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The uses to which we put our land.

One of the biggest achievements in history was the clearing of more than 300 million acres of virgin forest and the plowing of about 300 million acres of virgin grassland by American pioneer farmers. Another outstanding development was the increase in American farm production in 1947-1956, which was more rapid than in any period since 1890-1900, when the breaking of the prairies was ending. By *Hugh H. Wooten* and *James R. Anderson*, agricultural economists, Farm Economics Research Division.

FORESTS originally covered about half of the land in the United States. Two-fifths grew grass and herbaceous plants. The rest—about a tenth—was mostly arid and barren.

Most of the humid East was then in relatively compact forests.

Few grasslands existed east of the Mississippi—the prairies in what we now call the Corn Belt and the Lake States, the black-belt lands of Mississippi and Alabama, the Florida Everglades, and other small areas.

West, beyond the Great Plains, were smaller, scattered forests in mountains interspersed with dry valleys and basins. The West had less than a fifth of the original forests of a commercial quality.

Tall grasses extended into the Great Plains. Farther west, short and desert grasses grew—about half the forage there was made up of short and other grasses associated with limited rainfall. Areas of shrub vegetation were associated with scant rainfall and high temperatures.

TODAY the forest area is only 66 percent of the original forest. More than half of the forest land in the East has been cleared and is used for cropland, pasture, urban areas, and other pur-

poses. The commercial forests of the West have been reduced by about 25 percent.

Most of the original tall-grass land has been converted to cropland and improved pasture. The tall-grass prairies of the Central States now comprise one of our best farming regions. The better lands of the short-grass regions farther west are used for irrigated or dry-farm crops, and the rest is used for grazing. Areas covered with shrub vegetation have changed less. Relatively small tracts have been irrigated. Shrub-type plants have replaced short grasses and bunch grass in some areas, and thus have extended the acreage covered with shrub vegetation.

In 1790 agricultural settlement was almost confined to the Atlantic slope from southern Maine to eastern Georgia. But west of the Appalachian Mountains settlement was expanding. The newly born Nation was preparing for one of the most stupendous achievements in the history of the world—the clearing of more than 300 million acres of virgin forest and plowing of about 300 million acres of virgin grass—much of which was accomplished during the 19th century. For the first 50 years of that century, settlement was confined mostly to forested lands.

By 1850 agriculture was spreading to the prairie lands of Illinois, Iowa, Kansas, and Texas. A number of courageous pioneers from the Eastern States had settled in Oregon, Utah, and California, and were just learning how to irrigate and farm the land. The improved crop and pasture land of the Nation totaled about 110 million acres. The acreage was about five times that in 1790.

By 1900 the waves of farm settlers had reached the barriers of aridity all along the 100th meridian from central North Dakota to west-central Texas. Only Indian Territory remained with its original grass and forest cover. During the preceding 50 years the Corn Belt had become the agricultural heart of the country, while irrigation and dry farming had expanded the area of cropland, particularly in the Pacific Coast States. The improved cropland and pastureland now totaled about 405 million acres. This was nearly four times the acreage of half a century earlier.

The conquest of the arid, semiarid, and wet lands continued into the 20th century. The irrigated acreage increased from 7.5 million acres in 1900 to nearly 30 million acres in 1954. Drainage enterprises in 1954 included more than 100 million acres. The improved cropland and pasture in 1954 exceeded 600 million acres.

The decade 1947 to 1956 has been in many ways the most extraordinary period in American agriculture. Agricultural production increased more rapidly than in any period since 1890 to 1900, when the agricultural occupation of the prairies approached completion, yet it was done without a great increase in cropland and pasture.

Five factors, some new, and some of greatly increased importance, help to account for this unusual situation: Use of automobiles, tractors, and trucks, which caused a decline since the Second World War of more than 8 million in the number of horses and mules on farms, with resultant release of 20 million to 25 million acres of crops for

other purposes; increasing production of crops per acre in several regions; increasing production of animal products per unit of feed consumed; shifts from the less productive areas toward the more productive cropland; and improvement of land for crops and pastures by drainage, irrigation, flood control, and clearing.

AN INVENTORY of major uses of land in the United States in 1954 showed that one-fourth of it was cropland, one-half was pasture and grazing land, and one-sixth was unpastured forest. The rest was in service and miscellaneous other uses. The acreage of cropland used for domestic production was a little more than 2 acres per capita. Open or nonforested pasture totaled about 4 acres per capita.

