GEOGRAPHIC REGIONS OF MISSOURI*

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THE State of Missouri is geographically diverse. Several systems of areal subdivision of Missouri have been developed, some complete for the entire state and some for major areas within the state, notably the Ozark region. Few of these have considered several or all of the component elements of the total pattern; most have been limited in scope and purpose. This paper attempts to synthesize the many and varying areal patterns into a system of regions, each of which is relatively homogeneous in its total complex and significantly different from adjacent regions.

PREVIOUS STUDIES

Large generalized topographic and physiographic regions in Missouri have long been recognized. Three of the major physiographic provinces of the United States extend into the state—the Coastal Plain in the southeast, the Ozark Plateaus in the south, and the Central Lowland in the north and west.

One of the earliest attempts to divide the whole of Missouri into areal units was that of Marbut, who mapped and described a series of plains and uplands separated by escarpments (Fig. 1). This system of areas is not adequate for geographic regionalization, but it does contribute to an understanding of the surface configuration of the state and to an acceptable pattern of areal units.

The earliest and most complete geographic analysis of any large part of the state was Sauer's study of the Ozark Highland. Sauer conceived of the Ozark Highland as a single geographic unit, as indeed it is when the larger aspects of the country are considered. For a more detailed analysis of internal differences, however, he subdivided it into eight "provinces," consisting of (1) four regions in the Ozark Center: the Central Plateau, White River Hills, Osage-Gasconade River Hills, and Courtois Hills, (2) three border regions: the Springfield Plain, Missouri River Border, and Mississippi River Border; and (3) an intermediate region: the St. Francois Knob and Basin Region (Fig. 2).

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Schottenloher\textsuperscript{4} also studied the Ozark area, including its extensions into Oklahoma, Arkansas, and Illinois. His regional divisions follow Sauer's and utilize Marbut's as well. Schottenloher divided the Ozark region of Missouri into (1) three central hilly regions (St. Francois-Berggebiet, Current River-Hügelland, and Osage River-Hügelland), (2) northern and eastern border zones (Missouri-

\textit{Randlandschaft} and Mississippi-\textit{Randlandschaft}), (3) three central and western level uplands (\textit{Zentralplateau}, Springfield-Hochebene, and Neosho-\textit{Randgebiet}), and (4) the White River Hills, which wedge between the Central Plateau and Springfield Plain.

\textsuperscript{4} Rudolf Schottenloher, "Das Ozarkland," in \textit{Amerikanische Landschaft}, ed. by Erich von Drygalski (Berlin, 1936), pp. 1-128.
Cozzens\textsuperscript{5} divided the Ozark province into natural regions, geologic regions, physiographic regions, and forest cover regions, his natural regions being a synthesis of all the others (Fig. 3). These natural regions do not differ markedly from Sauer's geographic provinces. The core areas are identical in most instances and differences are chiefly in boundary delineation.

Fig. 2. Geographic provinces of the Ozark Highland of Missouri by Sauer. I, Missouri River Border; II, Mississippi River Border; III, Springfield Plain; IV, St. Francois Knob and Basin Region; V, Courtois Hills; VI, Osage-Gasconade River Hills; VII, White River Hills; VIII, Central Plateau.

ELEMENTS IN THE REGIONAL PATTERN

The most important elements in the regional pattern in Missouri are the physical features for land relief and slope, surface and subsurface materials, and soils and the cultural features for agriculture and other land uses, population and settlements, transportation and other forms of communication, sources of livelihood, levels of living, and social organization.

Topography. A basic factor in the regional differences within Missouri is topography. Not only is topography a significant factor in land capability and land use,

but it is of direct consideration in the character and utility of soils, the amount and conditions of soil moisture and ground water, and in types of original native vegetation. Each of these has its own pattern of distribution, but all are related in some degree to the topography. Moreover, most of the cultural features are also related in some degree to topography and to other physical features.

The chief measurable components of topography are slope and local relief. The great bulk of the land in Missouri has moderate slopes of three to 10 percent

(Fig. 4). Areas with a prevailing slope of less than three percent are confined either to alluvial lowlands bordering the several large streams of the state, including the extensive plain of the Mississippi Embayment in southeastern Missouri, or to level upland remnants. The largest areas of the latter type of nearly level land occur in the northeastern part of the state, where tributaries of the Mississippi and lowermost Missouri rivers have eroded valleys into the upland but have not completely destroyed the original plain. Areas of level upland with less than three percent slope also occur in the central and southwestern parts of the state. All are along drainage divides and represent essentially unchanged remnants of the formerly more extensive surface.

