9449	1.9174
1920	4,200,460	43,977	52,103	1.0411	1.2344
1921	3,376,362	29,415	2,233	.8712	.06012
1922	3,363,758	20,902	29,543	.5001	.8809

[1] See Table 43, column B.
[2] United States Bureau of Internal Revenue statistics of income reports for various years.

The "profits" shown in Table 44, above, are that part of the gross income that was left to the corporate treasuries after meeting all expenses and taxes. It is noteworthy that in several years the portions of the gross income of the construction industry that was taken by governments in taxes exceeded the amount left to the corporate treasury. This was true not only in 1921, the depression year, but also in 1918 and 1919.

These data do not cover 1923, as the "Statistics of income" were not available for that year when this report was written; it is necessary to resort to other devices. Arriving at a profit percentage necessitated an indirect process. A working figure for the tax percentage was obtained in the following manner. An analysis of the taxes for 1918 to 1922 shows division of these between "Federal" and "domestic" as set forth in the following tabular statement:

Year	Estimated gross income	Amount of domestic taxes	Amount of Federal taxes	Percentage to gross income of domestic taxes	Percentage to gross income of Federal taxes
1918	$3,706,720,000	$5,410,310	$71,060,458	0.146	1.942
1919	3,827,151,000	7,214,710	67,219,756	.1885	1.756
1920	4,200,400,000	9,698,063	33,179,762	.2323	.7788
1921	3,370,352,000	15,620,623	18,594,880	.4630	.4027
1922	3,353,758,000	10,430,670	9,662,358	.3113	.2878

It is noteworthy that prior to 1921 the Federal taxes upon construction corporations were many times as great in amount as were the State and local taxes. The latter increased rapidly, however, while the former decreased even more rapidly, so that in 1921 and 1922 the State and local taxes together exceeded the Federal taxes. Prior to 1922 corporations were subject to excess profits taxation. Therefore, in composing an estimated tax rate for 1923, the Federal tax component has been assumed to be the same as in 1922, namely, 0.2878 per cent.

In arriving at the component for State and local taxes, it was believed that the proportions shown for 1921 and 1922 were abnormally high, due to the fact that these taxes do not vary with the prosperity of the industry. Therefore the average for 1918, 1919, and 1920 has been taken. This component is therefore 0.1911 per cent. Thus the total tax percentage for 1923 is taken as 0.4789.

CONSTRUCTION CONTRACTS AWARDED

As before stated, the F. W. Dodge Co. publishes each year a compilation of the construction contracts awarded in an area mostly in the northern and eastern part of the United States that contains nearly three-fourths of the country's population. These contracts included building construction in cities and railroad, road, tunnel, sewer, water main, and all such construction for the entire area. Building construction in villages and on farms was not included.

Two problems arise in making use of these data. One consists of deriving a correction factor so as to cover the omitted kinds of building construction. The other concerns the process of making the estimate for the entire continental United States upon the basis of the reported data for a part of the country considered as a representative sample.

BUILDING CONSTRUCTION IN VILLAGES AND ON FARMS

Buildings are constructed for dwelling, for office, for banking, for institutional, for mercantile, and for industrial purposes. Undoubtedly factory buildings are not constructed outside of cities in proportion to population or to the increase of population. Also hospitals are constructed for the most part in cities. Stores, garages, small office buildings, moving-picture theaters, and an occasional country bank building, as well as dwelling houses, are constructed in villages. School buildings are constructed in both villages and at country crossroads. Dwelling houses, barns, poultry houses, silos, and the like are built on farms.

Therefore, in arriving at a corrective factor to be applied to city building statistics to take account of building construction in villages and on farms, the statistics were analyzed. The following classes of construction were omitted from the base: Industrial, road and public utility, hospital and other institutional,

public buildings other than schoolhouses, and the social and recreational. This errs, but in both directions; and it is the best available procedure.

Finally, since most of the included construction takes place to accommodate the growth of population, the ratio of the increase in population outside of cities to the increase in cities was used as the estimated proportion in which such construction occurs outside and inside cities. The annual increases of population in the two areas were not known. Therefore resort was made to the decennial increases. During the decade 1910 to 1920 the urban population increased a little more than 12,138,000; the rural population 1,600,000. The latter is 13.18 per cent of the former. Therefore the ratio 0.1318 was applied to the total of the chosen classes of urban building construction for each year. The resulting corrective factors are shown in Table 45, following:

TABLE 45.—*Value of construction contracts awarded in 27 to 29 Northern and Eastern States, percentages to the total of the combined residential, business, educational, social, recreational, and miscellaneous construction, and estimates of the percentages to cover unreported construction in villages and on farms, by years, 1918 to 1923*

[Amounts in thousands]

Year	Total construction reported by F. W. Dodge Co.	Combined residential business, etc., construction	Per cent of B to A	Ratio of increase of rural to increase of urban population	Estimated corrective percentage to be added
	A	B	C	D	E
1918	$1,689,240		[1] 42.00	0.1318	4.78
1919	2,579,881	$1,525,750	59.15	.1318	5.82
1920	2,533,224	1,330,371	52.10	.1318	5.83
1921	2,630,189	1,637,362	70.20	.1318	7.85
1922	2,352,657	2,378,803	70.90	.1318	7.93
1923	2,494,113	2,495,801	71.40	.1318	7.99

[1] The proportions of residential alone to total were 18.03, 32.91, and 22.34 in 1918, 1919, and 1920, respectively. It is assumed that the same relation held between the two proportions in 1918 as in 1920, namely, as 52.1 to 22.34.

Column A shows the total construction contract awards reported by F. W. Dodge Co. Column B shows those portions of the totals that consisted of residential, business, educational, and miscellaneous building construction in cities. The portion for 1918 is not shown, because the details for that year were not shown.