The major uses of land in 1954 were: Cropland, including 66 million acres of cropland used only for pasture, 465 million acres; pasture and grazing land, 934 million acres, of which 633 million acres were open grassland and 301 million acres were woodland and forest land; forest not pastured, 314 million acres; special uses, such as urban areas, highways, parks, and other public facilities, 110 million acres; and miscellaneous other land, 81 million acres.

All of the cropland was in farms. About 62 percent, or 581 million acres, of pasture and grazing land was in farms, and 353 million acres were not in farms. Nearly a third, or 197 million acres, of woodland and forest was in farms. Much of this acreage was scattered among many farms in woodlots and small tracts. Other farm areas—36 million acres in all—included farmsteads, feedlots, storage yards, lanes, ditches, small orchards, and gardens for home use.

Other land not in farms—155 million acres—included urban and town areas, highway and railroad rights-of-way, parks, wildlife refuges, military areas, flood-control areas, and other special-use areas. Special-use and miscellaneous unaccounted-for areas included

marshes, bare rock areas, sand dunes, and deserts—110 million acres in special-use areas and 81 million acres in miscellaneous other land.

Nearly 88 percent of the feed supply obtained from pasture was produced on pasture in farms; 12 percent was produced on grazing land not in farms. A third of the pasture feed was furnished by rotation or cropland pasture. Open permanent pasture in farms supplied more than 40 percent. Woodland pasture in farms furnished 8 percent of the pasture forage and aftermath pasture 8 percent. Of the total of 1,904 million acres, 1,158 million acres were in farms in 1954 and 746 million acres were not in farms.

Our estimates of major uses of land in continental United States are based on data assembled by the Farm Economics Research Division in 1955; reports of the 1954 Census of Agriculture; and reports and records of the Federal and State land-management and conservation agencies.

Cropland occupies almost half of the total land area of the Corn Belt and Northern Plain States.

In the northeastern, Appalachian, and southeastern regions, forest land accounts for more than half of the area.

Nearly half of the total area in the Pacific and Lake States is in forests.

Pasture and grazing land accounts for well over half of the total area in the Mountain States.

Nearly half of the land area in the Great Plains States is used for pasture and grazing.

Special uses occupy the highest proportion of the land area in the Northeastern, Pacific, and Lake States. Some of the uses have expanded rapidly there and in other regions. Urban areas and highways have absorbed a sizable acreage, particularly near large cities. Reservoirs are also a special use of land, but since the total area of land is reduced as reservoirs are established, their occupation of land is not reflected in the map on the next page.

The distribution of urban areas, highways, railroads, airports, farm-

steads, farm roads, and other special uses is closely related to the distribution of population and farms. Many of the large areas in such special uses as parks, wildlife areas, and military areas are located in the less populous parts of the country.

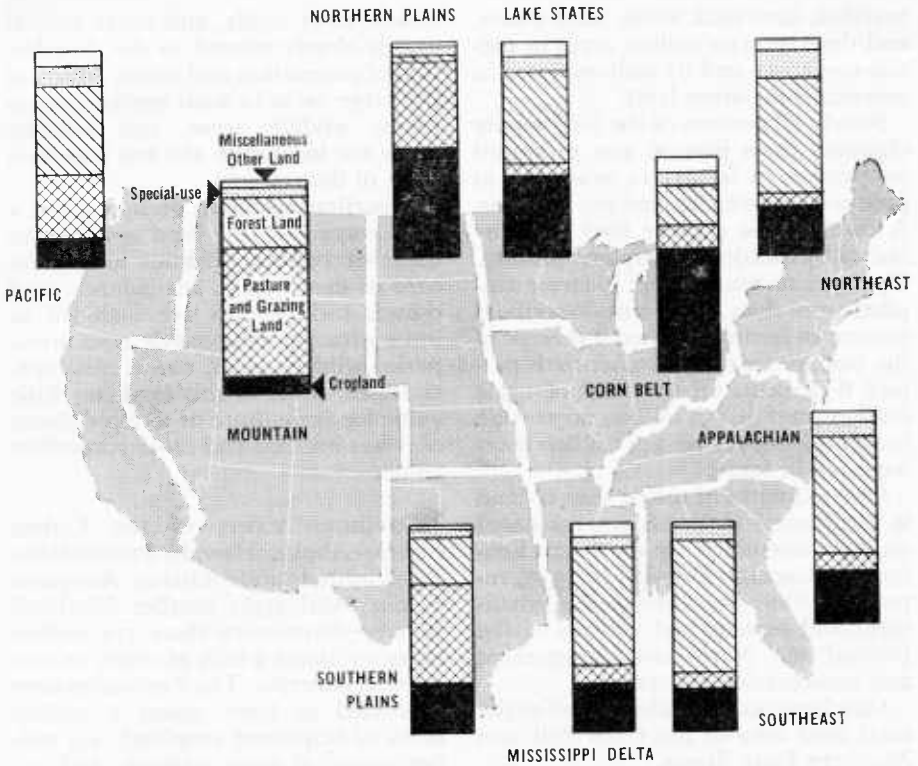
Miscellaneous areas occupy about 2 to 8 percent of the land area in the different regions. Considerable acreages of desert land, marshland, sand dunes, and beaches are included in some areas in national-defense areas, parks, wildlife areas, and similar special uses. Most of this land has little value for agriculture or forestry. Some of it has mineral and other subsurface value.

