UNITED STATES DEPARTMENT OF COMMERCE
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BUREAU OF THE CENSUS
J. C. CAPT, Director (Appointed May 22, 1941)
WILLIAM LANE AUSTIN, Director (Retired January 31, 1941)
PHILIP M. HAUSER, Assistant Director

SIXTEENTH CENSUS OF THE UNITED STATES : 1940

IRRIGATION OF AGRICULTURAL LANDS

TABULAR AND GRAPHIC PRESENTATION

OF

SPECIFIED IRRIGATION CENSUS STATISTICS

UNITED STATES
GOVERNMENT PRINTING OFFICE
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Department of Commerce
Bureau of The Census
Washington

E R R A T A

Irrigation of Agricultural Lands
(Tabular and Graphic Presentation of Specified Irrigation Census Statistics)

Page 18.—Chart X
Upper Colorado, including Green River
Lower Colorado
} Base data (Table 4, page 31) for 1920 and 1930 revised as indicated below.

Page 31.—Table 4

			From	To
Upper section of table:				
Line 15 (Upper Colorado River), Column	2	(1919)	1,844,258	1,348,548
	3	(1929)	1,968,667	1,449,042
	5	(1920)	2,360,597	1,809,091
	6	(1930)	2,516,149	1,844,032
	8	(1920)	3,236,592	2,508,266
	9	(1930)	3,485,341	2,162,222
Line 17 (Lower Colorado River), Column	2	(1919)	482,432	978,142
	3	(1929)	568,457	1,088,082
	5	(1920)	648,622	1,200,128
	6	(1930)	819,765	1,491,882
	8	(1920)	865,504	1,593,830
	9	(1930)	950,188	2,273,307
Lower section of table:				
Line 15 (Upper Colorado River), Column	2	(1920)	58,964,034	36,749,102
	3	(1930)	67,315,624	37,321,241
	6	(1920)	24.98	20.31
	7	(1930)	26.75	20.24
Line 17 (Lower Colorado River), Column	2	(1920)	29,975,850	52,190,782
	3	(1930)	65,034,623	95,029,006
	6	(1920)	46.21	43.49
	7	(1930)	79.33	63.70

SIXTEENTH CENSUS OF THE UNITED STATES: 1940

REPORTS ON AGRICULTURE, IRRIGATION, AND DRAINAGE[1]

Volume I.—Statistics by Counties for Farms and Farm Property, with Related Information for Farms and Farm Operators; Livestock and Livestock Products; and Crops (six parts).

Part 1.—New England, Middle Atlantic, and East North Central States
Part 2.—West North Central States
Part 3.—South Atlantic States
Part 4.—East South Central States
Part 5.—West South Central States
Part 6.—Mountain and Pacific States

Volume II.—Statistics by Counties for Value of Farm Products, Farms Classified by Major Source of Income, and Farms Classified by Total Value of Products (three parts).

Part 1.—Northern States
Part 2.—Southern States
Part 3.—Western States

Volume III.—General Report—Statistics by Subjects for the United States, Geographic Divisions, and States (one volume).

Chapter I.—Farms and Farm Property
Chapter II.—Size of Farms
Chapter III.—Color, Tenure, and Race of Farm Operator
Chapter IV.—Farm Mortgages and Farm Taxes
Chapter V.—Work Off Farm, Age, and Years on Farm
Chapter VI.—Cooperation, Labor, Expenditures, Machinery, Facilities, and Residence
Chapter VII.—Livestock and Livestock Products
Chapter VIII.—Field Crops and Vegetables
Chapter IX.—Fruits and Nuts, and Horticultural Specialties
Chapter X.—Value of Farm Products

United States Summary Bulletins.—Statistics for the United States, Geographic Divisions, and States in condensed form as follows:

First Series Summary—Number of Farms, Uses of Land, Values, Principal Classes of Livestock and Livestock Products; and Specified Crops Harvested.
Second Series Summary—Farm Mortgages, Taxes, Labor, Expenditures, and Miscellaneous Farm Information; Goats and Mohair; and Fruits, Vegetables, and Minor Crops.
Third Series Summary—Value of Farm Products, Farms Classified by Major Source of Income, and Farms Classified by Total Value of Products.

Territories and Possessions.—Farms and Farm Property, Livestock and Livestock Products, and Crops (one volume). (Separate agricultural bulletins are available for Hawaii and Puerto Rico.)

Territories: Alaska, Hawaii
Possessions: American Samoa, Guam, Puerto Rico, Virgin Islands of the United States

Irrigation of Agricultural Lands.—Statistics by Drainage Basins and by Counties for 20 Irrigation States and a Summary for the United States (one volume).

Twenty Separate State Maps Showing Irrigation by Drainage Basins.
A Separate Composite Map Showing Irrigation by Drainage Basins.

Drainage of Agricultural Lands.—Statistics for 38 Drainage States with County Data for 36 States and a Summary for the United States (one volume).

A Separate Map of the United States Showing Location of Land in Drainage Enterprises for 38 States.

SPECIAL STUDIES AND MONOGRAPHS

Special Poultry Report.—Statistics by Geographic Divisions and States for Poultry of All Kinds on Hand and Raised; by Counties for Chickens and Chicken Egg Production by Number of Chickens on Hand; and by Counties for Farms Reporting Chickens and Turkeys Raised by Numbers Raised (one volume).

Cows Milked and Dairy Products.—Number of Cows Milked, Milk Produced, Disposition of Dairy Products, and Number of Cows Kept Mainly for Milk Production, Classified by Number of Cows Milked, by Counties; with Related Data for Other Classes of Livestock and Livestock Products for the States and also for the United States (one volume).

Special Cotton Report.—Cotton Harvested by Number of Bales Harvested, and by Counties, with Acreage and Production of Cotton, and Value of Farm Products (one volume).

Special Cross-line Acreage Report.—Farms Reporting and Acreage by Place of Enumeration and by Location of Acreage, with Relationship to All Farms, by Counties: 1940 and 1935 (one volume).

Drainage Monograph.—A Comparison of Agriculture Within and Outside of Drainage Enterprises in the Alluvial Lands of the Lower Mississippi Valley (paper bound).

Irrigation Monograph.—A Tabular and Graphic Presentation of Specified Irrigation Census Statistics (paper bound).

[1]Agriculture volumes I and II and the volumes "Irrigation of Agricultural Lands" and "Drainage of Agricultural Lands" are comprised of State bulletins. Separate bulletins for each State are available. Separate chapters of Agriculture volume III are also available.

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TABLES

A TABULAR AND GRAPHIC[1] PRESENTATION OF SPECIFIED IRRIGATION CENSUS STATISTICS

BY MILO B. WILLIAMS

INTRODUCTION

Statistics relating to the irrigation of agricultural lands and irrigation enterprises in the United States have been gathered by the Bureau of the Census, at somewhat irregular intervals and with varying degrees of completeness, over a period of 50 years. The first Census of Irrigation was taken in 16 western States in 1890, as a part of the Eleventh Decennial Census of the United States, and the statistics were published in a separate volume, "Agriculture by Irrigation in the Western Part of the United States." The Twelfth Decennial Census taken in 1900 included, as a part of the Census of Agriculture, irrigation inquiries in the same 16 States but the statistics were published in the State bulletins with the Census of Agriculture. A special Census of Irrigation, covering irrigated lands in the arid, semiarid, and humid States, was taken in 1902 and the statistics were published in Bulletin of the Census No. 16, 1904. This 1902 Census of Irrigation was the first to display irrigation statistics by drainage basins of principal rivers and streams. Since 1902, Irrigation Censuses have been taken as a part of the Census of Agriculture in the years of 1910, 1920, 1930, and 1940, but the data have been published for each Census, except 1910, in separate State bulletins. Summary volumes containing State maps were published for the Irrigation Censuses of 1920 and 1930. A summary volume and separate irrigation State maps, by drainage basins, were published for the 1940 Census.

This monograph presents data in tabular[2] and graphic forms for the principal comparable statistics compiled by the Censuses of Irrigation up to and including those of 1940. Statistics regarding number of irrigation enterprises, number of farms irrigated, areas involved, capital invested, costs of maintenance and operation, and inventories of physical works for the Census years are related graphically in parallel to indicate trends with time. More detailed statistics for recent censuses than are shown in the following tables and graphs may be obtained for each State from the Bureau of the Census State bulletins and summary reports, "Irrigation of Agricultural Lands, 1940," for sale by the Superintendent of Documents, Government Printing Office, Washington, D.C.

The available statistics are arranged in accordance to area, type, and water source groups and presented in summary and for individual groups by States (17 western States and Arkansas and Louisiana), by specified drainage basins (10 major basins with selected secondary tributary basins), by type of irrigation enterprise (individual and partnership, cooperatives, irrigation districts, commercial companies, United States Bureau of Reclamation projects, and "all other" types grouped), and by source of water supply (surface sources, underground sources, and mixed, and all other sources grouped). The "all other" group under type of enterprise includes projects of the United States Office of Indian Affairs, State enterprises, city and/or sewage enterprises, and Reclamation Districts in California. The "surface source" group of water supplies consists of streams, lakes, springs, stored storm water, waste, seepage, or drainage water diverted by gravity and/or pumped. The "underground source" group of water supplies consists of wells pumped and/or flowing, and the "mixed and all other" group includes city water, sewage, streams and wells, and all other mixed or not reported sources diverted by gravity and/or pumped.

Definitions and Explanations

The Census year is the year in which the actual enumeration of irrigation enterprises was made.

An irrigation enterprise is an independent irrigation establishment owning or operating physical works for supplying water to agricultural land. An enterprise may represent a short canal, or a pumping plant watering a single small farm, or a great system of canals and reservoirs operating under one management supplying many farms. In the recent censuses, only such enterprises as supplied water for irrigation in the crop year prior to the census year, or were capable of supplying water for irrigation in the census year, or were in advance stages of construction January 1 of that year were included in the tabulated statistics. In the 1940 Census, each irrigation enterprise was classified as "primary," "supplemental," or a combination of both according to the water service it rendered to irrigators.

A primary enterprise is one which furnishes to the irrigators all, or the principal portion, of the irrigation water used. A stream diversion or pumping plant which one or more farmers consider a principal source of water, and which is used first in preference to other available sources because of ownership of works or water rights, or lower costs of water, is a typical primary enterprise regardless of the proportion of water obtained from such other available sources. All irrigated land must receive water from one primary enterprise, and the acreage statistics for primary enterprises represent all the acreage for States, drainage basins, or other area classifications.

A supplemental enterprise is one which, directly or indirectly, furnishes a user with water from a source, either like or different from the primary source, in addition to the water he receives from a primary enterprise. Notable supplemental enterprises are upstream or offstream storage projects established for conservation of winter run-off and floodwater and to augment the insufficient primary supplies of downstream users. Likewise, many supplemental pumping plants have been installed, either by individuals or groups, for lifting ground water or water from streams to provide for areas served inadequately from primary sources alone. This acreage is always included in the primary acreage.

Farms irrigated.—The number of irrigated farms, as shown in the tabulations and graphs for each State, are those reported in the Census of Agriculture, and not the irrigation units or irrigated parcels of land reported by the irrigation enterprises. For the purpose of the Agriculture Census a farm is defined as:

> All the land on which some agricultural operations are performed by one person, either by his own labor alone or with the assistance of members of his household, or hired employees. The land operated by a partnership is likewise considered a farm. A "farm" may consist of a single tract of land, or a number of separate tracts, and the several tracts may be held under different tenures, as when one tract is owned by the farmer and another tract is rented by him. When a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a farm. Thus, on a plantation the land operated by each cropper, renter, or tenant should be reported as a separate farm, and the land operated by the owner or manager by means of wage hands should likewise be reported as a separate farm.

The enumerators were instructed not to report as a farm any tract of land of less than 3 acres, unless its agricultural products in the year preceding the enumeration were valued at $250 or more.

Area irrigated is the acreage to which water was actually applied during the calendar year preceding the Irrigation Census year. It is not necessarily the area for which water was available or the area entitled to water; hence it does not include land under canals and sometimes irrigated but which was not watered in 1939, 1929, or 1919. Moreover, it takes no account of the degree of sufficiency of the irrigation.

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[1] Due to wartime conditions many statistics published herein are not shown graphically as originally planned.

[2] Special acknowledgment is due Gladys L. Eagle for the preparation of tables.

Land is classed as irrigated which had water supplied to it for agricultural purposes by artificial means or by seepage from canals, reservoirs, or irrigated lands. Land which is flooded during high-water periods is classed as irrigated if water is caused to flow over it by dams, canals, or other artificial means, but is not classified as irrigated if the overflow is due to natural causes alone. Land which has natural ground water sufficiently near the surface to support plant life and to which no water is artificially applied at any time, is not classed as irrigated.

Area that existing works were capable of supplying with water represents the area which the constructed works, as they existed on January 1 of the Irrigation Census year, could serve regardless of whether or not the land was farmed.

Area irrigable represents the extent of the plans of those controlling the enterprises. Possible extensions of projects not definitely planned in 1930 and 1940 were not included in the areas reported as irrigable.

Tables 3 to 6 and charts IX to XI show the areas which existing irrigation works were reported capable of supplying with water and the irrigable areas in enterprises from which the expansion possibilities from the standpoint of capacity of irrigation works can be determined. Statistics indicate that 7,051,509 acres out of the 10,302,210 acres of irrigable land now in irrigation projects, which were not irrigated in 1939, could be irrigated with the present system. This leaves 3,250,701 acres of irrigable land for which works have not been constructed. The States with the greatest acreages under irrigation works but not irrigated are: California with constructed works capable of supplying water to 2,329,008 acres more than were irrigated in 1939; Texas, with 728,588 acres; Colorado, with 692,857 acres; and Montana with 632,981 acres. Similarly, the Sacramento and San Joaquin Delta and tributary streams Basin, California, with works capable of supplying water to 1,738,715 acres more than were irrigated in 1939; the Missouri River Basin, with 1,532,573; the Colorado River Basin, with 729,624; and the Rio Grande Basin, with 656,127; indicate the location of the largest areas by drainage basins under irrigation works but not irrigated in 1939.

Capital invested is the amount reported by irrigation enterprises as the original cost of irrigation works, improvements, enlargements, lands, cost of water rights, buildings, and equipment used for maintenance and operation. Investments reported for many individuals, partnerships, and older enterprises are largely estimates furnished by owners or others who had no records or intimate knowledge of the money or time expended by the original builders. However, most of the larger enterprises supply accurate cost figures and, therefore, the composite investments shown can be considered substantially correct and time trends dependable. Average investment per acre is the ratio of the investment to the acreage existing enterprises were capable of supplying with water in the corresponding census year.

Maintenance and operation refers to the costs of maintaining the irrigation enterprise, including ordinary cleaning and repairs, and operation costs, including costs of fuel, electric energy, and amount paid the personnel. The average annual cost of maintenance and operation per acre is the ratio of the annual cost to the acreage irrigated in the crop year enumerated. This item does not include assessments for payments on principal and interest on bonds, notes, warrants, or for special or unusual expenditures.

Main canals and laterals.—A main canal is any open conduit conveying water from the source of supply to the tract of land to be irrigated or to a storage reservoir. A lateral canal is a branch of a main canal conveying water from a main canal to one or more farms. Main canals and laterals are tabulated as "canals." Farm ditches which distribute water to fields within the boundaries of the individual farm are not included.

Capacity at main canal heading is considered as the capacity of the canal headgate, pumping plant, or other structure used for the diverting of water from a surface source into a distribution system and does not necessarily mean the carrying capacity of a canal or other main conduit. A second-foot, or cubic foot per second (sec.-ft. or c.f.s.), is the rate of discharge of water flowing in a channel when the cross-sectional area is 1 square foot and the average velocity is 1 foot per second.

Pumping plants.—The census of pumping plants was confined to those used for lifting irrigation water and were enumerated and tabulated according to the kind of motive power, i.e., "electric motors," "internal-combustion engines," and "other power"; and by type of pump, i.e., "centrifugal," "turbine," "plunger," and "other pumps." Steam, water, and wind were classed in "other power." Hydraulic rams, air lifts, rotary and home-made pumps were classed as "other pumps." The inquiry regarding the average lift of pumping plants called for the vertical distance, in feet, between the average elevation of the water in the source of supply when the pump is running at usual capacity and the average elevation to which the water is lifted. It does not take into account friction and velocity heads. The statistics for 1940 show separately the lifts from wells and from all sources to indicate the lifts of ground water in areas irrigated from wells.

Capacity of a pump and yield of a well is given in gallons per minute (g.p.m.). Approximately 450 gallons per minute equals 1 second-foot.

Capacity of a motor or engine is given in horsepower (hp.). One horsepower is the energy required to lift 33,000 pounds through a vertical distance of 1 foot in 1 minute.

The drainage basin of a stream is the geographic area drained by that stream and its tributaries. Large river systems drain major basins, each of which for the purpose of the Irrigation Census of 1940 has been divided into secondary and minor tributary basins. Each basin, major or minor, is usually designated by the name of its arterial stream. Waters from most major basins ultimately reach the sea through surface or underground channels. However, the areas of the "Great Basin" comprising portions of Wyoming, Utah, Nevada, Oregon, and California, and similar smaller areas in other western States, drain into landlocked lakes or sinks and are considered as closed, or independent basins. Areas drained by the many smaller streams flowing from the irrigated States into the Gulf of Mexico or the Pacific Ocean are grouped and these groups are considered as drainage basins.

Precipitation for Census Years

The Irrigation Census of 1940 completed a span of 50 years in which the Federal Government has gathered statistics on irrigation. Table 1 shows the 8 individual years for which irrigation enumerations were made; and the mean annual precipitation and departures from normal for those years, as recorded by the United States Weather Bureau. The average monthly precipitation, by States, for the water year October 1938 through September 1939, is given in table 2. These data, together with those for recorded rainfall and departures from normal for all years from 1888 to 1939, are presented graphically in charts I to VIII. An analysis of these figures indicates that in most States the annual precipitation was below normal in most of the census years. In many sections of the West, the areas most affected by variations in the amount and distribution of precipitation are land reported as irrigated pasture. This acreage seems to accord largely with the fluctuations in the amount of water available for pasture irrigation in the spring and fall, before and after the requirements of other more valuable crops are satisfied, a relation and practice which should be taken into consideration in the use of irrigated-pasture data. When a census year falls in, or at the end of, a drought or period of excessive precipitation, the available water supply, areas irrigated, and crop yields are correspondingly affected. Therefore, users of Census data should take into consideration, in their interpretation of Irrigation Census statistics, the precipitation factor for the years concerned.

Precipitation for the calendar year 1939 and the water year October 1938 through September 1939 was below normal in the 19 Irrigation States. Colorado, California, and Nebraska received the least rainfall during 1939, amounting to 65, 67, and 72 percent of normal, respectively. Idaho, Kansas, eastern Oregon, eastern Washington, and Wyoming received approximately 75 percent of their normal precipitation (see tables 1 and 2).

Irrigation Statistics by States

Table 3 and chart IX present historic Census statistics summarized and by States on irrigation in the 17 western States and Arkansas and Louisiana for the Decennial Censuses, 1890 to 1940. The statistics show number of irrigation enterprises, farms irrigated, areas involved, capital invested, and average annual costs of maintenance and operation.

As graphically shown on summary chart IX the most rapid expansion of irrigated agriculture in these 19 States took place prior to 1920, reaching the greatest acceleration in the decade 1899 to 1909, when the area irrigated was increased by 6,688,793 acres compared with an increase of 4,758,431 acres in the 10-year period 1909 to 1919, and an expansion of only 1,812,023 acres in the 20 years between 1919 and 1939. Although the number of irrigation enterprises increased during each decade, the size of enterprise, in acres irrigated, only increased up to 1919. During the 20 years from 1919 to 1939, the size of enterprise decreased in both area and number of farms irrigated, as is shown by the table following:

ITEM	1889	1899	1909	1919	1929	1939
	Averages					
Acres irrigated per enterprise	------	------	253.8	303.2	258.8	229.2
Number farms per enterprise	------	------	2.9	3.5	3.5	3.2
Acres per farm irrigated	68.6	68.0	88.7	86.1	73.7	72.0
Cost of maintenance and operation per acre irrigated	------	------	$1.07	$2.43	$2.77	$2.28

The average size of the irrigated farm increased to 88.7 acres in 1909, but decreased to 72.0 acres in 1939. During the 20 years prior to 1940, the trend in number and size of irrigation enterprises and irrigated farms has been materially affected by the increased number of individual and small partnership developments for irrigation from underground water by pumping. In recent years, the number of irrigation enterprises has been increased in many areas by the formation of projects to supply supplemental water. In 1939, the 91,637 enterprises reported were composed of 80,502 primary enterprises averaging 260.9 acres irrigated per enterprise, and 11,135 supplemental enterprises averaging 295.2 acres per enterprise.

The capital invested, as reported by irrigation enterprises, has continuously increased in total and in average investment per acre based on the area that existing works were capable of supplying with water.

The reported capital invested by individual States does not in all cases follow an upward trend. Some States show an actual decline in total and average investment per acre, while others display a steeper trend upward than indicated in the "Summary" (chartIX). In 1940, the average investment was $37.50 per acre for the 19 States; while Kansas with $15.12 per acre and Arizona with $98.94 per acre represent the extremes in investments. Arizona statistics show a continous increase in investment per acre, while the average per acre in Kansas decreased 50.4 percent in the 20-year period 1920 to 1940.

The absence of records for persons reporting and the lack of knowledge of the actual costs of construction and water rights of the older irrigation projects and of many individually owned irrigation systems are elements of uncertainty in the investment figures of all censuses. These elements, however, probably do not affect the trends materially. In individual States, drainage basins, or counties, the trend in investment has been sometimes affected by the abandonment of portions or all of infeasible projects, the development of costly supplemental water supplies or the addition of betterments, such as lined canals, pipe lines, increased pumping facilities, or water-spreading works to augment ground-water storage. In many instances the construction of multipurpose water-conservation projects which contribute to irrigation water supplies may locally raise the per acre investment for lands already under irrigation or lower the average investment for new lands brought under water, depending upon the proportion of the costs of the multipurpose enterprise allocated to irrigation. In general, the cost per acre for the development and application of irrigation water from underground sources is considerably higher than from surface sources. Therefore, irrigated areas which expand by increased pumping from wells show higher capital costs. Many areas, heavily pumped, experience a lowering of the ground-water level which requires the abandonment of initial pumping equipment and the installation of more expensive equipment capable of making the higher lift of the required water. In other pumped areas, additional costs become necessary to purchase water rights, install physical works for spreading surface run-off water, or to bring in a supplemental supply.

The average annual cost per acre irrigated for maintenance and operation of irrigation enterprises, based on irrigated areas reporting this item in the crop year 1909, was $1.07 per acre for the 19 States. This rose to $2.43 in 1919, and to $2.77 in 1929 but dropped to $2.28 in 1939. This item seems to be fairly constant between censuses, but varies greatly between areas. The States having mostly surface supplies of water diverted by gravity, such as Colorado, Montana, and Wyoming, report average annual costs for maintenance and operation of less than $1.00 per acre irrigated; while States dependent more or less upon pumped water supplies, like Arkansas, Arizona, and California, reported average costs of maintenance and operation for 1939 of $5.46, $5.00, and $4.73 per acre, respectively.

Irrigation Statistics by Drainage Basins

Irrigation statistics have been obtained according to selected drainage basins, i. e., areas drained by a large stream system or a number of small streams, for the Censuses of 1902, 1920, 1930, and 1940 covering a period of 38 years. The principal data are presented in tables 4, 9, and 11 and chart X. The Census of 1902 shows only areas irrigated in the crop year enumerated, capital invested, and lengths of canals. Area for which existing irrigation works were capable of supplying with water, irrigable area, number and capacity of wells used for irrigation, and data relating to pumping equipment are also shown in tables and charts for the Censuses of 1920, 1930, and 1940.

The irrigated States of the West lie wholly, or in part, within 12 major drainage basins. Data for 10 major drainage basins and 10 secondary or tributary basins of these major basins are displayed graphically. The area drained by the Missouri River, although tributary of the Mississippi River, is considered a major drainage basin. The lower Mississippi River and Rio Grande flowing into the Gulf of Mexico are each treated as major basins. The remaining Gulf of Mexico streams are grouped in one basin. The Colorado River Drainage Basin is divided into an upper basin and a lower basin at a point in the river below the mouth of the Paria River at Lees Ferry near the Utah-Arizona line. The Great Basin is divided into two areas named for the prehistoric lakes, "Bonneville" and "Lahonton." The drainage basin called the Sacramento-San Joaquin Delta and tributary streams Basin includes the Sacramento and San Joaquin River systems and their delta areas, Streams tributary to San Pablo and San Francisco Bays are considered part of the Pacific Ocean streams Basin, exclusive of the Gulf of California streams, the Columbia and Klamath Rivers, and the Sacramento-San Joaquin Delta and tributary streams.

Data are not plotted graphically for the drainage basins, Red River of the North representing all streams flowing from the United States into Lake Winnepeg, Canada, or for Whitewater Draw and Vamori Wash, Arizona, closed basins in the Gulf of California watershed.

Specific boundary lines of drainage basins are delineated on separate, 3 color, State irrigation maps, and a 4 color composite map for the 17 western States, Arkansas, Louisiana, and Florida. Maps "Irrigation—By Drainage Basins—1939" are for sale by the Superintendent of Documents, Washington, D. C.

Areas Irrigated

The area irrigated in 1939 in the 17 western States and Arkansas and Louisiana, reported by the Census of Irrigation (table 3), was 21,003,739 acres an increase of 1,456,195 acres, or 7.4 percent since 1929. This is a greater rate of increase than the 1.9 percent increase during the preceding decade, yet much less than that for the decade 1909 to 1919 when an increase of 33.0 percent was shown. In the 1929 to 1939 period, increases were shown in 15 States, and decreases were recorded for Colorado of 5.1 percent, Louisiana of 0.8 percent, South Dakota of 10.3 percent, and Utah of 11.2 percent. The 1939 irrigated areas by principal drainage basins show increases in all basins, with the exception of the Rio Grande which shows a decrease of 2.8 percent, since 1929.

The distribution of 1939 irrigated areas by type of irrigation enterprise shows increases for all types, with the exception of "Commercial," which shows a decrease of 17.3 percent; and "All other" (miscellaneous), 2.4 percent. The transferring, during the past decade, of "Commercial" and "All other" types of enterprises into water-user organizations such as "Cooperatives," "Irrigation districts," and "Government projects" probably accounts for the most of these area changes by type of organization. The greatest decade increases of area irrigated, by type of enterprise, were reported by individual and partnership, 903,571 acres, cooperatives, 381,154 acres, and Bureau of Reclamation, 338,976 acres.

Chart XII shows graphically the historic trends of areas by type of enterprise related to investment. For the Census year of 1940, the areas and investment involved in developments for supplemental water are graphically presented with the supplemental investment shown; this is also added to the primary investment column. Investment for earlier Census years represent total expenditures for primary and supplemental projects unsegregated. Therefore, the total investment (primary plus supplemental) in 1940 is comparable with the investment of previous years. Likewise, the average investment per acre is based on totals for all years except 1940 when separate averages for primary and supplemental enterprises are shown. An average based on totals for 1940 is also shown because the total investment applies to the total primary acreage. In the chart for the individual type of enterprise, an average investment per acre based on total investment is not shown, because the supplemental investment usually applies to areas administered under one or more types other than the one credited with the investment. This is also true of chart XI which presents areas and investments by source of water supply. However, since less than 18 percent of total area and 16 percent of total investment is reported in "underground sources" and no supplemental enterprises are reported in "other mixed" sources, the total averages are shown in table 5.

Capital Invested

The total investment in irrigation works and water rights reported by enterprises in the 1940 Irrigation Census for the 17 western States and Arkansas and Louisiana continued the trend upward with an increase of $159,293,411, or 17.8 percent, since 1930. The change in investment per acre, based on the area irrigation works were capable of supplying with water, was from $34.20 in 1930 to $37.50 in 1940, indicating that the costs of additional irrigation works and betterments per unit irrigated also continue to increase, as has been true from the beginning according to Census Records. Likewise, the estimated cost to complete the irrigation works in existing enterprises based on the irrigable lands in these projects changed from $33.17 per acre in 1930 to $35.99 per acre in 1940, an increase of $2.82 per irrigable acre in the projects. Chart XII shows graphically the historic trends of capital invested as related to project areas.

California, with $318,889,218, or 30.3 percent of the total, with a decade increase of 2.5 percent, ranks first in the 19 Irrigation States in capital invested in irrigation enterprises; Colorado, second with $106,849,343, or 10.2 percent of the total, with a decade increase of 22.0 percent; and Idaho, third with $102,585,798, or 9.8 percent of the total, with a decade increase of 21.4 percent. Investment increases for the decade were reported in each of the 17 western States. The States of Arkansas and Louisiana, where irrigation is principally pumping water for rice, showed capital decreases of 15.6 percent and 26.5 percent, respectively; but the number of irrigation enterprises increased in both States, while the irrigated area in Arkansas increased 6.5 percent. Some of the factors which caused the decreases are revealed by the statistics which show losses and gains in capital invested and which indicate considerable shift of location of irrigation practice, by counties and parishes, within these States since 1930. Such shifts required the abandonment of old wells and pumping plants, many of which were installed prior to 1920 at high costs, and the installation of new wells and/or pumping equipment. Irrigation statistics of the Census of 1940 compared with 1930 also indicate a change from steam and internal-combustion engines to more efficient electric motors at less cost per horsepower. There were indications that new engines and wells installed during the decade 1930 to 1940 cost less than those they had replaced which were of the earlier installations.

The Columbia River Drainage Basin ranks first of the 12 principal drainage basins in capital invested in irrigation enterprises ($206,523,302, or 19.6 percent of the total) and also reported the greatest decade increase ($49,168,188, or 31.2 percent). The Missouri River Drainage Basin ranks second ($179,750,238 invested, or 17.1 percent of the total, with a decade increase of $43,243,517, or 31.7 percent); and the Sacramento-San Joaquin Delta and tributary streams Drainage Basin ranks third ($171,004,939, or 16.2 percent of the total, with a decade increase of $6,376,846, or 3.9 percent).

By type of organization, irrigation districts continue to lead in investment with $265,737,810, or 25.3 percent of the total, an increase within the decade of 26.1 percent (chart XII). The United States Bureau of Reclamation ranks second, with $250,245,359, or 23.8 percent of the total, a decade increase of 29.0 percent; and cooperatives rank third, with $224,140,876, or 21.3 percent of the total, a decade increase of 25.0 percent.

Irrigation Statistics by Sources of Water Supply

The Irrigation Census of 1940 grouped the various sources of water supply into (a) "Primary sources" (i.e., sources from which the principal part or all of the water is obtained for irrigation of the land involved), and (b) "Supplemental sources" (i.e., sources from which a part of the supply of water is obtained to supplement an inadequate primary supply). These two groups are, in turn, segregated into the various surface and underground sources.

Water diverted from streams by gravity and/or pumped, and used alone or in connection with water from wells, continues to be the major supply of irrigation water.

The total area reported entirely irrigated from streams was 16,054,903 acres in 1939, comparable to 14,952,049 acres in 1929, or an increase of 7.4 percent. The area reported as irrigated entirely from wells, either pumped or flowing, was 2,570,392 acres in 1939, comparable to 2,117,012 acres in 1929, or an increase of 21.4 percent. However, areas irrigated entirely from flowing wells decreased 14.4 percent, and those from wells, pumped and flowing, increased 24.0 percent, indicating wells originally flowing are being pumped. This transition is particularly true in the States of Utah, New Mexico, and Louisiana. The area reported as irrigated from all sources other than entirely from streams or entirely from wells was 2,378,444 acres in 1939, comparable to 2,478,483 acres in 1929, or a decrease of 4.0 percent.

Areas irrigated entirely from stream diversions increased in 13 States and decreased in 6 States from 1929 to 1939. The greatest increases were reported in Wyoming, 267,163 acres, or 22.6 percent; Oregon, 223,880 acres, or 30.3 percent; California, 208,597 acres, or 9.3 percent; Nevada, 186,359 acres, or 47.2 percent; and Montana, 169,747 acres, or 11.4 percent. The greatest decreases were reported in Colorado, 130,362 acres, or 4.1 percent; and Arizona, 51,053, or 29.9 percent. Areas irrigated entirely from wells, increased in 15 States and decreased in 4 States. The greatest increases were reported in Texas, 204,240 acres, or 326.1 percent; Nebraska, 57,582 acres, or 245.5 percent; and California, 54,342 acres, or 3.7 percent. The greatest decreases were reported in Louisiana, 39,009 acres, or 22.2 percent; and Utah, 3,717 acres, or 18.9 percent.

The area irrigated entirely from "streams gravity and wells pumped" was 1,252,329 acres in 1939. Increases in acreage irrigated from this source were reported in 14 States. Decreases were reported in Idaho of 32,859 acres, or 45.0 percent, and in Montana of 2,198 acres, or 44.5 percent. In 1939, the States of North Dakota, South Dakota, and Oklahoma reported no lands irrigated from this source. The net increase for the 16 States reporting was 87,980 acres, or 7.6 percent. Area irrigated entirely from springs was 210,373 acres in 1939, a decrease of 3.2 percent in the 10 years. Of the total acreage irrigated from springs in 1939, Nevada reported 54,945 acres; Utah, 35,898 acres; and California, 28,538 acres; representing a decrease of 11.4 percent and 27.6 percent for Nevada and Utah, respectively, but an increase of 18.9 percent for California.

