

AGRICULTURE.

FARMS AND FARM PROPERTY.

The enumerators of the Thirteenth Census returned at the date of the census enumeration 6,361,502 farms, containing 878,798,325 acres, of which 478,451,750 acres were improved, the remaining 400,346,575 acres comprising the acreage of woodland and other unimproved land in farms.

On Plate No. 237 the seven circles indicate, by the size of their sectors, the relative proportion of improved and unimproved land area in farms to the total land area of the United States at each census from 1850 to 1910. The rapid decrease in the area not in farms will be noted, also the increase in the proportion improved to the unimproved; the circle for 1910 indicates that a greater proportion of the total area was improved in 1910 than at any previous census, but that less than 50 per cent of the total is in farms.

Diagram 1 on Plate No. 238 represents, by the length of the bars and the shading, the total land area and the area of improved and unimproved land in farms, in 1910 and 1900, in each state. The diagram presents, in an effective manner, the relative size of all the states, as well as the large proportion that the land in farms and the improved land in farms forms of the total area in Iowa, Ohio, Indiana, and Illinois, where over 90 per cent of the total land area is in farms, and the small proportion of the land area in farms in the states of Arizona, Nevada, Utah, and Idaho, each being under 10 per cent. The great difference between the land area of Texas as compared with Rhode Island is strikingly presented by the difference in the length of the bars representing the two states.

Diagram 2 on Plate No. 238 represents, by the length of the bars, the total land area and the improved and unimproved acreage in farms, from 1850 to 1910. This diagram illustrates, in a slightly different form, the same data graphically presented by the circles on Plate No. 237. In 1850 a little over one-third (38.5 per cent) of the land in farms was improved. In 1910 over half (54.4 per cent) of the farm land was improved; the increase in the proportion of improved land to the total land area in farms and the increased proportion of the total land area that is in farms are more readily calculated from this diagram than from Plate No. 237.

In Diagram 3 on Plate No. 238 the increase in the number of farms, from 1850 to 1910, is indicated by the length of the bars. The number of farms increased

more rapidly than the acreage of land in farms, resulting in a material decrease in the average size of farms.

The map on Plate No. 239 shows, by counties, the percentage land in farms formed of the total land area in 1910. The heavy black shade, which indicates that 95 per cent and over of the land in the county was in farms, covers a large proportion of the area of Iowa, the eastern part of Kansas and Nebraska, the northern part of Missouri, and portions of Ohio. The unshaded area of the arid states indicates the small proportion of the total land area that is in farms.

The average acreage of all land per farm, by counties, in 1910, is presented in Plate No. 240. The average for the United States was 138.1 acres of land per farm. The seven designations on the map indicate groups from less than 80 acres to 640 acres and over; the darkest three shades indicate the counties having an average of 240 acres or more; practically all of these shades were found west of the Mississippi River, except a few counties in Florida, Virginia, and southern Georgia, proving that the large ranches in some of the Western states have not been materially reduced in size.

Map 1 on Plate No. 241 gives the proportion of improved land in farms to the total land area, by states, and Map 2 the average number of acres of all farm land per farm, by states, in 1910. A study of Map 1 shows that the states of Iowa and Illinois have the highest proportion (over 75 per cent) of improved land to the total land area. The next group, 50 to 75 per cent, covers a wider area and includes the states of Maryland, Delaware, Ohio, Indiana, Kentucky, Missouri, and Kansas. All the states in the Mountain division, together with the states of Oregon and Florida, have less than 10 per cent of their land area improved.

As indicated on Map 2, the states of Nevada and Wyoming have the largest farms, the state average being over 640 acres per farm. The next group, from 320 to 640 acres, covers the states of Montana, North Dakota, and South Dakota. Arkansas and Louisiana are the only states west of the Mississippi River with an average of less than 120 acres per farm. In the eastern part of the United States the average size of the farm is much smaller than in the West, New Hampshire, Vermont, and Illinois being the only

states with an average of 120 to 160 acres. The states for which the average is less than 80 acres are Massachusetts, New Jersey, South Carolina, Alabama, and Mississippi.

The map on Plate No. 242 indicates, in seven shades, the percentage improved land in farms formed of the total land area, by counties, in 1910. The counties with the highest proportion, 75 per cent and over, are solid black and cover nearly the entire state of Iowa, three-fourths of the state of Illinois, and considerable portions of Ohio, Indiana, Nebraska, Minnesota, North Dakota, South Dakota, Missouri, and Kansas, the land in these counties being practically all under cultivation. The unshaded areas, indicating that less than 12½ per cent, or one-eighth, of the county is under cultivation, are found principally in the states of the Mountain and Pacific divisions.

On Plate No. 243 the map of the United States shows, by the number of dots, the improved land in farms at the Thirteenth Census, each dot representing 10,000 acres. The sparsely settled areas of Arizona, New Mexico, Utah, Nevada, and southeastern California stand out very strongly, as well as the northeastern part of Minnesota and the southwestern part of Texas and along the Rio Grande.

Plate No. 244 illustrates the average acreage of improved land per farm, by counties, in 1910, and, as the largest farms are in the Western states, nearly all the higher grades from 160 to 200 acres, and from 200 acres and over, are in that section, the state of Nevada, with its large ranches, being especially prominent. North Dakota, South Dakota, Nebraska, and Kansas also show a very high average acreage of improved land per farm.

Plate No. 245 consists of two maps, Map 1 showing the per cent of increase in number of acres of improved land in farms, by states, from 1900 to 1910, and Map 2, the per cent of increase in number of acres of improved land in farms, by states, from 1890 to 1900. The states having the greatest increase from 1890 to 1900 were all west of the Mississippi River. The unshaded area, indicating states in which the number of acres of improved land in farms decreased during the decade, covers all of the New England and Middle Atlantic divisions, also Delaware, Texas, Nevada, Oregon, and California.

As indicated by the map for 1900 to 1910, there was a great change in the per cent of increase or decrease in the number of acres of improved land in farms. Iowa and California in the West decreased, also all of the New England and Middle Atlantic states, as well as Delaware, Maryland, Virginia, and Ohio. The states reporting an increase of 50 per cent and over were North Dakota, Oklahoma, Montana, Idaho, Washington, Wyoming, Colorado, and New Mexico. Texas, which decreased from 1890 to 1900, reported an increase of between 25 and 50 per cent from 1900 to 1910.

The five maps on Plates Nos. 246 to 250 show the number of farms of specified sizes in 1910.

Plate No. 246 indicates, by the dots, the number of farms with from 3 to 9 acres at the Thirteenth Census, each dot representing 10 farms. The groups of dots in the Eastern states show that the greater number of small farms are in that part of the country.

The next map, on Plate No. 247, indicates the number of farms of from 20 to 49 acres in 1910, each dot standing for 40 farms. The dense groups of dots are almost entirely in the South and in the states bordering on the Gulf of Mexico, where the largest number of such farms are located.

Plate No. 248 represents the number of farms of from 100 to 174 acres, at the same date, with 40 farms to each dot. The dense groups of dots, indicating where such farms are most numerous, are in the Middle Atlantic, East North Central, and West North Central divisions.

Plate No. 249 indicates the number of farms of from 260 to 499 acres in 1910, each dot representing 10 farms of the acreage specified. The dense groups of dots are found in the states of Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Kansas, and Oklahoma.

Plate No. 250 shows, by the dots, the number of farms of 1,000 acres and over in 1910. The heaviest grouping of farms of this class is noted in Texas, western Nebraska, Kansas, California, and eastern Washington. In Texas the dense groups are due principally to the large cattle ranches.

Diagram 1 on Plate No. 251 indicates, by the length of the bars, the average size of farms in each state, in 1910 and 1900—that is, the average number of acres of all farm land per farm. The diagram shows that, with the exception of 13 states—Rhode Island, New York, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, Nebraska, and Kansas—the size decreased from 1900 to 1910, striking decreases being shown in the states of Nevada, Wyoming, Montana, and Arizona. North Dakota and Nebraska are the only states which showed a fair increase in the average size of farms.

In Diagram 3 the average size of farms in the United States at each decade from 1850 to 1910 is shown by the length of the bars, and the gradual decrease from 1850 to 1880, and increase from 1880 to 1900, will be noted.

Diagram 2 shows the proportion of value of each class of farm property to the total value of farm property in 1910. Farm land forms the greater proportion of the value of farm property. In California and Washington the value of farm land forms over 80 per cent of the total value of farm property. In Oregon, South Dakota, Nebraska, Kansas, and Illinois the value of farm land forms over 75 per cent of the total value of farm property. In fact, it is only in the states of the New England and Middle Atlantic divisions,

except Pennsylvania, that the value of buildings, implements and machinery, and live stock forms more than 50 per cent of the total value of farm property.

Diagrams 4, 5, and 6 show, at each census from 1850 to 1910 the value of implements and machinery on farms; the value of live stock, including domestic animals, poultry, and bees on farms; and the average value of farm land and buildings per acre. The value of implements and machinery and live stock, etc., shows a steady increase. The value of farm land and buildings per acre shows a slight variation, as it increased steadily from 1850 to 1890, the value in 1890 being \$21.31 per acre; in 1900 the value had decreased to \$19.81 per acre; during the next 10 years the value of farm land increased so rapidly that for 1910 the average value per acre was \$39.60, or double the value in 1900.

On Diagram 1, Plate No. 252, the total value in each state of all farm property, by each class of farm property in 1910, is indicated by the division of the bars, by shade lines to agree with the proportion in each class of farm property. Illinois, with a total value of farm property of \$3,905,321,075, ranks first; Iowa is second, with \$3,745,860,544; while Rhode Island is last, with \$32,990,739. The states of Illinois and Iowa far exceed the other states in the value of their farm property. Texas, the state ranking third, has \$1,686,675,911 less in value of its farm property than Illinois, and \$1,527,215,380 less than Iowa.

Diagram 2 represents, by the length of the bars, the average value of all farm property per farm, at each census, from 1850 to 1910. The average value increased from 1850 to 1860, decreased to 1870, and further decreased to 1880; in 1890 there was an increase and from 1890 to 1900 a very slight increase, but from 1900 to 1910 the average value of farm property per farm almost doubled.

Diagram 3 on the same plate shows a steady increase in the value of farm land and buildings, from 1850 to 1910. For the last 10 years, from 1900 to 1910, it more than doubled.

A series of United States maps on Plates Nos. 253 to 255 show, in seven shades, the per cent of increase in the value of farm property, by states, at each census from 1850 to 1910.

On Map 1, Plate No. 253, the per cent of increase in the value of all farm property from 1850 to 1860, the white areas indicate the states from which no increases in value were reported. All the other states reported increases, 19 states showing increases of 100 per cent or more; 9 states, 50 to 100 per cent; 6 states, 25 to 50 per cent; and only 1 state—Massachusetts—10 to 25 per cent.

Map 2, the per cent of increase from 1860 to 1870, has only 6 states without report. Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Kansas, Nevada, and California reported increases of over 100

per cent. It will be noted that for this decade decreases were reported from New Hampshire, Massachusetts, and Rhode Island; all the South Atlantic division, except Delaware; the East South Central states; and the West South Central, except Oklahoma, as indicated by the solid black shading. The decreases were due principally to the ravages during the Civil War.

Map 1 on Plate No. 254, the per cent of increase in value of all farm property from 1870 to 1880, has only one state—Oklahoma, which at that date was known as the Indian Territory—from which no farm values were reported. On this map there are only three states showing decreases in the value of farm property—Vermont, New Jersey, and Delaware. New York and Louisiana show the smallest increases—less than 10 per cent. Aside from Oklahoma, every state west of the Mississippi River reported increases of 100 per cent and over, except Iowa, Missouri, Louisiana, and California. Iowa and California increased from 50 to 100 per cent, Missouri from 10 to 25 per cent, and Louisiana less than 10 per cent. Florida was the only state east of the Mississippi River that reported an increase of 100 per cent or more.

Map 2 on Plate No. 254 presents the increase from 1880 to 1890. Every state west of the Mississippi River showed an increase of 50 per cent or more, with the exception of Louisiana, which increased from 25 to 50 per cent. The states in the Mountain division, with the exception of the state of Nevada, all showed increases of 100 per cent or more. Florida was again the only state east of the Mississippi that reported an increase of 100 per cent and over. The New England and Middle Atlantic states, also Ohio, reported decreases.

Map 1 on Plate No. 255, the increase in value from 1890 to 1900, shows that the great increases in the value of farm property reported for the previous decade were not continued, although the New England states all reported small increases of less than 10 per cent, except Massachusetts, which increased 10 to 25 per cent. The only states reporting an increase of 100 per cent and over were North Dakota, South Dakota, Idaho, and Oklahoma. Four states, all in the East—New York, Pennsylvania, Delaware, and Florida—reported decreases in the value of farm property.

Map 2 presents the increase from 1900 to 1910, the greatest increase ever shown for the entire United States. Not a state reported a decrease and every state west of the Mississippi River, with the exception of Minnesota, Missouri, and Louisiana, reported an increase of 100 per cent and over. The three states excepted increased from 50 to 100 per cent. The states of the South Atlantic division also showed increases of 100 per cent or more, except Virginia, West Virginia, and Delaware, which reported increases of 50 to 100 per cent each, and Maryland, with an increase

of 25 to 50 per cent. Two states in the East South Central division—Alabama and Mississippi—also showed increases of 100 per cent or more. Florida, which decreased at the previous decade, reported an increase of over 100 per cent. Not a single state reported an increase of less than 10 per cent. The smallest increases reported were for New Hampshire, Massachusetts, Rhode Island, and Pennsylvania—10 to 25 per cent. There were only 4 states that reported increases of less than 25 per cent, and 25 that reported increases of over 100 per cent.

Plate No. 256 presents, by counties, the percentage of increase in value of all farm property, from 1900 to 1910. The black shade, which covers the greater part of some of the Western states, indicates an increase of 200 per cent and over. The states having the largest of such areas are North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, New Mexico, Montana, Idaho, and Washington. A number of counties in some of the Southern states—South Carolina, Georgia, and Florida—also reported increases of over 200 per cent, as well as a number of counties in the Northern states of Maine, Michigan, Wisconsin, and Minnesota. The white areas, indicating an increase of less than 25 per cent, are widely scattered, except in the states of New Hampshire, Massachusetts, Rhode Island, New York, and Pennsylvania, the latter state showing a larger unshaded area than any other state.

Plate No. 257 contains two maps indicating the average value of farm land per acre, by states, in 1910 and 1900. From a comparison of the two maps the remarkable increase in the average value of farm land per acre, from 1900 to 1910, will be noted, especially in the following named states, each having increased more than 200 per cent: Arizona, 475.8 per cent; Washington, 278.3 per cent; Montana, 276.2 per cent; Idaho, 276.1 per cent; Wyoming, 261.5 per cent; South Dakota, 249.7 per cent; Oklahoma, 246 per cent; Oregon, 213.7 per cent; Texas, 209.1 per cent; and Utah, 200.3 per cent. The states of North Carolina, South Carolina, Georgia, Florida, Iowa, North Dakota, Nebraska, Kansas, Colorado, New Mexico, and Nevada also reported large increases, although the proportionate increase was not as high as for the states previously mentioned. Not a single state showed a decrease in the value of farm land per acre; the smallest increases were reported for Pennsylvania, 14.2 per cent, and Rhode Island, 14.9 per cent. In 1900 Illinois was the only state that reported a value of over \$40 per acre. In 1910 there were 11 states that reported an average value of farm land of over \$40 per acre. New Mexico was the only state in 1910 that reported an average value of less than \$10 per acre.

The map on Plate No. 258 presents for the United States, by counties, the average value of land in farms per acre in 1910. The group with the highest valuation, \$125 and over per acre, is confined to a few coun-

ties in the states of Washington, Oregon, California, Idaho, Colorado, Kansas, and Missouri, in the West; and Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, New York, and New Jersey, in the East, Illinois having the greatest number of counties with an average value of \$125 and over per acre. Considerable areas in a number of the states are left unshaded, indicating an average value of less than \$10 per acre.

The map on Plate No. 259 shows, by counties, the per cent of increase in the average value of farm land per acre from 1900 to 1910. The per cent of increase for the United States as a whole was 108.1, but a majority of the counties reported increases of over 125 per cent. The areas shown in black indicate the counties for which the increase was 200 per cent and over. A number of counties east of the Mississippi River, in the Southern states, are in the highest group, but nine-tenths of the counties reporting increases of over 200 per cent are in states west of the Mississippi River. The dark area covers nearly all of South Dakota and Idaho, and a large part of North Dakota, Nebraska, Kansas, Oklahoma, Texas, Montana, and Washington. One singular fact brought out in this map is that white areas, indicating counties with an increase of less than 25 per cent, are, in many instances, adjacent to counties in which the increase is 200 per cent and over. The largest white areas are in New York and Pennsylvania.

The map on Plate No. 260 indicates, by dots, the value of farm land in 1910, each dot representing \$1,000,000. The dense groups in Illinois and Iowa indicate the extensive areas of high valuation in those states.

Plate No. 261, a map similar to the map on Plate No. 260, shows the value of farm buildings, at the same date, each dot on this map representing \$200,000. The dense groups of dots, indicating where the value of farm buildings is the highest, are in New York, New Jersey, Pennsylvania, Ohio, Michigan, Illinois, and Wisconsin. The highest values of farm buildings are not all located in the same areas as the highest values of farm land.

Plate No. 262 indicates the value of farm implements and machinery at the Thirteenth Census, each dot representing \$30,000. The dense groups of dots, indicating the highest valuation of farm implements and machinery, are found in practically the same areas as the highest values of farm buildings.

Plates Nos. 263 to 312 comprise a series of maps arranged in pairs for each state, one map showing the per cent of land area in farms and the other the average value of farm land per acre, by counties, in 1910. On the first map the counties are shaded to indicate in which of the seven groups of percentages, as specified in the legend, they fall. The lowest group, less than 20 per cent, is unshaded; the highest group, 95 to 100 per cent, is solid black. The second map shows, for counties, by the seven groups of shading, the average

value of the farm land per acre. Comparison of the two maps will reveal that the counties that have the highest percentage of land in farms are not always the counties with the highest value of farm land per acre. The data from which this series of maps were prepared will be found in the Report on Agriculture, Volumes VI and VII of the Thirteenth Census Reports. In preparing these maps the entire county was used as a unit, although in many of the Western states, where irrigation is necessary, it is undoubtedly a little misleading to have the entire county shaded to indicate a high value of farm land per acre when the actual area in farms forms a very small part of the county, and a large portion of the county is of very little value. For instance, in the state of California it will be noted that San Bernardino County is shaded to show a valuation of \$125 and over per acre; this value is true for only a very small part of its area. The same conditions exist in a number of other states, especially in the arid and semiarid regions, where the raising of crops and the farm values depend upon the water supply and are due almost entirely to irrigation. Small areas, therefore, have a high valuation per acre, while adjacent areas that can not be irrigated are practically of no value.

FARM TENURE.

Plate No. 313 is composed of two United States maps, the first showing the proportion of farms owned to all farms, by states, in 1910, and the second, similar data for 1900. At the Twelfth Census the densely shaded area, showing 90 per cent and over of farms owned to all farms, covered the states of Maine, New Hampshire, and North Dakota. In 1910 Maine and New Hampshire were still in the highest class, but North Dakota had dropped to the class 75 to 90 per cent, while New Mexico and Utah had advanced to the highest class, 90 per cent and over. There were 10 states that changed their grouping from 1900, as compared with 1910: New Mexico and Utah advanced from the 75 to 90 per cent group to the group 90 per cent and over; New York, Colorado, and California from group 50 to 75 per cent to group 75 to 90 per cent; Delaware from the less than 50 per cent group to the 50 to 75 per cent group; North Dakota dropped from the 90 per cent and over group to the 75 to 90 per cent group; South Dakota dropped from group 75 to 90 per cent to group 50 to 75 per cent; Oklahoma and Arkansas also decreased, dropping from group 50 to 75 to group less than 50 per cent.

Plate No. 314 presents the number of farms, classified by character of tenure of operator, in 1910, for each state arranged geographically. In this diagram each bar represents 100 per cent, and the different shades indicate the proportion in the three classes—owners, managers, and tenants. Maine leads with the highest percentage of the number of farms owned, New Mexico is second, Utah third, and New Hampshire fourth. The state having the smallest per-

centage of the number of farms owned is Mississippi, and, conversely, the largest proportion of tenants, while Alabama, with 0.2 per cent, has the smallest proportion of farms operated by managers. Maine has the smallest proportion of tenants, with New Mexico second, New Hampshire third, and Utah fourth. Excluding the District of Columbia, which is considered as a city, Nevada has the largest proportion of the number of farms operated by managers. Considered by geographic divisions, New England and the Mountain and Pacific divisions have the largest proportion of the number of farms owned, while the East South Central and West South Central divisions have the smallest proportion of the number of farms owned and the highest percentage of farms rented.

Plate No. 315, acreage of all land in farms, classified by character of tenure of operator, in 1910, arranged geographically by states, is similar to the previous diagram, although their percentages vary. The highest percentage of the acreage of all land in farms operated by owners is in Maine, with New Hampshire second, Utah third, and Idaho fourth. The lowest percentage of the acreage of all land in farms operated by owners is in Nevada, but this state has the highest percentage of the acreage of land in farms operated by managers, Wyoming being second, and New Mexico third. The states having the smallest proportion of acreage operated by managers are Iowa and Kentucky. The highest percentage of acreage of all land in farms operated by tenants is found in Delaware, with Illinois second, Oklahoma third, and Georgia fourth. The lowest percentage of the acreage of all land in farms operated by tenants is found in Maine, with New Hampshire second, Utah third, and Nevada fourth.

Plate No. 316 indicates the number of farms operated by owners and part owners April 15, 1910; Plate No. 317 is a similar map showing the number of farms operated by tenants at the same date; Plate No. 318 shows the number of farms operated by share tenants in 1910; and Plate No. 319, the number of farms operated by cash tenants in 1910. The distribution of the several kinds of tenure is shown by dots, each dot representing 50 farms. The heavy shading in the northern part of the United States, east of the Mississippi River, shows the areas in which the farms operated by owners are most numerous. The heavy shading in the southern part of the country on Plate No. 317 indicates the great number of farms operated by tenants in that portion of the United States. On Plate No. 318, the number of farms operated by share tenants, the dense groups of dots are found in the Southern states and in Ohio and Indiana, while on Plate No. 319, number of farms operated by cash tenants in 1910, the dense shading is found in the states of the South Atlantic and East South Central divisions.

On Map 1, Plate No. 320, per cent of number of farms operated by tenants, by states, in 1910, the heavy shaded areas, indicating the highest percentages, are all in the southern portion of the United States, while on Map 2, per cent of all land in farms operated by tenants, by states, at the Thirteenth Census, only three states—Illinois, Georgia, and Oklahoma—fall in the class 40 to 50 per cent, and but one—Delaware—in the highest class reported, 50 to 60 per cent.

Plate No. 321 presents the per cent of farms operated by tenants, by counties, in 1910. This map gives a comprehensive idea of the condition of the United States as related to farm tenants. The darkest shaded areas, indicating 75 per cent and over of the farms operated by tenants, are found in South Carolina, Georgia, Alabama, Mississippi, Tennessee, Oklahoma, Arkansas, and Louisiana. For the states west of the one hundred and first meridian the greater portion of this entire area shows less than 20 per cent of the farms operated by tenants.

The dense shading on the map on Plate No. 322, per cent of improved land in farms operated by tenants, by states, in 1910, indicates that five states—Delaware, South Carolina, Georgia, Alabama, and Mississippi—have between 50 and 60 per cent of the improved land in farms operated by tenants. The next group, from 40 to 50 per cent, covers the states of Maryland, Illinois, Oklahoma, and Texas.

FARM MORTGAGES.

Diagram 2 on Plate No. 322 shows the number of farms operated by their owners free from mortgage and mortgaged in 1910. The solid black part of the bar represents the farms free from mortgage and the light shaded portion the mortgaged. It will be noted that, with a few exceptions, the states of the New England, Middle Atlantic, and East and West North Central divisions have the highest proportion of their number of farms mortgaged. The states showing the lowest per cent of mortgaged farms are in the South Atlantic and Mountain divisions.

Plate No. 323 shows, by dots, the distribution of the mortgaged farms, by counties, for the same date, each dot representing 50 farms. The dense groups of dots, indicating the greatest number of mortgaged farms, are found in Massachusetts, Connecticut, and Vermont of the New England division; New York, New Jersey, and Pennsylvania, comprising the Middle Atlantic division; Michigan and Wisconsin, of the East North Central division; and Missouri of the West North Central division.