OFFSHORE PARTS of the United States—Alaska, Hawaii, Puerto Rico, the Virgin Islands, Guam, American Samoa, and eight smaller inhabited islands—have more than 372 million acres, or about a fifth as much as continental America. The Territories were estimated to have about 2 million acres of improved cropland, 1.5 million acres of farm pasture, and 1.5 million acres of woodland and other land in farms, or a total in 1954 of about 5 million acres of farmland.

Cropland and pasture in 1950 made up a small part of the land area of Alaska. Land not in farms was largely undeveloped forest, tundra, and grass.

In Hawaii, cropland in 1950 accounted for about a tenth; grassland and brushland pasture comprised a fifth; and forest and woodland made up three-tenths of the total area. Other land included a considerable acreage of nonvegetated lava flows and unusable palis, gulches, and streambeds.

Cropland accounted for more than three-fifths of the land area in Puerto Rico. About half of it was used for crops, and the rest was pasture. Grassland and brushland pasture and forest and woodland each accounted for about a tenth of the total area. Other land, including that occupied by buildings, roads, cities and towns, and wasteland, comprised the remaining fifth.



Major uses of all land as compared with total land area, 1954.

American Samoa, Guam, and the Virgin Islands are small tropical islands with relatively little commercial agriculture, except that some sugarcane is grown in the Virgins.

All cropland in the continental United States amounted to 465 million acres in 1954. Cropland used for crops totaled 380 million acres, of which 338 million acres had crops that were harvested, 29 million acres were cultivated summer fallow, and 13 million acres had crop failures. Also included were 19 million acres of cropland in soil-improvement crops or idle and 66 million acres of cropland used only for pasture.

Cropland used for crops averaged 380 million acres in 1950-1954 and 376 million acres in 1945-1949. Since the Second World War, the acreage of cropland has fluctuated between 360

million acres (in 1957) and 386 million acres (in 1949). Cropland used only for crops in 1957 totaled only 360 million acres, according to preliminary estimates. Over a longer period, cropland has remained relatively stable. Since the end of the First World War, fluctuation, rather than progressive change, has characterized the period.

The cropland averaged 4 million acres more in 1950-1954 than in 1945-1949, but the acreage from which crops were harvested averaged 7 million acres less in 1950-1954 than for 1945-1949. The yearly average in 1950-1954 was 339 million acres and 346 million acres in 1945-1949. The preliminary estimate of cropland harvested in 1957 was 319 million acres, the lowest since 1936. Thus the increase in the acreage of cropland used for crops is accounted for by increases in

crop failure and fallow, which more than offset the decline in harvested area.

Several factors account for the decline in the acreage of cropland harvested. Acreage allotments—part of a program to bring acreage and production into line with market demands—in effect for certain crops in some years from 1950 to 1954 affected the acreage of cropland harvested. Diversion of acreage in wheat, cotton, and corn to other crops accounted for much of the acreage on which allotments applied. Some of this diversion, however, was to such uses as rotation pasture, soil-improving crops, and idle cropland.

Availability of employment in cities has been a factor in the decline in cropland harvested in areas where industry is well developed. Urban and industrial expansion into rural areas is also taking cropland out of production in some sections. Shifts in type of farming, with greater emphasis on livestock and less on cotton, have accounted for reductions in the acreage of cropland harvested in some parts of the South. Reversion of cropland to brush and forest is also taking place in some localities.

