

The
Yearbook of
Agriculture
1958



THE UNITED STATES

GOVERNMENT PRINTING OFFICE

LAND

the yearbook of agriculture

1958

THE UNITED STATES DEPARTMENT

OF AGRICULTURE, WASHINGTON, D. C.

Contents: Foreword, *Ezra Taft Benson*, Secretary, page v. Preface, *Alfred Stefferud*, Editor, page vii. Forever the land: A section of pictures, page xv.

Our heritage

of land. Land and the growth of the Nation, *Walter E. Chryst* and *William C. Pendleton, Jr.*, page 2. Our wealth of land resources, *Carleton P. Barnes* and *F. J. Marschner*, page 10. How we acquired our landed estate, *Karl S. Landstrom*, page 19. Land and our economic development, *Joe R. Motheral*, page 28. The heritage of our public lands, *John B. Bennett*, *H. R. Josephson*, and *Hugh H. Wooten*, page 42. The uses to which we put our land, *Hugh H. Wooten* and *James R. Anderson*, page 53.

How we use and manage

public lands. A report on the public domain, *Harold R. Hochmuth* and *Robert K. Coole*, page 64. The management of State lands, *Alvin T. M. Lee* and *Hugh H. Wooten*, page 72. Getting and using land in time of war, *Alvin T. M. Lee*, page 87. The management of tribal lands, *M. Wilfred Goding*, page 96.

How we use our

private lands. The land changes and the land endures, *Howard E. Conklin* and *John W. Mellor*, page 104. Oranges do not grow in the North, *Ronald L. Mighell*, page 109. Changes in the Northern Dairy region, *Herbert C. Fowler*, page 114. The use of land in the Corn Belt, *C. W. Crickman*, page 122. Where our cotton comes from, *Max M. Tharp* and *E. Lee Langsford*, page 129. Changes in the land of cotton, *G. H. Aull*, page 136. The general farming and tobacco region, *W. Herbert Brown*, page 142. Land and problems in the wheat regions, *Warren R. Bailey*, page 150. Land-use problems in the Great Plains, *John Muehlbeier*, page 161. The role of land in western ranching, *M. L. Upchurch*, page 167.

Some financial aspects

of land use. Distribution of income from farmland, *Virgil L. Hurlburt*, page 176. How do you put a value on land?, *William H. Scofield*, page 183. Appraisal of farm real estate, *William G. Murray* and *Joseph Ackerman*, page 190. The market for farm real estate, *Paul L. Holm* and *William H. Scofield*, page 198. The mechanics of land transfer, *Charles L. Stewart* and *Stanley W. Voelker*, page 206. Borrowing money to purchase land, *James A. Munger*, page 218. Insurance against losses on farms, *Ralph R. Botts* and *Robert C. Otte*, page 230. How taxes affect the land and farmers, *Frederick D. Stocker*, page 240. Getting started in farming is hard, *Don Kanel*, *Franklin J. Reiss*, and *Charles L. Stewart*, page 254. A summary in charts and maps, page 263.

Rights, ownership,

and tenure. How our rights in land came about, *Marshall Harris*, page 278. What do we mean by "ownership"?, *Gene Wunderlich* and *Russell W. Bierman*, page 287. Farm tenure and the use of land, *Gene Wunderlich* and *Walter E. Chryst*, page 295. Trends in kinds and sizes of farms, *Kenneth L. Bachman* and *Jackson V. McElveen*, page 302. Land and one of the farm programs, *Frank H. Maier*, page 310.

Taking care of what

we have. The wise use of our resources, *John F. Timmons* and *Elmer L. Sauer*, page 316. Where farmers can get the help they need, *Virgil D. Gilman*, *James M. Hunt*, and *D. Harper Simms*, page 321. Technical assistance for landsmen, *Raymond W. Heinen*, page 329. The uses and values of soil tests, *J. W. Fitts*, page 333. Some new jobs for irrigation, *Elco L. Greenshields* and *William I. Palmer*, page 339. Wanted: Partnership to manage water, *J. T. Sanders* and *N. A. Back*, page 347. Protecting watersheds—ways and whys, *M. L. Weinberger* and *Erwin C. Ford*, page 356. The classification of rural land, *Frederick K. Nunns*, page 362. Group action to develop and protect land, *Fred A. Clarenbach* and *John Muehlbeier*, page 371. A new program for better living, *Joseph C. Doherty*, page 376. Information on land from airphotos, *Henry W. Dill, Jr.*, page 381. The face of our land looks to the sky, page 384.

Our woods and

templed hills. Our vital private forest lands, *John R. McGuire*, page 386. The care and use of national forests, *Edward P. Cliff*, page 392. Programs for forest management, *W. S. Swingler* and *Frank A. Connolly*, page 402. Clearing land for different uses, *James R. Anderson*, *Adon Poli*, and *Lawrence A. Reuss*, page 409. The potential demand for timber, *David B. King* and *I. Irving Holland*, page 416.

These also are

our country. Seward's folly can be a great land, *Hugh A. Johnson*, page 424. Hawaii's problems and many assets, *Perry F. Philipp*, page 440. Puerto Rico: Change and progress, *Julio O. Morales*, *Bartolomé M. Morell*, *Efrain Diaz-Cruz*, and *Ismael Ramirez-Murphy*, page 449.

Our growing needs

and problems. How our production has expanded, *Glen T. Barton*, page 460. Prospective needs for food and fiber, *Rex F. Daly*, page 466. Our future needs for nonfarm lands, *Raleigh Barlowe*, page 474. Land and advances in technology, *Orlin J. Scoville*, *Lewis B. Nelson*, and *Elco L. Greenshields*, page 480. Cities, transportation, and technology, *Harold M. Mayer*, page 493. Urban expansion—will it ever stop?, *M. Mason Gaffney*, page 503.

Planning for a

better use. Planning and zoning for the future, *Erling D. Solberg*, page 524. Planning for stability in a great area, *Erling D. Solberg*, page 532. Safe, efficient, and attractive highways, *Erling D. Solberg*, page 537. Public development of resources, *William A. Green*, *Harry A. Steele*, and *Mark M. Regan*, page 542. Arrangements for our public lands, *Fred A. Clarenbach*, *Walter L. Graves*, *Edward W. Schultz*, and *John B. Bennett*, page 551. Tenure and the use of farm resources, *Walter G. Miller*, *Max M. Tharp*, and *Lawrence A. Jones*, page 562. Planning for the new land frontier, *Hugh A. Johnson*, page 568. Balanced development of resources, *Carl P. Heisig*, *Hugh H. Wooten*, and *Raymond P. Christensen*, page 584.

LAND

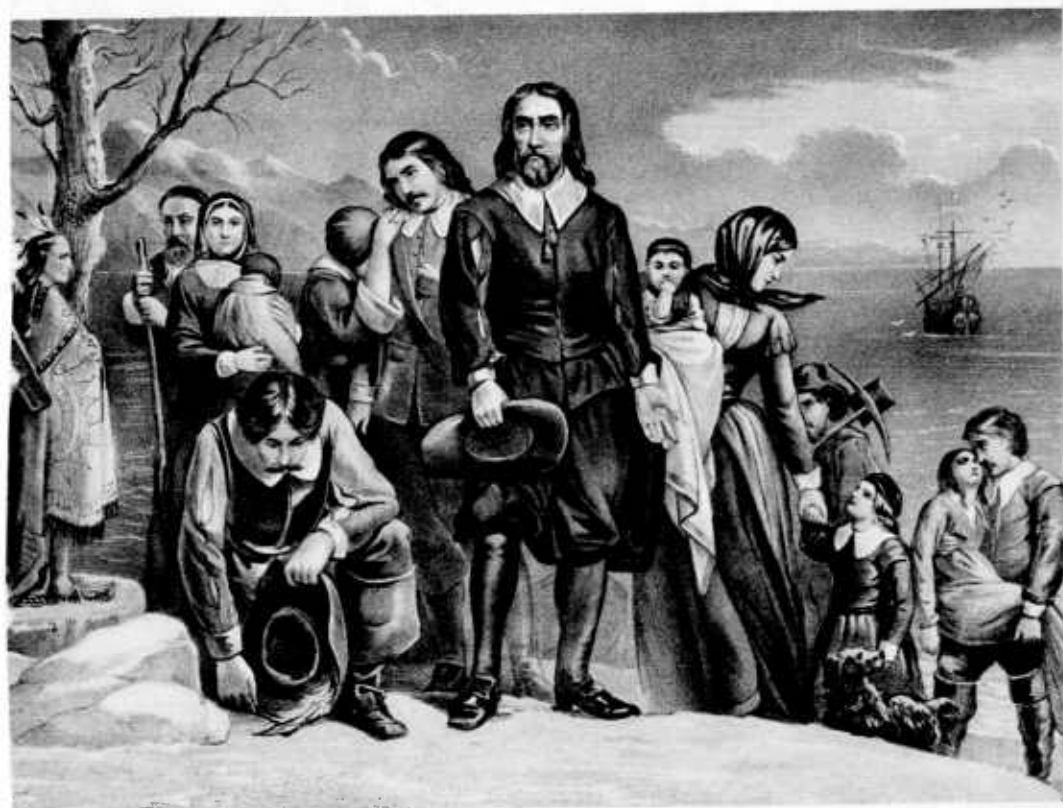
Forever the land:

A section of pictures. An account of what the fathers found; the winning of the West; the growth of people and the Nation; the development of scientific agriculture; problems of this later day; what of the future?

The help of Robert B. Branstead of the Soil Conservation Service, Leland J. Prater of the Forest Service, and a committee, headed by Joseph D. Tonkin, of the Federal Extension Service in preparing this section of pictures is gratefully acknowledged.

Among the photographers are Mr. Prater; Mr. Branstead; Lloyd F. Ryan, Bluford W. Muir, J. L. Averell, Daniel O. Todd, J. G. Jack, K. D. Swan, Paul S. Bieler, George S. Griffith, Paul Fair, W. E. Seibel, Fred E. Dunham, William E. Hallen, and Roy M. Filloon, Forest Service; Hermann Postlethwaite and Ed Hunton, Office of Information; B. C. McClean, Gordon Smith, R. J. Wagner, Sam Cole, C. A. Rechenthin, and E. Cole, Soil Conservation Service; and photographers of the State Extension Services and land-grant colleges. The prints are from the Collections of the Library of Congress.

Some of the photographs were made later than the time to which we apply them, but because they typify the time, place, and event, the faults of anachronism and anachorism may not be serious.



Land where my fathers died.
Land of the pilgrim's pride:
Of thee I sing.



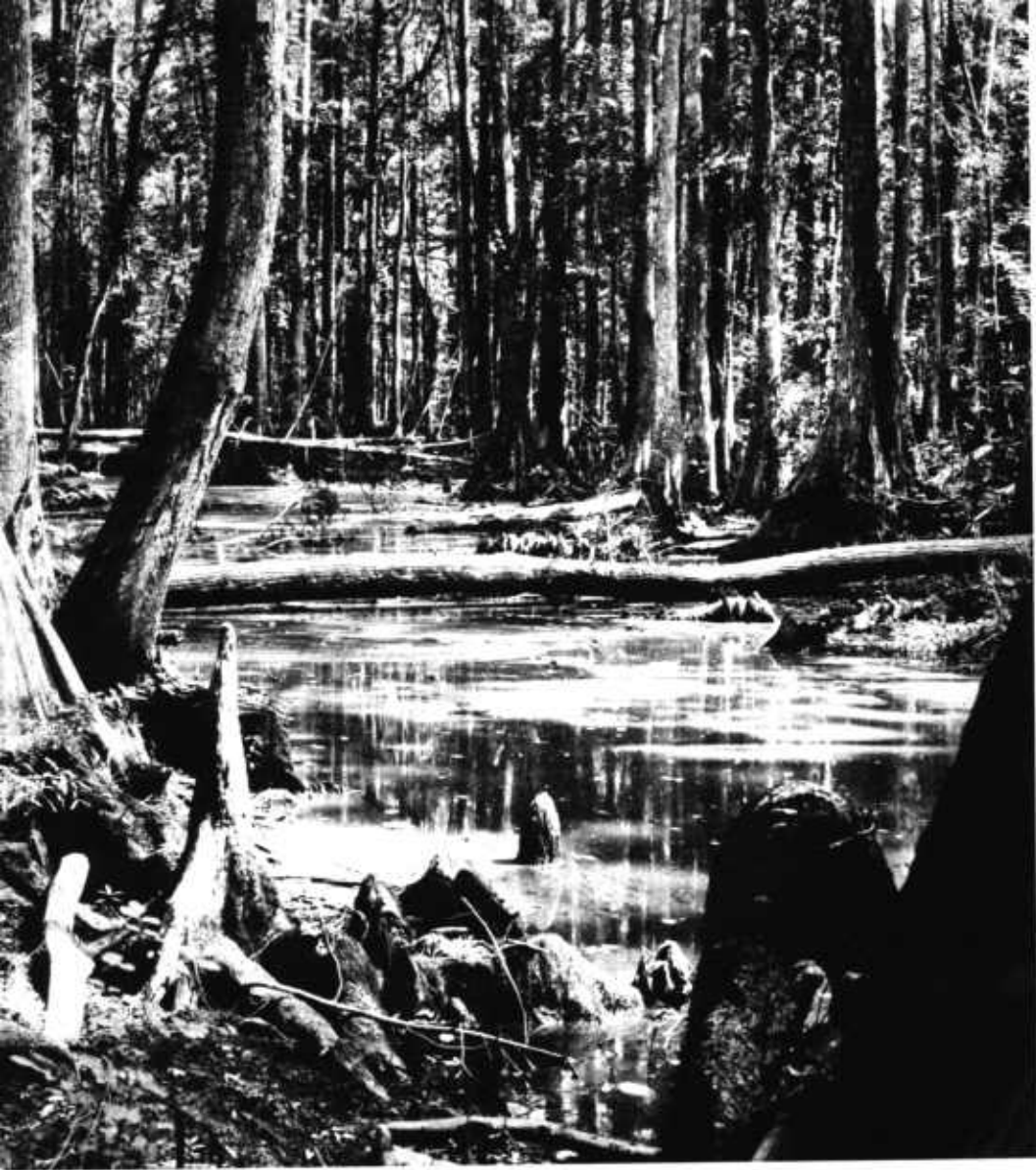
These the fathers found: Forests primeval,
boundless, untrod by feudal foot. [Wisconsin]



In them were fuel for the home fires,
wood for the homes that were coming,
meat for the body, and peace for the soul. [Michigan]

Clear ran the streams:
Unsullied, pure, and
teeming with bass,
trout, and salmon.
|Washington|





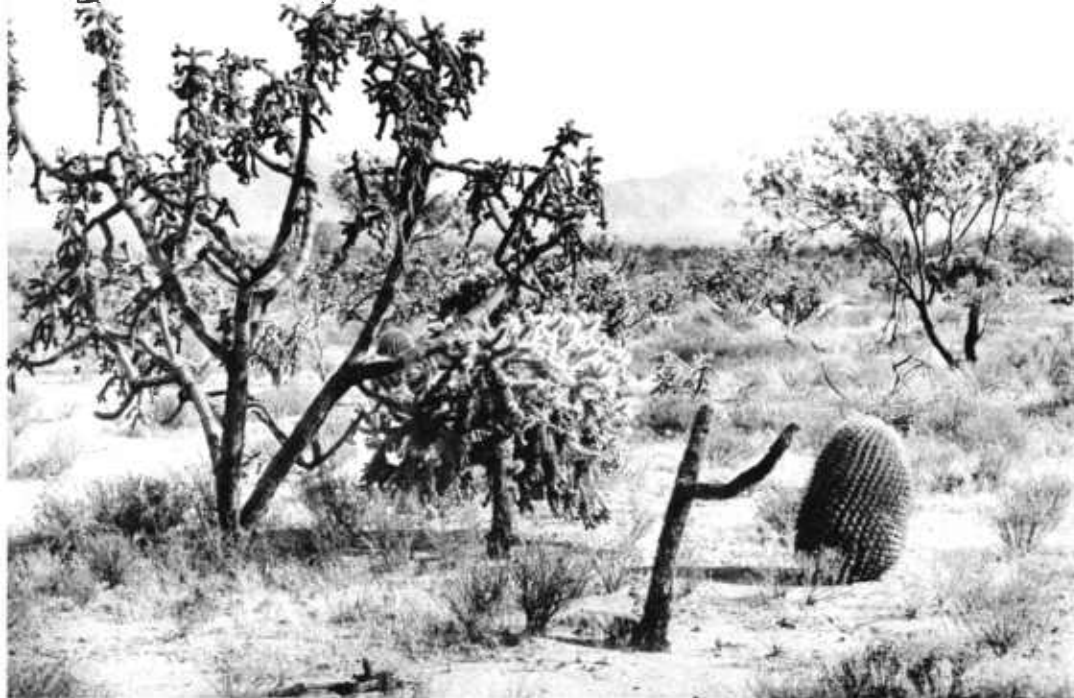
Creeks, swamps, marshes, potholes:
All were part of Nature's design;
each, in its way, a purposeful blessing. [South Carolina]



Prairies were to the westward,
with grass belly-high to a horse. [Oklahoma]

Far beyond the world the fathers knew
were mountains, majestic and awesome
and holders of wealth for the future. [Washington]





The desert, remote and waiting for man to disclose its resources and values of space, beauty, quiet. [Arizona]

In this land, this diverse, unspoiled land that knew not despot and serfdom, the fathers planted their seed. [North Carolina]





They built. When need was, they defended
their homes and their futures.

Some built stately mansions. [South Carolina]





Many moved westward. Hope and adventure were stronger than terrors and hardships of trackless expanses.

Before them went scouts and explorers, men who extended frontiers and saw new horizons. [Hayden Expedition, 1870]





Men lifted their eyes to the hills
for the gold and the wisdom they found there.



EMIGRATION



UP THE MISSISSIPPI RIVER.

The attention of Emigrants and the Public generally, is called to the now rapidly improving
TERRITORY OF MINNESOTA,
 Containing a population of 150,000, and goes into the Union as a State during the present year. According to an act of Congress passed last February, the State is munificently endowed with Lands for Public Schools and State Universities, also granting five per cent. on all sales of U. S. Lands for Internal Improvements. On the 3d March, 1857, grants of Land from Congress was made to the lending Trunk Railroads in Minnesota, so that in a short time the trip from New Orleans to any part of the State will be made in from two and a half to three days. The

CITY OF NININGER,

Situated on the Mississippi River, 35 miles below St. Paul, is now a prominent point for a large Commercial Town, being backed by an extensive Agricultural, Grazing and Farming Country; has fine streams in the interior, well adapted for Milling in all its branches; and Manufacturing **WATER POWER** to any extent.

Mr. JOHN NININGER, (a Gentleman of large means, ideas and liberality, speaking the various languages,) is the principal Proprietor of **Nininger**. He laid it out on such principles as to encourage all **MECHANICS**, Merchants, or Professions of all kinds, on the same equality and footing: the consequence is, the place has gone ahead with such rapidity that it is now an established City, and will annually double in population for years to come.

Persons arriving by Ship or otherwise, can be transferred without expense to Steamers going to Saint Louis; or stop at Cairo, and take Railroad to Dunleith (on the Mississippi). Steamboats leave Saint Louis and Dunleith daily for **NININGER**, and make the trip from Dunleith in 36 to 48 hours.

NOTICES.

1. All Railroads and Steamboats giving this card a conspicuous place, or *gratuitous insertion* in their cards, **AIDS THE EMIGRANT** and forwards their own interest.
2. For authentic documents, reliable information, and all particulars in regard to Occupations, Wages, Preempting Lands (in neighborhood), Lumber, Price of Lots, Expenses, &c., apply to

THOMAS B. WINSTON, 27 Camp street, New Orleans.
ROBERT CAMPBELL, St. Louis.
JOSEPH B. FORBES, Dunleith.



The people grew. The Nation grew.
Lanes became roads. The roads became highways.

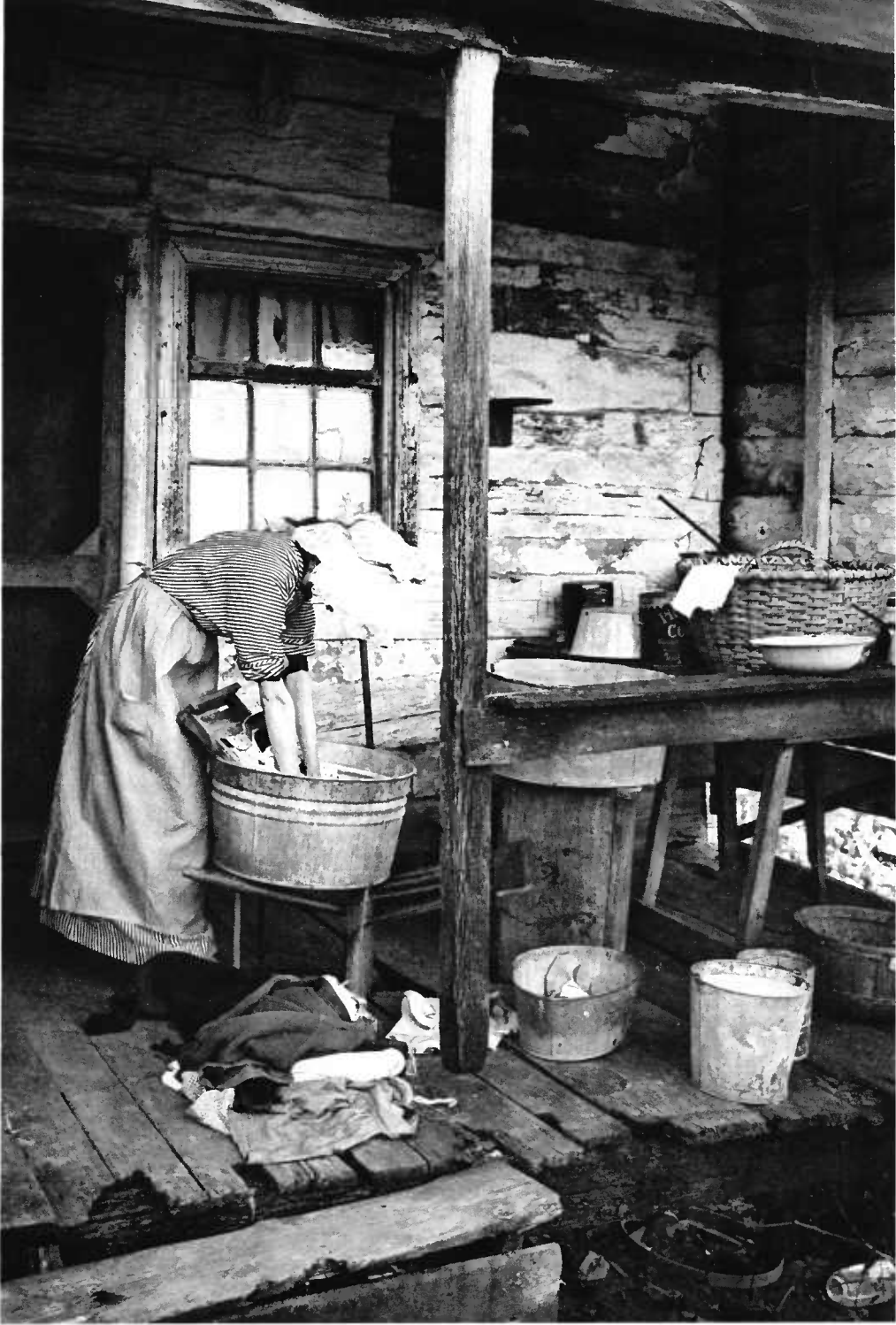




Railroads linked ocean and ocean.

The winning of the West meant primitive sod huts.





The winning of a new country meant drudgery and hard work.



It meant the few, forgotten comforts from the crossroads store.

For many, who failed to understand that methods of farming in the East would not succeed in the West, it meant poverty.





It meant despair, failure—or a new start, new hope.



Some sought other homes in a kinder place.

But life had its pleasures, too,
like driving to town on Saturday afternoon.





And always there was faith in God, in themselves,
and in the future of their Nation. [North Carolina]





A new day came to American farming when men of vision
founded State colleges of agriculture [Pennsylvania]

and the countrywide system of county agents,
dedicated men who showed them new methods





and expounded the principles of balanced farming.