Column C shows the percentage of the aggregate residential, business, educational, and miscellaneous building construction to the total construction contracts reported. It will be observed that the percentage for 1918, 42 per cent, is an estimate. The residential construction was given separately in 1918 as well as in the later years. It amounted to 18.03 per cent of the total in 1918, to 32.91 per cent in 1919, and to 22.34 per cent in 1920. Comparing the latter two percentages with those for the whole group of building construction—namely, 59.15 per cent in 1919 and 52.1 per cent in 1920—it appears that the nonresidential portion of the group accounted for 26.43 per cent of the total in the former year and 29.76 per cent in the latter. Thus, while residential construction was fluctuating sharply, nonresidential construction appears to have constituted an increasing proportion of the total. It is assumed that, since 1918 was a war year, the proportion of nonresidential construction in 1919 also represented an increase. Estimating it to have been 24 per cent of the total in 1918, and combining this with the 18 per cent given for the residential construction, 42 per cent results as the estimated percentage for all of these classes of building construction.

Multiplication of these percentages, which apply to residential, business, educational, and miscellaneous construction in cities, by the ratio previously derived of the increase in rural to the increase in urban population, results in the final corrective percentages, which are shown in column E. It will be observed that these corrections are relatively small. For no year does the addition amount to 8 per cent; for 1918 it was only 4.7 per cent.

CORRECTIVE FACTORS TO COVER CONSTRUCTION IN THE ENTIRE UNITED STATES

Application of the corrective percentages derived above would merely add an estimate of the building construction in villages and on farms in the area covered by the reported construction contract awards. It is next necessary to derive correction factors that will add an estimate of all construction in the remainder of the United States.

In certain other estimates it has been assumed that the value of construction in the entire continental United States bears the same proportion to the value in the area of report that the population of the whole country bears to the population in the area of report. This procedure would add from 34 to 40 per cent to the construction in the area of report. It is believed, however, that it is the growth of population rather than the number of population that is the main cause, directly and indirectly, of most construction work. It is the growth of population that creates the need for additional housing facilities; the need for additional retail service, therefore, the need not only for additional stores, but for additional banking service, additional manufacturing, additional other industrial activity, additional transportation facilities, and so on.

Therefore comparative increase in population has been used as the process of making the estimate in this inquiry. The increases in population had themselves to be estimated, however. For this purpose it was assumed that the average birth and death rates in the remainder of the United States were the same as in the area covered by the birth and death registration statistics published in the Statistical Abstract of the United States. Starting with the enumerated population as given by the census for January 1, 1920, the estimated increase for the entire country due to excess of births over deaths was estimated both for 1919 and 1920. To this was added the reported excess of immigration over emigration. As a working procedure the latter was assumed to distribute itself among the States in the same proportion as the excess of births over deaths. As a matter of fact this process assigned the great bulk of immigrants to the States of the New England, Middle Atlantic, and East North Central sections, which contain the great metropolitan cities and the great bulk of the manufacturing industries.

By this process the population not only of the United States but also of the several States in the registration area and the other States contained in the construction contract report area, was estimated as of January 1, 1919, and January 1, 1921. By a similar process applied to these new bases the increases in population during 1918, 1921 and 1922 were estimated. These estimates are shown in appendix Tables 46 to 51.

TABLE 46.—*Estimated increase of population of the United States and of population in the area of Dodge Co. reports of construction contract awards by years, 1918 to 1923.*

Year	Increase in United States[1]	Increase in reported area	Ratio	Year	Increase in United States[1]	Increase in reported area	Ratio
1918	671,726	450,428	1.4917	1921	1,913,692	1,376,928	1.3898
1919	1,006,868	657,551	1.52	1922	1,247,498	925,297	1.3488
1920	1,315,014	858,210	1.5324	1923	1,544,191	1,127,773	1.3695

[1] Estimated from the records of births and deaths in the registration area, and of immigration and emigration, and the Census of 1920.

The ratios thus derived, together with the corrective percentages previously obtained for taking into account the probable amount of building construction in villages and on farms, enable a provisional estimate to be made of the gross value of construction in the entire continental United States. These estimates are shown in Table 47, below.

TABLE 47.—*Provisional estimates of the gross value of construction, by years, 1918 to 1923*

Year	Construction contracts awarded in the area reported	Estimated ratio of increase of total population to increase in report area	Estimated ratio of all construction in report area to construction reported	Estimated gross value of all construction
	A	B	C	D
1918	$1,089,240,000	1.4017	1.0470	$2,038,272,000
1919	2,579,881,000	1.5209	1.0682	4,181,017,000
1920	2,533,224,000	1.5324	1.0583	4,108,228,000
1921	2,300,189,000	1.3898	1.0785	3,537,686,000
1922	3,852,057,000	1.3483	1.0790	4,877,408,000
1923	3,494,118,000	1.3405	1.0790	5,167,583,000

It will be seen from the ratios in Column B of Table 47 that the increase of population in the whole United States was from 35 to 53 per cent greater than the increase within the area covered by the F. W. Dodge Co. reports. These percentages may be compared with 34 to 40 per cent, which would have been used if population itself, rather than the increase of population, had been the basis of the estimate.

Successive application of the two corrective ratios (shown in Columns B and C) yields the provisional estimates for the entire United States. These are shown in Column D of the table. These estimates range from $2,638,000,000 in 1918 to $5,168,000,000 in 1923.

TESTS OF THE PROVISIONAL ESTIMATES

These have been referred to as "provisional estimates." The reason for so doing is that they do not withstand the test of a comparison of the estimates of construction by corporations shown in Table 43. Reference to that table shows that corporate construction alone amounted to $3,611,000,000 in 1918 as compared with $2,638,000,000 estimated total construction. The corporate estimate exceeds the total estimate for 1920 also, and leaves only $450,000,000 to noncorporate organizations in 1919.