THE AVERAGE of crop failure was 13 million acres in 1950-1954 and 9 million acres in 1945-1949. The preliminary estimate of crop failure in 1957 was 12 million acres.

Most of the crop failure occurs in the 14 Great Plains and Mountain States, in which nearly three-fourths of the total estimated crop failure occurred in 1950-1954. Drought is the chief cause of crop failure for the country as a whole, but floods, frost, hail, grasshoppers and other insects, and plant diseases may at times cause significant losses in some areas.

CULTIVATED SUMMER FALLOW has increased appreciably since 1944. The practice is widespread in subhumid and semiarid regions when small grains are produced without irrigation. Rainfall there may be insufficient for a crop each year, and experience has proved

that increases in yields result from fallowing land before small grains are planted. Fallowed land ordinarily is considered to be a part of the cropland used for crops.

Cultivated summer fallow reported in the 1954 Census of Agriculture amounted to 29 million acres. Annual estimates show an average of 28 million acres in 1950-1954 and 21 million acres in 1945-1949.

The high price of wheat led farmers to plow permanent grasslands in high-risk areas for production of wheat in the war and postwar years. An increase in fallowed cropland accompanied the plowing. The acreage of cultivated summer fallow remained high in later years, when acreage allotments for wheat were in effect, partly because yields of wheat are higher on fallowed than on other cropland.

ACREAGES IN PRINCIPAL CROPS harvested, as reported by the Department of Agriculture, plus estimated acreages in fruits, tree nuts, and farm gardens, averaged 347 million acres in 1951-1953 and amounted to 346 million acres in 1954 and 340 million in 1955.

Feed grains and hay crops occupied 213 of the 347 million acres in 1951-1953, 225 million acres in 1954, and 229 million acres in 1955.

Food crops averaged 102 million acres in 1951-1953 but totaled only 93 million and 87 million acres, respectively, in 1954 and 1955. Cotton, flaxseed, tobacco, and a few minor crops accounted for the remaining acreage.

Significant shifts in the acreage of several crops occurred between 1951-1953 and 1954-1955. The shifts may have reflected the influence of acreage allotments for wheat and cotton, which were in effect in 1954 and 1955 but not in 1951-1953. The acreages of wheat and cotton declined sharply. Most of the acreage diverted from those crops was used for sorghums, barley, oats, soybeans, and flaxseed.

THE TOTAL of acres in crops declined from 478 million to 465 million be-

tween 1949 and 1954. Acreage allotments in effect in 1954 encouraged the diversion of much of the cropland used for wheat, cotton, and corn to nonallotment crops, but part of the acreage was diverted to pasture and part of it remained idle and fallow.

A decline of 3 million acres in cropland used only for pasture between 1949 and 1954 may be explained partly by the fact that in 1949 cropland used only for pasture that was not actually in rotation with crops was more frequently reported as cropland than in 1954. This shift was particularly evident in parts of the South, where the seeding of pasture on cropland taken out of crop production proceeded rapidly after the Second World War. Much of this cropland, which had been seeded for only a short time when the 1950 Census of Agriculture was taken, has remained in pasture; by 1954, it was generally considered to be permanent grassland pasture.

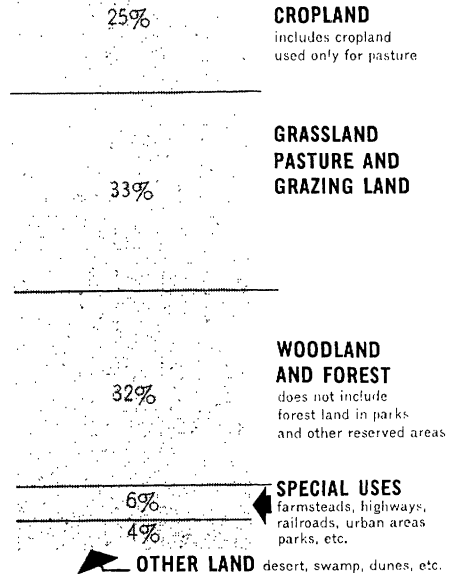
PASTURE AND GRAZING LAND totaled nearly a billion acres in continental United States in 1954. It included 699 million acres in grassland pasture and grazing land, and some 301 million acres of woodland and forest grazed during part of the year. The grassland pasture included 66 million acres of cropland used only for pasture; such land often is considered to be land available for crops.