STATISTICS OF FARMS, CLASSIFIED BY RACE, NATIVITY, AND TENURE OF FARMERS.

Plate No. 324 is made up of five diagrams, Diagram 1 showing the per cent of the number of farms, classi-

fied by color and nativity of operator, in 1910. The bars are shaded to indicate the proportion of the native white, foreign-born white, and negro and other non-white. The native white has the largest proportion of the number of farms in every state, except four—Minnesota, North Dakota, South Carolina, and Mississippi. In the first two the foreign-born whites operate over 50 per cent of the farms, and in South Carolina and Mississippi the negroes operate over 50 per cent. In West Virginia the native whites operate 98.4 per cent of the number of farms; Indiana is second, with 95.1 per cent. In Missouri (93.5 per cent), Pennsylvania (93.4 per cent), Ohio (92.9 per cent), and Kentucky (94.7 per cent), a little less than 95 per cent of the farms are under control of native white operators. West Virginia shows the smallest proportion of the number of farms operated by foreign-born whites and negroes, less than 2 per cent of the farms being operated by these two classes combined.

Diagram 2 compares, by the length of the bars, for the states in the South Atlantic, East South Central, and West South Central divisions, the average value of farm property per acre for white and colored farmers, in 1910, the black bar representing the value of property operated by colored farmers. The average value of farm property per acre for white farmers in Delaware, Maryland, Virginia, Florida, Louisiana, and Oklahoma, is higher than for colored farmers in 1910. In the remaining 10 states shown in this diagram the average value of farm property per acre for the colored farmers is higher than that of the white. Delaware has the highest average value of farm property per acre for the whites and Kentucky the highest for the colored.

Diagram 3 presents similar data for 1900, for the same states. In 1900 the average value of farm property per acre for both white and colored farmers was much lower than in 1910. The states of North Carolina and Oklahoma show a decided change. In 1900 the average value of farm property per acre in Oklahoma for the colored farmer was larger than for the white, while in 1910 the reverse was true. In North Carolina the value for the white farmer was greater than for the colored in 1900, but the value for the colored exceeded that of the white farmer in 1910.

Diagrams 4 and 5 show the average value of farm property per farm for white and colored farmers in the same 16 states for 1910 and 1900, respectively. In every instance the average value of the farm property per farm of the white farmers far exceeds that of the colored farmers both for 1910 and 1900.

Plate No. 325 indicates, by the length of the bars, the total number of acres in farms of white and colored farmers in 1910 and 1900, by states, ranked according to the number of acres in farms, with the greatest number first. Texas has by far the greatest area in farms, but the number of acres has decreased

since 1900; decreases are also shown for 24 other states, North Dakota, South Dakota, Nebraska, Oklahoma, and New Mexico showing the greatest increase in the total number of acres in farms of white farmers.

Map 1 on Plate No. 326 shows, by states, in eight groups of shading, the per cent of the number of farms of white farmers operated by white owners in the Southern states in 1910. The solid black shade indicates the states in which 70 per cent and over of the number of farms are operated by white owners and covers the states of Florida, Virginia, and West Virginia. Georgia and Oklahoma have the lowest percentage, 40 to 50 per cent, of farms operated by white owners; Delaware, South Carolina, Alabama, and Texas are in the group with 50 to 60 per cent, while the remainder of the Southern states—Maryland, North Carolina, Kentucky, Tennessee, Mississippi, Arkansas, and Louisiana—are in the group 60 to 70 per cent.

Map 2 on the same plate, per cent of the number of farms of colored farmers operated by colored owners, for the Southern states only, presents similar data to Map 1. The only state showing over 70 per cent of the farms of colored farmers operated by colored owners is West Virginia. Maryland and Virginia are in the group from 60 to 70 per cent. All other Southern states, with the exception of Kentucky and Oklahoma, with 50 to 60 per cent, fall in the groups having less than 50 per cent.

Map 1 on Plate No. 327 presents the per cent of number of farms of white farmers operated by white tenants, in 1910, for the Southern states only. The states of Georgia and Oklahoma have the highest percentage reported, between 50 and 60 per cent, all other Southern states having less than 50 per cent.

On Map 2, the per cent of number of farms of colored farmers operated by colored tenants, for the Southern states only, at the same date, seven states are colored solid black, indicating that colored tenants operate 70 per cent and over of the farms of colored farmers in the cotton-producing states of South Carolina, Georgia, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana. The next group, 60 to 70 per cent, includes North Carolina and Texas; Delaware is the only state in the group 50 to 60 per cent; Florida, Kentucky, and Oklahoma are in the group 40 to 50 per cent, the remainder of the states having less than 40 per cent of the colored farmers as tenants.

Map 1 on Plate No. 328 shows the per cent of number of all farms operated by colored farmers, in 1910, for the Southern states only. The shading indicates that Mississippi is the only state in which the colored farmers form 60 per cent and over of the number of all farmers. South Carolina is in the group 50 to 60 per cent; the states of Georgia, Alabama, and Louisiana are in the group 40 to 50 per cent; the remaining Southern states are in the groups below 30 per cent.

Map 2 presents the per cent of number of farms of white farmers operated by white managers, in 1910, for the Southern states only. There are only five states in which the white managers operate over 1 per cent of the farms of white farmers. Florida has the highest per cent, appearing in the group 3 to 4 per cent.

On Plate No. 329 the dots indicate the number of farms in the United States operated by colored owners and part owners, at the Thirteenth Census, each dot representing 50 farms. The map shows that the colored owners are scattered all over the United States, every state having one or more dots, except Maine, New Hampshire, Vermont, and Rhode Island. The greatest density of this character of ownership is found in the Southern states, Virginia and South Carolina having the greatest number.

Plate No. 330 indicates, by the dots, the number of farms operated by colored tenants, in 1910. A comparison with the map showing the counties in the Southern states having 50 per cent or more of their population colored will coincide almost exactly with the heavy groups of dots on this map. In other words, the number of farms operated by colored tenants are more numerous where the density of the colored population is highest. The states of South Carolina, Georgia, Alabama, Mississippi, Arkansas, and Louisiana have the largest areas most densely shaded. For the remainder of the United States, outside of the Southern states, the number of the colored tenants is very small.

Map 1 on Plate No. 331 indicates the percentage of all land in farms of white farmers operated by white owners, in 1910, for the Southern states only. Almost the entire area of the Southern states is solid black, indicating that in these states 70 per cent and over of the land of the white farmers was operated by white owners. Only five states have smaller percentages—Georgia and Texas, with 60 to 70 per cent; Maryland and Oklahoma, with 50 to 60 per cent; and Delaware, with 40 to 50 per cent. In other words, the map shows that in the Southern states more than 50 per cent of the land in farms of white farmers is owned.

Map 2, per cent of all land in farms of colored farmers operated by colored owners, in the Southern states, in 1910, shows that 70 per cent of all land in farms of colored farmers is operated by colored owners in West Virginia and Oklahoma. In Virginia colored owners operated from 60 to 70 per cent of the land in farms of colored farmers; in Kentucky and Florida, from 50 to 60 per cent; and in Arkansas and Texas, from 40 to 50 per cent. All the other states have less than 40 per cent of land in farms of colored farmers operated by colored owners.

Plate No. 332 consists of two maps, the first being per cent of all land in farms of white farmers operated by white managers, for the Southern states only, and Map 2, per cent of all land in farms of colored farmers

operated by colored managers, also for the Southern states, at the Thirteenth Census. A comparison of the two maps shows that the white managers operate a larger proportion of the acreage of the farms of white farmers than colored managers operate of the farms of colored farmers.

Plate No. 333 comprises two maps, Map 1, per cent of all land in farms of white farmers operated by white tenants, for the Southern states, in 1910, and Map 2, per cent of all land in farms of colored farmers operated by colored tenants, for the same states, at the same date. These maps indicate that the white tenancy in the Southern states operates a smaller proportion of the acreage of the land of white farmers than the colored tenants operate of the land of colored farmers.

Map 1 on Plate No. 334 gives the per cent of all land in farms operated by colored farmers in 1910, for the Southern states only. The highest per cent of all land operated by colored farmers is shown for Mississippi, which appears in the group 30 to 40 per cent. The states of South Carolina, Georgia, Alabama, and Louisiana are in the group 20 to 30 per cent, while all other states have less than 20 per cent of all land in farms operated by colored farmers.

Map 2 presents the per cent of improved land in farms operated by colored farmers in 1910, for the Southern states only. The colored farmers operated from 40 to 50 per cent of the improved land in Mississippi and South Carolina, and from 30 to 40 per cent in Georgia and Alabama. For the other states less than 30 per cent of the improved land in farms was operated by colored farmers.

SELECTED PLANTATION AREA.

The Census Bureau made an investigation, for a selected area, of the plantations in 1910, the first that had ever been made by the bureau, and in its conduct of this investigation a special plantation schedule was used in addition to the regular agricultural schedule. The selected area comprised 325 counties in the states of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, Louisiana, and Texas.

The sketch map of a portion of the United States on Plate No. 335 is shaded to indicate the selected plantation area, also the limit of cotton production, as well as the counties in which negroes formed 50 per cent or more of the population in 1910. It will be noted that the selected plantation area covers a large proportion of the counties in which the negroes predominate. The cross-hatched area indicates the counties selected for the special investigation; the dotted area indicates those counties in which the negroes formed 50 per cent or more of the population; a number of such counties are shown outside of the plantation areas, but the dots within the cross-hatching indicate the counties within the selected area that

had a majority of the population negroes. The discussion of the subject of the selected plantation area will be found on pages 877 to 890 of the Report on Agriculture, Volume V, Reports of the Thirteenth Census.

LIVE STOCK.

On Plate No. 336 the value of domestic animals on farms and ranges in 1910 is indicated by dots, each dot representing animals valued at \$100,000. The dense groups of dots indicate the areas from which the domestic animals having the highest value were reported.

On Plate No. 337 the number of neat cattle on farms and ranges in 1910 is represented by dots. Each dot represents 1,000 head of cattle and indicates the density of neat cattle in proportion to the area. The dense groups of dots in Wisconsin, Iowa, Minnesota, Illinois, Nebraska, Kansas, and New York indicate the areas from which the greatest number of cattle were reported.

On Plate No. 338, cattle on farms in 1910 and 1900, the length of the bar indicates the number of cattle on farms in each state. The states are ranked in the order of the number of cattle reported in 1910, with the largest number first. Texas was first, Iowa second, Kansas third, Nebraska fourth, Wisconsin fifth, and Missouri sixth in 1910, the first 4 states appearing in the same order in 1900. For 24 of the states a decrease in the number of cattle was reported in 1910. The largest decreases from 1900 to 1910 were in Texas, Iowa, Kansas, Illinois, and Oklahoma, while California and Minnesota reported the largest increases in the number of cattle on farms from 1900 to 1910.

Map 1 on Plate No. 339 shows, by the number of dots, the number of cattle on farms in 1910, by states, each dot representing 200,000 cattle.

Map 2 illustrates, by the dots, the number of dairy cows on farms in 1910, by states, each dot representing 200,000 dairy cows. A comparison of the two maps shows that a number of the states having large numbers of cattle reported a small number of dairy cows. Texas ranked first in the number of cattle but was sixth in the number of dairy cows; Iowa was second in the number of cattle and third in the number of dairy cows; New York, leading in the number of dairy cows on farms, ranked eighth in the number of cattle; Pennsylvania, seventh in the number of dairy cows, ranked thirteenth in the number of cattle.

Plate No. 340 shows, by dots, each dot representing 1,000 dairy cows, the distribution of dairy cows on farms and ranges, by counties, in 1910. The dense groups of dots locate the counties in which dairy cows are most numerous. In Wisconsin the dense groups of dots in the southern part of the state locate the great dairy farming district; central New York is also marked as a dairy farming district; southeastern Pennsylvania, near Philadelphia, also has an area

closely covered by dots, indicating a large number of dairy cows.

Diagram 1 on Plate No. 341 presents the number of sheep on farms in 1910 and 1900, the length of the bars showing the number of sheep at both censuses. In 1900 Montana had the largest number of sheep, but in 1910 Wyoming was slightly in the lead, Montana showing a large decrease in the number of sheep from 1900 to 1910. The arrangement of the bars on this diagram presents strikingly the decreases in the number of sheep reported from 36 of the 48 states. Utah, New Mexico, New York, Montana, Wisconsin, Pennsylvania, Colorado, Washington, Michigan, Indiana, North Dakota, and Oregon reported the largest decreases in the number of sheep returned in 1910, as compared with 1900. The total number of sheep reported at the census of 1910 showed a decrease, over the number returned in 1900, of 9,055,852, or 14.7 per cent.

In Diagram 2, horses, mules, and asses and burros in 1910 and 1900, Texas leads in the number reported, closely followed by Illinois, Iowa, Missouri, Kansas, Nebraska, and Oklahoma, each of these states reporting over 1,000,000 of such animals. The number of horses increased 1,566,093 over the number reported in 1900; the number of mules increased 945,154, and for the horses, mules, and asses and burros combined, from 1900 to 1910, the number increased 2,522,780, or 11.7 per cent.

On Map 1, Plate No. 342, number of horses, mules, and asses and burros on farms in 1910, by states, the number of dots indicates the number of animals, each dot representing 200,000.

The number of sheep on farms in 1910 is shown on Map 2, by states, each dot representing 200,000 sheep.

Plate No. 343 indicates the number of horses and mules on farms and ranges at the Thirteenth Census. Each dot on this map represents 1,000 animals, and the density of the dots indicates where the largest number of the animals were found.

Plate No. 344 presents similar data for sheep, each dot representing 2,500 sheep. The dense groups of dots in Ohio, Michigan, Idaho, Wyoming, and Montana are especially prominent, locating the counties reporting a large number of these animals.

Plate No. 345 gives the number of swine on farms in 1910 and 1900, by states, arranged in order of the number reported in 1910, with the largest first. Iowa leads, with 7,545,853, and Illinois is second, with 4,686,362. The black bars represent the number returned in 1910 and the open bars the number in 1900. The bars for the states producing the largest number of swine indicate a decrease from 1900 to 1910, 25 states reporting fewer swine in 1910 than in 1900; Oklahoma is the state showing the largest increase from 1900 to 1910. The total number of swine reported in 1910 was 58,185,676, or 4,682,365 less than the number reported in 1900.

Plate No. 346 shows the distribution of swine on farms and ranges, by counties, in 1910, each dot representing 2,500. As indicated on the diagram on Plate No. 345, Iowa, Illinois, Missouri, Indiana, Nebraska, and Ohio returned the largest number of swine.

Map 1 on Plate No. 347 also shows the number of swine on farms in 1910, by states, each dot representing 200,000 swine, and Map 2 the number of fowls on farms, by states, in 1910, each dot representing 1,000,000 fowls. The increase in the total number of fowls in the 10 years was 18.1 per cent. Iowa leads, with 23,482,880; Illinois is second, with 21,409,835; and Missouri third, with 20,897,208.

Plate No. 348 illustrates, by means of the dots, the distribution of poultry on farms and ranges in 1910, each dot representing 10,000 fowls. The dense groups of dots indicate that Iowa, Illinois, and Missouri have the largest numbers, and are the only states reporting over 20,000,000 fowls at the Thirteenth Census.

Plate No. 349 shows, by the length of the bars, the value of fowls raised in 1909 and 1899, by states, arranged in geographic divisions. Illinois reported the highest values at both the Twelfth and the Thirteenth Censuses. Large increases were reported for every state in 1909, as compared with 1899.

Plate No. 350 shows, by the length of the bars, the value of eggs produced in 1909 and 1899. Though Illinois led in the value of fowls raised, Ohio led in the value of eggs produced, followed by Missouri, Iowa, Illinois, and New York, in the order named, each producing eggs valued at over \$17,000,000. The value of eggs in 1909 for Illinois and Missouri was more than double the value reported for 1899.

On Plate No. 351 the production of wool in pounds in 1909 and 1899 is indicated by the length of the bars. Although the number of sheep was reduced from 1900 to 1910, the production of wool in Wyoming, Montana, and Ohio, the leading states, showed a fair increase. Although 31 of the states reported decreases, the total production of wool increased. The estimate of the number of pounds produced shows that the increase amounted to 12,852,393 pounds, or 4.6 per cent. The value of the wool clipped was \$45,670,053 in 1899, and \$65,472,328 in 1909, an increase of \$19,802,275, or 43.4 per cent.

SUMMARY FOR ALL CROPS.

Diagram 1 on Plate No. 352 shows the value of all farm crops in 1909 and 1899. Illinois was first at both enumerations, closely followed by Iowa, Texas, and Ohio, in the order named. New York, which was fifth in 1899, had dropped to eighth in 1909, Georgia having advanced to fifth place, Missouri to sixth, and Kansas to seventh. The value of crops in the United States increased 83 per cent during the decade and the diagram shows for individual states the valuation at the Twelfth and Thirteenth Censuses,

the difference in the length of the bars showing approximately the increase.

Diagram 2, proportion of land in farms, improved and in crops, with acreage reports, to total land area in 1910. The white, or unshaded, portion of the bar represents the per cent of the total land area that is not in farms. The heavily shaded part indicates the land in farms that is unimproved, the other two shades representing, first, the land in crops, and, second, by the cross-hatching, the other improved land. It will be noted that for the New England and Middle Atlantic states more than 50 per cent of the land is unimproved and not in farms. In the East North Central division only two states—Michigan and Wisconsin—show 50 per cent of the land unimproved and not in farms. In the West North Central division North and South Dakota, Minnesota, and Nebraska have less than 50 per cent of the land improved. In the states of the South Atlantic division, excluding the District of Columbia, which is a city, Florida shows the greatest proportion of unimproved land and land not in farms—94.6 per cent. In the states of the East South Central division the proportion of the land in crops and other improved land varies, only one state—Kentucky—having over 50 per cent of its land improved. In the West South Central division Texas, with the greatest total area, has the lowest per cent improved. The Mountain division has the smallest area improved and the states all show the lowest percentages of land improved of any in the United States. Arizona has the greatest proportion of unimproved area and the greatest percentage of land not in farms. The states comprising the Pacific division also have very low percentages of land improved and in crops. There are only nine states in the United States that have over 50 per cent of their total area improved.

On Plate No. 353, the proportion which the value of specified crops formed of the value of all crops in 1909, the total length of the bar represents the value of all crops in each state, the shaded portions indicating the proportionate value of the seven crops specified, and the unshaded portion the value of all other crops. The hay and forage crop in the states of the New England and Mountain divisions is the most valuable. Cereals are the predominating crop in Pennsylvania and all the states of the East North Central and West North Central divisions, also in Maryland, Delaware, Virginia, West Virginia, Kentucky, Tennessee, Louisiana, Oklahoma, Montana, Idaho, Washington, and Oregon. Cotton is the most valuable crop in the southern part of the South Atlantic division, and in Mississippi and Alabama of the East South Central division, and in the West South Central division, except the state of Oklahoma, in which cereals form more than 50 per cent of the value of all crops, and in Louisiana, where cereals are the leading crop. Vegetable crops are important in the New England and

Middle Atlantic divisions. Fruits and nuts and forest products are of small importance as compared with the other crops specified.

Diagram 1 on Plate No. 354, average value per acre of crops with acreage reports, 1909 and 1899, indicates that the New England states of Massachusetts, Rhode Island, and Connecticut reported the highest values, in the order named. The only states reporting values in excess of \$25 per acre were Massachusetts, with an average of \$41.33 per acre; Rhode Island, with \$40.50 per acre; Connecticut, with \$35.84; New Jersey, with \$33.19; South Carolina, with \$26.45; and Arizona, with \$25.97 per acre. The last state named on the diagram is South Dakota, which had a value of \$10.17 per acre. All of the states, except New Mexico, showed large increases in the average value of farm crops per acre from 1899 to 1909, New Mexico, the only state that decreased, reporting an average value of farm crops per acre of \$14.27 in 1899 and \$12.76 in 1909.

In Diagram 2, average value of farm crops per farm, 1909 and 1899, North Dakota leads with a valuation of \$2,429 per farm; Nevada is second, with \$2,203 per farm; California third, with \$1,736; South Dakota fourth, with \$1,616; and Nebraska fifth, with \$1,512 per farm. These were the only states reporting an average value of farm crops per farm of more than \$1,500. The state reporting the smallest value is New Mexico, with \$250 per farm in 1909 and \$249 in 1899, the reports at each census being nearly equal. Not a single state on the entire list showed a decrease in the average value of farm crops per farm in 1909, as compared with 1899, and, with a few exceptions, the proportionate increase for each state was large.

The small map (3), at the bottom of the plate, indicates, by means of dots, the geographic distribution of the value of all farm crops, by states, in 1909, each dot representing a value of \$8,000,000. It will be noted that the dots are closely grouped in the states of Iowa, Illinois, Indiana, and Ohio, but nearly all the Eastern and Southern states returned higher valuations. The Mountain states reported the lowest valuations, New Mexico, Arizona, and Nevada being the lowest. The Pacific states, while not as heavily shaded as the states in the East, reported farm crops of large value.

Plate No. 355 shows the distribution of the value of all crops in 1909, each dot representing a value of \$100,000. Illinois leads, with \$372,270,470; Iowa is second, with \$314,666,298; Texas third, with \$298,133,466; and Ohio fourth, with \$230,337,981.

The map on Plate No. 356 represents, by dots, the expenditures by farmers for labor in 1909, each dot representing \$15,000. The dense groups of dots show the counties having the greatest expenditures for labor and are nearly all counties located near great cities.

Plate No. 357 represents, by dots, the expenditures of farmers for feed for live stock in 1909, each dot equaling \$50,000. The Eastern states show the most densely shaded areas and indicate the greatest expenditures for feed for live stock.

Plate No. 358 shows the expenditures of farmers for fertilizer in 1909. Each dot represents \$5,000 and the dense groups are almost entirely in states on the Atlantic coast. The small number of dots in the states west of the Mississippi River presents strikingly the small amount expended for fertilizer.

Plate No. 359 shows, by dots, the value of the receipts from sale of feedable crops in 1909, each dot representing \$50,000. The dense groups in the counties in the northern half of Illinois indicate the greatest receipts from the sale of feedable crops in 1909.

INDIVIDUAL CROPS.

Plate No. 360 shows the changes in the acreage of all cereals from 1899 to 1909, for each state, arranged by geographic divisions. The black bars on the left of the central line show the decrease in acreage and the bars on the right of the central line indicate the increase. Decreases in 27 states are indicated and increases in 21 states. California shows the greatest decrease, 2,033,762 acres; Iowa was second in decrease of acreage, with 1,879,056 acres; Minnesota was third, with 1,067,219 acres; and Tennessee fourth, with 918,681 acres. The states showing the greatest increases in acreage are North Dakota, with 6,276,767 acres; Oklahoma second, with 3,816,834 acres; and Kansas, with 2,311,729; South Dakota, with 1,992,296; and Washington, with 1,240,685 acres, following in the order named. The total increase in acreage in cereals was 6,413,743 acres, or 3.5 per cent. The acreage east of the Mississippi River decreased over 6,000,000 acres, while that west of the Mississippi increased over 12,000,000 acres.

Map 1 on Plate No. 361 indicates, by states, in six groups, the changes in acreage of all cereals from 1899 to 1909. The highest group, with an increase of 2,500,000 acres and over, includes North Dakota and Oklahoma; the group 1,000,000 to 2,500,000 includes South Dakota, Kansas, and Washington. The decreases shown on the map are all in the states east of the ninety-seventh meridian, with the exception of Texas and California. The only states east of the Mississippi River increasing their acreage of cereals were Massachusetts, Rhode Island, Connecticut, Indiana, and Florida.

Map 2 on Plate No. 361 shows the acreage, by states, of all cereals in 1909, each dot representing 400,000 acres. Illinois has the greatest acreage, closely followed by Kansas and Iowa, each of these states having over 15,000,000 acres; Nebraska, North Dakota, Missouri, and Minnesota, in addition to those named, are the only states having over 10,000,000 acres each in cereals.

On Map 1, Plate No. 362, changes in yield of corn crop per acre, by states, from 1899 to 1909, the states unshaded, or left white, increased their yield in 1909. Oklahoma and Kansas showed the greatest decrease, 8 bushels and over per acre, while the corn crop of Pennsylvania, Arkansas, Nebraska, and Texas decreased 4 to 8 bushels; and Maryland, Mississippi, Iowa, New Mexico, and California reported a decrease of 2 to 4 bushels per acre in their corn crop.