Their sons and daughters joined 4-H Clubs.



In the West,
and later
in the East,
they began to
irrigate fields
for larger and
more certain
harvests. [Utah]





The land yielded its bounty of hay.
[Lolo National Forest, Montana]



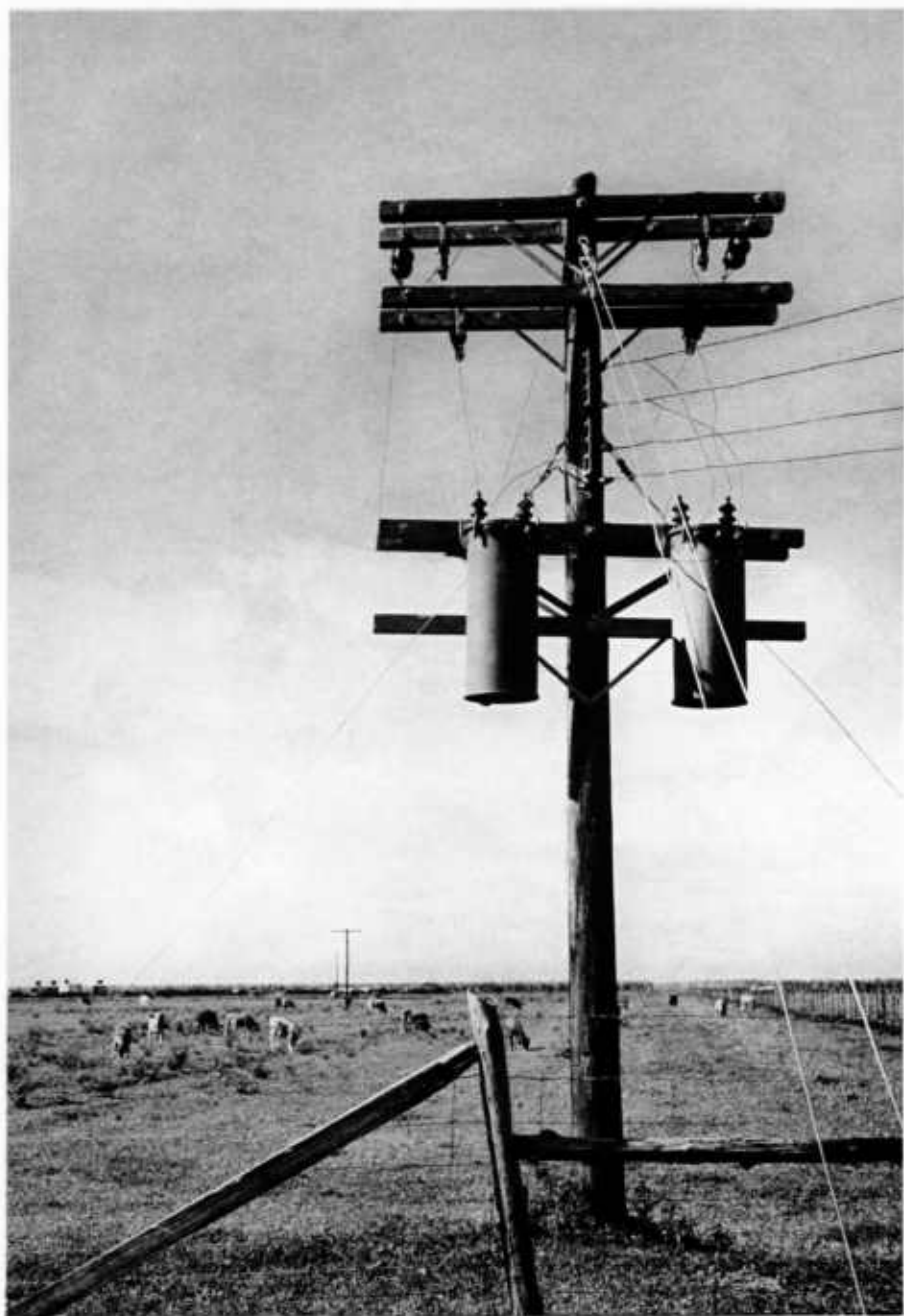
and pasture, [Idaho]



and corn, |Ohio|



and wheat—and much, much more. [North Dakota]



Electric power brought conveniences and greater efficiency to millions of remote farms.



So the fathers conquered a continent
and learned much about land and themselves. And the sons?
The sons, for quick profits and heedless of sons to come,
cut over and let burn many forests. [Oregon]



Logging at an end, towns died. [California]

They let the streams be polluted. [Ohio]





Silt from denuded watersheds choked reservoirs,
led to floods, and wasted water,
which was becoming more and more precious. [California]



People plowed land that should be grassland,
and saw how duststorms [Colorado]

could despoil the prairies. [Oklahoma]





They overgrazed and uncovered the slopes
and paid the price in erosion, [Alabama]

in the forced sales of homes and farms, [Georgia]





and poverty.





Now we are at
a crossroads.
At this moment
in history, when
our population
is growing,
the demand for
many products
of fields and
forest mounts,
and the face
of the land
is changing,
we can choose,
perhaps for the
last time,
what we are
to do with
our land.
our country.
[New York]



We see how cities grow out into farmlands
and orchards. [California]

We see how highways, airports, factories,
and other developments, however necessary they may be,
take over acres for all time. [Virginia]





For the future that we can build, we have the lessons of the past. We have the knowledge, from research and experience, of how to manage forests and keep them productive. [Lassen National Forest, California]



We have learned about the need to plant trees
to protect some hillsides and how to do it
and which trees to plant. [Mississippi]

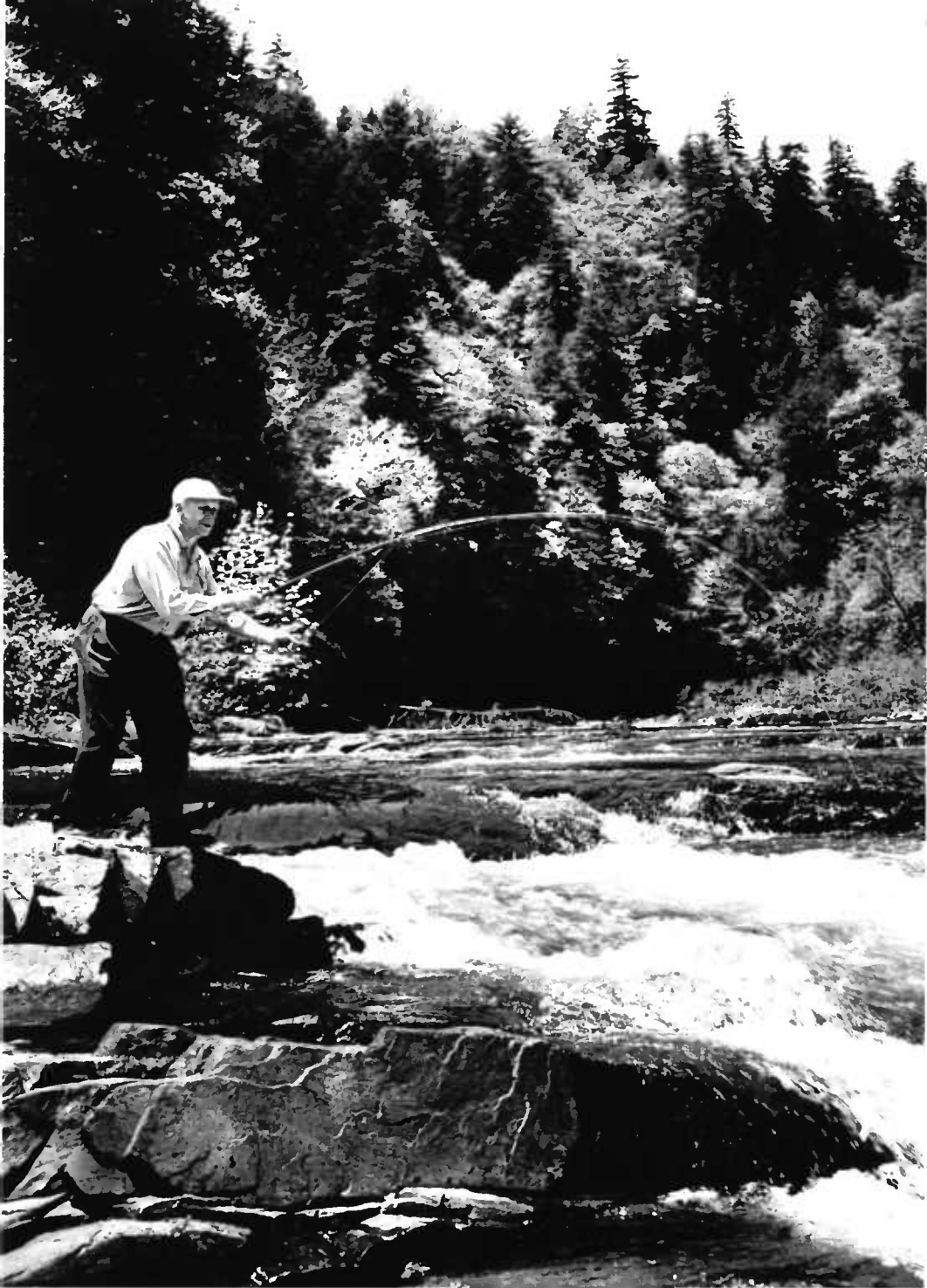
We have new kinds of grasses
and knowledge of their management. [Texas]





We have a heightened appreciation of the beauty of our land
and the growing need of people for recreation.

[Ouachita National Forest, Arkansas]



[Pisgah National Forest, North Carolina]

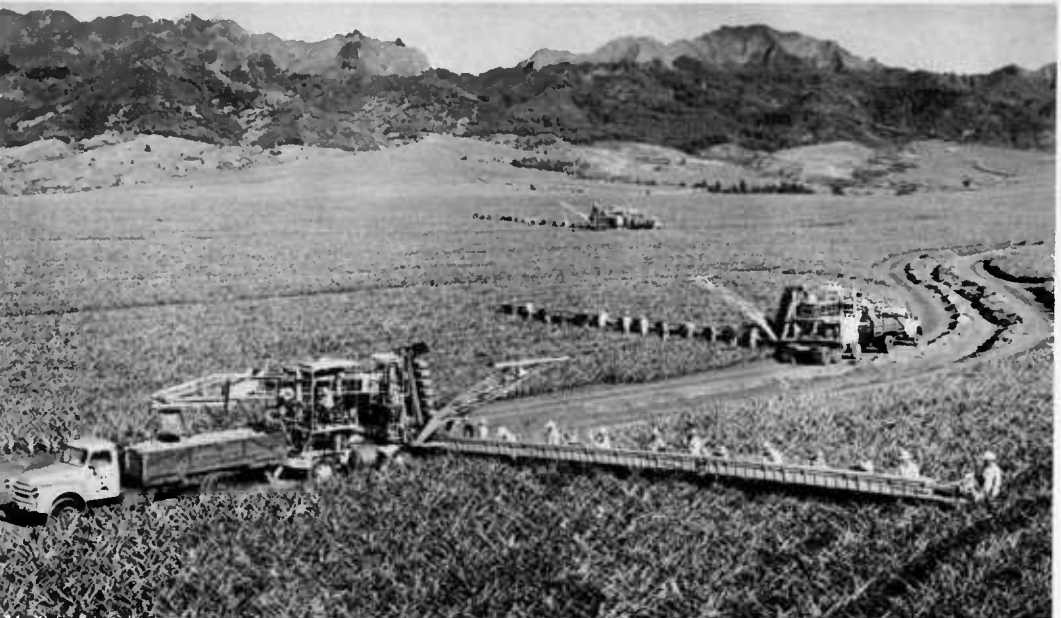


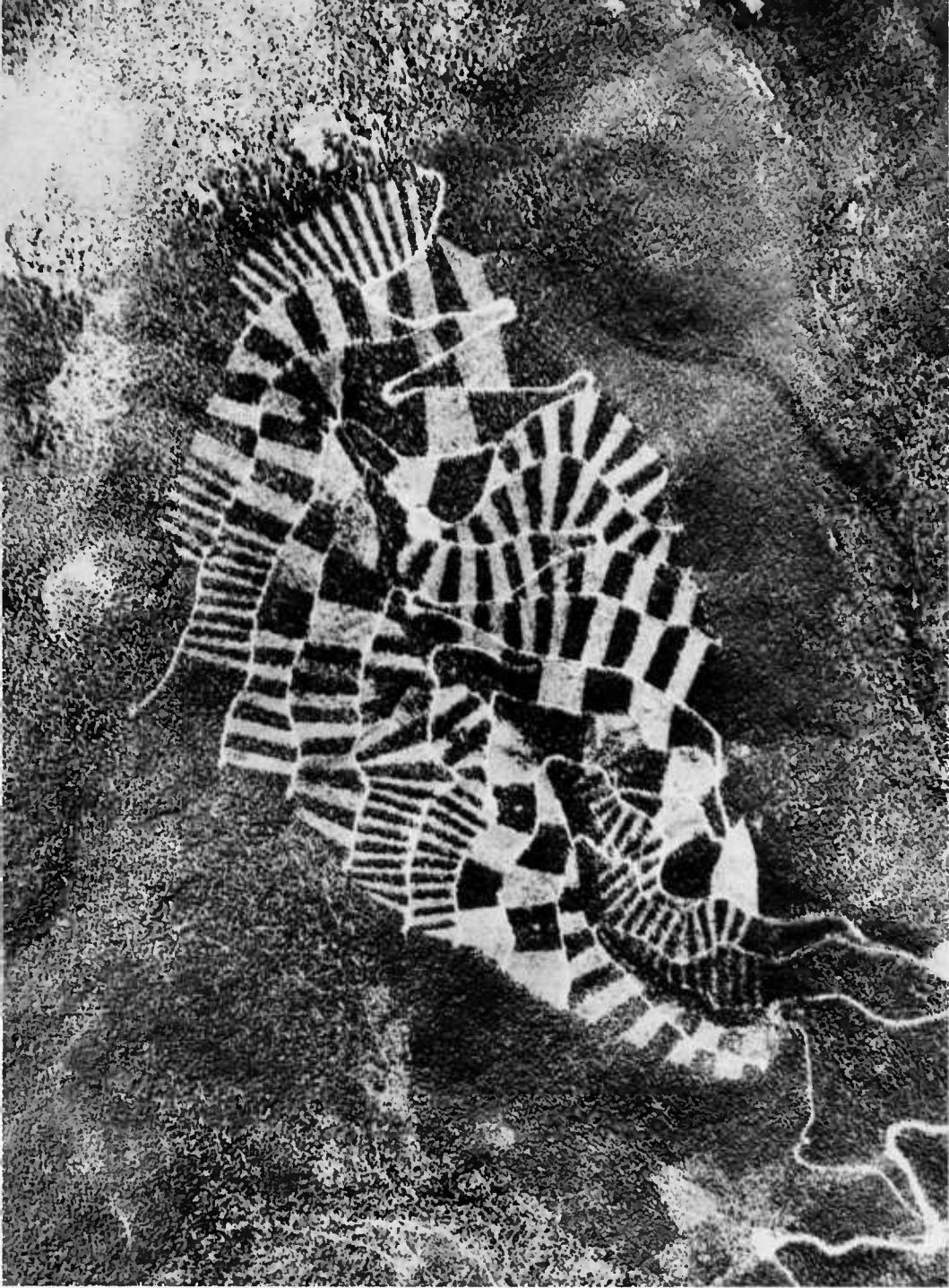
We have learned a good deal about irrigation,
contour tillage, stripcropping, and other improvements
that help prevent erosion. [Idaho]



Farmers, like those in this picture
of a father and his son going over their partnership records,
know more about the economics of farming.

Research is giving us a growing body of
scientific knowledge, of importance to all of us. [Hawaii]



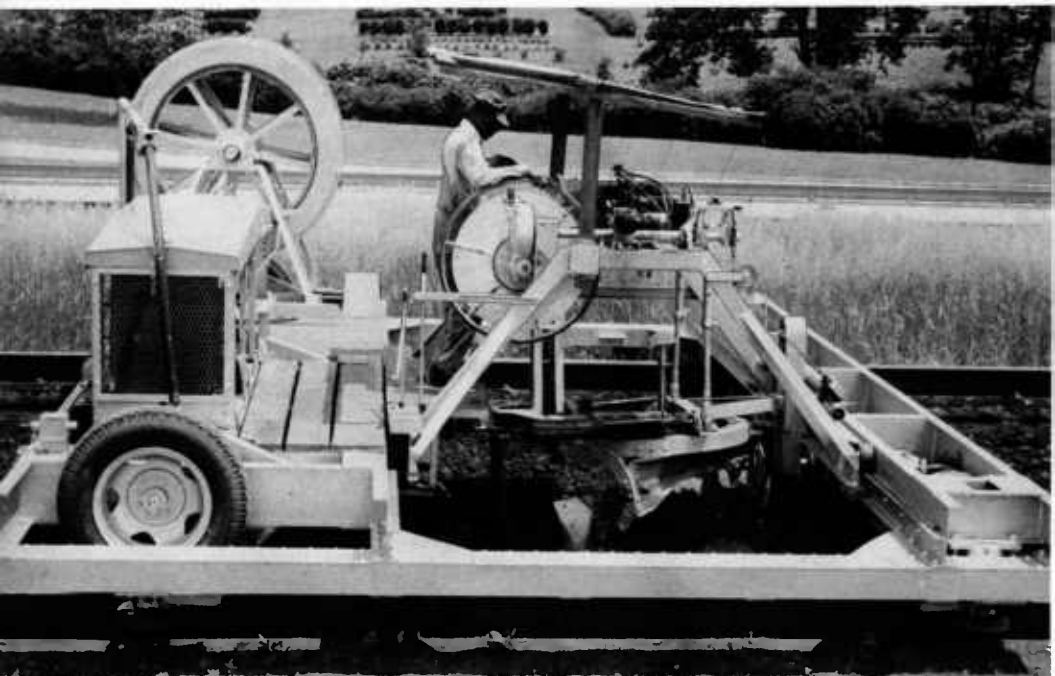


[Studies of the effect of cutting on water supplies in
Fraser Experimental Forest, Colorado]



[Coweeta Hydrologic Laboratory, Pisgah National Forest,
North Carolina]

[National Tillage Machinery Laboratory, Auburn, Alabama]





Our young people
are eager to learn,
confident,
responsive.



Of this land
and these people
I sing:
O beautiful
for spacious skies
And waving fields
of grain
[Wisconsin]







Their purple mountains' majesty

Above the fruited plain.

[Mt. Baker National Forest, Washington]

A foreword by the Secretary of Agriculture.

Science has ushered in the Atomic and Space Age. Man has launched satellites and is now planning with a degree of confidence on reaching the moon. These thoughts and plans stir us. They are an index of the strength of human aspirations, imagination, and genius.

But with all our Space Age planning, we still live close to the land. Many of us make our living from it. Many others derive pleasure from the recreation that the forests, fields, and streams afford. For each of us the land provides living space and is the source of our food, clothing, and housing.

Land, indeed, is part and parcel of our growth as a Nation—of our history and our national attitudes toward freedom and democracy. Ours is a choice land, blessed of Heaven.

As citizens, then, we should know more about land. We should get a panoramic view of the makeup of our country—cropland, grazing and forest lands, city land, lakes, deserts, and mountains, all of which form the natural resources base of our Nation.

Worthwhile also is the knowledge we gain when we travel the land and see the variations in topography, soil, plant cover, and climate; the ownership and management of land; and the practices of farmers and ranchers. All reflect the forces of environment on man and the patterns of settlement.

From the technical viewpoint, we need to look ahead to the requirements of coming generations for food, fiber, and timber and for urban and rural development.

Such an inventory and projection can tell us what we must do to husband our God-given resources and how we must deal with problems of land use and conservation. It will remind us of the ways in which we have been careless, unaware, and indifferent to our heritage. It will also indicate some accomplishments in the wiser use of our land. Finally, it demonstrates again how much we have for which we must be thankful to the Creator of all.

This book will stimulate thought about our land and its use. It will provide much material for discussion. This is as it should be, for discussion often strikes the spark to ignite inspired thoughts that guide us into a better future. By *Ezra Taft Benson*.

A preface by the

editor. We make a survey in this book of the land Americans have, use, and need. We discuss the land that was here when the colonists came, its importance in our history and growth, the use and management of public and private lands, the income and valuation of land, resources and prospective needs, and emerging problems of ownership and control.

We consider the profound changes these later days have brought, and we try to see what they mean in relation to our land resources: The growth of population and cities; the growth of the size of farms and the decline of the farm population (for land, used by people for people, has meaning only in terms of people); the use of millions of acres for highways, airports, factories, and subdivisions; the expanding number of part-time and residential "farms" of those who want to live two lives in the country and the city; the difficulties of getting started in farming; the need for more group action as the problems exceed the scope of individuals.

A broad subject—one worthy of our best effort; one that demands sharp thinking, deep wisdom, and courage to face up to the Nation's problems. Of the reader it asks the same and is worthy of his close attention, for our future will depend greatly on what we do with our land.

We present no ready program, no easy solution, and no definite policy. That is not our intention or our province; policies and programs are made by the people and their elected representatives. The suggestions presented here are personal, individual ones and are not necessarily those of the Department of Agriculture or any unit of the Government. Because the men who wrote the chapters were given no orders as to what they were to say, there are conflicts and contradictions. That is all to the good, however, because of the nature of the subject, which arouses strong opinions, depending (as one writer says) on whose ox is gored, and because of our purpose, which is to spur us to forward-looking action.

The members of the 1958 Yearbook Committee, which planned the scope and made the outline, are:

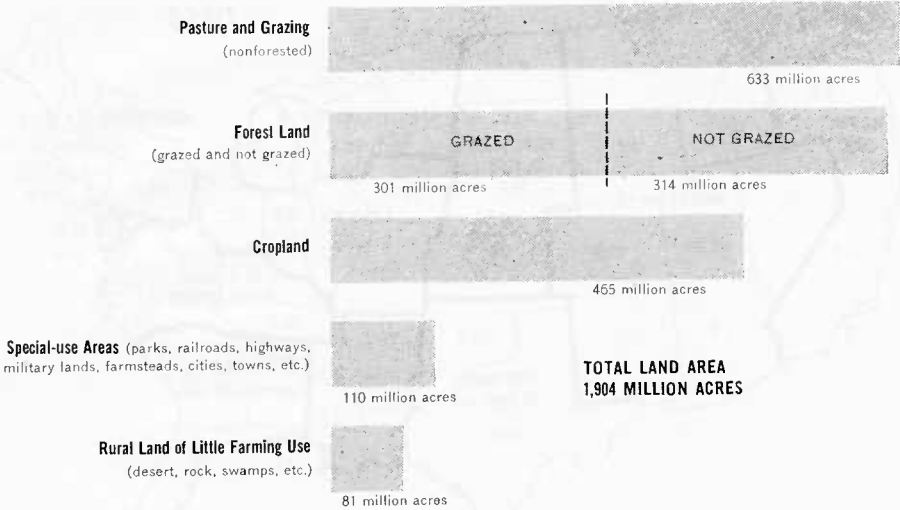
Sherman E. Johnson, Agricultural Research Service, Chairman
Ernst H. Wiecking, Agricultural Research Service, Secretary
Joseph Ackerman, Farm Foundation
Carleton P. Barnes, Agricultural Research Service
John B. Bennett, Department of the Interior

Howard E. Conklin, Cornell University
Virgil D. Gilman, Federal Extension Service
Carl P. Heisig, Agricultural Research Service
James M. Hunt, Agricultural Conservation Program Service
H. R. Josephson, Forest Service
Charles E. Kellogg, Soil Conservation Service
Edward F. Mynatt, Office of the General Counsel
Lewis B. Nelson, Agricultural Research Service
Harold E. Pinches, Agricultural Research Service
D. Harper Simms, Soil Conservation Service
Harry A. Steele, Agricultural Research Service
Charles L. Stewart, University of Illinois
John F. Timmons, Iowa State College

To them are due thanks for much hard work and unstinted effort, time, and thought.