There are four sources from which to obtain indices of the fluctuations in the gross value of construction. These are: (1) The estimates made on the basis of reported construction contracts awarded; (2) the gross income of construction corporations, reported by the Treasury Department in "Statistics of Income"; (3) the value of construction materials shipped, the indices of which are published by the constructor; and (4) the value of construction materials manufactured, reported by the Department of Commerce. These four sets of indices, using 1922 as a base, are shown in tabular form as follows:

Year	Construction contracts awarded	Gross income of construction corporations	Shipments of construction materials	Production of construction materials	Year	Construction contracts awarded	Gross income of construction corporations	Shipments of construction materials	Production of construction materials
1918	0.504	1.194	0.453	0.785	1921	0.704	1.007	0.645	0.79
1919	.77	1.141	.623	1.005	1922	1.000	1.000	1.000	1.000
1920	.765	1.270	.690	1.28	1923	1.042	.....	1.173	1.44

The divergences of trends shown by these four sets of indices are remarkable and convey warning that any estimates adopted for this industry may vary from the truth by a considerable margin. The gross value of construction contracts awarded should constitute a good index for the area covered in the reported data. There is, however, a considerable lag between the date of award of a contract and the performance of the work. Furthermore the adjustment to take account of the construction in the 19 to 21 States not included in the area of report may have a considerable error.

The shipments of construction materials would be a good index, if the same proportions always prevailed between the volumes of the different kinds of construction, and if the same proportions always prevailed between the value of materials consumed, the value of the construction labor and the amount of profit. Due to changes in these proportions, however, as general business prosperity, materials prices and wage rates change, exact correspondence between the values of materials consumed and the sales values of construction work done can not reasonably be expected. The general correspondence of trends shown by the awarded-contracts and material-shipments indices strengthens confidence in the estimates based on the former.

Production of construction materials is not so good an indication as shipments of such materials for several reasons. Some of the materials may be shipped abroad. Some of them may be used for purposes not classed as construction; for example, furniture manufacture. There may be considerable fluctuation in the manufacturers' inventories of finished product on hand, caused by more or less production for stock as the demand for the products shifts.

The gross income of construction corporations should furnish a good index of the gross value of construction done by such corporations. It is quite possible, however, that there has been a much more rapid growth of construction by unincorporated concerns since the close of the war than by corporations, due to the entrance into the industry of a considerable number of contractors with comparatively small means. The number of individual constructors who filed income tax returns increased from 18,606 in 1918 to 39,543 in 1922. During the same period the corporations increased in number from 7,731 to 11,370. For 1919 there were 8,704 more individual returns, but only 511 more corporate returns, than for the preceding year. The individual returns again increased nearly 5,300 in number the next year as compared with an addition of 1,722 corporations. For the depression year, 1921, there were 427 more individual returns than for 1920 and 401 more corporate returns. The increase in the number of individual constructors' returns for this year was quite remarkable in view of the fact that for industry as a whole there was a large decrease in the number of individual income tax reports. With the partial revival of business in 1922, the number of individual returns again leaped forward to the extent of nearly 6,500, as compared with an increase of 1,009 in the number of corporations.

TABLE 48.—*Estimates of the gross income of the construction industry of continental United States, 1918 to 1923, respectively*

Year	Estimated gross value of construction [1] A	Estimated ratio of gross income to gross value B	Estimated gross income C	Year	Estimated gross value of construction [1] A	Estimated ratio of gross income to gross value B	Estimated gross income C
	Millions		*Millions*		*Millions*		*Millions*
1923	$5,168		$5,208	1920	$5,142		$5,282
1922	4,877	[2] 1.026342	5,000	1919	4,573		4,690
1921	4,224		4,331	1918	4,012		4,113

[1] See Table 105, p. 206.

[2] See Appendix Table 48 and text relating thereto.

TABLE 49.—*Estimate of the total amount of wages and salaries paid in the construction industry of continental United States, 1918 to 1923, respectively*

Year	Estimated gross value of construction [1] A	Average percentage of wages and salaries to gross value B	Estimate of the total amount of wages and salaries C	Year	Estimated gross value of construction [1] A	Average percentage of wages and salaries to gross value B	Estimate of the total amount of wages and salaries C
	Millions		*Millions*		*Millions*		*Millions*
1923	$6,168	[2] 30.65	$1,894	1920	$5,182	[2] 35.12	$1,810
1922	4,877	[2] 32.28	1,574	1919	4,872	[2] 34.70	1,691
1921	4,229	[2] 32.93	1,424	1918	4,012	[2] 34.83	1,397

[1] See Table 105, p. 265.
[2] Interpolated along a smooth curve.
[3] Derived from the Reports on Productive Industries, Department of Internal Affairs, Commonwealth of Pennsylvania.

TABLE 50.—*Estimates of the amounts of taxes paid and profits made by the construction industry of continental United States in 1918 to 1923, respectively*

Year	Estimated gross income [1] A	Estimated percentage of gross income		Estimate of taxes D	Estimate of profits E
		Taxes [2] B	Profits [3] C		
1923	$6,398,000,000	0.4554		$324,000,000	
1922	6,000,000,000	0.5401	0.8500	30,000,000	$44,000,000
1921	4,331,000,000	0.8712	0.90813	38,000,000	2,830,000
1920	5,282,000,000	1.0111	1.2264	53,000,000	65,000,000
1919	4,996,000,000	1.9449	1.9174	97,000,000	96,000,000
1918	4,113,000,000	2.0678	1.2401	80,000,000	51,000,000

[1] See Appendix Table 47, column C.
[2] See Appendix Table 44, column D.
[3] See Appendix Table 44, column E.