Irrigation Works

Tables 8 to 12 present an inventory of irrigation works by States and principal drainage basins for the Censuses of 1940, 1930, and 1920, and chart XIV shows the number and capacity of irrigation pumps by States. The marked increase in the number of practically all physical structures during the last decade indicates the installations of betterments and increased efforts to conserve water and develop additional water supplies. Storage dams increased from 2,949 in 1930 to 4,607 in 1940, or 56.2 percent. The number of storage reserviors increased from 5,122 in 1930 to 7,709 in 1940, or 50.5 percent. The total storage capacity of reservoirs increased from 24,508,590 acre-feet in 1930 to 33,787,382 in 1940, or 37.9 percent. Although the number of reservoirs reported decreased in a few States, each of the 19 Irrigation States, except Kansas, shows increased storage capacity. The statistics presented on storage dams and reservoirs for the Census of 1920 include some developments installed for other than irrigation purposes. Therefore, in several States, the data are not comparable with those of later censuses when only structures installed primarily for irrigation purposes were included.

Judging from increases in storage capacity, the most important developments in the conservation of water by storage in the decade 1930 to 1940 took place in the States of Arizona, Nebraska, and Utah and in the principal drainage basins of the Missouri, Colorado, and Columbia Rivers, and the Great Basin.

The lengths and capacities of canals show only slight increases, while the lengths of reported pipe lines of all kinds increased from 17,363.1 miles in 1930 to 28,584.9 miles in 1940, or 64.6 percent. The major portion of this increase was concrete pipe lines installed in California, Arizona, and Texas.

The number of flowing wells, (see tables 10 and 11), decreased from 4,811 in 1930 to 4,641 in 1940 and their capacities decreased from 609,367 gallons per minute to 555,073, or 8.9 percent.

Number and Yields of Pumped Wells

Tables 8 and 9 show the number and yield of wells pumped for irrigation, by States and principal drainage basins and chart XIII shows this data by States. The total of 68,279 pumped wells reported in 1940 represents a net increase for the 19 Irrigation States of 11,550, or 20.4 percent, during the decade compared to an increase of 24,635 wells, or 76.8 percent, during the decade 1920 to 1930.

Yields of pumped wells also increased at the net rate of 33.5 percent in the decade 1930 to 1940 compared to 98.0 percent increase during the previous decade. The average yield per well was 635 gallons per minute in 1940 as compared to 572 in 1930, which indicates that larger wells are being developed with the more modern drilling and pumping equipment.

Each of the 19 Irrigation States, excepting Utah, shows an increase for 1940 contrasted with 1930 in number of wells pumped, while the reported yields decreased in Louisiana (22.1 percent), Nevada (6.0 percent), and Washington (6.5 percent). The greatest increases in number of pumped wells were reported for Texas (2,294), Colorado (2,224), Nebraska (1,875), and California (1,831). The greatest increases in yields, gallons per minute, were in California with 4,031,802; Colorado, 1,691,895; Nebraska, 1,625,126; and Texas, 1,598,835. These yields raised the average per well in these States as follows: California, from 519 gallons per minute to 583; Colorado, from 364 to 670; Nebraska, from 797 to 851; and Texas, from 558 to 652.

Pumped wells increased from 1930 to 1940, in the principal drainage basins, excepting the Red River of the North in North Dakota, Whitewater Draw and Vamori Wash, Arizona, and the Great Basin which alone reported a decrease of 1,401 wells, or 51.8 percent, representing a decrease of 50.6 percent in the total yield.

Pumping Equipment

Tables 10 and 11 present comparable statistics on pumping equipment for the Censuses 1910, 1920, 1930, and 1940, by States and for 1920, 1930, and 1940 by principal drainage basins. The average pumping lift is also shown.

The installed horsepower for pumping water for irrigation in the 19 States increased from 1,283,419 horsepower to 1,762,687, or 37.3 percent, during the decade 1930 to 1940. Likewise, the pumps installed increased 27.8 percent in number and 32.4 percent in capacity. The average pumping lift reported for all pumping plants remained static for the decade at 51 feet.

The use of electric power increased 241,858 installed horsepower and represents 63.4 percent of the total in 10 years. The installed horsepower of internal-combustion engines increased 322,387 horsepower and represents 33.4 percent of the total.

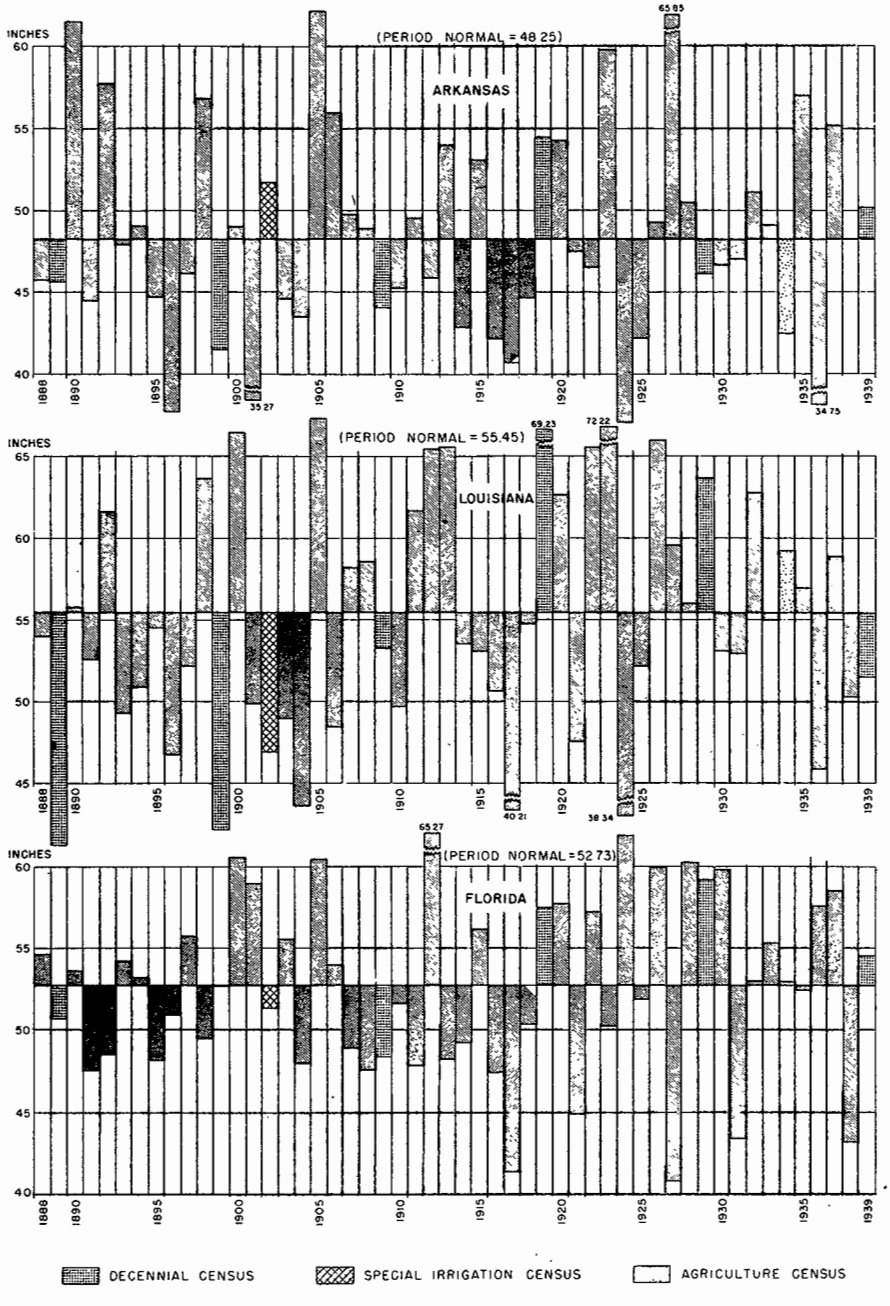
A marked increase (13,370 to 38,204, or 185.7 percent) took place in the installation of turbine pumps during the decade. Since this type of pump is used almost exclusively for the pumping of water from wells, and there was no substantial reduction in the use of all other types of pumps, it can be reasoned that the trend is toward turbine pumps and that the increased number of turbine pumps, is indicative of a new development involving pumped wells, since 1930. Although turbine pumps exceed in number and require 51.1 percent of the total installed horsepower, centrifugal pumps exceed them in capacity, with 55.4 percent of the total. The average lift for centrifugal pumps is 29 feet compared to 70 feet for the turbines. This higher lift largely accounts for the greater horsepower required by the turbine installations. It is notable that the total number of centrifugal pumps decreased slightly. However, the total capacity increased 10.1 percent and the installed horsepower decreased 17.8 percent, indicating replacements of machinery of higher efficiency.

All States show a marked increase for the decade in the installation of pumping equipment, with the exception of Utah, which showed a decrease of 11.1 percent. California, with 52,016 pumps, or 66.1 percent of the total installations, ranks first, followed by Texas, with 6.1 percent, and Colorado and Nebraska, each with 3.6 percent of the total. Marked increases in reported average lifts are shown in Arizona and Texas.

Pumping-plant installations in the principal drainage basins increased, with the exception of the Red River of the North, Whitewater Draw, Vamori Wash, and the Great Basin (which decreased 48.1 percent). The Sacramento-San Joaquin Delta and tributary streams Basin contains 44.3 percent of the total irrigation pumps in the 19 States. Other Pacific Ocean Basins, exclusive of the Colorado, Columbia, and Klamath Basins, rank second with 21.1 percent, and the Missouri River Basin ranks third with 7.6 percent of the total number of pumps installed. However, the Gulf of Mexico streams, other than the Mississippi River and the Rio Grande, rank third in installed horsepower and second in capacity of pumps.

CHART I - ARKANSAS, LOUISIANA, AND FLORIDA

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939



AVERAGE MONTHLY PRECIPITATION
1938 AND 1939

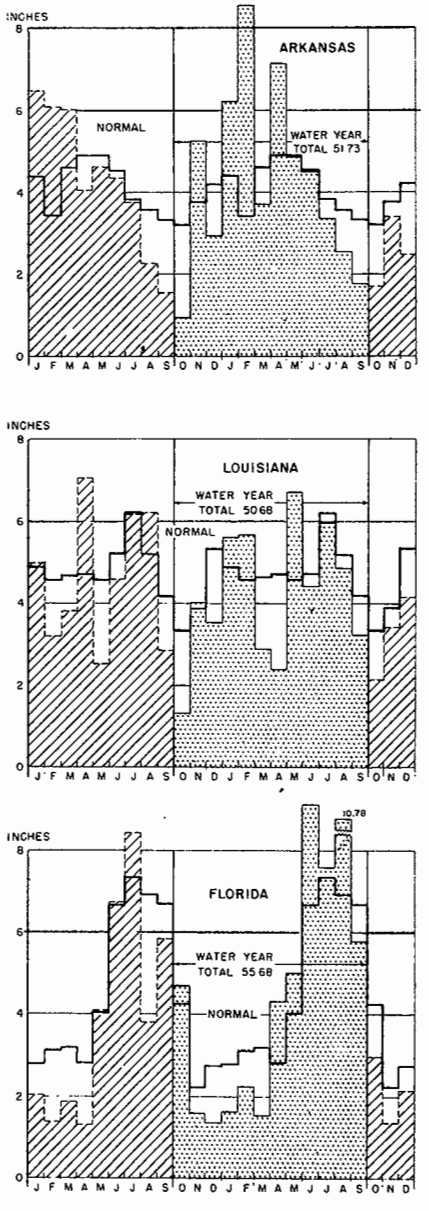
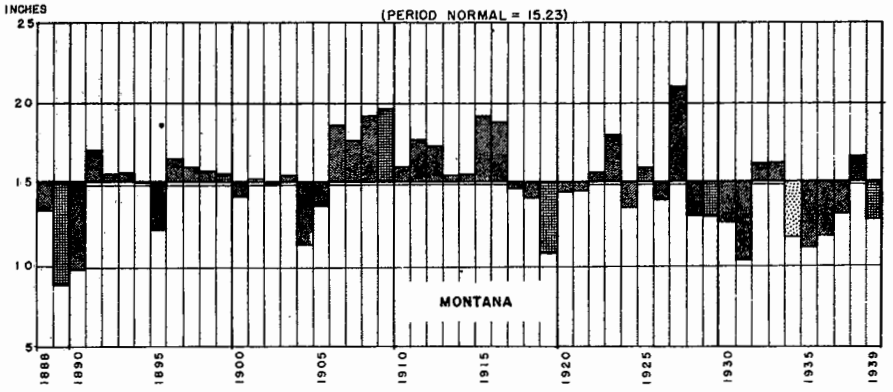
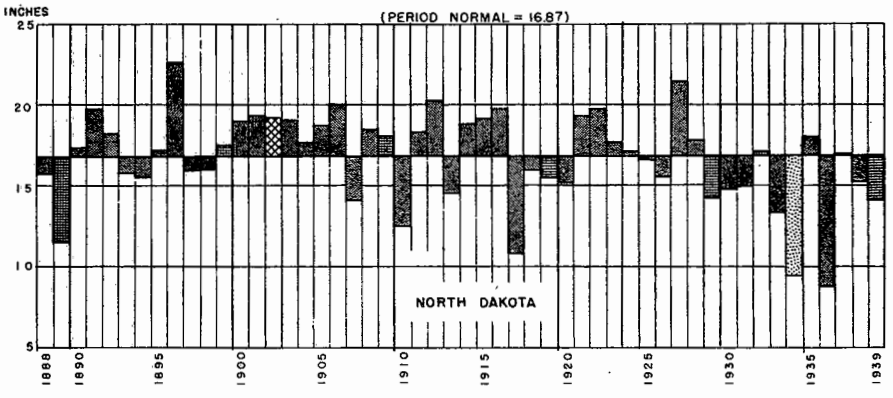
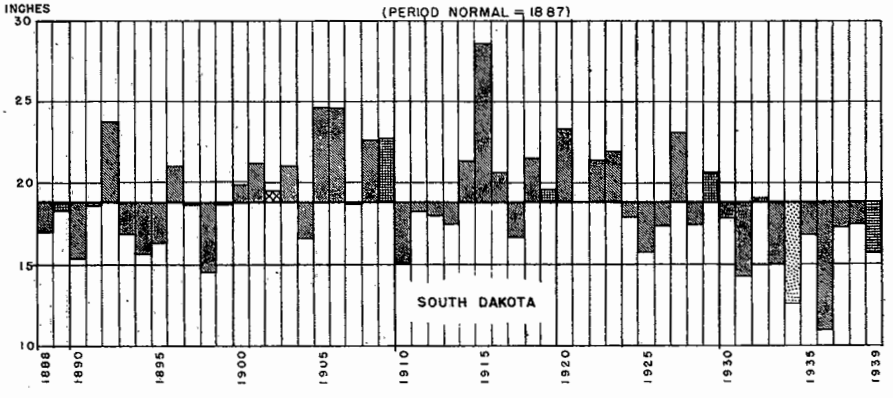


CHART II - MONTANA, NORTH DAKOTA, AND SOUTH DAKOTA

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939

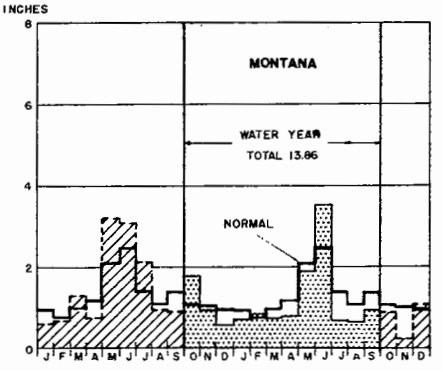


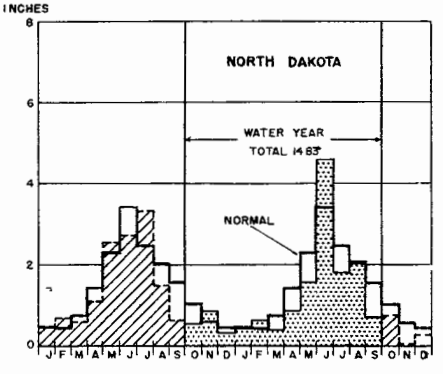




DECENNIAL CENSUS SPECIAL IRRIGATION CENSUS AGRICULTURE CENSUS

AVERAGE MONTHLY PRECIPITATION
1938 AND 1939





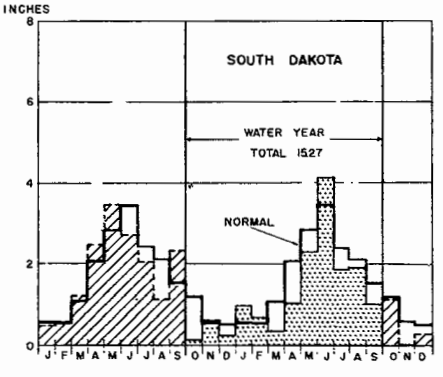
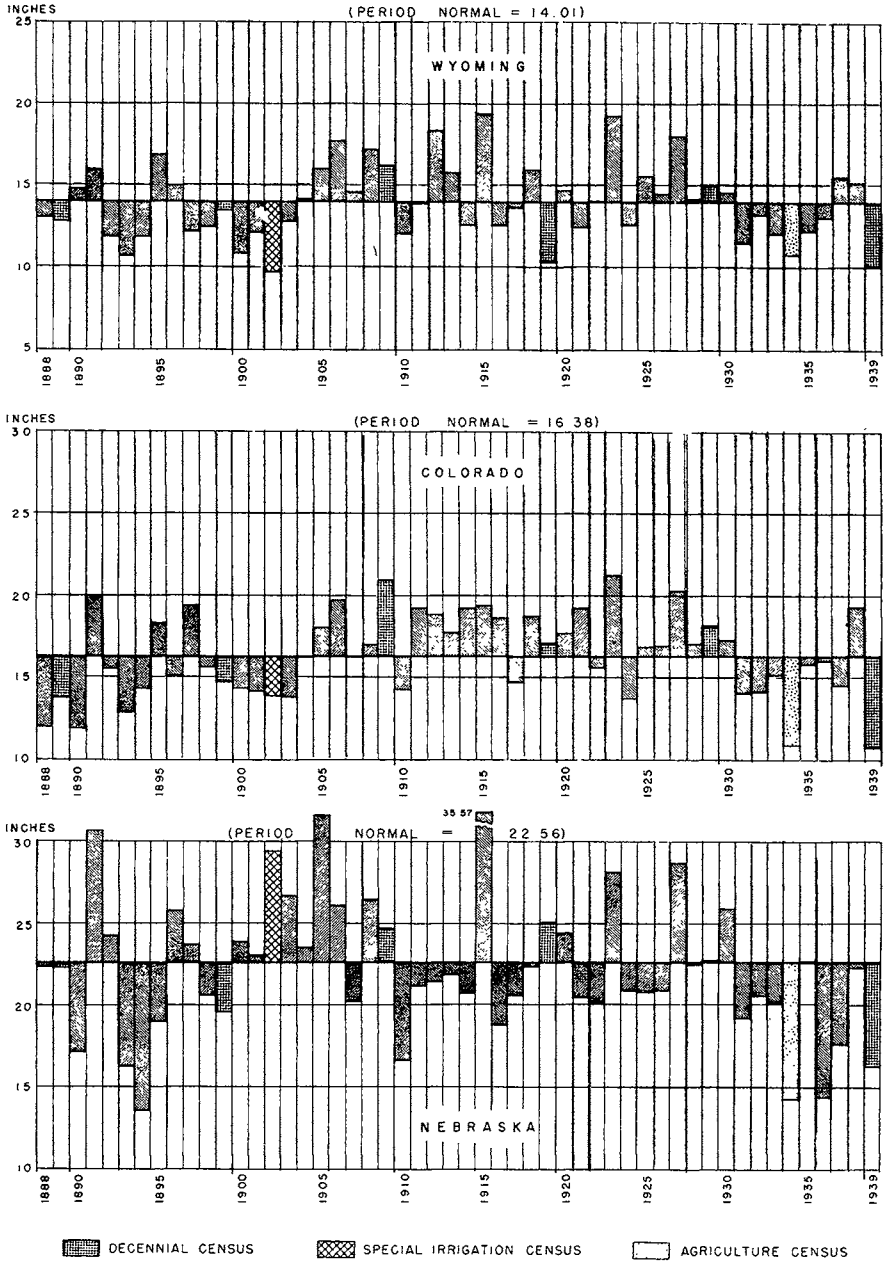


CHART III - WYOMING, COLORADO, AND NEBRASKA

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939



AVERAGE MONTHLY PRECIPITATION
1938 AND 1939

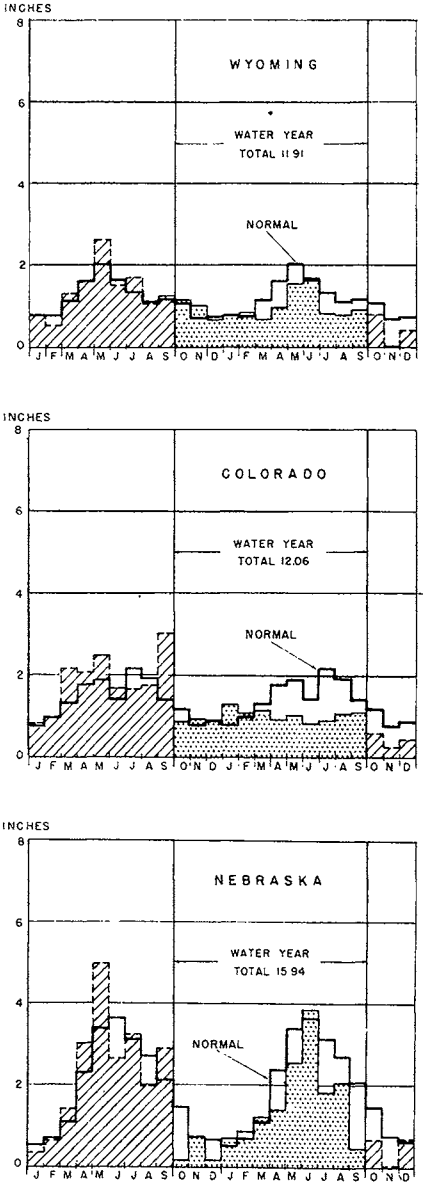
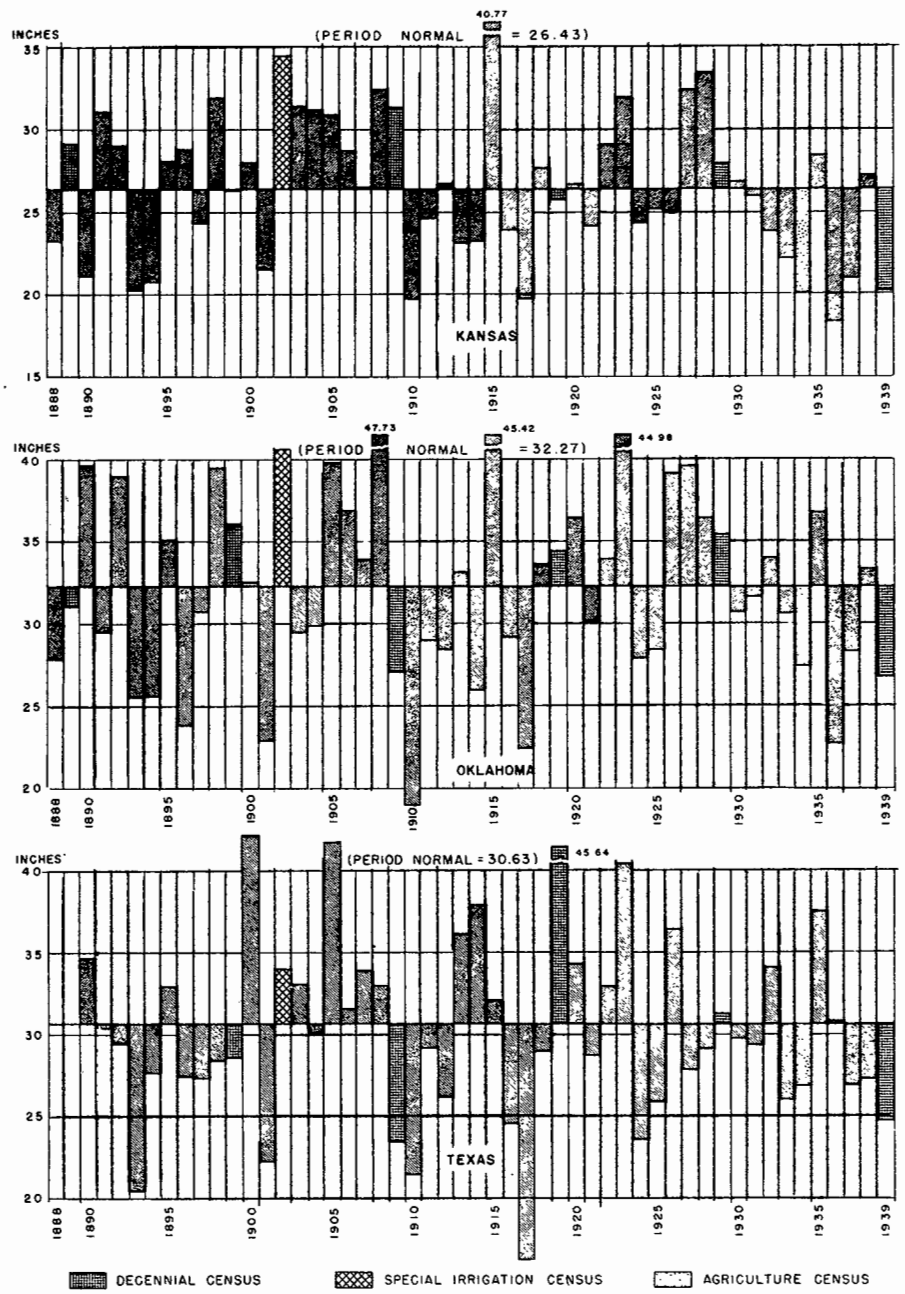


CHART IV - KANSAS, OKLAHOMA, AND TEXAS

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939



AVERAGE MONTHLY PRECIPITATION 1938 AND 1939

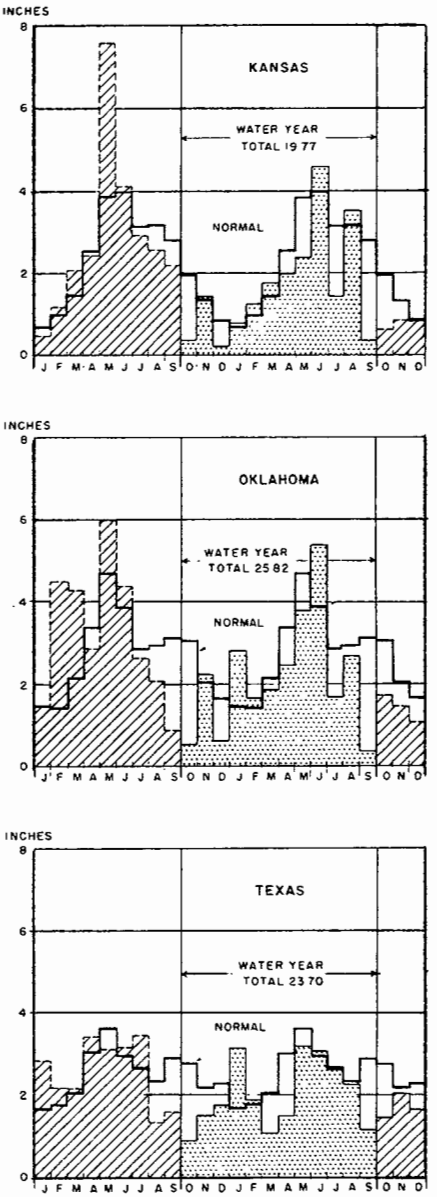
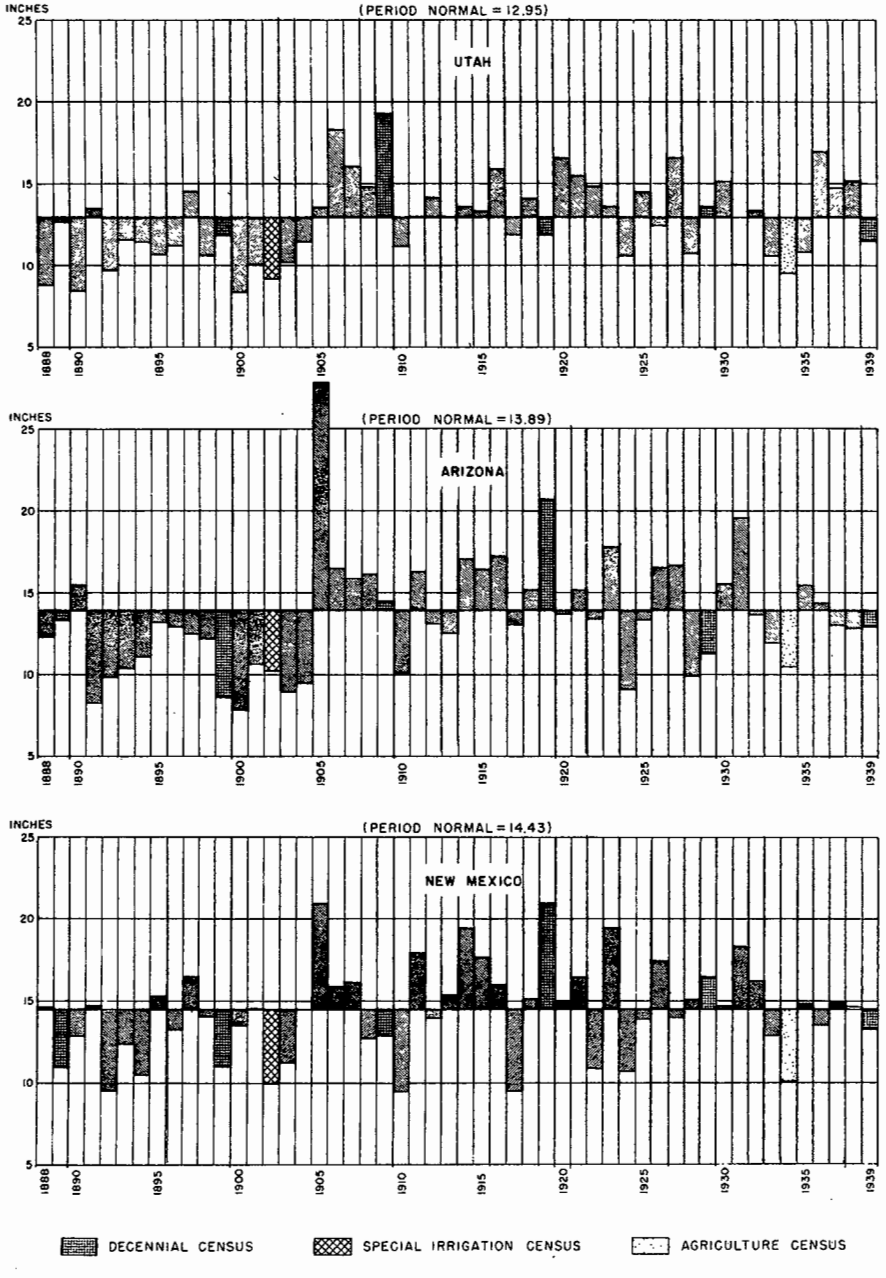