If it were our policy to dedicate a Yearbook of Agriculture to an individual, this Yearbook would be dedicated to Charles L. Stewart, professor of agricultural economics in the University of Illinois, for his active interest in this book and this subject and for his devoted, conspicuously successful teaching of others to appreciate its scope and importance. By *Alfred Stefferud*, Office of Information.

Major Uses of Land, 1954



A fourth of the land in the United States is cropland. One-third of it is grassland pasture and nonforest grazing land. Nearly one-third is woodland and forest, about half of which is grazed to some extent. The rest is in special and various other uses.

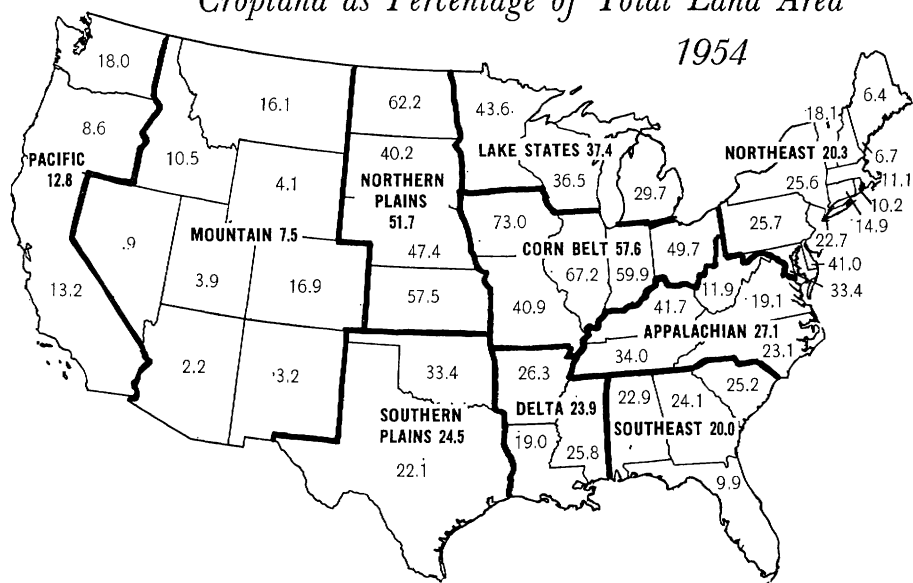
Of the cropland, about three-fourths is used for crops each year, and much of the remainder is pastured in rotation with crops. All cropland is in farms, but the acreage of pasture and grazing land not in farms comprises two-fifths of the total pasture area.

About 70 percent of the grazing land not in farms is publicly owned. The grazing land, both open and forested, that lies outside farms supplements land in farms.

Altogether, more than 80 percent of the total land area was used in the production of food and fiber in 1954. Urban areas, residential and industrial sites, farmsteads, highways, roads, railroads, airports, parks, and other special uses are high in value.

Finally, several million acres of semidesert, bare rock, marsh, and sand dunes are worth little for agricultural use, but they have utility for wildlife and recreational use.

Cropland as Percentage of Total Land Area 1954



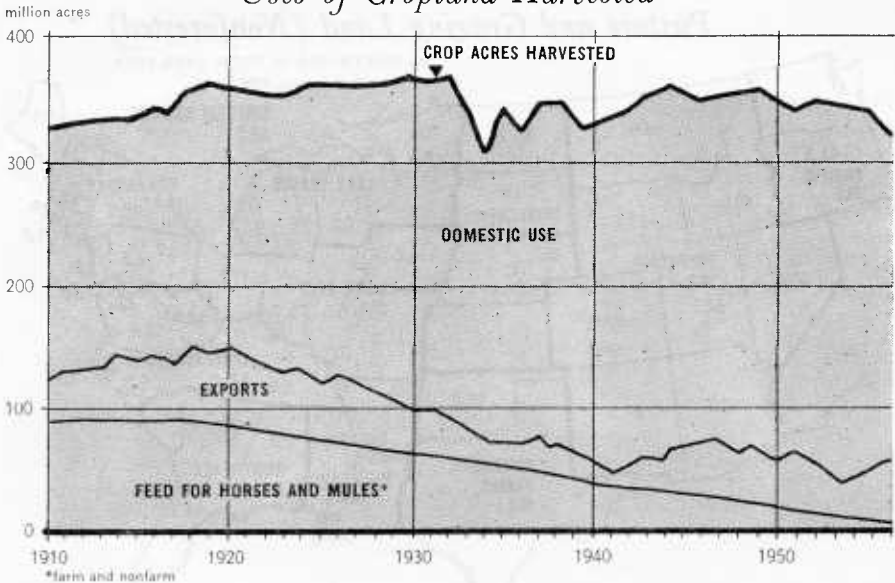
This map shows the general distribution of all cropland. More than 40 percent of the cropland was in the nine Corn Belt and northern Great Plains States in 1954, the year to which the latest census of agriculture pertained.

More than half of the total land area in Iowa, Illinois, Indiana, North Dakota, and Kansas was used for crops.

The Western States occupied two-fifths of the land area but contained only slightly more than one-seventh of the land used for crops. Texas, although it had the largest acreage of cropland of any State, used less than a fourth of its total area for this purpose.

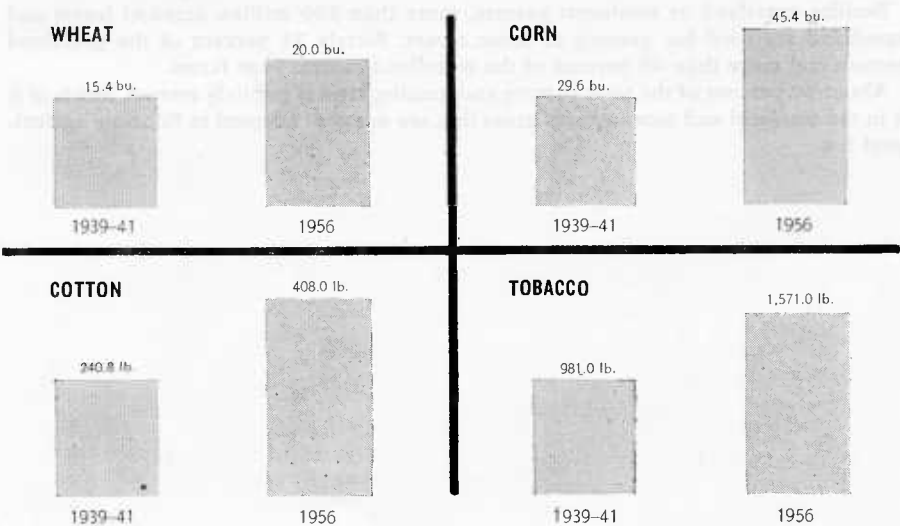
The total acreage of cropland varies greatly among regions. Pasture and grazing land are inseparable from arable farming over immense acreages. The arable pasture and cropland are readily interchangeable. For example, much of the reduction in crop acreages 1954 to 1958 has gone into pasture. When there is need for a greater acreage in crops, some of this pasture may be plowed up again for cultivation.

Uses of Cropland Harvested

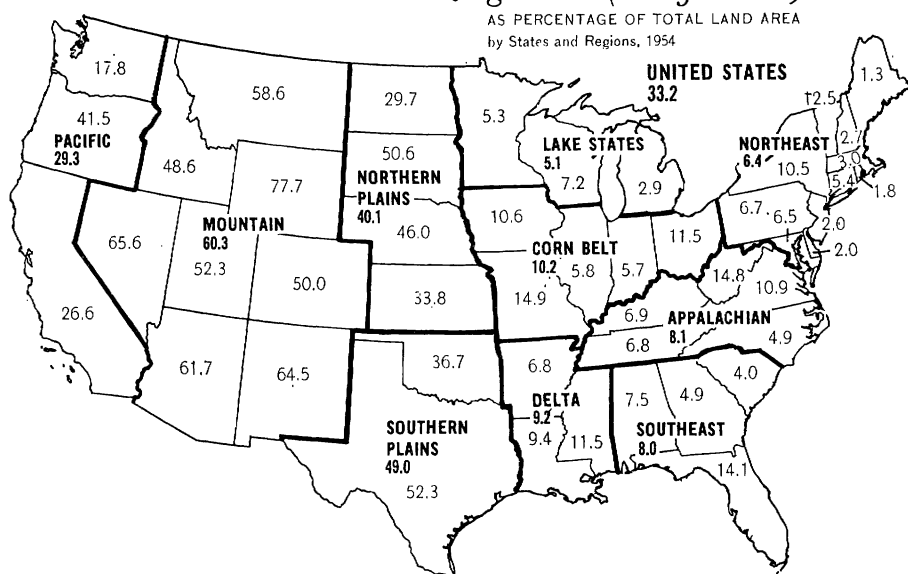


Of the 326 million acres of crops harvested in 1956, about 16 percent was used to produce exported products; 3 percent, feed for horses and mules; and 81 percent, food, fiber, and tobacco. Farm output for human use increased at about the same rate as the United States population until just before the Second World War, when it began to rise faster. Much of the grain has come from an increased output per acre. The acreage of cropland in 1957 was slightly less than in 1940, but higher yields raised total production 24 percent. Increases have been marked for such crops as wheat, corn, cotton, and tobacco.

Production per Harvested Acre



Pasture and Grazing Land (Nonforested)



Pastures and grazing land (including plowable and nonplowable grassland) account for the largest acreage of land use in the country—633 million acres, or nearly one-third of the land area.

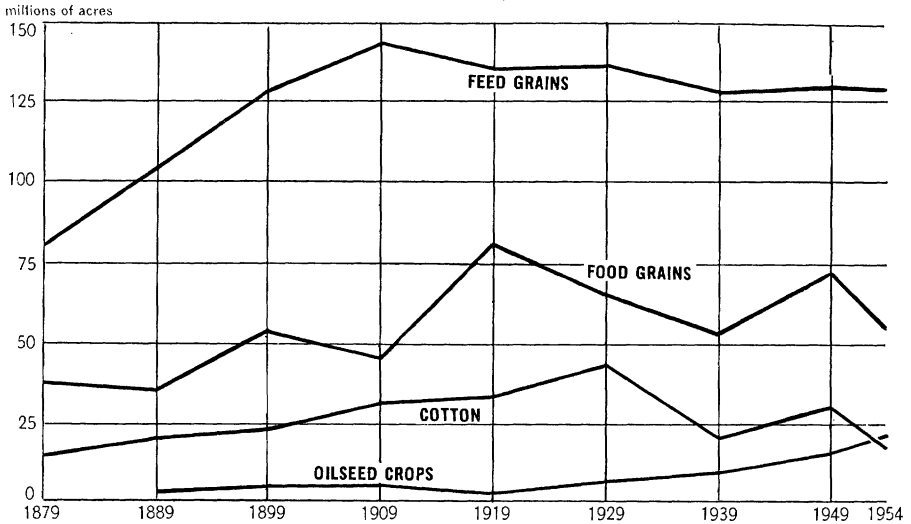
Many types of pasture and grazing land are included, such as the highly productive pastures in the Northern and Central States, the irrigated pastures and natural grasslands of the Great Plains and the Western States, and the improved grazing areas of the South and West.

Besides grassland or nonforest pasture, more than 300 million acres of forest and woodland are used for grazing to some extent. Nearly 75 percent of the grassland pasture and more than 40 percent of the woodland pasture is in farms.

About 30 percent of the total pasture and grazing land is publicly owned. Much of it is in the semiarid and mountainous areas that are not well adapted to full-time agricultural use.

Acreages in Food Grains, Feed Grains, Oilseed Crops, and Cotton

UNITED STATES, 1879-1954



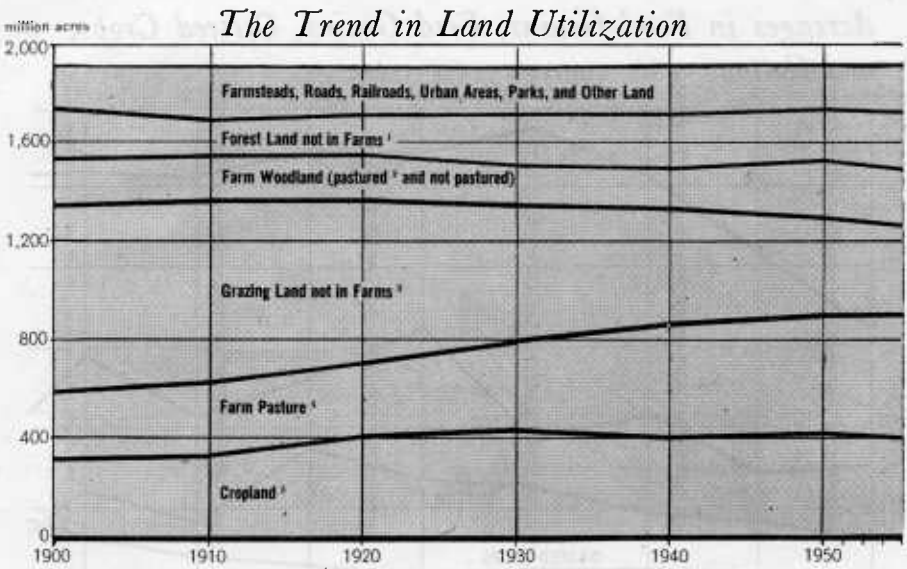
The acreage used for food grains—wheat, rice, rye, and buckwheat—became more than 19 million acres smaller between 1949 and 1954 and declined another 12 million acres from 1954 to 1957.

The total acreage of feed grains—corn, oats, barley, grain sorghum, and mixed small grains—occupied about the same acreage in 1954 as in 1949 but decreased by 5 million acres between 1954 and 1957. Some important shifts occurred. Corn harvested for grain declined. The acreages of sorghum harvested for grain, barley, and oats increased.

The acreage of cotton declined 7 million acres from 1949 to 1954 and another 6 million acres from 1954 to 1957. The acreage in soybeans and other oilseed crops increased about 6 million acres from 1949 to 1954 and 4 million acres from 1954 to 1957. Diversion of acreage from allotment crops to soybeans was a reason for the increase.

As a result of these and other shifts, the number of acres from which crops were harvested declined by about 19 million between 1954 and 1957. The drop was related to the existence of large stocks of certain crops and the resulting acreage controls and to the Soil Bank Program.

Fluctuations in the acreages used to produce the major crops in response to demand have been common in much of our agricultural history.



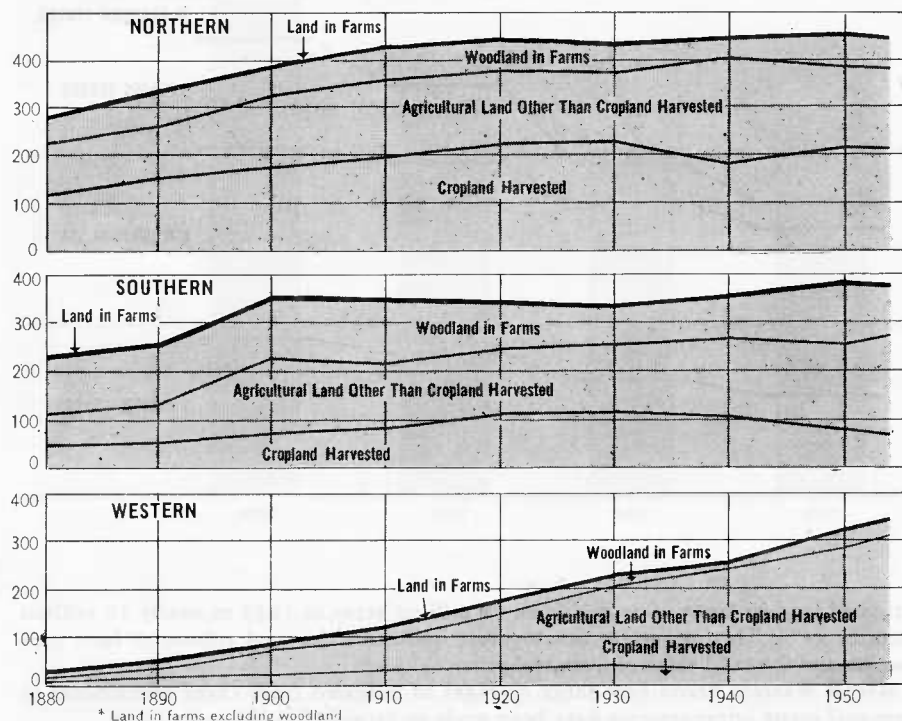
¹ Excludes forested areas reserved for parks and related uses and arid woodland, brushland, and forest land used for grazing.
² 121 million acres were reported pastured in 1954.
³ Includes grassland, arid woodland, brushland, and forest land grazed.
⁴ Open pasture in farms, including cropland used only for pasture and other plowable pasture.
⁵ Includes soil improvement crops, summer fallow, and land seeded to crops for harvest the succeeding year.
Cropland acreages are for the year preceding the date of the census except for 1954.

Notable shifts have occurred in the use of land since 1880. The total acreage in farms, crops, and pasture has increased generally in the West, the Corn Belt, and the Lower Mississippi Alluvial Valley, but the acreage in farms and crops has decreased in many parts of the East. The acreage occupied by cities, towns, rural residences, industrial plants, highways, airports, reservoirs, recreational areas, and other facilities has increased enormously with the growth in population, especially in the Eastern and West Coast States and around the Great Lakes.

A leveling off in the use of land for crops has occurred in the East since 1920, but the downward trend apparently is slowing down. The incorporation of grazing land into farms and ranches in the West has not always resulted in changed use, but abandonment of cropland in the East usually has meant a shift to pasture and eventually to woodland. In some areas of the Piedmont and other hill sections of Virginia, the Carolinas, Georgia, Alabama, and Mississippi, large acreages of cropland have been converted to pasture and large tracts have returned to forest. These regional shifts in cropland, pasture, and forest have been partly in balance, and so are not fully apparent in the national picture.

Land in Farms, Agricultural Land and Cropland Harvested*

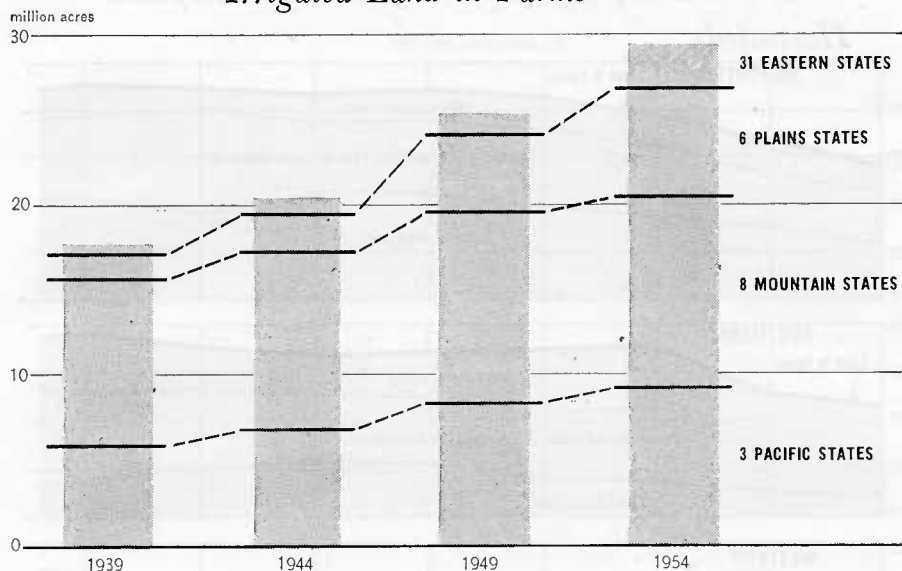
BY REGIONS 1880-1954



Land in farms, agricultural land (not including farm woodland), and cropland harvested increased generally until 1940 in the Northern, Southern, and Western States. Harvested cropland reached a peak acreage in the North and South in 1930 and in the West in 1950.

Several important contrasts in trends exist among farm production regions within these three groups of States. Cropland and pasture acreages in the Corn Belt and Lake States have not changed greatly in recent years. In the Northeastern States, the downward trend has continued but apparently is becoming stabilized. In some parts of the South, such as the Mississippi Delta and eastern North Carolina, the area used for farming has increased because of the clearing and drainage of new land and in Texas through irrigation, plowing up of grassland, and land clearing. In other sections, such as hill sections of the Southeastern States, large acreages of cropland have been converted to pasture and large tracts have reverted to forest.

Irrigated Land in Farms



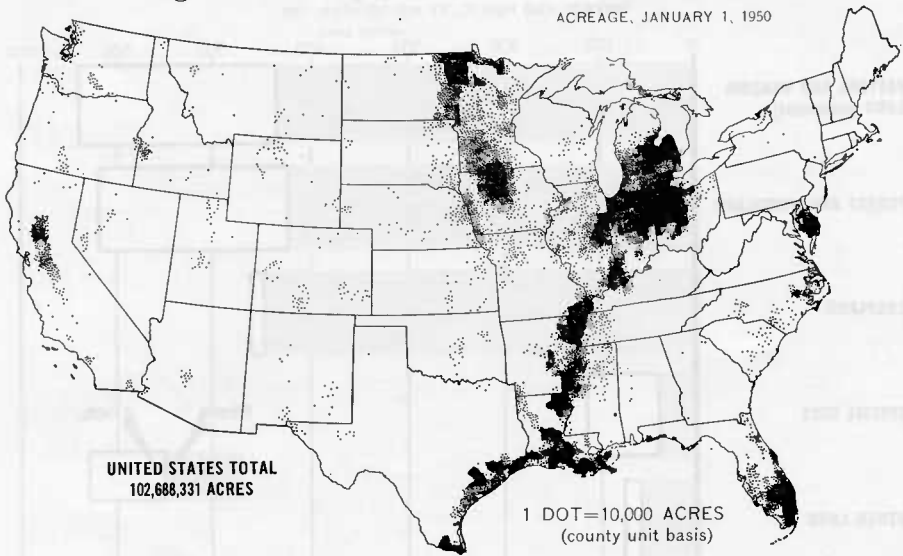
Irrigated land in farms increased from 18 million acres in 1939 to nearly 30 million acres in 1954. This important development influenced the total volume of farm production and the total value of farm real estate.

Several Western States have large acreages of irrigated land. Large investments in farm real estate improvements have been made to provide irrigation facilities.

Crop yields and income per acre generally average much higher on farms with irrigated land than on farms that have no irrigated land. Consequently many additions are being made in extent and location of irrigated acreages as new projects are developed and old ones are enlarged in various drainage basins of the West. Irrigation is increasing also in the rice areas of the South and in the eastern truck crop sections.

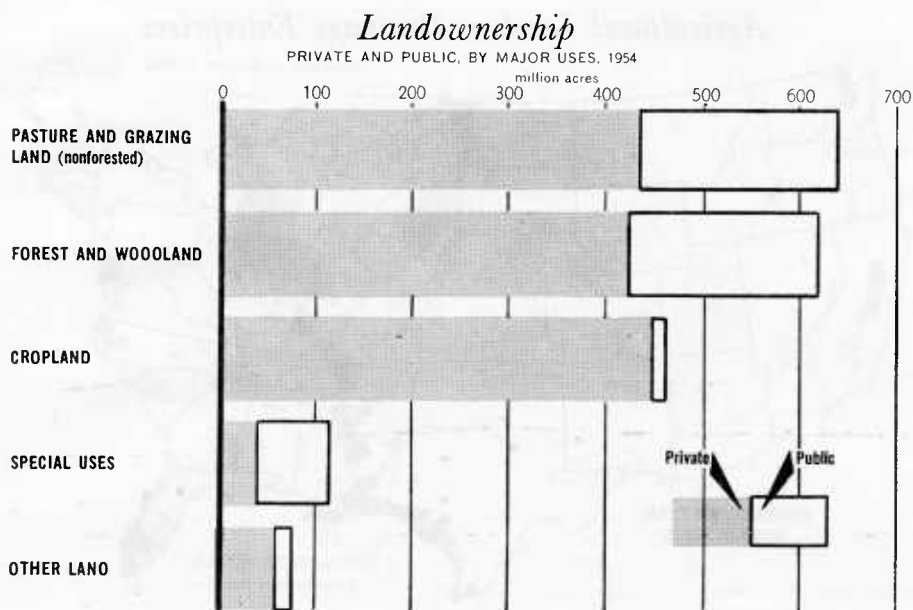
Agricultural Land in Drainage Enterprises

ACREAGE, JANUARY 1, 1950



Farmland in organized drainage enterprises increased from 87 million acres in 1940 to nearly 103 million acres in 1950, or more than 1.5 million acres a year. About four-fifths, or 82 million acres, are improved. Of the unimproved land, 4 million acres are classified as suitable for development. Besides the land in organized drainage enterprises, there were an estimated 50 million acres of farmland drained by private or farm drainage—a total of 153 million acres of artificially drained land.