Fig. 3. Natural Regions of the Ozark Province by Cozzens. 1, St. Francis Forested Knob; 2, St. Francis-Big River Cleared Lowland; 3, Osage-Gasconade-Meramec Hills Forest; 4, Marshfield Forested Slope; 5, Cleared River Border; 6, Springfield Forest-Prairie; 7, White River Hills.
All areas with slopes exceeding 10 percent are adjacent to major streams or in the area of igneous rocks. Areas of more than 20 percent slope are confined to river-bluff zones and the most rugged parts of the interior Ozarks, particularly the sides of granite and porphyry knobs in the outcrop area of igneous rocks.

The difference in elevation within local areas—local relief—is a partial measurement of length of slope and degree of ruggedness. It measures the height of hills and ridges above the bottoms of nearby valleys and, in combination with angles of slope, is a measure of the configuration of the surface.

The local relief in Missouri varies from less than 100 feet on the alluvial lowlands and on a few remaining areas of undissected uplands to as much as 1,000 feet in the area of igneous knobs. Over much of the southeastern lowlands the actual relief is less than 10 feet, but no other area of comparable size is as flat. In most of the several individual areas of igneous rocks the local relief exceeds 750 feet (Fig. 5) and is the maximum of the state.

**Fig. 4.** Prevailing Land Slope, measured on U. S. Geological Survey topographic maps.
A second large area of high relief and steep slope is the White River Basin of southwestern Missouri. Here the depth of plateau dissection by the White River and its tributaries exceeds 500 feet. Slopes generally are greater than 10 percent and some exceed 20 percent.

These two areas having the maximum local relief of the state are bordered by zones of 400 to 500 feet relief. Only along parts of the Gasconade, Missouri, and Mississippi rivers does local relief exceed 400 feet anywhere else in the state. Except in the vicinity of the larger streams, local relief in northern and western Missouri is less than 200 feet and in limited areas less than 100 feet. The dissected zones extending a few miles from the larger streams of north-central and northwestern Missouri have a relief between 200 and 300 feet, but slopes in these areas are not steep.

Soils. As a major element in the physical environment the soils of Missouri play a leading role in the patterns of regionalism. They have a distributional pat-
tern of their own, and soil characteristics reflect and tend to summarize other elements of regional differentiation, including topography, surface materials, climate, and natural vegetation. Their influence on land productivity and similar aspects of agriculture lead to other areal differences, including social and economic conditions.

![Major Soil Areas of Missouri](fig6.png)

**Fig. 6.** Major Soil Areas of Missouri. The names denote the most extensively distributed and more or less typical soil series of each area, each of which also contains associated soil series of lesser extent. (From University of Missouri Department of Soils.)

The occurrence and distribution of individual soil series and types is related to local conditions of topography, parent materials, and vegetation. Local soil associations reflect combinations of soil materials, vegetative cover, land slope, surface and subsurface drainage, and other physical conditions related to soil formation and its characteristics, as they occur in close proximity. Eighteen major soil areas have been delineated in Missouri (Fig. 6).

**Land Use.** The use of land in Missouri is one of the most significant com-
ponents of the regional pattern. Land use exhibits a distinctive pattern of distribution and strongly reflects other factors of regionalism, particularly topography and soils. The major uses of land—for crops, pasture, and forests—are based ultimately on the character and productivity of the land and rather accurately reflect its quality.

![Map of Missouri land-use areas](image)

Fig. 7. Natural Land-Use Areas of Missouri. Numbered areas are as follows: 28, St. Louis Rolling Lands; 29, Quincy Hills; 33, Audrain Prairies; 34, Keosauqua Loess Flats and Hills; 35, Missouri-Iowa Loess Flats and Drift Hills; 40, Missouri Valley Loess Hills and Rolling Prairies; 43, Osage Prairies; 44, Northern Cherokee Prairies; 177, Mississippi River Bottoms (Northern Division); 179, Mississippi Silty Terraces and Low Ridges; 220, Ozark Center; 221, Middle Ozark Plateau; 222, Southwestern Ozark Plateau; 268, Northeastern Ozark Border; 269, Springfield Upland.