CHART V- UTAH, ARIZONA, AND NEW MEXICO

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939



AVERAGE MONTHLY PRECIPITATION
1938 AND 1939

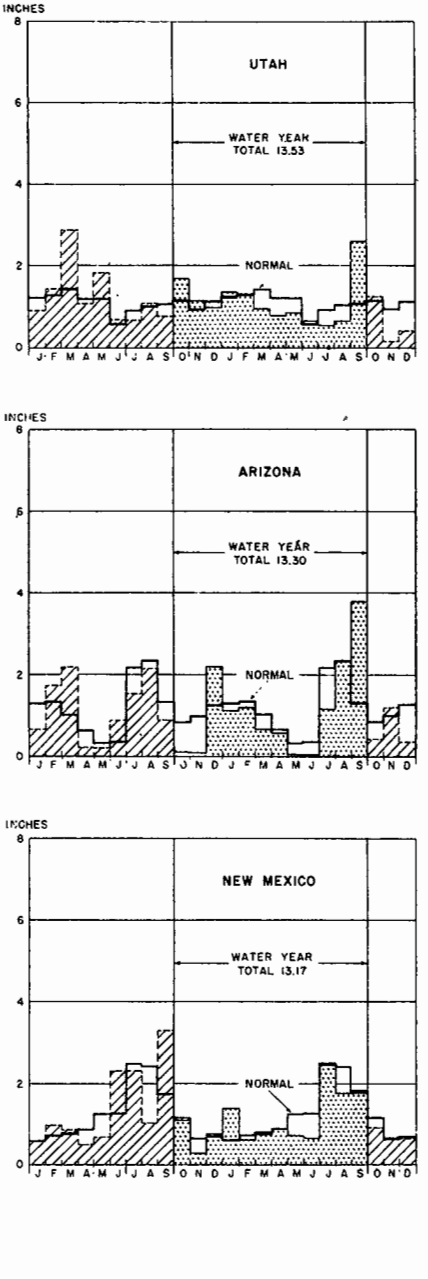
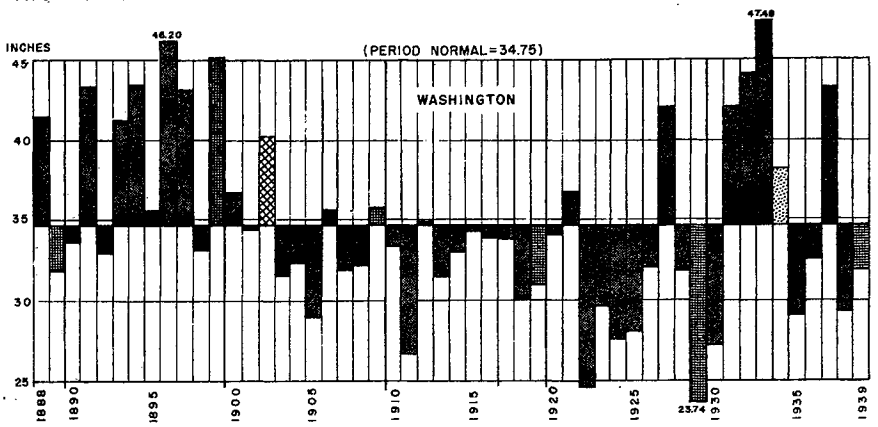
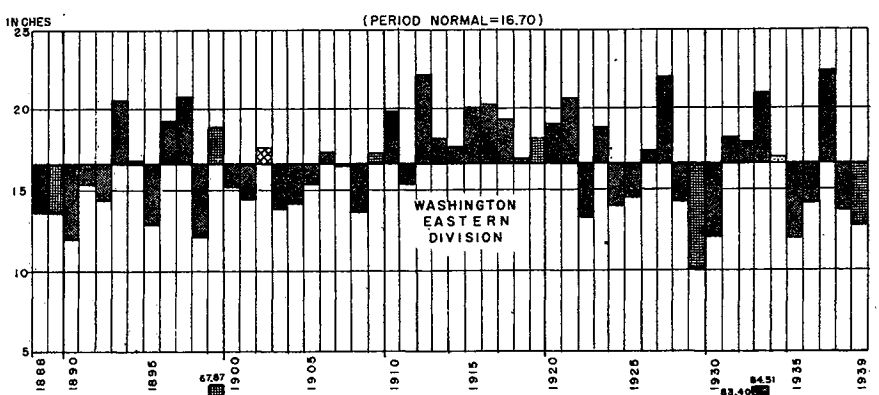
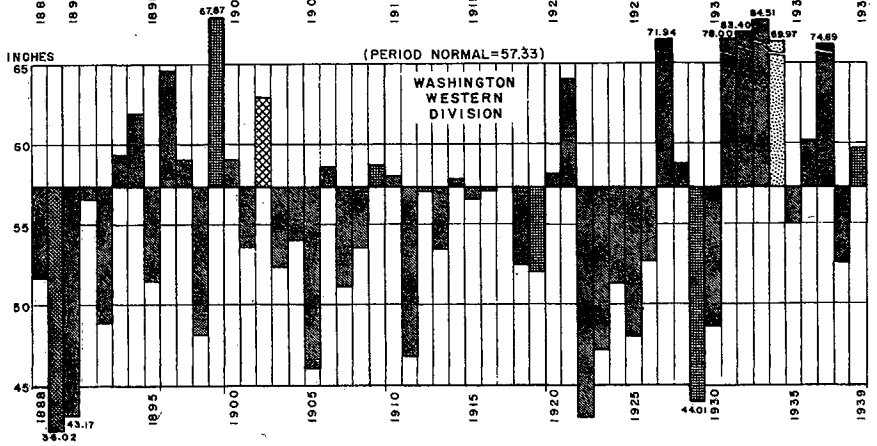


CHART VI - WASHINGTON

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939

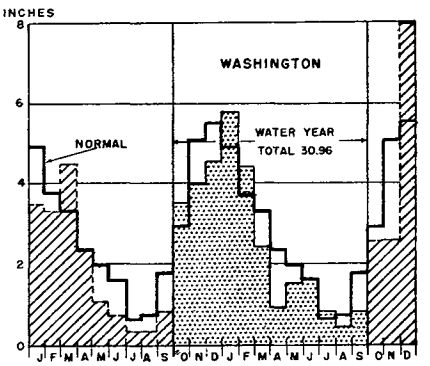


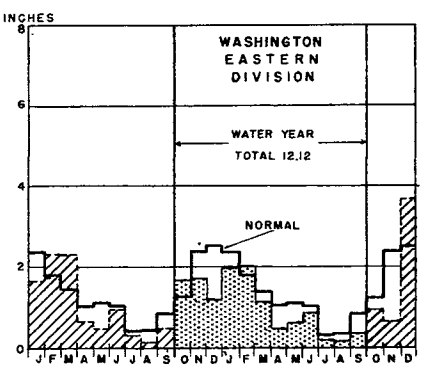




DECENNIAL CENSUS SPECIAL IRRIGATION CENSUS AGRICULTURE CENSUS

AVERAGE MONTHLY PRECIPITATION
1938 AND 1939





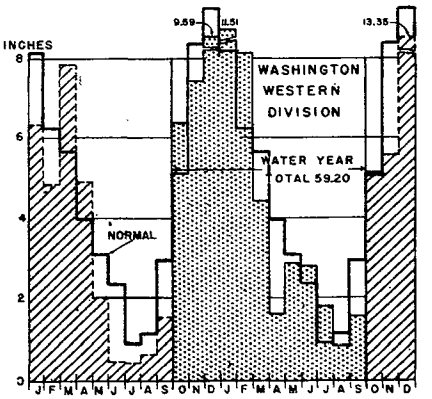
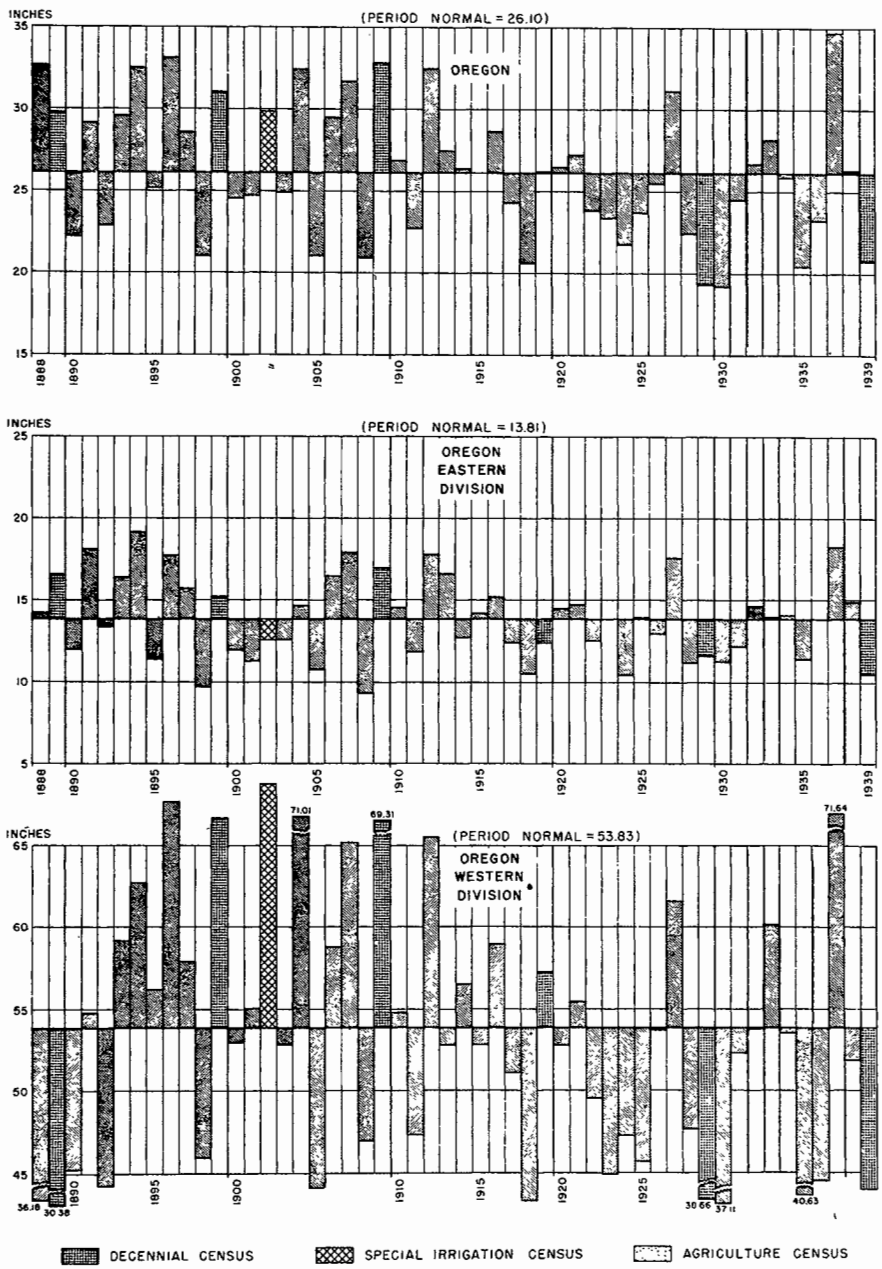


CHART VII - OREGON

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888-1939



AVERAGE MONTHLY PRECIPITATION 1938 AND 1939

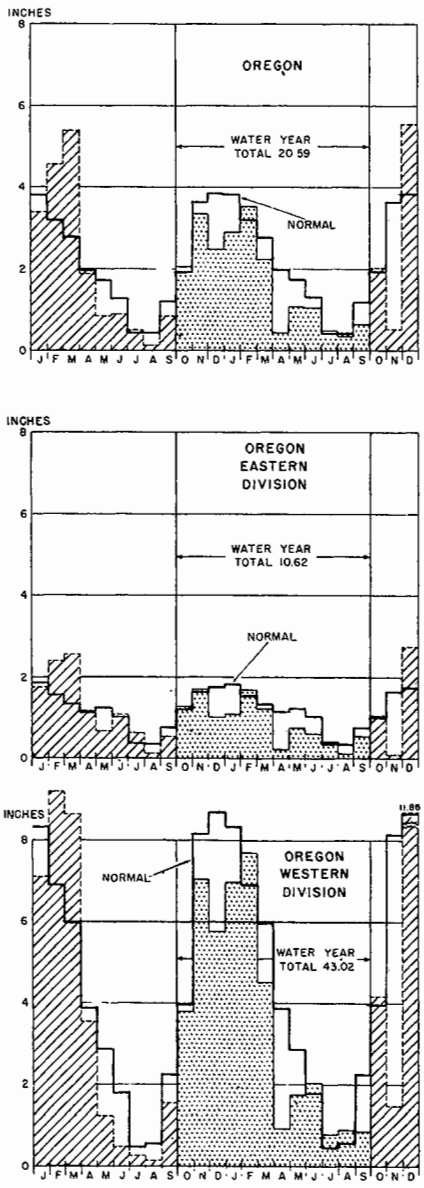
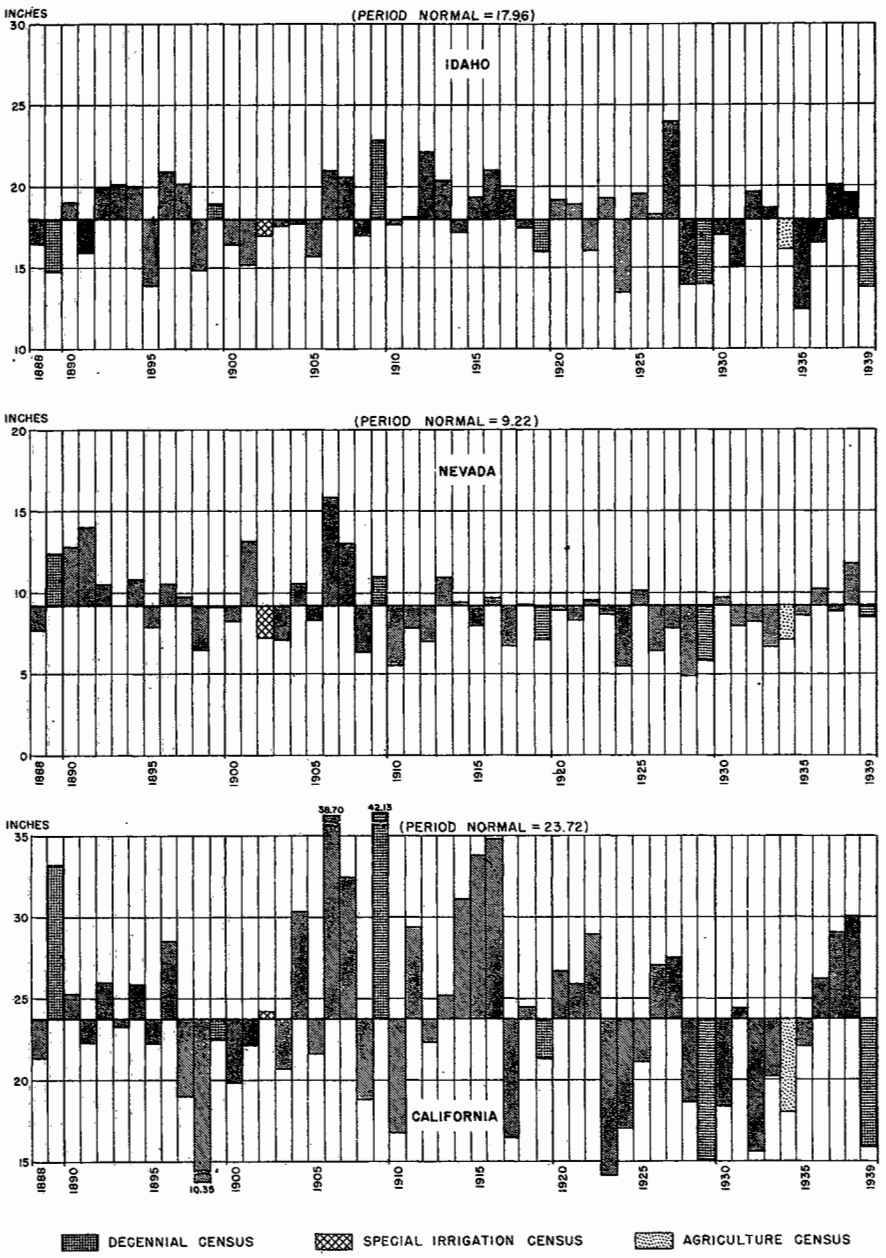


CHART VIII – IDAHO, NEVADA, AND CALIFORNIA

AVERAGE ANNUAL PRECIPITATION AND DEPARTURE FROM NORMAL 1888–1939



AVERAGE MONTHLY PRECIPITATION 1938 AND 1939

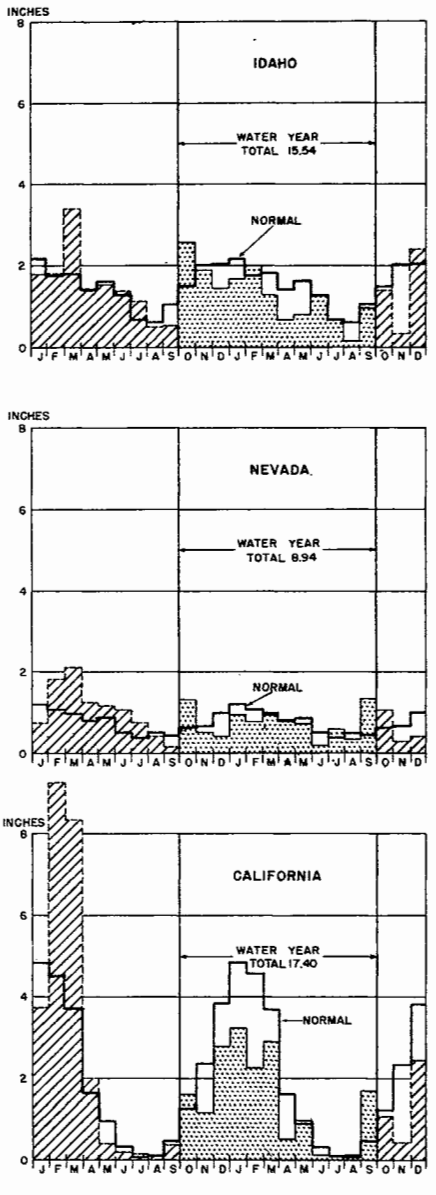


CHART IX.— FARMS IRRIGATED, AREAS, INVESTMENT AND AVERAGE ANNUAL COST OF MAINTENANCE AND OPERATION OF IRRIGATION ENTERPRISES, CENSUSES OF 1890 TO 1940: BY STATES ARRANGED IN ORDER OF AREA IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER IN 1940

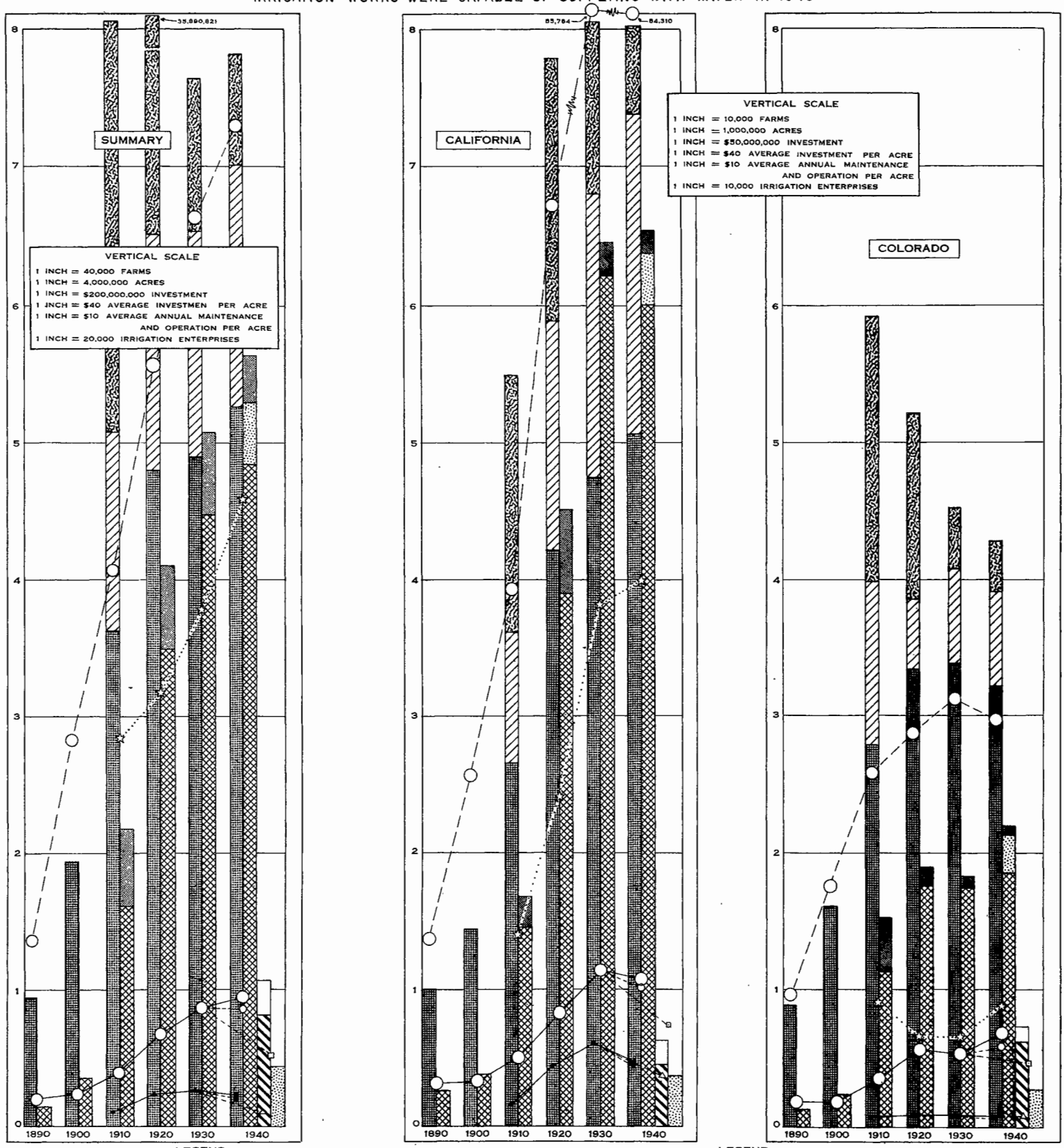


CHART IX. — FARMS IRRIGATED, AREAS, INVESTMENT, AND AVERAGE ANNUAL COST OF MAINTENANCE AND OPERATION OF IRRIGATION ENTERPRISES, CENSUSES OF 1890 TO 1940: BY STATES ARRANGED IN ORDER OF AREA IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER IN 1940 — Continued

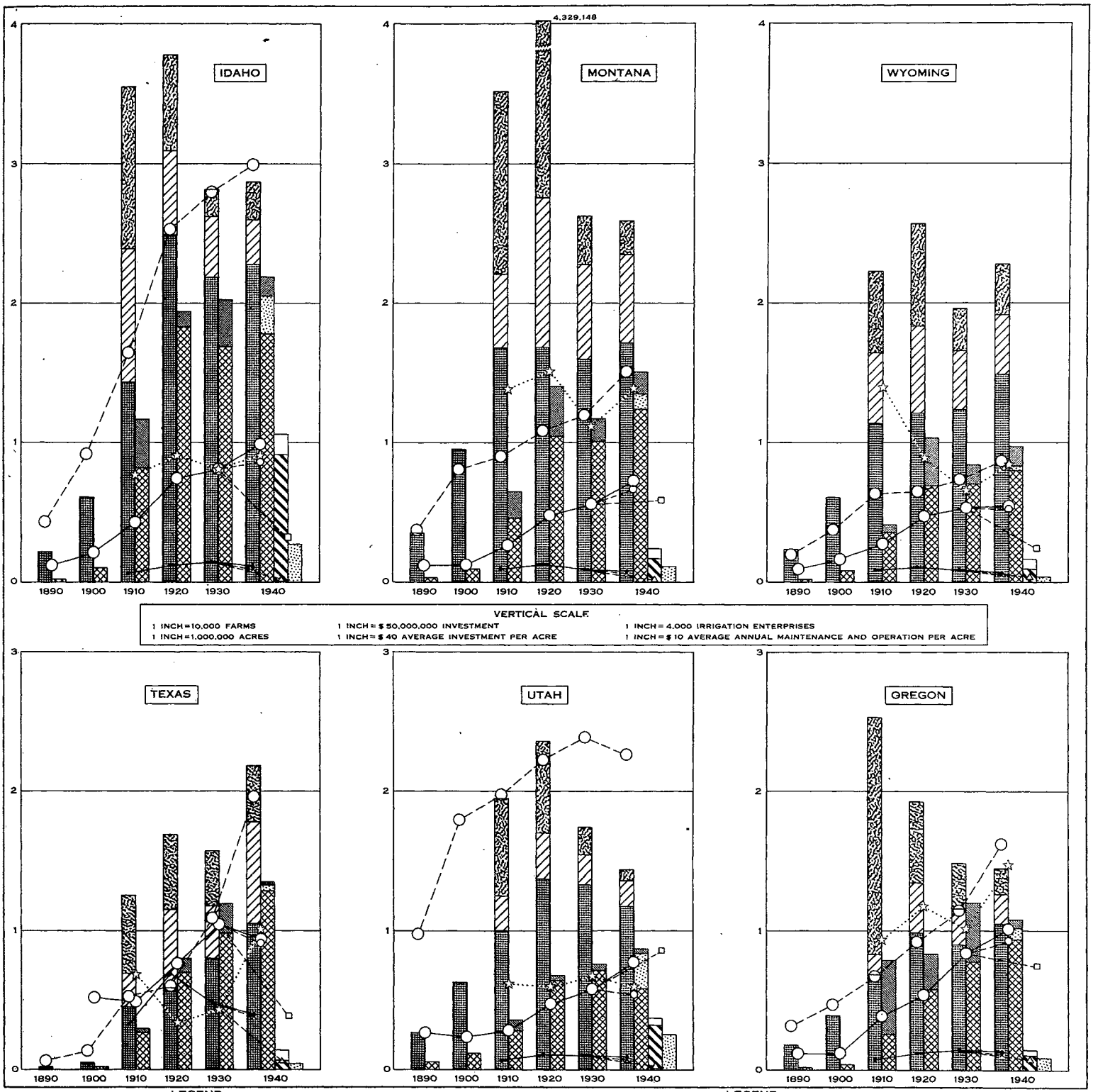


CHART IX.— FARMS IRRIGATED, AREAS, INVESTMENT, AND AVERAGE ANNUAL COST OF MAINTENANCE AND OPERATION OF IRRIGATION ENTERPRISES, CENSUSES OF 1890 TO 1940; BY STATES ARRANGED IN ORDER OF AREA IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER IN 1940 — Continued

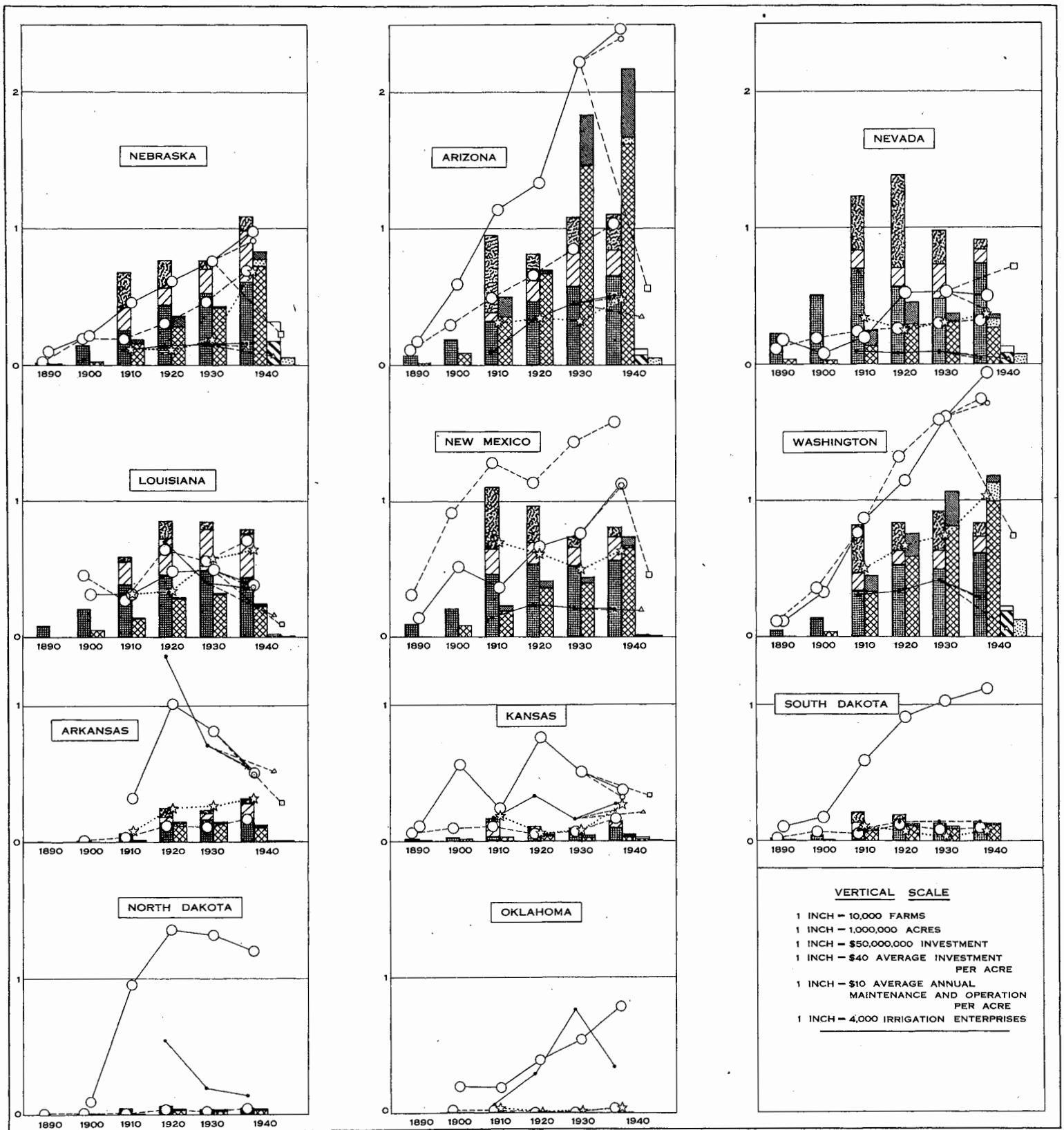


CHART X. — AREAS, INVESTMENT, AND AVERAGE INVESTMENT PER ACRE OF IRRIGATION ENTERPRISES, CENSUSES OF 1902 TO 1940: BY SPECIFIED DRAINAGE BASINS

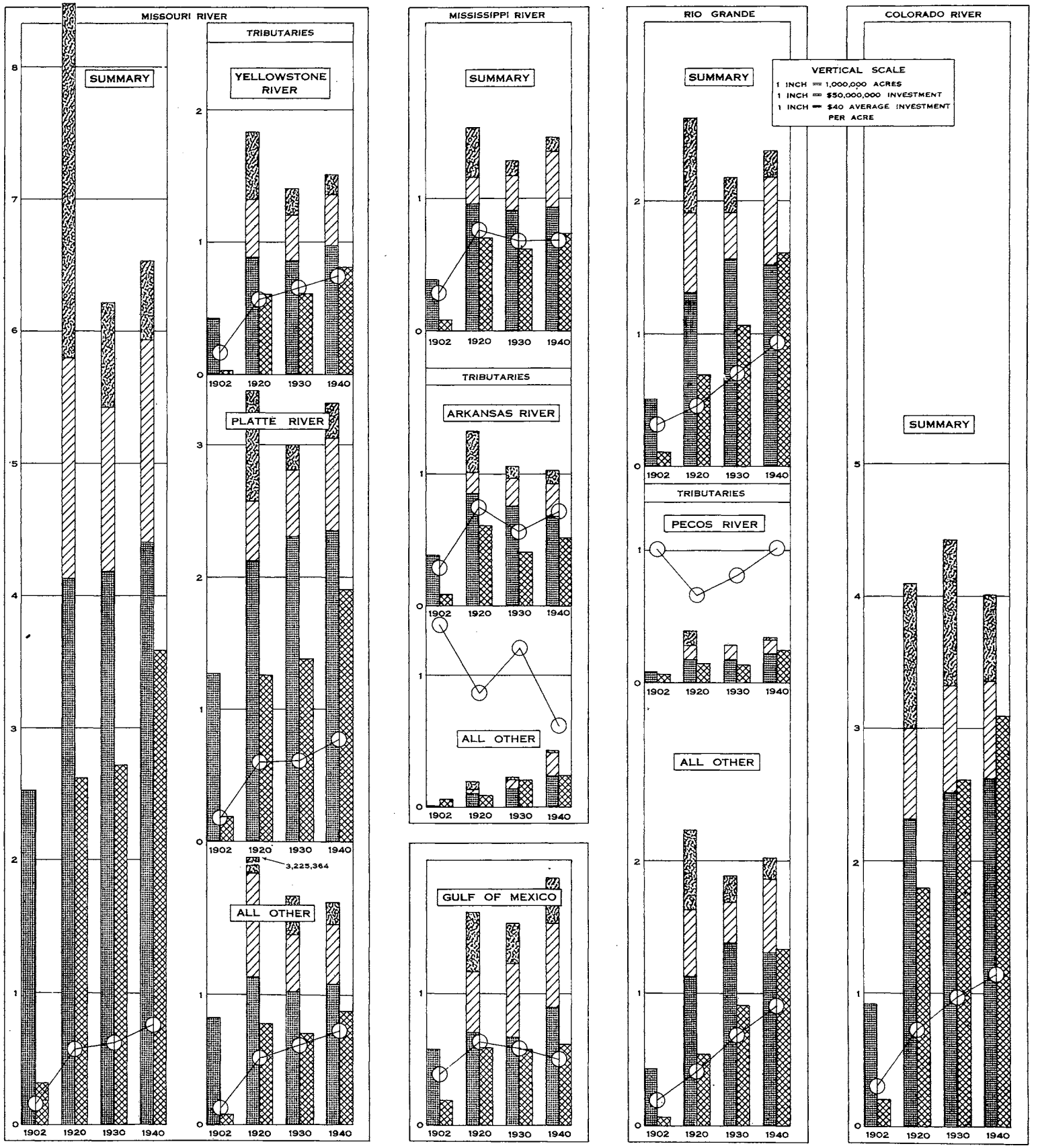


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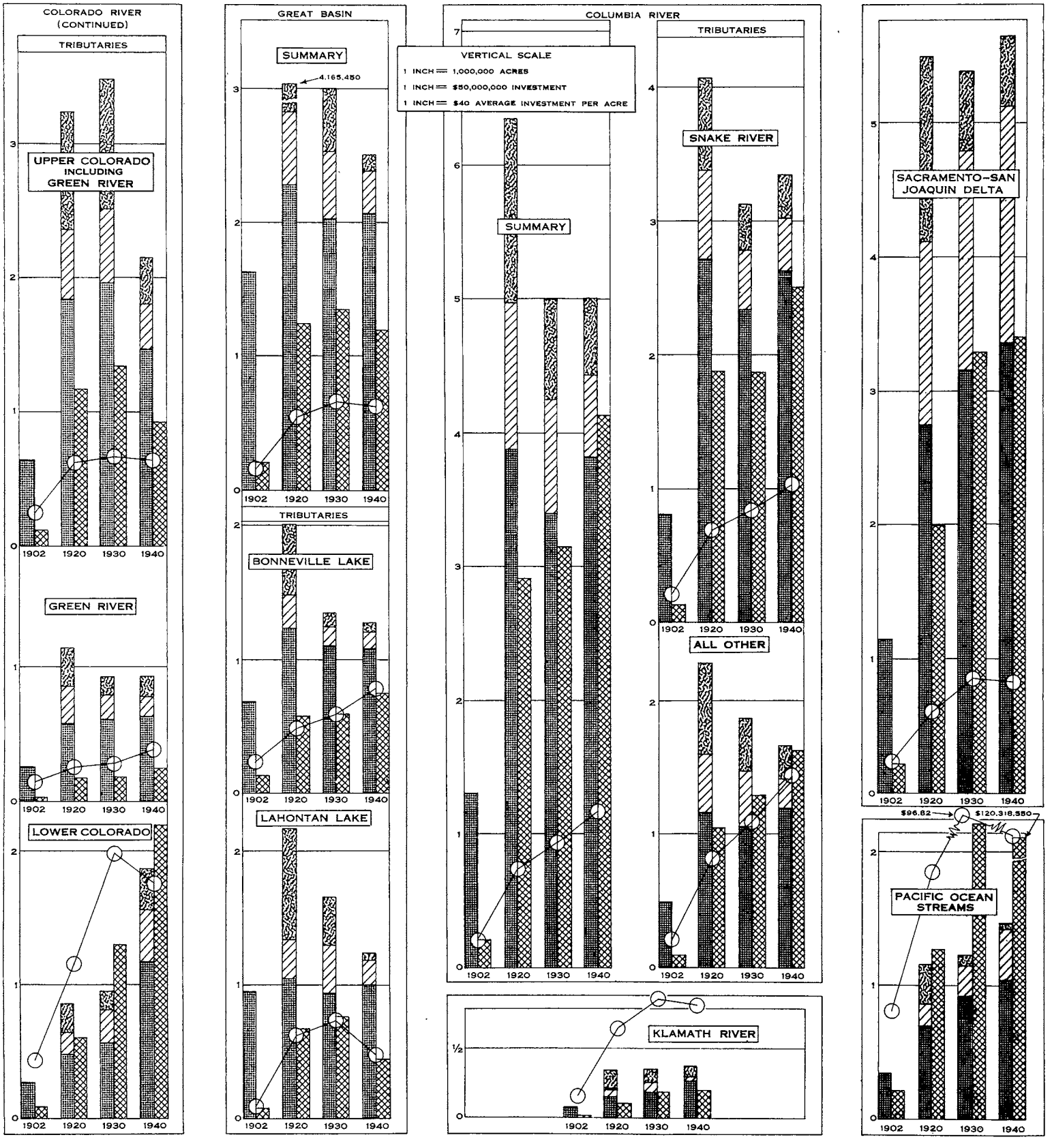
CHART X. — AREAS, INVESTMENT, AND AVERAGE INVESTMENT PER ACRE OF IRRIGATION ENTERPRISES, CENSUSES OF 1902 TO 1940: BY SPECIFIED DRAINAGE BASINS — Continued