TABLE 51.—*Estimate of the amount paid to other industries and of the value created by the construction industry of continental United States in 1923*

Year	Estimated gross income [1] A	Estimated value product [2] B	Estimated amount paid to other industries C	Per cent of C to A D
1923	$6,398,000,000	$1,754,000,000	[3] $3,544,000,000	[4] 6.09
1922	6,000,000,000	1,048,000,000	3,365,000,000	6.7
1921	4,331,000,000	1,475,000,000	2,850,000,000	0.59
1920	5,282,000,000	1,928,000,000	3,354,000,000	0.35
1919	4,996,000,000	1,884,000,000	3,112,000,000	0.23
1918	4,113,000,000	1,534,000,000	2,500,000,000	0.24

[1] See Appendix Table 47, column A.
[2] See Table 103, p. 260.
[3] Derived by subtracting amount in column C ($3,544,000,000) from the gross income.
[4] Estimated by applying interpolated percentage in column D.
[5] Interpolated along a smooth curve.

TABLE 52.—*Derivation of preliminary sequential ratios of electric railway operating revenues in Continental United States, 1918 to 1923 (each in terms of operating revenues in the preceding year)*

Years compared	Number of companies furnishing data	Comparable operating revenues in— Compared year (thousands)	Comparable operating revenues in— Base year (thousands)[1]	Sequential ratio
	A	B	C	D
1918 to 1917	(2)	$111,080	$104,700	1.0645
1919 to 1918	103	231,079	192,838	1.1983
1920 to 1919	127	257,354	229,752	1.163
1921 to 1920	180	437,404	434,888	1.006
1922 to 1921	225	464,365	400,548	0.989
1923 to 1922	288	549,825	538,750	1.0205

[1] Compiled from tabulations of reports to the American Electric Railway Association published in various numbers of Acra.
[2] The number of companies was not stated in the source.

TABLE 53.—*Derivation of corrected sequential ratios of railway operating revenues of the Electric Railway Industry of the United States and estimates of the total railway revenues, 1918 to 1923, inclusive*

Year	Preliminary sequential ratios[1]	Ratio of census reported to estimated revenues for 1922	Corrective factor applied to each sequential ratio	Corrected sequential ratios	Estimated total railway operating revenues
	A	B	C	D	E
1917					[3] $850,140,806
1918	1.0645		0.99287	1.0564	689,818,259
1919	1.1983		.99287	1.1898	817,170,306
1920	1.163		.99287	1.1547	943,514,238
1921	1.006		.99287	.9988	942,382,028
1922	.989	[2] 0.98487	.99287	.9820	[3] 925,477,485
1923	1.0205		.99287	1.0133	937,693,793

[1] See Table 52, column D.
[2] Reported by the census of Electric Railways, 1922, p. 131.
[3] The amount reported by the census was $925,477,485. The estimate, formed by multiplying $850,140,806, the amount reported by the census for 1917, by all the sequential ratios (column A) for 1918 to 1922, inclusive, was $959,167,853.

TABLE 54.—*Derivation of average percentages of taxes and net operating income to operating revenues of electric railway companies in continental United States, 1918 to 1923, inclusive*

[Amounts in thousands]

	1918		1919		1920	
	Amount[1]	Per cent	Amount[1]	Per cent	Amount[1]	Per cent
Railway operating revenues	$192,838	100.000	$229,752	100.000	$434,889	100.000
Taxes	12,820	6.648	15,180	6.607	27,483	6.320
Net operating income	42,178	21.872	49,967	21.748	81,437	18.726
Number of companies in sample	103		127		180	

	1921		1922		1923	
	Amount[1]	Per cent	Amount[1]	Per cent	Amount[1]	Per cent
Railway operating revenues	$400,548	100.000	$538,750	100.000	$549,825	100.000
Taxes	32,348	6.589	35,420	6.576	36,211	6.586
Net operating income	101,003	21.530	126,704	23.535	125,033	22.750
Number of companies in sample	225		288		288	

[1] Taken from summaries of reports of electric railway companies to the American Electric Railway Association published in various numbers of Acra.

TABLE 55.—*Derivation of average percentages of wages and salaries to railway operating revenues of the electric railway industry of the United States, 1918 to 1923, inclusive*

Year	Railway operating revenues of reporting companies A	Wages and salaries of reporting companies B	Percentages of wages and salaries to railway operating revenues C	Year	Railway operating revenues of reporting companies A	Wages and salaries of reporting companies B	Percentages of wages and salaries to railway operating revenues C
1918	$251,091,123	$115,287,930	46.00	1921	357,915,410	170,142,706	50.05
1919	302,940,689	148,534,764	49.11	1922	332,314,970	158,514,101	47.70
1920	352,959,077	181,718,539	52.37	1923	360,738,200	170,200,785	48.52

TABLE 56.—*Estimates of the amounts of taxes, wages, and salaries, and operating income of the electric railway industry in the United States, 1918 to 1923, inclusive*

Year	Estimated railway operating revenues [1]	Estimates of taxes		Estimates of wages and salaries		Estimates of operating income	
		Per cent [2]	Amount	Per cent [3]	Amount	Per cent [3]	Amount
1918	$660,818,259	6.048	$45,650,678	46.00	$315,936,400	21.872	$150,220,890
1919	817,176,860	6.007	53,990,843	49.11	401,316,315	21.745	177,719,517
1920	943,514,238	6.320	59,630,009	52.37	494,118,407	18.728	176,682,477
1921	942,382,029	6.889	64,920,097	50.05	471,602,261	21.530	202,894,849
1922	925,477,485	6.576	60,859,400	47.70	441,452,763	23.535	217,811,127
1923	937,693,793	6.586	61,756,513	48.52	454,909,027	22.750	213,825,337

[1] See Table 53. [2] See Table 54. [3] See Table 55.