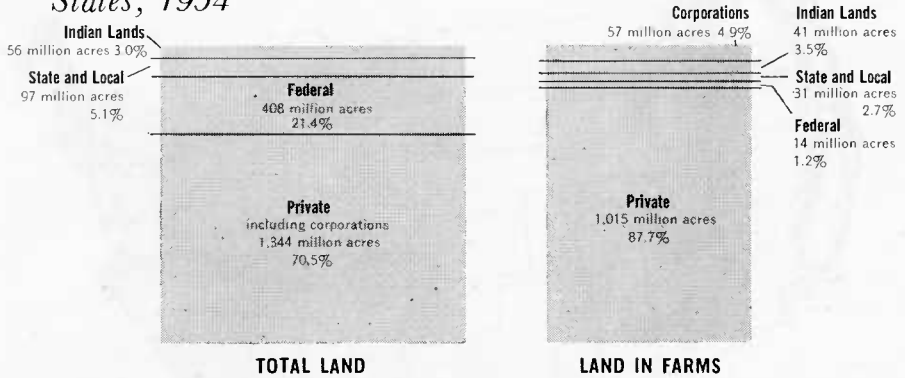
Many drainage improvements have been made since 1950. Records of local district and conservation programs show that large individual farm investments, as well as public investments, have been made to provide tile drains, farm ditches, and main outlets for excess waterflow. Drainage improvements have added greatly to farm production, income, and values in the Corn Belt, Lake States, Mississippi Delta, and Southern Coastal Plain.



Nearly all cropland is privately owned. Only small areas are publicly owned—among them some State school lands and land held temporarily for a specific public purpose.

About a third of the grazing and forest lands are publicly owned. Much of it is in arid and mountainous areas that are not well adapted to full-time agricultural use. Special-use areas—parks, highways, reservoirs, and military posts, which are on land that has slight surface value for agriculture—make up a considerable part of the publicly owned land. Such special-use areas as highway rights-of-way, reservoirs, parks, and wildlife refuges are increasing. The acreage of public land, however, as a whole has shown a small decrease in recent years.

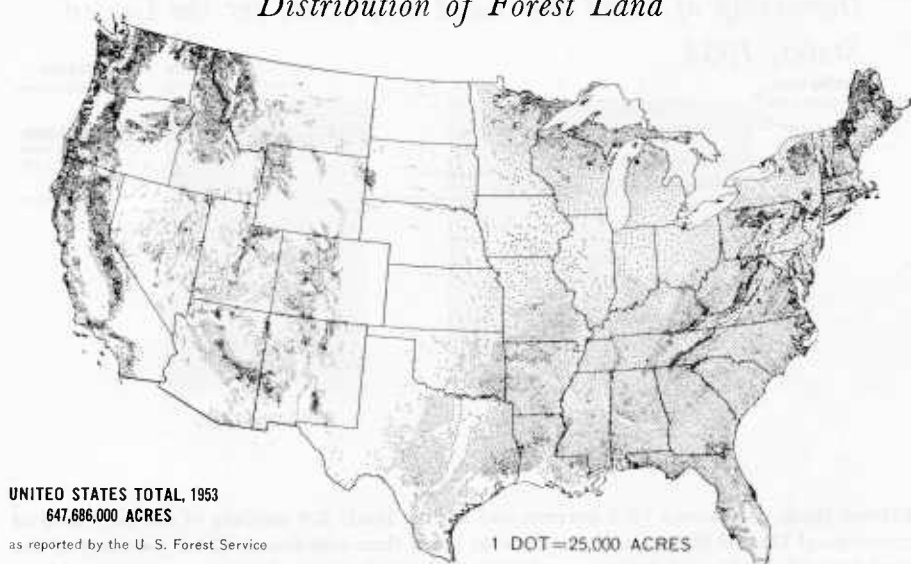
Ownership of Land and Land in Farms, for the United States, 1954



Private lands comprised 70.6 percent and Indian lands 2.9 percent of the land area of continental United States in 1954. Title to more than one-fourth (26.5 percent) of the land area of the United States rested with Federal, State, or local governments. Much of it is in the West. Only 3.9 percent of the land in farms was publicly owned. Most of the land in farms owned by government was devoted almost entirely to grazing. Grazing land used by ranchers on a permit basis was not included as "land in farms." Private individuals owned 87.6 percent of the land in farms in 1954; corporations owned 5.0 percent; and Indian lands made up 3.5 percent.

Of the public land area, 407.9 million acres were owned in 1954 by the Federal Government; 80.3 million acres were owned by States; and an estimated 17 million acres were owned by local governments. The Federal land is mostly forests, parks, wildlife refuges, and range which was not homesteaded. The States also have large acreages in parks, forests, and wildlife refuges.

Distribution of Forest Land

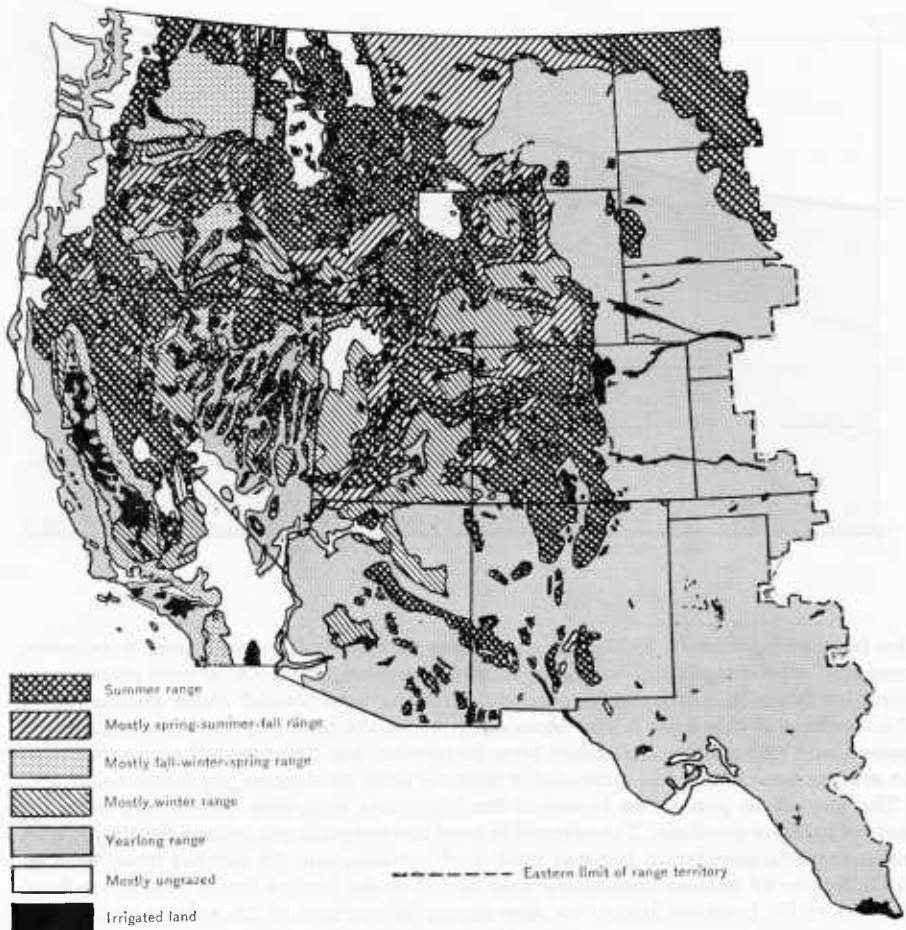


Included in the total forest and woodland area in the continental United States (exclusive of Alaska) of 648 million acres are 484 million acres of commercial forest land and 164 million acres of noncommercial land.

The noncommercial forest and woodland includes 138 million acres of unproductive forest and 26 million acres reserved for special purposes such as parks and wildlife refuges.

The total forest area is considerably larger than the area devoted to cultivated cropland, but about the same as the grassland pasture and range area. Of the total acreage of forest and woodland, about 35 percent is in the Southern States, including Texas and Oklahoma. Nearly 12 percent of the forest is in the Northeastern States; 16 percent in the Lake and other North Central States; and 37 percent in the Western States. Nearly a fourth of the commercial timber acreage and more than two-thirds of the sawtimber, however, are in the Western States. One-third of the sawtimber alone is in Oregon and Washington.

Seasonal Use of the Western Range



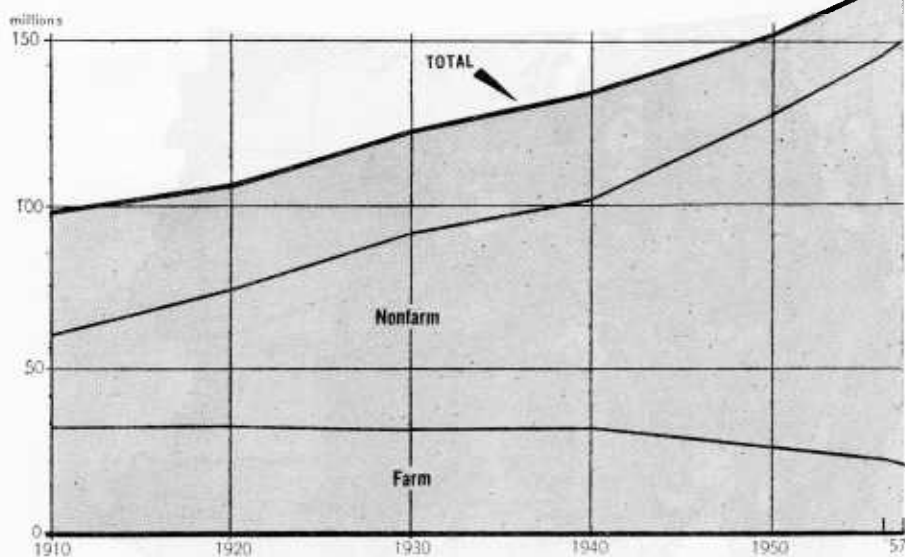
Feed for All Livestock

Percentage of All Feed from Pasture and Grazing
1949-50



Pasture furnished 37 percent of all feed for livestock in 1949-1950. Corn supplied 26 percent and hay 14 percent. Oats, barley, and other grains accounted for 9 percent. Animal protein feeds, oilseed meals, other high-protein feeds, and other byproducts also supplied 9 percent. Silage, beet pulp, skim milk, and seeds made up the remaining 5 percent of the feed for all livestock. Differences in climate and land in the Western States mean differences in season, type, and value of grazing. Higher areas furnish 3 to 6 months of summer grazing. Foothills and plateaus ordinarily do not carry animals more than 6 to 8 months without change of pasture.

Population of the United States



The farm population in 1957 was 12 percent of the total United States population, compared with 23 percent in 1940. It was estimated that 20.4 million people were living on farms in April 1957, compared with the total United States population of 170.5 million at that date. A year later, April 1958, the total population was 3 million greater, or 173.5 million. Although farm population has decreased, the importance of the average farm family has increased in terms of farm production per farmworker.

The growth in population is one of the important long-time trends that affect the demand for farm products. The uptrend in food consumption per person combined with the increase in population boosted total food consumption 39 percent from 1940 to 1957. Nearly 39 million consumers were added to the United States population from 1940 to 1957. Looking ahead, we may expect an increase of 25 million in the next decade—almost as many as now live in New York and Pennsylvania combined.

WITHIN THE LIMITATIONS I mentioned, airphoto interpretation provides basic data needed for economic analysis. We can identify and locate the areas where changes in land use have occurred. The photographs may be used as field location maps for detailed study. We can measure the acreage of change in use, and by com-

paring it with the size of the study area or the acreage of cropland, we can estimate the rate of change.

The airphoto interpretation method is not a substitute for detailed field study, but we are getting suitable data in a relatively short time, at low cost, and with a minimum number of experienced workers.

The face of our land looks to the sky.

To see its many features, we must get above it and look down.

The airphoto is our best chance to get a bird's-eye view of our farms and ranches; from an airplane we only get a fleeting view.

The photograph gives us the opportunity to study an area in detail, and we have a record of how things were at the time the picture was made. The natural red, green, black, gray, brown, tan, and yellow are black, white, and gray in an airphoto, but the story is there if we can interpret it. We can see a field partly plowed, shocks of grain, the new farm pond, and the other marks people make on the land.

Most of our agricultural areas have been photographed from above by private companies for the Department of Agriculture. Many have been photographed two or more times so that we can keep up with changes in the use of farmland. More than 6.6 million square miles have been photographed since 1938.

On the pages that follow are airphotos of typical farm regions throughout the United States. They were taken at a time when the characteristic patterns are most apparent. They give us another kind of tour, beginning in the Northeast and continuing generally southward and westward—more or less in the way our agriculture developed.



The well-drained sandy lands of Aroostook County in Maine (above) support intensive potato production. The wooded areas usually have poor drainage (September). The area shown in the picture below of a part of Hampshire County in Massachusetts is typical of the more intensive dairy sections. A sizable acreage is in grass; a minimum is in row crops. Much of the land is wooded, including some tracts that were once in cropland or pasture. The photograph was taken in June.



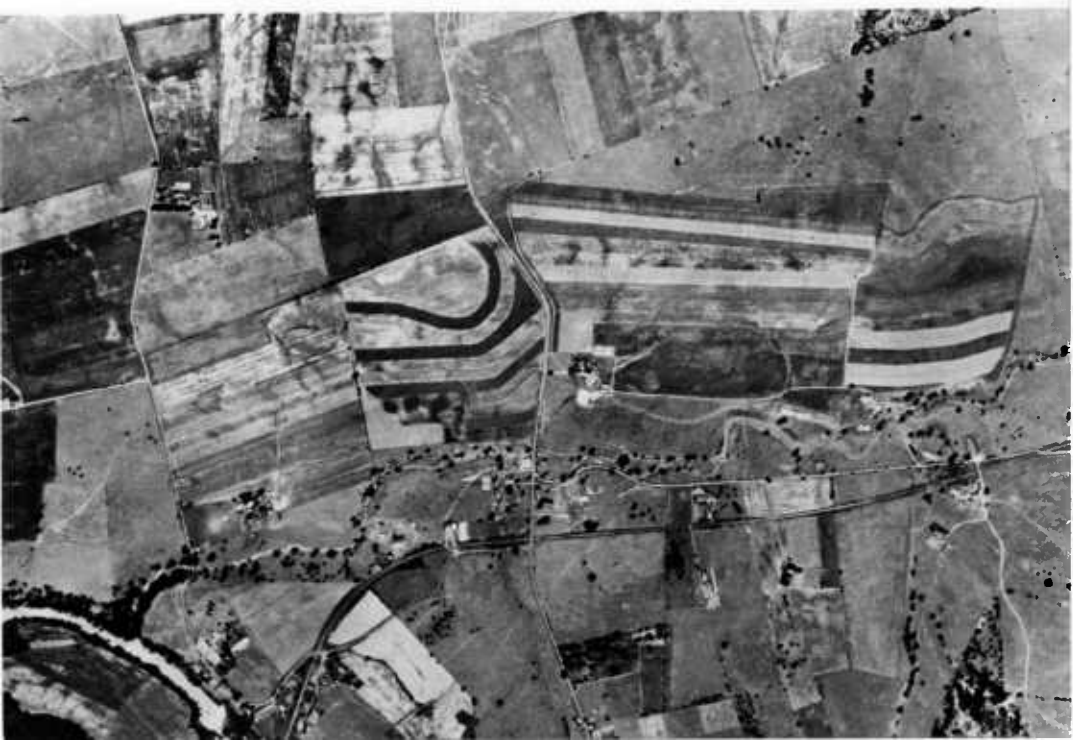


The farms shown in this picture (above) of a lake plain in Monroe County, New York, are typical of the orchard and truck-farming area along Lake Ontario. The gentle topography and climate favor the intensive production of vegetables and fruits (October). In Cumberland County in New Jersey, as in many coastal sections, truck crops to be sold as fresh vegetables and for canning are grown intensively on drained tracts that are adjacent to the tidal marshlands (September).





These farms (above) are in Lancaster County, Pennsylvania, in a section that has been intensively cultivated more than 200 years—with good management and careful attention to soil-conserving practices (June). This part of Rockingham County in Virginia (below) is similar to many other areas of the Limestone Valley, where general farming and livestock raising predominate. Sloping land is stripcropped. Tracts near the streams are kept in pasture. This picture was taken in July.





The Bourbon County, Kentucky, area pictured above has a land pattern typical of the Kentucky bluegrass section. The gray areas with a scattering of dots (trees) are pastures. The round, black, white-rimmed areas are stock ponds. The cultivated fields look almost white in the picture. Much of the land is in pasture and hay (the black areas) (October). Pitt County in North Carolina (below) has many intensively cultivated tobacco farms. The buildings along the roads include many barns used for flue-curing the fine-leaf tobacco.



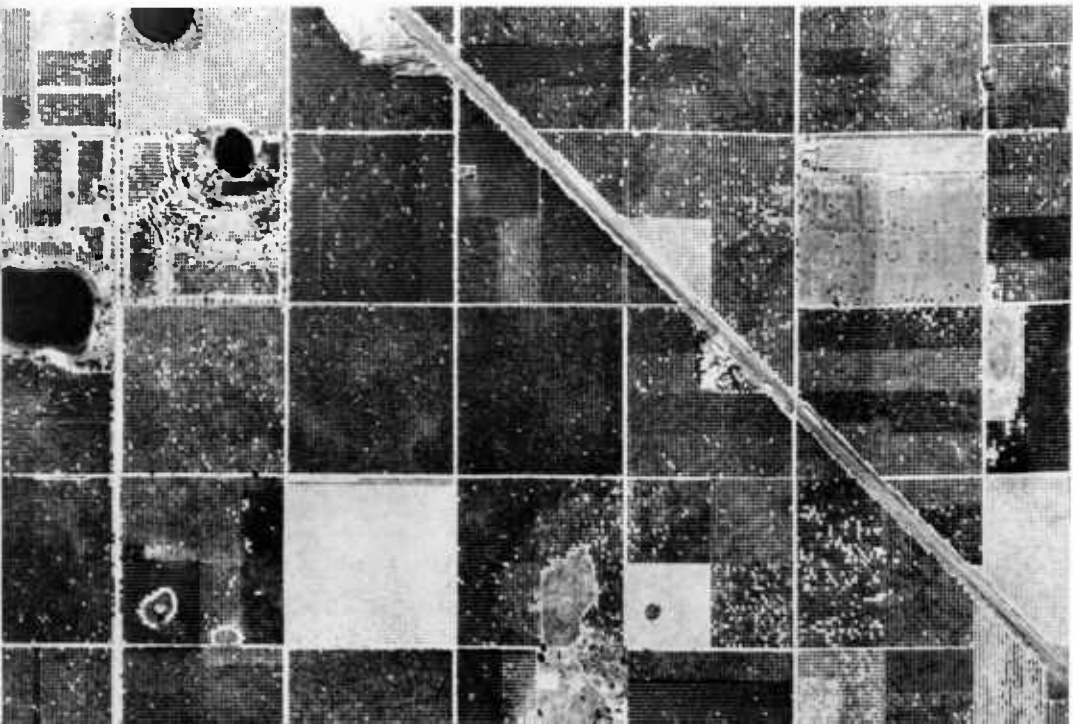


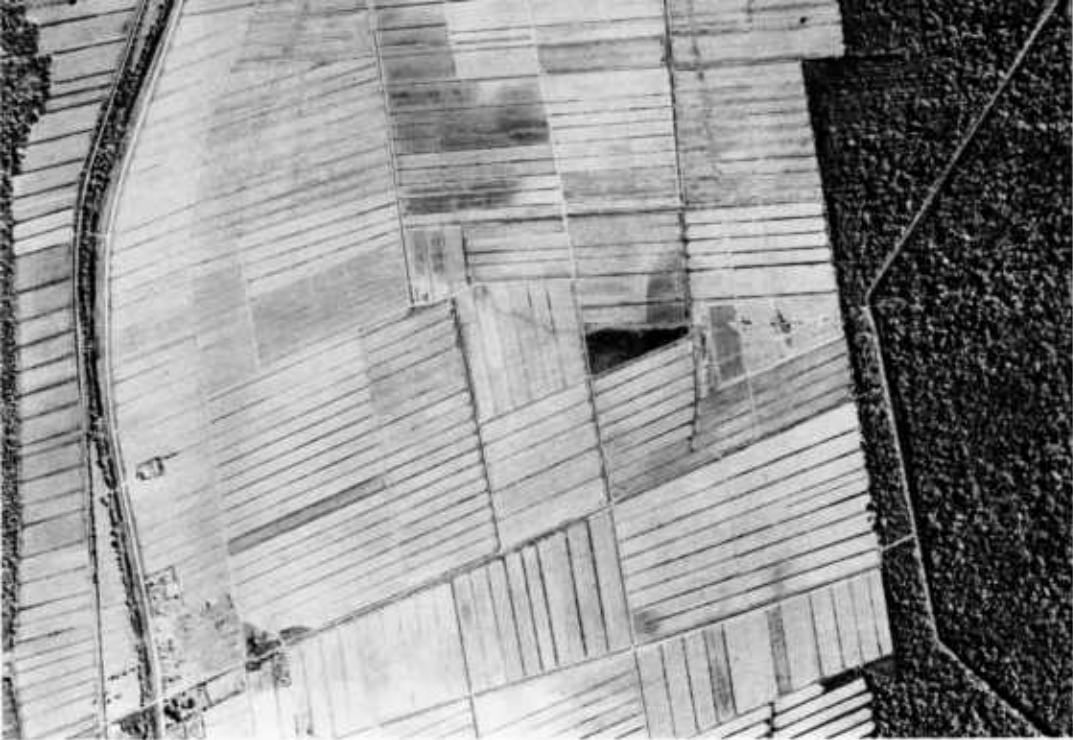
This part (above) of Beaufort County, North Carolina, is typical of many sections in the lower coastal plain of the Southeast, where drainage has been established by systems of ditch and tile lines. Undrained swampland can be seen on the left; some land next to the cultivated fields is partly drained. General farming is the major enterprise (February). Below is a part of Walton County, Georgia, which is typical of the Piedmont area where cotton was once the major crop. Two sets of terrace systems for control of soil erosion are visible. Those in operation appear in the white or cultivated areas. The older systems show in the darker gray areas. Some are idle and reverting to forest (April).





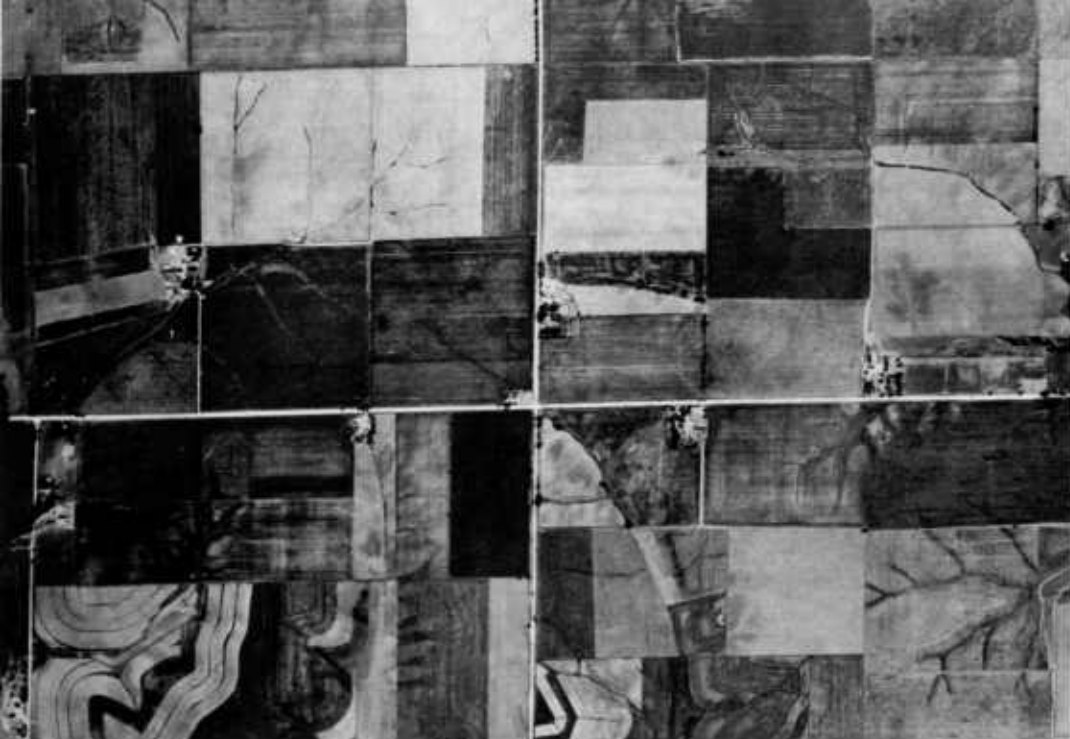
This portion of Tift County, Georgia, is like many other sections of the Coastal Plain. Terrace systems permit intensive cultivation of the low ridges between the many stream channels. The stream areas are in pasture and woods. The gray area near the center of the picture is a pecan orchard (March). This view of Polk County in central Florida (below) shows the usual pattern of citrus groves. The dark-colored round areas are small lakes, which are characteristic of this part of the Florida Peninsula (January).