LEGEND

AREA IRRIGATED IN THE CROP YEAR ENUMERATED

AREA WORKS WERE CAPABLE OF SUPPLYING WATER

AREA IRRIGABLE IN EXISTING IRRIGATION IN CENSUS YEAR

INVESTMENT TO JANUARY 1 OF THE CENSUS YEAR

AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WATER

CHART XI. — AREA IRRIGATED, 1909 TO 1939; AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE, CAPITAL INVESTED, AND AVERAGE INVESTMENT, 1920 TO 1940; AND AVERAGE ANNUAL COST PER ACRE OF MAINTENANCE AND OPERATION OF IRRIGATION ENTERPRISES, 1919 TO 1939; BY SOURCE OF WATER SUPPLY

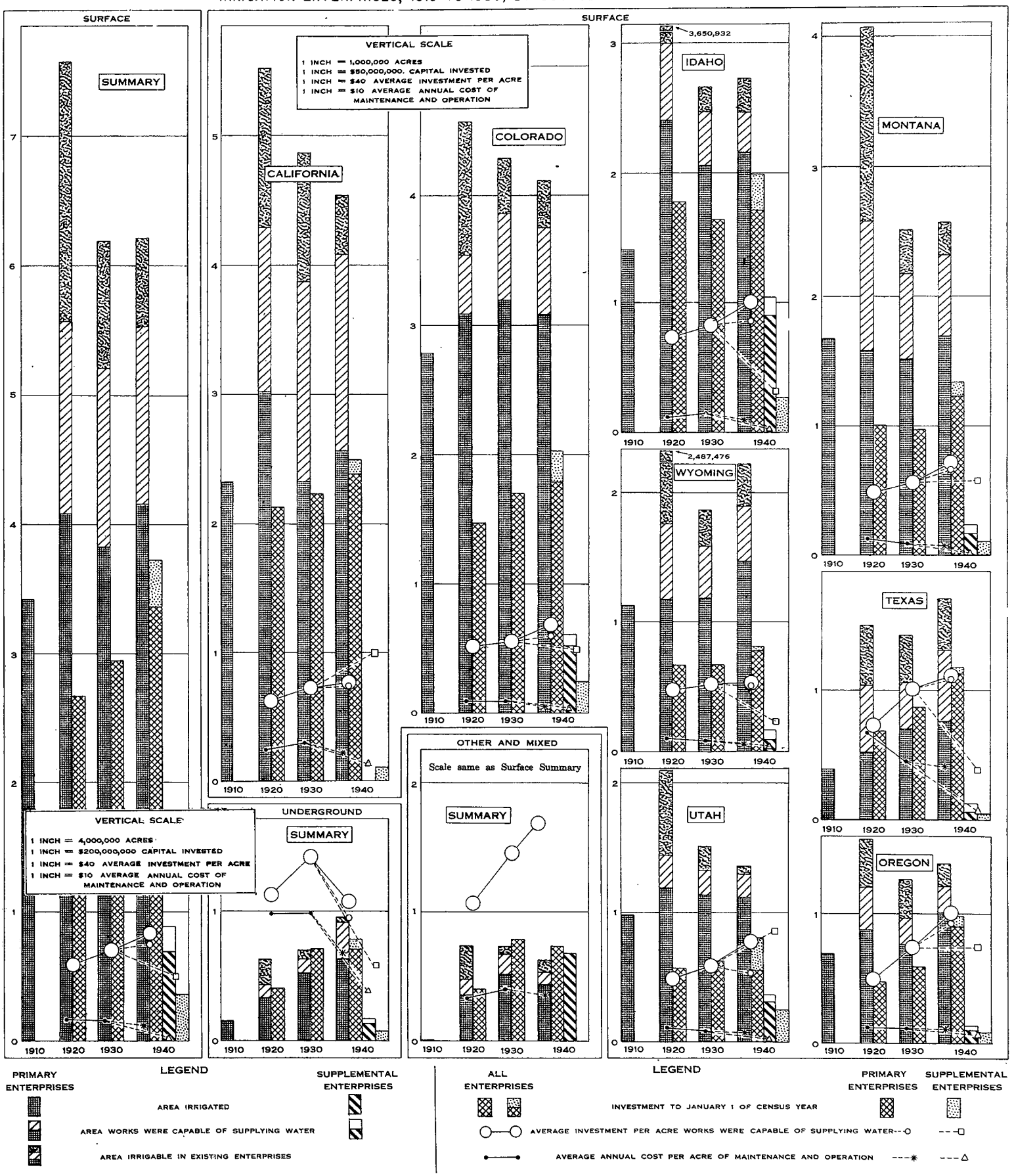
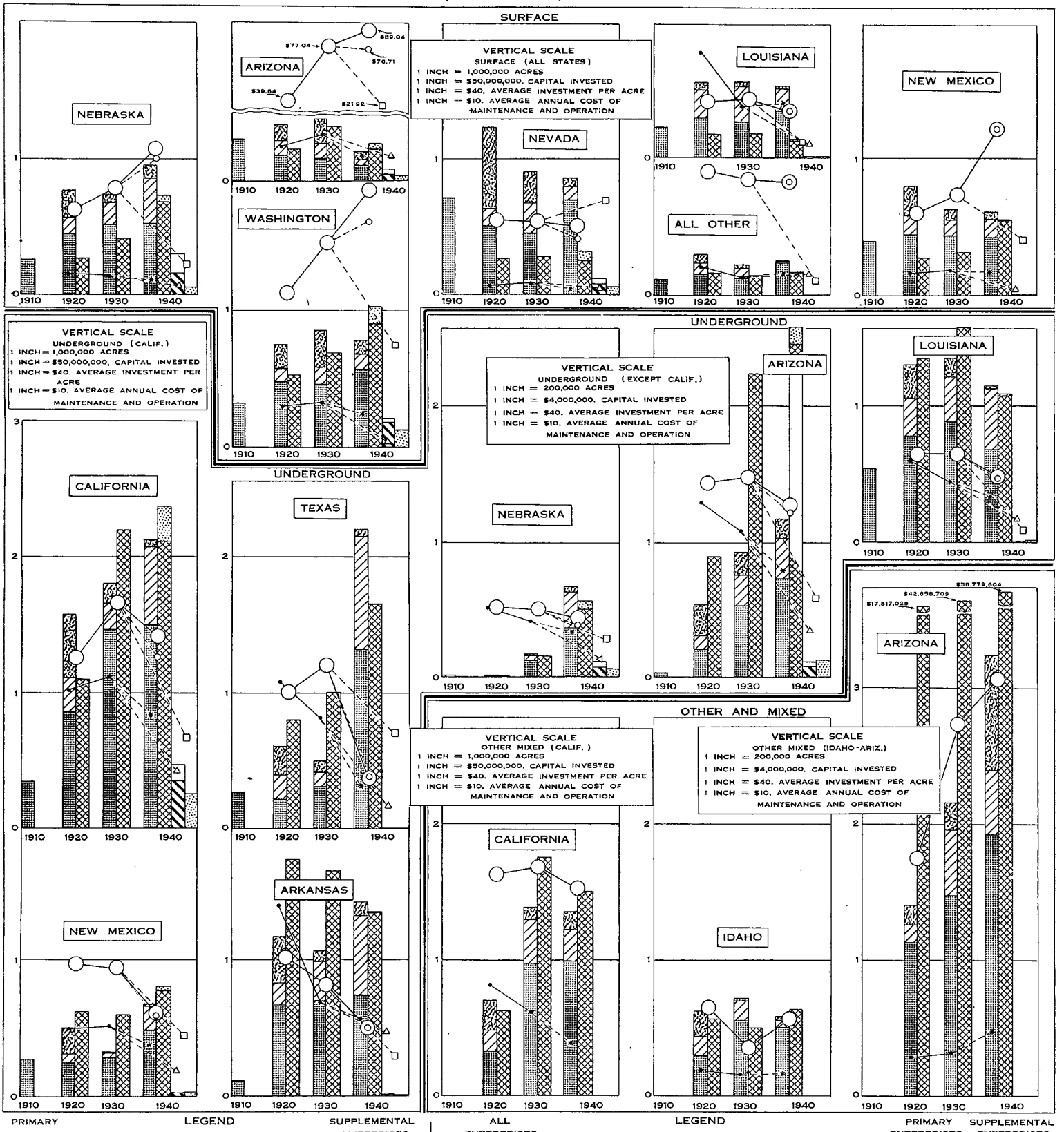


CHART XI.— AREA IRRIGATED, 1909 TO 1939; AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE, CAPITAL INVESTED, AND AVERAGE INVESTMENT, 1920 TO 1940; AND AVERAGE ANNUAL COST PER ACRE OF MAINTENANCE AND OPERATION OF IRRIGATION ENTERPRISES, 1919 TO 1939; BY SOURCE OF WATER SUPPLY — Continued



LEGEND

PRIMARY ENTERPRISES — SUPPLEMENTAL ENTERPRISES

AREA IRRIGATED

AREA WORKS WERE CAPABLE OF SUPPLYING WATER

AREA IRRIGABLE IN EXISTING ENTERPRISES

LEGEND

ALL ENTERPRISES — PRIMARY ENTERPRISES — SUPPLEMENTAL ENTERPRISES

INVESTMENT TO JANUARY 1 OF CENSUS YEAR

AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WATER

AVERAGE ANNUAL COST PER ACRE OF MAINTENANCE AND OPERATION

CHART XII — AREAS, CAPITAL INVESTED, AND AVERAGE INVESTMENT PER ACRE, 1890-1940; AND BY TYPE OF IRRIGATION ENTERPRISE, 1910-1940

(For the 17 Western States and Arkansas and Louisiana)

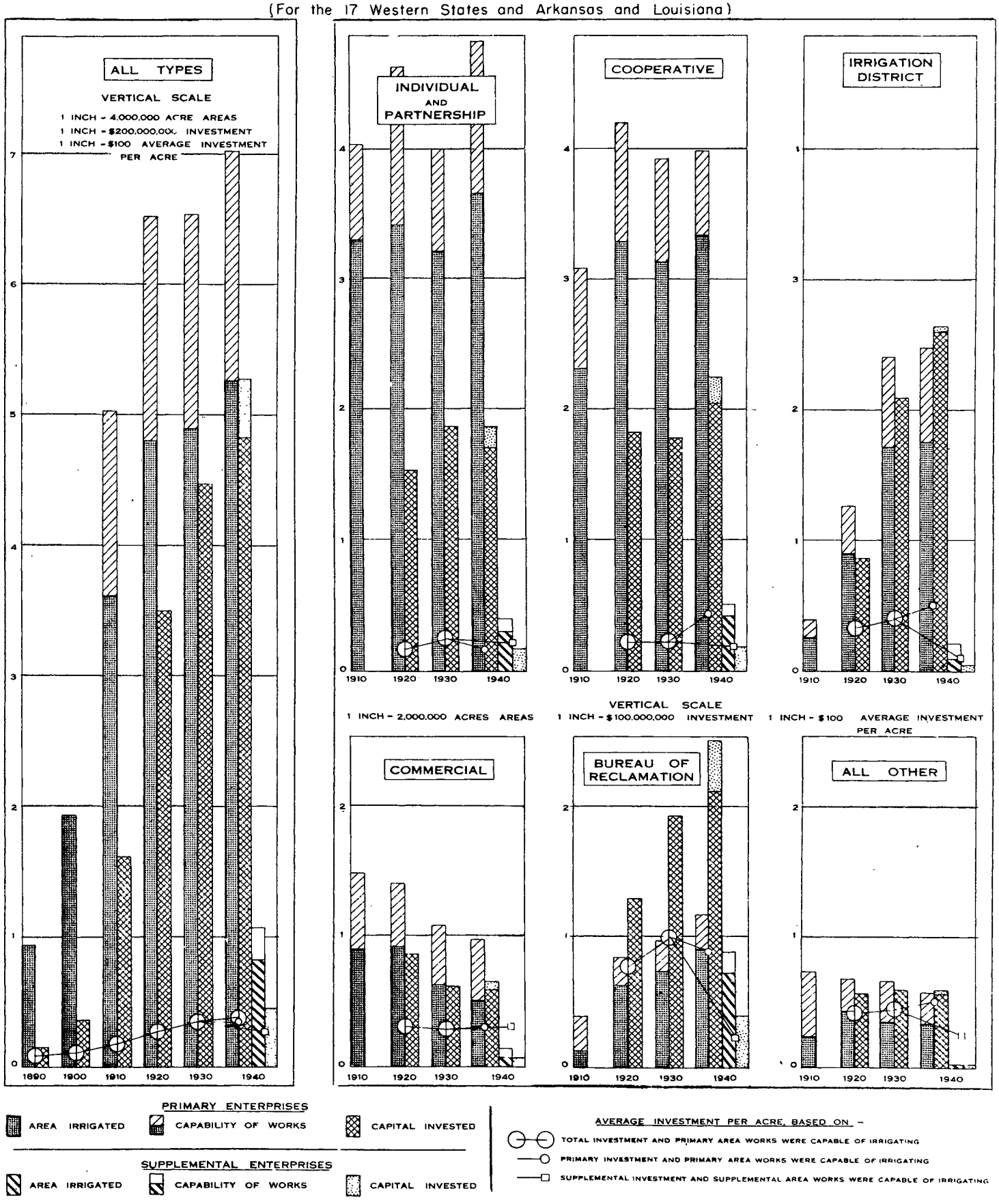


CHART XIIa—PROPORTION OF TOTAL.—AREA IRRIGATED AND AREA WORKS WERE CAPABLE OF SUPPLYING WATER, 1910–1940; AND CAPITAL INVESTED, 1920–1940; BY TYPE OF IRRIGATION ENTERPRISE
(For the 17 Western States and Arkansas and Louisiana)

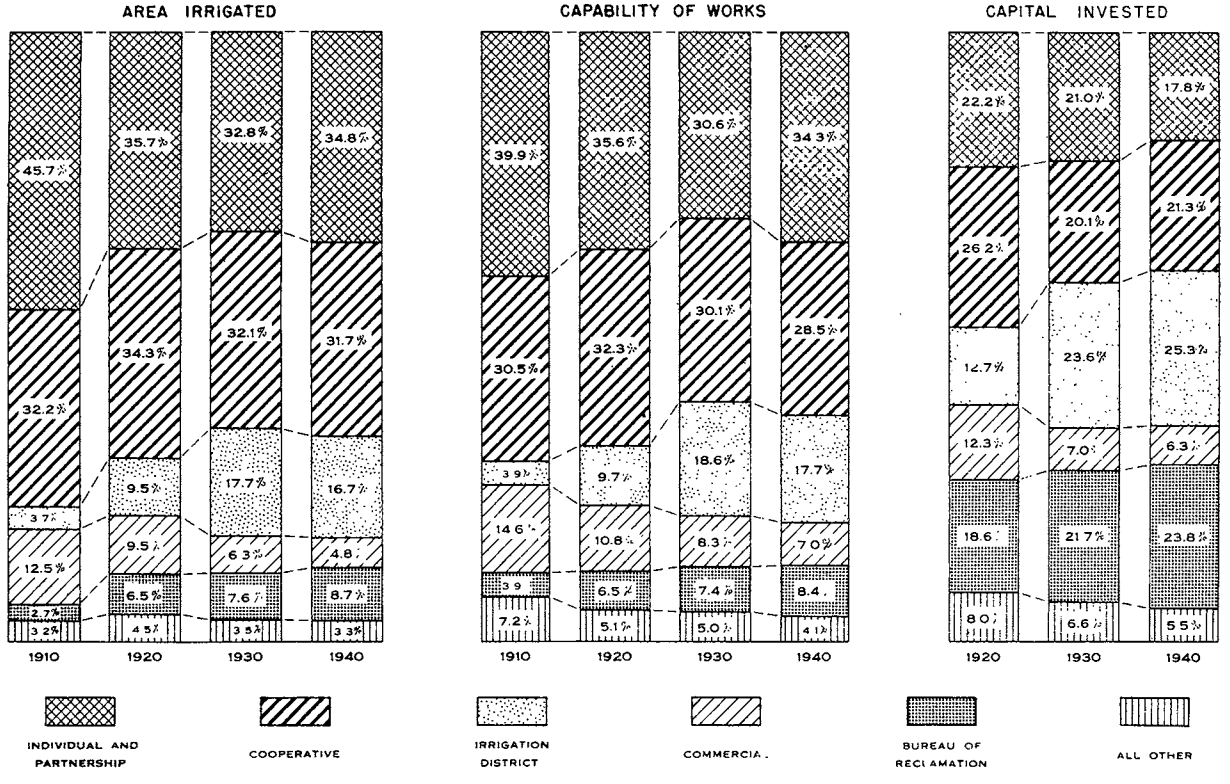


CHART XIII. — NUMBER AND YIELD OF PUMPED AND FLOWING WELLS, AVERAGE YIELD OF PUMPED WELLS, 1910 TO 1940; AND AVERAGE LIFT OF PUMPED WELLS, 1940: BY STATES

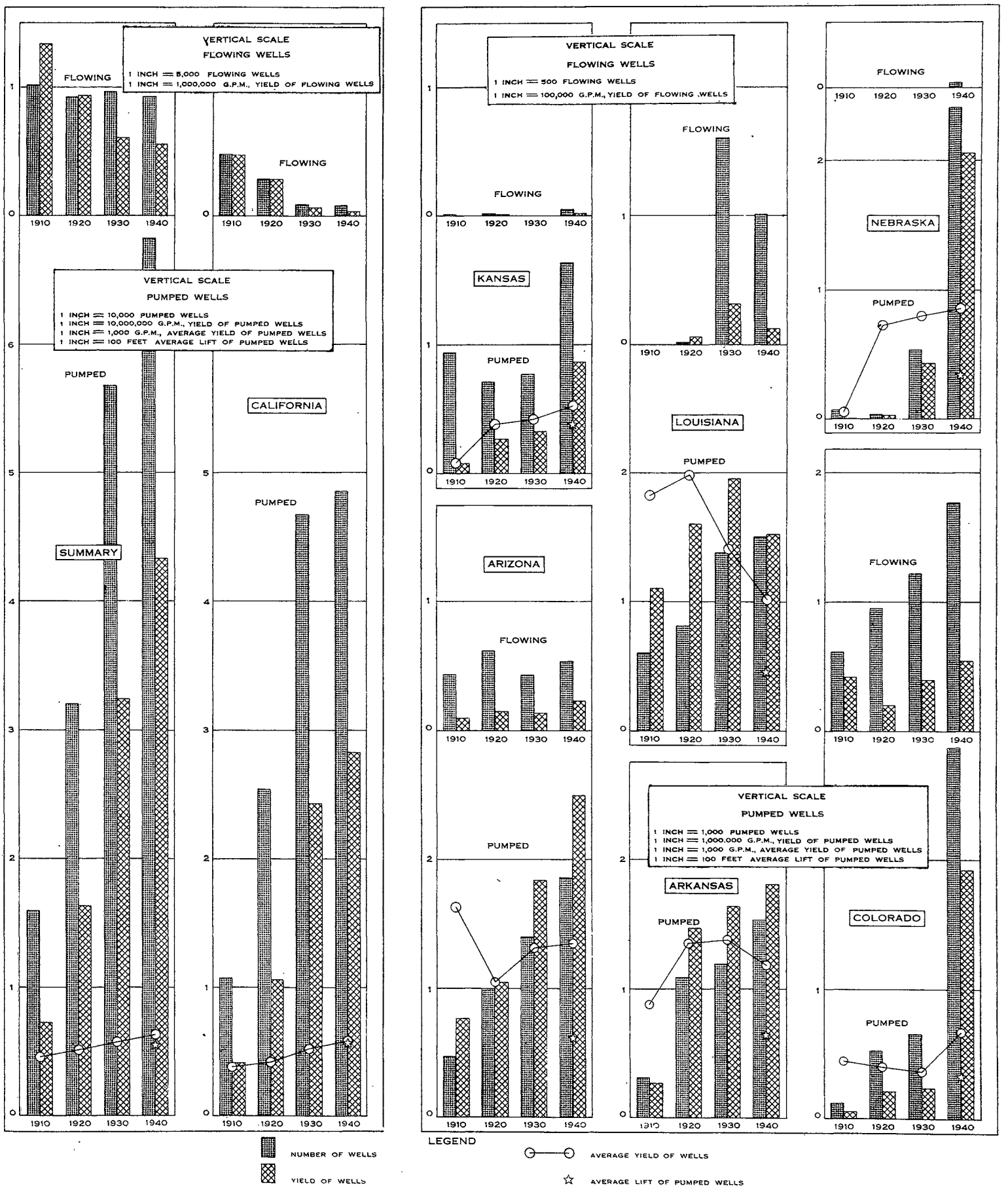


CHART XIII. — NUMBER AND YIELD OF PUMPED AND FLOWING WELLS, AVERAGE YIELD OF PUMPED WELLS, 1910 TO 1940; AND AVERAGE LIFT OF PUMPED WELLS, 1940: BY STATES — Continued

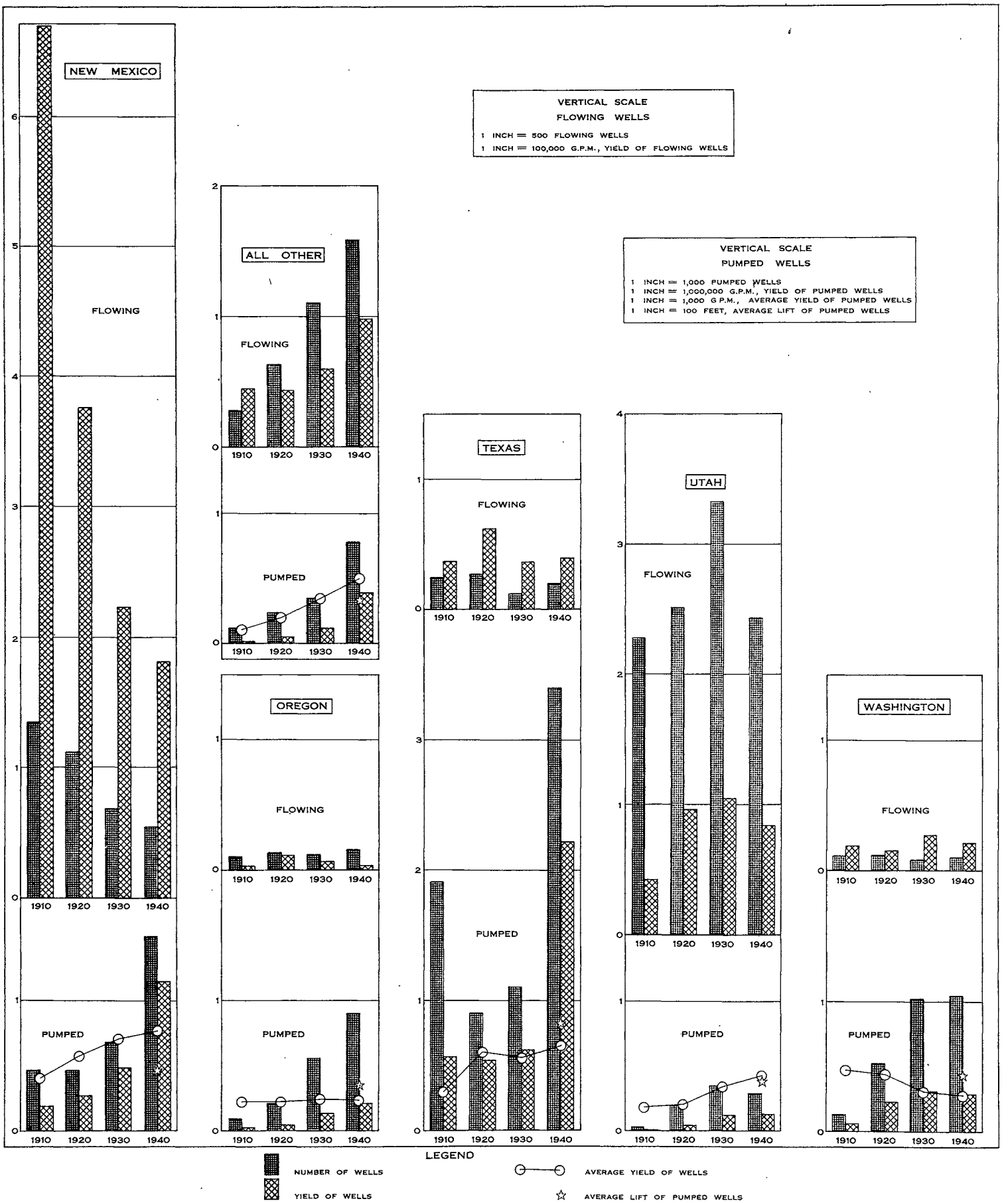


CHART XIV— NUMBER AND TOTAL CAPACITY OF PUMPS, 1910 TO 1940; AVERAGE CAPACITY OF PUMPS AND AVERAGE CAPACITY OF PRIME MOVERS, 1910 TO 1940; AVERAGE LIFT OF PUMPS, 1920 TO 1940: BY STATES

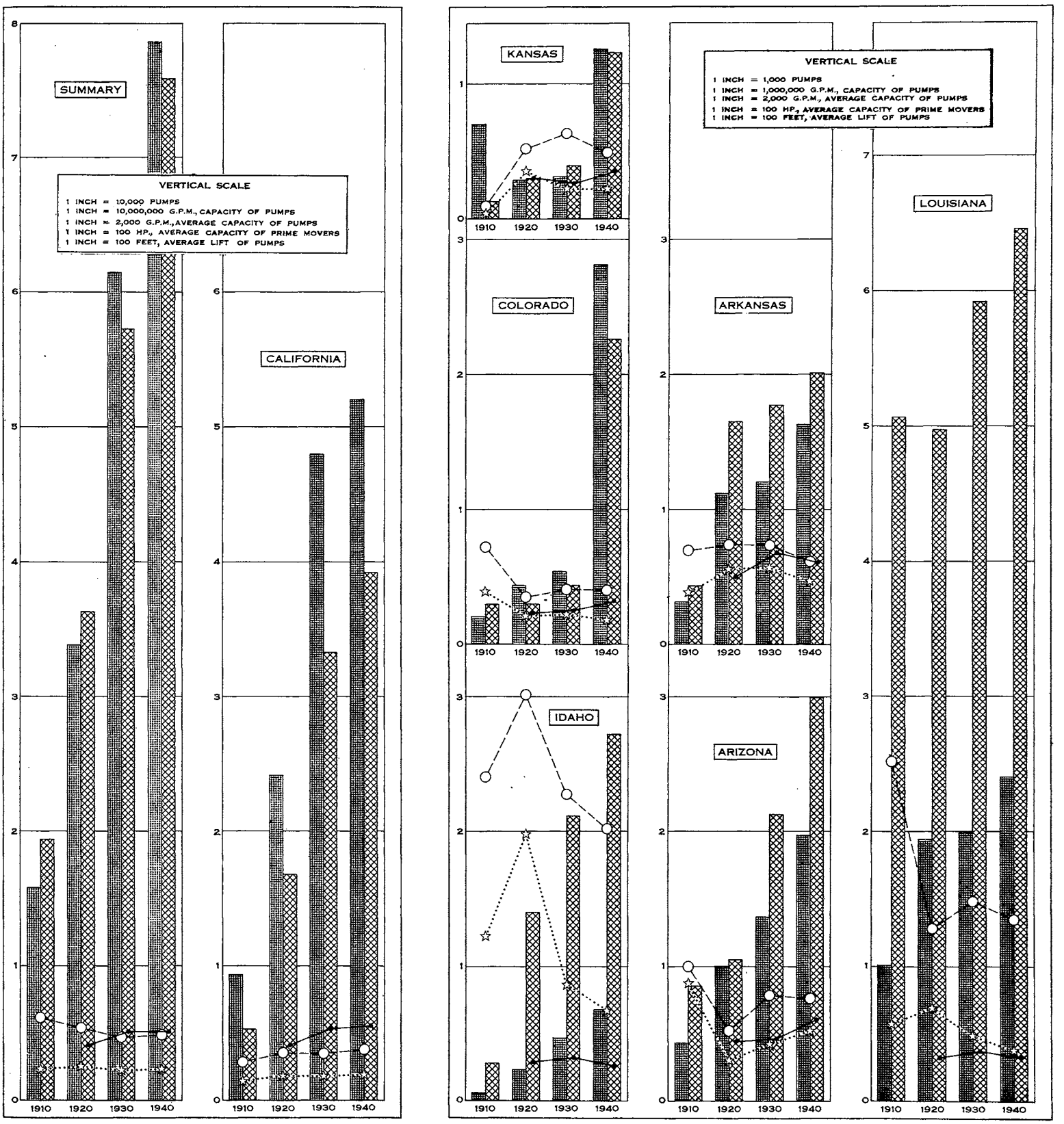


CHART XIV.— NUMBER AND TOTAL CAPACITY OF PUMPS, 1910 TO 1940; AVERAGE CAPACITY OF PUMPS AND AVERAGE CAPACITY OF PRIME MOVERS, 1910 TO 1940; AVERAGE LIFT OF PUMPS, 1920 TO 1940: BY STATES