TABLE 57.—*The value created by the street and electric railway industry of the United States in 1917 and 1922 as per census data*

	1917	1922
Taxes	$45,750,695	$64,788,215
Salaries and wages	207,240,262	445,680,135
Operating income	211,473,743	224,135,609
Total	524,470,900	734,604,059

TABLE 58.—*Derivation of corrective factors to apply to preliminary estimates of taxes, wages, and salaries and operating income of the street and electric railway industry of the United States*

	Amount reported by the census	Amount estimated	Ratio of enumerated to estimated amount
Taxes	$64,788,215	$60,859,000	1.06456
Wages and salaries	445,680,135	441,453,000	1.009755
Operating income	224,135,609	217,811,000	1.02903714

TABLE 59.—*Final estimate of operating income paid by the street and electric railways industry of the United States, 1918–1923, inclusive*

Year	Preliminary estimate of operating income A	Corrective factors B	Final estimates of operating income C
1923	$213,325,000	1.02963714	$219,519,000
1922	217,811,000	1.02963714	224,135,000
1921	202,895,000	1.02963714	208,756,000
1920	176,688,000	1.02963714	181,913,000
1919	177,720,000	1.02963714	182,980,000
1918	150,231,000	1.02963714	154,682,000

TABLE 60.—*Final estimates of wages and salaries paid by the street and electric railway industry of the United States, 1918–1923, inclusive*

Year	Preliminary estimates of salaries and wages A	Corrective factors B	Final estimates of salaries and wages C	Year	Preliminary estimates of salaries and wages A	Corrective factors B	Final estimates of salaries and wages C
1923	$464,999,000	1.0006755	$450,320,000	1920	$404,118,000	1.0006755	$408,849,000
1922	441,455,000	1.0006755	445,080,153	1919	401,316,000	1.0006755	405,188,000
1921	471,002,000	1.0006755	470,178,000	1918	315,938,000	1.0006755	318,061,000

TABLE 61.—*Final estimates of taxes paid by the street and electric railway industry of the United States, 1918–1923, inclusive*

Year	Preliminary estimates of taxes A	Corrective factors B	Final estimates of taxes C	Year	Preliminary estimates of taxes A	Corrective factors B	Final estimates of taxes C
1923	$61,767,000	1.00450	$65,744,000	1920	$59,630,000	1.00458	$63,490,000
1922	60,859,000	1.00450	64,788,315	1919	53,001,000	1.00458	57,477,000
1921	64,021,000	1.00450	68,112,000	1918	45,580,000	1.00458	48,608,000

TABLE 62.—*Derivation of indices of the gross earnings of the water transportation industry by years, 1917 to 1923, in terms of gross earnings in the census year 1918*

Years compared	Number of companies	Comparable totals of gross income		Sequential ratios
		Compared year	Base year	
1917–1918	99	$101,733,386	$85,540,118	1.189
1918–1917	107	100,981,247	108,537,674	0.930
1919–1918	109	121,512,813	98,967,110	1.231
1920–1919	111	124,478,628	110,910,200	1.122
1921–1920	109	121,055,776	146,450,030	.827
1922–1921	105	121,981,537	113,900,474	1.070
1923–1922	116	135,611,740	121,670,424	1.117

TABLE 63.—*Estimated gross operating revenues of the water transportation industry by years, 1917 to 1923*

Year	Sequential ratios of gross operating revenues [1] A	Index numbers of gross operating revenues [2] B	Estimated amount of gross operating revenues [3] C	Year	Sequential ratios of gross operating revenues [1] A	Index numbers of gross operating revenues [2] B	Estimated amount of gross operating revenues [3] C
1917	1.189	118.90	$670,283,000	1921	0.897	125.31	$712,028,000
1918	0.930	110.58	623,303,000	1922	1.070	135.15	761,570,000
1919	1.231	136.12	767,300,000	1923	1.117	140.99	851,000,000
1920	1.122	152.73	860,977,000				

[1] See Appendix Table 63.—These ratios are to be applied in successive multiplication to the operating revenues reported by the carriers for 1916, namely, $563,730,287.
[2] Formed by successive multiplication of the ratios in first column, commencing with the ratio for 1917.
[3] Formed by applying either first or second column to the amount reported for 1916.

TABLE 64.—*Gross and net operating income reported for certain companies and estimated gross and net income for the water transportation industry, by years, 1918 to 1923*

[Amounts in thousands]

Year	Number of companies reporting	Gross operating income reported	Net operating income reported	Per cent of net to gross income reported	Gross operating income of the industry [1]	Net income of the industry [1]
1918	120	$101,373	$7,572	7.47	$623,303	$46,565
1919	117	125,643	5,496	4.38	767,300	33,610
1920	120	143,173	2,937	1.98	860,977	17,047
1921	119	123,361	7,514	6.15	712,028	43,798
1922	120	126,263	12,038	10.25	761,570	78,052
1923	120	136,696	14,262	10.40	851,009	88,505

[1] See Appendix Table 63. [2] Available for rent, interest, and profits.