The land-use characteristics of Missouri have been delineated areally into 15 natural land-use areas\(^6\) (Fig. 7). These are part of a system of 272 divisions of

the United States, based upon the physical characteristics of the land influencing its use. The 15 divisions which lie wholly or partly in Missouri constitute a type of regional subdivision of the state.

Eight areas (Fig. 7, areas 28, 29, 33, 34, 35, 40, 43, 44) in northern and western Missouri are classed as Midcontinent-type. These are agricultural areas of demonstrated agricultural quality, largely in farms and supporting relatively remunerative agriculture. In the western and northeastern Ozark border areas (268, 269, Fig. 7), lands of good agricultural quality and largely in farms predominate, but these are interspersed with lands of different physical character, the best use of which is open to question. The central Ozark areas (220, 221, 222, Fig. 7) have hilly or rolling lands, in large part steep, stony, or low in productivity. A large part is in forest. Subsistence agriculture prevails in the rougher and more remote portions. The southeastern lowland of Missouri (areas 177 and 179) is classed as smooth, inherently productive, but in large part poorly drained, a considerable part in forest, and part subject to inundation. The desirability of clearing and draining forested and undrained areas is questionable.

Socio-Economic Factors. Several economic and social factors enter significantly into the pattern of regionalism. In a sense, the use of land is one of these, although it is perhaps more closely related to the physical conditions of land than to economic or social conditions. Economic factors include sources of livelihood, levels of income, and types of farming. Social factors include planes of living, age characteristics of the inhabitants, birth and death rates, school attendance, levels of educational attainment, and other characteristics of the population. The physical and cultural characteristics of the area are inter-related and interdependent, and they form complex but generally similar patterns of distribution.

Livelihood Areas. Several of the regional economic factors have been summarized in a division of the state into livelihood areas\(^7\) (Fig. 8). The system delineates 235 areas in the United States, 12 of which include portions of Missouri. No characterization of individual areas is provided, but the stated objective of the map is that each delineated area be characterized by a high degree of uniformity in its present economic development and in its resource potentialities. The areas are thus based upon natural resources and their utilization, and several are recognizably similar to land-use areas.

State Economic Areas. The state economic areas developed by the Bureau of the Census\(^8\) are relatively homogeneous subdivisions, each having certain significant characteristics which distinguish it from adjoining areas. Criteria considered in the subdivision include demographic, climatic, physiographic, and cultural factors, as well as industrial and commercial activities. Division of each state into its prin-

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\(^8\) State Economic Areas, by Donald J. Bogue, p. 1. Procedures for delimiting the areas are outlined in pp. 3-6.
principal units, within each of which a distinctive economy prevails, is implied. The term "economy" is used in a broad sense, referring to "the total adjustment which the population of an area has made to a particular combination of natural resources and other environmental factors." Two categories of areas are recognized in the system, metropolitan and non-metropolitan. Two metropolitan and nine non-

Fig. 8. Livelihood Areas. 63, St. Louis Environs; 64, Quincy-Peoria Area; 66, Southern Iowa-Northern Missouri Area; 67, Kansas City Environs; 68, Cherokee Area; 69, Osage Area; 71, Central Missouri Valley; 77 Springfield Upland; 78, Ozark Plateau; 79, Northeastern Ozark Border; 118b, Upper Delta, Missouri Section; 119, Mississippi Terrace Ridge Area. Areas 63 and 64 are subdivisions of the Eastern Corn Belt-Industrial group of livelihood areas; areas 66 through 71 of the Western Corn Belt group; areas 77, 78, and 79, of the Ozarks-Southern Appalachians group; and areas 118b and 119 of the Central Cotton-Forest group.

metropolitan areas are delineated in Missouri (Fig. 9). Several of the areas are almost identical to other divisions presented. Differences in details of boundaries result in part from the use of county boundaries.

Agricultural Regions. Missouri includes parts of three major agricultural

9 Loc. cit.
regions: the Cotton Belt, the Corn Belt, and the Corn and Winter Wheat Belt. Greater detail of differentiation of agricultural patterns is provided by a types-of-farming study. In this the state is divided into seven major types-of-farming areas. Four of these have from two to six subdivisions; one has three non-contiguous parts (Fig. 10).