Continued

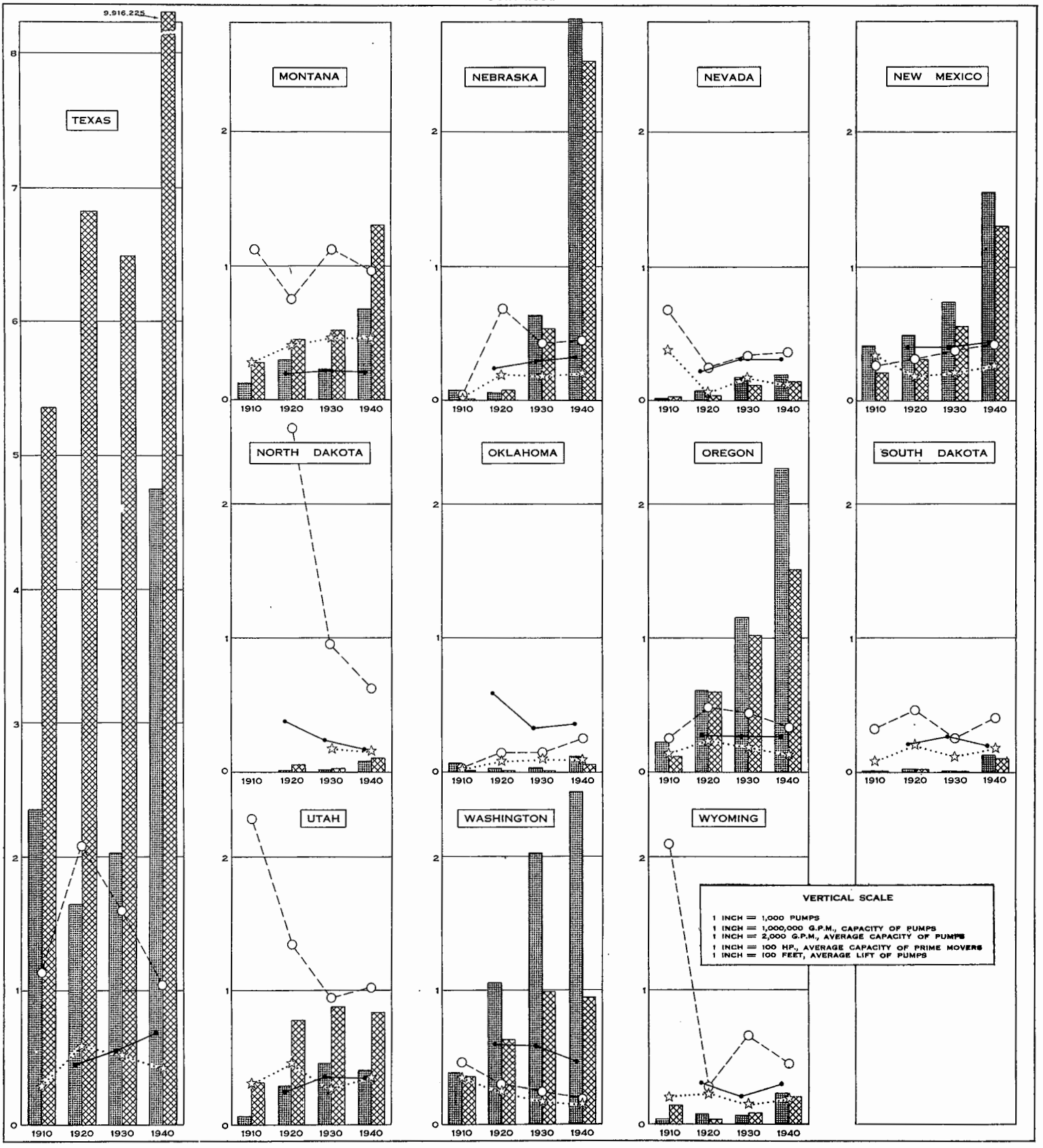


TABLE 1.—PRECIPITATION AND DEPARTURES FROM NORMAL: 1889, 1899, 1902, 1909, 1919, 1929, 1934, AND 1939

(For the 17 western States, Arkansas, Louisiana, and Florida. See charts I to VIII)

STATE	PRECIPITATION																	
	Normal for period	1889		1899		1902		1909		1919		1929		1934		1939		
		Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Amount	Depart.[1]	Percent of normal
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	
Arizona	13.89	13.29	-0.60	8.61	-5.28	10.23	-3.66	14.48	+0.59	20.70	+6.81	11.29	-2.60	10.47	-3.42	12.88	-1.01	93
Arkansas	48.25	45.61	-2.64	41.49	-6.76	51.70	+3.45	44.05	-4.20	54.52	+6.27	46.10	-2.15	42.47	-5.78	50.16	+1.91	104
California	25.72	33.25	+9.53	22.47	-1.25	24.22	+0.50	42.13	+18.41	21.29	-2.43	15.00	-8.72	18.01	-5.71	15.80	-7.92	67
Colorado	16.38	13.73	-2.65	14.67	-1.71	13.88	-2.50	20.96	+4.58	17.14	+0.76	18.16	+1.78	10.89	-5.49	10.68	-5.70	65
Idaho	17.96	14.76	-3.20	18.96	+1.00	16.96	-1.00	22.83	+4.87	15.97	-1.99	13.94	-4.02	16.10	-1.86	13.73	-4.23	76
Kansas	26.43	29.44	+3.01	26.26	-0.17	34.42	+7.99	31.15	+4.72	25.65	-0.78	27.96	+1.53	20.02	-6.41	20.08	-6.35	76
Louisiana	55.45	41.21	-14.24	42.19	-13.26	46.89	-8.56	53.25	-2.20	69.23	+13.78	63.65	+8.20	59.23	+3.78	51.51	-3.94	93
Montana	15.23	8.94	-6.29	15.74	+0.51	15.12	-0.11	19.72	+4.49	10.88	-4.35	13.08	-2.15	11.87	-3.36	12.83	-2.40	84
Nebraska	22.56	22.29	-0.27	19.55	-3.01	29.47	+6.91	24.64	+2.08	25.09	+2.53	22.74	+0.18	14.31	-8.25	16.28	-6.28	72
Nevada	9.22	12.41	+3.19	9.12	-0.10	7.25	-1.97	11.03	+1.81	7.08	-2.14	5.83	-3.39	7.12	-2.10	8.48	-0.74	92
New Mexico	14.43	10.97	-3.46	10.98	-3.45	9.97	-4.46	12.83	-1.60	20.95	+6.52	16.48	+2.05	10.08	-4.35	13.22	-1.21	92
North Dakota	16.87	11.54	-5.33	17.62	+0.75	19.35	+2.48	18.10	+1.23	15.59	-1.28	14.31	-2.56	9.51	-7.36	14.15	-2.72	84
Oklahoma	32.27	31.01	-1.26	36.07	+3.80	40.54	+8.27	27.01	-5.26	34.41	+2.14	35.39	+3.12	27.46	-4.81	26.71	-5.56	83
Oregon	26.10	29.79	+3.69	31.06	+4.96	29.88	+3.78	32.85	+6.75	26.21	+0.11	19.33	-6.77	25.87	-0.23	20.77	-5.33	80
Eastern Division	13.81	16.60	+2.79	15.23	+1.42	12.60	-1.21	17.00	+3.19	12.41	-1.40	11.58	-2.23	14.07	+0.26	10.50	-3.31	76
Western Division	53.83	30.38	-23.45	66.70	+12.87	68.76	+14.93	69.31	+15.48	57.28	+3.45	38.66	-15.17	53.53	-0.30	43.90	-9.93	82
South Dakota	18.87	18.34	-0.53	18.84	-0.03	19.54	+0.67	22.74	+3.87	19.64	+0.77	20.63	+1.76	12.58	-6.29	15.71	-3.16	83
Texas	30.63	38.06	+7.43	28.70	-1.93	33.92	+3.29	23.45	-7.18	45.64	+15.01	31.17	+0.54	26.78	-3.85	24.69	-5.94	81
Utah	12.95	12.67	-0.28	11.83	-1.12	9.17	-3.78	19.31	+6.36	11.83	-1.12	13.60	+0.65	9.52	-3.43	11.49	-1.46	89
Washington	34.75	31.83	-2.92	45.07	+10.32	40.24	+5.49	35.87	+1.12	31.00	-3.75	23.74	-11.01	38.27	+3.52	32.00	-2.75	92
Eastern Division	16.70	13.62	-3.08	18.97	+2.27	17.69	+0.99	17.40	+0.70	18.22	+1.52	10.19	-6.51	17.13	+0.43	12.83	-3.87	77
Western Division	57.33	36.02	-21.31	67.87	+10.54	62.98	+5.65	58.75	+1.42	52.08	-5.25	44.01	-13.32	69.97	+12.64	59.74	+2.41	104
Wyoming	14.01	12.93	-1.08	13.58	-0.43	9.81	-4.20	16.33	+2.32	10.46	-3.55	15.06	+1.05	10.88	-3.13	10.27	-3.74	73
Florida	52.73	50.69	-2.04	52.65	-0.08	51.33	-1.40	48.37	-4.36	57.50	+4.77	59.19	+6.46	52.94	+0.21	54.54	+1.81	103

[1] Departure from normal.

TABLE 2.—MONTHLY AND ANNUAL PRECIPITATION WITH ANNUAL DEPARTURE FOR CALENDAR YEARS, 1938 AND 1939; AND MONTHLY AND TOTAL PRECIPITATION WITH DEPARTURE FOR PERIOD FOR WATER YEAR, OCTOBER 1938 THROUGH SEPTEMBER 1939

(For the 17 western States, Arkansas, Louisiana, and Florida. See charts I to VIII)

STATE	PRECIPITATION — Water Year →																						
	1938								1939														
							Annual											Water Year			Annual		
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.	Nov.	Dec.	Precipitation	Departure	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Precipitation	Departure[1]	Oct.-Dec.	Precipitation	Departure[1]
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
Arizona	4.58	1.29	4.56	0.10	0.07	2.20	12.80	-1.09	1.12	1.20	0.66	0.56	0.04	0.04	1.16	2.36	3.79	13.30	-0.59	1.95	12.88	-1.01
Arkansas	18.58	12.99	7.55	0.94	5.26	2.93	48.25	0.00	6.21	8.56	3.71	7.13	4.85	4.50	3.34	2.53	1.77	51.75	+3.48	7.56	50.16	+1.91
California	21.31	2.59	0.60	1.61	1.17	2.78	30.06	+6.34	3.23	2.25	2.90	0.52	0.97	0.12	0.08	0.07	1.70	17.40	-6.32	3.96	15.80	-7.92
Colorado	3.98	6.23	6.45	0.87	0.93	0.89	19.35	+2.97	1.30	1.09	1.14	0.91	1.03	0.82	0.90	1.08	1.10	12.06	-4.32	1.51	10.68	-5.70
Idaho	7.02	4.40	2.19	2.58	1.91	1.46	19.56	+1.60	1.69	2.01	1.29	0.68	0.81	1.29	0.69	0.16	0.97	15.54	-2.42	4.14	15.73	-4.23
Kansas	3.67	14.05	7.62	0.53	1.40	0.20	27.27	+0.84	0.78	1.22	1.72	1.96	2.55	4.59	1.40	3.50	0.32	19.77	-6.66	2.24	20.08	-6.35
Louisiana	11.99	14.16	15.23	1.52	4.03	3.53	50.26	-5.19	5.62	5.69	2.89	2.40	6.72	4.42	5.97	4.86	5.23	50.68	-4.77	9.71	51.51	-3.94
Montana	2.54	6.98	3.88	1.75	0.89	0.56	16.60	+1.37	0.70	0.81	0.72	0.78	1.89	3.52	0.68	0.62	0.94	13.86	-1.37	2.17	12.83	-2.40
Nebraska	2.41	10.65	8.09	0.18	0.72	0.18	22.23	-0.33	0.70	0.87	1.21	1.40	2.53	3.84	1.83	2.04	0.44	15.94	-6.62	1.42	16.28	-6.28
Nevada	4.67	3.52	1.34	1.52	0.52	0.42	11.79	+2.57	0.96	0.78	0.95	0.79	0.73	0.19	0.60	0.34	1.34	8.94	-0.28	1.80	8.48	-0.74
New Mexico	2.38	3.48	6.63	1.10	0.27	0.76	14.62	+0.19	1.39	0.61	0.76	0.88	0.72	0.64	2.45	1.76	1.83	13.17	-1.26	2.18	13.22	-1.21
North Dakota	1.75	6.37	5.47	0.55	0.87	0.32	15.33	-1.54	0.47	0.65	0.39	0.87	1.55	4.59	1.81	2.10	0.68	14.83	-2.04	1.06	14.15	-2.72
Oklahoma	10.15	13.20	6.51	0.52	2.21	0.62	33.21	+0.94	2.79	1.67	1.82	2.44	3.76	5.35	1.65	2.66	0.33	25.82	-6.45	4.24	26.71	-5.56
Oregon	13.33	3.60	1.49	2.06	3.35	2.48	26.51	+0.21	2.90	3.53	2.23	0.44	1.07	1.05	0.49	0.35	0.64	20.59	-5.51	8.07	20.77	-5.33
Eastern Div.	6.70	2.87	1.30	1.29	1.71	1.02	14.89	+1.08	1.09	1.68	1.22	0.22	0.76	0.61	0.35	0.12	0.55	10.62	-3.19	3.90	10.50	-3.31
Western Div.	28.05	5.25	1.93	3.80	7.04	5.76	51.83	-2.00	6.97	7.70	4.51	0.93	1.75	2.03	0.79	0.88	0.86	43.02	-10.81	17.48	43.90	-9.93
South Dakota	2.35	8.87	5.49	0.16	0.57	0.26	17.50	-1.37	0.95	0.69	0.35	1.03	2.32	4.15	1.85	1.92	1.02	15.27	-3.60	1.43	15.71	-3.16
Texas	7.12	9.65	6.32	0.87	1.50	1.72	27.18	-3.45	3.10	1.86	1.04	1.47	3.16	3.05	2.60	2.21	1.12	23.70	-6.93	5.08	24.69	-5.94
Utah	5.24	3.60	2.52	1.70	1.16	0.97	15.19	+2.24	1.37	1.29	0.94	0.78	0.86	0.65	0.54	0.66	2.61	15.53	+0.58	1.79	11.49	-1.46
Washington	11.40	4.23	1.54	3.55	4.01	4.54	29.27	-5.48	5.79	4.44	2.45	0.91	1.52	1.64	0.84	0.43	0.84	30.96	-3.79	13.14	32.00	-2.75
Eastern Div.	6.30	2.07	0.91	1.64	1.70	1.17	13.79	-2.91	1.97	1.99	1.12	0.43	0.60	0.85	0.18	0.13	0.34	12.12	-4.58	5.22	12.83	-3.87
Western Div.	19.05	7.52	2.68	6.40	7.46	9.59	52.70	-4.63	11.51	8.12	4.45	1.64	2.90	2.83	1.84	0.87	1.59	59.20	+1.87	23.99	59.74	+2.41
Wyoming	2.81	5.75	4.04	1.17	1.01	0.68	15.26	+1.25	0.78	0.85	0.68	0.96	1.57	1.70	0.81	0.78	0.92	11.91	-2.10	1.22	10.27	-3.74
Florida	5.28	12.14	18.10	4.70	1.60	1.35	43.17	-9.56	1.62	2.25	1.54	4.32	5.01	9.13	7.59	10.78	5.79	55.68	+2.95	6.51	54.54	+1.81

[1] Departure from normal.

TABLE 3.—IRRIGATION ENTERPRISES, AREA EXISTING IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE IN ENTERPRISES, AND ESTIMATED COMPLETED COST OF EXISTING ENTERPRISES, 1910 TO 1940; FARMS IRRIGATED, AREA IRRIGATED, AND CAPITAL INVESTED, 1890 TO 1940: BY STATES

(For the 17 western States and Arkansas and Louisiana. See chart IX)

ITEM	CENSUS OF—							
	1890	1900	1910	1920	1930	1940		
						Total	Primary enterprises	Supplemental enterprises
SUMMARY (19 STATES)								
Irrigation enterprises—number	———	———	56,858	63,298	75,517	91,637	80,502	11,135
Farms irrigated [1]—number	54,136	115,849	162,723	222,789	265,147	291,655	291,655	———
Area irrigated—acres	3,715,945	7,744,492	14,433,285	19,191,716	19,547,544	21,003,739	21,003,739	3,287,210
Area existing irrigation works were capable of supplying with water—acres	———	———	20,285,403	26,020,477	26,101,890	28,055,248	28,055,248	4,268,394
Area irrigable in enterprises—acres	———	———	[2] 32,245,464	[2] 35,890,821	30,599,470	31,305,949	———	———
Capital invested in irrigation enterprises—dollars	29,533,921	70,010,594	321,454,008	697,657,328	892,755,790	1,052,049,201	963,888,263	88,160,938
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 7.95	[3] 9.04	15.85	26.81	34.20	37.50	34.56	20.65
Estimated completed cost of existing enterprises—dollars	———	———	434,948,825	819,778,005	1,015,108,210	1,126,545,687	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	1.07	2.43	2.77	2.28	2.14	0.95
BY STATES								
California:								
Irrigation enterprises—number	———	———	13,970	24,115	38,117	39,975	31,733	8,242
Farms irrigated [1]—number	13,732	25,675	39,352	67,391	85,784	84,310	84,310	———
Area irrigated—acres	1,004,233	1,446,114	2,664,104	4,219,040	4,746,632	5,069,568	5,069,568	455,342
Area existing irrigation works were capable of supplying with water—acres	———	———	3,619,378	5,894,466	6,815,250	7,398,576	7,398,576	624,550
Area irrigable in enterprises—acres	———	———	[2] 5,490,360	[2] 7,805,207	8,075,895	8,039,175	———	———
Capital invested in irrigation enterprises—dollars	13,004,817	19,181,610	72,580,030	194,886,388	310,967,979	318,889,218	300,164,036	18,725,182
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 12.95	[3] 13.26	20.05	33.06	45.63	43.10	40.57	29.98
Estimated completed cost of existing enterprises—dollars	———	———	84,392,344	225,799,123	325,930,535	327,593,311	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	1.54	4.40	6.10	4.73	4.39	3.69
Colorado:								
Irrigation enterprises—number	———	———	9,065	6,634	6,509	8,713	7,084	1,629
Farms irrigated [1]—number	9,659	17,613	25,857	28,756	31,288	29,766	29,766	———
Area irrigated—acres	890,735	1,611,271	2,792,032	3,348,385	3,393,619	3,220,685	3,220,685	628,015
Area existing irrigation works were capable of supplying with water—acres	———	———	3,990,166	3,855,348	4,078,712	3,913,542	3,913,542	738,232
Area irrigable in enterprises—acres	———	———	[2] 5,917,457	[2] 5,220,588	4,528,251	4,283,250	———	———
Capital invested in irrigation enterprises—dollars	6,368,755	11,758,703	56,636,443	88,302,442	87,603,240	106,849,343	92,871,122	13,978,221
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 7.15	[3] 7.30	14.19	22.90	21.48	27.30	23.73	18.93
Estimated completed cost of existing enterprises—dollars	———	———	76,443,239	95,198,423	91,845,804	109,808,466	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.75	0.87	0.85	0.81	0.65	0.82
Idaho:								
Irrigation enterprises—number	———	———	3,092	3,629	3,222	3,625	3,437	188
Farms irrigated [1]—number	4,323	9,188	16,439	25,283	27,953	29,898	29,898	———
Area irrigated—acres	217,005	608,718	1,430,848	2,488,806	2,181,250	2,277,857	2,277,857	910,002
Area existing irrigation works were capable of supplying with water—acres	———	———	2,388,959	3,092,810	2,617,021	2,595,534	2,595,534	1,053,582
Area irrigable in enterprises—acres	———	———	[2] 3,549,573	[2] 3,780,048	2,814,048	2,870,023	———	———
Capital invested in irrigation enterprises—dollars	1,029,000	5,120,399	40,977,688	91,501,009	84,500,354	102,585,798	89,034,966	13,550,832
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 4.74	[3] 8.41	17.15	29.59	32.29	39.55	34.33	12.86
Estimated completed cost of existing enterprises—dollars	———	———	58,451,106	97,019,717	101,350,250	109,513,311	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.63	1.17	1.44	1.11	1.02	0.23
Montana:								
Irrigation enterprises—number	———	———	5,534	6,035	4,461	5,555	5,501	54
Farms irrigated [1]—number	3,706	8,043	8,970	10,807	11,925	15,087	15,087	———
Area irrigated—acres	350,582	951,154	1,679,084	1,681,729	1,594,912	1,711,409	1,711,409	168,863
Area existing irrigation works were capable of supplying with water—acres	———	———	2,205,155	2,753,498	2,276,000	2,344,390	2,344,390	234,269
Area irrigable in enterprises—acres	———	———	[2] 3,515,602	[2] 4,829,148	2,622,423	2,588,214	———	———
Capital invested in irrigation enterprises—dollars	1,623,195	4,683,073	22,970,958	52,143,365	50,319,204	67,352,505	61,882,978	5,469,527
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 4.63	[3] 4.92	10.42	18.94	22.11	28.73	26.40	23.35
Estimated completed cost of existing enterprises—dollars	———	———	32,382,077	70,079,028	58,489,575	75,174,645	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.89	1.26	0.87	0.73	0.72	0.12
Wyoming:								
Irrigation enterprises—number	———	———	5,577	3,564	2,651	3,385	3,319	66
Farms irrigated [1]—number	1,917	3,721	6,297	6,449	7,308	8,637	8,637	———
Area irrigated—acres	229,676	605,878	1,133,302	1,207,982	1,236,155	1,486,498	1,486,498	93,581
Area existing irrigation works were capable of supplying with water—acres	———	———	1,639,510	1,831,039	1,655,008	1,913,527	1,913,527	163,090
Area irrigable in enterprises—acres	———	———	[2] 2,224,298	[2] 2,564,668	1,958,147	2,277,046	———	———
Capital invested in irrigation enterprises—dollars	831,427	3,973,165	17,700,980	34,326,328	35,153,187	41,522,801	39,955,803	1,566,998
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3] 3.62	[3] 6.56	10.80	18.75	21.24	21.70	20.88	9.61
Estimated completed cost of existing enterprises—dollars	———	———	20,425,890	51,500,288	41,970,416	48,539,663	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.86	1.04	0.84	0.59	0.57	0.34
Texas:								
Irrigation enterprises—number	———	———	2,772	1,371	1,728	4,040	4,021	19
Farms irrigated [1]—number	623	1,325	5,238	5,974	10,861	19,568	19,568	———
Area irrigated—acres	18,419	49,652	451,130	586,120	798,917	1,045,224	1,045,224	66,909
Area existing irrigation works were capable of supplying with water—acres	———	———	690,991	1,150,542	1,177,415	1,773,812	1,773,812	139,231
Area irrigable in enterprises—acres	———	———	[2] 1,253,173	[2] 1,687,447	1,566,876	2,180,796	———	———
Capital invested in irrigation enterprises—dollars	———	1,027,608	13,487,347	35,072,739	49,022,164	66,441,376	64,300,488	2,140,888
Average investment per acre based on area existing works were capable of supplying with water—dollars	———	[3] 20.70	19.52	30.48	41.64	37.46	36.25	15.38
Estimated completed cost of existing enterprises—dollars	———	———	14,754,172	39,860,871	59,555,624	67,319,032	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	3.25	6.92	4.74	3.89	3.86	0.64

[1] Number of farms irrigated as reported in the Census of Agriculture, 1940. [2] For 1910 and 1920, relates to total area in enterprises. Areas irrigable for those years were not reported. [3] Not shown graphically.

TABLE 3.—IRRIGATION ENTERPRISES, AREA EXISTING IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE IN ENTERPRISES, AND ESTIMATED COMPLETED COST OF EXISTING ENTERPRISES, 1910 TO 1940; FARMS IRRIGATED, AREA IRRIGATED, AND CAPITAL INVESTED, 1890 TO 1940; BY STATES—Continued

(For the 17 western States and Arkansas and Louisiana. See chart II)

ITEM	CENSUS OF—							
	1890	1900	1910	1920	1930	1940		
						Total	Primary enterprises	Supplemental enterprises
	BY STATES—Continued							
Utah:								
Irrigation enterprises—number	———	———	2,472	2,405	2,714	2,401	2,254	147
Farms irrigated [1]—number	9,724	17,924	19,709	22,218	23,847	22,612	22,612	———
Area irrigated—acres	263,475	629,295	999,410	1,371,651	1,324,125	1,176,116	1,176,116	322,994
Area existing irrigation works were capable of supplying with water—acres	———	———	1,250,246	1,700,550	1,542,475	1,357,714	1,357,714	370,284
Area irrigable in enterprises—acres	———	———	[2]1,947,625	[2]2,359,244	1,759,869	1,432,533	———	———
Capital invested in irrigation enterprises—dollars	2,780,000	5,865,502	14,028,717	32,057,351	35,669,819	41,896,532	29,219,904	12,676,628
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]10.55	[3]9.52	11.22	18.84	23.15	30.86	21.52	34.23
Estimated completed cost of existing enterprises—dollars	———	———	17,840,775	33,835,641	37,857,011	43,380,966	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.65	1.08	1.00	0.85	0.77	0.26
Oregon:								
Irrigation enterprises—number	———	———	3,745	4,710	4,066	5,884	5,788	96
Farms irrigated [1]—number	3,150	4,636	6,669	9,154	11,587	16,159	16,159	———
Area irrigated—acres	177,944	388,310	686,129	986,162	898,713	1,049,176	1,049,176	104,970
Area existing irrigation works were capable of supplying with water—acres	———	———	830,526	1,544,046	1,158,210	1,261,081	1,261,081	141,558
Area irrigable in enterprises—acres	———	———	[2]2,527,208	[2]1,925,987	1,478,128	1,441,417	———	———
Capital invested in irrigation enterprises—dollars	825,660	1,843,771	12,760,214	28,929,151	38,754,548	50,961,251	46,726,313	4,234,938
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]4.64	[3]4.75	15.36	21.52	33.46	40.41	37.05	29.92
Estimated completed cost of existing enterprises—dollars	———	———	39,216,619	41,585,742	60,039,959	53,884,430	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.75	1.19	1.41	1.25	1.18	0.75
Nebraska:								
Irrigation enterprises—number	———	———	474	470	721	2,717	2,455	262
Farms irrigated [1]—number	214	1,932	1,852	3,021	4,602	6,915	6,915	———
Area irrigated—acres	11,744	148,538	255,950	442,690	532,617	610,579	610,579	171,833
Area existing irrigation works were capable of supplying with water—acres	———	———	429,225	562,468	703,641	992,957	992,957	316,730
Area irrigable in enterprises—acres	———	———	[2]680,135	[2]766,768	765,039	1,095,567	———	———
Capital invested in irrigation enterprises—dollars	47,798	1,310,698	7,798,510	15,909,185	21,586,519	39,056,207	36,191,786	2,864,421
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]4.07	[3]8.82	18.17	24.73	30.39	39.33	36.45	9.04
Estimated completed cost of existing enterprises—dollars	———	———	9,485,251	18,030,154	21,465,772	41,995,361	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	1.09	1.48	1.54	1.59	1.59	0.70
Arizona:								
Irrigation enterprises—number	———	———	1,269	1,388	1,270	1,911	1,768	143
Farms irrigated [1]—number	1,075	2,981	4,841	6,605	8,523	10,339	10,339	———
Area irrigated—acres	65,821	185,396	320,051	467,565	575,590	653,265	653,265	75,806
Area existing irrigation works were capable of supplying with water—acres	———	———	387,655	627,503	824,152	844,212	844,212	113,551
Area irrigable in enterprises—acres	———	———	[2]944,090	[2]813,153	1,085,627	1,104,645	———	———
Capital invested in irrigation enterprises—dollars	465,000	4,438,352	17,677,966	33,498,094	73,328,197	83,526,608	81,015,378	2,511,230
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]7.06	[3]25.94	45.60	53.40	88.97	98.94	95.97	22.16
Estimated completed cost of existing enterprises—dollars	———	———	24,828,868	34,615,064	91,915,550	108,980,519	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.93	3.27	4.57	5.00	4.92	3.51
Nevada:								
Irrigation enterprises—number	———	———	1,347	1,015	1,245	1,464	1,453	11
Farms irrigated [1]—number	1,167	1,906	2,406	2,718	3,031	3,264	3,264	———
Area irrigated—acres	224,403	504,168	701,833	561,447	486,648	739,865	739,865	84,722
Area existing irrigation works were capable of supplying with water—acres	———	———	840,962	704,708	736,249	841,304	841,304	125,845
Area irrigable in enterprises—acres	———	———	[2]1,232,142	[2]1,582,056	985,717	915,689	———	———
Capital invested in irrigation enterprises—dollars	1,700,975	1,557,559	6,721,924	14,754,280	15,457,951	16,906,790	13,393,439	3,513,351
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]7.58	[3]5.05	7.99	20.94	21.00	20.10	15.92	28.37
Estimated completed cost of existing enterprises—dollars	———	———	12,188,756	22,648,747	18,489,603	18,129,554	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.97	0.79	0.91	0.48	0.43	0.46
Louisiana:								
Irrigation enterprises—number	———	———	1,237	1,573	2,352	2,566	2,550	16
Farms irrigated [1]—number	———	4,551	2,690	6,471	5,588	7,037	7,037	———
Area irrigated—acres	84,377	201,685	380,200	454,882	450,901	447,095	447,095	2,579
Area existing irrigation works were capable of supplying with water—acres	———	———	555,220	728,742	795,165	759,915	759,915	4,342
Area irrigable in enterprises—acres	———	———	[2]581,965	[2]851,211	850,401	793,674	———	———
Capital invested in irrigation enterprises—dollars	———	2,529,319	6,839,166	14,065,181	15,744,745	11,565,515	11,548,812	16,701
Average investment per acre based on area existing works were capable of supplying with water—dollars	———	[3]12.54	12.40	19.30	19.80	15.22	15.20	5.85
Estimated completed cost of existing enterprises—dollars	———	———	6,914,166	14,264,178	15,771,003	11,659,725	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	———	7.01	4.09	5.65	5.64	1.51
New Mexico:								
Irrigation enterprises—number	———	———	2,786	2,391	1,965	2,503	2,451	52
Farms irrigated [1]—number	3,085	9,128	12,795	11,590	14,347	15,811	15,811	———
Area irrigated—acres	91,745	203,893	461,718	558,377	527,033	554,039	554,039	5,125
Area existing irrigation works were capable of supplying with water—acres	———	———	644,970	696,119	656,669	731,990	731,990	5,912
Area irrigable in enterprises—acres	———	———	[2]1,102,297	[2]961,879	741,245	807,656	———	———
Capital invested in irrigation enterprises—dollars	511,957	4,165,312	9,154,897	18,210,412	19,834,380	32,735,997	32,629,293	106,704
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]5.58	[3]20.43	14.19	26.16	30.20	44.72	44.58	18.05
Estimated completed cost of existing enterprises—dollars	———	———	11,640,091	20,440,646	21,942,450	36,773,139	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	1.36	2.41	2.15	2.11	2.09	2.00

[1] Number of farms irrigated as reported in the Census of Agriculture, 1940. [2] For 1910 and 1920, relates to total area in enterprises. Areas irrigable for those years were not reported. [3] Not shown graphically.