TABLE 65.—*Estimates of the percentages to wages and salaries of the food supplied to employees of water transportation companies in the United States, 1918 to 1923, inclusive (based on reports of companies doing an exclusively freight business)*

Year	Number of companies	Amounts in thousands		Per cent of food to wages and salaries
		Wages and salaries	Value of food supplied	
	A	B	C	D
1918	24	$1,488	$199	13.38
1919	22	1,570	200	12.87
1920	25	3,321	466	14.00
1921	30	3,047	310	8.74
1922	34	4,178	394	9.44
1923	33	5,247	484	11.22

TABLE 66.—*Estimates of the total remuneration of employees to gross operating revenues of the water transportation industry of the United States in 1918 to 1923, respectively*

Year	Estimated total remuneration to employees of a representative list of companies						Gross operating revenues	Per cent of employees' remuneration to gross operating revenues
	Wages and salaries	Per cent of food to wages and salaries [1]	Estimated value of food supplied	Compensation for injuries	Pensions and relief	Total remuneration		
	A	B	C	D	E	F	G	H
	Thous.		Thous.	Thous.	Thous.	Thous.	Thous.	
1923 [2]	$43,249	9.22	$3,986	$109.7	$94.4	$46,429	$111,407	41.67
1922 [3]	31,373	9.44	2,962	47.7	76.1	34,459	87,643	39.32
1921 [4]	35,018	8.74	3,285	133.6	82.7	38,114	90,074	40.05
1920 [5]	38,869	14.09	5,382	120.7	83.1	44,455	94,371	49.03
1919 [6]	29,774	13.87	3,991	121.5	78.2	33,965	73,135	46.07
1918 [7]	24,579	13.35	3,280	59.0	71.4	30,005	69,127	44.27

[1] See Appendix Table 65.
[2] 93 companies.
[3] 84 companies.
[4] 90 companies.
[5] 95 companies.
[6] 96 companies.
[7] 106 companies.

TABLE 67.—*Estimates of the total remuneration to employees in the water transportation industry of the United States in 1918 to 1923, respectively*

Year	Estimated gross operating revenues of the industry [1]	Estimated percentages of employees' remuneration to gross operating revenues [2]	Estimated amounts of employees' remuneration
	A	B	C
1923	$851,009,000	41.67	$354,615,000
1922	761,870,000	39.32	299,672,000
1921	712,028,000	40.05	285,182,000
1920	860,977,000	49.03	422,061,000
1919	767,850,000	44.07	346,649,000
1918	623,353,000	44.27	275,963,000

[1] See Appendix Table 63.
[2] See Appendix Table 66.

TABLE 68.—*Estimate of the total taxes paid by the water transportation industry of the United States, 1918 to 1923, respectively*

[Amounts in thousands]

Year	Gross operating income and taxes reported by a representative list of companies			Per cent of taxes to gross operating income	Estimated gross operating income of the industry [1]	Estimated amount of taxes paid by the industry
	Number	Gross operating income	Taxes			
	A	B	C	D	E	F
1923	114	$116,203	$2,615	2.25	$851,009	$19,148
1922	103	104,645	1,974	1.89	761,870	14,399
1921	104	95,649	2,124	2.22	712,028	15,807
1920	105	107,507	2,271	2.30	860,977	19,802
1919	101	93,999	1,935	2.06	767,850	15,808
1918	103	81,300	1,457	1.79	623,353	11,148

[1] See Appendix Table 63.

TABLE 69.—*Index numbers of taxes and of wages and salaries of the telegraph and cable industry by years, 1918 to 1923*

(1922=100)

Year	Taxes		Wages and salaries	
	Amount reported by 10 companies	Index numbers	Amount reported by 10 companies	Index numbers
1918	$5,069,178	87.00	$90,230,270	80.60
1919	5,870,764	101.07	98,434,928	87.90
1920	4,804,462	83.00	92,144,645	120.77
1921	4,628,889	80.00	74,370,468	105.75
1922	5,803,488	100.00	70,319,970	100.00
1923	6,047,794	102.40	77,540,825	150.93

TABLE 70.—*Uncollectible operating revenues, operating income, other interest deductions, miscellaneous deductions from income, amounts available for rent, interest, and uncollectible revenue, of 10 telegraph and cable companies, by years, 1918 to 1923*

[Amounts in thousands]

Year	Uncollectible operating revenues	Operating income	Operating income and uncollectible revenues [1]		Other interest deductions	Miscellaneous deductions from income	Amounts available for rent, interest, dividends, and uncollectible revenues	
			Amount	Index numbers			Amount	Index numbers
1918	$423	$18,440	$18,802	81.72	$179	$53	$18,950	80.90
1919	477	24,251	24,708	106.88	800	1	24,105	104.29
1920	609	21,188	21,790	94.28	328	8	21,468	93.11
1921	705	18,076	18,893	81.73	124	92	18,877	80.00
1922	624	22,493	23,117	100.00	12	58	23,047	100.00
1923	522	20,343	20,885	90.30	13	50	20,892	90.30

[1] Total of first two columns.

TABLE 71.—*Estimated total taxes, wages, and salaries, operating income and uncollectible revenues, rent, interest, profits, and uncollectible revenues in the telegraph and cable industry, by years, 1918 to 1923*

[Amounts in thousands]

Year	Taxes		Wages and salaries		Operating income and uncollectible revenues		Amounts available for rent, interest, dividends, and uncollectible revenues	
	Index numbers	Estimated amounts	Index numbers	Estimated amounts	Index numbers	Estimated amounts	Index numbers	Estimated amounts
1918	87.00	$5,988	80.60	$85,480	81.72	$21,880	80.005	$21,601
1919	101.07	6,959	87.90	73,577	106.88	28,610	104.500	27,904
1920	83.00	5,722	120.77	96,540	94.28	25,243	93.110	24,841
1921	80.00	5,515	105.75	80,549	81.73	21,883	80.000	[1] 21,353
1922	100.00	[1] 6,894	100.00	[1] 76,102	100.00	[1] 26,774	100.000	[1] 26,680
1923	102.40	7,060	110.03	83,801	90.25	24,166	90.250	24,081

[1] Taken or derived from the Census of Telegraph, 1922.