Fig. 9. State Economic Areas. Each of these "consists of a county or group of counties which has agricultural, industrial, and social characteristics that differentiate it from other adjoining areas." (From U. S. Bureau of the Census, 1950.)

*Rural Social Areas.* Rural social areas of Missouri have been delineated into six units, in each of which there is a high degree of homogeneity with respect


to population, social organization, and culture. Four of the six major areas are subdivided, so that there are a total of 15 units (Fig. 11). The major divisions are relatively homogeneous areas with respect to a large number of factors; minor divisions based upon additional elements break the larger principal areas into smaller and still more homogeneous units. The areas were determined by analysis of county data, and boundaries follow county lines.

**GEOGRAPHIC REGIONS**

The conventional fourfold subdivision of Missouri has a sound basis and is doubtless adequate for many general studies. The four areas thus recognized—
Ozark Highland, Western Old Plains, Northern Glaciated Plains, and Southeastern Lowlands—are markedly different, yet each is homogeneous in its broader aspects. Variations in the several regional factors within each are generally less than these differences among the four divisions. When geographic patterns are examined in greater detail, however, homogeneity within each of these major divisions becomes less apparent and subdivision into smaller units with less internal variation is suggested.

The size and number of possible areal units depends upon the number of regional factors considered and the amount of variation permitted within each unit. Most of the twenty divisions suggested here are subject to further subdivision if additional criteria are examined, or if those considered are held within narrower limits. The system of regions presented is believed to be adequate for most purposes, however, and an increase in the number would reduce the contrast among them. Combinations of physical and cultural features enter into the identity of each region, and the dominant factor or combination of factors of delineation varies from one to another. The characteristics of land and land use, both rural and urban, are
the most significant factors of regionalism employed. The land-use pattern and other aspects of human occupancy are closely related to the physical environment in most of the regions, but in the two urban regions physical habitat is less obvious and cultural structures dominate the landscape. Here too, however, human use of the area is the paramount criterion.

The four major divisions may be called "regions" and their subdivisions "sub-regions." Emphasis on the smaller units is believed to be preferable, however, and they should be termed "regions." The larger divisions composed of similar or related regions may well be called "provinces."

The four provinces differ markedly in topography, soils, land use, types of farming, planes of living, and other phenomena which exhibit patterns of regional distribution. Among them, contrasts between the Ozarks on the one hand and each of the plains areas on the other are greater than the differences among the plains provinces, particularly between the Northern and Western Plains. As compared with the Ozark province, the surface of each of the other provinces is smoother, its soils more productive, and its land better adapted to agriculture. Agriculture is more productive, incomes are higher, educational achievement is generally greater, and levels of living are higher than in the Ozarks. Both the Northern Plains and the Southeastern Lowlands are superior to the Western Plains in most of these respects. The Northern and Western Plains provinces have consistently declined in number of inhabitants during the past half-century, while the Ozarks and Southeastern Lowlands have increased. The increase in number of inhabitants is most marked in the Southeastern Lowlands and in all large urban centers.

The occurrence of glacial till and loess aids in broadly distinguishing the Northern Plains from the adjacent provinces. Most other characteristic features developed from this underlying factor. The dominantly alluvial material of the Southeastern Lowland Province, together with its southerly location and distinctive agriculture, form the chief basis for its differentiation from the upland provinces. In like manner, the dissected plateau of the Ozarks and old plains of the Western Plains, together with resulting features, are the major basis for distinguishing them.

The boundaries of the four provinces delineate their dominant features. Except for the two urban regions these lines serve also as regional boundaries. The southern boundary of the Northern Plains in the east is the approximate southern extent of glacial till. The southern boundary of the Northern Plains in the west is placed at the southern limits of deep loess (more than 8 feet). The loess thins rapidly southward from the Missouri River and is not topographically significant in the Western Plains.