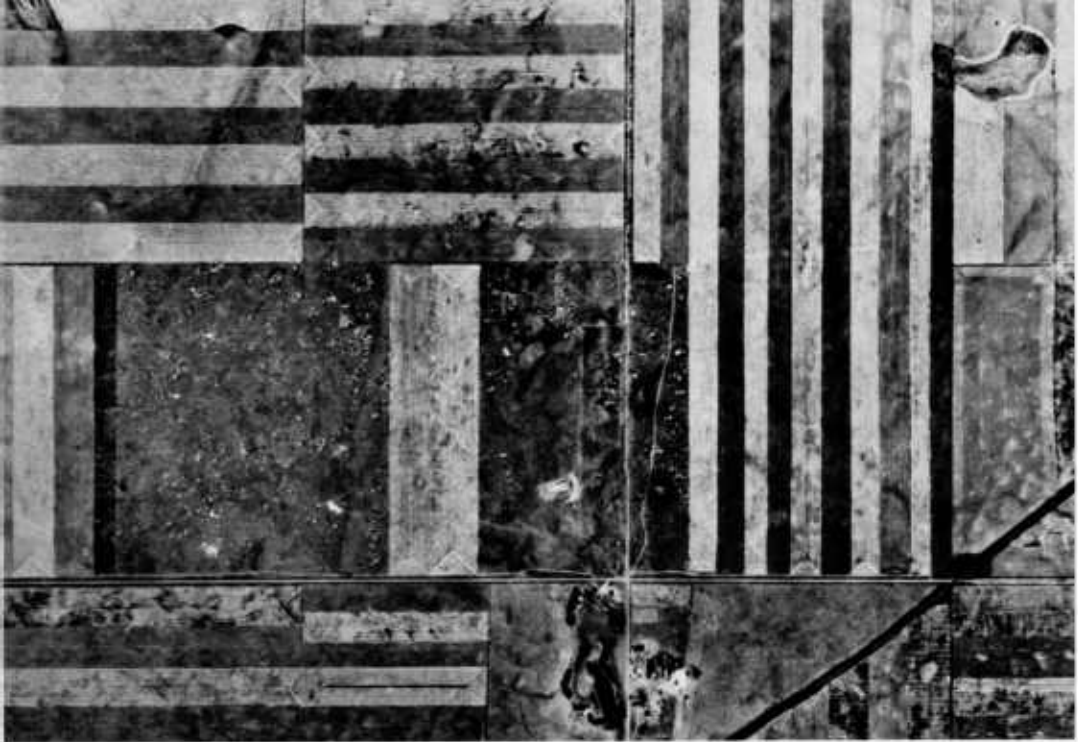
This photograph (above), taken in Terrebonne Parish, Louisiana, indicates the intensive cultivation of land that has been drained between bayous. It has large sugar plantations. Farm buildings are visible in the lower left corner (March). This farm (below) in Sunflower County, Mississippi, exemplifies land patterns in the lower Mississippi Valley. The cultivated fields have been adjusted to the old meander channels formed when the river overflowed its banks in the past. The higher areas between the old channels now are the cropland (December).



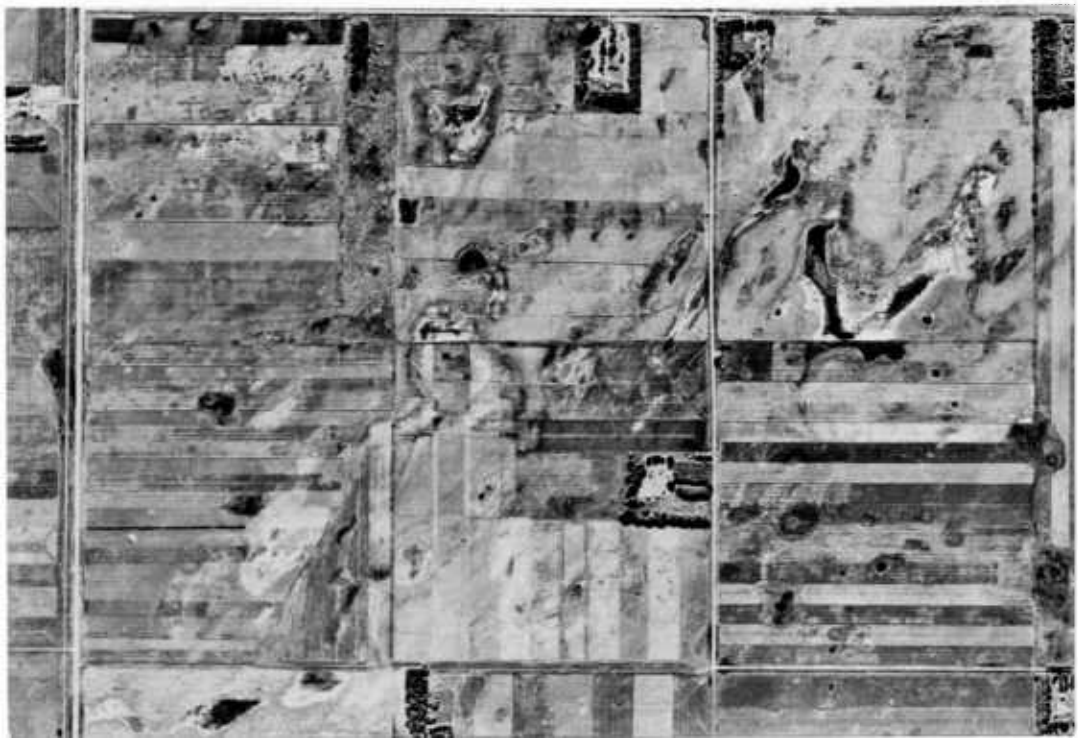


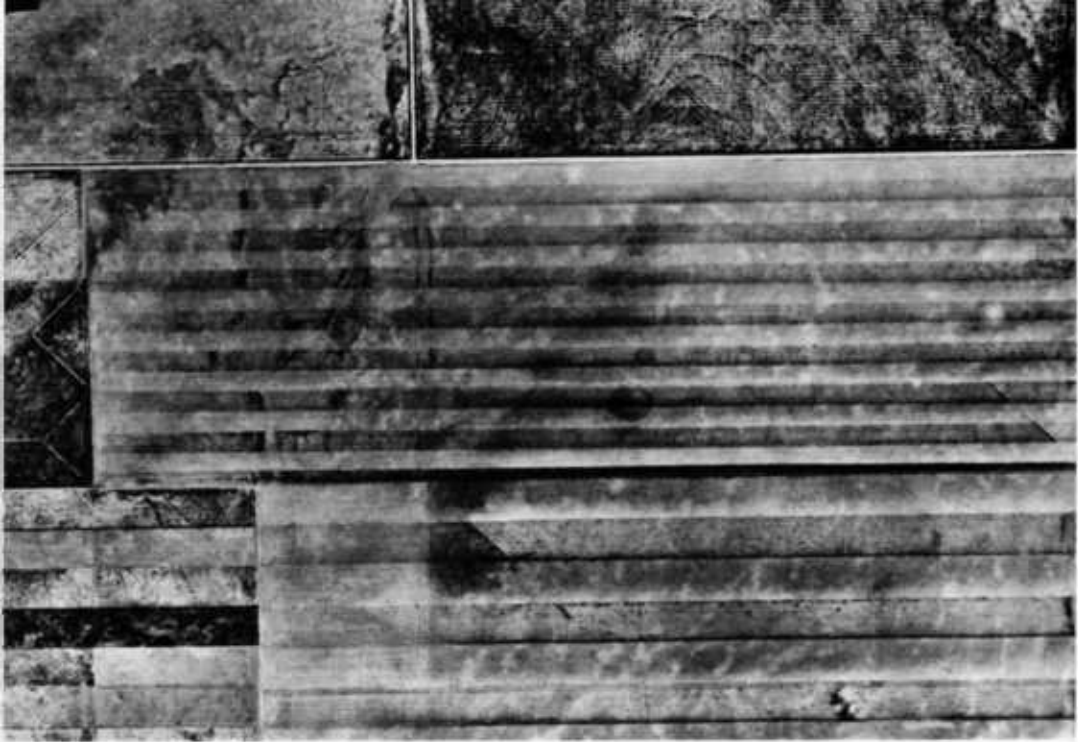
This area (above) in Green County, Wisconsin, is typical of the Lake States dairy region. Terraces and stripcropping help control erosion. The pattern of land use is somewhat like that in the Corn Belt, but more of the land is in pasture (June). The picture below of Webster County, Iowa, in the Corn Belt, shows a complete section of land bounded by roads on all sides. The land is used intensively. The chief crop is corn. Some hay and other forage crops are grown. The photograph, made in September, shows the tone and texture pattern of crops just before harvesttime.



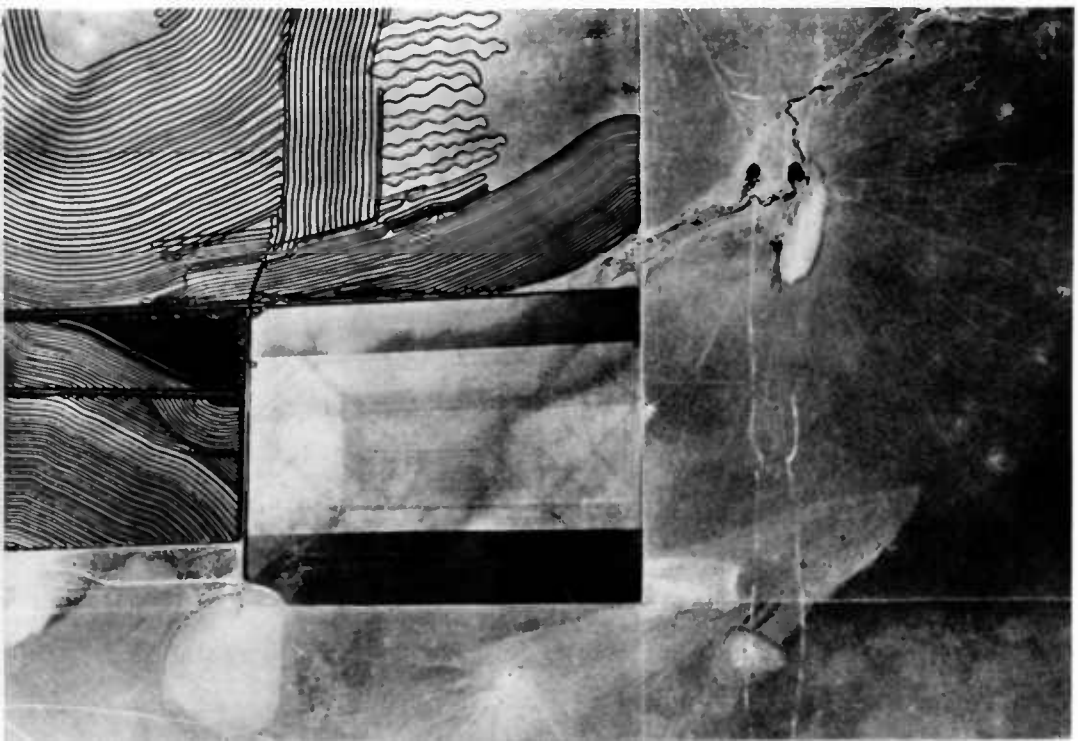


Wheat growers in Hill County, Montana (above), as in other parts of the wheat-producing sections of the Northern Plains, lay out alternate strips of wheat and fallow on the more level terrain and use rougher areas for range (September). Below is pictured a wheat-barley-flax area on the glaciated plains in Bottineau County, North Dakota. The depressions—potholes—occur in varying sizes. Trees form windbreaks around farmsteads, as in other localities in the Northern Plains (July).





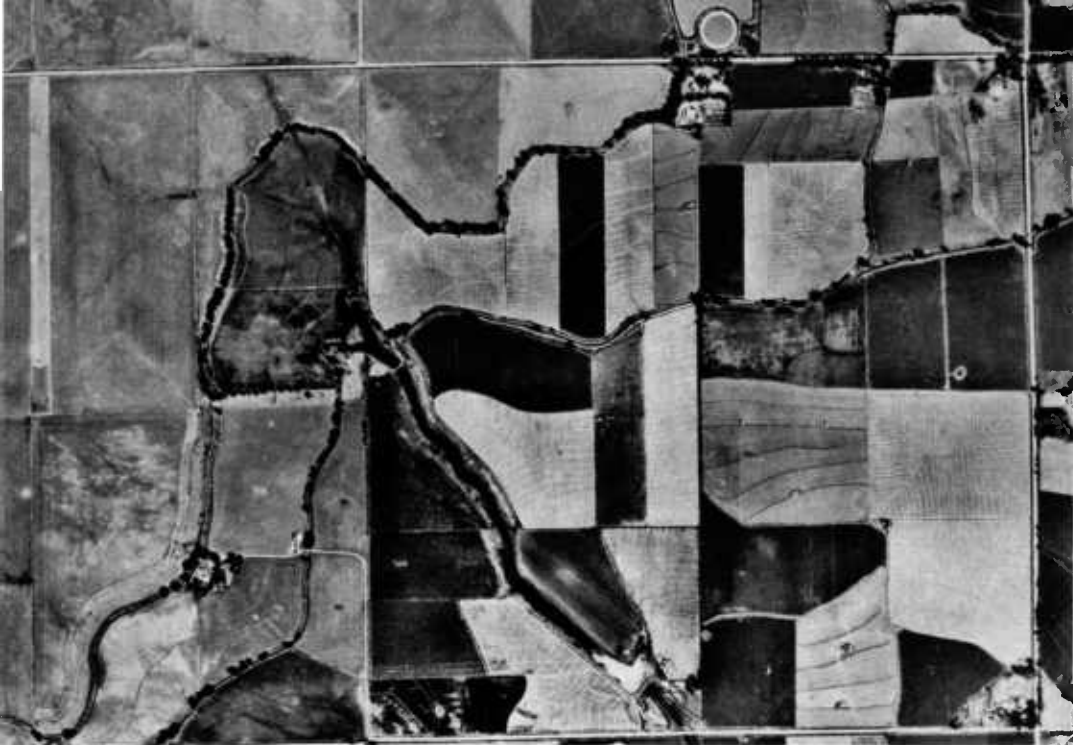
Parts of the large operating units that are typical of wheat-producing areas in the Northern Plains are shown in the picture above of a part of Kit Carson County, Colorado. Near the top of the photograph, the units of wheat and fallow alternate in separate large fields. In the lower part, the strips of wheat and fallow are relatively narrow so as to control wind erosion (September). In Randall County, Texas, on the High Plains of the Panhandle, both dryland farming tracts and rangeland occupy adjacent areas. The white, roughly circular patches are depressions in the caliche soils developed on limestone. The wavy dark lines in the upper part of the photograph are ridges made to control wind erosion (February).





The area pictured above in San Saba County, Texas, is typical of the southwestern all-year range. In the lower left half of the picture, juniper and mesquite are being cleared off for range improvement. In the upper middle portion, a dam has been built to provide a pond for watering livestock. The ranch buildings are at the end of the road, which appears as a white streak in the lower right (February). Below is a part of Ellis County, Texas, in the Black Prairie area of the Southern Plains. The curving lines mark terraces used to control erosion in fields where cotton and feed crops are grown. In the upper corners of the photograph we can see pasture areas (December).





In Weld County, Colorado, in the Rocky Mountain region, are many contrasts between dry and irrigation farming. At the left of the picture above is a dry-farming area, which is mainly in wheat. The rest of the photograph shows general farming with irrigation from canals, which are marked by trees. Storage ponds are connected to the canals. The circular object at the top and the irregular white spot near the lower middle are ponds. The white lines in several fields show where oats have been harvested (September). The ranches (below) along the John Day River in Grant County, Oregon, typify a combination of irrigated cropland in the valley and dry range on high land.





Cache County, Utah (above), contains many relatively small irrigated farms, on which sugar beets, small grain, and hay are the main crops. Many of the farmsteads are grouped in villages at crossroads like the one at the right in the photograph. At the top is a dryland area (September). This area (below) of Tulare County, California, is typical of the more fertile areas of the Central Valley. Citrus and deciduous fruits, vegetables, and many field crops are grown. Some of the land is irrigated from one of the Central Valley Project canals that is seen in the photograph; at the left is an intensively farmed area; at the right is a nonirrigated dryland area (September).





The pattern of small and medium-sized farms along the Willamette River in Marion County, Oregon, is seen in the picture above. General farming is the main enterprise. The better soils are used for orchards and vegetables. Yakima County, Washington (below), is famous for its apple orchards, which flourish close to the dry mountain slopes that we can see at the bottom of the picture (June). Orchards have a distinctive pattern in airphotos.





The photographs above of the same area in Chicot County, Arkansas, reveal how farmland is developed by clearing and drainage. The picture on the left was taken in April 1951; the one on the right, in November 1955, when much of the cutover forest had been cleared. The white lines mark areas where felled trees were bulldozed into windrows and burned. The picture on the left below was taken in February 1938; the one on the right, in March 1955. Both show the same area in Robeson County, North Carolina. During this period, forest land had been cleared or was in process of being cleared. The black lines, roughly parallel to the roads (white lines), are trees pushed into windrows for drying.





The two photographs above of the same area near San Jose in Santa Clara County, California, illustrate the shift of land from farms to urban use. They were taken in January 1950 and June 1956. During this period, cropland and orchards became subdivisions for residences. This area (below) near Wilmington, Delaware, was photographed in 1937 (on the left) and 1954 (on the right). Housing developments are seen in the upper left corner and in the lower part of the 1954 photograph. The gray area with the white lines crossing in the left center of the 1954 picture is an airfield.



Index

- Aandahl, Andrew R., 368
 Abstractor, 210
 Acidity, and irrigation, 344
 Acidity level, 335
 Ackerman, Joseph, 190-197
 Acquired land, 26; kind, 48
 Acquisitions, U. S., 19-27; map, 24
 Acreage, Hawaiian Islands, 440; Puerto Rico, 452; Southern farms, 139; U. S., 10; wheat farms, 159; wheat production, 150
 Acreage allotment, 201, 311, 312; cotton, 132; effect on crop-land, 58; wheat, 155
 Acreage Reserve, 246, 327; cotton, 132; in wheat regions, 156
 Acts, *see* name of
 Adams, John Quincy, 21
 Adirondack and Catskill Forest Preserve, 77
 Administrators' sales, 203
 Aerial map, 191, 381-384
 Africa, U. S. holdings in, 27
 Agencies, assistance to farmers, 322
 Agricultural Act of 1956, 327, 406
 Agricultural Adjustment Act, 26, 132, 310
 Agricultural colleges, 7
 Agricultural Conservation Program, 144, 164, 320, 322, 325, 358, 407, 433, 434; cotton, 133; in Plains, 162
 Agricultural Conservation Program Service, 326, 372
 Agricultural Council, Great Plains, 166
 Agricultural experiment stations, 7; Alaska, 425
 Agricultural land, chart, 269; drainage enterprise, map, 271; Hawaii, 446
 Agricultural Marketing Service, 554
 Agricultural Research Service, 156, 165, 287, 291, 372
 Agriculture, Alaska, 427; changes in, 53; and industry, 570; and nonfarm growth, 581
 Aids, 281
 Airfields, 50; sites, 88
 Airphotos, source of information, 381-384; steps, 382
 Airports, 495; acreage, 61; demand for land, 476; disposal, 94
 Airspace, price, 506
 Alabama, 20, 53, 74, 92, 129, 331, 411
 Alaska, 22, 50, 64, 71, 329, 424-439; acreage of, 425; land uses, 55; map, 426, 430; national parks, 49; public-domain lands, 71; purchase, 25
 Alaska Peninsula, 427
 Alaska Railroad, revenues, 557
 Alaska Road Commission, 432
 Alaska Rural Rehabilitation Corporation, 433
 Aleutian Islands, 427
 Alfalfa, 117, 143, 173, 343
 Alienation, fines, 281
 Alkalinity, and irrigation, 344
 All-risk Federal crop insurance, 233
 Alleger, Daniel, 572
 Allotment system, Indians, 98
 Allotments, crop, *see* Acreage allotment
 Alsike, 143
 Amenity values, 184, 186, 187
 American Farm Bureau Federation, 371
 American Forestry Association, 371
 American Municipal Association, 371
 American Samoa, 56
 American Society of Farm Managers and Rural Appraisers, 193
 American Society of Planning Officials, 531
 American Water Works Association, 371
 American Watershed Council, Inc., 371
 AMO-1618, 487
 Amortization loans, 224
 Amortization schedules, 216
 Anderson, James R., 53-62, 409-415, 474, 476, 506, 586
 Andrews, Richard A., 435
 Antibiotics, stored food, 487
 Appalachian, farms, 138
 Appalachian Mountains, 142
 Appraisal, condemnation, 197; farm buildings, 192, 196; farm real estate, 190-197; income method, 193; loan, 196; purchase-sale, 196; purpose, 196; report, 197; tax assessments, 196
 Appraisal map, 191
 Appraiser, duties, 195
 Appropriation doctrine, 345
 Arid areas, map, 17
 Arid lands, 14
 Aridity, 339
 Arizona, 49, 69, 74, 100, 129, 132, 167, 199, 351, 394, 482; rainfall, 340; school lands, 73
 Arkansas, 97, 129, 131, 136, 331, 341, 343, 344, 350, 378, 383, 411, 412; population and resources, 574; State lands, 75
 Aroostook County, 114
 Articles of Confederation, 19
 Artillery ranges, 87; sites, 88
 Asia, U. S. holdings in, 27
Aspergillus niger, 337
 Assessment, inaccurate, 241; on land, 179; and market value, 248
 Assistance, technical, 329
 Atomic energy, 502; sites, 50, 477
 Atomic Energy Commission, lands, 27, 87
 Auction, public, 186
 Aull, G. H., 136-141
 Australasia, U. S. holdings in, 27
 Australia, 249
 Automobile industry, 495
 Automobiles, urban expansion, 500; and urban land use, 594
 Avocados, 339
 Bachman, Kenneth L., 302-309
 Back, N. A., 347-355
 Back-to-the-land movement, 202
 Bailey, Warren R., 150-160
 Baltimore, 497
 Bananas, Hawaii, 442
 Bankhead-Jones Farm Tenant Act, 26, 92, 220
 Bankhead-Jones Title III Lands, 47
 Bankruptcies, 203
 Banks, 225; farm mortgages, 293; land financing, 205; loans, 227; and mortgages, 221; and urban expansion, 520
 Bark beetles, 396
 Barley, 115, 117, 157, 159, 163, 343
 Barlowe, Raleigh, 474-479, 575