Map 2, corn—acreage, by states, in 1909, shows that the states having more than 5,000,000 acres in corn were, in order of size of acreage, Illinois, Iowa, Kansas, Nebraska, Missouri, Oklahoma, and Texas; Illinois, with 10,045,839 acres in corn, reported the largest acreage in 1909.

Plate No. 364 consists of six diagrams, relating to the production of corn, wheat, and oats. In Diagram 1, production of corn in 1909 and 1899, Illinois, with 390,218,676 bushels, ranked first; Iowa was second, with 341,750,460 bushels; Indiana was third, with 195,496,433 bushels; and Missouri fourth, with 191,427,087 bushels. Comparing the bars for the two years, it will be noted that in 16 of the 28 states shown the production was less in 1909 than in 1899.

Diagram 4, Plate No. 364, shows the production of corn at each census from 1849 to 1909. The increase was small from 1849 to 1859; it decreased from 1859 to 1869; the crop more than doubled from 1869 to 1879; the increase was regular from 1879 to 1889 and from 1889 to 1899, but a slight decrease was reported in 1909.

Plate No. 365 represents, by dots, the production of corn in 1909; each dot equals 100,000 bushels. The dense groups of dots in Illinois, Iowa, Indiana, and Nebraska are almost solid black, indicating a tremendous production in these states. The scattering dots in other states show the relative importance of the grain crop in these states.

Map 1 on Plate No. 363, wheat—acreage, by states, in 1909, indicates that North Dakota, with 8,188,782 acres, had the largest area in wheat in 1909. Kansas was second, with 5,973,785 acres; Minnesota, with 3,276,911 acres, was third; and South Dakota, with 3,217,255 acres, was fourth.

Diagram 2 on Plate No. 364, production of wheat in 1909 and 1899, shows that North Dakota was first in 1909, with a crop of 116,781,886 bushels; Kansas second, with 77,577,115 bushels; Minnesota third, with 57,094,412 bushels; and Nebraska fourth, with 47,685,745 bushels. There were 13 of the 24 states represented on the diagram that reported a smaller production in 1909 than in 1899.

Diagram 5, Plate No. 364, production of wheat at each census from 1849 to 1909, indicates that the wheat crop increased at each census; the increase over the previous census from 1879 to 1889 and from 1899 to 1909 was very small.

Plate No. 366 represents, by dots, the production of wheat in 1909. The dense groups in North Dakota, South Dakota, and parts of Nebraska and Kansas indicate the counties in which the production was greatest.

Map 2, Plate No. 363, oats—acreage, by states, in 1909, shows that Iowa had the largest area in oats, with an acreage of 4,655,154; Illinois being second, with 4,176,485 acres; and Minnesota third, with 2,977,258 acres.

Diagram 3, Plate No. 364, shows the production of oats in 1909 and 1899. Illinois was first, with a production of 150,386,074 bushels; Iowa was second, with 128,198,055 bushels; Minnesota third, with 93,897,717 bushels; and Wisconsin fourth, with 71,349,038 bushels. These states had almost the same rank in 1899, except that Minnesota and Wisconsin changed places. Of the 26 states represented on the diagram, 9 reported a smaller production in 1909 than in 1899.

Diagram 6, Plate No. 364, production of oats at each census from 1849 to 1909, indicates that the oats crop showed a steady increase at each enumeration, the largest increase being shown from 1879 to 1889.

Plate No. 367 presents, by dots, the production of oats in 1909, each dot representing 100,000 bushels. Illinois and Iowa led in the production of this cereal and the dense groups of dots in the northern part of Illinois indicate where the greatest production was reported in 1909.

Diagram 1 on Plate No. 368 shows the production of barley for the 15 principal producing states in 1909 and 1899. The acreage of barley increased 3,228,510 acres and the production 53,709,335 bushels. Minnesota reported the largest crop at the last enumeration, 34,927,773 bushels; California was second, with a production of 26,441,954 bushels; North Dakota third, with 26,365,758 bushels; South Dakota fourth, with 22,396,130 bushels; and Wisconsin fifth, with 22,156,041 bushels. Iowa, the state ranking fourth in 1899, reported a decrease of over 7,000,000 bushels in its crop for 1909.

Diagram 2 gives the production of rye in 1909 and 1899 for the 12 principal producing states. Michigan, with a crop of 5,814,394 bushels, was first in production; Wisconsin second, with 4,797,775 bushels; Minnesota third, with 4,426,028 bushels; and Pennsylvania fourth, with 3,496,603 bushels. The crop of 1909 was less than that reported in 1899 for 6 of the 12 states represented on the diagram. The increase for the entire United States was 3,951,832 bushels. The increase in the states of Michigan and Minnesota was 6,243,402 bushels. The greatest decrease reported by any state was from Nebraska, a decrease of 1,241,189 bushels for 1909.

In Diagram 3, production of buckwheat for 1909 and 1899, New York leads, with a crop of 5,691,745 bushels; Pennsylvania being second, with 4,797,350

bushels; Michigan third, with 958,119 bushels; and West Virginia fourth, with 533,670 bushels. These were the only states reporting over 500,000 bushels. The three states of the Middle Atlantic division produced 10,701,643 of the 14,849,332 bushels reported for the entire United States.

The maps on Plates Nos. 369 to 371 show the distribution of the production of barley, rye, and buckwheat, respectively, in 1909. Each dot represents 50,000 bushels and the dense groups of dots locate the principal producing areas of these crops.

Diagram 4, Plate No. 368, presents the production of tobacco in 1909 and 1899. Kentucky was the leading state, with a production of 398,482,301 pounds; North Carolina, with a production of 138,813,163 pounds, was second; and Virginia third, with a production of 132,979,390 pounds. These were the only states producing over 100,000,000 pounds.

Plate No. 372 represents, by the dots, the tobacco production in 1909, each dot equaling 400,000 pounds. The dense groups of dots are located in Kentucky, North Carolina, Virginia, Ohio, Tennessee, Wisconsin, Pennsylvania, and Connecticut. The acreage devoted to the tobacco crop is small; only 1,294,911 acres were reported in 1909. The dots indicate that the areas in Pennsylvania and Connecticut are very small and the crop is cultivated in comparatively few counties. Kentucky, the state leading in its production, has the greatest number of counties producing tobacco.

The fifth illustration on Plate No. 368 is a map of the United States presenting the acreage of hay and forage in 1909, each dot representing 400,000 acres. Iowa, with 5,046,185 acres, was the leading state, New York following closely, with 5,043,373 acres; Nebraska was third, with 4,520,034 acres; Kansas fourth, with 3,957,745 acres; and Minnesota fifth, with 3,946,072 acres. The total acreage reported was 72,280,776, an increase since 1899 of 10,589,707 acres, or 17.2 per cent. Only 10 states reported a decrease in acreage in this crop.

Plate No. 373 shows the production of hay and forage in 1909. This is one of the leading agricultural crops of the United States and its distribution is indicated by the dots, each dot representing 2,000 tons. The dense groups of dots are in the counties where the crop is of the greatest importance. Each state has a number of dots, showing that it is a crop of wide range and one of importance in nearly every state. The dots are most numerous in the Northern states, especially in the Middle Atlantic and East and West North Central divisions, where are found the areas producing the heaviest crop of hay and forage.

On plate No. 374 the production of alfalfa in 1909 is indicated. The dots on this map show that the

crop is unimportant east of the Mississippi River, but in the Western states, especially in Nebraska, Kansas, Colorado, Utah, Idaho, and California, the crop, while a minor one, is of considerable value.

Plate No. 375 consists of four diagrams. In Diagram 1, production of potatoes in 1909 and 1899, New York state leads for both 1899 and 1909. In 1899 it reported 38,060,471 bushels, while the crop of 1909 was 48,597,701 bushels. Michigan, the second state in point of production, reported 38,243,828 bushels in 1909; Wisconsin, the third state, reported 31,968,195 bushels; Maine, with 28,556,837 bushels, was fourth; Minnesota, with 26,802,948 bushels, was fifth; Pennsylvania, with 21,740,611 bushels, was sixth; and Ohio, with 20,322,984 bushels, was seventh. Each of these states reported a production of more than 20,000,000 bushels in 1909. The total production increased from 273,318,167 bushels to 389,194,965 bushels, an increase of 115,876,798 bushels, or 42.4 per cent.

Plate No. 376 gives the production of potatoes in 1909, each dot representing 100,000 bushels. The dots, indicating the distribution of the crop, are most dense in Maine, New York, Michigan, Wisconsin, and Minnesota, showing that these states lead in the production of potatoes. The dense groups of dots in the northern part of Maine locate important producing counties of the state in 1909.

For the production of sweet potatoes and yams in 1909 and 1899, as indicated in Diagram 2, Plate No. 375, North Carolina was the leading state in both 1899 and 1909, reporting, at the Twelfth Census, 5,781,587 bushels, and at the Thirteenth Census, 8,493,283 bushels. Georgia was second in 1909, with 7,426,131 bushels; Alabama third, with 5,314,857 bushels; and Virginia fourth, with 5,270,202 bushels. The total production reported in 1899 was 42,517,412 bushels, as compared with 59,232,070 bushels in 1909, an increase of 16,714,658 bushels, or 39.3 per cent. Of the states appearing on the diagram, there were but four reporting a smaller production for 1909 than for 1899. Texas reported the largest decrease, the 1909 crop being 569,052 bushels less than that of 1899. The reports of 15 states for 1909 indicated decreases in the number of bushels produced, as compared with the production for 1899.

On Plate No. 377 the production of sweet potatoes and yams in 1909 is shown, the distribution of the crop being indicated by the dots, each dot representing 100,000 bushels. The area of production is principally confined to the states of the South Atlantic and East and West South Central divisions. The states leading in the production are all Southern states. The total production in 1909 was 59,232,070 bushels, 29,628,153 bushels of which were produced in the South Atlantic division, 13,573,580 bushels in

the East South Central division, and 9,025,928 bushels in the West South Central division. Over 52,000,000 of the 59,000,000 bushels were produced in these three divisions.

Diagram 4 on Plate No. 375 presents the production of cotton in 1909 and 1899. The total production in bales was 9,534,707 in 1899 and 10,649,268 in 1909, an increase of 11.7 per cent. Texas was the state leading in production at both censuses, with 2,506,212 bales in 1899 and 2,455,174 in 1909, a decrease of 51,038 bales. Georgia, South Carolina, Alabama, and Mississippi follow in the order named and were the only states each reporting over 1,000,000 bales.

Diagram 3, on the same plate, production of cotton at each census from 1849 to 1909, indicates that the production increased each year, except in 1869, at which date there was a reduction in the crop of over 2,000,000 bales from the amount returned in 1859. The production in 1879 was larger than that of 1869 by more than 2,500,000 bales.

Plate No. 383 represents, by dots, the distribution of the cotton crop in 1909, each dot equaling 1,000 bales. This crop is confined to the Southern states, and the dense groups of dots indicate the principal producing areas in the states of North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, and Texas.

On Map 1, Plate No. 384, cotton—acreage, by states, each dot represents 400,000 acres. The Southern states are the only states in which solid black dots are found. Texas is the leading state in both acreage and production, reporting 9,930,179 acres in cotton. Georgia is second, with 4,883,304 acres; Alabama third, with 3,730,482 acres; and Mississippi fourth, with 3,400,210 acres.

On Plate No. 378 the production of dried peas and beans in 1909 is indicated by the dots, each dot representing 10,000 bushels. The thickly shaded areas in Michigan and New York indicate that these states lead in the production of dried peas and beans. The crop is unimportant in other portions of the country, as indicated by the small number of dots shown in other states.

Plate No. 379, production of rice in 1909, indicates the areas in which this crop is produced, each dot representing 50,000 bushels. Louisiana, with 10,839,973 bushels; Texas, with 8,991,745 bushels; and Arkansas, with 1,282,830 bushels, produced 21,114,548 bushels, the remaining states producing only 723,972 bushels. South Carolina produced 541,570 bushels in 1909. The states of Virginia, North Carolina, Georgia, Florida, Alabama, and Mississippi also reported small amounts. The states mentioned are the only states from which rice was reported.

The map on Plate No. 380 represents, by the dots, the distribution of the production of sugar beets in 1909, each dot equalling 5,000 tons. The report indicates that every state in the United States, except Connecticut, produced sugar beets in 1909. The total production was 3,932,857 tons. The states leading in the production were Colorado (1,231,712 tons), California (845,191 tons), Michigan (707,639 tons), Utah (413,946 tons), Idaho (179,661 tons), Wisconsin (127,526 tons), and Montana (109,434 tons). These were the only states reporting a production of more than 100,000 tons each, most of the remaining states reporting small quantities. The dots locate the counties in the states from which this crop was reported, and it will be noted that the area from which sugar beets were reported is very small, as compared with the area of other crops. The total acreage reported in 1909 was only 364,093 acres.

Plate No. 381 indicates, by the distribution of the dots, the production of flaxseed in 1909, each dot representing 10,000 bushels. The heavily dotted areas are found principally in North Dakota, South Dakota, and Minnesota, with a few scattered dots in Montana, Kansas, Missouri, and Iowa. These states together reported 19,328,129 bushels of the total (19,512,765).

The map on Plate No. 382 represents, by the dots, the distribution of the production of hops in 1909. This crop is one of importance in only four states—Oregon, California, Washington, and New York—the other states reporting small quantities of hops.

Map 2 on Plate No. 384 represents the distribution of the value of fruits and nuts reported in 1909. The value of the fruits and nuts produced at that date in California was more than half the total value reported for the entire United States. New York was second in the value of the fruit production and Texas in the value of nuts produced.

Plate No. 385 represents the production of small fruits in 1909. The producing areas are indicated by the dots, each dot representing 100,000 quarts. Massachusetts, New Jersey, Delaware, and Michigan have dense groups of dots, indicating the portions of these states in which this crop is produced. New York, Maryland, Missouri, and California also have quite an extended area of this crop, although not as concentrated as in the states referred to above.

Plate No. 386 presents the production of orchard fruits in 1909, the density of the production being indicated by the dots, each dot representing 25,000 bushels. The dense groups of dots, indicating the counties with the greatest production, are found in New York, California, and Michigan. Orchard fruits are widely distributed over all parts of the country, except in the Mountain and West North Central divisions.

On Plate No. 387, production of grapes in 1909, the distribution and density of production are indicated by dots, each dot representing 1,000,000 pounds. California produced 77 per cent of the 1,979,686,525-pound crop, and the dense groups of dots locate the counties in which this crop was produced. New York, with a production of 253,006,361 pounds, and Michigan, with 120,695,997 pounds, rank next to California. The production in some counties of New York and Michigan is very large, as indicated by the solid black area.

Plate No. 388 presents the centers relating to farms, agricultural products, and population, for 1900 and 1910. This map of a section of the United States has indicated thereon, by various symbols, the location of ten centers. The first, indicated by stars, are the centers of population in 1900 and 1910, the center of population moving almost directly west during the decade. The second, the heavy rimmed circles, indicates the location of the centers of the number of farms in 1900 and 1910. The center of the number of farms moved west and south, the movement being about 30 miles southwest for the 10 years. The centers of improved acreage in 1900 and 1910 are indicated by two triangles. This center during the decade moved west and north about 35 miles. The center of the production of cereals in both 1900 and 1910 is indicated by a cross inscribed in a circle. As this crop was largely produced in the Northwest, the change was in that direction, the center moving a little west of north about 12 miles. The centers of farm values are indicated by the black blocks with the white center. The center of farm values had the largest movement of any of the centers during the decade, moving almost directly west about 65 miles.

In general, agricultural production has followed the movement of population—that is, they all moved in a westerly direction, although not in a parallel line, as three of the centers had a decided movement north, while that for the number of farms was in the opposite direction. The south movement of the center of number of farms was due to the large number of tenant farms reported in the South.

The table following indicates the latitude and longitude in 1900 and 1910, the distance each of the centers moved during the decade, and the location of the center in relation to a prominent city. Of the ten centers shown on the map, two, those of population, are in Indiana, five in Illinois, two in Missouri, and one in Iowa.

The center of number of farms for 1900 and 1910, also the center of production of cereals for 1900, the center of improved acreage for 1900, and the center of farm values in 1900 are in Illinois. The centers of farm values and improved acreage for 1910 are in Missouri, while the center of production of cereals for 1910 falls in Iowa.

CENTERS OF POPULATION AND AGRICULTURE: 1900 AND 1910.

CENSUS YEAR.	North latitude.			West longitude.			APPROXIMATE LOCATION BY IMPORTANT TOWNS.	MOVEMENT FROM 1900 TO 1910.	
	°	'	"	°	'	"		Distance in miles.	Direction.
CENTER OF POPULATION: 1900 AND 1910.									
1900.....	39	9	36	85	48	54	6 miles southeast of Columbus, Ind..... In the city of Bloomington, Ind.....	39.0	West.
1910.....	39	10	12	86	32	20			
CENTER OF NUMBER OF FARMS: 1900 AND 1910.									
1900.....	38	17	00	88	12	30	11.2 miles southeast of Fairfield, Wayne County, Ill..... 6.6 miles north-northwest of Benton, Franklin County, Ill.....	43.9	{ West-south-west.
1910.....	38	4	12	88	57	33			
CENTER OF IMPROVED ACREAGE: 1900 AND 1910.									
1900.....	39	26	20	90	39	20	In Greene County, Ill., 60 miles north-northwest of St. Louis, Mo..... 9.2 miles east-northeast of Paris, Monroe County, Mo.....	68.2	{ West by north.
1910.....	39	31	12	91	52	13			
CENTER OF PRODUCTION OF CEREALS: 1900 AND 1910.									
1900.....	40	16	13	91	25	10	28 miles north of Quincy, Ill..... 19.1 miles west of Fort Madison, Lee County, Iowa.....	28.7	{ North-north-east.
1910.....	40	37	48	91	41	36			
CENTER OF FARM VALUES: 1900 AND 1910.									
1900.....	39	57	48	90	21	35	39 miles west-northwest of Springfield, in Cass County, Ill..... 14 miles south-southwest of Edina, Knox County, Mo.....	105.4	West.
1910.....	39	57	0	92	18	36			

IRRIGATION.

Plate No. 389 is a reproduction of the map prepared by the United States Weather Bureau, Department of Agriculture, on which the normal annual precipitation from 1870 to 1901 is indicated by the curved red lines. This map is of value in studying the areas in which irrigation is necessary, owing to the low precipitation. In the 11 states forming what is known as the arid region, the line marking the annual precipitation of less than 20 inches practically outlines the boundaries of the region where irrigation is commonly practiced.

The per cent of total land area irrigated and per cent of number of farms irrigated in 1909 are presented, by counties, for those states where irrigation was used to any extent, on Plates Nos. 390 to 400.

Plate No. 390 treats of irrigation in Arizona and the map at the left shows that Maricopa County, which had 3.5 per cent of its area irrigated, is the only county with more than 1 per cent of the total land area irrigated in 1909. The map at the right is shaded to show, in groups, the proportion of farms irrigated. One county, Pinal, has over 90 per cent of its farms irrigated, three counties have 75 to 90

per cent, one county has between 50 and 75 per cent, five counties have from 25 to 50 per cent, and the remaining counties of Apache, Navajo, and Coconino have less than one-fourth of the farms irrigated. Pinal County has the largest proportion of farms irrigated, 92.8 per cent, and Graham County ranks second, with 86.1 per cent.

The first map of California, on Plate No. 391, shows that Kings County, with 25.7 per cent, was the only county in the state with more than 15 per cent of its area irrigated in 1909. Del Norte was the only county in the state reporting no area irrigated. The map for the per cent of the farms irrigated shows that in Inyo and Imperial Counties more than 90 per cent of the farms were irrigated. Imperial County had the highest per cent of farms irrigated, 94.6 per cent, and Inyo was second, with 93.2 per cent. The greatest proportion of the number of farms irrigated was reported from the counties in the southern part of the state.

In the case of Colorado, Plate No. 392, the counties with the highest proportion of land irrigated are Boulder, 23.1 per cent, and Weld, 15.4 per cent, in the north; and Rio Grande, 18.7 per cent, and Conejos, 15.6 per cent, in the south—the only counties with

more than 15 per cent of their area irrigated. The map for per cent of number of farms irrigated shows only three counties—Phillips, Clear Creek, and San Juan—as having no land under irrigation. Forty-one of the 60 counties of the state reported that more than half the farms were irrigated. Rio Grande County, with 99.6 per cent, had the highest proportion of irrigated farms, but there were 17 other counties with more than 90 per cent of the farms irrigated, all being located in the western part of the state.

On Plate No. 393, Idaho, Canyon County, with 16.2 per cent, was the only county in the state reporting more than 15 per cent of its area under irrigation. One county, Latah, was without an irrigated farm. The map at the right shows that two counties—Twin Falls (92.9 per cent) and Lincoln (91.5 per cent)—had the largest number of farms irrigated, reporting more than 90 per cent of the whole number of farms under irrigation. Four counties—Ada, with 87.5 per cent; Custer, with 87.9 per cent; Lemhi, with 87.3 per cent; and Bear Lake, with 86.7 per cent—reported more than 85 per cent of their farms irrigated. Irrigation of importance in Idaho is confined to the southern part of the state. Eighty-nine per cent of the land under irrigation in the entire state is found in the valley of the Snake River, which extends across the state from east to west.

Plate No. 394 shows that not a county in Montana had more than 10 per cent of its area irrigated. Gallatin County, with 7.9 per cent, had a larger proportion than any other county. The lower map, per cent of the number of farms irrigated, shows that Deer Lodge County, with 99.4 per cent, had the largest percentage of farms irrigated, and Ravalli, with 92.4 per cent, was second. Only two other counties—Beaverhead, with 89.6 per cent, and Madison, with 81.1 per cent—had more than 75 per cent of the number of farms under irrigation.

Plate No. 395, for Nevada, indicates that only two counties—Douglas (6.9 per cent) and Lyon (6.4 per cent)—had more than 5 per cent of their area irrigated. The counties in Nevada are very large and the farm area irrigated forms only a small proportion (1 per cent) of the total area, but practically all the farms are irrigated, as 89.5 per cent of the total number of farms in the state were reported as being under irrigation. In 8 of the 15 counties the per cent of the number of farms irrigated is over 90, while in the remaining counties it is over 80. In Douglas County every farm was reported as irrigated, and in Clark and Lander Counties only one farm in each county was reported as not under irrigation. The county which had the least proportion of its farms irrigated was White Pine, the percentage being 80.8.

For New Mexico, Plate No. 396, not a single county had more than 2.9 per cent of its total land area irrigated. The proportion irrigated for the state was

only 0.6 per cent. As indicated by the map at the right, three counties in the state reported more than 90 per cent of their farms irrigated, these counties being Rio Arriba, with 96.4 per cent; Taos, with 96.2 per cent; and Dona Ana, with 91.4 per cent.

Plate No. 397, for Oregon, shows only one county in the state, Baker, with 6.6 per cent, as having more than 5 per cent of the total land area irrigated. The per cent for the entire state was only 1.1. The per cent of the number of farms irrigated, illustrated on the lower map, shows two counties in the eastern extremity of the state—Baker, with 80.6 per cent, and Malheur, with 77.7 per cent—as the only counties having more than 75 per cent of the number of farms irrigated. In Hood River County the number of farms irrigated formed 62.4 per cent of the total.

On Plate No. 398, Utah, the map for the per cent of total land area irrigated in 1909 shows that only one county, Salt Lake, with 17.1 per cent, reported more than 15 per cent of its land area under irrigation. The map at the right indicates that every county in the state reported more than 50 per cent of its farms as irrigated, the lowest proportion being 65.7 per cent. For 17 of the 27 counties at least 90 per cent of the farms were irrigated, and for 7, from 75 to 90 per cent, while in only 3 counties was the percentage of farms irrigated less than 75. The highest percentage shown for any county was 99.7 for Emery. Ten other counties reported 95 per cent or more of the number of farms as irrigated; these were Morgan (99.2 per cent), Carbon (98.8 per cent), Beaver and Wasatch (98.1 per cent), Sevier (97.6 per cent), Piute (97.5 per cent), Rich (96.8 per cent), Sanpete (96.6 per cent), Wayne (95.5 per cent), and Washington (95 per cent).