Grassland, to which 699 million acres were devoted in 1954, includes all land used primarily for pasture and grazing, exclusive of woodland and forest pastured or grazed. It includes the shrub and brushland types of pasture and grazing land, such as sagebrush, scattered mesquite and some other shrub types in the West and some scattered brushland pasture in the East, and all tame and wild or native grasses and legumes and other forage used for pasture or grazing.

Some 80 million to 90 million acres in planted fields are pastured for short periods each year. These include fall and winter pasturage of small grain

TOTAL ACREAGE IN THE UNITED STATES

1903.8 million acres



Major uses of land in the United States (1954).

and after-harvest pasturage of wheat, hay, and cornstalk and stubble fields. The acreage of crops pastured and the acreage of pasture and grazing land vary from year to year, depending on the weather and the available forage. More than 90 percent of all pasture and grazing land is grazed for some period each year.

More than a third of the feed for livestock comes from pasture and grazing land. The average acre yield for unimproved grazing land is low compared with that from cropland. Large acreages of this land furnish pasture for only a few weeks in some seasons. Much of it can be used only for grazing; it is not suitable for cultivated crops or for other intensive uses. Pasture and grazing lands have been improved by seeding and other practices, but the increase in production from pasture has been less rapid than that from cropland.

Exclusive of cropland pasture, there were about 934 million acres of pasture and grazing land in 1954. About 62

percent was in farms and ranches. The rest was largely public land and large privately owned forest tracts not in farms. More than half of the farm and ranch pasture and nearly 80 percent of the grazing land not in farms is in the western range region, or roughly west of the 100th meridian.

More than half of the pasture and grazing land (56.5 percent), exclusive of cropland pasture, is in the 11 Western States. Here about 70 percent of the land area is devoted to this use. Pasture and grazing lands occupy slightly less than half the land area in the 14 Southern States from Virginia to Texas and Oklahoma. About one-fourth of the land in the Northern States is used for pasture and grazing.

Most of the forest and woodland suitable for grazing is in the Southern and Western States. More than half of the woodland and forest area in these regions has some forage of value for grazing. More than 40 percent of the grazed forest and woodland in the country lies in the Western States. Only in some of the Southern States, however, does woodland used for grazing make up as much as half or more of the total pastured acreage.

IMPROVED PASTURE was estimated to total 215 million acres. This included 66 million acres of cropland used only for pasture. Improved pasture also included other grassland pasture in farms generally in tame grasses and legumes, whether seeded or natural growth, but may include native forage land that has been improved. All classes have had two or more improvement or conservation practices applied, such as weed and brush control, artificial or natural seeding or reseeding, fertilization, drainage, irrigation, or similar practices that improve yields.

The acreage of improved pasture increased from an estimated 175 million acres in 1939 to 215 million acres in 1954, an increase of 40 million acres, or an average of about 2.7 million acres a year. The acreage of improved pasture in 1954 represented nearly a

third of the entire grassland or non-forested pasture and grazing land area of 699 million acres. An indication of the greater interest in improved pasture is the large number of farmers and ranchers who have carried out pasture-improvement work.

A larger acreage of improved pasture could be attained without reducing the acreage of cropland or forest. The greatest opportunity for increasing production of forage is through improvement of the acreage now used for pasture. Old, neglected pastures can be renovated and production increased. The inclusion of additional pasture in the regular cropland rotation has aided the improvement and production of pasture.

Improvement of pasture and grazing land offers opportunities and presents problems in all regions. Much of this land cannot be used successfully for crops without expensive improvement. Much of the grazing land in the West is range on which yields of forage are low because of limited rainfall. Large areas grazed in the South are made up of brush, woodland, and depleted cropland.

UNIMPROVED GRAZING LAND consists mainly of undeveloped land. Because of rough topography, poor or unsuitable soil, insufficient precipitation, lack of irrigation water, or for other reasons, it cannot be used successfully for crops and improved pastures without considerable improvement. This land is suitable for grazing by domestic livestock. It can support uncultivated and unfertilized forage, primarily native grasses.

Unimproved grazing land generally is considered to include forage-producing forest land economically suitable for grazing by domestic livestock. To this extent, grazing and forest lands overlap. Grazing land excludes large blocks of forest land on which forage is insufficient for domestic livestock, even though such areas are near areas suitable for grazing.