- Barnes, Carleton P., 10-18
 Barnes, Ralph, 514
 Barns, appraisal, 196
 Bartholomew, Harland, 475, 476, 504
 Barton, Glen T., 460-465, 585
 Beans, 343
 Beef, price index, 181
 Beef cattle, Corn Belt, 124; general farming region, 144; in South, 131
 Beegle, J. Allan, 575
 Beginning farmers, 256
 Benefit-cost analysis, 543
 Benefit-Cost Subcommittee, 545
 Bennett, H. H., 433
 Bennett, John B., 42-52, 551-561
 Bentley, J. R., 414
 Bering, Vitus, 25
 Bierman, Russell W., 287-294
 Big Bend, 151
 Big game, numbers, 398
 Bighorn sheep, 397
 Bill of Rights, 278
 Billboard-control bills, 539
 Black, John D., 119, 581
 Black bear, 397
 Black Prairies, cotton, 130
 Blackfeet Indians, Montana, 101
 Blanch, George T., 579
 Blueberries, Alaska, 437
 Bluegrass area, 147
 Board of Review for Water Resources Projects, 373
 Borrowing, costs, 225
 Borrowing money to purchase land, 218-229
 Boston, 499
 Botts, Ralph R., 230-239
 Bowring, J. R., 573
 Brandywine Valley Association, 371
 Bread flour, 152
 Broiler industry, 463
 Brown, W. Herbert, 142-149
 Brown spot needle blight, 408
 Brush control, 411
 Brushland, clearing methods, 414
 Buildings, appraisal, 192, 196; insurance, 230, 238; and land earnings, 178
 Bureau of Indian Affairs, 27, 99, 101, 372, 430
 Bureau of Land Management, 22, 27, 49, 65, 71, 168, 172, 173, 174, 365, 372, 430, 438, 556; lands, 64-71
 Bureau of Reclamation, 372, 430, 556; lands, 27
 Bureau of Sport Fisheries and Wildlife, 556
 Bureau of Statistics, 20
 Bureau of the Census, 20, 52, 195, 287, 383
 Burgess, Ernest W., 497
 Burning, controlled, 415
 Butter, 116
 Cabbage, Hawaii, 442
 Cadastral surveys, 71
 Caguas, 451
 Calcium, 336
 Calhoun, Wendell, 437
 California, 16, 23, 52, 73, 113, 129, 132, 167, 200, 350, 353, 414, 575, 589; range region, 170; settlement, 54; State parks, 52
 California Real Estate Research Program, 510
 California State Water Resources Board, 515
 Campgrounds, in forests, 393, 396
 Canada, 49, 194
 Cantaloups, 343
 Capital, beginning farmers, 254, 255
 Capital asset, 250
 Capital gains tax, 180, 203, 250
 Capital investments, 308
 Capital values, and taxes, 247
 Capitalization process, in appraisal, 194
 Carreker, John R., 344
 Carrots, 343
 Cash-grain, general farming region, 144
 Cash rents, 178; taxes, 244
 Cash tenants, defined, 296
 Cattle, in Corn Belt, 123; insurance, 236; in South, 137
 Cattle wars, 154
 Census of Agriculture, 55, 138, 153, 158, 255, 303, 369
 Census of Irrigation, 482
 Central business district, 496
 Cereals, acreage, Puerto Rico, 454
 Cessions, land, U. S., 20
 Chamber of Commerce of the United States, 371
 Cheese, 116
 Cherokee Nation, 97
 Chestnut blight, 408
 Chicago, 497, 499, 503, 518
 Christensen, Raymond P., 584-592
 Chryst, Walter E., 2-9, 295-301
 Chugach National Forest, 427
 Cigars, Puerto Rico, 449
 Cities, *see also* Urban expansion; acreage in, 505; complexities of, 497; growth and transportation, 493-502; growth patterns, 497; taxes, 507
 Citizens Committee on Natural Resources, 371
 Citrus, insurance, 234
 Citrus groves, Florida, 572
 City-State, theory, 110
 Civilian Conservation Corps, 82, 394
 Claims, Indian lands, 25; insurance, 235
 Clarenbach, Fred A., 371-375, 551-561
 Clark, William, 21
 Clarke-McNary Act of 1924, 26, 392, 403
 Classification of rural land, 362-370
 Clemson Agricultural College, 344
 Cleveland, 499, 508
 Cleveland, Grover, 392
 Cliff, Edward P., 392-401
 Climate, Alaska, 426; Hawaii, 440; map, 17; marine, 12; Puerto Rico, 449; U. S., 15
 Clover, 117
 Coal, 70, 188, 189
 Coconino National Forest, 394
 Coffee, consumption of, 472; Hawaii, 441; Puerto Rico, 449, 451, 454
 Coffman, Robert J., 434
 Coinsurance, 238
 Colonies, and Indian rights, 96; map, 24
 Colorado, 23, 151, 156, 161, 200, 235, 342, 351, 394, 482, 533; rainfall, 340; school lands, 73
 Colorado Plateau, 64
 Colorado River, 66; drainage area, 350; project, New Mexico, 102
 Colorado River Desert, 15
 Colorado River Reservation, Arizona, 101
 Columbia Basin Project, 482
 Columbia River, 21, 66, 350
 Colville Tribe, Washington, 100
 Commercial farms, 303; general farming region, 143, 145
 Commercial lands, potential needs, 478
 Commission charges, loans, 225
 Committees, conservation, 326
 Commodities, farm, carryover, chart, 471
 Commodity Credit Corporation, 233, 312
 Commodity Stabilization Service, 326, 381
 Community forest, 52
 Community planning, 524-531
 Comparative advantage, defined, 111
 Competition in farming, 105
 Composite resources, 317
 Concentric zonal hypothesis, 497
 Condemnation appraisals, 197
 Condensed milk, 116
 Conditional estates, defined, 289
 Confiscatory tax, 242
 Conklin, Howard E., 104-108, 366
 Connecticut, 19, 20, 331
 Connecticut River Watershed Council, Inc., 371
 Connecticut Valley, 143
 Connolly, Frank A., 402-408
 Conservancy district, 345
 Conservation, 315-384, 406; Dust Bowl, 533; economic possibilities, 316; Great Plains, 533; and income, 318; meaning, 316; national policy, 320
 Conservation Foundation, 371
 Conservation plan, formation, 330

- Conservation practices, extent, 1957, 331; improvements in, 490
- Conservation Reserve, 406, 585; cotton, 133; in Plains, 162; in wheat regions, 156
- Conservation Reserve Program, 325, 327; payments, 328
- Construction, nonresidential, 418
- Continental Congress, 19
- Continental Shelf, 555
- Continental Shelf Land Act, 70
- Contract for deed, 215
- Cook, James, Captain, 440
- Cooperative educational program, 323
- Cooperative Extension Service, 323
- Cooperative Forest Management Act, 405
- Coordinator of Water Resources, 373
- Coos Bay Wagon Road Lands Grant, 67
- Coote, Robert K., 64-71
- Copper, 338
- Corn, 123, 125, 126, 130, 148, 151, 155, 311, 339, 343; cropping system, 122; in general farming region, 144, 146; production per harvested acre, 265
- Corn Belt, 53, 54, 55, 111, 113, 142, 145, 187, 201, 231, 245, 264, 304, 488; farm sales, 187; land use, 122-128; location, 122
- Cornell system of economic land classification, 366
- Corporation farms, number, 301
- Corporations, landownership, 288
- Corps of Engineers, 26, 347, 372; flood-control program, 352
- Cost accounting, 181
- Cost sharing, 325, 375
- Costs, and returns, 4, 176
- Cotton, 155, 311, 339, 343; acreage, 57, 130, 136, 138; acreage chart, 267; allotments, 132; extent, 57; importance, 136; investment, 135; irrigation, 130, 344; production, 129-135; production chart, 134; production per harvested acre, 265; projected needs, 585; requirements, 129
- Cotton Belt, 113; extent, 129
- Cotton farm, 131, 149
- "Cotton South," changes in, 136-141
- Council of Conservationists, 371
- Council of State Governments, 374
- County agents, 323
- County forest, 52
- Cows, milk, map, 118; in South, 137; in wheat regions, 159
- Cranberries, Alaska, 437
- Cream, 115
- Credit, Alaska, 433; for beginning farmers, 259; farm mortgage, 204; farm sales, 204; financing farm ownership, 218; Hawaii, 444; Puerto Rico, 456; and tenure system, 285; use of, 221
- Credit agencies, 185
- Credit instruments, 223
- Crickman, C. W., 122-128
- Crop costs, Delta, 134
- Crop failure, extent, 57; Great Plains, 165
- Crop-hail insurance, 234
- Crop insurance, Federal, 233
- Crop-share tenants, defined, 296
- Cropland, acreage of, 54; Alaska, 432; chart, 263; conservation of, 331; in crops, 61; decline, 58; extent, 10, 55, 56; general farming region, 146; harvested, Alaska, 434; harvested, chart, 265, 269; percentage of total land area, chart, 264; in Plains, 162; projected acreage of, 586; South, 139; trend, chart, 268
- Cropping systems, Corn Belt, 124; Puerto Rico, 453
- Crops, acreages, 57; and climate, 15; demand, 470; humid areas, 11; irrigation, 341; land used for, 61; response, to irrigation, 343
- Cucumbers, Hawaii, 442; irrigation, 343
- Cumberland Plateau, 143, 145
- Cunninghamella, 337
- Curtsey right, 213
- Cutover flatwoods, 412
- Cutover land, taxes, 85
- Cutover timberland, clearing, 413
- Dairy cows, 16
- Dairy farms, Alaska, 434; classified, 114; decline in number, 121; map, 116
- Dairying, general farming region, 142; Hawaii, 442; Matanuska Valley, 427, 435; in the North, 114-121
- Daly, Rex F., 466-473
- Dates, 339
- Death taxes, 240, 251
- Debt, and land prices, 205; in 1920's, 220; and ownership, 291; real-estate, amount, 221
- Declaration of Taking Act, 89
- Deductible clause, insurance, 232
- Deductible policies, 235
- Deed-and-mortgage sale, 216
- Deed of conveyance, 211
- Deed of trust, 223
- Deer, 397
- Defeasance clause, 212
- Delaware, 20, 114, 331
- Delaware Indians, 97
- Delinquency, tax, 248
- Delta, typical farm, 134
- Den trees, 396
- Denmark, 219
- Denver, 162
- Department of Defense, 26, 430
- Department of State, 27
- Department of the Army, 372
- Department of the Interior, 365, 430, 432, 556; Alaska, 424
- Depression, 1930's, 220
- Desert Land Act, 65
- Deserts, 15, 62
- Devil River Watershed Cooperative Association, 372
- Diaz-Cruz, Efrain, 449-457
- Dikes, 359
- Dill, Henry W., Jr., 381-384
- Diseases, forests, and insects, 407
- Distress transfers, 203
- District of Columbia, 509
- Districts, conservation, 331
- Doane Agricultural Service, 193
- Dodder, 485
- Dodge City, 154
- Doherty, Joseph C., 376-380
- Dower right, 213
- Downpayment, in land purchase, 221, 223
- Downstream flood damage, 349
- Drainage, agricultural land, map, 271; districts, 353; extent of operations, 352; and flood control, 353
- Drewry, C. B., 81
- Drought, 342; and crop production, 461; in Great Plains, 166; humid areas, 14; insurance, 234; in Plains, 162
- Dubuque Daily Republican, quote, 531
- Dunnage, 420
- Durgin, O. B., 573
- Durum, 151
- Dust blowing, wheat regions, 153
- Dust Bowl, map, 536; planning for stability in, 532-536; soil capabilities, 533
- Duststorms, 532; Plains, 163
- Earnings, of land, 178
- Easement, along highways, 538; land-use, 534
- Eastern Coastal Plains, cotton, 130
- Eastern States, irrigation, 483
- Eastern winter wheat region, 150
- Economics, benefit-cost analysis, 543; and land use, 4
- Education, for farming, 261; and tenure system, 285
- Educational assistance, for farmers, 322
- Eggs, consumption 470
- Electric power, sale of, 556
- Elk, 397
- Emergency Farm Mortgage Act, 220
- Eminent domain, rights of, 279
- Employment, effect on land, 57; farm, 255; nonfarm, 201; off-farm, 153, 570, 574; in South, 141; for young farmers, 261

- England, 96, 582
 English Statute of Tenures of 1660, 282
 Entail, 282
 Epstein, B. J., 518
 Equipment, land clearing, 411
 Equitable title, 212
 Erie Canal, 119
 Erie County, 20
 Erosion, 410; control, 324; damage, annual, 349; flood damage, 361; Hawaii, 444; Puerto Rico, 454; sedimentation, 348
 Escheat, rights of, 279
 Escrow deed, 217
 Esser, George, Jr., 521
 Estate by entirety, defined, 289
 Estate in common, defined, 289
 Estate Planning for Farmers, 252
 Estates, 288; main forms, 289
 Europe, U. S. holdings in, 27
 Evaluation Standards Subcommittee, 550
 Evaporated milk, 116
 Everglades, 53
 Excessive heat, insurance, 234
 Excessive moisture, insurance, 234
 Executive orders of 1934, 67
 Experiment stations, 323; land in, 50
 Exports, food and fiber, 473; Hawaii, 443; Puerto Rico, 451
 Expressway, *see also* Highways; and urban land use, 501
 Extension forester, 404
 Extension services, 7

 Fact Finders' Act of 1924, 365
 Fairbanks, 425, 427, 432
 Fallow, extent, 57; in Palouse, 151
 Family farming, defined, 111
 Farm buildings, appraisal, 196; insurance on, 230; market value, 187; productive value, 187; values, 187
 Farm capital, in dairy region, 117
 Farm Credit Administration, 164, 180, 220, 225, 433
 Farm Economics Research Division, 55
 Farm enterprises, chart, 306
 Farm forests, 387; extent, 389
 Farm management records, 194
 Farm-mortgage lenders, 292
 Farm-mortgage loans, average, 293; volume, 219
 Farm mutual companies, insurance, 231
 Farm operators, and tenure, 564; income, map, 204
 Farm output, cropland, horses, and mules, graph, 462; expansion, 460-465; potential needs, 584-592; and taxes, 241; trends, 590
 Farm products, demand for, 467; sales, Alaska, 434; utilization of, chart, 470
 Farm production, change in, graph, 465
 Farm Production Regions, map, 458
 Farm programs, 310-314
 Farm real estate, appraisal, 190-197; market, 108-205; value, 218
 Farm Security Administration, 92, 456; relocation, farm families, 90
 Farm surveys, 330
 Farm technology, and prices, 185
 Farmers, assistance, 321-328; and taxes, 240-253; technical assistance, 329-332
 Farmers Home Administration, 7, 164, 193, 194, 220, 225, 257, 259, 260, 292, 322, 323, 328, 372, 376, 433, 444, 456; credit service, 226; relocation, farm families, 90
 Farmhouses, 187
 Farming, changes, 104-108; competition in, 105; Corn Belt, 127; getting started in, 254-262; revolution in methods, 461; specialized, 111, 305; specialized, Hawaii, 444; types, Alaska, 434; types, general farming region, 142; types, map, 112
 Farmland, abandonment, 242; air photographs, 381-384; changes in value, map, 197; changing face of, 568-583; chart, 269; classification, 362-370; demand, 200; extent, in dairy region, 115; factors affecting, 109-113; grade standards, 186; and highways, 577; income, distribution, 176-182; Indian, 101; as investment, 201; market for, 185; market values, levels, 200; ownership, chart, 502; and urban expansion, 508; value, 199; value estimates, 183-189; wartime leases, 93
 Farms, acreage, Puerto Rico, 453; commercial, size of, chart, 307; corporation, 251; decline, effect, 255; enlargement, 255; family, 7, 304; family-type, Puerto Rico, 456; growth in size, 563; irrigated land in, chart, 270; manager-operated, Puerto Rico, 456; mechanics of buying, 206-217; mortgaged, types of, 293; number, 296, 583; number, South, 133, 138; owner-operated, Puerto Rico, 456; population, graph, 276; rented, taxes, 244; size, 583; size, Corn Belt, 127; size, Hawaii, 443; size, South, 133, 139; size, wheat regions, 155; small-scale, 304; tenure systems, 562-567; transfers of, 203; trends in kinds, 302-309; trends in sizes, 309; U. S., chart, 307; value of sales, 139; value per acre, map, 189; zoning for, 529
 Farmsteads, trend, chart, 268
 Farmworker, move to city, 573; production, 304; in South, 137
 Fealty, 281
 Feather River Project Association, 371
 Federal-Aid Highway Act of 1956, 476, 538
 Federal Crop Insurance Corporation, 233
 Federal Extension Service, 372
 Federal Farm Loan Act of 1916, 225
 Federal Farm Mortgage Corporation, 226
 Federal-grant lands, to States, 73
 Federal Housing Administration, 514
 Federal income tax, 250
 Federal Interagency Committee, 23
 Federal Interagency Committee on Water Resources, 550
 Federal Interagency River Basin Committee, 544
 Federal land, *see also* Public lands; Public domain; kinds of uses, 48; special purposes, 50; timber sales, 553; use and management, 551-561; use by ranchers, 168; vegetative cover, types, 50
 Federal land bank, 193, 205, 219, 225
 Federal land-bank system, 7, 225; farm mortgage, 293
 Federal Loan Act, 219
 Federal Power Commission, 372, 542, 547
 Federal-State cooperative extension program, 286
 Federal Water Power Act, 542
 Federal wildlife refuges, extent, 49
 Federal Works Agency, 93
 Fee simple, 446; defined, 289; tribal holdings, 100
 Fee tail, defined, 289
 Feed crops, in Corn Belt, 123
 Feed grains, acreages, chart, 267; extent, 57; projected needs, 485
 Feeder cattle, 124
 Feedlots, Corn Belt, 124
 Feeds, purchased, 119
 Fertility, 335; importance, 104
 Fertilizer, 119, 178; Corn Belt, 128; Delta area, 134; and production, 483; Puerto Rico, 455; recommendations, 337; technological advances in, 483
 Feudal land system, 281
 Fiber, prospective needs, 466-473
 Filipinos, Hawaii, 444

- Financing of farm ownership, 218–229
- Fire control, public domain, 67; national forests, 400, 403
- Fire insurance, 230; rates, 232
- Fire protection, in South, 139
- Fish and Wildlife Service, 27, 372, 430
- Fishing, 398; Southeastern Alaska, 426
- Fishlake National Forest, 394
- Fitts, J. W., 333–338
- Flathead Indian Reservation, 27
- Flathead Indians, Montana, 101
- Flax, 159, 339
- Flaxseed, expansion, 465; extent, 57
- Flexible payment loan, 224
- Flood control, acts, 351, 354, 356, 542; Federal participation, 351; legislation, 542; programs, 237, 349
- Flood-control areas, 61; use of land, 477
- Flood-plain, area, 349; zoning of, 352
- Floods, 348; damage, distribution, 350; designation, 348; insurance, 234, 237
- Floodways, 359
- Floral products, Hawaii, 442
- Florida, 12, 20, 101, 238, 341, 353, 411, 412, 520, 572; cession, 21; cotton, 130; State lands, 75
- Florida Everglades, 53
- Florida Purchase, 21
- Florida treaty, 22
- Flow resources, in conservation, 317
- Fluid milk, production, 115
- Food, habits, changes, chart, 469; prospective needs, 466–473
- Food crops, extent, 57
- Food grains, acreages, chart, 267; projected needs, 585
- Forage, in national forests, 398
- Forage crops, 131
- Ford, Erwin C., 356–361
- Foreclosure, 203, 212, 220, 223
- Foreclosure moratorium laws, 286
- Foreign-aid programs, 199
- Foreign market, food and fibers, 473
- Forest(s), acreage, 54, 586; Alaska, 71; area, 60; clearing, 409–415; diseases and insects, 407; farm, 387, 389; fire control, 139, 403; Hawaii, 445; humid areas, 13; management programs, 402–408; ownership, 402; ownership, chart, 272; private, yields, 387; public domain, 67; State, 52
- Forest Industry, ownerships, 387
- Forest land, chart, 263; classification, 364; distribution, map, 274; extent, 55, 395; Indian, 101; private, 386–391; and taxation, 253; trend, chart, 268
- Forest Pest Control Act, 408
- Forest Preserve Act, New York, 76
- Forest products, in South, 139
- Forest programs, State-Federal, 404
- Forest Reserves, establishment, 392
- Forest Service, 26, 168, 174, 326, 372, 381, 392, 402, 412, 426, 430, 553; charter, 395; programs, 397; Tax Law Digest, 85
- Forester, public, 405
- Forestry, program, New York, 76; on rangeland, 168; residual use, 18; Southeastern Alaska, 426
- Forestry departments, State, 322
- Fort Clatsop, 22
- Fort Hall project, Idaho, 102
- Fort Knox, 91
- Fort Leonard Wood, 93
- Fort Mandan, 21
- Fort Worth, 518
- Four Lakes Watershed Alliance, 372
- Fowler, Herbert C., 114–121
- France, 20
- Freehold, defined, 295
- Freeway, 501
- Freezing, insurance, 234
- Fremont, John Charles, 23
- Friedman, Milton, 516
- Friends of the Land, 371
- Fritz Creek, 432
- Frost-free seasons, 15; crops in, 12
- Fruits, acreage, Puerto Rico, 454; consumption of, 471
- Fuelwood, 416
- Full owners, Alaska, 436; defined, 296; Hawaii, 444; wheat regions, 154
- Fuller, Varden, 575
- Fund resources, in conservation, 317
- Future interests, defined, 289
- Gadsden, James, 23
- Gadsden Purchase, 23
- Gaffney, M. Mason, 503–522
- Game and fish departments, State, 322
- Game ranges, extent, 49
- Gas, 70
- General Accounting Office, 27
- General Allotment Act, 98
- General Condemnation Statute, 89
- General farming region, 113, 142–149
- General farms, defined, 142
- General Land Office, 20, 65
- General Mining Law, 65, 70
- General Motors case, 90
- General Services Administration, 27
- Generalized Land Resource Areas, map, 17
- Genetics, plant, advances in, 488
- Geographic Regions and Divisions, map, 458
- Geological Survey, 20, 372, 382; Alaskan study, 429
- George, Henry, 249
- Georgia, 19, 20, 92, 129, 331, 344, 411, 412, 489, 570; cotton, 130; rainfall, 340
- Georgia Water and Sewage Association, 371
- Getting started in farming, 254–262
- Gibberellic acid, 487
- Gieseke, L. F., 363
- Gilman, Virgil D., 321–328
- Glover, Loyd, 163
- Goding, M. Wilfred, 96–102
- Golf courses, demand for land, 477
- Government programs, cotton, 132
- Grain, for cattle, 124; general farming region, 144; Great Plains, 161; South, 131, 139; nonfood uses, 472
- Grand Coulee Dam, 482
- Grass, 117; and cotton, 140; in Great Plains, 161; in South, 139
- Grasshoppers, 485; in Plains, 164
- Grassland, acreage of, 54; conservation of, 331; extent, 58; pasture, chart, 263; South, 139
- Graves, Walter L., 551–561
- Gravity irrigation, 345
- Gray, Robert, 21
- Grazing, and climate, 16; control, 60; in national forests, 396; public domain, 65; residual use, 18; State lands, 72
- Grazing boards, national forests, 398
- Grazing districts, Montana, 84; public lands, 49
- Grazing fees, 554
- Grazing land, 15; acreage, 58; characteristics, 167; extent, 167; map, 266; trend, chart, 268; unimproved, 59
- Grazing leases, Alaska, 428
- Grazing policies, national forests, 399
- Grazing Service, 65
- Great American Desert, 343
- Great Britain, 19; land tax system, 247
- Great Lakes, 12, 113
- Great Mahale, 445
- Great Plains, 15, 26, 53, 98, 116, 169, 187, 224, 264, 343, 482; crop failures, 165; extent, 161; homesteaders, 154; land-use problems, 161–166; map, 536; planning for stability in, 532–536; surplus wheat, 589; wheat, 150
- Great Plains Agricultural Council, 166, 532
- Great Plains Conservation Program, 162, 322, 325, 327, 407