Plate No. 399, Washington. The Cascade Mountains extend north and south, crossing the state of Washington and dividing it into two parts. West of the Cascades the rainfall is heavy, while east of the mountains very few crops mature without irrigation, and most of the irrigated area, therefore, lies east of the Cascades. The report for 1910 shows that 98.6 per cent of the total acreage irrigated was in the eastern part of the state. The two maps on the plate indicate, by the different shading, the counties which had the largest proportion of irrigated land, also those having the highest percentage of the number of farms irrigated. The irrigated area in the state of Washington formed only 0.8 per cent of its total area, the map showing for each county the percentage of the total land area irrigated. There is not a single county in the state that reported more than 5 per cent of its area under irrigation in 1909. Kittitas and Yakima Counties, each with 4.6 per cent, reported the highest percentage. The lower map shows that Yakima, with 88.3 per cent, had the highest percentage of farms irrigated. Of the 38 counties in the state, 5 reported no irrigated area and from 13 others the amount of irrigated area reported was so small that they have been

grouped as "all other;" this leaves 20 counties which reported a portion of their farms as irrigated, 10 of these having less than 10 per cent of their farms irrigated.

The upper map of Wyoming, on Plate No. 400, shows that only two counties—Sheridan, with 5.7 per cent, and Albany, with 5.4 per cent—had over 5 per cent of their total land area under irrigation. The proportion for the entire state was 1.8 per cent of the total land area irrigated. The per cent of the number of farms irrigated, as indicated on the lower map, shows that in three counties over 90 per cent of the number of farms were irrigated; these are Park County, with 96.5 per cent; Big Horn County, with 94.4 per cent; and Carbon County, with 90.9 per cent.

AREA IN IRRIGATION PROJECTS.

Plates Nos. 401 to 408, inclusive, comprise a series of maps of the states covered by the special census of irrigation; each map shows the approximate location and extent of the land included in irrigation projects in 1910. On each state map a shaded square is drawn to the scale of the map and represents the area irrigated in 1909, in proportion to the total area of the state as represented by the map.

Plate No. 401, Map 1, of Wyoming, shows the location of the water courses and the approximate area of the irrigation projects along these courses. The shaded square in the lower left-hand corner is drawn to scale and represents the irrigated area as compared with the total area of the state. In the number of acres irrigated, Wyoming, with 1,133,302 acres, is fifth; Colorado, with 2,792,032 acres; California, with 2,664,104 acres; Montana, with 1,679,084 acres; and Idaho, with 1,430,848 acres, being the only states with a greater area irrigated.

The shaded square at the upper right-hand corner of the map of Colorado (No. 2) shows the 2,792,032 acres of irrigated area in Colorado, as compared with the total area of the state. The returns of the Thirteenth Census reported that Colorado had more acres irrigated than any other state.

The irrigated area of Arizona, as shown on Map 1 on Plate No. 402, is very small as compared with the total area of the state. In New Mexico, Map 2, the area irrigated is slightly larger than that of Arizona. The shading on the map indicates that a large proportion of the areas under irrigation are along the Rio Grande.

On Plate No. 403, approximate location of the irrigated areas of Idaho and Montana, Map 1, of Idaho, shows that practically all the irrigated area is in the southern part of the state and a large proportion in the Snake River Valley. The shaded square is drawn on the same scale as the map of the state and represents the 1,430,848 acres, in proportion to the size of

the state. Map 2, of Montana, shows the approximate location of the irrigated areas and that they are found in all parts of the state. In fact, every county in the state reported irrigated acreage. The shaded square represents the 1,679,084 acres of irrigated area, as compared with the total area of the state.

On the map of Nevada, Plate No. 404, the approximate location of the irrigated areas is indicated by the shade lines and, like Montana, the areas are in every county in the state. The proportion of the irrigated area, 701,833 acres, to the total area of the state is indicated by the shaded square in the lower left-hand corner of the map. Map 2 shows, by the shade lines, the location of the irrigated areas in Utah, which, as in Nevada, are found in every county. The shaded square in the upper right-hand corner, representing 999,410 acres, is in proportion to the total area of the state.

The map of Washington on Plate No. 405 shows, by the shaded areas, that the irrigated area is in the eastern portion of the state; the small shaded square in the lower left-hand corner represents the 334,378 acres irrigated in proportion to the total area of the state.

The shaded areas on the map of Oregon (on the same plate) indicate that the irrigated areas are in the eastern and southern parts of the state, also that the irrigation projects are numerous but the individual projects are small. The total irrigated area of 686,129 acres is compared with the total area of the state by the shaded square in the upper left-hand corner of the map.

On Plate No. 406 the map of California appears with an irrigated area of 2,664,104 acres and the shaded areas locate the projects. The total area of California is very large, therefore, although the irrigated area is larger than that of any other state except Colorado, the relative proportion of the irrigated area to the total area of the state is small, as shown by the shaded square in the upper right-hand corner, compared with the map of the entire state.

Plate No. 407, the maps of North and South Dakota, locates the irrigation projects in these states. North Dakota has a very small irrigated area, practically all found in the counties of McKenzie and Williams. South Dakota has a rather small area under irrigation, although it is much larger than that of North Dakota. It is all in the extreme western portion of the state.

Plate No. 408 consists of maps on which are located the irrigated areas of Nebraska and Kansas. The greater portion of the irrigated areas in Nebraska are found along the Platte River and its tributaries. The irrigated area in Kansas is small and is practically all located along the Arkansas River, in the western portion of the state, and nearly all in five counties.

MANUFACTURES.

The Thirteenth Census returned a total value of products of manufactures of \$20,672,051,870 for the year 1909. The special census of manufactures for the year 1904 returned a total value of products of \$14,793,902,563, and the Twelfth Census, for the year 1899, a total value of products of \$11,406,926,701.

The three circles on Plate No. 409 represent the total value of products of manufactures returned at the censuses specified, the circles being proportionate in size to the total value of products of manufactures as reported, the sectors representing the per cent each of the geographic divisions reported of the total. The geographic divisions, ranked according to the total value of manufactures returned in 1909, 1904, and 1899, are as follows: Middle Atlantic first, then East North Central, New England, West North Central, South Atlantic, Pacific, East South Central, West South Central, and Mountain. The divisions have the same relative position at each of the three censuses specified.

Diagram 1 on Plate No. 410 indicates, by the length of the bars, the value of the products of manufacturing industries, by states, in 1909 and 1899, the black bars representing the amount returned for 1909 and the shaded bars that for 1899. The states are arranged in the order of the value of manufactures, the state with the greatest value being first. Every state presented an increase in the value of its manufactures for 1909 over the returns for 1899. New York was first, with the greatest numerical increase in the value of products from 1899 to 1909, \$1,497,659,320, or an increase of 80 per cent. Pennsylvania was second, with an increase of \$976,859,654; Illinois third, with \$798,408,286; Ohio fourth, with \$689,264,962; and New Jersey fifth, with an increase in its products of \$592,523,392. Wyoming, the state with the smallest increase in the value of products, reported an increase of \$2,980,523. The greatest per cent of increase reported (842.7 per cent) was from Nevada, although this state stood third from the last in the value of products.

On Diagram 2, Plate No. 410, average number of wage earners, by states, 1909, New York state is first, with 1,003,981; Pennsylvania, with 877,543; Massachusetts, with 584,559; Illinois, with 465,764; Ohio, with 446,934; and New Jersey, with 326,223, follow in the order named. A comparison with Diagram 1

shows that the states do not rank in the same order for the average number of wage earners as they do in the value of products. Massachusetts, which was fourth in the value of products, is third in the average number of wage earners, while Illinois, third in the value of products, is fourth in wage earners. Connecticut, which was twelfth in the value of products, is eighth in the average number of wage earners. Of the other states, Wisconsin, which was eighth in the value of products, is tenth in the average number of wage earners. Indiana has the same position in both diagrams, while Missouri, which was tenth in the value of products, is eleventh in the average number of wage earners. The same differences in rank will be noticed in the states having small value of products and a small number of wage earners. Nevada, which is last in the average number of wage earners, was third from the last in the value of products, while Wyoming, which was last in the value of products, is third from the last in the number of wage earners.

Diagram 1 on Plate No. 411 arranges the value of manufactured products for 48 leading cities, in 1909, according to the value of their products. New York City was first, with products valued at \$2,029,692,576; Chicago, the second city, returned products valued at \$1,281,171,181; Philadelphia was the third city, with \$746,075,659; St. Louis fourth, with \$328,495,313; and Cleveland fifth, with \$271,960,833. The forty-eighth city shown on the diagram was Waterbury, Conn., which returned, in 1909, products valued at \$50,349,816. The per cent of increase from 1899 to 1909 for New York City was 73.1; for Chicago, 60.6; for Philadelphia, 43.5; for St. Louis, 69.6; and for Cleveland, 95.2. Each of the 21 leading cities shown on the diagram returned products valued at over \$100,000,000.

Diagram 2 on Plate No. 411, average number of wage earners for 48 cities leading in value of products in 1909, shows that New York leads, with 554,002, Chicago being the second city, with 293,977. All the cities do not have the same rank in regard to the number of wage earners as in the value of products, but the first six cities on both diagrams are the same. Pittsburgh, which was seventh in value of products, was ninth in number of wage earners; Baltimore, seventh in wage earners, was thirteenth in value of products; Minneapolis, fourteenth in value of products, was twenty-fifth in average number of

wage earners; Waterbury, forty-eighth in value of products, was thirty-second in wage earners.

On Plate No. 412, value added by manufacture in 1909, by states, the length of the bar indicates the value added by manufacture in each state, the states being ranked in order, with the state having the greatest value at the top. New York is the leading state, followed by Pennsylvania, Illinois, Massachusetts, and Ohio, in the order named, each of these states reporting value added by manufacture of over \$600,000,000. The states do not rank in the total value added by manufacture (Plate No. 412) in the same order as in Diagram 1 on Plate No. 410, value of products. The first seven states, however, are in the same order; the remaining states changed their rank, showing that the value added by manufacture is not always proportionate to the total value of products returned. Nevada, which is last in the value added by manufacture, is, excluding the District of Columbia, forty-sixth in the total value of products. Wyoming, which is last in the total value of products, is next to the last in the value added by manufacture.

Plate No. 413 presents the value of all manufactured products and proportional value of each group returned in 1909, 1904, and 1899. The area of each circle is in proportion to the value returned at each census, and the circles are divided into fourteen sectors, proportionate to the value of each of the principal groups of manufactures, the groups having the same relative importance at each of the enumerations. Food and kindred products was the leading group at each census, iron and steel and their products ranked second, and textiles third, these three groups having almost 50 per cent of the value of all manufactured products at each of the censuses specified.

Plate No. 414, value of products for groups of industries for 1909, 1904, and 1899, represents, by the length of the bars, the value of products for the 14 general groups of industries, arranged in order of the value of their products in 1909. The three bars are shaded to indicate the value of products in 1909, 1904, and 1899, in the order in which they appear on the diagram. Each of the groups increased at each of the enumerations, food and kindred products showing the greatest increase.

Diagram 1 on Plate No. 415, value of products for leading industries in 1909 and 1899, is arranged in the order of the value of their products in 1909, the length of the bar being in proportion to the value of the product. Slaughtering and meat packing leads, with foundry and machine-shop products second, and lumber and timber third, each of these industries having products valued at over one billion dollars; iron and steel, steel works and rolling mills are fourth; flour-mill and gristmill products fifth; printing and publishing sixth; cotton goods, including cotton small wares, seventh; clothing, men's, including shirts, eighth; and

boots and shoes, including cut stock and findings, ninth. These nine industries were the only industries reporting values of products exceeding \$500,000,000 in 1909. Not one of these industries reported a value in 1899 of \$800,000,000. Of the nine industries specified, printing and publishing had the highest percentage of increase from 1899 to 1909, 86.7 per cent; cotton goods, 85.3 per cent; boots and shoes, 76.8 per cent; flour-mill and gristmill products, 76.2 per cent; and men's clothing, including shirts, 75.4 per cent. Only three of the nine leading industries specified reported increases of less than 75 per cent.

Diagram 2 represents, by the length of the bars, the percentage of the total value of products reported for the leading industries in 1909. Slaughtering and meat packing, with 6.6 per cent, had the largest proportion of the total value of products; foundry and machine-shop products was second, with 5.9 per cent; and lumber and timber products third, with 5.6 per cent. These were the only industries with a value of products forming more than 5 per cent of the total value of all products.

Plate No. 416, average number of wage earners, by states, in 1909 and 1899, represents, by the length of the black bar, the number of wage earners in 1909 and, by the shaded bar, the number in 1899, the state having the largest average number being placed first. New York leads, with 1,003,981; Pennsylvania is second, with 877,543; and Massachusetts third, with 584,559; Illinois, Ohio, and New Jersey follow in the order named, being the only states reporting an average number of wage earners of over 250,000 for 1909. The difference between the length of the black and shaded bar indicates the increase in each state in the number of wage earners in 1909 over the number employed in 1899.

On Plate No. 417, average number of wage earners, by industries employing over 40,000 wage earners in 1909, the bars are arranged in the order of the number of wage earners returned, the largest being first. The lumber and timber industry leads in the average number of wage earners, followed by the foundry and machine-shop industry, second; cotton goods, third; cars and general shop construction and repairs, fourth; and printing and publishing, fifth. These are the only industries each reporting over 250,000 wage earners in 1909.

Plate No. 418 consists of five diagrams, showing the value of products in 1909 and 1899 for states leading in each industry specified. In Diagram 1 the length of the bars represents the value of products for boots and shoes, including cut stock and findings, for 1909 and 1899, in the 14 states leading in this industry. Massachusetts was first, with products valued at \$236,342,915, the second state in order being Missouri, with \$48,751,235, Massachusetts reporting products with a valuation nearly five times that of the second state.

New York was third, with \$48,185,914, and New Hampshire fourth, with \$39,439,554. The only states reporting values in excess of \$20,000,000, in addition to those above cited, were Ohio, with \$31,550,957, and Pennsylvania, with \$20,218,784.

In the value of products for leather, tanned, curried, and finished, represented in Diagram 2, Pennsylvania was the leading state, with a value of products of \$77,926,321; Wisconsin was second, with \$44,667,676; and Massachusetts third, with \$40,002,079, followed by New Jersey, with \$28,430,955, and New York, with \$27,642,383. These are the only states which reported a value of products for this industry in excess of \$20,000,000.

In the value of products of woolen, worsted, and felt goods, and wool hats (Diagram 3), Massachusetts led, with \$141,966,882; Pennsylvania was second, with \$77,446,996; Rhode Island third, with \$74,600,240; New Jersey fourth, with \$33,938,637; and New York fifth, with \$23,739,421, the only states reporting a value of products in excess of \$20,000,000.

In Diagram 4, women's clothing, New York leads, with a total value reported of \$272,517,792, nearly nine times that reported by Pennsylvania—the second state—\$32,837,424. New York and Pennsylvania were the only states reporting products valued in excess of \$20,000,000.

In Diagram 5, men's clothing, including shirts, New York leads, with \$266,075,427; Illinois is second, with \$89,472,755; Pennsylvania third, with \$39,681,760; Maryland fourth, with \$36,921,294; and Ohio fifth, with \$24,869,437, the only states reporting products valued at more than \$20,000,000 in 1909. A comparison of the bars for 1909 with those for 1899 shows that New York, which led in the production of men's clothing at both censuses, nearly doubled its value of products in 1909.

Diagram 1 on Plate No. 419 presents the value of products of cotton goods, including cotton small wares, for the leading states in 1909 and 1899. In 1909 Massachusetts led in this industry, with a value of products of \$186,462,313. The state second in rank was North Carolina, with \$72,680,385; South Carolina was third, with \$65,929,585; Rhode Island fourth, with \$50,312,597; and Georgia fifth, with \$48,036,817. These were the only states reporting values in excess of \$40,000,000. Each of the states represented on the diagram, with the exception of Maryland, reported large increases in the value of products from 1899 to 1909.

The map on Plate No. 419, cotton goods, including cotton small wares, value of products in 1909, shows, by dots, the location of the cotton goods industry. Each dot represents a production valued at \$10,000,000. This industry is confined principally to the states touching the Atlantic coast, and Alabama on the Gulf of Mexico. The state with the greatest production is, of course, Massachusetts. The sketch on the lower

right-hand corner shows, on a large scale, the distribution in the states of Massachusetts, Connecticut, and Rhode Island, as it could not be indicated on the map. Four states—Massachusetts, Rhode Island, North Carolina, and South Carolina—produced 59.7 per cent of the value of the total production reported for this industry in 1909.

Diagram 2, Plate No. 419, represents, by the bars, the value of products of silk and silk goods, including throwsters, for 1909 and 1899. The states presented on the diagram rank in the same order at both censuses, New Jersey leading, with Pennsylvania second, New York third, and Connecticut fourth, each of these states reporting products valued at more than \$10,000,000 in both 1909 and 1899. The industry, as indicated by the states represented on the diagram, is confined almost entirely to the New England and Middle states, as almost nine-tenths of the total value of products were reported by the four states of New Jersey, Pennsylvania, New York, and Connecticut at the Thirteenth Census.

Plate No. 420 treats of the value of products of hosiery and knit goods for 1909 and 1899. Diagram 1 shows that New York leads at both censuses, with \$67,130,296 in 1909; Pennsylvania being next, with \$49,657,506; and Massachusetts third, with \$14,736,025. These are the only states that reported products for this industry valued at more than \$10,000,000.

The map, the second illustration on the plate, shows, by the dots, the geographical distribution of the industry and that it is practically localized in the states of New York, Massachusetts, and Pennsylvania.

Diagram 1 on Plate No. 421 presents the value of products of merchant flour mills and gristmills for leading states in 1909 and 1899. Minnesota leads, with \$139,136,129; New York stands second, with \$69,802,278; Kansas third, with \$68,476,410; Illinois fourth, with \$51,110,681; Ohio fifth, with \$48,093,353; and Pennsylvania sixth, with \$44,782,558; closely followed by Missouri, with \$44,508,106, and Indiana, with \$40,541,422. These are the only states that reported products valued at more than \$40,000,000.

The small map (2) accompanying this diagram presents graphically the distribution of flour-mill and gristmill products in 1909, by states, and indicates that the industry is of wide distribution, as well as one of importance in two-thirds of the states.

Diagram 3, bread and other bakery products for the leading states in 1909 and 1899, shows that for this industry New York returned the greatest value of products, \$86,232,985. Pennsylvania was second, with \$45,850,070; Illinois third, with \$36,117,986; Massachusetts fourth, with \$26,146,044; Ohio fifth, with \$23,007,131; and New Jersey sixth, with \$20,085,629. These were the only states reporting products in excess of \$20,000,000. Each of these states, except Massachusetts, increased from 1899 to 1909 over 100 per cent.

Diagram 1 on Plate No. 422 presents the value of products of butter, cheese, and condensed milk in 1909 and 1899. Wisconsin led in the value of products, with \$53,843,249; New York was next, with \$42,458,345; Iowa third, with \$25,849,866; and Minnesota fourth, with \$25,287,462, being the only states reporting value of products in excess of \$20,000,000. All the states represented on the diagram show large increases in the returns of 1909 over 1899, Michigan, California, Nebraska, Washington, Oregon, Indiana, Missouri, and Colorado each increasing over 200 per cent, and three of them—Washington, Oregon, and Missouri—increasing over 500 per cent.

Map 2 shows, geographically, the distribution of the value of products of butter, cheese, and condensed milk, by means of dots, each dot equaling \$2,000,000. The number of dots indicates the states in which the value of products was highest, Wisconsin and New York being practically covered. Iowa, Minnesota, and Illinois also have a large number of dots. This industry is of importance in only 18 states, all in the North and West.

In Diagram 1 on Plate No. 423, canning and preserving—value of products for leading states in 1909 and 1899, California leads, with a production in 1909 of \$32,914,829; New York is second, with \$19,039,735; and Maryland third, with \$13,709,449. These are the only states reporting products valued at more than \$10,000,000 in 1909. During the decade Wisconsin, Colorado, Kentucky, and Minnesota each increased its value of products over 200 per cent, and California and Indiana over 100 per cent. The majority of the states shown in the diagram had satisfactory increases in the value of their products, although in the case of Maryland a slight decrease was reported.

In Diagram 2, oil, cottonseed, and cake—value of products for leading states in 1909 and 1899, Texas leads, with products valued at \$29,915,772; Georgia is second, with \$23,640,779; Mississippi third, with \$15,965,543; Louisiana fourth, with \$13,084,586; and South Carolina fifth, with \$10,902,935. These are the only states in which the value of the products exceeded \$10,000,000. All the states shown on the diagram increased the value of their products with the exception of Kentucky, which showed a slight decrease in the value reported for 1909.

In the value of products of food preparations (Diagram 3) New York leads, with a product valued at \$17,324,076; Michigan comes next, with \$11,491,660; Ohio third, with \$10,836,735; and Illinois fourth, with \$10,402,669; these are the only states which reported products valued at over \$10,000,000 in 1909. All the states represented on the diagram, with the exception of Massachusetts, show exceptionally large increases, the increases for Michigan, Georgia, Louisiana, Texas, Tennessee, Maryland, Kansas, and Kentucky being over 500 per cent.

On Diagram 4, confectionery—value of products for leading states in 1909 and 1899, New York was first, with products valued at \$25,540,394; Massachusetts was second, with \$15,266,453; Pennsylvania third, with \$13,541,759; and Illinois fourth, with \$12,798,077; these were the only states reporting values of products in excess of \$10,000,000 in 1909. All other states on the diagram also show large increases in the value of the products returned in 1909 over the returns of 1899, New Jersey increasing 1,059.4 per cent; Oregon, 481.3 per cent; and Washington, Utah, and Nebraska each over 300 per cent.

Diagram 1 on Plate No. 424 illustrates the value of products of the slaughtering and meat-packing industry for leading states in 1909 and 1899. Illinois returned the greatest value of products, \$389,594,906; the second state was Kansas, with \$165,360,516; New York was third, with \$127,130,051; Nebraska fourth, with \$92,305,484; and Missouri fifth, with \$79,581,294. These are the only states which reported products valued at more than \$75,000,000 in 1909. Of all the states shown on the diagram, Kansas, New York, Iowa, Pennsylvania, Ohio, Texas, New Jersey, California, Maryland, and Michigan reported increases of more than 100 per cent in 1909. At both censuses Illinois reported products more than twice as large as the second state, Kansas.

The map (2) on this plate shows the distribution of the same industry, geographically, by means of dots, each dot representing \$10,000,000. Illinois, Kansas, New York, and Nebraska are the states with the greatest production.

As indicated on Diagram 1 on Plate No. 425, Georgia led in the value of products of fertilizers, with a valuation of \$16,800,301; Maryland was second, with \$9,672,786; South Carolina third, with \$9,024,900; Virginia fourth, with \$8,034,543; New Jersey fifth, with \$7,671,859; Pennsylvania sixth, with \$6,542,844; Alabama seventh, with \$6,423,233; and North Carolina eighth, with \$6,316,485. These are the only states which reported products valued at more than \$5,000,000. All the states named on the diagram show large increases, especially Florida, with 675.6 per cent; Georgia, with 399 per cent; Mississippi, with 331 per cent; North Carolina, with 321.6 per cent; and Connecticut, with 302.3 per cent. The small map (2) at the bottom of the plate shows the distribution of the value of products of fertilizers in 1909, and that the industry is of importance in the states bordering on the Atlantic Ocean and the Gulf of Mexico, the production in the other parts of the United States, with few exceptions, being of small value.

In Diagram 1 on Plate No. 426, gas, illuminating and heating—value of products for leading states, in 1909 and 1899, New York led, with a production of \$42,346,726; Illinois was second, with \$21,052,100; Penn-

sylvania third, with \$15,839,612; and Massachusetts fourth, with \$11,074,354. These were the only states reporting products in excess of \$10,000,000 in 1909. All the states named on the diagram, except Ohio, which reported a decrease in value of products in 1909, showed large increases in 1909 over 1899.

In the value of products of turpentine and rosin (Diagram 2) Florida led, with a production of \$11,937,518; Georgia was second, with \$6,938,957; Alabama third, with \$2,471,999; Mississippi fourth, with \$1,474,629; and Louisiana fifth, with \$1,173,848. These were the only states reporting value of products in excess of \$1,000,000.

Diagram 3, chemicals—value of products for leading states in 1909 and 1899, indicates that New York led, with a production of \$35,346,072; New Jersey was second, with \$22,824,140; Pennsylvania third, with \$15,978,162; and Michigan fourth, with \$12,890,206; these being the only states reporting products in excess of \$10,000,000 in 1909. All the states named on the diagram, except Maryland, show large increases in the returns in this industry over 1899, California, however, showing a decided decrease in the value reported for 1909 from that of 1899.