The principal native or unimproved

grazing lands are in the West and the lower South. In the West, they are predominantly grasslands or desert shrublands too dry for arable farming, although mountain woodland, which is moist enough for trees but generally is too rough for tillage, is also important. In the South, they are mainly forested grazing lands in the Coastal Plains and wet plains and marshes.

Much of the depleted, unimproved grazing land can be restored to a higher productivity more economically through management than tillage.

Control and limitation of grazing in accordance with carrying capacity, allowance of growth for natural seeding, artificial reseeding of open areas and abandoned fields, and removal of competing brush are among the chief methods of restoring grazing land.

Abandoned fields that are submarginal for crop production and are used for grazing even though they need reseeding to grass are classified as grazing land. About 785 million acres of unimproved land (including forested areas) were used for grazing in 1954 to 1958.

Income enters strongly into the question of whether or not arable pasture or grazing land can best be used for native pasture, tame pasture, cultivated crops, or other purposes. Costs and returns also enter into the problem of the degree to which the grazing resources of nonarable rangelands should be shared among livestock, wildlife, recreation, and watershed interests.

Just where the line should be drawn between unimproved grazing lands suitable for grazing and low-capacity lands, such as deserts, on which grazing of domestic livestock is not feasible, often is a problem. Such low-capacity land is not usually considered grazing land.

Classification of land as range has long been questioned on the grounds that it does not always provide a lower limit of usefulness as natural pasture—a limit below which the land would not be regarded as range. Some land is so arid, so rocky, so inaccessible, so steep, or otherwise so inherently unproductive that although it does provide some

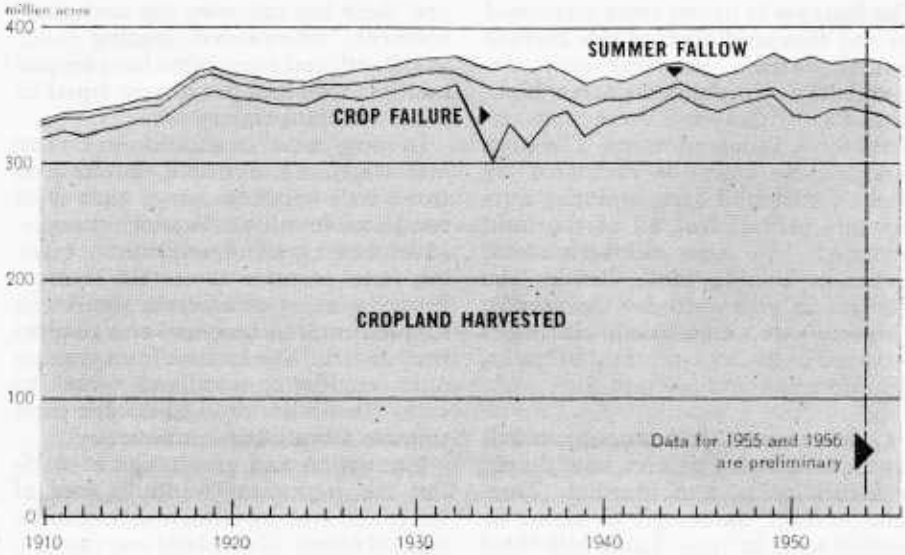
native pasturage, the amount is so small that to term it “range” is misleading. To graze it with domestic livestock may be uneconomic. From a stockman's viewpoint, it may better be called wasteland than rangeland. This lower limit fluctuates with the seasonal precipitation and the water supply. It varies also with economic conditions and with the type of ranching operations carried on.

THE FOREST AND WOODLAND area in continental United States classified by the Timber Resource Review in 1955 is 648 million acres. Of this, 484 million acres are commercial and 164 million are noncommercial.

By definition of forest land, 42 million acres of nonstocked and other open or nonforested areas were included in the area classified as commercial forest land. Much of this acreage was cropland, pasture, and closely cutover land, apparently idle or not used for any other purpose that was thought to be suitable and available for producing timber at the time the field surveys were made. Of the acreage classified as nonstocked forest land, approximately 17 million acres were in the Northern States, 16 million acres in the Southern States, and 9 million acres in the Western States.