TABLE 3.—IRRIGATION ENTERPRISES, AREA EXISTING IRRIGATION WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE IN ENTERPRISES, AND ESTIMATED COMPLETED COST OF EXISTING ENTERPRISES, 1910 TO 1940; FARMS IRRIGATED, AREA IRRIGATED, AND CAPITAL INVESTED, 1890 TO 1940; BY STATES—Continued

(For the 17 western States and Arkansas and Louisiana. See chart II)

ITEM	CENSUS OF—							
	1890	1900	1910	1920	1930	1940		
						Total	Primary enterprises	Supplemental enterprises
	BY STATES—Continued							
Washington:								
Irrigation enterprises—number	———	———	1,934	2,692	2,986	4,120	3,987	133
Farms irrigated [1]—number	1,046	3,513	7,664	13,271	15,949	17,426	17,426	———
Area irrigated—acres	48,799	135,470	334,378	529,899	499,283	615,015	615,015	184,664
Area existing irrigation works were capable of supplying with water—acres	———	———	470,514	657,151	651,511	751,527	751,527	219,009
Area irrigable in enterprises—acres	———	———	[2]817,032	[2]856,795	915,379	837,096	———	———
Capital invested in irrigation enterprises—dollars	196,660	1,722,369	16,219,149	29,299,011	40,561,895	56,415,198	49,881,624	6,533,572
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]4.05	[3]12.71	34.47	45.98	64.25	77.12	68.19	29.83
Estimated completed cost of existing enterprises—dollars	———	———	22,322,856	37,684,591	53,232,477	58,141,097	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	3.08	3.45	4.14	2.80	2.78	0.51
Arkansas:								
Irrigation enterprises—number	———	———	310	944	1,043	1,298	1,293	5
Farms irrigated [1]—number	———	20	252	1,166	1,096	1,529	1,529	———
Area irrigated—acres	9	25	27,753	143,946	151,787	161,601	161,601	341
Area existing irrigation works were capable of supplying with water—acres	———	———	47,156	179,013	209,942	287,765	287,765	1,266
Area irrigable in enterprises—acres	———	———	[2]52,885	[2]246,480	225,992	314,929	———	———
Capital invested in irrigation enterprises—dollars	———	———	587,854	7,185,322	6,836,648	5,766,895	5,752,045	14,850
Average investment per acre based on area existing works were capable of supplying with water—dollars	———	———	12.47	40.13	32.56	20.04	19.99	11.73
Estimated completed cost of existing enterprises—dollars	———	———	612,834	7,283,522	6,844,092	5,878,930	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	———	13.67	7.05	5.46	5.45	5.20
Kansas:								
Irrigation enterprises—number	———	———	716	209	300	1,066	988	78
Farms irrigated [1]—number	519	929	1,006	504	683	1,578	1,578	———
Area irrigated—acres	20,818	23,620	37,479	47,312	71,290	99,980	99,980	13,666
Area existing irrigation works were capable of supplying with water—acres	———	———	139,995	67,855	83,583	142,409	142,409	19,163
Area irrigable in enterprises—acres	———	———	[2]161,300	[2]102,562	95,719	147,226	———	———
Capital invested in irrigation enterprises—dollars	84,729	529,755	1,365,563	2,067,381	1,685,652	2,153,886	1,896,991	256,895
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]4.07	[3]22.43	9.75	30.47	20.17	15.12	13.32	13.41
Estimated completed cost of existing enterprises—dollars	———	———	1,365,563	2,195,981	1,723,872	2,255,579	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	1.59	3.29	1.53	2.59	2.29	2.18
South Dakota:								
Irrigation enterprises—number	———	———	395	292	121	274	274	———
Farms irrigated [1]—number	189	606	500	1,198	763	967	967	———
Area irrigated—acres	15,717	43,676	63,248	100,682	67,107	60,198	60,198	———
Area existing irrigation works were capable of supplying with water—acres	———	———	128,481	150,914	109,550	121,847	121,847	———
Area irrigable in enterprises—acres	———	———	[2]201,625	[2]188,382	122,510	123,961	———	———
Capital invested in irrigation enterprises—dollars	63,968	284,747	3,043,140	5,465,248	4,502,117	5,395,610	5,395,610	———
Average investment per acre based on area existing works were capable of supplying with water—dollars	[3]4.07	[3]6.52	23.69	36.21	41.10	44.28	44.28	———
Estimated completed cost of existing enterprises—dollars	———	———	3,800,556	5,500,748	5,174,417	5,432,954	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.64	1.26	1.33	1.28	1.28	———
North Dakota:								
Irrigation enterprises—number	———	———	49	30	25	80	80	———
Farms irrigated [1]—number	7	54	69	340	113	479	479	———
Area irrigated—acres	445	4,872	10,248	12,072	9,392	21,615	21,615	———
Area existing irrigation works were capable of supplying with water—acres	———	———	21,917	34,235	24,006	36,522	36,522	———
Area irrigable in enterprises—acres	———	———	[2]38,173	[2]57,476	24,860	39,558	———	———
Capital invested in irrigation enterprises—dollars	———	16,980	836,482	1,857,118	1,267,514	1,755,489	1,755,489	———
Average investment per acre based on area existing works were capable of supplying with water—dollars	———	3.49	38.17	54.25	52.79	48.07	48.07	———
Estimated completed cost of existing enterprises—dollars	———	———	836,482	2,072,766	1,343,911	1,785,539	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	28.40	5.50	1.97	1.41	1.41	———
Oklahoma:								
Irrigation enterprises—number	———	———	114	53	77	120	120	———
Farms irrigated [1]—number	———	124	157	73	99	275	275	———
Area irrigated—acres	———	2,759	4,388	2,969	1,573	4,160	4,160	———
Area existing irrigation works were capable of supplying with water—acres	———	———	6,397	9,672	7,331	8,624	8,624	———
Area irrigable in enterprises—acres	———	———	[2]8,528	[2]11,742	7,344	15,494	———	———
Capital invested in irrigation enterprises—dollars	———	21,872	47,200	151,325	160,099	272,186	272,186	———
Average investment per acre based on area existing works were capable of supplying with water—dollars	———	[3]7.93	7.38	15.65	21.84	31.56	31.56	———
Estimated completed cost of existing enterprises—dollars	———	———	47,200	162,775	167,909	299,486	———	———
Average annual cost per acre irrigated for maintenance and operation of irrigation works—dollars	———	———	0.51	2.92	7.62	3.35	3.35	———

[1] Number of farms irrigated as reported in the Census of Agriculture, 1940. [2] For 1910 and 1920, relates to total area in enterprises. Areas irrigable for those years were not reported. [3] Not shown graphically.

TABLE 4.—AREA IRRIGATED, 1902, 1919, 1929, AND 1939; AREA EXISTING WORKS WERE CAPABLE OF SUPPLYING WITH WATER AND AREA IRRIGABLE, 1920 TO 1940; CAPITAL INVESTED AND AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1902, 1920, 1930, AND 1940; BY SPECIFIED DRAINAGE BASINS

(For the 17 western States and Arkansas and Louisiana. See chart I)

DRAINAGE BASIN	AREA IRRIGATED (ACRES)				AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER (ACRES)			AREA IRRIGABLE (ACRES)		
	1902	1919	1929	1939	1920	1930	1940	1920[1]	1930	1940
Summary (19 States)	9,431,066	19,191,716	19,547,544	21,003,759	26,020,477	26,101,890	28,055,248	35,890,821	30,599,470	31,305,949
Red River (of the North)	682	———	2,099	4,495	———	2,099	7,980	———	2,409	8,100
Missouri River, summary	2,535,237	4,147,278	4,185,180	4,410,385	5,805,650	5,472,012	5,942,958	8,483,171	6,231,873	6,542,576
Yellowstone River	427,559	889,025	861,145	984,550	1,322,304	1,210,690	1,360,217	1,826,870	1,401,212	1,515,241
Platte River	1,286,345	2,136,402	2,515,297	2,360,615	2,579,720	2,815,195	3,061,356	3,451,057	3,081,680	3,539,995
All other tributaries	819,335	1,121,851	1,008,738	1,065,240	1,903,606	1,448,127	1,521,385	3,225,264	1,748,961	1,687,340
Mississippi River, exclusive of Missouri River, summary	395,687	958,495	902,560	927,594	1,152,281	1,170,583	1,350,911	1,543,064	1,280,730	1,458,502
Arkansas River	395,085	851,150	755,535	679,919	1,009,821	960,622	935,512	1,344,646	1,051,965	1,050,597
All other tributaries	602	107,345	149,027	247,675	142,340	209,961	417,599	198,418	228,767	427,905
Gulf of Mexico streams, other than Mississippi River and Rio Grande	577,809	698,077	662,958	902,592	1,157,529	1,221,997	1,520,796	1,602,169	1,536,404	1,874,654
Rio Grande, summary	504,942	1,312,855	1,564,725	1,521,578	1,914,285	1,914,781	2,177,705	2,628,153	2,177,664	2,578,063
Pecos River	78,855	176,458	175,798	217,542	281,150	223,642	314,454	597,443	287,164	349,897
All other tributaries	426,087	1,136,397	1,388,927	1,304,036	1,633,135	1,691,139	1,863,271	2,230,710	1,890,500	2,028,166
Colorado River, summary	927,185	2,326,690	2,537,124	2,658,120	3,009,219	3,355,914	3,367,744	4,102,096	4,455,529	4,017,757
Upper Colorado River[2]	649,063	1,844,258	1,968,667	1,464,271	2,360,597	2,516,149	1,808,055	3,236,592	3,485,341	2,157,752
Green River	254,951	586,387	610,659	636,977	855,264	792,677	782,571	1,148,821	926,619	930,100
Lower Colorado River[2 3]	278,120	482,432	568,457	1,173,849	648,622	819,765	1,559,689	865,504	950,188	1,860,005
Great Basin, summary	1,654,433	2,277,651	2,036,033	2,073,727	2,825,513	2,556,492	2,581,171	4,165,450	3,004,651	2,504,611
Bonneville Lake	686,858	1,255,747	1,104,975	1,085,258	1,479,758	1,240,546	1,205,711	2,005,750	1,549,150	1,272,056
Lahontan Lake[4]	[5]947,575	1,041,904	[5]951,058	990,489	1,345,560	[6]1,296,146	1,175,460	2,161,700	[6]1,655,521	1,232,555
Columbia River, summary	1,297,437	3,875,245	3,595,640	3,819,738	4,968,518	4,241,244	4,426,367	6,536,801	4,992,151	5,001,483
Snake River	807,044	2,712,618	2,359,264	2,625,355	3,376,146	2,773,621	3,018,889	4,057,747	3,150,120	3,343,028
All other tributaries	490,393	1,160,627	1,054,376	1,194,383	1,592,372	1,467,623	1,407,478	2,279,054	1,862,011	1,658,455
Klamath River	80,433	153,105	187,991	271,038	205,374	264,949	310,560	562,793	316,259	384,005
Sacramento-San Joaquin Delta and tributary streams	1,159,243	2,744,644	3,157,152	3,593,882	4,113,524	4,795,836	5,132,597	5,499,755	5,393,666	5,660,337
Pacific Ocean streams, exclusive of Gulf of California streams, Columbia and Klamath Rivers, and Sacramento-San Joaquin Delta and tributary streams	341,596	695,807	914,801	1,032,294	858,874	1,141,250	1,422,997	1,150,786	1,222,604	1,461,602
Whitewater Draw and Vamori Wash (Gulf of Calif.)	384	5,871	5,301	8,498	9,950	4,753	15,462	16,625	5,570	14,261

DRAINAGE BASIN	CAPITAL INVESTED (DOLLARS)				AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WATER (DOLLARS)			
	1902	1920	1930	1940	1902[8]	1920	1930	1940
Summary (19 States)	91,000,595	697,657,328	[7]892,755,790	1,052,049,201	9.65	26.81	34.20	37.50
Red River (of the North)	5,957	———	20,925	130,566	5.77	———	9.97	16.36
Missouri River, summary	16,176,277	151,555,106	136,506,721	179,750,238	6.59	22.66	24.95	30.25
Yellowstone River	2,770,255	30,181,550	31,917,510	40,767,196	6.48	22.82	26.36	29.97
Platte River	9,241,861	62,895,985	69,495,120	95,210,869	7.18	24.38	24.70	31.10
All other tributaries	4,164,181	38,477,575	35,096,291	45,772,175	5.08	20.21	24.24	28.77
Mississippi River, exclusive of Missouri River, summary	4,619,814	35,185,789	31,851,675	37,101,932	11.75	30.53	27.19	27.46
Arkansas River	4,586,655	30,241,390	21,722,225	26,691,327	11.67	29.94	22.61	28.60
All other tributaries	33,159	4,942,399	10,109,450	10,410,605	55.08	34.72	48.15	24.95
Gulf of Mexico streams, other than Mississippi River and Rio Grande	8,966,265	29,439,808	28,578,195	30,498,561	15.52	25.45	25.39	20.05
Rio Grande, summary	6,495,615	54,824,111	53,748,608	80,565,998	12.86	18.19	28.07	36.99
Pecos River	3,185,855	7,485,049	7,220,317	12,855,650	40.40	26.62	32.29	40.89
All other tributaries	3,307,760	27,341,062	46,528,291	67,708,348	7.76	16.74	27.51	36.54
Colorado River, summary	11,298,671	88,959,884	152,350,247	155,800,882	12.19	29.56	39.67	46.26
Upper Colorado River[2]	6,509,557	58,964,054	67,315,624	46,448,752	10.03	24.98	26.75	25.69
Green River	1,470,459	8,592,546	8,820,455	12,160,991	5.77	10.05	11.15	15.54
Lower Colorado River[2 3]	4,789,114	29,975,850	65,034,623	109,352,150	17.22	46.21	79.55	70.11
Great Basin, summary	10,115,189	62,207,175	67,579,074	59,698,865	6.19	22.02	26.64	25.07
Bonneville Lake	6,551,123	28,678,299	29,695,422	37,401,770	9.51	19.38	23.94	31.02
Lahontan Lake[4]	[5]3,584,076	35,528,878	[6]37,885,652	22,297,095	3.78	24.92	29.25	18.97
Columbia River, summary	10,851,415	145,672,582	157,355,114	206,523,502	8.36	29.32	37.10	46.66
Snake River	6,749,247	93,625,117	93,265,245	125,320,432	8.36	27.73	33.65	41.51
All other tributaries	4,102,168	52,047,265	64,089,869	81,202,870	8.37	32.69	45.67	57.69
Klamath River	529,456	5,502,890	9,430,566	10,430,941	6.58	26.79	35.59	35.59
Sacramento-San Joaquin Delta and tributary streams	10,985,469	100,527,759	164,628,095	171,004,959	9.64	24.44	34.33	33.32
Pacific Ocean streams, exclusive of Gulf of California streams, Columbia and Klamath Rivers, and Sacramento-San Joaquin Delta and tributary streams	10,953,742	65,507,056	110,495,970	120,318,550	32.07	73.94	96.82	84.55
Whitewater Draw and Vamori Wash (Gulf of Calif.)	6,755	299,368	230,606	226,627	17.54	50.09	48.52	16.85

[1]Relates to total area. Area irrigable in 1920 not reported.
[2]Data for Irrigation Census of 1930, included in published Agriculture Census Reports, as "Other Tributaries of Colorado River," are allocated 85 percent to the Upper Colorado River Drainage Basin and 15 percent to the Lower Colorado River Drainage Basin.
[3]Includes data for Imperial Valley, Calif., for all Censuses, and data for some small unidentified basins in the Colorado River Drainage Basins in Censuses of 1902 and 1920.
[4]Statistics for Irrigation Censuses of 1902, 1920, and 1930 include data for some small unidentified basins in the Great Basin Drainage Basins.
[5]Includes unidentified data for the Whitewater River Drainage Basin in California. Data for Whitewater River Basin for Censuses of 1920 and 1940 are included in the Lower Colorado River Basin.
[6]Based on area irrigated. Area works were capable of supplying with water in 1902 not reported.
[7]Revised.

TABLE 5.—AREA IRRIGATED, 1909 TO 1939; AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER, AREA IRRIGABLE, AND AVERAGE ANNUAL COST PER ACRE OF MAINTENANCE AND OPERATION OF

(For the 17 western States and

	STATES	AREA IRRIGATED					AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER				AREA IRRIGABLE		
		1909	1919	1929	1939		1920	1930	1940		1920[2]	1930	1940
		(Acres)	(Acres)	(Acres)	Primary (Acres)	Supplemental (Acres)	(Acres)	(Acres)	Primary (Acres)	Supplemental (Acres)	(Acres)	(Acres)	(Acres)
		SURFACE SOURCES (STREAMS, LAKES, AND SPRINGS, GRAVITY OR											
1	Summary (19 States)	15,755,445	16,386,422	15,344,803	16,653,782	2,782,340	22,510,141	20,844,073	22,170,892	3,566,910	30,332,521	24,796,758	24,898,591
2	Arizona	312,466	199,546	174,608	123,674	58,151	312,644	282,084	161,926	91,137	422,339	468,037	220,652
3	Arkansas	3,355	6,619	1,577	7,254	39	7,810	1,917	11,967	50	8,050	2,672	16,527
4	California	2,313,381	3,020,697	2,310,659	2,558,654	99,895	4,289,855	3,851,490	4,087,433	140,313	5,516,870	4,865,274	4,536,694
5	Colorado	2,783,750	3,082,467	3,196,102	3,085,448	519,025	3,546,394	3,864,285	3,749,967	606,357	4,579,327	4,297,355	4,112,378
6	Idaho	1,428,971	2,427,341	2,065,971	2,168,964	906,945	3,002,625	2,471,610	2,470,701	1,049,887	3,650,952	2,665,572	2,741,987
7	Kansas	55,518	32,137	56,792	49,551	257	44,094	62,269	70,488	257	44,490	75,198	71,904
8	Louisiana	226,574	281,427	263,246	290,154	150	492,528	526,178	505,937	357	551,060	552,497	527,135
9	Montana	1,678,822	1,585,784	1,513,959	1,695,787	168,806	2,579,103	2,174,494	2,327,899	254,211	4,077,527	2,508,432	2,571,400
10	Nebraska	255,811	440,782	505,648	519,043	156,085	559,140	667,953	852,515	292,980	761,302	724,951	948,212
11	Nevada	701,646	509,959	457,243	700,214	84,204	633,077	672,986	797,857	123,240	1,236,185	901,685	869,898
12	New Mexico	406,889	453,552	444,655	426,209	92	591,368	581,637	563,698	152	810,137	643,804	623,822
13	North Dakota	10,247	12,007	8,861	21,568	———	34,145	23,475	36,469	———	57,586	24,079	39,505
14	Oklahoma	4,319	2,716	734	2,954	———	9,333	6,329	5,281	———	11,383	6,329	9,925
15	Oregon	684,669	871,900	764,625	1,011,345	104,267	1,201,343	993,977	1,215,432	140,665	1,576,996	1,264,787	1,393,240
16	South Dakota	61,792	96,168	66,091	58,693	———	141,965	108,529	118,499	———	177,870	121,269	120,289
17	Texas	393,548	516,725	710,633	757,239	66,849	1,057,140	1,065,012	1,310,626	159,171	1,501,064	1,429,078	1,707,457
18	Utah	995,010	1,185,055	1,147,995	1,121,521	320,369	1,478,877	1,328,524	1,296,806	367,297	2,098,681	1,507,074	1,368,800
19	Washington	525,714	487,247	461,227	580,122	183,789	580,626	586,796	687,091	218,130	763,648	864,859	790,162
20	Wyoming	1,133,163	1,174,313	1,194,177	1,475,628	93,437	1,768,094	1,596,750	1,900,720	162,946	2,487,476	1,877,806	2,228,826
		UNDERGROUND SOURCES (WELLS											
1	Summary (19 States)	653,761	1,364,639	2,117,012	2,570,592	524,870	1,797,299	2,542,637	3,697,063	701,484	2,572,264	2,808,727	3,848,569
2	Arizona	7,585	41,810	106,002	146,496	15,655	62,484	151,209	204,332	22,194	108,178	185,583	234,456
3	Arkansas	24,398	135,260	142,978	149,915	302	168,548	199,849	268,145	1,216	235,620	215,144	288,343
4	California	350,725	868,080	1,464,960	1,519,302	355,447	1,117,385	1,661,072	2,080,023	484,237	1,580,740	1,817,884	2,136,037
5	Colorado	8,282	14,390	15,929	65,509	108,990	20,556	20,044	85,995	131,875	27,819	25,352	87,498
6	Idaho	1,877	1,545	5,569	8,595	3,057	1,754	6,660	11,343	3,895	4,395	7,709	12,872
7	Kansas	1,961	13,285	11,651	45,058	13,429	20,579	18,072	64,041	18,926	55,034	18,857	67,327
8	Louisiana	109,547	155,575	175,787	136,778	2,429	211,315	243,720	222,632	3,985	261,147	270,377	230,994
9	Montana	262	351	1,064	1,542	57	556	1,462	1,733	58	917	1,570	1,819
10	Nebraska	159	546	23,452	81,054	15,548	1,148	30,922	126,888	23,750	1,228	33,172	133,431
11	Nevada	187	1,171	3,426	3,409	518	1,804	8,751	4,915	605	7,455	10,292	6,098
12	New Mexico	54,829	52,295	58,118	98,818	5,081	63,987	64,104	130,601	5,780	102,615	65,475	136,954
13	North Dakota	1	———	———	47	———	———	———	53	———	———	———	53
14	Oklahoma	69	125	65	792	———	136	66	1,143	———	156	79	1,346
15	Oregon	1,460	2,405	5,891	8,328	703	2,904	4,300	12,014	893	3,499	4,798	12,568
16	South Dakota	1,456	130	528	701	———	130	535	760	———	250	548	910
17	Texas	57,782	44,466	62,624	266,864	60	80,648	84,680	434,413	60	122,701	100,898	443,811
18	Utah	4,400	12,394	19,655	15,958	2,625	18,908	21,993	19,667	2,987	30,086	25,278	21,492
19	Washington	8,664	20,665	20,995	19,999	875	24,271	24,755	25,799	879	30,211	27,147	27,458
20	Wyoming	139	166	320	3,467	144	188	445	4,566	144	213	586	5,122
		OTHER AND MIXED											
1	Summary (19 States)	44,079	1,440,655	2,085,729	1,779,585	———	1,913,037	2,715,180	2,187,293	———	2,986,036	2,993,985	2,558,789
2	Arizona[6]	———	226,209	294,980	385,093	———	252,175	390,859	477,954	———	282,656	432,007	649,537
3	Arkansas	———	2,067	7,252	4,452	———	2,655	8,176	7,653	———	2,810	8,176	10,259
4	California[6]	———	530,285	971,013	991,612	———	487,248	1,302,688	1,231,120	———	707,597	1,592,737	1,366,444
5	Colorado	———	251,528	181,588	71,728	———	288,598	194,385	79,580	———	613,442	207,544	83,374
6	Idaho	———	59,920	109,710	100,498	———	88,431	158,751	111,490	———	124,721	142,767	115,164
7	Kansas	———	1,890	2,847	5,391	———	3,180	3,242	7,880	———	3,038	3,664	7,995
8	Louisiana	44,079	17,880	11,868	20,165	———	24,899	25,267	31,346	———	39,004	27,527	35,547
9	Montana	———	95,594	79,889	14,080	———	175,859	100,044	14,958	———	250,904	112,421	14,995
10	Nebraska	———	1,362	3,517	10,302	———	2,180	4,766	13,754	———	4,258	4,916	13,924
11	Nevada	———	50,517	25,979	36,240	———	69,827	54,512	58,552	———	138,598	71,740	59,695
12	New Mexico	———	32,550	24,260	29,012	———	40,764	30,928	37,691	———	49,127	31,968	46,880
13	North Dakota	———	65	531	———	———	90	531	———	———	90	781	———
14	Oklahoma	———	128	776	434	———	203	936	2,200	———	203	936	2,225
15	Oregon	———	111,857	150,197	29,503	———	159,799	159,933	35,635	———	345,492	208,543	35,609
16	South Dakota	———	4,584	488	804	———	8,819	488	2,588	———	10,262	695	2,762
17	Texas	———	24,929	25,660	21,121	———	32,754	29,725	28,775	———	63,682	36,900	29,548
18	Utah	———	174,222	156,475	58,857	———	202,765	192,158	41,241	———	230,477	207,517	42,241
19	Washington	———	21,987	17,061	14,892	———	32,254	19,960	18,657	———	42,956	23,373	19,496
20	Wyoming	———	33,503	41,658	7,403	———	62,757	57,853	8,241	———	76,979	79,775	45,098

[1]Based on the area irrigated in enterprises reporting cost of maintenance and operation in the crop year enumerated.
[2]Total area in enterprises. Area irrigable not reported in 1920.
[3]Contains $100,000 for which no acreage was reported and which was not included in computing average investment per acre.
[4]States reporting less than 100,000 acres, area works were capable of supplying with water, in 1940 not shown graphically.
[5]Revised.
[6]Other and mixed sources in Arizona and California are largely for enterprises reporting streams, gravity or pumped, with wells pumped.

CAPITAL INVESTED, AND AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1920 TO 1940; IRRIGATION ENTERPRISES, 1919 TO 1939; BY SOURCE OF WATER SUPPLY, BY STATES

Arkansas and Louisiana. See chart XI)

CAPITAL INVESTED, JANUARY 1					AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER					AVERAGE ANNUAL COST PER ACRE OF MAINTENANCE AND OPERATION[1]				
1920	1930	1940			1920	1930	1940			1919	1929	1939		
(Dollars)	(Dollars)	Total (Dollars)	Primary (Dollars)	Supplemental (Dollars)	(Dollars)	(Dollars)	Total (Dollars)	Primary (Dollars)	Supplemental (Dollars)	(Dollars)	(Dollars)	Primary (Dollars)	Supplemental (Dollars)	
PUMPED, STORED STORM WATER, AND WASTE WATER) OF WATER SUPPLY														
553,725,689	589,676,749	744,435,919	672,917,002	71,518,917	23.92	28.29	33.58	30.55	20.05	1.73	1.64	1.27	0.36	1
12,395,094	21,750,456	14,418,370	12,420,810	1,997,560	39.64	77.04	89.04	76.71	21.92	2.59	3.51	1.97	1.89	2
111,324	52,575	180,252	179,902	350	14.25	16.99	15.06	15.03	7.00	7.65	6.14	5.06	7.69	3
106,147,114	111,448,117	124,316,682	118,748,821	5,567,861	24.74	28.94	30.41	29.05	39.68	2.55	2.89	2.15	1.39	4
75,509,625	85,206,854	101,824,106	89,821,241	12,002,865	20.75	22.05	27.15	25.95	19.80	0.87	0.85	0.58	0.36	5
89,148,755	82,264,498	99,740,085	86,305,491	13,434,592	29.69	33.28	40.37	34.93	12.80	1.15	1.43	0.98	0.22	6
1,257,816	947,879	768,696	767,896	800	28.53	15.22	10.91	10.89	3.38	1.74	0.97	1.26	0.38	7
8,301,088	8,925,848	6,707,445	6,706,017	1,428	16.85	18.96	13.26	13.25	4.00	7.53	3.62	3.75	0.95	8
50,354,367	48,409,882	67,006,643	61,537,816	5,468,827	19.52	22.26	28.79	26.44	23.35	1.26	0.87	0.71	0.12	9
[3]13,843,282	20,715,880	56,654,746	34,038,969	2,595,777	24.58	31.01	42.98	39.94	8.86	1.48	1.43	1.07	0.63	10
13,588,552	14,371,537	16,272,427	12,830,961	3,441,466	21.46	21.35	20.40	16.08	27.92	0.69	0.85	0.42	0.45	11
14,523,385	16,811,289	28,009,263	28,007,132	2,131	24.56	29.93	49.69	49.68	16.14	1.65	1.87	1.80	0.59	12
1,856,618	1,254,039	1,752,369	1,752,369	----------	54.37	53.42	48.05	48.05	----------	5.50	1.97	1.40	----------	13
95,250	132,620	129,077	129,077	----------	10.21	20.95	24.44	24.44	----------	1.68	8.18	2.10	----------	14
23,940,425	29,547,086	49,246,537	45,052,846	4,193,691	19.93	29.73	40.52	37.07	29.81	1.18	1.27	1.12	0.68	15
5,391,253	4,486,042	5,347,447	5,347,447	----------	37.98	41.33	45.13	45.13	----------	1.26	1.35	1.25	----------	16
50,401,891	43,300,579	58,850,985	56,691,797	2,159,188	29.31	40.73	44.89	43.26	15.37	6.68	4.49	4.12	0.64	17
28,832,957	31,265,939	40,494,786	27,892,277	12,602,509	19.50	23.54	31.23	21.51	34.31	1.09	0.93	0.73	0.25	18
26,423,472	35,325,731	52,166,352	45,663,158	6,503,174	45.51	60.20	75.92	66.46	29.81	2.98	3.25	2.46	0.35	19
33,603,663	33,500,118	40,589,675	39,022,975	1,566,698	19.01	20.98	21.35	20.53	9.61	1.04	0.84	0.56	0.34	20
FLOWING AND/OR PUMPED) OF WATER SUPPLY[4]														
82,180,666	144,975,284	159,878,812	143,236,791	16,642,021	45.72	57.02	43.24	38.74	23.72	9.84	9.92	6.88	3.85	1
3,587,975	8,939,052	10,328,634	9,814,964	513,670	57.42	59.12	50.55	48.03	25.14	12.82	10.70	7.91	3.51	2
7,028,775	6,640,775	5,429,033	5,414,533	14,500	41.70	33.23	20.25	20.19	11.92	14.06	7.04	5.55	4.69	3
56,640,694	[5]111,174,365	119,346,657	106,189,336	13,157,321	50.69	66.93	57.38	51.05	27.17	10.30	11.25	8.46	4.35	4
435,828	585,503	3,373,470	1,398,114	1,975,356	21.20	29.20	40.16	16.65	14.98	3.38	4.48	3.74	2.96	5
58,587	203,990	342,745	226,505	116,240	33.40	30.65	30.22	19.97	29.84	3.01	2.69	2.59	2.35	6
745,585	648,238	1,275,015	1,018,920	256,095	36.23	35.87	19.91	15.91	13.53	6.96	3.92	3.35	2.21	7
5,394,448	6,282,965	4,324,076	4,308,803	15,273	25.53	25.78	19.42	19.35	3.83	5.93	4.44	3.48	1.55	8
26,292	23,284	48,731	48,031	700	47.29	15.93	28.12	27.72	12.07	6.80	5.06	4.48	15.00	9
23,250	616,939	2,260,097	1,991,453	268,644	20.25	19.95	17.81	15.69	11.31	5.16	4.03	3.48	1.44	10
75,975	301,133	285,229	213,344	71,885	42.11	34.41	58.03	43.41	118.82	17.25	4.63	1.85	1.96	11
2,533,687	2,441,540	3,238,644	3,134,071	104,573	39.60	38.09	24.80	24.00	18.09	5.27	5.39	3.91	2.01	12
----------	----------	3,120	3,120	----------	----------	----------	58.87	58.87	----------	----------	----------	7.26	----------	13
52,075	12,225	87,265	87,265	----------	382.90	185.23	76.35	76.35	----------	46.10	14.30	6.48	----------	14
127,806	256,265	545,944	504,697	41,247	44.01	59.60	45.44	42.01	46.19	8.24	10.54	6.34	6.73	15
5,000	6,000	21,250	21,250	----------	38.46	11.26	27.96	27.96	----------	----------	0.53	2.19	----------	16
3,286,855	4,086,553	6,657,288	6,655,588	1,700	40.76	48.26	15.32	15.32	28.35	10.98	8.37	3.09	1.67	17
338,814	754,405	616,996	542,877	74,119	17.92	34.30	31.37	27.60	24.81	2.08	2.97	2.84	2.00	18
1,803,954	1,995,028	1,579,630	1,549,232	30,398	74.32	80.51	61.23	60.05	34.58	11.25	15.36	9.52	4.50	19
15,090	9,250	114,988	114,688	300	80.27	20.79	25.18	25.12	2.08	7.95	23.56	4.43	0.69	20
SOURCES OF WATER SUPPLY[4]														
81,752,975	158,103,757	147,734,470	147,734,470	----------	42.73	58.23	67.54	67.54	----------	3.39	4.03	3.57	----------	1
17,517,025	42,658,709	58,779,604	58,779,604	----------	69.46	109.14	122.98	122.98	----------	2.77	3.08	4.69	----------	2
45,225	163,500	157,610	157,610	----------	16.28	19.97	20.59	20.59	----------	6.39	6.99	3.54	----------	3
32,098,580	88,345,499	75,225,879	75,225,879	----------	65.88	67.82	61.10	61.10	----------	8.38	6.13	3.87	----------	4
14,356,989	1,811,103	1,651,767	1,651,767	----------	49.78	9.32	20.76	20.76	----------	0.92	0.58	1.09	----------	5
2,295,667	2,051,866	2,502,970	2,502,970	----------	25.94	14.64	22.45	22.45	----------	1.85	1.60	1.66	----------	6
65,982	89,535	110,175	110,175	----------	20.12	27.62	13.98	13.98	----------	1.65	9.50	3.01	----------	7
367,645	535,950	533,992	533,992	----------	14.77	21.21	17.04	17.04	----------	7.79	9.55	3.00	----------	8
1,762,704	1,886,038	297,131	297,131	----------	10.14	18.85	19.86	19.86	----------	1.04	0.81	0.95	----------	9
42,653	53,500	161,364	161,364	----------	19.57	11.23	11.73	11.73	----------	2.65	1.25	1.29	----------	10
1,089,975	785,461	549,154	549,154	----------	15.61	14.41	9.06	9.06	----------	1.54	1.41	0.37	----------	11
1,153,340	581,551	1,488,090	1,488,090	----------	28.29	18.80	39.48	39.48	----------	6.29	-1.93	0.84	----------	12
500	13,275	----------	----------	----------	5.56	25.00	----------	----------	----------	----------	----------	----------	----------	13
4,000	15,254	55,844	55,844	----------	19.70	16.30	25.38	25.38	----------	10.00	4.91	9.90	----------	14
4,860,822	8,951,197	1,168,770	1,168,770	----------	34.77	55.97	34.75	34.75	----------	1.21	1.93	1.54	----------	15
68,995	10,075	26,913	26,913	----------	7.82	20.65	10.40	10.40	----------	1.14	0.09	2.63	----------	16
1,585,995	1,635,032	953,103	953,103	----------	42.25	55.01	33.12	33.12	----------	6.15	4.54	2.78	----------	17
2,865,600	3,649,477	784,750	784,750	----------	14.13	18.99	19.03	19.03	----------	0.94	1.36	1.21	----------	18
1,071,605	3,245,136	2,669,234	2,669,234	----------	33.22	162.48	143.22	143.22	----------	9.19	15.60	6.46	----------	19
707,575	1,643,819	818,140	818,140	----------	11.27	28.42	99.28	99.28	----------	1.25	0.88	0.99	----------	20

TABLE 6.—AREA IRRIGATED, 1909 TO 1939; AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1910 TO 1940; CAPITAL INVESTED AND AVER-