In foundry and machine-shop products for 1909 and 1899, as found on Diagram 1, Plate No. 427, Pennsylvania was first, with \$210,746,257; New York second, with \$154,370,346; Ohio third, with \$145,836,648; and Illinois fourth, with \$138,578,993; these were the only states reporting value of products in excess of \$100,000,000 for 1909. All the states on the diagram show increases for 1909 over 1899.

On Diagram 2, copper, tin, and sheet-iron products, New York is first, with \$38,452,127; Illinois second, with \$22,822,810; Ohio third, with \$19,086,462; Pennsylvania fourth, with \$17,197,057; Maryland fifth, with \$16,909,447; and New Jersey sixth, with \$11,113,644, the only states reporting products valued at over \$10,000,000. Every state on the diagram shows a large percentage of increase in value of products from 1899 to 1909.

In Diagram 3, brass and bronze products—value of products for leading states in 1909 and 1899, Connecticut was first, with products valued at \$66,932,969; New York second, with \$22,184,189; and Michigan third, with \$13,890,220. These are the only states reporting products valued at more than \$10,000,000. Increases for all the states are large, indicating a rapid growth in the industry.

Plate No. 428, blast furnaces—location of establishments in 1909, is a sketch map of the eastern portion of the United States on which the location of blast-furnace plants is indicated, approximately, by the dots. Pennsylvania had the largest number, 66; Ohio was second, with 40; Alabama third, with 19; Virginia fourth, with 14; Tennessee fifth, with 13; and Michigan sixth, with 11.

Diagram 1 on Plate No. 429, pig-iron production for leading states, 1909 and 1899, Pennsylvania led, with a production of 10,911,676 tons; Ohio was second, with 5,446,971 tons; Illinois third, with 2,468,772 tons; Alabama fourth, with 1,764,544 tons; and New York fifth, with 1,717,091 tons. These are the only states which reported a production of over 1,000,000 tons in 1909. The diagram shows that in most of the states represented the production of pig iron increased largely from 1899 to 1909. Two states, however—Virginia and Tennessee—show decreases. There was no report for Indiana in 1899.

The small map (2) shows the geographical distribution of the pig-iron production in 1909, by states, by means of dots, each representing 400,000 tons. The concentration in the states of Pennsylvania, Ohio, Illinois, New York, and Alabama is strikingly presented.

The location of establishments of steel works and rolling mills in 1909 is shown on a sketch map of the eastern part of the United States, Plate No. 430. The approximate location of each establishment is indicated by a dot, and the concentration of the industry in a few states is clearly represented. Pennsylvania, Ohio, New York, Illinois, Indiana, West Virginia, New Jersey, and Wisconsin, in the order named, have the largest number of these plants. There are a small number of establishments, however, in a few of the other states. Steel works are nearly all located near large cities; and wherever the dots are grouped, there cities of importance in manufactures and population will be found. The grouping of the dots in Pennsylvania indicates the large number in the vicinity of Pittsburgh and Philadelphia; in Ohio, in and around Cleveland and Youngstown; in Illinois the dense group is in and around Chicago; in Wisconsin, adjacent to Milwaukee; and in Alabama the dots indicate the establishments in the vicinity of the city of Birmingham. The counties having the largest number of steel works and rolling mills are Allegheny County, Pa., with 55; Westmoreland County, Pa., with 15; Cuyahoga County, Ohio, with 15; Milwaukee County, Wis., with 12; Mercer County, Pa., with 11; Cook County, Ill., with 11; and Berks County, Pa., with 10.

The nine states shown on Diagram 1, Plate No. 431, steel production, 1909 and 1899, are the only states in which steel production is an industry of any importance. According to the returns for 1909, Pennsylvania led, with a total of 12,206,608 tons, an increase over 1899 of 89.8 per cent; Ohio was second, with 4,713,869 tons; Illinois third, with 2,671,087 tons; and New York fourth, with 1,115,250 tons. These were the only states showing a production of over 1,000,000 tons. All the states represented on the diagram increased their product in 1909 over the returns of 1899 from 25 to over 1,000 per cent. For New York the per cent of increase was over 4,700.5.

In Diagram 2, finished rolled products and forgings, 1909 and 1899, Pennsylvania, with 9,903,162 tons, leads in the production reported; Ohio, with 3,097,426 tons, is second; and Illinois, with 2,086,120 tons, is third. These were the only states reporting a production of more than 1,000,000 tons. Each of the 10 states represented on the diagram increased their returns from 1899 to 1909 over 50 per cent, there being but 4 states with an increase of less than 100 per cent—Pennsylvania, Illinois, Maryland, and Wisconsin. The increases reported by the other states on the diagram vary from over 100 to over 500 per cent, the increase in production of New York for 1909 over that of 1899. The first 4 states ranked in the same order in 1899 as they did in 1909. Pennsylvania reported 51.4 per cent of the total production; Ohio, 16.1 per cent; Illinois, 10.8 per cent; and Indiana, 5 per cent, these 4 states reporting 83.3 per cent of the total production.

Plate No. 432 presents the value of products in 1909 and 1899, for states leading in the industries specified.

In Diagram 1, electrical machinery, apparatus, and supplies, New York led in 1909, with a value of products of \$49,289,815; Pennsylvania was second, with \$31,351,312; New Jersey third, with \$28,365,377; Massachusetts fourth, with \$28,142,889; Illinois fifth, with \$26,826,177; and Ohio sixth, with \$18,776,769, the only states having a production valued in excess of \$10,000,000 in 1909. Each of the states represented on the diagram reported a large increase over the return for 1899.

In Diagram 2, cars and general shop construction and repairs by steam-railroad companies, Pennsylvania led in 1909, with a value of products of \$76,035,180; Illinois followed, with \$32,229,243; Ohio was third, with \$28,690,287; and New York fourth, with \$21,726,491, these being the only states reporting over \$20,000,000 in 1909 in value of products. Each of the states on the diagram reported a considerable increase in the returns for 1909 over 1899.

In Diagram 3, brick and tile, Illinois was first in value of products, with \$9,765,051; Ohio was second, with \$9,357,730; Pennsylvania third, with \$9,225,204; and New York fourth, with \$8,432,804. These were the only states reporting products valued at over \$5,000,000 in 1909. A majority of the states named on the diagram show fair increases over the returns of 1899, Washington, Oklahoma, Utah, Colorado, California, and Kansas, each with more than 200 per cent, leading in the percentage of increase. For Massachusetts, Wisconsin, and New Hampshire the value of products decreased.

Plate No. 433 presents the value of products of the carriage and wagon industry. Diagram 1 gives the comparative figures for 1909 and 1899, and shows that the states leading in this industry were Ohio, with products valued at \$21,949,459, closely followed by Indiana, with \$21,655,440; Illinois third, with

\$16,831,283; New York fourth, with \$13,292,531; Pennsylvania fifth, with \$12,748,383; and Michigan sixth, with \$10,158,883. These were the only states reporting products valued at more than \$10,000,000 in 1909. The value of products reported in 1909 indicated a decrease from the returns of 1899 for the states of Ohio, New York, and Michigan. The states of New Jersey, Massachusetts, and Connecticut each reported a much smaller value of product in 1909 than in 1899.

The map (2) shows the distribution, by states, of the carriage and wagon industry in 1909, each dot representing products valued at \$1,000,000. The groups of dots in the states of Ohio, Indiana, Illinois, New York, Pennsylvania, and Michigan indicate high values in these states. The map also indicates that this industry is of importance in only a small number of states and in a limited area.

Plate No. 434 presents the value of products of automobiles. Diagram 1 compares the value for 1909 and 1904 in 13 states in which this industry is of importance. Michigan, the state leading in this industry in 1909, was not reported separately in 1899, but was so reported in 1904, therefore the diagram has been made to show the returns for the censuses of 1904 and 1909, instead of 1899 and 1909. For a majority of the states shown on the diagram the industry was not of enough importance to be tabulated separately in 1899. Michigan reported the value of automobiles manufactured in 1909 as \$96,651,451; Ohio was second, with products valued at \$38,838,754; New York third, with \$30,979,527; and Indiana fourth, with \$23,764,070. These were the only states reporting products valued at more than \$20,000,000 in 1909. The diagram presents very clearly, by the difference between the length of the black bar and the shaded bar, the tremendous increase in this industry in each of the states in which it was of importance.

The map (2) indicates, by means of the dots, the geographic location of the states in which this industry is prominent, each dot representing a value of \$3,000,000. As shown in the comparative diagram, Michigan (confined to southern peninsula), Ohio, New York, and Indiana are the states leading in this industry and together reported 76.3 per cent of the total value returned in 1909.

Plate No. 435 indicates the value of products of the lumber industry. The diagram (1) shows, for 1909 and 1899, the value of production in the states leading in this industry, Washington appearing first in 1909, with a production valued at \$89,154,820; New York was second, with \$72,529,813; Louisiana third, with \$62,837,912; Michigan fourth, with \$61,513,560; Wisconsin fifth, with \$57,969,170; and Pennsylvania sixth, with \$57,453,583. These were the states each of which reported products valued at more than \$50,000,000 in 1909. A comparison of the bars shows that there has been a great change in the production of the leading

states since 1899. Michigan, which led in 1899, was fourth in 1909; Wisconsin, second in 1899, was fifth in 1909; Washington, seventh in 1899, was first in 1909; and New York, fourth in 1899, was second in 1909. Of the 32 states listed on the diagram, 5 reported a decrease in their value of production in 1909. The total value of lumber products increased greatly from 1899 to 1909, due principally to the increase in the value of lumber.

The small map (2) shows, by the dots, the geographic distribution of the lumber and timber industry and directs attention to the fact that this industry was of importance in every state east of the one hundred and first meridian; in other words, it is a flourishing industry in all parts of the United States, except in the states of the Mountain division and North Dakota, South Dakota, Nebraska, Kansas, and Oklahoma.

Plate No. 436 is made up of small outline maps on which are indicated the boundaries of Richmond, Va., Columbus, Ohio, and Pueblo, Colo., the three maps forming a striking illustration of the tendency on the part of large manufacturing plants to locate adjacent to, but just outside of, the city boundary. A great majority of the employees live in the city and, as the plants enter largely into the business activities, are really part of the city, but, in making any statement of the manufactures of the city, these plants must be counted in the territory outside—in other words, in the county; consequently, many cities do not receive full credit for the manufacturing industries that should be included in any statement of their manufactures. There are other cities in which the same conditions exist, but the most striking examples that could be found are in the three cities specified.

METROPOLITAN DISTRICTS.

In enumerating the population of cities and announcing the results of the enumeration, the Bureau of the Census must necessarily deal with the population contained within the corporate boundaries of each city. In many instances these boundaries do not give an adequate idea of the population grouped about the urban center, and many cities have suburban districts with dense population lying just outside the

city limits. These suburban areas really form a part of the city, but are not under the jurisdiction of the municipal government. The condition in regard to population applies with even greater force to the collection of statistics of manufactures, for many large industrial plants lie just outside of the corporation lines. An example of this is shown on Plate No. 436, previously referred to.

In order that the magnitude of each of the principal urban centers taken as a whole might be shown, statistics were compiled comprising the population of the city and the adjacent suburbs, such areas being designated as metropolitan districts. In outlining the metropolitan districts the population of the civil divisions located within 10 miles of the city boundaries was considered, and, if one-half the area or one-half the population of a civil division lying partly within and partly without such a 10-mile limit was within the 10-mile limit, the entire civil division was considered as within the metropolitan district. State boundaries were disregarded so that, in some cases, the metropolitan district lies partly within two states.

The 13 maps on Plates Nos. 437 to 449, inclusive, show the extent of the metropolitan districts used for both population and manufactures. These districts are identical with the metropolitan districts given in the bulletin entitled "Population of Cities," and described on page 61 of the Abstract of the Thirteenth Census. The maps are presented in the order of the importance of the districts as manufacturing centers, and not of population, as follows: Plate No. 437, New York; Plate No. 438, Chicago; Plate No. 439, Philadelphia; Plate No. 440, Pittsburgh; Plate No. 441, Boston; Plate No. 442, St. Louis; Plate No. 443, Cleveland; Plate No. 444, Buffalo; Plate No. 445, Detroit; Plate No. 446, Cincinnati; Plate No. 447, Baltimore; Plate No. 448, Minneapolis-St. Paul; Plate No. 449, San Francisco-Oakland.

The statistical data compiled for each of these districts, presented on pages 903 to 975 of the Report on Manufactures, Volume X of the Thirteenth Census Reports, comprise the following items: 1. Territory included; 2. Summary for district; 3. Comparison with earlier censuses; 4. Leading industries; and 5. Comparative summary, by industries.

MINES AND QUARRIES.

The census of mines and quarries, taken in connection with the Thirteenth Census, covered the United States proper, also Alaska, Hawaii, and Porto Rico, and included all classes of mines, quarries, and petroleum and gas wells that were in operation during any portion of the year 1909. This was the first census at which a general canvass of the operation of petroleum and gas wells was made by census agents, covering both producing enterprises and those whose operations were confined to developing. Mines, quarries, or wells that were idle during the entire year of 1909 were omitted from the canvass. The returns relate to the calendar year 1909, or the business year which corresponded most nearly to that calendar year.

Plate No. 450 presents the value of products of mining industries. Diagram 1 shows, by states, the value of products for 1909 and 1902, and is based on Table 2, page 318, of the Report on Mines and Quarries, 1909, but the figures differ slightly from the other tables; see explanation on page 24 of the report. Pennsylvania led, with \$331,376,718, which formed 28.2 per cent, or more than one-fourth, of the total value of products reported in 1909. No other state approached it in importance. Illinois was second, with products valued at \$77,214,343; West Virginia third, with \$73,452,935; Michigan fourth, with \$64,956,299; Ohio fifth, with \$59,931,837; California sixth, with \$59,012,946; and Minnesota seventh, with \$58,975,781. These are the only states named on the diagram which reported products valued at more than \$50,000,000 in 1909.

The circle accompanying the diagram indicates, by the size of the sectors, the per cent distribution by geographic divisions for 1909, the Middle Atlantic division leading, with 29.9 per cent of the total, and the East North Central, with 19.2 per cent, the two divisions having almost one-half of the entire production. The Mountain division was third, with 16.6 per cent, while the New England division reported the smallest production, forming only 1.4 per cent of the total production in 1909.

The map (2) on the lower half of the plate shows the geographic distribution of the value of products, as indicated by the dots, each dot representing products valued at \$10,000,000. Pennsylvania is covered with these dots; the second state in point of production is Illinois; the third, West Virginia; the fourth, Michigan; the fifth, Ohio; and the sixth,

California. The wide distribution of the dots indicates the extensive area covered by the mining industry, every state except Mississippi reporting products, but in only a dozen states is this industry of importance.

Diagram 1 on Plate No. 451 shows the value of products of the principal mining industries for 1909 and 1902, based on the following table:

PRODUCT.	VALUE OF PRODUCTS.		Per cent of Increase. ¹
	1909	1902	
All Industries.....	\$1,175,475,001	\$771,486,926	52.4
Coal.....	550,513,808	366,642,015	50.2
Anthracite.....	149,180,471	70,173,586	95.8
Bituminous.....	401,333,395	296,468,429	38.2
Petroleum and natural gas.....	175,527,807	102,034,500	72.0
Iron.....	106,947,082	65,460,985	63.4
Copper.....	99,493,799	51,178,036	94.4
Precious metals.....	87,671,553	82,482,052	0.3
Deep mines.....	77,434,301	77,154,326	0.4
Placer mines.....	10,237,252	5,327,726	92.2
Lead and zinc.....	28,508,547	14,000,177	95.7
Quicksilver.....	808,458	1,560,000	-44.0
Limestone.....	47,784,479	30,278,877	57.8
Granite and traprock.....	24,576,293	18,042,943	30.2
Sandstone.....	9,200,829	10,954,634	-15.2
Marble.....	6,239,120	5,044,182	23.7
Slate.....	6,054,174	5,606,051	6.3
Clay.....	2,045,948	2,061,072	42.9
Gypsum.....	5,812,810	2,089,341	178.2
Phosphate rock.....	10,781,192	4,922,943	119.0
Sulphur and pyrite.....	5,109,050	947,080	439.4
Palo and soapstone.....	1,174,516	1,138,167	3.2

¹ A minus sign (-) denotes decrease.

Bituminous coal was the leading industry in point of value of products, with \$401,333,395; petroleum and natural gas was second, with \$175,527,807; anthracite coal third, with \$149,180,471; iron fourth, with \$106,947,082; copper fifth, with \$99,493,799; and precious metals sixth, with \$87,671,553. These are the only industries which returned products valued in excess of \$50,000,000. The black bars represent the value of these products for 1909 and the shaded bars for 1902. The difference in the length of the bars indicates that each of the industries listed on the diagram have increased in value of products, except sandstone and quicksilver. The increase in the precious metals is very small, compared with the increase in other leading industries.

The series of diagrams, 2 to 9, present graphically the value of products for selected industries in the principal states in 1909. Anthracite coal, as shown in Diagram 2, is produced almost exclusively in a comparatively small area in eastern Pennsylvania, the value of the product reported in 1909 from this state being \$148,957,894. The value of product of anthracite coal reported from other states was \$222,577.

Diagram 3 gives the value of products of bituminous coal for the leading states in 1909. Pennsylvania leads, with a value of products of \$147,466,417; Illinois second, with \$53,030,545; West Virginia third, with \$46,929,592; Ohio fourth, with \$27,353,663; Alabama fifth, with \$18,459,433; Colorado sixth, with \$15,782,197; and Indiana seventh, with \$15,018,123. These were the only states that reported products valued at over \$15,000,000 in 1909.

In the value of copper for the leading states, 1909 (Diagram 4), Montana leads, with \$45,960,517; Arizona second, with \$31,614,116; Michigan third, with \$30,165,443; California fourth, with \$10,104,373; and Utah fifth, with a product of \$8,432,099.

Diagram 5 shows the states leading in the value of products of precious metals from deep mines in 1909. Colorado was first, with \$27,325,847, Nevada being second, with \$17,807,945. California, Utah, Idaho, and South Dakota followed, in the order named, each state reporting products valued at less than \$10,000,000.

Diagram 6 presents the value of products of lead and zinc at the same date. Missouri produced 71.9 per cent of the United States total, the value of its product being \$22,565,528 of the \$31,363,094 reported from all states. Wisconsin, Kansas, and Oklahoma also produce these metals.

Diagram 7 gives the value of the products of limestone as reported for 1909. Pennsylvania leads, with \$4,733,819; Illinois is second, with \$3,977,359; Indiana third, with \$3,616,696; Ohio fourth, with \$3,363,149; New York fifth, with \$2,656,142; and Missouri sixth, with \$2,027,902.

Diagram 8, value of products of granite, for 1909, shows that Vermont leads with \$2,829,522; Massachusetts second, with \$2,185,986; Maine third, with \$1,761,801; California fourth, with \$1,518,916; Wisconsin fifth, with \$1,433,105; and New Hampshire sixth, with \$1,205,811.

Only three states made returns in 1909 for the value of products of phosphate rock, as indicated in Diagram 9. Florida led, with products valued at \$8,488,801; Tennessee being second, with \$1,395,942; and South Carolina third, with \$862,409.

Plate No. 452 is an outline map on which the coal mining fields in the United States in 1909 are indicated by the shaded areas. The large areas in which the bituminous and subbituminous and lignite are found, as compared with the small, solid black areas for anthracite in eastern Pennsylvania, give an idea of the very small area of the anthracite field, as compared with the bituminous, though the value of the anthracite coal product was more than one-fourth (25.8 per cent) of the total value of coal mined.

The location and approximate extent of the anthracite coal fields of Pennsylvania for 1909 are indicated by the solid black areas on Map 1, Plate No. 453.

Map 2 on the same plate shows the relative production of bituminous coal, by states, in 1909. Pennsylvania is also the largest producer of bituminous coal, which, unlike anthracite coal, is found in a number of states, as it is an important industry in 17 states. The distribution of the production of coal is indicated by the dots, as described in the legend.

The United States map on Plate No. 454 is shaded to indicate approximately the location and area of the petroleum and natural gas fields in 1909, the proportion of production in each field being indicated on the circle, Diagram 2 on Plate No. 455.

Diagram 1 on Plate No. 455 indicates, by the rise and fall of the four lines, the production of iron ore in the principal producing regions each year, from 1889 to 1909, compared with the United States total. The Lake Superior region includes the states of Michigan, Minnesota, and Wisconsin, and the Southern the states of Alabama and Tennessee; the "all other" includes the remaining states. It will be noted that the line representing the United States is practically parallel with that of the Lake Superior region and just a little above it, and the marked increase and decrease in the Lake Superior region are also shown in the line representing the total production of the United States. As the Lake Superior region produces more than three-fourths (81 per cent) of all the iron ore reported, a change in its production was reflected in the United States total. The productions for the Southern region and for the "all other" states were very close each year, as indicated by the lines crossing each other several times. This diagram presents strikingly the fluctuation from year to year and the falling off of the production in the periods of financial depression, especially in the years 1904 and 1908. The tremendous increase in 1907 is also indicated.

In Diagram 2 on the same plate the entire area of the circle represents the total production of petroleum, by fields, in 1909, and the sectors the portion produced in each field. The Mid-Continent field produced 49,000,000 barrels, more than one-fourth of the total production. The California San Joaquin Valley field produced 41,000,000 barrels, these two fields reporting more than half of the product in 1909. The Illinois field was third in point of production, with 29,000,000 barrels; the Appalachian fourth, with 27,000,000 barrels; followed by the California Coastal and Southern, with 11,000,000 barrels; and the Gulf and Lima-Indiana fields, with 10,000,000 and 5,000,000 barrels, respectively.

In Diagram 3, production of natural gas for 1909, Pennsylvania led, with over one hundred and eighty-seven billions of cubic feet; West Virginia was second, with one hundred and fifty-six billions of cubic feet; Ohio third, with ninety-eight billions; and Kansas fourth, with sixty-nine billions. These were the only

states producing more than fifty billions of cubic feet in 1909.

In Diagram 4, value of products of petroleum and natural gas, by states, in 1909, Pennsylvania led, with product valued at \$39,197,475; Ohio was second, with \$29,620,959; California third, with \$29,310,335; and West Virginia fourth, with \$28,188,087. These were the only states reporting value of products in excess of \$20,000,000.

Diagram 1 on Plate No. 456 presents the production of iron ore, by principal states in 1909, 1899, 1889, and 1879.

Minnesota, which made its first report on the production of iron ore in 1889, led in the production of this metal in 1909. The growth of the industry during each 10 years was remarkable, the increase from 1899 to 1909 being more than 250 per cent, and from 1889 to 1899 over 840 per cent. In both 1889 and 1899 Michigan led in the production of iron, but in 1909, was second to Minnesota. In 1879 Pennsylvania was the leading state, but the production of iron ore has

decreased steadily with each decade and in 1909 it was the sixth state in production, having less than the state of New York. Alabama, the third state in 1909, had a very small production in 1879, but the increase has been regular at each census. New York, the fourth state in 1909, is shown by the diagram as having had a great decrease in the production from 1889 to 1899, but in 1909 the output had increased and was about equal to that of 1889, the production at each of the three enumerations, 1879, 1889, and 1909, being almost the same.

Diagram 2 compares, by the length of the bars, the value of products of iron ore in 1909, in the states which ranked highest in the value of their production.

The circle diagram (3) indicates, by the sectors, the per cent of production of iron ore in each state, Minnesota leading, with 56.1 per cent of the total product, and Michigan standing second, with 23.1 per cent. These two states represent 79.2 per cent, or more than three-fourths, of all iron ore production reported in 1909.

ANNUAL AND SPECIAL REPORTS.

Plates Nos. 457 to 501 include a series of illustrations, divided as follows:

Cotton—Plates Nos. 457 to 469.

Financial statistics of cities—Plates Nos. 470 to 475.

Vital statistics—Plates Nos. 476 to 478.

Religious bodies—Plates Nos. 479 to 492.

Marriage and divorce—Plates Nos. 493 to 498.

Insane in hospitals—Plates Nos. 499 to 503.

These diagrams and maps were used to illustrate the annual reports of the Census Bureau, comprising statistics relating to the production and ginning of cotton in the United States, financial statistics of cities, and mortality statistics, and for the special reports covering statistics of religious bodies, as returned in 1906, marriage and divorce, for the same date, also the insane in hospitals as enumerated January 1, 1910.