- Green, William A., 542-550
Green manure, 128
Greensboro, N. C., 521
Greenshields, Elco L., 339-346, 480-492
Grizzly bear, 397
Gross income, estimate, 193
Gruen, Victor, 518
Gruening, Ernest, 424
Guadalupe Hidalgo, 23
Guam, 56
Gulf of Mexico, 20
- Hail, insurance, 235
Halcrow, Harold G., 571
Hale, Gerald A., 382
Halogeton, 66
Hard red spring wheat region, 151
Harris, Chauncy D., 498
Harris, Marshall, 278-286
Harrison, Robert W., 573
Harrison, William Henry, 392
Hawaii, 329, 357, 406; land uses, 55; national parks, 49; problems and assets, 440-448; U. S. holdings in, 27
Hawaii National Park, 445
Hawaii Water Authority, 444
Hawaiian Homes Commission, 446
Hawley, Amos H., 509
Hay, 117, 122, 128, 143; general farming region, 144; projected needs, 585; wheat regions, 154
Hay crops, extent, 57
Heald, Henry T., 592
Heinen, Raymond W., 329-332
Heisig, Carl P., 582, 584-592
Herbicides, advances in, 484
High Plains, typical farm, 135
Highways, *see also* Expressways; 537-541; acreage, 61; acreage requirements, 588; billboards, 539; demand for land, 476; and farms, 577
Hochmuth, Harold R., 64-71
Hog ration, Corn Belt, 125
Hogs, 123; Corn Belt, 123; Hawaii, 442
Holland, I. Irving, 416-422
Holm, Paul L., 198-205
Homage, 281
Homestead Act, 219, 425, 438, 456
Homestead exemptions, and taxes, 242
Homestead rights, 217
Homesteaders, Alaska, 425; Great Plains, 154
Homesteads, Alaska, 430; in wheat regions, 154
Honolulu, 440, 447
Hoover Commission, 237, 545
Hops, 339
Hormones, 487
Horses, Alaska, 428; feed, 120
Houses, lumber for, 417
Hoyt, Homer, 497, 518
Hoyt, William G., 237, 349
Hudson River, 119
Humid areas, map, 17
Humid lands, resources, 11
Hunt, James M., 321-328
Hurd, Anthony, 582
Hurlburt, Virgil L., 176-182
Hybrid corn, 127, 488
Hydroelectric capacity, 9
Hydroelectric power, 352
- Idaho, 151, 158, 199; school lands, 73; yield tax, 85
Illinois, 20, 74, 114, 122, 123, 125, 142, 146, 150, 199, 203, 244, 256, 257, 264, 318, 338, 507; land values, 126; settlement, 54; State lands, 75
Imperial Valley, 14
Improvements, farmland, valuation, 187
Income, agriculture, Puerto Rico, 456; and capital values, 247; changes in, 199; dairy farm, 117, 120; estimating, 178; farm operators, map, 204; farmland, distribution, 176-182; future, 184; general farming region, 146; High Plains, 135; industries, Puerto Rico, 456; land resources, 4; measure of farm size, 296; and production, 585; tobacco, 147, 149; wheat farms, 157
Income tax, 240, 250; deductions, 180; effects, 250; laws and real estate, 511
Incorporation of farms, 251
Indian lands, *see also* Tribal lands; 48, 96-102; acquisition, 27, 100; administration, 99; claims, 25; extent, 49; in range area, 168; treaties, 97; use, 288
Indian Reorganization Act, 27, 99, 100
Indian Territory, 54
Indian tribes, treaties, 97
Indiana, 88, 150, 244, 255, 257, 264, 537; State lands, 75
Individuals, as lenders, 228
Industrial expansion, 57; Hawaii, 447; Puerto Rico, 451
Industrial lands, potential needs, 478
Industry, and agriculture, 570; in Great Plains, 166; in South, 141; transportation, 495; trends in growth, 529; zoning for, 529
Inflation, and taxes, 250
Inheritance, 217; and ownership, 290
Inheritance taxes, 212; State, 251
Insect infestation, insurance, 234
Insecticides, advances in, 485
Insects, forests, 407
Installment-purchase contract, 215
Insurance, buildings, 208; claims, 235; farm losses, 230-239; fire, 213; livestock, 236; miscellaneous, 239; rates, 231; types, 230; windstorm, 213
Insurance companies, 205
Inter-Agency Committee on Water Resources, 373
Inter-Agency River Basin Committee, 372
Interest rates, 224; and costs, 182; loans, 225
Intermediate cuts, 395
Internal Revenue Code, 207
Internal revenue stamps, 214
Interurban railway, urban expansion, 499
Inventory, 190; of buildings, 192
Investment, and capital requirements, 256; public land needs, 558
Iowa, 74, 115, 123, 125, 151, 195, 199, 244, 256, 264, 320, 331, 338, 342; rainfall, 340; settlement, 54; State lands, 75
Iron, 338
Irradiation, plant breeding, 488
Irrigated acreage, 1949-1956, chart, 346
Irrigation, Alaska, 427; arid regions, 14; chart, 270; cotton, 132, 135; early, 341; Eastern States, 483; extent, 332; Hawaii, 444; improvements, 489; Indian land, 101; land classification, for, 365; laws, 345; new jobs for, 339-346; problems, 344; Puerto Rico, 455; in ranching, 173; technical advances, 482
Irrigation districts, 345
Irrigation Districts Association of California, 371
Isolated-settler purchase program, 81
Izaak Walton League of America, 371
- Jackson, Andrew, 23, 97
Jamez pueblo, 100
Japanese, Hawaii, 444
Jefferson, Thomas, 21
Jefferson National Forest, 394
Johnson, Andrew, 25
Johnson, Hugh A., 424-439, 434, 568-583
Johnson, Sherman E., 581
Jones, Lawrence A., 562-567
Joint tenancy, 212; defined, 289
Joint stock land banks, 219
Jorgensen, Harold, 437
Josephson, H. R., 42-52
Juniper, 415
- Kanel, Don, 254-262
Kanosh Band, Utah, 101
Kansas, 23, 73, 74, 88, 151, 153, 156, 158, 159, 160, 161, 183, 195, 244, 264, 331, 338, 341, 533; settlement, 54

- Kansas State Tax Commission, 242
Kearney, Stephen W., 22
Keep Green program, 389
Kellogg, Charles E., 428
Kenai Moose Reserve, 427
Kenai Peninsula, 427, 431, 434
Kentucky, 26, 88, 136, 142, 143, 144, 145, 146, 331, 338, 350, 379, 412
Kentucky Bluegrass area, 148
Ketchikan, 426
King, David B., 416-422
Klamath irrigation project, 556
Klamath Reservation, timberlands, 100
Klamath Termination Act, 100
Klimm, Lester E., 569
Klondike, 425
Knudson-Vandenberg Act, 559
Kodiak, 427
Kristjanson, L. Burbank, 368
- Labor, general farming region, 145; Hawaii, 443; in South, 140; tobacco, 148; wheat regions, 160
Ladino, 143
Lake States, 53, 231; isolated-settler program, 81; public domain, 74
Land, and advances in technology, 480-492; future importance, 8; growth of the Nation, 2-9; urban demands, 494
Land Authority of Puerto Rico, 455
Land bank, Federal, 225
Land Bank Commissioner, 220
Land-bank commissioner loans, 226
Land-bank loans, 226
Land-bank system, 219
Land-capability classes, 363; zoning by, 535
Land clearing, 409-415; Alaska, 433; equipment, 411; extent, 332
Land contract, 215
Land court system, registration, 446
Land-grant colleges, 286, 323
Land Law of Puerto Rico, 455
Land use, *see* Use of land
Landlord-tenant, 565
Landlords, 288
Landownership, chart, 272; and income, 6; Puerto Rico, 455
Landstrom, Karl S., 19-27
Langbein, Walter B., 237, 349
Langsford E. Lee, 129-135
Lanham Act, 93
LaSalle, 20
Law of diminishing returns, 107
Laws, *see* name of
Lea Act, 408
Lead, 189
League of Wisconsin Municipalities, 371
Leasehold, defined, 295
Leases, cash, 564; land, Hawaii, 446
Leasing program, in wartime, 94
Lee, Alvin T. M., 72-86, 87-95
Legal description, appraisal, 190; farm, 206; land, 190
Legal dimension, of conservation, 316
Legal title, 212
Legumes, 117; acreage, Puerto Rico, 454; in general farming region, 144
Lenders, farm mortgage, types, 292; miscellaneous, 229; types of, 225
Lending agencies, 204
Lending practices, 221
Lespedeza, 143
Lessinger, Jack, 510, 511
Lettuce, 343
Leukel, R. W., 488
Levees, 359
Lewis, Meriwether, 21
Lewis and Clark expedition, 21
Lien, tax, 248
Life estate, 217; defined, 289
Life-insurance companies, 183, 225; farm mortgages, 293; loans, 227; and mortgages, 221
Lignite, 188
Lime, 119; and production, 483
Liming, Southern States, 483
Little Trappe Farm Improvement Association, 372
Littlefield, E. W., 79
Littleleaf disease, 408
Livestock, advances in breeding and feeding, 490; breeding units, rise in, 463; in Cotton Belt, 131; feed, map, 275; gains in production, 128; in Great Plains, 161; Hawaii, 442; insurance, 236; in national forests, 396; price index, 181; production increase, 464; projected needs, 585; in South, 137; in wheat regions, 157
Livestock farm, 147
Livestock pests, 486
Livestock products, consumption of, 468
Livestock-share tenants, defined, 296
Loan, appraisals, 196; banks, 227; insurance companies, 227; interest rates, 225; land-bank commissioner, 226; mortgage, 185; optional payments, 224; partial payment, 223; reserve payments, 224; to start farming, 257; straight-end, 223; types, 223
Loan bill, agricultural, Alaska, 433
Location theory, 110
Logging, national forests, 392
Loomer, C. W., 80
Los Angeles, 515
Losses, farm, insurance on, 230-239
Louisiana, 23, 52, 73, 85, 97, 129, 131, 136, 189, 279, 341, 377, 399, 411, 412, 486, 573; rainfall, 340; State lands, 75
Louisiana Purchase, 21
Louisiana Territory, 20
Lucas, Broder F., 366
Lumber, manufactured products, 420; potential demand, 416-422
McCormick reaper, 481
McElveen, Jackson V., 302-309
McGuire, John R., 386-391
McKinley, William, 392
Macadamia nuts, Hawaii, 442
Machinery, advances in, 481; cotton, 130; Delta area, 134; general farming region, 144; returns from, 184; wheat regions, 159
Madison, James, 21
Magna Carta, 282
Magnesium, 336
Maier, Frank H., 310-314
Maine, 20, 49, 114, 115, 238, 243, 382; State parks, 52
Manager, defined, 296; farm, Hawaii, 443; number, 301
Manganese, 338
Manhattan, 496, 518
Manufacturing, shift from cities, 496; use of lumber, 420
Manure, 119
Manvel, Allen, 507
Maps, aerial, 191, 381-384
Marinette County, Wis., 80
Market, Alaska, 437; farm real estate, 198; land, 106; land, defined, 185; land, and farm prices, 199
Market value, defined, 198
Marketable title, 209
Marketing quotas, 311; cotton, 132
Marriage, 281
Marschner, F. J., 10-18
Marshall, Alfred, 516
Marshall, John, 97
Marshes, 13, 62
Maryland, 19, 20, 114, 115, 343, 415, 540
Massachusetts, 19, 20, 114, 331
Massachusetts Bay Colony, 96
Matanuska Valley, 427, 431, 433
Matanuska Valley Colonization Project, 425
Mathews, O. R., 488
Mayer, Harold M., 493-502
Maynes, Scott, 507
Mead, W. R., 583
Meat, consumption of, 469
Mechanization, 305; Corn Belt, 128; dairy region, 115; and developments, 120; effect, 303; and farm output, 461; in gen-

- eral farming region, 144, 145;
High Plains, 135; Kentucky,
147; and output, 480; in
South, 140
- Medical facilities, cities, 497
- Mellor, John W., 104-108
- Meridians, prime, map, 208
- Mesquite, 415
- Metes and bounds, 190, 206; Ha-
waii, 447
- Metzler, William H., 574
- Mexican War, 22, 23
- Mexico, 49
- Michigan, 26, 52, 74, 97, 114,
151, 200, 244, 290, 338, 478,
509, 575, 589; forests, 86;
land programs, 79; State
parks, 52
- Mick, A. H., 428
- Mighell, Ronald L., 109-113
- Military and defense, potential
needs, 478
- Military areas, community prob-
lems, 92
- Military camps, 87; sites, 88
- Military lands, 72, 87-95; Alaska,
430; Hawaii, 446; lease, crop
production, 93; purchases, 26;
surplus, 94
- Milk, consumption of, 469; pro-
duction, 115
- Miller, Walter G., 562-567
- Mineral deed, 188
- Mineral Leasing Act, 50, 65, 70,
399
- Minerals, Hawaii, 445; in national
forests, 399; public domain,
70, 555; rights, 188
- Mining, employment, 146; South-
eastern Alaska, 426
- Mining laws, 555; national for-
ests, 399
- Minnesota, 23, 26, 52, 74, 97,
114, 151, 195, 199, 232, 243,
244, 257, 415, 488, 537; for-
ests, 86; land programs, 79;
State parks, 52
- Mission 66, 558
- Mississippi, 20, 53, 73, 85, 97,
129, 189, 199, 331, 338, 350,
379, 411, 412, 489, 573; State
lands, 75
- Mississippi Delta, 129; cotton,
130; farms, 138; subsoiling,
482
- Mississippi River, 19, 20, 130, 150,
348
- Mississippi River Commission, 542
- Mississippi Valley, 21, 122
- Missouri, 26, 97, 122, 125, 142,
151, 199, 244, 255, 257, 338,
344, 350, 378; State lands, 75
- Missouri Basin Inter-Agency Com-
mittee, 372
- Missouri River, 66
- Mohave Desert, 15
- Moisture, conservation, 324; crop
requirements, 342; importance
of, 11
- Molasses, Puerto Rico, 449
- Molybdenum, 338
- Monroe, James, 21
- Montana, 49, 76, 151, 156, 161,
189, 235, 489; cooperative
grazing associations, 83; gen-
eral land policy, 83; grant
lands, 83; Grass Conservation
Act, 83; grazing districts, 84;
land programs, 82; Session
Laws, 83; State grazing, 86;
State lands in, 82; steer ranch,
172
- Montana Grass Conservation Com-
mission, 83
- Moore, E. Howard, 575
- Moore, Geoffrey, 521
- Moose, 397
- Morales, Julio O., 449-457
- Morrell, Bartolomé M., 449-457
- Morgan, James, 507
- Mormon pioneers, 339
- Mortality insurance, 236
- Mortgage, 223; debt, South, 133;
farms, Alaska, 436; fore-
closure, 220; liquidation, 220;
preparation, 211, 212; unre-
deemed, 214
- Mortgage credit, 328
- Mortgage-loan companies, 229
- Mortgage policies, 185
- Motheral, Joe R., 28-41
- Mound Branch Watershed Asso-
ciation, 372
- Mount McKinley National Park,
427
- Mountains, as resources, 13
- Muehlbeier, John, 161-166, 371-
375
- Multiple-crop insurance, 233
- Multiple-peril crop insurance, 234
- Multiple use, forests, 393
- Multiple-use mining law, 399
- Munger, James A., 218-229
- Murphy, R. E., 518
- Murray, William G., 190-197
- Mutual insurance companies, 230
- Naphthaleneacetic acid, 487
- Napoleon, 21
- National Audubon Society, 371
- National Association of Manufac-
turers, 371
- National Association of Soil Con-
servation Districts, 371
- National Bulletin of the Agricul-
tural Conservation Program,
326
- National domain, 19-27
- National Farm Loan Associations,
219
- National Farmers Union, 371
- National Flood Control Act, 542
- National Forest Reservation Com-
mission, 26
- National forests, 69; care and use,
392-401; development plan,
558; establishment, 47; fire
- control, 400; land purchase
for, 47; minerals, 399; num-
ber, 392; and ranching, 174;
recreational use, 556; roads,
401; source of water, 393;
special uses, 557; values, 393
- National Grange, 371
- National Park Service, 18, 27, 49,
372, 430
- National-park system, units, 49
- National parks, 27, 69, 72; devel-
opment program, 558; man-
agement, 556
- National Parks Association, 371
- National Reclamation Act, 542
- National Reclamation Association,
371
- National Recreation Association,
477
- National Resources Board, 569
- National Resources Planning
Board, 372
- National Rivers and Harbors Con-
gress, 371
- National System of Interstate and
Defense Highways, 588
- Navajo, land purchase, 100; proj-
ect, Colorado, 102; Reserva-
tion, 98
- Navy Department, land acquisi-
tion, 90; land purchases, 87
- Nebraska, 73, 74, 151, 156, 161,
195, 199, 200, 244, 259, 331,
341, 343, 482, 533; land clas-
sification, 368
- Nelson, Lewis B., 480-492
- Nematodes, 485
- Net farm income, and land prices,
198
- Net rents, 184
- Nevada, 49, 74, 167
- New England, 52, 115
- New Hampshire, 26, 85, 331, 353,
573
- New Jersey, 20, 114, 243, 383,
569, 589; rainfall, 340
- New Mexico, 52, 69, 74, 101, 129,
132, 151, 156, 161, 189, 200,
243, 351, 377, 399; school
lands, 73
- New Orleans, 20
- New York, 19, 20, 52, 76, 77,
97, 115, 120, 415, 495, 497,
499; cutover land, 84; dairy
farm, 117; forestry program,
76; obsolete land, 105; pro-
duction, 105; State lands, 75;
State parks, 52; State Refor-
estation Commission, 78; tim-
ber, value, 77
- New York City, 505
- New York Council for Stream Im-
provement, 371
- New York State College of Agri-
culture, 77
- New York State Forest Preserve,
77
- New Zealand, 249
- Newsprint production, South, 139

- Nitrogen, 336; technological advances, 484
- Nonfarm lands, future needs for, 474-479
- Nonrenewable resources, 317
- Nonresidential construction, 418
- Norbeck-Andersen Act of 1929, 27
- Normal values, concept, 185
- Norris-Doxey Act of 1937, 405
- North America, U. S. holdings in, 27
- North Carolina, 19, 20, 97, 142, 147, 199, 331, 338, 383, 411, 412, 485; rainfall, 340
- North Central Technical Committee, 254
- North Dakota, 54, 73, 74, 151, 156, 158, 189, 235, 244, 264, 341, 488
- Northeastern States, 114
- Northern Dairy region, 113, 114-121
- Northern Plains, 114, 163
- Northern States, grazing land, 59; land clearing, 415
- Northwest ordinances, 283
- Northwest Territory, 21; squatters, 283
- Nuclei, 498
- Nunns, Frederick K., 362-370
- Nygard, I. J., 428
- Oahu, land-use problem, 447
- Oak wilt, 408
- Oats, 115, 117, 122, 123, 125, 143, 157
- Ohio, 20, 74, 114, 146, 148, 151, 244, 260, 350, 574; State lands, 75
- Ohio River, 122, 142, 146, 150
- Ohio Valley, 237
- Ohio Valley Improvement Association, 371
- Oil, 70; royalties, 189
- Oil crops, expansion, 465
- Oils, food, consumption of, 472; nonfood uses, 472
- Oilseed crops, acreages, chart, 267
- Oklahoma, 59, 73, 74, 129, 136, 151, 154, 156, 161, 188, 243, 338, 341, 533; rainfall, 340
- Olives, 339
- Onis, Don Luis de, 21
- Operating capital, 254
- Operation Outdoors, 397, 558
- Ordinances, land-use, 533; road-side zoning, 540; zoning, 527
- Ordinance of May 20, 1785, 71
- Ordinance plants, 87; sites, 88
- Oregon, 16, 25, 49, 73, 88, 100, 151, 167, 394; rainfall, 340; settlement, 54
- Oregon and California Railroad lands, 26
- Oregon and California Revested Lands, revenue, 557
- Oregon and California Revested Railroad grant lands, 67
- Oregon Compromise, 22
- Oregon Territory, 21
- Organic Act of 1912, 424
- Organic matter, 336
- Original Thirteen States, map, 24
- Otte, Robert C., 230-239
- Ottoson, Howard W., 368
- Overexpansion, 513
- Overtaxation, marginal land, 247
- Owner-operators, decline in, 563
- Owners, corporate, 288; farms, South, 138
- Ownership, dairy region, 118; defined, 288; extent, 287; fee simple, 188; land and land in farms, chart, 273; private farmland, 1954, map, 292; public, purposes, 84; range-land, 168; significance, 287-294; *v.* renting, 563
- Ozark Uplift, 122, 142
- Pacific coast, winds, 16
- Pacific Islands, U. S. holdings in, 27
- Pacific Northwest, 12; wheat, 150
- Pacific Southwest, 23
- Pacific States, temperature, 15
- Package insurance, 239
- Palmer, William I., 339-346
- Palouse, 151, 158; value of wheat farm, 160
- Papago Reservation, 98
- Papayas, Hawaii, 442
- Paper, consumption, 421
- Paper mills, 139
- Parity, 185; defined, 311; effect, 181
- Parks, 61
- Parsons, Brinckerhoff, Hall & MacDonald, 514
- Part owners, Alaska, 436; defined, 296; Hawaii, 444; increase in, 563; number, 301
- Part ownership, in wheat regions, 154
- Partial-payment loan, 223
- Part-time farms, 570; beginners, 260; Hawaii, 443; South, 139; wheat, 153
- Passion fruit, Hawaii, 442
- Pastry flour, 152
- Pasture, 128; acreage of, 54, 58; acreage, Puerto Rico, 454; on cleared land, 412; Corn Belt, 125; general farming region, 144; and grazing, chart, 263; improved, area, 59; improvement program, 454; improvements, 59; irrigation, 341; map, 266; ownership, chart, 272; projected needs, 585; range area, 168; in South, 131, 139; trend, chart, 268; in wheat regions, 154
- Pasture crops, 122
- Pastureland, acreage of, 586; Florida, 572
- Peach, insurance, 234; irrigation, 343
- Peanuts, 311; expansion, 465
- Pedersen, Harald A., 573
- Pendleton, William C., Jr., 2-9
- Penn. R. J., 80
- Pennsylvania, 20, 26, 52, 115, 151, 415, 589; cutover land, 84; forestry program, 76; State lands, 75; State parks, 52
- Permafrost, Alaska, 429
- Personal income taxes, 251
- Personal property, insurance, 239; and taxes, 242
- Petersburg, 425
- pH, tests, 336
- Philadelphia, 499, 518
- Phillip, Perry F., 440-448
- Philipponeau, M., 510
- Phosphates, 70, 484
- Phosphorus, tests, 336
- Photographs, air, of land, 381-384
- Physical inventory, appraisal, 190
- Picker-sheller, 481
- Picnic areas, in national forests, 396
- Piedmont, cotton, 130
- Pilot watershed programs, 408
- Pinchot, Gifford, 402
- Pineapple, production, Hawaii, 441
- Pittsburgh, 348
- Planning groups, in rural counties, 377
- Plant disease, insurance, 234
- Plantations, pineapple, Hawaii, 441; sugarcane, Hawaii, 441
- Plat, 207
- Plat books, 190
- Plow-plant methods, 481
- Plywood, demand, 421
- Pol. Adon, 409-415
- Police power, rights of, 279
- Policy, land disposal, 552; land-management, proposals, 560; rights in land, 7; sale, Indian land, 99
- Polycymakers, 522
- Polk, James K., 23
- Pollution, water, 590
- Ponds, extent, 332
- Population, changes, farm and nonfarm, 573; demand for farm products, 466; farm, 583; farm in South, 133; growth, and farm output, 584-592; growth, chart, 468; growth, Puerto Rico, 451; Hawaii, 447; increase, 18; in ranching economy, 168; U. S., graph, 276
- Porsild, A. E., 428
- Port of New York, 495
- Potash, 70, 484
- Potassium tests, 336
- Potatoes, 143, 343; consumption of, 471; Tanana Valley, 435
- Poultry, in Corn Belt, 123