The forest area also included 15 million acres of productive timberlands and 11 million acres of nonproductive reserved lands in national and State parks, monuments and wilderness areas, and other special uses. These lands were set aside by statute, ordinance, or administrative order for public purposes. Deducting these special public-use areas from the total forestland area left 622 million acres available primarily for growing timber and related uses.

An additional 7 million acres of forest land overlapped other land uses reported by the agricultural census in 1954 and other land-use surveys. Thus the estimated net forest and woodland area was 615 million acres, whose main use was for forestry. Differences



Cropland used for crops.

in definition of forest land in the timber-resource survey and in the agricultural census and other surveys account for much of this overlap.

Nearly half—301 million acres—of the woodland and forest was estimated to have been grazed at some time during the year or to have forage of significant value for pasturage.

SPECIAL USES of land are many—for urban areas, highways, railroads, airports, parks, national-defense areas, wildlife refuges, farmsteads, and farm roads and lanes. These uses are mostly nonagricultural.

A question often is asked about them: Is it desirable to use good agricultural land for urban sites and other similar purposes when less desirable agricultural land suitable for such uses is available? Competing demands for the use of land are particularly acute in good farming areas where urban and industrial expansion has been rapid.

The acreage occupied by the special-use land totaled 110 million acres in 1954. Urban and transportation areas accounted for about two-fifths of the total land area occupied by these spe-

cial uses. Parks and wildlife areas occupied about a fourth of the total area in special uses. National-defense installations, flood-control areas, and State-owned institutional and related sites accounted for another fourth. The remaining tenth was in farmsteads and farm roads and lanes.

Urban and transportation areas ordinarily are most directly in competition with agriculture for the use of level and fertile land. Other special uses, for which separate estimates have not been made, also compete frequently with agriculture for land. Examples of such areas are industrial, nonfarm residential, and commercial sites in rural areas; mining areas; clay, sand, and stone quarry sites; cemeteries; and golf courses.

Reservoir areas are deducted from the land area when they are completed and hence are not included among the special uses of land. Artificial reservoirs in 1954 occupied about 7 million acres.

The acreage of land in urban areas, highways, airports, and reservoirs increased an average of about 831 thousand acres a year from 1945 to 1954.

The increase in urban areas accounted for 395 thousand acres of this average annual increase, reservoir areas accounted for 360 thousand acres, highways for 78 thousand acres, and airports for 5 thousand acres. The area occupied by railroads decreased by about 7 thousand acres annually during this period. Not all of the land occupied by these nonagricultural uses was tillable land. Besides the changes in area used for the specific purposes we mentioned, increases occurred in the area occupied by parks, wildlife areas, and military sites.

OTHER MISCELLANEOUS unaccounted-for areas included deserts, sand dunes, bare-rock areas, and marshes. Their total acreage amounted to about 81 million acres in 1954. Land with these physical characteristics that was used for such things as military areas, parks, and wildlife refuges was not included in this total.

The many types and classes of rural lands and the varying local conditions, customs, needs, and practices necessarily have led to multiple uses of the same areas. This diversity has meant variations in management governing the main agricultural uses. Management of cultivated cropland and improved pasture differs from that of unimproved range and forests in such elements as intensity of use and degree of investment. Accordingly, these uses tend to restrict cropland and improved grazing land to a single primary use, with possibly one or more limited supplemental uses. Because of their cover

and their less intensive use and management, unimproved grazing land, woodland, and forest often have several multiple uses that are almost equal in value to their primary uses.

In some areas, in addition to timber and wood, for example, forests and woodlands produce forage that is of considerable value to livestock growers. Much forest grazing supplements existing farm pastures at certain seasons. Proper grazing produces a significant supplemental income and also reduces fire hazards. The income from grazing often enables a woodland owner to carry his timber crop to an age most suitable for profitable marketing.

Recreation and production of wildlife are important multiple uses of forest and grazing lands and, to a more limited extent, of cropland and pasture.

The influence of forest and grazing lands goes beyond the production of timber, livestock, wildlife, and recreation. A far-reaching benefit of these lands to agriculture, other industries, and the whole economy lies in watershed services.

Some 25 million acres of land are irrigated with water from watersheds that are chiefly in forest and grassland. Most western streams have their sources in forest or grassland areas. They supply a large part of the water for irrigated areas, as well as water for domestic and industrial uses and for power. The services of forested watersheds in the Central and Eastern States are needed increasingly for domestic and industrial water supplies, for navigation, and for power.