(For the 17 western States and

	ITEM	AREA IRRIGATED (ACRES)					AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER (ACRES)		
		Total			Primary enterprises	Supplemental enterprises	Total		
		1909	1919	1929	1939	1939	1910	1920	1930
		SUMMARY							
1	Summary (19 States)	14,433,285	19,191,716	19,547,544	21,003,759	3,287,210	20,285,403	26,020,477	26,101,890
2	Individual and partnership	6,594,614	6,848,807	6,410,581	7,314,152	596,171	8,086,766	9,255,756	7,982,142
3	Cooperatives	4,643,539	6,581,400	6,271,334	6,652,488	858,388	6,191,577	8,403,298	7,861,081
4	Irrigation district	528,642	1,822,887	3,452,275	3,514,702	211,470	800,451	2,531,425	4,846,095
5	Commercial	1,809,379	1,822,001	1,230,763	1,017,781	128,238	2,954,166	2,799,563	2,160,950
6	Bureau of Reclamation	395,646	1,254,569	1,485,028	1,824,004	1,460,470	786,190	1,680,643	1,944,825
7	All other	461,465	862,052	697,563	680,612	32,473	1,466,253	1,349,792	1,306,797
		STATES							
	California:								
8	Total	2,664,104	4,219,040	4,746,632	5,069,568	455,342	3,619,378	5,894,466	6,815,250
9	Individual and partnership	961,136	1,502,870	1,735,457	2,004,621	348,721	1,131,951	1,919,663	2,037,308
10	Cooperatives	779,020	1,215,696	853,547	851,527	46,647	984,570	1,705,647	1,359,477
11	Irrigation district	173,793	577,168	1,598,830	1,684,602	12,387	294,108	899,785	2,386,919
12	Commercial	746,265	873,499	312,313	368,841	23,135	1,204,059	1,307,968	668,592
13	Bureau of Reclamation	400	36,622	31,998	44,581	1,709	1,200	42,805	44,588
14	All other	3,490	13,185	214,487	115,396	22,743	3,490	18,598	318,366
	Colorado:								
15	Total	2,792,032	3,348,385	3,393,619	3,220,685	628,015	3,990,166	3,855,348	4,078,712
16	Individual and partnership	1,226,025	1,014,412	969,708	907,754	133,143	1,581,941	1,194,422	1,194,132
17	Cooperatives	1,273,141	1,789,385	1,789,909	1,947,770	[2]433,217	1,870,447	1,993,361	2,065,779
18	Irrigation district	115,504	248,409	230,400	186,925	———	207,570	269,504	344,153
19	Commercial	159,457	212,138	286,846	66,699	48,581	292,103	226,641	311,873
20	Bureau of Reclamation	16,600	71,145	81,883	83,137	13,074	30,000	135,265	116,034
21	All other	1,505	12,896	34,873	28,400	(2)	8,105	36,155	46,741
	Idaho:								
22	Total	1,430,848	2,488,806	2,181,250	2,277,857	910,002	2,388,959	3,092,810	2,617,021
23	Individual and partnership	403,600	513,350	327,488	324,626	8,890	483,946	639,002	388,943
24	Cooperatives	628,102	938,421	1,198,482	1,229,043	44,300	782,603	1,190,422	1,467,327
25	Irrigation district	140,930	355,995	304,010	334,266	14,097	177,900	400,382	335,018
26	Commercial	44,872	6,503	———	8,719	———	67,352	7,747	———
27	Bureau of Reclamation	47,500	253,759	275,954	344,638	842,715	113,000	289,992	290,248
28	All other	165,844	420,778	75,316	36,565	———	764,158	565,265	135,485
	Montana:								
29	Total	1,679,084	1,681,729	1,594,912	1,711,409	168,863	2,205,155	2,753,498	2,276,000
30	Individual and partnership	1,191,060	976,615	885,274	827,564	5,504	1,495,513	1,617,617	1,099,699
31	Cooperatives	333,926	393,257	418,862	443,373	138,287	373,022	553,952	524,077
32	Irrigation district	412	35,153	83,870	71,454	2,072	6,640	70,650	137,458
33	Commercial	62,544	34,115	22,375	40,384	28,000	80,895	38,215	28,780
34	Bureau of Reclamation	14,077	88,291	98,327	186,002	———	85,245	172,206	247,756
35	All other	77,065	154,298	86,204	142,652	———	163,840	300,858	238,230
	Wyoming:								
36	Total	1,133,302	1,207,982	1,236,155	1,486,498	93,581	1,639,510	1,831,039	1,655,008
37	Individual and partnership	813,823	724,620	665,844	816,337	11,376	1,024,137	1,008,379	799,345
38	Cooperatives	116,317	286,702	303,086	396,964	42,500	165,476	432,956	395,079
39	Irrigation district	11,800	22,935	86,174	96,681	24,307	27,050	54,017	115,408
40	Commercial	87,935	57,800	51,460	10,931	———	133,305	121,310	94,760
41	Bureau of Reclamation	12,905	53,555	85,886	138,653	15,398	34,869	93,022	144,548
42	All other	90,522	62,370	43,705	26,932	———	254,673	121,355	105,868
	Texas:								
43	Total	451,130	586,120	798,917	1,045,224	66,909	690,991	1,150,542	1,177,415
44	Individual and partnership	49,657	110,680	132,291	549,774	1,826	65,286	216,351	189,739
45	Cooperatives	130,011	103,378	58,691	59,303	(4)	183,411	256,304	117,815
46	Irrigation district	(5)	88,571	452,461	382,458	(4)	(5)	170,548	604,595
47	Commercial	271,462	262,892	89,996	190,763	(4)	442,294	481,899	199,230
48	Bureau of Reclamation	(5)	20,284	65,442	61,153	12,681	(5)	25,070	66,000
49	All other	(5)	315	36	1,773	———	(5)	370	36
	Utah:								
50	Total	999,410	1,371,651	1,324,125	1,176,116	322,994	1,250,246	1,700,550	1,542,475
51	Individual and partnership	222,448	166,887	172,240	107,537	4,652	257,266	195,858	202,147
52	Cooperatives	687,260	1,014,649	934,680	858,194	141,157	790,855	1,225,084	1,069,593
53	Irrigation district	8,455	21,143	8,125	23,394	8,000	8,455	24,023	8,100
54	Commercial	64,727	[6]86,911	[6]99,834	85,600	———	87,070	[6]126,833	[6]128,509
55	Bureau of Reclamation	———	29,285	40,000	38,623	161,455	———	50,030	40,000
56	All other	16,520	52,776	69,246	62,768	7,730	106,600	78,722	94,126
	Oregon:								
57	Total	686,129	986,162	898,713	1,049,176	104,970	830,526	1,344,046	1,158,210
58	Individual and partnership	410,078	590,626	450,841	543,612	16,363	454,074	689,723	539,903
59	Cooperatives	149,985	186,037	[6]184,940	158,174	3,565	169,944	236,171	[6]222,189
60	Irrigation district	1,500	92,081	160,974	204,271	———	1,500	198,540	240,019
61	Commercial	77,387	27,338	12,619	7,123	———	93,750	67,163	21,517
62	Bureau of Reclamation	22,000	54,981	61,829	130,403	85,042	45,319	76,525	85,612
63	All other	25,179	35,099	27,510	5,593	———	65,939	75,924	48,970
	Nebraska:								
64	Total	255,950	442,690	532,617	610,379	171,633	429,225	562,468	703,641
65	Individual and partnership	45,227	68,140	57,472	123,979	17,986	64,472	96,465	77,296
66	Cooperatives	78,605	55,408	54,811	61,252	365	168,260	102,242	77,324
67	Irrigation district	76,448	206,206	219,590	234,688	56,680	77,228	220,859	254,033
68	Commercial	24,854	25,335	53,574	28,723	———	52,724	27,332	114,361
69	Bureau of Reclamation	30,536	87,558	147,026	160,799	96,602	66,241	115,487	180,458
70	All other	300	43	144	938	———	300	83	169

See footnotes at end of table.

AGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1920 TO 1940; BY TYPE OF IRRIGATION ENTERPRISE, BY STATES

Arkansas and Louisiana. See chart XII)

AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER (ACRES)—Continued		CAPITAL INVESTED, JANUARY 1 (DOLLARS)					AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER (DOLLARS)				
Primary enterprises 1940	Supplemental enterprises 1940	Total			Primary enterprises 1940	Supplemental enterprises 1940	Total		Primary enterprises 1940	Supplemental enterprises 1940	
		1920	1930	1940			1920	1930			
SUMMARY											
28,055,248	4,268,394	697,657,328	[1]892,755,790	1,052,049,201	963,888,263	88,160,938	26.81	54.20	34.36	20.65	1
9,635,198	798,308	154,634,169	[1]187,867,180	187,382,730	170,368,731	17,013,999	16.71	23.54	17.69	21.31	2
7,996,256	990,411	183,041,500	179,329,962	224,140,876	205,082,550	19,058,326	21.78	22.81	25.65	19.24	3
4,969,395	451,677	88,575,514	210,733,476	265,737,810	260,701,900	5,035,910	34.99	43.49	52.46	11.15	4
1,961,202	[2]32,804	85,735,470	62,351,714	66,243,823	59,250,003	6,993,820	30.62	28.85	30.21	30.04	5
2,349,967	1,762,721	129,509,819	193,989,576	250,245,559	211,046,133	39,199,226	77.08	99.75	89.81	22.24	6
1,145,250	32,473	56,162,856	58,483,882	58,298,603	57,438,946	859,657	41.61	44.75	50.15	26.47	7
STATES											
7,398,576	624,550	194,886,388	[1]310,967,979	318,889,218	300,164,036	18,725,182	33.06	45.63	40.57	29.98	8
2,787,274	483,132	57,616,716	[1]108,129,435	109,682,184	97,017,879	12,664,305	30.01	53.07	35.06	26.21	9
1,194,742	68,013	48,899,448	48,682,089	58,187,092	54,451,984	3,735,108	28.67	35.81	45.58	54.92	10
2,384,379	12,587	33,985,301	105,349,178	109,319,715	109,122,822	196,893	37.77	44.14	45.77	15.90	11
740,007	56,566	44,996,723	24,660,738	28,354,269	26,287,295	2,066,974	34.40	36.88	35.52	56.53	12
60,297	1,709	2,398,220	5,520,644	5,915,578	5,874,308	41,270	56.03	123.81	97.42	24.15	13
251,877	22,745	6,989,980	18,625,895	7,450,380	7,409,748	20,632	375.85	38.50	29.42	0.91	14
5,913,542	738,232	88,302,442	87,603,240	106,849,343	92,871,122	13,978,221	22.90	21.48	23.73	18.93	15
1,110,597	166,528	11,599,895	10,815,909	11,348,304	8,829,100	2,519,204	9.71	9.06	7.95	15.13	16
2,307,280	[3]466,787	42,911,035	45,651,717	[3]58,829,795	50,168,249	[3]8,661,544	21.53	22.10	21.74	[2]18.56	17
253,841	35,000	16,269,026	12,657,718	15,621,957	15,332,375	289,584	60.37	36.78	65.57	8.27	18
97,801	53,581	5,711,887	5,624,989	6,228,398	4,933,743	1,294,655	25.20	18.04	50.45	24.16	19
121,746	16,336	10,255,231	11,551,307	12,928,239	11,715,005	1,213,234	75.80	99.55	96.22	74.27	20
42,277	(z)	1,557,580	1,301,600	[2]1,892,652	1,892,652	(z)	43.08	27.85	44.77	(z)	21
2,595,534	1,055,582	91,501,009	84,500,354	102,585,798	89,034,966	13,550,832	29.59	32.29	34.33	12.86	22
388,916	10,522	5,747,004	3,473,615	2,922,197	2,761,026	161,171	8.99	8.93	7.10	15.32	23
1,342,511	55,307	36,576,664	34,785,666	41,534,385	40,502,309	1,032,076	30.73	23.71	30.17	18.66	24
362,665	14,097	11,954,046	10,725,493	13,874,612	13,804,612	70,000	29.86	32.01	38.06	4.97	25
8,719	———	698,179	———	115,660	115,660	———	90.12	———	13.04	———	26
424,840	978,656	17,804,859	29,603,539	41,868,781	29,581,196	12,287,585	61.40	101.99	69.63	12.62	27
65,883	———	18,720,277	5,914,041	2,272,163	2,272,163	———	33.12	43.65	34.49	———	28
2,544,390	254,269	52,143,363	50,319,204	67,352,505	61,882,978	5,469,527	18.94	22.11	26.40	23.35	29
986,782	6,238	15,543,287	7,595,504	6,258,533	6,212,642	25,891	9.61	6.91	6.30	4.15	30
569,880	177,959	6,692,877	8,466,956	11,760,098	8,934,147	2,825,951	12.08	16.16	15.68	15.88	31
82,711	2,072	1,708,851	5,404,781	3,736,632	3,711,632	25,000	24.19	39.32	44.87	12.07	32
112,285	48,000	676,535	632,480	3,945,268	1,832,608	2,112,660	17.70	21.98	16.32	44.01	33
325,197	———	14,381,318	18,325,910	26,607,374	26,607,374	———	85.51	73.97	82.33	———	34
269,537	———	13,140,495	9,893,593	15,064,600	14,584,575	480,025	43.68	41.53	54.11	[3]60.00	35
1,913,527	165,090	34,326,328	35,153,187	41,522,801	39,955,805	1,566,998	18.75	21.24	20.88	9.61	36
995,756	15,492	8,738,886	5,410,055	7,819,522	7,773,873	45,649	8.67	6.77	7.81	2.95	37
509,748	45,586	6,701,990	4,786,271	7,746,056	7,553,366	192,690	15.48	12.11	14.82	4.23	38
117,976	85,691	1,441,312	2,615,006	5,249,158	4,096,984	1,152,174	26.68	22.66	34.73	13.45	39
58,653	———	780,562	2,299,870	2,980,102	2,980,102	———	6.43	24.27	52.60	———	40
170,643	16,321	12,863,870	17,589,985	15,411,395	15,234,910	176,485	138.29	121.69	89.28	10.81	41
62,771	———	3,799,708	2,452,002	2,316,568	2,316,568	———	31.31	23.16	36.91	———	42
1,773,812	159,231	55,072,739	49,022,164	66,441,376	64,300,488	2,140,888	30.48	41.64	36.25	15.38	43
563,686	2,655	8,256,568	9,371,780	9,105,016	9,091,669	13,347	38.16	49.39	16.13	5.03	44
90,241	(4)	3,821,844	3,459,486	1,954,900	1,952,900	(4)	14.91	29.36	21.42	(4)	45
696,415	(4)	5,449,142	26,543,073	42,700,333	42,369,323	(4)	31.95	43.90	60.84	(4)	46
348,392	(4)	13,825,409	5,404,080	9,330,311	7,835,780	(4)	28.69	17.09	22.49	(4)	47
69,010	17,119	3,673,476	6,238,245	3,147,764	2,847,764	300,000	146.53	94.52	41.27	17.52	48
6,068	———	46,300	5,500	223,052	223,052	———	125.14	152.78	36.76	———	49
1,357,714	370,284	32,057,351	35,669,819	41,896,532	29,219,904	12,676,628	18.84	23.13	21.52	34.23	50
142,454	6,600	2,736,804	3,482,497	1,428,479	1,338,791	89,688	13.97	17.23	9.40	13.59	51
968,621	154,933	20,254,212	16,763,420	19,861,261	17,707,384	2,153,877	16.53	15.67	18.28	13.90	52
24,894	8,000	265,484	1,896,590	2,640,455	2,265,455	375,000	11.05	234.15	91.00	46.88	53
98,375	———	[5]3,698,770	[6]7,220,629	3,541,088	3,541,088	———	[5]29.16	[6]56.19	36.00	———	54
40,812	195,021	3,567,057	5,181,980	12,698,755	2,964,692	9,734,063	71.30	129.55	72.64	50.43	55
82,578	7,750	1,515,024	1,124,705	1,726,494	1,402,494	324,000	19.25	11.95	16.98	41.91	56
1,261,081	141,558	28,929,151	38,754,548	50,961,251	46,726,315	4,234,958	21.52	33.46	37.05	29.92	57
650,375	17,206	6,584,382	4,871,562	5,592,899	5,422,518	170,381	9.55	9.02	8.34	9.90	58
174,245	6,619	3,143,698	[6]6,286,247	4,732,990	4,702,990	30,000	13.31	[6]28.29	26.99	4.53	59
255,856	———	6,313,753	13,983,818	12,821,775	12,821,775	———	31.80	58.26	54.83	———	60
16,988	———	3,281,034	1,606,957	441,013	441,013	———	48.85	74.68	25.96	———	61
175,171	117,755	5,956,950	11,408,297	27,002,875	22,968,318	4,034,557	77.84	133.26	131.12	34.27	62
10,466	———	3,649,334	597,867	369,699	369,699	———	48.07	12.21	35.32	———	63
992,957	316,730	13,909,185	21,386,319	39,056,207	36,191,786	2,864,421	24.73	30.39	36.45	9.04	64
197,075	26,893	1,146,227	1,041,547	2,967,486	2,671,642	295,844	11.88	13.47	13.56	11.00	65
86,350	[7]8,365	547,104	751,302	72,173,158	[7]2,144,788	728,370	5.35	9.72	13.24	73.59	66
400,674	175,476	2,811,474	5,082,366	19,205,720	17,716,079	1,489,641	12.73	20.01	44.22	8.49	67
126,673	(7)	726,560	899,054	1,027,010	(7)	(7)	26.58	7.86	(7)	(7)	68
181,155	105,996	8,674,250	13,605,568	14,659,810	13,609,244	1,050,566	75.11	75.58	75.12	9.91	69
1,050	———	5,570	8,482	50,033	50,033	———	43.01	50.19	47.65	———	70

TABLE 6.—AREA IRRIGATED, 1909 TO 1939; AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1910 TO 1940; CAPITAL INVESTED AND AVER-

(For the 17 western States and

	ITEM	AREA IRRIGATED (ACRES)					AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER (ACRES)		
		Total			Primary enterprises 1939	Supplemental enterprises 1939	Total		
		1909	1919	1929			1910	1920	1930
		STATES—Continued							
	Arizona:								
1	Total	320,051	467,565	575,590	655,263	73,806	387,655	627,305	824,152
2	Individual and partnership	61,196	80,511	73,836	131,320	15,547	81,422	195,331	107,220
3	Cooperatives	101,025	114,482	58,733	82,919	215	120,559	130,903	58,427
4	Irrigation district	(5)	300	117,869	77,164	———	(5)	300	191,186
5	Commercial	80	14,500	32,600	12,200	———	200	20,000	76,500
6	Bureau of Reclamation	138,364	248,814	278,584	265,042	58,044	164,500	269,691	296,758
7	All other	19,386	8,958	13,968	84,618	———	20,974	11,078	94,081
	Nevada:								
8	Total	701,833	561,447	486,648	739,863	84,722	840,962	704,708	736,249
9	Individual and partnership	581,406	355,901	316,918	438,996	7,848	649,841	453,900	502,308
10	Cooperatives	78,966	69,877	32,267	8222,105		88,255	85,485	56,891
11	Irrigation district	———	80,000	———	2,940	65,000	———	80,000	———
12	Commercial	8,864	5,990	5,855	(8)	———	9,300	7,240	5,855
13	Bureau of Reclamation	30,000	44,324	54,040	57,471	11,874	90,185	69,850	90,000
14	All other	2,597	5,355	77,568	18,351	———	3,361	8,235	81,195
	Louisiana:								
15	Total	380,200	454,882	450,901	447,095	2,579	553,220	728,742	795,165
16	Individual and partnership	222,049	259,673	226,259	248,664	2,579	267,620	375,917	334,045
17	Cooperatives	———	10,635	———	38,640	———	———	20,325	———
18	Commercial	158,151	184,574	224,625	159,764	———	285,600	332,500	461,060
19	All other	———	———	17	27	———	———	———	60
	New Mexico:								
20	Total	461,718	538,377	527,033	554,039	5,123	644,970	696,119	656,669
21	Individual and partnership	144,212	151,351	130,738	151,366	5,123	185,283	215,618	155,802
22	Cooperatives	251,911	264,610	233,286	168,186	———	355,527	305,540	276,581
23	Irrigation district	———	15,008	22,000	86,675	———	———	24,808	37,000
24	Commercial	28,190	19,871	16,192	22,514	———	58,150	33,745	28,212
25	Bureau of Reclamation	13,398	77,678	103,090	98,064	———	21,467	96,751	111,035
26	All other	24,007	9,859	21,727	27,234	———	24,743	19,659	48,039
	Washington:								
27	Total	334,378	529,899	499,285	615,013	184,664	470,514	637,151	651,511
28	Individual and partnership	95,655	142,215	88,015	104,343	10,721	117,145	169,457	106,290
29	Cooperatives	81,122	93,192	92,743	84,256	6,720	90,805	104,699	112,501
30	Irrigation district	———	79,918	97,772	124,599	5,347	———	118,009	122,006
31	Commercial	66,911	21,705	9,474	7,290	———	138,064	31,652	20,201
32	Bureau of Reclamation	55,690	122,869	118,667	167,085	161,876	74,500	135,119	137,288
33	All other	35,000	70,000	92,812	127,440	———	50,000	78,215	133,225
	Arkansas:								
34	Total	(9)	143,946	151,787	161,601	341	(9)	179,015	209,942
35	Individual and partnership	(9)	140,471	145,487	158,750	341	(9)	175,338	203,442
36	Cooperatives	(9)	1,075	———	(4)	———	(9)	1,275	———
37	Commercial	(9)	2,400	6,300	(4)	———	(9)	2,400	6,500
	Kansas:								
38	Total	37,479	47,312	71,290	99,980	13,666	139,995	67,853	83,583
39	Individual and partnership	3,154	14,546	16,689	58,255	12,751	4,795	26,614	23,812
40	Cooperatives	27,372	32,516	37,871	39,528	915	135,200	40,719	41,991
41	Commercial	———	150	16,000	(10)	———	———	320	17,000
42	Bureau of Reclamation	6,953	———	———	———	———	(5)	———	———
43	All other	———	100	730	2,397	———	———	200	780
	South Dakota:								
44	Total	63,248	100,682	67,107	80,198	———	128,461	150,914	109,550
45	Individual and partnership	37,684	31,664	11,268	10,606	———	55,820	56,032	14,174
46	Cooperatives	13,601	10,080	19,646	14,533	———	18,243	10,615	20,876
47	Commercial	6,300	2,280	———	———	———	6,800	1,600	———
48	Bureau of Reclamation	5,613	56,638	36,193	34,222	———	47,568	82,692	74,500
49	All other	50	20	———	837	———	50	75	———
	North Dakota:								
50	Total	10,248	12,072	9,392	21,615	———	21,917	34,235	24,006
51	Individual and partnership	8,638	3,306	3,303	2,232	———	9,821	7,997	4,006
52	Cooperatives	———	———	———	500	———	———	———	———
53	Irrigation district	———	———	———	4,605	———	———	———	———
54	Bureau of Reclamation	1,610	8,766	6,089	14,131	———	12,096	26,238	20,000
55	All other	———	———	———	147	———	———	———	———
	Oklahoma:								
56	Total	4,388	2,969	1,573	4,160	———	6,397	9,672	7,551
57	Individual and partnership	2,388	969	1,453	3,816	———	3,397	2,072	2,551
58	Cooperatives	2,000	2,000	120	———	———	3,000	7,600	4,800
59	All other	———	———	———	344	———	———	———	———

1 Revised.
2 Data for 1 State enterprise included with "Cooperatives."
3 Based on irrigable area.
4 Data are included in State totals because less than 3 enterprises reported.
5 Not included in classification in 1910.
6 Includes 1 Carey Act enterprise.
7 One "Commercial" enterprise included with "Cooperatives."
8 Data for 2 "Commercial" enterprises included with "Cooperatives."
9 Not available.
10 One "Commercial" enterprise included with "All other."

AGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER, 1920 TO 1940; BY TYPE OF IRRIGATION ENTERPRISE, BY STATES—Con.

Arkansas and Louisiana. See chart XII)

AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER (ACRES)—Continued		CAPITAL INVESTED, JANUARY 1 (DOLLARS)					AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER (DOLLARS)				
Primary enterprises 1940	Supplemental enterprises 1940	Total			Primary enterprises 1940	Supplemental enterprises 1940	Total		Primary enterprises 1940	Supplemental enterprises 1940	
		1920	1930	1940			1920	1930			
STATES—Continued											
844,212	115,531	53,498,094	73,328,197	83,526,608	81,015,378	2,511,230	53.40	88.97	95.97	22.16	1
184,482	21,751	5,598,625	5,913,408	5,667,378	5,155,438	511,940	28.66	55.15	27.95	23.54	2
92,531	637	3,171,406	1,337,982	3,227,304	3,224,694	2,610	24.23	22.90	34.85	4.10	3
140,687	———	100,000	13,721,792	14,961,006	14,961,006	———	333.33	71.77	106.34	———	4
12,400	———	3,693,400	4,857,759	3,492,685	3,492,685	———	184.67	63.50	281.67	———	5
297,669	90,943	20,277,919	37,691,293	39,708,470	37,711,790	1,996,680	75.19	127.02	126.69	21.96	6
116,443	———	656,744	9,805,963	16,469,767	16,469,767	———	59.28	104.25	141.44	———	7
841,304	123,845	14,754,280	15,457,951	16,906,790	13,393,439	3,513,351	20.94	21.00	15.92	28.37	8
489,808	8,735	4,014,570	4,530,708	2,350,895	2,278,510	440,885	8.84	9.02	4.65	50.47	9
[a] 255,281		1,019,047	936,400	[a] 3,605,009	[a] 3,236,509		11.92	16.46	[a] 12.68		10
3,820	75,900	1,246,611	———	888,934	84,217	804,717	15.58	———	22.05	10.89	11
(a)	———	340,559	227,000	(a)	(a)	———	47.04	38.77	(a)	———	12
66,788	41,210	7,955,537	7,767,759	8,838,237	6,570,488	2,267,749	113.87	86.31	98.38	55.05	13
25,607	———	179,956	1,996,064	1,225,715	1,225,715	———	21.85	24.58	47.79	———	14
759,915	4,342	14,063,181	15,744,743	11,565,513	11,548,812	16,701	19.30	19.80	15.20	3.85	15
419,759	4,342	7,943,252	6,984,092	5,799,128	5,782,427	16,701	21.13	20.91	13.78	3.85	16
47,260	———	161,658	———	766,097	766,097	———	7.95	———	16.21	———	17
292,805	———	5,958,271	8,757,151	4,997,688	4,997,688	———	17.92	18.99	17.07	———	18
111	———	———	3,500	2,600	2,600	———	———	58.35	23.42	———	19
731,990	5,912	18,210,412	19,834,380	32,735,997	32,629,293	106,704	26.16	30.20	44.58	18.05	20
199,699	5,912	5,589,372	3,814,458	4,551,158	4,424,454	106,704	25.92	24.48	22.16	18.05	21
191,544	———	3,558,863	3,016,075	4,973,160	4,973,160	———	11.65	10.90	25.96	———	22
133,512	———	914,479	1,289,160	11,165,731	11,165,731	———	36.86	34.84	83.63	———	23
32,466	———	1,877,842	1,543,000	852,957	852,957	———	55.65	54.69	26.27	———	24
115,695	———	5,020,230	8,684,489	7,760,844	7,760,844	———	51.89	78.21	67.08	———	25
59,074	———	1,249,626	1,487,178	3,452,147	3,452,147	———	63.57	30.96	58.44	———	26
731,527	219,009	29,299,011	40,561,895	56,415,196	49,881,624	6,533,572	45.98	64.23	68.19	29.83	27
151,549	11,058	4,732,706	4,467,599	4,246,697	4,178,853	67,844	27.95	42.03	31.77	6.14	28
91,528	6,720	3,949,896	4,162,417	5,043,916	4,977,116	66,800	37.73	37.00	54.38	9.94	29
142,161	12,554	6,112,628	10,170,631	15,317,182	15,015,291	301,891	51.80	83.36	91.55	24.05	30
7,610	———	2,341,428	682,507	765,810	765,810	———	73.97	53.79	100.63	———	31
210,512	188,677	10,441,145	15,542,597	27,675,132	21,578,095	6,097,037	77.27	113.21	102.50	32.31	32
148,167	———	1,721,208	5,536,144	6,366,459	6,366,459	———	22.01	41.55	36.22	———	33
287,765	1,266	7,183,322	6,856,648	5,766,895	5,752,045	14,850	40.13	32.56	19.99	11.73	34
283,525	1,266	7,073,297	6,711,648	5,711,895	5,697,045	14,850	40.34	32.99	20.09	11.73	35
(4)	———	60,013	———	(4)	(4)	———	47.07	———	(4)	———	36
(4)	———	50,012	125,000	(4)	(4)	———	20.84	19.23	(4)	———	37
142,409	19,165	2,067,381	1,685,652	2,153,886	1,896,991	256,895	30.47	20.17	13.32	13.41	38
83,483	17,978	775,095	875,951	1,494,396	1,256,301	238,095	29.12	36.79	15.05	13.24	39
55,923	1,185	1,289,737	242,001	600,082	581,282	18,800	51.67	5.76	10.39	15.88	40
(10)	———	1,549	520,000	(10)	(10)	———	4.84	30.59	(10)	———	41
———	———	———	———	———	———	———	———	———	———	———	42
10 3,003	———	1,000	47,700	10 59,408	10 59,408	———	5.00	61.15	10 19.78	———	43
121,847	———	5,465,248	4,502,117	5,395,610	5,395,610	———	36.21	41.10	44.28	———	44
26,081	———	743,880	237,424	240,939	240,939	———	13.28	16.75	9.24	———	45
21,471	———	240,030	196,953	256,021	256,021	———	22.61	9.43	11.92	———	46
———	———	15,058	———	———	———	———	9.41	———	———	———	47
72,504	———	4,464,780	4,067,740	4,628,868	4,628,868	———	54.06	54.60	63.84	———	48
1,791	———	1,500	———	269,782	269,782	———	20.00	———	150.63	———	49
36,522	———	1,857,118	1,267,314	1,755,489	1,755,489	———	54.25	52.79	48.07	———	50
3,996	———	81,693	55,091	54,732	54,732	———	10.22	13.75	13.70	———	51
590	———	———	———	57,150	57,150	———	———	———	96.85	———	52
11,824	———	———	———	234,600	234,600	———	———	———	19.84	———	53
19,928	———	1,775,425	1,212,223	1,393,237	1,393,237	———	67.67	60.61	69.91	———	54
184	———	———	———	15,790	15,790	———	———	———	85.82	———	55
8,624	———	151,325	160,099	272,186	272,186	———	15.65	21.84	31.56	———	56
7,961	———	110,658	85,099	180,892	180,892	———	53.41	35.62	22.72	———	57
———	———	40,667	75,000	———	———	———	5.35	15.62	———	———	58
663	———	———	———	91,294	91,294	———	———	———	137.70	———	59

TABLE 7.—LENGTH OF CANALS, 1900 TO 1940; CAPACITY OF CANALS AT MAIN HEADINGS, AND NUMBER AND

(For the 17 western States and Arkansas and

	STATE	CANALS[1]								
		Length (miles)					Capacity at main headings (second-feet)			
		1900	1910	1920	1930	1940	1910	1920	1930	1940
1	Summary (19 States)	44,535	127,930	159,864	126,802	127,533.7	618,097	651,079	547,514	612,021
2	Arizona	1,492	2,597	3,368	3,974	4,178.2	17,200	11,707	13,697	13,258
3	Arkansas	———	131	86	51	77.9	(2)	1,205	1,845	270
4	California	5,106	21,129	27,384	18,602	19,799.1	89,597	115,257	84,944	91,776
5	Colorado	7,374	22,570	27,595	21,581	19,864.0	148,485	119,558	125,652	139,780
6	Idaho	4,977	12,759	17,298	14,544	15,602.1	80,458	86,275	76,765	71,510
7	Kansas	324	316	418	285	292.5	2,600	1,667	2,079	3,547
8	Louisiana	386	1,168	3,243	2,226	2,421.0	(2)	11,889	11,586	10,535
9	Montana	6,812	18,934	22,496	15,957	15,702.5	83,849	94,429	53,253	66,745
10	Nebraska	1,701	2,728	3,325	3,485	3,331.3	9,378	11,665	13,108	14,256
11	Nevada	2,859	3,151	4,368	4,155	2,897.2	17,579	10,554	16,986	22,950
12	New Mexico	2,382	5,854	5,952	4,466	4,647.9	29,646	25,452	17,479	16,821
13	North Dakota	(2)	128	151	87	159.2	2,161	856	1,072	616
14	Oklahoma	68	85	57	24	42.2	155	344	77	277
15	Oregon	2,285	7,591	9,071	8,177	8,518.0	59,686	28,897	25,906	37,290
16	South Dakota	225	1,256	1,258	1,082	1,049.3	5,398	5,427	1,995	1,948
17	Texas	450	2,703	4,473	4,879	5,956.1	12,818	25,261	21,626	24,615
18	Utah	2,858	7,709	11,677	9,257	9,004.5	25,081	29,447	30,648	34,579
19	Washington	808	3,892	5,615	3,635	4,248.6	13,178	16,242	14,987	15,104
20	Wyoming	4,454	13,251	12,051	10,775	11,762.1	42,650	59,009	55,811	46,366

[1] Reported as main canals and ditches, Census of 1900; and as canals (mains and laterals, not including farm ditches), Censuses of 1920, 1930, and 1940.
[2] Not available.