COTTON.

The left-hand circle in Diagram 1 on Plate No. 457 shows, by the size of the sectors, the proportion of the world's mill supply of cotton contributed by each country (growth of 1913). The United States produced 60.9 per cent of the total; India, 17.1 per cent; and Egypt, 6.6 per cent, these three countries contributing more than four-fifths of the world's supply. The circle on the right of the diagram represents the distribution of the total consumption, by countries (year ending August 31, 1913). The United States consumed the largest proportion, 26.9 per cent; the United Kingdom, with 20.6 per cent, was second, these two countries reporting nearly one-half of the world's consumption; Germany was third; British India, fourth; Russia, fifth; and Japan, sixth.

Diagram 2, at the bottom of the plate, indicates, by the length of the bars, the cotton production in specified years, from 1790 to 1913, the difference in the length of the bars showing in the years named, up to 1904, an increase in cotton production. In 1904 a large increase was shown over the production of 1900, but in 1907 the cotton crop showed a decrease of over 2,000,000 bales. The crop of 1908 was nearly as large as that of 1904, but a reduction was reported in 1909 of over 3,000,000 bales. In 1910 an increase was shown over 1909, and in 1911 the crop was the largest that had ever been reported for the United States, a gain of over 4,000,000 bales over the crop of 1910 being shown. In 1912 the crop was reduced from 15,692,701 to 13,703,421 bales, a reduction of nearly 2,000,000 bales. In 1913 an increase of over 450,000 bales was reported.

Plate No. 458 is a sketch map of a section of the United States, on which the cotton-producing counties in 1913 have been shaded, the difference in the

shading separating the counties producing sea-island cotton from the others. The location of the center of cotton production in 1859, 1879, 1899, 1906, 1908, 1910, 1911, 1912, and 1913 is indicated by the stars. The limit of the region infested by the boll weevil each year, from 1909 to 1913, is indicated by lines differing in character for each year. These lines indicate the northern limit of the advance made by this pest from year to year.

The small circle in the southeast corner of the map shows, by the size of the sectors, the percentage of the cotton crop of 1913 grown in each state. Texas was the leading state, with 27.9 per cent of the total; Georgia was second, with 16.4 per cent; and Alabama third, with 10.6 per cent, the other states following in the order of size of their cotton crop, as indicated in the circle. Two states, Texas and Georgia, produced 44.3 per cent of the crop of 1913.

Plates Nos. 459 to 467 comprise maps of 11 cotton-producing states, classifying each county in those states, according to the production of cotton in 1913. The unshaded areas indicate that no cotton was reported. The classification of counties is based on the amount of cotton ginned, as follows: Less than 5,000 bales, 5,000 to 10,000 bales, 10,000 to 15,000 bales, 15,000 to 25,000 bales, 25,000 to 40,000 bales, and 40,000 bales and over. Those counties that reported 40,000 or more bales of cotton ginned in 1913 are indicated by the solid black. There were 62 counties that reported 40,000 or more bales ginned from the crop of 1913, distributed, by states, as follows: Texas, 29 counties; South Carolina, 10; Georgia and Mississippi, each 6; Arkansas, 4; Alabama, 3 counties; and Louisiana, North Carolina, Oklahoma, and Tennessee 1 county each.

Diagram 1 on Plate No. 468 shows the proportion of the total supply of cotton in the United States for the year ending August 31, 1913, consumed, held in stocks, at the end of the year, and exported, with the distribution of exports by countries to which exported. The United States consumed 35.9 per cent, while 9.9 per cent was held in stocks and 54.2 per cent was exported, the largest proportion of the amount exported, 21.9 per cent, going to the United Kingdom; 14.8 per cent, to Germany; 6.3 per cent, to France; 3.1 per cent, to Italy; and 2.3 per cent, to Japan, the other countries receiving but a small proportion.

Diagram 2 represents, for a series of years, by the length of the bars, the exports of domestic cotton from 1830 to 1913. The exports vary almost with the size of the cotton crop, but a tremendous increase in the exports of cotton from the United States from 1830, when it was less than 1,000,000 bales of 500 pounds each, to 1912, when it was nearly 11,000,000 bales of 500 pounds each, is brought out by the difference in length of the bars.

The map (3) shows the classification of states according to the quantity of cotton and linters consumed

in 1913. From the states marked with a star no consumption of cotton was reported, and those which consumed less than 10,000 bales are unshaded. The heaviest consumption, of 500,000 bales and over, was in Massachusetts and Rhode Island in the North and North Carolina, South Carolina, and Georgia in the South. These are the states which have the greatest number of spindles. The next group, with from 200,000 to 500,000 bales consumed, includes the states of New Hampshire, New York, and Alabama. Texas, which produced the largest amount of cotton, only consumed from 50,000 to 100,000 bales.

The map on Plate No. 469 shows the classification of counties according to the number of cotton spindles in 1913. It indicates the localization of the cotton industry, there being very few spindles shown west of the Mississippi River, except in the state of Texas. The heavy shading in the New England states indicates the large number of cotton factories in that area. North Carolina, South Carolina, and Georgia, also show a heavily shaded area, indicating the location of numerous factories in those states.

FINANCIAL STATISTICS OF CITIES.

The Bureau of the Census collects annually the financial statistics of cities having an estimated population of 30,000 or more. The eleventh annual report for the fiscal year 1912 was issued in June, 1914. The maps and diagrams used to present graphically some of the statistical tables are reproduced on Plates Nos. 470 to 475. Plate No. 470, map of the United States on which is located each of the 195 cities having an estimated population of 30,000 or more on July 1, 1912, shows the cities for which the statistics were collected that year.

On Diagram 1, Plate No. 471, the total length of the bar represents the total population at each census, from 1790 to 1910, and the estimated population for the years 1911 and 1912. The solid black portion of the bar represents the population in cities with 30,000 inhabitants or more, and the part of the bar shaded with broad black and white lines represents the population in cities with 8,000 to 30,000 inhabitants. In other words, the diagram indicates the population in cities of the two classes—8,000 to 30,000 and 30,000 and over—also the population outside such cities. The rapid increase in the population of our cities has been discussed fully in the report on population.

Diagram 2 represents, by the different shading, the percentage of the population in cities with 30,000 or more population, the percentage in cities with 8,000 to 30,000 population, and the percentage of population outside such cities. It will be noted that, based on the estimates of population for 1912, 39.5 per cent of the population is in cities with 8,000 or more inhabitants. At the census of 1910 there was reported in such cities 38.8 per cent of the population, and at the First Census, in 1790, the percentage was 3.3. In 1912, 30.7 per cent of the estimated population was in cities with more than 30,000 population, while in 1790 there was but one city in that class, which formed only 0.8 per cent of the total population. The increasing importance of the cities with over 30,000 population is apparent.

Diagram 3 presents graphically, for the 195 cities and for the five groups, the per capita revenue receipts and the per capita payments for expenses and interest, and for outlays, in five groups of cities with specified excess of revenue receipts over payments for expenses and interest, in 1912. It will be noted, by

the difference in the length of the bars on this diagram, that the per capita revenue receipts are largest in the first group (more than 40 per cent), and that they are larger in the fourth group (10 to 20 per cent) than in any other group except the first. Expenses and interest are larger in the fourth group than in any other. Per capita outlays are largest in the first group and smallest in the fifth group.

Diagram 4 presents the net revenue receipts and net governmental cost payments of 146 cities, from 1902 to 1912, the bars for the latter being subdivided, by different shading, into expenses, interest, and outlays. The comparison is confined to 146 cities for the reason that statistics could not be secured for 11 years for more than 146 of the 195 cities to which the volume relates for the year 1912. The 49 cities for which comparative statistics are not given are listed on page 17 of the Report on Financial Statistics of Cities. A comparatively small increase for net governmental cost payments was shown each year from 1902 to 1906, but from 1906 to 1907 the increase was much larger than during any previous year. From 1907 to 1908 the increase was almost as great as for the previous year, but from 1908 to 1909 it was practically the same, showing no increase. The increase each year since 1909 has been almost uniform. The increase in net revenue receipts was regular, being nearly the same each year. The difference in length of bars, between 1902 and 1912, measures the enormous increase in both, the receipts and governmental cost payments having practically doubled in the 11 years.

Diagram 1 on Plate No. 472 presents the net governmental cost payments of the United States and of 146 cities for each year from 1902 to 1912. The bar representing the cost payments of the United States is divided by different shading into two parts, one representing pensions and the remainder of the bar other purposes. It will be noted, by comparing the length of the bars, that the cost payments of the United States decreased from 1904 to 1905, also from 1909 to 1910. The payments for 146 cities indicate a uniform increase, with the exception of 1908 and 1909, the expenditures for these years being practically the same. In 1902 the cost payments for the United States exceeded those of the 146 cities by \$220,817,044, but in 1912 the cost payments of the cities had increased more rapidly than

those of the United States, and there was only a difference of \$58,276,351, the cost payments for the United States being greater by that amount.

Diagram 2 on this plate sets forth the net payments for outlays for the United States and New York city from 1902 to 1912. In 1902 the outlays for New York city were double those for the United States, but the increase in the outlays of the United States was very rapid from 1903 to 1904, when they exceeded the outlays for New York city by more than \$15,000,000. In 1905 the outlays for both the United States and New York had decreased, but in that year the outlays of New York city exceeded those of the United States by more than \$20,000,000. Both increased rapidly until 1908, when they were very nearly equal, the outlay for New York city being slightly larger than that for the United States. In 1909 the outlays of the United States were more than \$10,000,000 larger than the outlays for New York city. Since that date the outlays for the United States have increased gradually each year, while in New York city the outlays for 1911 were much larger than for 1912.

Diagram 3, Plate No. 472, compares the following items: Net indebtedness of 146 cities, the United States, and New York city, for 11 years, 1902 to 1912, the bars being shaded to represent the net indebtedness for each of the three divisions.

In 1902 the net indebtedness of New York city was much less than that of the United States or the 146 cities, the United States having a larger debt than the 146 cities. In 1903 the debt of New York city had grown slightly, the indebtedness of the United States had decreased, and the indebtedness of the 146 cities had increased, so that the 146 cities had a greater debt than the United States; the bar representing the net debt of the 146 cities increased steadily each year from 1902 until 1912, when it was \$1,932,547,533. The net indebtedness for New York city also increased steadily until in 1912 it was \$792,927,021. The net indebtedness of the United States decreased from 1902 to 1903 and from 1905 to 1907, increased gradually to 1910, and decreased from 1910 to 1911, but showed a slight increase in 1912, at which date it was \$1,027,574,697.

Diagram 4 on the same plate is of great interest, as it presents the per capita net indebtedness for the same units for which the total net indebtedness was shown in Diagram 3. The per capita debt of the United States did not in any year, from 1902 to 1912, exceed \$13, the highest per capita being \$12.24 for the year 1902. The per capita net indebtedness of the 146 cities in 1902 was \$44.19; this gradually increased each year until in 1912 it had reached \$70.47. The per capita net indebtedness of New York city far exceeded that of both the United States and the 146 cities combined. In 1902 it was \$76.45, and from that date it increased much more rapidly than the per capita

indebtedness of the 146 cities, until in 1912 it reached \$156.57, having more than doubled in the 11 years, while the per capita debt of the 146 cities had increased 59.5 per cent, and that for the United States had shown a slight decrease. The per capita debt of New York city in 1912 was more than double the per capita debt for the 146 cities.

Diagram 1 on Plate No. 473 shows the per capita net revenue receipts and governmental cost payments for groups of cities with specified population in 1912. The five groups of cities are from 30,000 to 50,000 population, 50,000 to 100,000, 100,000 to 300,000, 300,000 to 500,000, and 500,000 and over. The cost payments and net revenue receipts both increase regularly from the lowest group (30,000 to 50,000 population) to the highest group (500,000 and over), the per capita in the highest population group being almost double that of the smallest group. This proves that the per capita governmental cost payments in large cities is far higher than in smaller cities.

Per capita net revenue receipts and governmental cost payments for cities with highest and lowest per capita governmental cost payments, in groups of cities with specified population, in 1912, are presented in Diagram 2. The diagram shows for each population group the difference between the highest and lowest cities in each group, the comparison being specially noticeable in the group 50,000 to 100,000 population by comparing the bar for Johnstown, having the lowest per capita in that class, with that for Tacoma. The difference between the pair of cities with the smallest population, Quincy and San Diego, is much greater than between the pair of large cities, New York and Philadelphia, the difference between the latter cities being less than between the highest and lowest cities in any other population group.

In Diagram 3, per capita net payments for the principal governmental costs of 146 cities from 1902 to 1912, the length of the bars shows the total per capita, and the shaded portions represent four different items of expense. The black part of the bar, indicating the largest item, represents the expenses of general departments; the next largest item was outlays, with interest next, expenses of public service enterprises having the smallest proportion. The total length of the bars on the diagram shows that the increases from year to year are not regular; for instance, 1904 and 1905 show practically the same length of bar, while from 1908 to 1909 there is a marked decrease, a decrease being indicated for each of the items making up the total.

On Diagram 4, per capita net receipts from the principal revenues from 1902 to 1912, the bars are divided into sections representing eight different items. The largest item of the net receipts was the general property tax; the second was for public service enterprises; special assessments were third; taxes on liquor

traffic were fourth; while the smallest amount received was from license taxes other than liquor. The differences in the length of the bars show that there was a gradual increase each year, except from 1908 to 1909, when a slight decrease was reported.

Diagram 5 presents the per capita net payments for specified general departmental expenses of cities with the highest and lowest per capita, by groups of cities with specified population in 1912. In the lowest class of cities, with from 30,000 to 50,000 population, Newton, Mass., and Charlotte, N. C., are compared, the net payments of Newton (\$25.29) being practically four times as large as those of Charlotte (\$6.44). In the class 50,000 to 100,000 population the per capita for Springfield, Mass. (\$20.51), is more than three times as large as that for Allentown, Pa. (\$6.47). In the class 100,000 to 300,000 the per capita for Denver (\$20.13) is more than double that of Birmingham (\$8.64). In the class of 300,000 to 500,000 the per capita for Washington is practically double that of New Orleans, the former having a per capita of \$25.43 and the latter of \$12.79. In the highest class of cities—those over 500,000—Boston, with a per capita of \$28.06, and Baltimore, with \$15.14, are compared, Boston's per capita exceeding that of Baltimore by nearly \$13.

Diagram 6 illustrates the increase in the per capita payment for the principal general departmental expenses, from 1902 to 1912, for the 146 cities covered by the different census reports for the 11 years. The differences in the length of the bars indicate the gradual increase in the per capita payments for the seven items indicated in the legend. The increase from \$13.02 in 1902 to \$17.34 in 1912 is a gain during the 11 years of 33.2 per cent. Each per capita gains slightly over the previous year, except for 1908 and 1909, when a slight decrease is shown.

Diagram 1 on Plate No. 474 shows the per cent distribution of principal general departmental expenses, from 1902 to 1912, of 146 cities. Each bar represents 100 per cent, and the difference in the shading for each division indicates the percentage in each of the eight items specified, the shading indicating that the items have varied very little from year to year, the proportion in each of these groups being nearly the same.

Diagram 2 on the same plate, revenue receipts and payments for expenses of the water-supply systems of 146 cities from 1902 to 1912, presents graphically two items and indicates that the revenue receipts were much in excess of the payments for expenses. A regular increase is shown from year to year in the revenue receipts. The payments for expenses show a slight decrease from 1904 to 1905, but an increase for each of the other years, although the increase from 1908 to 1909 was very small.

Diagram 3, Plate No. 474, per capita increases in net indebtedness and net payments for interest by 146 cities from 1902 to 1912, is a double diagram, the

upper diagram representing net indebtedness and the lower, net payments for interest, for a series of 11 years. A study of the diagrams shows that the increase in net indebtedness and in net payments for interest has been steady, the length of the bars indicating that in every year the per capita net indebtedness increased, but in the lower diagram it will be noted that the net payments for interest decreased from 1908 to 1909, all other years having steadily increased.

Diagram 4 on this plate presents the increase of per capita indebtedness with increase in size of cities in 1912. The lower bar in each group represents the net debt, while the upper bar is shaded to indicate the indebtedness for general departments and municipal service, also public service. The per capita indebtedness is smallest for the cities with the least population and the debt increases, group by group, to that of the cities with the largest number of inhabitants. As has been shown on all the other diagrams, the per capita net debt increases as the size of the city increases.

Diagram 5, Plate No. 474, per capita net indebtedness of cities with highest and lowest per capita, in groups of cities with specified population, in 1912, strikingly presents, by the difference in the length of the bars, the tremendous difference between the lowest and highest per capita indebtedness in the cities in each group. The greatest disparity is shown between the per capita debt of Springfield, Mo. (\$3.75), and that of Galveston, Tex. (\$113.24), in the group with the smallest population. In the group over 500,000 the per capita net debt of Detroit (\$18.09) is compared with that for New York (\$156.57).

Diagram 1 on Plate No. 475 shows the increase of property tax levies, with increase in size of cities, in 1912. The per capita for the group with the greatest population was \$23.42, nearly twice that of the group with the smallest population, \$11.93.

Diagram 2 on the same plate presents the averages per 100 inhabitants of the expenses of stated kinds of schools, in groups of cities with specified population, in 1912. The difference in the length of the bars shows the gradual increase of the expenses for the four items and indicates that the increase is gradual from the group with 50,000 to 100,000 population to the group with the greatest population, the two lower groups, 30,000 to 50,000 and 50,000 to 100,000 population, being nearly equal. The expenses vary but little in the several groups, the elementary day schools having the highest average as well as the greatest increase from the lowest population group to the highest.

Diagram 3 on this plate gives the per cent distribution of the expenses of schools for stated objects, in groups of cities with specified population, in 1912. The percentages for the operation of school plants and general administration exhibit a number of differences and indicate that in these items the expense is greater in the small cities than in the large cities, the other items showing very slight differences.

Diagram 4, Plate No. 475, averages per 100 inhabitants of the expenses for stated objects of the schools, in groups of cities with specified population, in 1912. The length of the bars and shaded divisions representing the five items are practically the same for the cities in the two groups with the smallest population. The averages in each group follow the general trend of other diagrams, increasing with the size of the city. Instruction shows a greater proportional increase than any other item and forms the greatest portion of the total expense.

Diagram 5 on this plate represents the per cent distribution of the expenses of three kinds of schools in groups of cities with specified population in 1912. The bars are the same length and each represents 100 per cent, the shading indicating the proportion for each kind of school. The percentage for the secondary day schools reverses the usual procedure, and is higher in the cities with the smaller population and forms a smaller proportion of the total in the cities with the largest population. The elementary day schools are practically the same. The percentages for night schools and all other schools increase from the small cities to the large.

The map (6) on Plate No. 475 indicates, by the different shading, the percentage of the total estimated population of each of the states living in cities with 30,000 or more inhabitants in 1912. The percentages are based on the estimated population of the cities and of the United States for 1912. The dark shade marks the states which have a great preponderance of this urban element. Massachusetts, Rhode Island, New York, and New Jersey are the states which have more than 50 per cent of their population in cities with 30,000 or more inhabitants. In the next group, 40 to 50 per cent, we find a wide range geographically; Connecticut, Delaware, Maryland, and Illinois in the East and California in the West are all in this class. There are nine states without a city of 30,000 inhabitants—two east of the Mississippi River—Vermont and Mississippi—and seven west of this river—North Dakota, South Dakota, Wyoming, New Mexico, Arizona, Nevada, and Idaho. There are four states—Maine, West Virginia, North Carolina, and South Carolina—east of the Mississippi River with less than 10 per cent of their population in cities of 30,000 or more inhabitants, and two states west of the Mississippi River in this class—Arkansas and Oklahoma.

VITAL STATISTICS.

The act of March 2, 1902, established a permanent Census Office and provided for an annual report on mortality statistics. Under the terms of the law the statistics were restricted to states having adequate registration laws. The act providing for the Thirteenth Census, approved July 2, 1909, made no provision for the collection of mortality data by the enumerators, as at the previous censuses.

The four small maps on Plate No. 476 represent, by shading, the growth of the registration area for deaths from 1880 to 1913. The two small circles in the lower left corner of each map indicate the per cent of the population in the registration area and the proportion of the total area included in the registration area at the dates specified.

In 1880 the population in what are termed the registration states formed only 17 per cent of the total population, while the area of the states included in the registration area was only 0.6 per cent of the total area of the United States. In 1880 only two states were included in the registration area—Massachusetts and New Jersey.

In 1890 the registration area had been extended to include—in addition to Massachusetts and New Jersey—New Hampshire, Vermont, Connecticut, Rhode Island, New York, and Delaware, and included 31.4 per cent of the total population and 3 per cent of the total area of the United States.

In 1900 the registration area was enlarged and included 40.5 per cent of the total population and 7.1 per cent of the area, Maine, Michigan, and Indiana having been added and Delaware dropped.

In 1913 the registration area had expanded to include 65.1 per cent of the total population and a little more than one-third of the total land area—that is, 38.6 per cent. In 1913 the collection of mortality statistics from registration states included the following states: California, Colorado, Connecticut, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, and Wisconsin, also the District of Columbia. In addition to these states the registration area included 41 cities in nonregistration states, and all municipalities in North Carolina having a population of 1,000 or more in 1900.

Plate No. 477 compares the death rate of the United States for the registration area with those of certain foreign countries for each year from 1900 to 1911. The countries of New Zealand, Australia, and Sweden each had a lower death rate than the United States from 1900 to 1911, except in 1908, when the death rate for the United States was 14.8 and that of Sweden

14.9. England and Wales in the earlier periods had a higher death rate than that reported for the United States, but in 1903, and in later periods until 1908, its death rate was slightly below that of the United States. In 1908 they were the same, the lines crossing again shortly after 1909, and again crossing just before 1911. All the other countries show a higher death rate than that of the United States, that of Chile being especially marked as having the highest death rate of all the countries reported. Hungary and Spain are the next in order, their lines crossing at five different periods. The death rate of Austria is below both that of Hungary and Spain but above that of Italy, except in 1908, when it fell below the Italian death rate; for subsequent years a higher death rate was reported. Japan is represented from 1900 to 1909 only. Its death rate is below that of Italy, except in 1909, but above that of France, except in 1900 and 1906, when it was slightly lower. For the early years, from 1900 to 1905, the French and German death rates were very close but after 1905 the German death rate was below that of France at every year reported. The general death rate of Ireland was below that of Germany, except between 1909 and 1911, and above that of England and Wales and the United States.

Plate No. 478 represents, by the rise and fall of the lines, the death rates from important causes of death in the registration area of the United States for each of the years from 1900 to and including 1912. The heavy black line, representing the death rate from tuberculosis, indicates a striking decrease from 1900 to 1912, and in the latter year was slightly below that of organic heart disease. The death rate from pneumonia was second from 1900 to 1907; between 1907 and 1908 it fell below the death rate from heart disease. Organic heart disease has shown a startling increase and in 1912 was higher than tuberculosis or pneumonia; it was third in rank in the death rates from 1900 to 1907; between 1907 and 1908 it crossed the pneumonia death rate line and continued above that cause of death until in 1912 it was highest among the causes of death. One peculiar fact brought out in the diagram is the closeness with which the lines representing the death rates from cerebral hemorrhage, apoplexy, and cancer approach each other from 1903 to 1912. The three lines indicating the lowest death rates shown on the diagram, those of measles, whooping cough, and scarlet fever, are very close and cross and recross each other from 1900 to 1912; for the latter year, scarlet fever had the lowest death rate of the three, whooping cough the highest, and measles just between the two.

RELIGIOUS BODIES.

The Census Bureau collected in the year 1906 statistics of religious bodies in continental United States, no effort being made to include statistics of organizations in any portion of the outlying territory. Although the report was not printed until 1910, the data relate to the close of the year 1906. This report contained many illustrations and it has been deemed advisable to include them in this volume as Plates Nos. 479 to 492.

Wherever the designation "not church members" has been used it represents the difference between the number reported as communicants, or members, and the total population. It embraces, therefore, children too young to become church members, as well as that proportion of the population eligible to church membership, although not affiliated with any religious denomination.