TABLE 72.—*Percentage proportion of reported operating income of the telephone industry paid in wages and salaries, by years, 1918 to 1923*

Year	Number of companies reporting	Aggregate operating income reported	Aggregate wages	
			Amount reported	Per cent
1918	100	$69,766,906	$165,623,478	237.29
1919	212	76,546,374	260,732,869	272.99
1920	227	80,016,162	288,135,490	353.84
1921	233	107,195,194	300,600,880	280.42
1922	253	129,507,442	328,810,140	253.89
1923	210	139,008,344	360,732,589	259.67

TABLE 73.—*Percentage proportion of reported operating income of the telephone industry represented by uncollectible operating revenues, by years, 1918 to 1923*

Year	Number of companies reporting	Aggregate operating income reported	Aggregate uncollectible operating revenues		Year	Number of companies reporting	Aggregate operating income reported	Aggregate uncollectible operating revenues	
			Amount	Per cent				Amount	Per cent
1918	199	$75,005,169	$1,657,316	2.20	1921	221	$109,004,628	$2,354,003	2.15
1919	207	78,148,941	1,798,501	2.29	1922	235	130,099,346	3,209,935	2.46
1920	210	84,777,384	1,620,210	1.91	1923	187	139,792,886	3,027,726	2.50

TABLE 74.—*Percentages of the reported gross earnings of electric power companies in 1917 to 1922, respectively, to their gross earnings in 1923*

Year compared	Number of companies furnishing comparable data	Aggregate gross earnings reported in—		Percentage	Year compared	Number of companies furnishing comparable data	Aggregate gross earnings reported in—		Percentage
		1923	Year compared				1923	Year compared	
	A	B	C	D		A	B	C	D
1917	136	$422,138,541	$191,667,380	45.38	1920	182	$502,638,324	$302,340,640	72.10
1918	168	476,006,175	241,178,292	50.69	1921	184	463,874,007	305,769,682	78.85
1919	168	471,169,493	275,876,704	58.55	1922	188	481,913,704	421,923,005	87.55

TABLE 75.—*Estimated gross earnings of electric power companies in continental United States, by years, 1917 to 1923, inclusive*

Year	Estimated percentage of gross earnings in 1923 [1]	Preliminary estimates	Corrective factor	Final estimates
	A	B	C	D
1917	45.38	$556,714,000	[2] 0.948139	[3] $526,594,000
1918	50.69	619,515,000	[4] .958511	593,812,000
1919	58.55	716,902,000	[4] .968883	694,581,000
1920	72.10	882,922,000	[4] .979256	864,607,000
1921	78.85	965,681,000	[4] .989628	955,466,000
1922	87.55	[5] 1,072,120,000	[2] 1.000000	1,072,120,000
1923	100.00	1,224,530,000	[4] 1.010372	1,237,281,000

[1] See Table 74.
[2] Ratio of amount reported by the census, shown in column D, to the preliminary estimate, shown in column B.
[3] Census of electric industries, 1917.
[4] Interpolated on the assumption that the percentage of error progressed year by year by the same difference.
[5] Reported by United States Bureau of the Census.

TABLE 76.—*Estimated percentages of total profits, rent, and interest to gross earnings of electric power companies of continental United States, by years, 1917 to 1923, inclusive*

[Amounts in thousands]

Year	Number of companies reporting	Reported gross earnings	Reported rent, interest, and profits	Percentage	Year	Number of companies reporting	Reported gross earnings	Reported rent, interest, and profits	Percentage
	A	B	C	D		A	B	C	D
1917	130	$191,567	$66,348	34.63	1921	184	$305,700	$113,886	31.14
1918	159	241,175	77,532	32.16	1922	188	421,929	137,558	32.60
1919	168	275,676	87,650	31.77	1923	202	518,880	178,559	34.41
1920	182	362,341	102,675	28.39					

TABLE 77.—*Estimated total rent, interest, and profits of electric power companies in continental United States, by years, 1917 to 1923, inclusive*

Year	Gross earnings [1]	Rent, interest, and profits		Year	Gross earnings [1]	Rent, interest, and profits	
		Percentages [2]	Total			Percentages [2]	Total
	A	B	C		A	B	C
1917	$526,804,000	34.63	$183,463,000	1921	$955,566,000	31.14	$297,503,000
1918	503,812,000	32.16	199,911,000	1922	1,072,120,000	32.60	349,541,000
1919	604,681,000	31.77	220,700,000	1923	1,237,281,000	34.41	425,748,000
1920	864,607,000	28.39	246,462,000				

[1] See Table 76, column D. [2] See Table 76, column D.

TABLE 78.—*Estimated remuneration of employees of the electric power industry of continental United States, by years, 1917 to 1923, inclusive*

[Amounts stated in thousands]

Year	Derivation of estimated percentages of wages and salaries to gross earnings				Preliminary estimate of total remuneration [1]	Corrective factor	Final estimate
	Number of companies	Reported gross earnings	Reported wages and salaries	Per cent			
	A	B	C	D	E	F	G
1917	130	$188,487	$36,373	19.30	$101,091	[2] 0.935583	[3] $95,242
1918	150	237,622	45,899	19.32	114,724	[4] .954400	109,503
1919	159	270,020	55,029	20.38	141,570	[4] .972307	137,608
1920	172	355,700	74,023	20.81	179,925	[4] .990304	178,180
1921	174	358,540	71,590	19.97	199,327	[4] 1.008311	192,304
1922	178	413,603	79,801	19.31	207,026	[4] 1.026118	[5] 212,483
1923	182	509,600	98,552	19.34	239,290	[4] 1.044024	240,825

[1] Obtained by applying the percentages in column D to the estimated gross earnings of the industry (see Table 76, column D).
[2] Ratio of amount reported by the census to the estimate in column E.
[3] Reported by the Census of Electrical Industries, 1917.
[4] Estimated by interpolating by constant successive differences.
[5] Reported by the Census of the Electric Power Industry, 1922.