TABLE 8.—AREAS, CAPITAL INVESTED, AVERAGE INVESTMENT PER ACRE, AND PROPORTIONS OF TOTALS, BY TYPE OF ENTERPRISE: 1890 TO 1940

(Statistics for chart XII covering the 17 western States and Arkansas and Louisiana)

TYPE OF ENTERPRISE (For definitions and explanations, see text)	CENSUS OF—												
	1890[1]	1900[1]	1910		1920		1930		1940				
	All enterprises	All enterprises	All enterprises	Proportion of total	All enterprises	Proportion of total	All enterprises	Proportion of total	All enterprises	Proportion of total	Increase or decrease (-) 1930–1940	Primary enterprises	Supplemental enterprises[2]
	AREA IRRIGATED												
	Acres	Acres	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Percent	Acres	Acres
Total	3,715,945	7,744,492	14,455,285	100.0	19,191,716	100.0	19,547,544	100.0	21,005,759	100.0	7.4	21,005,759	3,287,210
Individual and partnership	(3)	(3)	6,594,614	45.7	6,848,807	35.7	6,410,581	32.8	7,314,152	34.8	14.1	7,314,152	596,171
Cooperatives	(3)	(3)	4,645,539	32.2	6,581,400	34.3	6,271,334	32.1	6,652,488	31.7	6.1	6,652,488	858,388
Irrigation district	(3)	(3)	528,642	3.7	1,822,887	9.5	3,452,275	17.7	3,514,702	16.7	1.8	3,514,702	211,470
Commercial	(3)	(3)	1,809,579	12.5	1,822,001	9.5	1,250,765	6.3	1,017,781	4.8	-17.3	1,017,781	128,238
U. S. Bureau of Reclamation	(3)	(3)	395,646	2.7	1,254,569	6.5	1,485,028	7.6	1,824,004	8.7	22.8	1,824,004	1,460,470
All other[4]	(3)	(3)	481,465	3.2	862,052	4.5	697,565	3.5	680,612	3.5	-2.4	680,612	32,473
	AREA WORKS WERE CAPABLE OF SUPPLYING WITH WATER												
	Acres	Acres	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Percent	Acres	Acres
Total	(3)	(3)	20,285,403	100.0	26,020,477	100.0	26,101,890	100.0	28,055,248	100.0	7.5	28,055,248	4,268,394
Individual and partnership	(3)	(3)	8,086,766	39.9	9,255,756	35.6	7,982,142	30.6	9,633,198	34.3	20.7	9,633,198	798,308
Cooperatives	(3)	(3)	6,191,577	30.5	8,403,298	32.3	7,861,061	30.1	7,996,256	28.5	1.7	7,996,256	990,411
Irrigation district	(3)	(3)	800,451	3.9	2,531,425	9.7	4,846,095	18.6	4,969,595	17.7	2.5	4,969,595	451,677
Commercial	(3)	(3)	2,954,166	14.6	2,799,565	10.8	2,160,950	8.3	1,961,202	7.0	-9.2	1,961,202	232,804
U. S. Bureau of Reclamation	(3)	(3)	786,190	3.9	1,680,645	6.5	1,944,825	7.4	2,549,967	8.4	20.8	2,549,967	1,762,721
All other[4]	(3)	(3)	1,466,255	7.2	1,349,792	5.1	1,306,797	5.0	1,145,250	4.1	-12.4	1,145,250	32,473
	CAPITAL INVESTED												
	Dollars	Dollars	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Percent	Dollars	Dollars
Total	29,535,921	70,010,594	321,454,008	100.0	897,657,328	100.0	[5]892,755,790	100.0	1,052,049,201	100.0	17.8	965,888,265	88,160,936
Individual and partnership	(3)	(3)	(3)	(3)	154,634,169	22.2	[5]187,867,180	21.0	187,382,750	17.8	-0.3	170,368,751	17,013,999
Cooperatives	(3)	(3)	(3)	(3)	185,041,500	26.2	179,329,962	20.1	224,140,676	21.3	25.0	205,082,350	19,058,326
Irrigation district	(3)	(3)	(3)	(3)	88,575,514	12.7	210,733,476	23.6	265,737,810	25.3	26.1	260,701,900	5,035,910
Commercial	(3)	(3)	(3)	(3)	85,755,470	12.3	62,351,714	7.0	66,243,825	6.3	6.2	59,250,005	6,993,820
U. S. Bureau of Reclamation	(3)	(3)	(3)	(3)	129,509,819	18.6	195,989,576	21.7	250,245,359	23.8	29.0	211,046,153	39,199,226
All other[4]	(3)	(3)	(3)	(3)	56,162,856	8.0	58,485,882	6.6	58,298,603	5.5	-0.3	57,438,946	859,657
	AVERAGE INVESTMENT PER ACRE WORKS WERE CAPABLE OF SUPPLYING WITH WATER												
	Dollars	Dollars	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Percent	Dollars	Dollars
Total	[6]7.95	[6]9.04	15.85	xxx	26.81	xxx	[5]34.20	xxx	37.50	xxx	9.1	34.36	20.65
Individual and partnership	(3)	(3)	(3)	xxx	16.71	xxx	[5]23.54	xxx	xxx	xxx	xxx	17.69	21.51
Cooperatives	(3)	(3)	(3)	xxx	21.78	xxx	22.81	xxx	xxx	xxx	xxx	25.65	19.24
Irrigation district	(3)	(3)	(3)	xxx	34.99	xxx	43.49	xxx	xxx	xxx	xxx	52.46	11.15
Commercial	(3)	(3)	(3)	xxx	30.62	xxx	28.85	xxx	xxx	xxx	xxx	30.21	30.04
U. S. Bureau of Reclamation	(3)	(3)	(3)	xxx	77.06	xxx	99.75	xxx	xxx	xxx	xxx	89.81	22.24
All other[4]	(3)	(3)	(3)	xxx	41.61	xxx	44.75	xxx	xxx	xxx	xxx	50.15	26.47

[1] Census of Agriculture. [2] Areas shown under "Supplemental sources" are parts of areas shown under "Primary sources" and therefore are not added again into the totals (see text). [3] Data not separated by type of enterprise. [4] Includes Reclamation district office of Indian Affairs, State, City and/or sewage, and other. [5] Revised. [6] Based on area irrigated.

YIELD OF PUMPED WELLS, 1910 TO 1940; AND AVERAGE PUMPING LIFT FROM PUMPED WELLS, 1940; BY STATES

Louisiana. See chart XIII for pumped wells)

PUMPED WELLS													
Total (number)				Yield (gallons per minute)								Average pumping lift (feet)	
				Total				Average per well					
1910	1920	1930	1940	1910	1920	1930	1940	1910	1920	1930	1940	1940	
15,971	52,094	56,729	68,279	7,248,699	16,396,549	32,467,120	43,555,271	454	511	572	655	55	1
470	999	1,398	1,858	765,921	1,042,590	1,852,552	2,508,357	1,630	1,044	1,311	1,350	62	2
507	1,089	1,190	1,534	268,829	1,470,147	1,841,448	1,812,647	876	1,350	1,379	1,182	64	3
10,724	25,401	46,737	48,568	4,119,575	10,608,476	24,266,167	28,297,969	384	418	519	585	57	4
121	527	654	2,878	55,564	210,094	257,903	1,929,798	443	399	364	671	53	5
24	53	121	309	2,826	17,749	34,601	225,164	118	335	286	729	29	6
939	710	772	1,658	73,363	266,797	325,500	863,663	78	376	419	527	38	7
606	812	1,389	1,504	1,108,256	1,607,637	1,958,811	1,526,615	1,829	1,980	1,410	1,015	45	8
10	22	48	102	5,263	11,085	18,653	33,883	526	504	381	332	24	9
86	54	537	2,412	3,363	24,701	428,058	2,053,184	51	726	797	851	34	10
6	129	147	167	1,349	6,798	54,162	50,938	225	53	368	305	31	11
466	461	680	1,487	190,690	265,618	481,898	1,145,276	409	576	709	769	46	12
1	———	———	11	15	———	———	378	15	———	———	34	25	13
65	19	18	77	1,791	3,643	2,715	15,486	28	192	151	201	48	14
92	208	558	901	20,883	47,026	136,669	209,289	227	226	245	232	35	15
4	1	1	16	24	800	375	1,059	6	800	375	65	55	16
1,912	901	1,102	3,396	567,126	538,565	614,395	2,215,230	297	598	558	652	82	17
27	192	346	286	4,827	39,059	120,333	122,528	179	203	348	428	38	18
128	520	1,019	1,041	60,220	227,744	306,800	287,527	470	438	301	276	43	19
3	16	11	94	855	8,020	8,280	60,522	278	501	753	644	46	20

TABLE 9.—LENGTH OF CANALS, 1902, 1920, 1930, AND 1940; CAPACITY OF CANALS AT MAIN HEADINGS, AND NUMBER AND YIELD OF PUMPED WELLS, 1920 TO 1940; AND AVERAGE PUMPING LIFT FROM WELLS, 1940; BY SPECIFIED DRAINAGE BASINS

(For the 17 western States and Arkansas and Louisiana)

DRAINAGE BASIN	CANALS							PUMPED WELLS									
	Length (miles)				Capacity at main headings (sec.-ft.)			Total (number)			Yield (gallons per minute)						Average pumping lift (feet)
											Total			Average per well			
	1902	1920	1930	1940	1920	1930	1940	1920	1930	1940	1920	1930	1940	1920	1930	1940	1940
Summary (19 States)	58,880	159,864	126,802	127,533.7	651,079	547,314	612,021	52,094	56,729	68,279	16,396,549	32,467,120	43,555,271	511	572	655	55
Red River (of the North)[1]	6	———	1	23.9	———	2	365	———	———	———	———	———	———	———	———	———	———
Missouri River, summary	17,302	39,599	30,612	31,151.1	167,891	130,173	148,255	585	1,071	4,760	171,464	615,550	3,633,499	445	575	765	35
Yellowstone River	3,980	8,833	8,015	8,162.6	32,064	29,539	32,035	6	4	28	1,005	555	6,615	168	139	236	44
Platte River	6,769	14,961	12,618	13,422.2	67,344	66,838	72,454	313	956	4,277	143,904	560,450	3,553,350	460	588	784	35
All other tributaries	6,553	15,805	9,979	9,546.3	68,483	33,796	43,766	66	111	455	26,555	52,545	273,536	402	472	601	46
Mississippi River, exclusive of Missouri River, summary	3,050	8,286	5,518	4,838.6	41,974	49,701	49,858	2,085	2,216	4,428	1,876,840	2,104,516	3,495,820	900	950	789	62
Arkansas River	3,050	7,691	5,275	4,423.7	39,166	46,577	48,217	1,354	1,343	2,529	954,452	999,536	1,497,906	690	744	592	45
All other tributaries	———	575	243	414.9	2,808	3,124	1,641	731	873	1,899	942,388	1,104,780	1,995,914	1,289	1,265	1,051	77
Gulf of Mexico streams other than Mississippi River and Rio Grande	1,357	4,886	3,792	4,569.8	20,951	18,608	18,860	1,615	2,363	4,158	2,072,580	2,495,111	3,210,785	1,285	1,055	772	62
Rio Grande, summary	3,235	9,732	9,381	8,702.9	40,424	38,609	43,851	503	731	1,712	286,143	498,651	1,291,071	569	682	754	48
Pecos River	853	2,082	1,175	998.1	5,619	5,920	7,164	287	542	858	174,958	262,546	736,153	610	768	858	49
All other tributaries	2,382	7,650	8,206	7,704.8	34,805	34,689	36,687	216	389	854	111,205	236,085	554,918	515	607	650	46
Colorado River, summary	8,376	22,586	20,185	20,894.1	66,306	68,322	81,033	1,128	1,196	2,395	1,095,724	1,772,812	2,758,985	971	1,482	1,152	58
Upper Colorado River[2]	6,191	18,752	15,874	13,964.3	54,457	55,169	57,900	6	22	15	3,000	15,643	1,850	500	711	141	20
Green River	2,127	6,703	5,794	5,743.9	16,875	17,145	21,496	1	3	11	1,350	410	920	1,350	137	84	58
Lower Colorado River[2 3]	2,185	3,834	4,311	6,929.8	11,869	15,153	23,133	1,122	1,174	2,382	1,092,724	1,757,169	2,757,153	974	1,497	1,157	58
Great Basin, summary	8,445	17,665	12,753	10,757.6	57,409	50,743	57,949	870	2,707	1,306	273,094	1,321,396	653,078	314	488	500	76
Bonneville Lake	3,354	10,304	6,806	7,339.2	29,281	25,104	28,428	124	213	305	30,620	75,907	129,711	247	347	425	39
Lahontan Lake[4]	5,091	7,361	5,947	3,418.4	28,128	25,639	29,521	746	2,494	1,001	242,474	1,247,489	523,367	325	500	523	88
Columbia River, summary	10,575	32,799	26,919	27,535.0	134,536	115,085	121,457	752	1,663	1,972	277,555	464,026	687,639	369	279	349	39
Snake River	6,865	20,071	16,904	16,397.2	95,846	85,164	86,012	130	229	418	40,957	70,236	256,972	315	307	615	24
All other tributaries	3,710	12,728	10,015	11,137.8	38,690	29,919	35,445	622	1,434	1,554	236,598	393,790	430,667	380	275	277	45
Klamath River	951	1,726	1,698	1,904.3	8,878	5,900	9,179	16	14	56	5,975	21,442	29,509	373	1,532	527	37
Sacramento-San Joaquin Delta and tributary streams	4,221	19,428	15,314	15,202.8	79,142	64,374	72,735	14,657	31,744	32,418	6,384,882	16,750,369	20,042,295	436	527	618	43
Pacific Ocean streams, exclusive of Gulf of California streams and Columbia and Klamath Rivers and Sacramento-San Joaquin Delta and tributary streams	1,382	3,049	2,622	1,947.6	13,055	5,789	7,995	9,874	12,814	14,952	3,879,505	6,385,210	7,509,059	393	498	503	82
Whitewater Draw and Vamori Wash (Gulf of California)[1]	———	128	7	26.0	553	10	484	209	210	142	72,787	62,457	45,537	348	297	321	57

[1] Not shown graphically.
[2] Data for Census of 1930 shown in published Census reports under "Other tributaries of Colorado River" are allocated, 85 percent to the Upper Colorado River Drainage Basin and 15 percent to the Lower Colorado River Drainage Basin.
[3] Includes Imperial Valley.
[4] Includes unidentified independent streams.

TABLE 10.—NUMBER AND YIELD OF FLOWING WELLS, NUMBER AND CAPACITY OF PUMPS, AND AVERAGE CAPACITY OF PRIME MOVERS, 1910 TO 1940; AVERAGE LIFT OF PUMPS, 1920 TO 1940; BY STATES

(For the 17 western States and Arkansas and Louisiana. See chart XIII for flowing wells and XIV for pumps)

STATE	FLOWING WELLS								PUMPS			
	Total (number)				Yield (gallons per minute)				Total (number)			
	1910	1920	1930	1940	1910	1920	1930	1940	1910[1]	1920	1930	1940
Summary (19 States)	5,071	4,606	4,811	4,641	1,345,676	955,057	609,367	555,075	15,805	33,804	61,445	78,528
Arizona	214	310	215	268	9,953	14,547	15,772	22,878	429	1,001	1,364	1,969
Arkansas	———	———	———	———	———	———	———	———	515	1,121	1,206	1,633
California	2,361	1,415	449	436	477,543	287,187	65,768	34,767	9,297	24,154	47,994	52,016
Colorado	313	476	621	886	41,989	20,139	39,644	54,859	206	435	540	2,818
Idaho	62	142	220	375	7,200	15,133	30,108	40,165	58	232	465	675
Kansas	3	6	1	24	30	500	75	1,453	698	288	512	1,259
Louisiana	———	9	807	502	———	6,255	31,961	12,695	1,007	1,941	2,000	2,403
Montana	15	41	40	44	22,185	4,608	4,106	9,854	125	299	253	680
Nebraska	———	———	———	19	———	———	———	370	75	54	656	2,848
Nevada	19	125	274	322	1,302	21,942	19,131	39,835	18	72	173	196
New Mexico	673	556	340	288	669,268	376,222	225,257	181,076	415	491	758	1,559
North Dakota	———	———	———	———	———	———	———	———	4	10	15	85
Oklahoma	———	1	———	———	———	100	———	———	68	26	30	116
Oregon	51	65	59	76	5,035	11,968	6,535	5,396	229	614	1,157	2,265
South Dakota	42	4	15	19	14,382	2,750	4,825	5,377	8	25	8	127
Texas	125	155	61	100	37,019	62,364	36,020	39,508	2,359	1,641	2,028	4,754
Utah	1,138	1,256	1,663	1,216	42,794	96,371	104,670	83,858	69	291	460	409
Washington	55	60	42	50	18,926	14,925	27,290	21,192	391	1,059	2,023	2,488
Wyoming	2	7	6	56	250	46	2,205	3,830	34	70	65	230

STATE	PUMPS—Continued											PRIME MOVERS			
	Capacity (gallons per minute)								Average lift (feet)			Average capacity (horsepower)			
	Total				Average										
	1910	1920	1930	1940	1910	1920	1930	1940	1920	1930	1940	1910	1920	1930	1940
Summary (19 States)	19,355,864	36,275,005	57,244,859	75,802,998	1,225	1,073	932	965	41	51	51	23	25	22	25
Arizona	851,873	1,048,030	2,125,293	2,992,986	1,986	1,047	1,558	1,520	44	46	60	87	30	42	52
Arkansas	456,402	1,654,097	1,775,788	2,015,697	1,385	1,476	1,472	1,235	50	68	61	39	56	57	47
California	5,276,298	16,775,692	33,240,589	39,147,470	568	695	695	753	41	53	55	14	18	18	19
Colorado	296,957	299,726	457,250	2,263,375	1,441	689	810	803	23	25	32	39	21	22	18
Idaho	278,569	1,397,681	2,115,513	2,719,905	4,803	6,024	4,545	4,029	29	32	26	122	198	86	67
Kansas	128,276	297,975	393,526	1,251,482	184	1,035	1,261	978	30	26	35	2	35	22	22
Louisiana	5,064,175	4,968,686	5,914,799	6,453,487	5,029	2,560	2,957	2,686	32	37	32	57	69	48	37
Montana	281,199	453,251	525,494	1,309,014	2,250	1,516	2,247	1,925	20	22	21	28	41	46	45
Nebraska	5,366	73,686	536,752	2,528,669	72	1,365	844	888	24	29	32	2	19	18	20
Nevada	24,295	35,266	115,648	141,065	1,550	490	668	720	22	31	31	38	6	17	12
New Mexico	216,355	304,789	555,063	1,309,005	524	621	752	840	40	40	44	34	18	21	26
North Dakota	182,115	51,250	24,900	104,158	45,529	5,125	1,915	1,255	58	24	17	510	517	17	15
Oklahoma	4,541	7,668	8,855	59,280	67	295	295	511	59	33	36	2	8	9	9
Oregon	118,514	600,045	1,022,215	1,510,958	518	977	884	667	28	27	27	14	24	19	13
South Dakota	5,289	23,520	4,027	103,050	661	953	503	811	21	27	20	8	20	12	17
Texas	5,362,665	6,825,998	6,494,999	9,916,225	2,273	4,160	5,203	2,086	45	55	69	29	59	52	42
Utah	315,057	785,588	877,942	835,862	4,566	2,695	1,909	2,044	25	36	35	31	46	27	35
Washington	365,411	636,552	995,303	953,751	955	601	491	583	60	59	47	35	24	17	15
Wyoming	142,529	39,725	86,905	209,559	4,192	568	1,337	911	31	21	30	21	23	15	19

[1] Number of pumping plants.

TABLE 11.—NUMBER AND YIELD OF FLOWING WELLS; NUMBER, CAPACITY, AND AVERAGE LIFT OF PUMPS; AND AVERAGE CAPACITY OF PRIME MOVERS; 1920 TO 1940; BY SPECIFIED DRAINAGE BASINS

(For the 17 western States and Arkansas and Louisiana)

DRAINAGE BASIN	FLOWING WELLS						PUMPS		
	Total (number)			Yield (gallons per minute)			Total (number)		
	1920	1930	1940	1920	1930	1940	1920	1930	1940
Summary (19 States)	4,606	4,811	4,641	955,057	609,567	555,073	33,804	61,445	78,528
Red River (of the North)	———	———	———	———	———	———	———	8	16
Missouri River, summary	41	21	79	4,271	7,218	9,915	689	1,279	5,994
Yellowstone River	21	6	20	194	2,265	2,494	120	68	244
Platte River	6	———	14	270	———	1,260	307	944	4,533
All other tributaries	14	15	45	3,807	4,953	6,161	262	267	1,217
Mississippi River, exclusive of Missouri River, summary	27	7	47	6,240	995	4,265	1,715	1,804	4,190
Arkansas River	24	6	46	3,640	945	3,729	872	852	2,125
All other tributaries	3	1	1	2,600	48	534	843	952	2,065
Gulf of Mexico streams, other than Mississippi River and Rio Grande	127	856	576	57,009	52,953	43,504	3,208	3,525	5,697
Rio Grande, summary	1,016	965	1,136	401,158	276,671	240,308	709	1,099	2,353
Pecos River	563	350	273	384,325	257,257	188,255	309	404	911
All other tributaries	453	615	863	16,851	39,414	52,053	400	695	1,442
Colorado River, summary	612	224	463	70,917	16,803	48,584	1,128	1,220	2,640
Upper Colorado River[1]	13	18	18	1,055	3,099	1,094	85	109	150
Green River	2	4	11	———	510	754	23	22	67
Lower Colorado River[1,2]	599	206	445	69,882	13,704	47,490	1,043	1,111	2,510
Great Basin, summary	1,610	2,175	1,698	128,522	153,800	118,499	820	2,788	1,448
Bonneville Lake	846	835	1,313	91,066	46,064	88,934	221	325	404
Lahontan Lake[3]	764	1,340	385	37,456	107,736	29,565	599	2,463	1,044
Columbia River, summary	178	293	374	27,135	62,451	65,579	1,745	3,434	4,459
Snake River	105	212	294	9,867	52,163	42,569	478	804	971
All other tributaries	71	81	80	17,268	30,288	23,010	1,267	2,630	3,488
Klamath River	4	28	5	55	241	42	85	123	224
Sacramento-San Joaquin Delta and tributary streams	181	72	47	51,785	14,400	3,405	14,849	33,129	34,851
Pacific Ocean streams, exclusive of Gulf of California streams and Columbia and Klamath Rivers, Sacramento-San Joaquin Delta, and tributary streams	802	159	212	187,484	23,427	20,211	8,649	12,821	16,552
Whitewater Draw and Vamori Wash (Gulf of California)	10	11	6	503	430	765	209	215	144

DRAINAGE BASIN	PUMPS—Continued									PRIME MOVERS		
	Capacity (gallons per minute)						Average lift (feet)			Average capacity (horsepower)		
	Total			Average								
	1920	1930	1940	1920	1930	1940	1920	1930	1940	1920	1930	1940
Summary (19 States)	36,275,005	57,244,859	75,802,998	1,073	952	965	41	51	51	25	22	23
Red River (of the North)	———	20,400	26,045	———	2,550	1,628	———	15	21	———	19	17
Missouri River, summary	800,218	1,543,545	5,773,010	1,161	1,050	956	22	26	32	31	22	20
Yellowstone River	182,508	273,074	532,157	1,521	4,016	2,181	25	19	22	39	60	41
Platte River	220,040	723,029	3,813,132	717	766	841	22	27	33	14	18	19
All other tributaries	397,670	547,442	1,387,721	1,518	1,301	1,140	(4)	(4)	29	30	32	23
Mississippi River, exclusive of Missouri River, summary	2,257,441	2,418,238	4,275,330	1,305	1,340	1,020	45	54	57	48	45	35
Arkansas River	1,119,743	1,144,006	2,004,166	1,284	1,343	943	42	49	43	45	38	28
All other tributaries	1,117,698	1,274,232	2,271,164	1,326	1,338	1,100	(4)	(4)	72	51	52	44
Gulf of Mexico streams, other than Mississippi River and Rio Grande	9,202,748	8,929,951	11,646,141	2,869	2,535	2,044	37	46	50	39	44	37
Rio Grande, summary	2,716,936	3,881,586	5,486,952	3,832	3,532	2,332	42	41	42	51	54	33
Pecos River	221,289	336,354	866,406	716	853	951	31	28	47	18	21	28
All other tributaries	2,495,647	3,545,232	4,620,546	6,239	5,101	3,204	(4)	(4)	38	78	73	36
Colorado River, summary	1,195,680	2,367,101	3,616,220	1,060	1,940	1,370	42	44	34	32	31	44
Upper Colorado River[1]	169,008	346,746	230,121	1,988	5,016	1,770	(4)	(4)	24	71	98	46
Green River	44,920	16,774	80,650	1,953	762	1,204	16	20	20	36	31	27
Lower Colorado River[1,2]	1,026,672	1,820,355	3,386,099	984	1,658	1,349	(4)	(4)	36	29	47	45
Great Basin, summary	1,033,964	3,205,814	1,514,746	1,261	1,150	1,046	41	67	71	27	23	27
Bonneville Lake	734,153	909,981	877,780	3,322	2,800	2,173	(4)	(4)	38	60	39	38
Lahontan Lake[3]	299,811	2,295,833	636,966	501	952	610	(4)	(4)	84	17	21	24
Columbia River, summary	2,522,910	3,595,854	4,609,862	1,446	1,047	1,038	50	47	39	40	24	24
Snake River	1,758,084	2,331,003	3,017,535	3,678	2,899	3,108	29	29	25	109	55	52
All other tributaries	764,826	1,262,851	1,592,329	604	480	459	(4)	(4)	43	20	15	16
Klamath River	174,184	508,985	506,460	2,089	4,158	2,261	25	33	26	34	67	31
Sacramento-San Joaquin Delta and tributary streams	11,584,371	23,856,244	29,694,592	780	720	855	32	42	42	15	14	16
Pacific Ocean streams, exclusive of Gulf of California streams and Columbia and Klamath Rivers, Sacramento-San Joaquin Delta, and tributary streams	4,732,586	7,059,634	8,630,296	547	551	521	58	79	77	23	25	23
Whitewater Draw and Vamori Wash (Gulf of California)	73,967	59,507	63,344	354	277	440	44	48	57	12	9	14

[1]Data for Irrigation Census of 1930, included in published Agriculture Census Reports, as "Other Tributaries of Colorado River," are allocated 85 percent to the Upper Colorado River Drainage Basin and 15 percent to the Lower Colorado River Drainage Basin.

[2]Includes Imperial Valley.

[3]Includes unidentified independent streams.

[4]Not available.

TABLE 12.—PIPE LINES—TOTAL LENGTHS, 1910 TO 1940; AND LENGTHS BY MATERIALS OF CONSTRUCTION AND SIZE, 1930 AND 1940; BY STATES

(For the 17 western States and Arkansas and Louisiana)

STATE	LENGTH OF PIPE LINES												
	Total (miles)				By materials of construction and size								
					1930								
					Concrete (miles)			Metal (miles)			Wood-stave (miles)		
	1910[1]	1920	1930	1940	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)
Summary (19 States)	5,806.9	8,878.5	[2]17,363.1	28,584.9	[3]10,324.5	7,519.1	2,681.9	[3]4,857.7	4,019.7	835.5	[3]1,005.8	593.4	406.4
Arizona	38.5	104.5	[2]189.5	344.5	71.0	14.0	57.0	58.1	52.5	5.6	41.8	21.5	20.5
Arkansas	———	0.4	1.0	15.0	———	———	———	1.0	0.9	0.1	———	———	———
California	2,619.4	6,885.9	[2]14,685.0	22,690.2	[3]9,585.4	7,199.4	2,269.5	[3]4,094.2	3,335.4	758.5	227.5	138.9	88.6
Colorado	183.6	217.5	151.9	245.1	68.0	55.7	12.5	36.5	21.0	15.5	17.5	5.4	12.1
Idaho	103.9	180.6	[2]265.4	299.9	80.0	56.2	43.8	55.1	29.1	6.0	[3]152.6	55.9	74.7
Kansas	0.3	2.8	16.1	24.1	———	———	———	16.1	16.1	———	———	———	———
Louisiana	4.1	50.1	15.1	63.6	———	———	———	14.6	10.3	4.3	0.5	0.3	0.2
Montana	29.9	48.0	64.9	148.1	12.3	0.2	12.1	27.6	19.6	8.0	15.8	4.7	11.1
Nebraska	1.5	3.8	27.5	126.1	6.6	———	6.6	3.9	2.3	1.6	7.5	1.2	6.3
Nevada	7.2	33.0	[2]90.6	104.7	11.6	9.5	2.1	58.2	54.2	4.0	10.7	10.2	0.5
New Mexico	40.5	60.8	15.2	36.5	0.7	0.7	———	10.0	9.1	0.9	3.5	2.1	1.4
North Dakota	0.3	0.3	1.2	3.8	———	———	———	1.2	1.2	———	———	———	———
Oklahoma	———	4.3	0.7	24.4	———	———	———	0.7	0.7	———	———	———	———
Oregon	107.5	159.6	[2]225.3	665.2	61.5	30.6	30.9	80.7	72.9	7.8	[3]70.4	41.0	27.4
South Dakota	6.7	7.2	8.9	17.3	1.1	———	1.1	3.6	2.9	0.7	1.8	———	1.8
Texas	32.6	157.1	[2]319.0	925.1	[3]149.8	24.0	118.8	58.6	53.9	4.7	56.0	25.2	30.8
Utah	117.8	154.7	159.0	172.5	24.0	9.0	15.0	49.2	42.9	6.3	30.3	26.4	3.9
Washington	500.5	790.0	[2]1,156.9	2,612.7	249.7	139.7	110.0	300.6	290.4	10.2	587.1	260.6	126.5
Wyoming	12.8	17.9	14.1	70.3	2.8	0.1	2.7	8.0	6.3	1.7	0.8	———	0.8

STATE	LENGTH OF PIPE LINES—Continued												
	By materials of construction and size—Continued												
	1930—Continued			1940									
	Clay and other (miles)			Concrete (miles)			Metal (miles)			Wood-stave (miles)			Clay and other (miles)		
	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)	Total	1 to 12 inches (diameter)	Over 12 inches (diameter)
Summary (19 States)	[3]322.8	235.4	60.4	18,692.2	14,126.6	4,565.6	8,027.5	7,083.1	944.4	1,236.5	808.5	428.0	628.7	456.3	172.4
Arizona	0.4	0.4	———	265.8	95.4	170.4	65.7	48.1	17.6	3.0	1.3	1.7	9.8	2.3	7.5
Arkansas	———	———	———	———	———	———	3.4	3.2	0.2	———	———	———	9.6	9.6	———
California	110.7	78.7	32.0	16,745.0	13,183.5	3,561.5	5,414.1	4,787.1	627.0	249.8	160.1	89.7	281.3	215.5	65.8
Colorado	10.1	8.9	1.2	86.7	57.6	29.1	93.5	51.9	41.6	23.7	9.1	14.6	41.2	14.6	26.6
Idaho	11.1	11.0	0.1	96.0	43.8	52.2	58.5	40.2	18.3	121.0	63.6	57.4	24.4	17.3	7.1
Kansas	———	———	———	1.1	0.6	0.5	21.7	20.8	0.9	———	———	———	1.3	0.5	0.8
Louisiana	———	———	———	15.4	6.1	9.3	40.7	20.5	20.2	5.9	5.5	0.4	1.6	1.1	0.5
Montana	9.2	0.7	8.5	14.5	1.8	12.7	78.7	56.8	21.9	26.1	10.8	15.3	28.8	0.9	27.9
Nebraska	9.5	———	9.5	21.2	3.1	18.1	83.2	65.8	17.4	12.5	5.1	7.4	9.2	2.7	6.5
Nevada	8.3	8.3	———	8.7	4.3	4.4	77.7	69.1	8.6	12.1	12.0	0.1	6.2	4.8	1.4
New Mexico	1.0	0.8	0.2	8.7	1.4	7.3	21.4	13.1	8.3	3.4	1.3	2.1	3.0	3.0	———
North Dakota	———	———	———	0.3	———	0.3	3.4	3.3	0.1	———	———	———	0.1	0.1	———
Oklahoma	———	———	———	0.6	0.6	———	25.6	25.6	———	0.1	0.1	———	0.1	0.1	———
Oregon	0.9	0.9	———	97.8	61.8	36.0	489.2	438.5	50.7	67.7	36.3	31.4	10.5	5.8	4.7
South Dakota	2.4	2.3	0.1	5.7	2.0	3.7	11.0	10.0	1.0	0.5	0.5	———	0.1	———	0.1
Texas	1.6	1.6	———	655.4	155.6	499.8	204.0	189.9	14.1	22.2	6.0	16.2	41.5	38.4	3.1
Utah	[3]55.5	54.2	0.3	40.6	17.8	22.8	60.7	43.5	17.2	21.2	13.3	7.9	50.0	44.9	5.1
Washington	[3]99.6	67.6	6.0	614.9	489.5	125.4	1,239.0	1,171.5	67.5	654.3	474.0	180.3	104.5	92.1	12.4
Wyoming	2.5	———	2.5	13.8	1.7	12.1	38.0	26.2	11.8	13.0	9.5	3.5	5.5	2.6	2.9

[1]Data for 1910 represent lengths of pipe reported in 1920 by enterprises which were installed prior to 1909 and may contain some pipe extensions installed by these enterprises between 1909 and 1919.

[2]Data for 1930 contain a total of 854.5 miles of pipe not segregated by material, as follows: Arizona, 18.0; California, 665.2; Idaho, 4.6; Nevada, 1.8; Oregon, 11.8; Texas, 53.0; and Washington, 99.9.

[3]Data for 1930 contain pipe not segregated into size groups, as follows: Concrete—California, 116.5 miles, and Texas, 7.0 miles; metal, California, 2.5 miles; wood-stave—Idaho, 2.0 miles, and Oregon, 2.0 miles; and clay and other—Utah, 1.0 miles, and Washington, 26.0 miles.