Diagram 1 on Plate No. 479 shows the proportion of the population reported as Protestant, Roman Catholic, and "all other" church members, and the proportion not reported as church members, in 1890 and 1906. The areas of the two circles are in proportion to the total population returned in 1890 and 1906, the circles being divided into sectors in proportion to the four classes specified. The Roman Catholic and Protestant bodies include nearly all of the church membership, the "all other" religious denominations being a very small proportion of the total population of the United States. The large proportion in the class "not church members" is due to the inclusion of all persons, including children, not reported as church members. (See note at head of diagram.)

In Diagram 2 on Plate No. 479, distribution of communicants or members, by principal families or denominations, in 1890 and 1906, the areas of the two circles are in proportion to the number of communicants or members returned at the dates specified. The sectors of the circles indicate the proportion each of the principal denominations formed of the total. In 1890 the Roman Catholic was first, Methodist second, Baptist third, Presbyterian fourth, and Lutheran fifth; in 1906 the Catholic, Methodist, and Baptist occupied the same places, but the Lutheran was fourth and the Presbyterian fifth, the Lutheran having increased more rapidly than the Presbyterian. The other denominations had practically the same proportions at each census.

Plates Nos. 480 to 483 each consist of a series of twelve circles, each circle representing a state, ar-

ranged in alphabetical order; each circle is divided into sectors in the proportion each of the principal denominations bears to the total number of communicants, or members, of all religious bodies in the state. The Roman Catholic denomination leads in 30 states, is second in 6 states, third in 7 states, and fourth in 2 states, there being only 3 states—North Carolina, South Carolina, and Tennessee—in which it did not appear as fourth or higher. The Baptist leads in 11 states, is second in 6 states, third in 4 states, and fourth in 8 states. The Methodist leads in 5 states, is second in 25 states, third in 9 states, and fourth in 8 states. The Latter-day Saints is the only other denomination leading in any state, being first in 2 (Idaho and Utah), second in 2, and third in 1. The Lutheran is second in 4 states, third in 5 states, and fourth in 5 states, while the Presbyterian is third in 16 states and fourth in 9 states. The next denomination in importance is the Congregationalist, which is second in 4 states, third in 1 state, and fourth in 3 states.

Table 1

STATE OR TERRITORY.	PERCENTAGE OF TOTAL POPULATION REPRESENTED IN 1906 BY MEMBERS OF—			
	All religious bodies.	Protestant bodies.	Roman Catholic Church.	All other bodies.
New Mexico.....	63.3	6.7	56.2	0.4
Utah.....	54.6	2.6	2.6	49.4
Rhode Island.....	54.0	13.1	46.0	0.9
Massachusetts.....	51.3	14.8	35.5	1.1
Louisiana.....	50.6	19.4	31.0	0.1
Connecticut.....	50.0	19.5	29.8	0.7
South Carolina.....	45.8	45.0	0.7	0.1
District of Columbia.....	44.4	29.7	14.2	0.5
Wisconsin.....	44.3	21.7	22.3	0.2
New Hampshire.....	44.0	14.9	27.7	1.4
New York.....	43.7	15.0	27.8	0.8
Pennsylvania.....	43.0	24.8	17.5	0.7
Georgia.....	42.1	41.2	0.8	0.1
Vermont.....	42.0	18.2	23.5	0.3
Minnesota.....	41.2	22.2	18.7	0.3
Alabama.....	40.8	38.5	2.1	0.2
Virginia.....	40.2	38.6	1.5	0.1
North Carolina.....	40.0	39.8	0.2	0.1

On Plate No. 484, proportion of the population reported as Protestant, Roman Catholic, and "all other" church members, and proportion not reported as church members, for each state and territory in 1906, the highest percentage of Protestant church members was found in South Carolina (45 per cent), and the lowest percentage in Utah (2.6 per cent). The highest percentage of Roman Catholic Church members was found in New Mexico (56.2 per cent), and the lowest percentage in North Carolina (0.2 per cent). The "all other" religious bodies had the largest pro-

portion (largely comprising Latter-day Saints) in Utah and the smallest proportion (less than one-tenth of 1 per cent) in North Carolina. New Mexico shows the largest proportion (63.3 per cent) of its population reported as communicants, or church members; Utah the next largest proportion (54.6 per cent); Rhode Island third (54 per cent); while Oklahoma had the lowest per cent (18.2) of its population reported as church members, and the highest per cent (81.8) reported as not church members.

Plates Nos. 485 and 486 consist of a series of 12 small maps which show the number of communicants, or members, per thousand of the population for 12 principal families, or denominations, for each state and territory, in 1906. In the states left unshaded none of the denominations specified are reported. The states are shaded in groups, as follows: The first group, less than 10 per thousand of population; the second group, 10 to 25 per thousand; the third group, 25 to 50 per thousand; the fourth group, 50 to 100 per thousand; and the fifth and last group, 100 or over to each thousand of population.

The first map shows the proportion of Roman Catholics to the total population of each state. The states covered with black have 100 persons and over of this denomination in each thousand of population. A comparison of the 12 maps reveals the fact that the Roman Catholics have the largest number of communicants, or members, of any of the denominations.

On Map 2, Methodist bodies, the solid black shading in the South indicates the states in which the Methodists are most prominent.

The Baptists are more numerous in a larger number of the Southern states than the Methodists, as is shown by the solid black covering the states indicated on Map 3.

The Lutheran bodies are strongest in the Northwest, as indicated by the solid black areas on Map 4, due to the large number of Scandinavians and Germans in the states of North Dakota, Minnesota, and Wisconsin. The uncolored areas in Arizona and New Mexico indicate no churches of this denomination.

The Presbyterian bodies, as shown on Map 5, are scattered and do not show any proportion above the group 25 to 50 per thousand in any state.

Map 6 indicates that the largest proportion of Disciples, or Christians, is found in the state of Kentucky.

Map 1 on Plate No. 486 presents the distribution of the Protestant Episcopal bodies. Only 4 states—Connecticut, Rhode Island, Maryland, and Nevada—are shaded to fall in the group 25 to 50 per thousand.

On Map 2, distribution of the Congregationalists, the shading indicates that Connecticut and Vermont had the highest proportion of this element. The map also shows 7 states unshaded, indicating that no churches of Congregationalists were reported.

As indicated on Map 3, for Reformed bodies, about half the states are unshaded, indicating that no churches of this denomination were reported. Pennsylvania was the state reporting the highest proportion of this denomination.

On Map 4, United Brethren, all the states reported are in the class less than 25 per thousand, more than one-half of the states being unshaded, indicating no churches reported for this denomination.

On Map 5, German Evangelical Synod of North America, 26 states in New England, the South, and the far West have no churches of this religious denomination. In only 2 states—Illinois and Missouri—are they reported with from 10 to 25 communicants per thousand of population.

The Latter-day Saints (Map 6) have churches reported from 29 of the states, but the highest proportion of members is in the states of Idaho and Utah, these states reporting over 100 per thousand of population. Wyoming, with 50 to 100 per thousand, and Nevada and Arizona, with 25 to 50 per thousand, are the only states reporting more than 10 per thousand of population. Nineteen states are unshaded, indicating no churches of this denomination.

Plates Nos. 487 and 488 consist of 12 diagrams, giving the number of communicants, or members, per thousand population, arranged according to proportional strength for twelve principal families or denominations, for each state and territory, in 1906. The length of the bar represents the number of communicants of that body per thousand in each state, arranged in order, with the highest proportion first.

Diagram 1 on Plate No. 487, Roman Catholic, illustrates the fact that New Mexico has the largest proportion of Roman Catholics, followed by Rhode Island, Massachusetts, Louisiana, and Connecticut, in order. The smallest proportion of Roman Catholics indicated on the diagram was reported from South Carolina.

Diagram 2, Baptist, indicates that they are strongest in Georgia, South Carolina, Alabama, Mississippi, and Virginia; in fact, the leading states for this denomination are Southern states. The smallest proportion indicated on this diagram was for Montana.

Diagram 3, Lutheran, shows that the largest proportion of this denomination was found in Minnesota, with North Dakota, Wisconsin, and South Dakota following in the order named. The smallest proportion reported from the states represented on the diagram is for Rhode Island.

The largest proportion of United Brethren, as shown on Diagram 4, appears in Indiana, followed by West Virginia, Ohio, Kansas, and Pennsylvania, in the order named.

In Diagram 5, Reformed Bodies, Pennsylvania leads, with New Jersey, Ohio, Michigan, and Maryland following in the order named. This, like the United

Brethren, is, in numbers, one of the smaller religious denominations.

Plate No. 488 is comprised of seven diagrams. On Diagram 1, Methodist, South Carolina had the highest proportion, followed by Delaware, Georgia, North Carolina, and Florida, in the order named. The smallest proportion among the states represented on the diagram is shown for Utah.

In Diagram 2, Disciples, the largest proportion shown is for the state of Kentucky; Missouri, Indiana, Kansas, and Iowa follow. Of the states listed on the diagram, New Mexico reported the smallest proportion.

The state leading in Presbyterians, as shown in Diagram 3, was Pennsylvania. Tennessee was second, New Jersey third, Ohio fourth, and Colorado fifth. The state with the lowest proportion represented on the diagram was Vermont.

In Diagram 4, Protestant Episcopal communicants, the District of Columbia reported the highest proportion of members; Connecticut was second, Rhode Island third, Nevada fourth, and Maryland fifth. Of the states shown on the diagram, North Dakota had the lowest proportion.

The New England states led in the proportion of Congregationalists, as indicated on Diagram 5. Connecticut was first, Vermont second, New Hampshire third, Massachusetts fourth, Maine fifth, and Rhode Island sixth. New York reported the lowest proportion.

The German Evangelical Synod is one of the smaller denominations in number, as shown on Diagram 6. Illinois had the highest proportion, Missouri was second, Wisconsin third, and Indiana fourth.

Latter-day Saints are of importance in only the 5 states indicated on Diagram 7. Utah had by far the highest proportion of any state. Idaho was the state second in the proportion of members, with Wyoming third, Arizona fourth, and Nevada fifth.

On Plate No. 489, distribution of communicants, or members, in each principal family or denomination, for cities of 25,000 inhabitants or more in 1900 (arranged in four classes), and outside of cities, in 1906, each bar represents, first, cities with 300,000 inhabitants and over; second, cities with 100,000 to 300,000 inhabitants; third, cities with 50,000 to 100,000 inhabitants; fourth, cities with 25,000 to 50,000 inhabitants; and outside cities with 25,000 inhabitants or more. The Jewish Congregations led with 88.7 per cent of their communicants in cities with 25,000 inhabitants

or more; they also had 57.5 per cent in cities with 300,000 inhabitants or more. The smallest per cent outside of cities (11.3) was also reported for Jewish Congregations. The Church of Christ, Scientist, also shows an exceptionally large proportion (61.1 per cent) in cities of 300,000 and over, and a very small proportion (17.4 per cent) outside of cities of 25,000 inhabitants and over. The Eastern Orthodox is next in proportion of members in cities of 25,000 or more, and a large proportion of this membership (34.1 per cent) is in cities of 300,000 and over. The Roman Catholic shows that 52.2 per cent of the members are in cities of 25,000 and over. The Protestant Episcopal shows that the membership is about evenly divided, 51.2 per cent being in cities of 25,000 and over and 48.8 per cent being outside. All the other denominations show less than half their members in cities of 25,000 inhabitants or more, the Mennonites showing the smallest proportion in this class, only 2.1 per cent.

Plates Nos. 490 and 491 are made up of a series of twenty-four circles representing 24 of the principal cities of the United States, arranged in alphabetical order, each circle being divided to show the distribution of the communicants, or members, of the principal families or denomination in 1906. The Roman Catholic Church has the largest number of communicants, or members, in each of the cities shown, with the Methodists next in rank, as the latter are second in 6 cities, third in 14, and fourth in 1, there being only 3 cities of the 24—Providence, Buffalo, and Boston—where they do not appear among the first four. The Lutherans are next in rank, being second in 7 cities, followed by the Baptists and Presbyterians.

Plate No. 492 presents the per cent of the population reported as Protestant, Roman Catholic, and "all other" church members, and the per cent not reported as church members, for 35 principal cities, in 1906, arranged in order of the proportion of Protestants, the city with the highest per cent being first. The highest per cent of Protestants was reported for Washington, D. C., with Louisville, Ky., and Memphis, Tenn., following in order. The smallest proportion of Protestants is shown for Fall River, Mass. The largest proportion of Roman Catholics is found in Fall River, with Providence second, New Orleans third, and Boston fourth. Worcester, Pittsburgh, Providence, and Omaha reported the largest percentages for "all other" bodies. St. Joseph, Mo., shows the largest proportion of persons not attending church, with Omaha, Nebr., second, and Toledo, Ohio, third.

MARRIAGE AND DIVORCE.

In 1909 the Census Bureau published a special report on marriage and divorce. The report presented the results of two Federal investigations into these subjects; the first, made by the Bureau of Labor, covered the period from 1867 to 1886, while the second, made by the Bureau of the Census, covered the period from 1887 to 1906. As the report made by the Bureau of Labor was out of print, the Census Bureau's report was compiled to cover a period of 40 years, from 1867 to 1906.

It is deemed a matter of interest to reproduce in the Statistical Atlas the maps and diagrams used for illustrating the statistics on marriage and divorce for the period covered by the report.

MARRIAGE.

The statistics on marriage, for the period from 1887 to 1906, gave the total number of marriages recorded in the counties covered by the investigation as 12,832,044. The number recorded for each year, with the increase, as compared with the preceding year, is shown in the following table, and the data graphically presented in Diagram 1 on Plate No. 493:

YEAR.	MARRIAGES.		YEAR.	MARRIAGES.	
	Number.	Increase over preceding year.		Number.	Increase over preceding year.
Total.....	12,832,044		1897.....	622,350	8,477
1906.....	853,290	48,503	1896.....	613,873	15,018
1905.....	804,787	23,642	1895.....	598,855	32,094
1904.....	781,145	14,987	1894.....	566,101	12,512
1903.....	780,132	30,309	1893.....	578,073	803
1902.....	746,733	30,112	1892.....	577,870	15,458
1901.....	716,621	31,337	1891.....	562,412	10,875
1900.....	685,284	34,674	1890.....	542,537	11,080
1899.....	650,610	24,955	1889.....	531,457	26,027
1898.....	625,655	3,305	1888.....	504,530	24,461
			1887.....	483,069	

1 Decrease.

Diagram 1 on Plate No. 493 illustrates, by the length of the bars, the annual number of marriages for 20 years, from 1887 to 1906, the number having increased from 483,069 in 1887 to 853,290 in 1906. The greatest increase (48,503) shown in one year was that from 1905 to 1906. The two years 1894 and 1904 reported a decrease in the number of marriages, compared with the number during the previous years, proving that the number of marriages depends, to some extent, on economic conditions, increasing in periods of prosperity

and declining after a commercial crisis. Especially noticeable is the small increase shown for the year 1893, and the actual decrease in the succeeding year, 1894. The panic prior to 1904 was not as severe as that of 1893; the decrease for 1904, therefore, was not as great as the decrease from 1893 to 1894.

Diagram 2 indicates, by the curves, the number of marriages per 10,000 estimated population for geographic divisions, by single years, from 1887 to 1906. As this diagram is reproduced from the Census Report on Marriage and Divorce for 1906, the geographic divisions used do not coincide with the geographic divisions at the Thirteenth Census; they are, therefore, listed below:

North Atlantic division:

Maine.
New Hampshire.
Vermont.
Massachusetts.
Rhode Island.
Connecticut.
New York.
New Jersey.
Pennsylvania.

South Atlantic division:

Delaware.
Maryland.
District of Columbia.
Virginia.
West Virginia.
North Carolina.
South Carolina.
Georgia.
Florida.

North Central division:

Ohio.
Indiana.
Illinois.
Michigan.
Wisconsin.
Minnesota.
Iowa.

North Central division - Contd.

Missouri.
North Dakota.
South Dakota.
Nebraska.
Kansas.

South Central division:

Kentucky.
Tennessee.
Alabama.
Mississippi.
Louisiana.
Arkansas.
Indian Territory.
Oklahoma.
Texas.

Western division:

Montana.
Idaho.
Wyoming.
Colorado.
New Mexico.
Arizona.
Utah.
Nevada.
Washington.
Oregon.
California.

These marriage rates are based on estimated population for geographic divisions for all years, except the census years. As will be observed from the lines on the diagram, the average number of marriages in the South Central division was larger than for any other division, except for the year 1906, for which year the Western division reported a higher proportion. The

lines in many places cross each other, showing that the marriage rates for the different divisions are not constant from year to year. Some of the fluctuations in the lines are due to the fact that the estimated population was not a true statement of the population of each of the divisions; several of the geographic divisions grew more rapidly during the period from 1900 to 1906 than they did during the decade from 1890 to 1900. The growth in the divisions was computed on the same basis, but the actual growth was not uniform, the Western division evidently having a more rapid growth than estimated. The Western division shows the most striking change, the number of marriages per 10,000 population starting at the lowest point in 1887 and ending in 1906 with the highest number. This, in a measure, is due to an underestimate of the population. The heavy black line represents the average for the entire United States. The average for the South Central division is above the United States average at each year; the North Central division average is above the United States average from 1887 to 1895, after which year it is below, but follows closely the average for the United States. The South Atlantic division, from 1887 to 1896, was below the United States average, but after the year 1896 it reported more marriages per 10,000 population than the United States.

The Western division, referred to above, had the lowest average in 1887, with 71 marriages per 10,000 of population, but rapidly increased its average to 1891, when it reached 90 per 10,000; its average decreased to 1894. In fact, the lines of every division, except the South Atlantic and South Central, showed a decrease in 1894, as compared with the previous year, being affected by the unsatisfactory economic conditions. From 1894 the average for the Western division increased rapidly, except for a decrease reported in 1896, until between 1901 and 1902 it crossed the line of the United States average, and, in 1906, reached an average of 127 marriages per 10,000 population, the highest average of any division. This was due to the rapid increase in the population and the fact that a large proportion of the migration, both interstate and foreign, was of adults of marriageable age.

There is a peculiarity about the increase for the different divisions as shown for the years 1903 and 1904. The average for the North Atlantic division, the North Central division, the United States, and the South Atlantic division all decreased from 1903 to 1904; the the Western division returned the same average; the South Central division increased from 1903 to 1904, but reported a decided decrease for the next year, 1904 to 1905, at the time when all the other divisions reported increases, the Western division especially hav-

ing a very large increase from 1904 to 1905 and from 1905 to 1906.

Diagram 3, average annual number of marriages per 10,000 adult unmarried population, for states and territories, in 1900. The Indian Territory, which is now a part of Oklahoma, led, with 555 per 10,000, and is first on the diagram. Arkansas was second, with an average of 544 marriages to each 10,000 unmarried adults; Texas third, Florida fourth, and Oklahoma, exclusive of the Indian Territory, fifth. The average for California was the lowest, with 228 per 10,000 unmarried adults, and Connecticut was just above California, with an average of 232 per 10,000.

The first illustration on Plate No. 494 is a small map showing the average annual number of marriages per 10,000 adult unmarried population, for the states and territories, in 1900. The solid black areas indicate the states that averaged 450 or more marriages per 10,000 unmarried adults. Florida, Mississippi, Arkansas, Oklahoma and Indian Territory (now Oklahoma), and Texas are the only states in this group. The next group, with an average of 350 to 450, includes the states of West Virginia, Indiana, Tennessee, Georgia, Alabama, Louisiana, Kansas, Utah, and Nevada. Six states, excluding South Carolina, which had no marriage records, reported averages of less than 250 marriages per 10,000 adult unmarried population. Geographically the states were almost equally divided, three of them—Montana, Wyoming, and California—in the West; and Connecticut, Massachusetts, and Delaware in the East. As South Carolina had no marriage records, it should not be included with any class.

DIVORCE.

The data concerning divorce, which were secured from the court records, fall into three main classes. The first class consists of the number of divorces granted; the second class consists of the statistics in regard to the legal proceedings, and embraces the data concerning the party, whether husband or wife, to whom the divorce was granted, the cause, the facts as to contest, the residence of the libellee, the form of service of notice, and the question of alimony; the third class comprises the figures in regard to the character of the marriage dissolved and embraces the subjects of the place of marriage, the duration of marriage, the condition as to children, and the occupation of the parties.

For the 20 years from 1887 to 1906, 945,625 divorces were granted. The number from 1867 to 1886 was 328,716, hardly more than one-third of the number reported for the second 20 years. Every five-year period since 1867 witnessed a marked increase in

the number of divorcees, as shown in the following table:

Table 2

PERIOD OF YEARS.	DIVORCES.		
	Total number.	Increase over preceding five-year period.	
		Number.	Per cent.
1906 to 1906.....	332,642	71,022	27.6
1897 to 1901.....	260,720	65,781	33.7
1892 to 1896.....	191,939	37,615	23.9
1887 to 1891.....	157,324	40,013	34.1
1882 to 1886.....	117,311	28,027	31.4
1877 to 1881.....	80,284	20,757	30.3
1872 to 1876.....	68,547	14,073	27.9
1867 to 1871.....	53,574		

The enormous increase in divorcees is shown by the figures in the following table, which supplies the total number reported for each year from 1867 to 1906:

Table 3

YEAR.	DIVORCES.			YEAR.	DIVORCES.		
	Total number.	Increase over preceding year.	Number per 100,000 of estimated population.		Total number.	Increase over preceding year.	Number per 100,000 of estimated population.
1906.....	72,003	4,080	84	1886.....	25,535	2,063	44
1905.....	67,976	1,777	81	1885.....	23,472	478	41
1904.....	66,100	1,274	80	1884.....	22,004	1,204	42
1903.....	64,925	3,445	80	1883.....	23,108	1,086	43
1902.....	61,480	496	77	1882.....	22,112	1,350	42
1901.....	60,984	5,233	78	1881.....	20,762	1,099	40
1900.....	55,751	4,314	73	1880.....	19,663	2,580	39
1899.....	51,437	3,588	69	1879.....	17,083	904	35
1898.....	47,849	3,150	65	1878.....	16,080	402	34
1897.....	44,699	1,702	62	1877.....	15,687	887	34
1896.....	42,937	2,550	61	1876.....	14,800	588	32
1895.....	40,387	2,819	58	1875.....	14,212	223	32
1894.....	37,598	100	55	1874.....	13,980	833	32
1893.....	37,498	880	50	1873.....	13,156	766	31
1892.....	36,579	1,039	50	1872.....	12,300	804	30
1891.....	35,540	2,079	55	1871.....	11,586	624	29
1890.....	33,461	1,726	53	1870.....	10,962	23	28
1889.....	31,735	3,066	51	1869.....	10,939	789	29
1888.....	28,669	750	47	1868.....	10,150	213	27
1887.....	27,919	2,384	47	1867.....	9,937		27

1 Decrease.

Plate No. 496 presents graphically the divorcees per 100,000 estimated population for geographic divisions, by single years, from 1867 to 1906. The Western division reported the largest number of divorcees per 100,000 of population, and presents a striking series of increases and decreases, the line for this division being the most irregular of any on the diagram. Except in 1868, 1870, and 1871, the average increased each year up to 1877, when the rate reached 126 per 100,000. There was a sharp decline in 1878 to 85 per 100,000, and in 1879 the average was 78 per 100,000. A continuous rise is shown to 1883, after which, except for 1886, there was a decrease to 82 per 100,000 in 1887; 1892, with an average of 117, was another high year, followed by a decrease to 1893, then a gradual increase to 1902, when it reached 142 per 100,000; a slight decrease for two years was followed by a rapid increase until 1906, when it reached 168 per 100,000; this average was the highest shown for any year by any division. This rate was more than four times

that reported from the North Atlantic division (41), and almost four times that reported from the South Atlantic division (43).

The South Central division, the North Central division, and the Western division, since 1884, have all shown a larger number of divorcees per 100,000 population than the United States, the North Atlantic division and the South Atlantic division being below the number for the United States. All the divisions, however, show an alarming increase from 1867 to 1906.

The ratio for the South Atlantic division was the lowest at each year until 1905 and 1906, when it passed the North Atlantic division, after which they were very close together, the South Atlantic having a ratio of 43 and the North Atlantic a ratio of 41 per 100,000. The divisions in the West, therefore, show a much higher divorce rate and a more rapid increase in the divorce rate than do the North Atlantic and the South Atlantic divisions.