TABLE 79.—*Estimated taxes paid by electric power companies of continental United States, by years, 1917 to 1923, inclusive*

[Amounts stated in thousands]

Year	Derivation of estimated percentage of taxes to gross earnings				Preliminary estimate of taxes	Corrective factor	Final estimates
	Number of reporting companies	Reported gross earnings	Reported taxes	Per cent			
	A	B	C	D	E	F	G
1917	130	$191,367	$14,209	7.45	$30,254	0.766	$30,003
1918	158	241,178	19,787	8.20	48,693	.765	37,204
1919	108	275,876	22,190	8.04	55,852	.766	42,710
1920	182	362,341	27,187	7.50	64,846	.764	49,550
1921	184	365,760	30,052	8.46	80,841	.764	61,725
1922	183	421,929	37,390	8.94	96,848	.763	73,138
1923	202	518,880	47,200	9.10	112,593	.761	85,720

TABLE 80.—*Estimated percentages of retail sales divided among wages and salaries, rent, bond interest and profits, and in costs paid away to other industries, by years, 1919 to 1922, inclusive.*

Kind of store	1919			1920			1921			1922		
	Salaries and wages	Rent, interest, and profits	Costs paid away	Salaries and wages	Rent, interest, and profits	Costs paid away	Salaries and wages	Rent, interest, and profits	Costs paid away	Salaries and wages	Rent, interest, and profits	Costs paid away
Department	12.09	6.68	81.42	13.9	6.15	80.06	15.4	5.32	78.78	14.9	6.43	78.67
General	6.00	4.06	89.94	7.0	4.12	88.88	7.7	3.37	88.93	7.5	4.13	88.37
Grocery	8.30	4.24	87.46	10.0	4.21	85.79	10.9	3.38	85.72	11.1	4.29	84.61
Shoe	12.60	5.08	81.52	13.6	6.06	79.45	14.3	4.62	81.08	14.9	6.60	78.11
Men's furnishings	12.90	2.57	84.53	15.0	2.44	82.56	16.4	2.12	81.38	16.3	2.44	81.26
Furniture	13.60	12.40	74.01	15.7	12.70	71.51	17.3	10.38	82.32	17.0	12.84	80.16
Jewelry	14.10	16.25	69.65	14.7	16.15	70.16	16.0	9.95	78.05	17.3	10.66	71.05
Drug	15.05	11.63	72.42	18.3	12.37	69.33	20.1	9.93	80.07	19.7	12.44	67.86
Hardware	9.55	11.63	78.82	11.4	9.15	79.46	12.6	7.48	80.02	13.8	9.18	77.52

..ed by each of the 14 major groups of manufacturing ..vision between salaries and wages and rent, interest, .. to 1923

[Amounts in millions]

..stry group	1918			1919			1920		
	Total value created by the industry	Salaries and wages	Rent, royalties, and profits	Total value created by the industry	Salaries and wages	Rent, royalties, and profits	Total value created by the industry	Salaries and wages	Rent, royalties, and profits
..and kindred products	$1,203	$710	$493	$1,404	$848	$756	$1,372	$1,080	$312
..tiles and their products	3,845	1,692	2,153	4,401	1,986	2,418	6,033	3,380	2,652
Iron and steel and their products	4,038	2,730	1,200	3,952	2,773	1,179	7,671	5,204	1,807
Lumber and its manufacturers	984	657	327	1,323	810	612	1,964	1,172	702
Leather and its finished products	704	389	315	1,054	546	509	918	492	426
Paper and printing	1,077	723	354	1,333	860	447	2,231	1,418	833
Liquors and beverages	438	66	372	344	115	230	137	56	41
Chemicals and allied products	1,045	649	1,005	1,788	793	903	1,709	926	783
Stone, clay, and glass products	776	546	230	626	447	179	820	633	287
Tobacco manufactures	252	165	87	234	169	65	171	79	92
Vehicles for land transportation	1,420	946	474	1,257	726	531	1,625	1,036	589
Metals and metal products other than iron and steel	851	565	206	860	501	359	894	626	269
Railroad repair shops	413	233	180	474	267	207	679	374	295
Miscellaneous industries	1,898	978	720	2,860	1,727	1,133	2,963	1,964	909
Total	19,244	11,039	8,305	22,097	12,579	9,518	28,485	18,400	10,038

Industry group	1921			1922			1923		
	Total value created by the industry	Salaries and wages	Rent, royalties, and profits	Total value created by the industry	Salaries and wages	Rent, royalties, and profits	Total value created by the industry	Salaries and wages	Rent, royalties, and profits
Food and kindred products	$1,079	$924	$155	$1,317	$925	$392	$1,309	$809	$580
Textiles and their products	3,096	2,050	1,031	4,660	2,673	1,977	4,364	2,639	1,725
Iron and steel and their products	2,163	1,754	409	3,057	2,670	387	5,409	4,150	1,249
Lumber and its manufactures	1,016	830	180	1,463	920	479	1,704	1,100	636
Leather and its finished products	718	478	240	796	502	294	829	514	300
Paper and printing	1,301	980	381	1,404	1,002	402	1,306	803	473
Liquors and beverages	74	88	19	234	30	204	266	35	233
Chemicals and allied products	807	496	311	1,497	887	610	1,705	873	832
Stone, clay, and glass products	504	406	98	575	377	198	696	438	258
Tobacco manufactures	277	164	113	291	166	125	309	182	127
Vehicles for land transportation	658	566	92	451	251	200	1,329	780	549
Metals and metal products other than iron and steel	435	422	13	781	630	251	1,061	704	357
Railroad repair shops	401	300	101	524	344	180	891	550	341
Miscellaneous industries	1,595	1,105	490	1,982	1,388	594	2,700	1,891	809
Total	14,168	10,566	3,602	19,107	12,084	6,483	24,271	15,667	8,604

Loss.