- Poultry farm, Hawaii, 443; Northern Dairy region, 114
- Power projects, 72
- Power reservations, extent, 49
- Precheur, C., 510
- Precipitation, annual, average, 342; chart, 340
- Precision planters, 481
- Pre-emption Act of 1841, 284
- Presidential Advisory Committee on Water Resources Policy, 372
- Presidential Cabinet Committee, 549
- President's Policy Committee on Water Resources, 348
- President's Reorganization Plan No. 3, 399
- Prices (land), 106, 563; attitudes, 222; defined, 183; as guides, 184; Hawaii, 447; increase, 221; and producing power, 106; and land income, 176; and taxes, 241; urban land, 503, 506
- Price index, livestock, 181
- Price support, cotton, 132
- Price-support and production-control program, 310
- Price-support benefits, 312
- Price-support programs, 181, 201
- Primer seizin, 281
- Primitive areas, 397
- Primogeniture, 282
- Prisoners, camps, 88
- Private rights, in land, 280
- Production, crop, and drought, 461; expansion of, 460-465; factors, 176; farm, change in, 465; farm, graph, 464; livestock, increase, 464; pattern, and tenancy, 298; per harvested acre, chart, 265; in South, 140
- Productivity, classifications, 363; economic, 4; physical, 4
- Products, marketable, Alaska, 437; sold per farm, chart, 308
- Profit-and-loss account, 179
- Programs, assistance to farmers, 322, 329-332; assistance to forest owners, 391; conservation, eroded lands, 66; educational, 323; farm, and land, 310-314; Federal-State cooperative extension, 286; flood-control, 351; forest management, 389, 402-408; land and water management, 371-375; land improvement, 324; need for resource, 591; rehabilitation, 286; resource development, 542-550; river-basin, 545; roadbuilding, 476; soil conservation, 320
- Property, origins, 389
- Property in land, 279
- Property insurance, claims, 232
- Property tax, 194, 252; defined, 240; effect, 241; forest land, 85, 86; and owners, 242; revenue, 240
- Prospecting, in national forests, 400
- Protective covenant, land use, 534
- Public, potential needs, 8
- Public auction, 186
- Public domain, *see also* Public lands; Federal lands; acquisition, 19, 64; alienation, 283; chart, 68; cost, 23; disposals, 48, 64, 552; history, 64; map, 24; minerals, 555; value, 51
- Public forester, 405
- Public health, and technology, 497
- Public lands, *see also*, Federal lands; State lands; Public domain; Alaska, 430; Guam, 26; Hawaii, 26, 445; laws, 65; Puerto Rico, 26; sales, 9, 219; sales and leases, 556; Samoa, 26; use and management, 551-561; use by ranchers, 168
- Public Law 566, 354, 394
- Public Law 1021, 162, 327, 407
- Public ownership, objectives, 84
- Public programs, 180
- Public rights, 279
- Public transportation, 500
- Publications, on conservation, 332
- Pueblo Reservation, 98
- Puerto Rico, 329, 331, 406; change and progress, 449-457; land area, 452; land uses, 55; map, geographic regions, 452; national parks, 49; topographic map, 450
- Puerto Rico Reconstruction Administration, 456
- Pulp, in South, 139
- Pulp operations, Alaska, 426
- Pulpwood, demand, 421
- Purchase agreement, 213
- Purchase-and-sale appraisals, 196
- Purinton, M. C., 573
- Quitclaim deed, 209
- Quitrents, 282, 285
- Railroad, changes in agriculture, 120; demand for land, 476; lumber for, 419; urban expansion, 498; urban land use, 504
- Rainfall, chart, 340
- Ramirez-Murphy, Ismael, 449-457
- Ranches, Alaska, 428; defined, 171; Hawaii, 442; sheep, Northwest, 173; size, 168
- Ranching, land, Western, 167-174
- Range, 60; improvements, 66; in Plains, 164
- Rangeland, 60; grasshoppers, 165; Indian, 101; management, 169; State, 51; uses, 168
- Rapid transit systems, 499
- Rate of return, farm business, 177
- Raymond, George, 514
- Real estate, appraisal, 190-197; farm, market, 198-205; farm value, map, 189
- Real Estate Board of New York, 508
- Real-estate brokers, 186; surveys, 195
- Real-estate taxes, 245; changes, 243
- Reclamation, 72; areas, 49
- Reclamation Fund, 542
- Records, land-title, 70
- Recreation, demand for land, 477; Federal lands, 556; in national forests, 393, 396
- Recreational lands, potential needs, 478
- Rectangular survey, 190, 207
- Red clover, 143
- Red Cross, aid to displaced persons, 91
- Red River, 350
- Reforestation, 77
- Refuges, big game, 49
- Regan, Mark M., 542-550
- Regeneration cut, 395
- Regional Planning Association of New Jersey, New York, and Connecticut, 515
- Registration, land, Hawaii, 446
- Regulations, billboard, 539; land-use, 533; zoning, 374, 527
- Reiss, Franklin J., 254-262
- Relief, 281
- Religion, and tenure system, 284
- Relocation, farm families, Farm Security Administration, 90
- Relocation corporations, 92
- Renewable resources, 317
- Rent, landlords, 182; use of land, 184
- Rental payment, 178
- Rentals, farms, 257; fixed *v.* share, 564; in wheat regions, 154
- Renting *v.* ownership, 563
- Reorganization Act of 1945, 65
- Republic of Texas, 22
- Research, and tenure system, 285
- Reservation, Indian, 98; power, 49
- Reservoir, acreage, 61; use of land, 477
- Reservoir areas, 61
- Resettlement Administration, 220
- Residences, land uses, 474
- Residential areas, zoning, 527
- Residential farms, 297
- Residential lands, potential needs, 478
- Resources, balanced development of, 584-592; extent and types, 10-18; farm operator, 176; land, map, 17; legislation, 542; mountains, 13; natural, 2; public development, 542-550; Puerto Rico, 449; types, 2; use of, 316-320
- Resources for the Future, 371
- Retirement, farmers, 251
- Retirement-income plans, 201

- Returns from land, 176
 Reuss, Lawrence A., 409-415, 572
 Revenue, Federal lands, 553; public domain, 50
 Revenue stamps, 207
 Revolutionary War, 9, 19, 20, 278
 Rhode Island, 20, 200, 331
 Rice, 311, 412; Hawaii, 442
 Rights, land, 7, 278-286; land, distribution, 8; land, significance, 295; minerals, 188; ownership, and tenure, 277-314; priority, postwar, 95; public, 279; subsurface, valuation, 188; survivorship, 212, 217; water, Hawaii, 446
 Rights-of-way, highways, 539
 Rio Grande River, 66
 Riparian doctrine, 345
 Risks, borrowing, 221; public 7
 "River Palms", 20
 Rivers and Harbors Act, 351, 542
 Rochester, Minn., 497
 Rogers, Robert O., 585
 Roosevelt, Theodore, 392
 Rotation, Corn Belt, 126
 Rousseau, L. H., 25
 Rowe, J. Z., 574
 Rowlands, David, 507
 Rowlands, W. A., 81
 Royal Mortgage Bank of Sweden, 219
 Royalties, oil, 189
 Rum, Puerto Rico, 449
 Rural Development Program, 376-380, 407; map, 541
 Rural land, classification, 362-370; little farming use, chart, 263
 Rural-urban fringe, 247
 Russia, claim to Alaska, 22
 Russian-American Company, 25
 Russians, in California, 23
 Safflower, 339
 Sahara, 10
 St. Lawrence Seaway, 121
 St. Louis, 22
 Sales, administrators, 203; in Corn Belt, 187; index figures, 195; land value guide, 186; value, comparisons, 195; contracts, 223
 Salmon, Alaska, 437
 Salmon, S. C., 488
 Salt, 188
 Salt-Wahoo Watershed Association, 371
 Salt water, and irrigation, 345
 Salter, Leonard A., Jr., 309
 San Francisco, 23, 503
 San Isabel National Forest, 394
 San Juan, 451
 Sand dunes, 62
 Sanders, J. T., 347-355
 Santa Clara Valley, 515
 Sarasota Bay, 20
 Sauer, Elmer L., 316-320
 Sawlogs for lumber, 416
 School lands, extent, 73
 School-trust lands, ownership, 86
 Schools, in wartime, 93
 Schroeder, Widick, 575
 Schultz, Edward W., 551-561
 Schultz, T. W., 569
 Schumpeter, Joseph A., 518
 Scofield, William H., 183-189, 198-205
 Scoville, Orlin J., 480-492
 Scully Estate, 92
 Second Organic Act of 1912, 424
 Second War Powers Act, 89
 Secretary of Commerce, 539
 Section, land, chart, 192; land, plat, 210; township, 209
 Sector theory, 497
 Seminoles, 101
 Service areas, potential needs, 478
 Sesame, 339
 Settlement, of Plains, 162
 Settlers, in wheat regions, 154
 Seward, William H., 25, 424
 Shackle, G. L. S., 516
 Share-cash tenants, defined, 296
 Sharecroppers, 260; decrease in, 564; defined, 296; Delta area, 134
 Sheep, 120; Alaska, 428; Corn Belt, 123; general farming region, 144; South, 137
 Shipping, use of wood, 419
 Shopping center, 529
 Shoshone National Forest, 392
 Silage, 117
 Simms, D. Harper, 321-328
 Simons, Henry, 380
 Single tax reform, 249
 Sitka, 426
 Siuslaw National Forest, 394
 Skim milk, 115
 Skyscrapers, 496
 Slope, moisture, 11
 Smokechasers, 400
 Snodgrass, M. D., 433
 Social Program Administration, Puerto Rico, 456
 Social security, 251
 Sod seeding, 489
 Soil acidity, tests, 336
 Soil Bank, 246, 253, 322, 325, 406, 585; cotton, 132; functions, 327; in Plains, 162; in wheat regions, 156
 Soil Conservation and Domestic Allotment Act, 326
 Soil conservation districts, 163, 329, 358; number, 331; Puerto Rico, 455; regulations, 533
 Soil conservation programs, 320
 Soil Conservation Service, 13, 144, 163, 165, 329, 349, 372, 376, 381, 405, 410, 432, 454, 587; functions, 324; land classification, 363
 Soil Conservation Society of America, 371
 Soil conservationists, training, 330
 Soil map, 330
 Soil samples, 334
 Soil survey, Dust Bowl, 533
 Soil survey publications, 191
 Soil-testing programs, 489
 Soil-testing services, 338
 Soil tests, biological, 335; chemical, 335; uses, 333-338
 Soils, Alaska, 428; classification, 108; Corn Belt, 122; Puerto Rico, 449; subhumid areas, 15; types, U. S., 10-18
 Solberg, Erling D., 524-531, 532-536, 537-541
 Sorghum, 135, 157, 163
 South, cotton, 136
 South America, U. S. holdings in, 27
 South Carolina, 19, 20, 92, 129, 232, 331, 485, 489, 570; cotton, 130; State lands, 75
 South Dakota, 151, 156, 161, 199, 244, 341, 533; school lands, 73
 Southeast Sprinkler Irrigation Association, 371
 Southeastern States, 13; farms, 138
 Southern Plains, 163; farms, 138
 Southern States, 59; changes in, 136, 141; grazing land, 59; liming, 483
 Southwest, cow-calf ranch, 172; urban growth, 14
 Southwestern States, off-farm work, 574
 Soybeans, 122, 123, 126, 128, 143, 151, 155, 339; expansion, 465; irrigation of, 344; in South, 131
 Space, extension of, 110
 Spain, 20, 21, 96
 Spanish colonists, Puerto Rico, 451
 Special-purpose districts, 358
 Special-use areas, chart, 263
 Special uses, land, 61
 Specialization in farming, 111
 Spring range, 174
 Springfield plan, of repayment, 224
 Spruce budworm, 408
 Squatters, Northwest Territory, 283
 Stamp, L. Dudley, 582
 State extension forester, 405
 State-Federal forest programs, 404
 State forest, 52
 State forester, 405
 State income tax, 250
 State lands, 51; management, 72-86; Montana, 82; revenue, 52; school grants, 73
 State parks, 52
 State soil conservation district law, 329
 Statutory right, 217
 Steam railway, 498
 Steel, use in transportation, 495
 Steele, Harry A., 542-550
 Stefansson, Vilhjalmur, 425

- Steger, Wilbur, 511
 Stereoscopic photo coverage, 382
 Stewart, Charles L., 206-217, 254-262
 Stewart, Clyde E., 578
 Stilbestrol, 490
 Stock insurance companies, 230
 Stocker, Frederick D., 240-253
 Stockfish, Jacob, 520
 Stoeckl, Baron de, 25
 Storage losses, reduction, 486
 372
 Storage losses, reduction, 486
 Storie, R. E., 363
 Storms, effect, 348
 Straight-end loan, 223
 Subhumid lands, 14
 Subsurface water, 346
 Suburbs, *see also* Urban expansion; demand for land, 475; and farm practices, 576; and farm taxes, 247; growth of, 493; study of, 575
 Sugar, Puerto Rico, 449
 Sugarcane, Hawaii, 440; Puerto Rico, 451, 453
 Suitcase farmers, 153
 Summer range, 174
 Sunflower, 339
 Supply-demand balance, 111
 Surplus land, disposal of, 94
 Surplus Property Act, 94
 Surpluses, 311
 Survey, cadastral, public-domain lands, 71; rectangular system, 71, 190, 207
 Survivorship, rights, 212, 216
 Sustained yield, forests, 393
 Swamps, 13
 Sweden, 219
 Sweetpotatoes, irrigation of, 344
 Swine, in South, 137
 Swinger, W. S., 402-408

 Taconite, 188
 Tanana Valley, 431, 433, 434, 435
 Tang, A. M., 570
 Targhee National Forest, 401
 Taro, Hawaii, 442
 Tax(es), benefit-cost analysis, 548; burdens of, 245; capital gains, 180; confiscatory, 242; death, 240, 251; effect on land and farmers, 240-253; farm and urban, 507; farm, table, 243; Hawaii, 444; High Plains, 135; income, 250; income, deductions, 180; inheritance, 212, 251; and land income, 179; and net return, 244; Puerto Rico, 457; real-estate, 208; rural-urban fringe, 247; savings from landownership, 202; and suburbanization, 577; urban, 507
 Tax assessments, in appraisal, 196; and land classification, 367, 370
 Tax delinquency, 247, 248
 Tax laws, forest, 85
 Tax levies, variations, 243
 Tax lien, 248
 Tax sales, 248
 Taxation, effects, 241; purposes, 240; rights of, 279
 Taylor Grazing Act, 65, 67, 69
 Tea, consumption of, 472
 Technicians, conservation, 324
 Technology, and beginning farmers, 254; changes in, 105; Corn Belt, 127; cotton, 130, 135; and growth of cities, 493-502; and land, 480-492; and output, 462; urban building, 496; and yields, 491
 Tenancy in common, 212, 217
 Tenant operators, in wheat regions, 154
 Tenants, defined, 296; number, 300; tenure system, 564; in wheat regions, 158
 Tennessee, 20, 88, 129, 145; tobacco, 143
 Tennessee Valley Authority, 144, 372; lands, 27
 Tenure, age of operators, map, 258; Alaska, 436; and farm resources, 562-567; fee simple, 283; Hawaii, 443, 445; and income tax, 250; Indian lands, 98; and land use, 295-301; Puerto Rico, 455; security, beginning farmers, 259; significance, 295; types, U. S., charts, 300; in wheat regions, 154, 158
 Tenure arrangements, 295
 Tenure constitution, 286
 Tenure structure, defined, 296
 Tenure system, 278, 280; and income, 6; tax delinquency, 248
 Terracing, extent, 332
 Territorial and Alaska Rural Rehabilitation Corporation, 438
 Territorial Planning Office, Hawaii, 448
 Territories, land uses, 55
 Territory of New Mexico, 22
 Territory of Washington, 25
 Tests, biological, 336
 Texas, 26, 52, 54, 59, 73, 74, 129, 131, 135, 136, 151, 154, 156, 161, 188, 189, 264, 287, 341, 411, 486; annexation, 22; settlement, 54
 Texas High Plains, cotton, 130
 Texas Panhandle, 153
 Texas Territory, 23
 Tharp, Max M., 129-135, 562-567
 Thirteen Original States, 19
 Thornthwaite, C. W., 14, 161
 Thruway, 501
 Tillamooks, 25
 Timber, 67; as crop, 395; Federal land sales, 553; Hawaii, 445; potential demand, 416-422; severance taxes, 85; in South, 139; stand improvement, 395; taxes on, 85
 Timber access roads, costs, 69
 Timber Resource Review, 60, 387
 Timberland, management, public domain, 67; in South, 139
 Timmons, John F., 316-320
 Title, land, 209; marketable, 209; type, 212
 Title-insurance, 211
 Title opinion, 211
 Title registration, 281
 Tobacco, 143, 311; acreage, 147; demand for, 472; extent, 57; insurance, 234; irrigation of, 344; Kentucky, 143; production per harvested acre, 265; Puerto Rico, 452, 454; Tennessee, 143; Virginia, 143; where grown, map, 148
 Tobacco region, 142-149
 Tomatoes, Hawaii, 442
 Tongass National Forest, 426
 Torrens system, 211; title registration, 281
 Tourist, Hawaii, 447
 Township, sections, 209
 Trace elements, 336
 Tract index, 211
 Tractors, 482; effect, 304; increase, 120; in South, 140
 Trade, Puerto Rico and Mainland, 452
 Transfer, distress, 203; land, mechanics of, 206-217
 Transportation, and urban expansion, 493-502, 504; importance of, 494
 Transportation areas, 61; potential needs, 478
 Treaty, Indians, 97
 Tree Farm Program, 389
 Trees, Great Plains, 161; planting, 395, 406; in South, 139
 Trees for Tomorrow, Inc., 372
 Tribal lands, *see also* Indian lands; 49; unallotted, 100; management, 96-102
 Tricart, J., 510
 Trist, Nicholas P., 23
 Truck, urban expansion, 500
 Trust deeds, 212
 Trust lands, Indian, 49
 Tryon, Theodore C., 382
 Turnpikes, 501
 2,4-D, 489
 2,4-TP, 487
 Tyler, John, 22
 Type-of-farming regions, 113

 Ullman, Edward L., 498
 Underground water, 317, 345
 United States Census of Governments, 521
 United States Information Agency, 27
 University of Florida, 343
 Upchurch, M. L., 167-174

- Upstream flood damages, 349
- Uranium, public-domain lands, 64
- Urban expansion, *see also* Suburbs; 57, 493, 503-522; change in farm practices, 568-583; and farm economy, 589; forms of, 580; Hawaii, 447; land needs, 475; problems, 524; property taxes, 577; Puerto Rico, 451; stability of, 521
- Urban land, value, 503, 506
- Urban sites, 61
- Urea, 490
- Use of land, 53-62, 263; benefits, 5; changes, Puerto Rico, 451; costs, 5; cropland harvested, 265; economic, 316; economic aspects, 2-9; Great Plains, 161-166; legal, 316; map, 56; 1954, 54; Northern Dairy region, 119; physical dimension, 316; Puerto Rico, chart, 454; in the South, 136-141; special, 61; and tenure, 295-301
- Uses, nonfarm lands, 474-479
- Utah, 69, 73, 74, 167, 199, 200, 351, 575; off-farm work, 578; settlement, 54
- Ute Indians, 23
- Utilization, Dust Bowl, 532; Great Plains, 532; land, changes in, 586; land, trend in, 591; trend, chart, 268
- Utilization projects, Federal lands, 49
- Value, changes in, 199; defined, 183, 198; farm, and income, map, 204; farm real estate, map, 189; farmland, 199; farmland, changes, map, 197; income, land, 193; index of land, 563; land, Alaska, 436; land, Corn Belt, 126; land, estimates, 183-189; land, Hawaii, 446; land, Puerto Rico, 456; by ownership, 296; physical assets, chart, 188; and taxes, 240
- Van Buren, Martin, 22
- Vance, J. E., 518
- Vanderblue, Homer, 520
- Vaughan, L. M., 78
- Vegetables, consumption of, 471
- Veneer, demand, 421
- Vermont, 26, 114, 331, 540; dairy farm, 117
- Vertical integration, 307
- Veterans, on farms, 257; homesteads, Alaska, 430
- Virgin Islands, 56, 329, 331; national parks, 49
- Virginia, 19, 20, 26, 59, 114, 136, 142, 143, 145, 238, 260, 338, 350, 380, 589
- Voelker, Stanley W., 206-217
- Von Thünen, J. H., 497; location theory, 110
- Wake Island, U. S. holdings in, 27
- Walrath, Arthur, 507, 577
- War Department, land acquisition, 90; land purchases, 87
- War Powers Act, 89
- Wardship, 281
- Warranty deed, 209, 212, 215
- Warren, G. F., 77
- Washington, 16, 52, 151, 158, 245; school lands, 73
- Water, agriculture, 18; conservation, 590; and farm production, 341; humid areas, 11; management, 347-355; national forests, 393; in Plains, 164; shortages of, 590; and use of land, 15
- Water diversions, extent, 332
- Water Pollution Act, 543
- Water-resource plans, 373
- Water resources, in Plains, 162
- Water-storage areas, 72
- Watershed Protection and Flood Prevention Act, 352, 355, 357, 543; purpose, 332
- Watersheds, 394; programs, 356; protection, 356-361
- Waterways, and city growth, 119; development, extent, 332
- Weather, crop production, 461
- Weber Basin, 580
- Webster, Daniel, 284
- Wedge theory, 497
- Weedkillers, 484
- Weeds, Corn Belt, 128; use of water, 484
- Weeks Act, 26, 47, 392, 403
- Wehrwein, George S., 81
- Weinberger, M. L., 356-361
- Welfare, public, 9
- Wells, irrigation, 345
- West Virginia, 145, 146, 412
- Western grazing region, 113
- Western irrigated area, cotton, 130
- Western ranching, land in, 167-174
- Western range, map, 275
- Western Reserve, 20
- Western States, 59; grant land, 51; grazing land, 59; land clearing, 413; map, 170; State-owned land, 73
- Wet lands, unimproved, 353
- Wheat, 115, 117, 120, 122, 311, 339; acreage, 57, 150; allotments, 155; Big Bend, 151; consumption of, 471; Great Plains, 150; Northern Plains, 150; Palouse, 150; production per harvested acre, 265; requirements, 152; Southern Plains, 150; surplus, 589
- Wheat farms, expenses, 157; income, 157; organization, 157
- Wheat growers, 152
- Wheat regions, 113; land and problems, 150-160; tenure, 158
- Wheeler, Richard G., 119
- Wheeler-Case Act, 92
- White pine blister rust, 408
- White River, 350
- Widmer, Georges, 505
- Wild areas, 397
- Wilderness areas, 397
- Wilderness Society, 371
- Wildlife, 18, 353
- Wildlife, habitat, 324, 397; management, responsibility, 397
- Wildlife, in National forests, 396
- Wildlife areas, 61; conservation of, 331
- Wildlife preserves, States, 52
- Wildlife refuges, extent, 49; purchase, 27
- Wilhelm I, 22
- Wilkes, Charles, 23
- Will, preparation, 217
- Wind, and climate, 16; erosion, in Plains, 163
- Windstorm insurance, 230, 234
- Windstorms, losses, 232
- Winnetka, 512
- Wisconsin, 20, 26, 52, 76, 97, 114, 120, 200, 244, 331, 338, 353, 575, 577, 589; dairy farm, 117; forest, 86; forest crop law, 80; forest reserves, 80; land programs, 79; tax-delinquent land, 81
- Wisconsin Conservation Department, 82
- Wisconsin Zoning Act of 1929, 81
- Witchweed, 485
- Women, landowners, 288
- Wood-rotting fungi, 396
- Woodland, acreage of, 54; conservation, 330; harvested, chart, 269; ownership, chart, 272
- Woodlot owners, 391
- Woodpulp, South, 139
- Wooten, Hugh H., 42-52, 53-62, 72-86, 474, 476, 506, 584-592, 586
- Working circle, 395
- Works Progress Administration, 82
- Wrangell, 426
- Wunderlich, Gene, 287-294, 295-301
- Wyoming, 52, 151, 161, 200; school lands, 73
- Yavapai Tribe of Arizona, 101
- Yields, Government program, 461; and moisture, 343; and technology, 491
- Young, Harold E., 382
- Young people, start in farming, 255
- Zia pueblo, 100
- Zimmer, Basil G., 509
- Zinc, 338
- Zoning, Dust Bowl States, 533; for farms, 529; flood plains, 352; for the future, 524-531; for future land needs, 589; industry, 529; land classes, 535; and land policy, 85; ordinance, 527; residential, 527; roadside, 538, 540; water development, 374; Wisconsin, 81