Map 2 on Plate No. 494, average annual number of divorcees per 100,000 married population, for states and territories, in 1900. The map is shaded in four groups—under 100 per 100,000 married population; 100 to 200; 200 to 300; 300 to 400; and 400 and over, the highest group. The three states falling in the group 400 and over are Washington, Montana, and Colorado. The next group, 300 to 400 divorcees per 100,000 married population, comprises Oregon, Idaho, Wyoming, Nevada, Arizona, Texas, Oklahoma, Indian Territory, Arkansas, and Indiana. The unshaded areas, indicating states having a rate under 100 per 100,000, include New York, Pennsylvania, New Jersey, Delaware, North Carolina, South Carolina, and Georgia.

Diagram 1 on Plate No. 495, average annual number of divorcees per 100,000 married population, for states and territories, in 1900. The states and territories, arranged in the order of their average annual number, with the largest first, show a wide variation geographically. Washington leads, with 513 divorcees per 100,000 married population; Montana is second, with 497; Colorado third, with 409; Arkansas fourth, with 399; Texas fifth, with 391; Oregon sixth, with 368; Wyoming seventh, with 361; and Indiana eighth, with 355. These 8 states each have an annual average of more than 350 divorcees per 100,000 married population

The state with the lowest average, excluding South Carolina, in which state all laws permitting divorcees were repealed in 1878, is Delaware, with 43 per 100,000. New York and New Jersey are very close, each with 60 per 100,000. It is very difficult to explain why there should be such a wide disparity between the average annual number of divorcees in the state of Washington and that of Delaware.

In Diagram 2 on Plate No. 495, annual number of divorcees in the United States from 1867 to 1906, the increase is strikingly shown by the gradual increase in

the length of the bars for each year, the advance being from 9,937 in 1867 to 72,062 in 1906, or more than seven times the number reported for 1867. The population of the United States from 1870 to 1900 (almost the same period) had increased only 97.1 per cent, while the number of divorces increased 408.6 per cent, showing that the divorces are increasing much more rapidly than the population.

Diagram 3 compares the average annual number of divorces per 100,000 population for the United States with the averages for certain specified foreign countries. The United States average of 73 is more than double that of the next country, Switzerland, with 32, followed in order by France, with 23; Denmark, with 17; and Germany, with 15, the only countries which reported an average annual number of 15 or more divorces per 100,000 of population. Ireland had the smallest average of the countries presented in the diagram—less than 1 per 100,000 of population.

Plate No. 497 consists of four small United States maps on which the states are shaded to show, in five groups, the average annual number of divorces per 100,000 population, for states and territories, for 1870, 1880, 1890, and 1900. A comparison of the four maps brings out the rapid increase in the average annual number of divorces, as indicated by the increased number of states with the darker shadings; the difference between the shading on the map for 1870 and that of 1900 is most striking. In 1870 a large number of states were unshaded, falling in the group under 25, but in 1900 there were only five states in that group,

all in the East. The Western states, with the exception of New Mexico, are all in the highest groups, with averages of 75 to 100 and 100 and over. With a few exceptions, the states east of the Mississippi River are in the lower groups, those having less than 75 divorces per 100,000 of population.

On Plate No. 498, number of divorces granted for certain specified causes, from 1867 to 1906, the lines indicate the number granted each year for each of the specified causes. The most prevalent cause was divorce to the wife for desertion. The rapid increase shown in this cause is startling. The next most important cause was divorce granted to the wife for cruelty on the part of the husband; the third cause represents the number of divorces granted to the husband for desertion. The line representing the number of divorces to the husband for cruelty on the part of the wife shows the smallest number of divorces from 1867 to 1896. Of the eight causes represented on the diagram, five represent divorces granted to the wife and three to the husband, indicating that the wives secure more divorces than the husbands. The rapid increase in the number of divorces granted to the wife for desertion and for cruelty, and to the husband for desertion, is strikingly illustrated on the diagram, the first cause having increased from 2,012 divorces in 1867 to 15,895 in 1906. The next cause, to the wife for cruelty, advanced from 994 in 1867 to 14,368 in 1906. The number of divorces to the husband for desertion advanced from 1,382 in 1867 to 11,512 in 1906.

INSANE IN HOSPITALS.

The Census Bureau issued in 1914 a special report based on the returns of the insane in hospitals in 1910.

The following table presents a summary of the results by classes:

RACE AND NATIVITY.	Total population: 1910.	INSANE IN HOSPITALS: 1910.				PER CENT DISTRIBUTION.		
		Enumerated Jan. 1.		Admitted during the year.		Total population: 1910.	Insane in hospitals: 1910.	
		Number.	Per 100,000 population.	Number.	Per 100,000 population.		Enumerated Jan. 1.	Admitted during the year.
Total.....	91,972,206	187,791	204.2	60,769	66.1	100.0	100.0	100.0
White.....	81,731,957	174,224	213.2	56,182	68.7	88.9	92.8	92.5
Native.....	68,886,412	115,402	168.7	39,620	57.9	74.4	81.5	85.2
Foreign born.....	13,345,545	54,096	405.3	15,523	116.3	14.5	28.8	25.5
Nativity unknown.....		4,726		1,030			2.5	1.7
Negro.....	9,827,763	12,910	131.4	4,384	44.6	10.7	6.9	7.2
Other colored.....	412,510	657	159.3	203	49.2	0.4	0.3	0.3

The total number of inmates reported in insane asylums on January 1, 1910, was 187,791, of which number 28.8 per cent were whites of foreign birth, and of the 60,769 persons admitted to institutions during the year 1910, 25.5 per cent were of the same class.

Diagram 1 on Plate No. 499, number of insane admitted during 1910 and number enumerated January 1, 1910, by age periods, is based on the following table:

AGE GROUP.	INSANE IN HOSPITALS: 1910.			
	Enumerated Jan. 1.		Admitted during the year.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	187,791		60,769	
Age reported.....	184,557	100.0	59,812	100.0
Under 15 years.....	341	0.2	327	0.5
15 to 19 years.....	2,312	1.3	2,530	4.2
20 to 24 years.....	7,801	4.2	5,701	0.5
25 to 29 years.....	14,083	7.6	7,027	11.7
30 to 34 years.....	19,091	10.3	7,295	12.2
35 to 39 years.....	22,856	12.4	7,495	12.5
40 to 44 years.....	23,321	12.6	6,469	10.8
45 to 49 years.....	22,874	12.4	5,081	8.5
50 to 54 years.....	20,885	11.3	4,877	8.2
55 to 59 years.....	19,383	8.9	3,368	5.6
60 to 64 years.....	12,720	6.9	2,872	4.8
65 to 69 years.....	9,545	5.2	2,191	3.7
70 to 74 years.....	6,263	3.4	1,776	3.0
75 to 79 years.....	3,595	1.9	1,180	2.0
80 years and over.....	2,477	1.3	1,014	1.7
Age unknown.....	3,234		957	

The bars on the left of the central line represent the number of insane enumerated January 1, 1910, and the bars on the right of the central line represent the

insane admitted during 1910. The longest of the bars, representing the number enumerated January 1, 1910, 23,321, is that for the age period 40 to 44 years. The age period 45 to 49 years, with 22,874, ranks second in point of numbers. The shortest bar represents the number under 15 years of age, for which only 341 were returned, and for the highest age period, 80 years and over, there were 2,477 enumerated January 1, 1910. The bars on the right of the diagram represent the number of insane admitted during the year, the longest bar indicating the 7,495 insane reported for the age period 35 to 39 years. The period 30 to 34 years is next in point of number returned, with 7,295. The shortest bar is shown for the age period under 15 years, representing 327 insane. For the highest age period, 80 years and over, 1,014 insane were reported as admitted during the year.

Diagram 2 on Plate No. 499, number of white and negro insane admitted to hospitals in the North and South per 100,000 population, by age periods, in 1910, represents each of the classes specified on the diagram by a line which indicates, by its rise or fall, the increase or decrease of each of the specified age periods at the top of the diagram, over the previous age period. Under 15 is the first vertical line on the left, and 65 years and over is represented by the line on the extreme right. The vertical scale represents the ratio per 100,000 of population. The number in the age period under 15 years was 0.9 per 100,000, almost zero, for the whites in the North. An increase is indicated over the preceding age period for each age group until the ratio of 140.6 per 100,000 is reached at the

age period 45 to 49 years, when a slight decrease is indicated to the age period 55 to 59 years, then a rise for the age periods 60 to 64 and 65 years and over, when the ratio was 166.4 per 100,000. For the negroes in the North the ratio for the period under 15 years was 5 per 100,000 population; from this point the rise was rapid, until the age period 25 to 29 years, when the ratio per 100,000, was 133.8. A slight fall is shown for the next age period, 30 to 34 years (127.2), then a rapid rise in the line to the age period 45 to 49 years, 158.2 per 100,000. A decline is then shown for two age periods, to 137.8 for the age period 55 to 59 years, then a rapid rise for the age period 60 to 64, to 228.6 per 100,000, and a further rise in the next age group, 65 years and over, to 250.2 per 100,000.

The ratios represented on the diagram for the South, both whites and negroes, as indicated by the lines, are much lower than for the same classes in the North. The ratio of the whites in the South under 15 years is 1.5 per 100,000, from which point a rise is shown for each age period until 99.2 is reached at the age period 35 to 39 years, then a slight decrease is followed by a rise until 102.6 is reached at the age period 45 to 49 years; then the line falls to 92.3 for the age period 55 to 59 years; a rather rapid increase is again shown to the age period 65 years and over, of 128.6 per 100,000.

The ratios for the negroes in the South were lower at every age period than for the whites, therefore the line representing the negroes is below the whites, thus reversing the relative positions of the two classes as shown for the North. The ratio per 100,000 population for the negroes in the South was 1.2 for the age period under 15 years; the ratio increased gradually to 76.2 at the age period 30 to 34 years; then, except for the slight increase at the age period 40 to 44 years, there was a decline, until at the age period 55 to 59 years it was 60 per 100,000; from that point a rapid increase is shown to 98.2 for the age period 65 years and over. The following table supplies the data upon which the diagram is based.

AGE AT ADMISSION.	ADMITTED TO HOSPITALS FOR THE INSANE: 1910.			
	White.		Negro.	
	Number.	Per 100,000 population.	Number.	Per 100,000 population.
UNITED STATES.				
All ages.....	56,182	68.7	4,384	44.6
Under 15 years.....	272	1.1	54	1.5
15 to 19 years.....	2,215	27.8	320	36.2
20 to 24 years.....	5,101	63.9	579	56.2
25 to 29 years.....	6,394	88.1	601	68.2
30 to 34 years.....	6,696	106.8	568	85.0
35 to 39 years.....	6,945	121.2	520	79.7
40 to 44 years.....	6,046	126.5	388	85.2
45 to 49 years.....	5,340	131.7	316	81.0
50 to 54 years.....	4,609	129.6	253	77.6
55 to 59 years.....	3,208	125.1	150	71.6
60 to 64 years.....	2,706	130.8	163	87.4
65 years and over.....	5,807	159.5	348	118.3
Age unknown.....	834		115	
THE NORTH.				
All ages.....	41,118	75.3	1,105	107.5
Under 15 years.....	140	0.9	12	5.0
15 to 19 years.....	1,552	29.6	56	65.0
20 to 24 years.....	3,619	67.5	130	114.1
25 to 29 years.....	4,561	92.9	167	133.8
30 to 34 years.....	4,776	111.9	133	127.2
35 to 39 years.....	5,059	128.2	143	145.7
40 to 44 years.....	4,504	133.6	105	148.1
45 to 49 years.....	4,050	140.6	87	158.2
50 to 54 years.....	3,449	139.3	67	154.6
55 to 59 years.....	2,450	136.7	39	137.8
60 to 64 years.....	1,983	137.2	49	228.6
65 years and over.....	4,423	166.4	90	250.2
Age unknown.....	552		27	
THE SOUTH.				
All ages.....	10,161	49.5	3,193	36.5
Under 15 years.....	114	1.5	41	1.2
15 to 19 years.....	507	23.5	263	27.1
20 to 24 years.....	1,079	55.2	439	48.2
25 to 29 years.....	1,246	74.6	422	50.3
30 to 34 years.....	1,275	90.3	425	76.2
35 to 39 years.....	1,258	99.2	376	71.0
40 to 44 years.....	902	99.0	271	71.3
45 to 49 years.....	837	102.6	221	67.5
50 to 54 years.....	769	98.7	180	64.2
55 to 59 years.....	528	92.3	108	60.0
60 to 64 years.....	473	102.2	111	67.7
65 years and over.....	932	128.6	252	98.2
Age unknown.....	181		84	
THE WEST.				
All ages.....	4,903	74.0	86	169.8

Diagram 3 on Plate No. 499, proportion of insane enumerated January 1 to adult population, 1904 and 1910. The large squares are drawn proportional to the adult population—that is, the population 15 years of age and over, as returned in 1910, and the estimated adult population for 1904. The small, solid black square in the lower right-hand corner of each large square represents the insane in hospitals in proportion to the total adult population returned, and presents strikingly the very small proportion of the insane in hospitals as compared with the total adult population.

Diagram 1 on Plate No. 500 presents, by the rise and fall of the two lines, the ratio of the male and female insane admitted to hospitals in 1910 per 100,000 population of the same age and sex. The ratio for the males exceeds that for the females at each age period. The line for the males rises regularly from the age period under 15 years to the period 45 to 49 years; a slight fall is then shown to the age period 50 to 54 years, after which the rise in the ratio for each age period is rapid, until at the age period 80 years and over, it reaches 224 per 100,000 males. The line representing the ratio of the females for each age period increases almost parallel to that of the males, except that the males show a slight fall from the period 45 to 49 years to the period 50 to 54 years, while the females show a slight increase. In the next age group, 55 to 59 years, the ratio shows a decided falling off, but for each period thereafter it rises rapidly, reaching for the age period 80 years and over the ratio of 192.7, an increase in the last two age periods from 150 to 192.7 per 100,000 females, a much more rapid rise than is shown for the males in the same age periods. Table 5, on which this diagram is based, follows the description of the diagrams on Plate No. 501.

Diagram 2 on Plate No. 500 indicates, by the two lines, the ratio per 100,000 population of the native white and foreign-born white insane admitted to hospitals in 1910. The age periods and scale are the same as on Diagram 1. The line for the foreign-born white shows a rapid increase in the ratio per 100,000 from the age period under 15 years to the period 50 to 54 years, then a slight decline for the period 55 to 59 years, after which each age period shows a rapid increase over the previous period, to the ratio of 264.7 per 100,000 at the period 80 years and over. The ratio for the native white is lower than that of the foreign-born white at each age period. The line rises for each age period from under 15 years to the period 45 to 49 years, then there is a decline for two age periods, 50 to 54 and 55 to 59 years; after this period the increase is very slight for the age periods 60 to 64 and 65 to 69 years; the succeeding age periods show increases almost parallel to the increases for the foreign-born white, the ratio for the last age group, 80 years and over, being 197.6. The following table (No. 4) supplies the figures upon which the diagram is based:

Table 4

AGE GROUP.	NATIVE WHITE: 1910.			FOREIGN-BORN WHITE: 1910.		
	Total number.	Admitted to hospitals for the insane.		Total number.	Admitted to hospitals for the insane.	
		Num-ber.	Per 100,000 popu-lation.		Num-ber.	Per 100,000 popu-lation.
All ages.....	68,386,412	30,620	57.9	13,345,545	15,523	116.3
Under 15 years.....	24,957,140	256	1.0	759,345	10	1.3
15 to 19 years.....	7,294,630	1,871	25.6	673,701	320	47.5
20 to 24 years.....	6,556,030	3,966	60.5	1,430,381	1,074	75.1
25 to 29 years.....	5,504,440	4,749	84.9	1,662,690	1,568	94.3
30 to 34 years.....	4,761,561	4,841	101.7	1,505,715	1,777	118.0
35 to 39 years.....	4,323,752	4,990	115.6	1,408,093	1,848	131.2
40 to 44 years.....	3,476,707	4,201	120.8	1,303,475	1,755	134.6
45 to 49 years.....	2,914,702	3,656	125.4	1,146,360	1,605	140.0
50 to 54 years.....	2,639,258	3,197	121.5	925,055	1,341	145.0
55 to 59 years.....	1,870,688	2,178	116.4	603,520	982	141.6
60 to 64 years.....	1,441,746	1,728	119.9	627,583	928	147.9
65 to 69 years.....	1,051,557	1,282	120.8	488,307	765	156.6
70 to 74 years.....	693,017	1,000	145.4	336,967	616	181.0
75 to 79 years.....	412,789	604	168.1	208,212	407	195.5
80 years and over.....	288,400	570	197.6	149,773	370	264.7
Age unknown.....	108,013	432	26,211	163

On Plate No. 501, insane admitted to hospitals suffering from general paralysis or alcoholic psychosis and all other causes in 1910, Diagram 1 indicates, by the rise and fall of the lines, the ratio per 100,000 population of same age, for the males, the solid line representing the "all other" causes, and the broken line those having general paralysis or alcoholic psychosis. The line representing the insane having general paralysis or alcoholic psychosis starts practically at zero for the age period under 15 years, rising rapidly to the age period 40 to 44 years, when it reaches the point 48.6 per 100,000, the highest point reached. From this age period there is a gradual decrease, except at the period 75 to 79 years, until at the age period 80 years and over the number admitted was 14.8 per 100,000. The line representing admissions from all other causes shows a continuous and rapid rise from 1.1 per 100,000 at the age period under 15 years to the age period 30 to 34 years, when a slight decrease is noted for the period 35 to 39 years, then it rises very slowly to the age period 50 to 54 years, after which the rise is nearly vertical to the age period 80 years and over, with a ratio per 100,000 of 209.1.

Diagram 2 furnishes similar data for the females. The line representing the number admitted from paralysis and alcoholic psychosis is very much lower than for the males, the highest point reached being at the same age period, 40 to 44 years, 12.2 per 100,000 population of same age. It gradually decreased to the age period 70 to 74, when it was 5.4 per 100,000 population. A slight increase was noted for the next age period, 75 to 79 years, to 7.7 per 100,000, then a decrease to 5.8 for 80 years and over. The line representing all other causes does not show a continuous increase, as for the males. Starting at 0.9 for the age period under 15 years, it advances rapidly to the age period 50 to 54 years, when a slight decrease followed to the age period 55 to 59 years, then a

steady rise for every other period, the period 80 years and over having a ratio of 187 per 100,000, as compared with 209.1 for the males. The figures upon which these two diagrams are based will be found in the following table:

Table 5

INSANE ADMITTED TO HOSPITALS: 1910.

AGE GROUP.	Total.		Having general paralysis or alcoholic psychosis.		All other.	
	Male.	Female.	Male.	Female.	Male.	Female.
	NUMBER.					
All ages ¹	34,116	26,653	8,356	1,851	25,760	24,802
Under 15 years.....	181	146	12	9	169	137
15 to 19 years.....	1,471	1,068	52	31	1,419	1,037
20 to 24 years.....	3,234	2,467	208	95	2,966	2,372
25 to 29 years.....	3,911	3,113	679	155	3,232	2,961
30 to 34 years.....	4,618	3,277	1,091	221	2,927	3,056
35 to 39 years.....	4,930	3,405	1,411	289	2,679	3,116
40 to 44 years.....	3,618	2,851	1,353	303	2,265	2,548
45 to 49 years.....	3,463	2,518	1,131	231	2,332	2,287
50 to 54 years.....	2,712	2,165	905	173	1,807	1,992
55 to 59 years.....	1,975	1,393	582	105	1,393	1,288
60 to 64 years.....	1,598	1,174	300	79	1,338	1,095
65 to 69 years.....	1,255	936	211	59	1,044	877
70 to 74 years.....	994	782	84	30	910	752
75 to 79 years.....	676	501	62	20	614	478
80 years and over.....	513	501	34	15	479	486
NUMBER PER 100,000 POPULATION OF SAME SEX AND AGE.						
All ages ¹	72.1	59.7	17.7	4.1	54.4	55.6
Under 15 years.....	1.2	1.0	0.1	0.1	1.1	0.9
15 to 19 years.....	32.5	23.5	1.1	0.7	31.3	22.0
20 to 24 years.....	70.6	55.1	5.9	2.1	64.8	53.0
25 to 29 years.....	92.1	70.2	16.0	3.9	76.1	75.2
30 to 34 years.....	109.9	98.8	29.8	6.7	80.0	92.2
35 to 39 years.....	121.5	112.1	41.9	9.5	79.6	102.9
40 to 44 years.....	129.8	115.2	48.6	12.2	81.3	102.9
45 to 49 years.....	133.0	120.5	47.5	11.1	85.4	109.4
50 to 54 years.....	128.5	120.0	42.9	9.7	85.6	111.2
55 to 59 years.....	132.7	107.3	39.1	8.1	93.6	99.2
60 to 64 years.....	143.2	108.6	30.4	7.3	112.8	101.3
65 to 69 years.....	145.3	114.8	24.4	7.2	120.8	107.5
70 to 74 years.....	177.0	141.6	15.0	5.4	162.0	136.2
75 to 79 years.....	204.1	150.0	18.7	7.7	185.3	142.3
80 years and over.....	224.0	192.7	14.8	5.8	209.1	187.0

¹ Includes age unknown.

Map 1 on Plate No. 502 indicates, by the shading, the ratio of insane enumerated per 100,000 of population in 1910, in six groups. The group with the lowest ratio, less than 100 insane per 100,000 of population, covers five states—Alabama, Arkansas, Oklahoma, New Mexico, and Utah. The darkest shade, indicating a ratio of 300 or more insane per 100,000 of population, covers only three states—Massachusetts, Connecticut, and New York. The shade indicating a ratio of 250 to 300 insane per 100,000 population covers the states of Vermont, Wisconsin, Nevada, and California. The remaining states all fall in the three groups with ratios between 100 and 250 insane per 100,000 population.

Map 2 indicates, by the eight groups of shading, the number of insane admitted to hospitals in 1910 to each 100,000 population. The states having the highest ratio, 100 and over per 100,000, are Massachusetts, Connecticut, and Wisconsin. The next group, 90 to

100 insane admitted to each 100,000 population, covers the states of Rhode Island, New York, Maryland, and Colorado. The lowest group, less than 40 insane admitted per 100,000 population, includes 11 states, while the next group, 40 to 50, includes 8 states.

Diagram 1 on Plate No. 503 shows, by the rise and fall of the heavy black line, the ratio per 100,000 population of the insane admitted to hospitals in 1910, by age periods. The line starts at the first age period, under 15 years of age, with 1.1 per 100,000, and rises rapidly to 127.1 per 100,000 at the age period 45 to 49 years; a decline follows for two age periods to 120.8 in the age period 55 to 59 years; from this point a rapid rise is shown to 207.4 in the last age period, 80 years and over.

Diagram 2 represents, by the rise and fall of the four lines, the number of insane admitted to hospitals in 1910 per 100,000 population of the same age, race, and nativity for four classes of the population—native white of native parentage, native white of foreign or mixed parentage, foreign-born white, and negro. The lines representing the foreign-born white and the native white of foreign or mixed parentage are very close together, indicating that there is only a slight difference in the number of insane admitted for these two classes at each age period. It will also be noted that the lines for all of the four classes for the age period under 15 years to the age period 20 to 24 years are very close together. After the age period 20 to 24 years they separate, and for the foreign-born white and the native white of foreign or mixed parentage the ratio increases much more rapidly than for the native white of native parentage and the negroes. The line for the native white of native parentage runs almost midway between the lines representing the negroes and the other two classes. The ratio for the native white of native parentage increases from the first age period, under 15 years, regularly to the age period 45 to 49 years; then a sharp decline is indicated for two age periods to the age period 55 to 59 years; from this age period it increases to the age period 65 years and over, the last shown on the diagram. The line representing the negro insane is nearly parallel to the lines of the native white of native parentage and the native white of foreign or mixed parentage for the first three age periods, but after the age period 20 to 24 years it does not rise as rapidly as for the other three classes of the population. From the age period 25 to 29 years, when it reaches 68.2 per 100,000 population, a further rise is noted to 85 per 100,000 population in the next age period, after which it declines to 79.7 at the age period 35 to 39 years; the line again rises to 85.2 for the age period 40 to 44 years; then falls for three age periods to the age period 55 to 59 years, when it reaches the

low point of 71.6. For the next two age periods, 60 to 64 years and 65 years and over, a sharp rise is shown. The highest ratio for any age period of the negroes was 118.3 per 100,000 population for the age period 65 years and over. This is far below the ratio for the

other classes at the same age period, which rank as follows: Native white of native parentage, with 139.3 per 100,000 population of the same age, race, and nativity; foreign-born white, with 181.9; and native white of foreign or mixed parentage, with 190.9.