The boundary of the Ozark Province is relatively distinct throughout its length. It is perhaps most obvious in the southeast, where the contrast between dissected upland and alluvial lowland is great. The least clear-cut line of demarcation is adjacent to the St. Louis Urban Region, where many Ozark features extend into the area of considerable urban influence.
The western boundary of the Ozark Province is less strongly marked than other portions. The Springfield Plain, the western-most subdivision of the province, is one of the superior regions of the state in its resource base and economic development, and it may be considered as transitional. Its wide upland divides are similar to Western Plains areas, but its stream borders, especially in the east, are like those of the adjacent Ozark Plateau. Over-all characteristics and local usage seem to place the Springfield Plain within the Ozark Province.

REGIONS OF THE NORTHERN PLAINS

Northern Loess Hills. The westernmost subdivision of the Northern Plains Province, the Northwestern Loess Hills, consists of the areas of deepest loess soils. The upland is rolling, particularly along the "breaks" of the Missouri River, but the deep, porous loess soils tend to reduce the effects of steep slopes. The region is the best agricultural area of the state, with the highest values of land and over-all productivity. Its land is its chief natural resource and its economy almost entirely agricultural.

The Northwestern Loess Hills is formed by that portion of the Missouri Valley Loess Hills and Rolling Prairies land-use area lying in Missouri north of Kansas City (Fig. 7). It is that part of state economic area 1 lying north of the Kansas City Urban Region (Fig. 9). The region includes most of the Marshall subarea of the Northern and Western Meat Production area, together with the adjacent river bottoms and river bluffs subarea of the Cash Grain, Truck, and Fruit type-of-farming area (Fig. 10). It corresponds with subarea 1 of the rural social areas (Fig. 11). The outstanding characteristic of the region is its high agricultural productivity and the resulting economic and social conditions.

Grand River Loess Flats and Drift Hills. The Grand River Loess Flats and Drift Hills region is approximately the Grand River basin. Grand River and its tributaries have cut broad valleys with wide flood plains into the till plain. Glacial till on which the dominant Shelby soils developed underlies most of the rolling land. Valley sides are not steep and slopes are generally under 10 percent. The upland plain remnants and valley floors have less than 3 percent slope (Fig. 4). Except for these loess flats and valley floors, however, the land is everywhere moderately rolling. Fifty to 60 percent of the area is cropland and most of the remainder is pastured. The region originally supported a prairie grassland except in the forested valleys. Woodland areas are limited to the rougher lands along the valley sides.

This region is the western three-fourths of state economic area 2a and of the Missouri-Iowa Loess Flats and Drift Hills land-use area (Figs. 9 and 7). It is approximately coincident with the Grundy-Shelby subarea of the Northern and Western Meat Production type-of-farming area (Fig. 10). It includes most of rural social subarea B-1 (Fig. 11), a subdivision based largely upon slightly greater farm tenancy than adjacent areas. Land and agricultural values in the region are well above the state average and three to four times those of the central Ozarks,
but below those of the Northwestern Loess Hills region. With the extensive areas of valley cropland, farm income from crops is proportionally greater than in the other livestock farming areas.

**West Central Loess Hills.** The West-Central Loess Hills border the Missouri River between the Kansas City Urban Region and the Northern Ozark Border Region. It consists of the flood plain and the rolling, loess-covered hills extending five to 25 miles from the river on each side. The chief boundary criterion on both north and south is the extent of Marshall and Knox soils, whose distribution corresponds to the deepest and most complete coverage of loess. The hills are rounded and rise from 200 to 300 feet above the flood plain, but average slopes are generally under 10 percent. There is little level land except on the flood plain.

This region is that part of state economic area 1 east of the Kansas City metropolitan area (Fig. 9). It is the southeastern segment of the Missouri Valley Loess Hills and Rolling Prairie land-use area (Fig. 7). It is separated from the northwestern portion of that area largely because of the intervening position of the Kansas City Urban Region, but also because of its minerals and mining activity. Limestone and shale are quarried in the region, and coal is mined in the western part.

Agriculture is the most important activity of the region and the major source of income. More than 60 percent of the land area is devoted to the production of crops. Land values and values of crops and livestock are almost as high as in the Northwest Loess Hills region. The region includes part of the Cash Grain, Truck, and Fruit Crops type-of-farming region, together with the adjoining margins of the Northern and Western Meat Production area (Fig. 10).

**Chariton Hills.** The Chariton River and its tributaries have developed an area of closely spaced, steep-sided, forested hills, which contrast sharply with the rolling prairies of the Grand River Hills to the west and the tabular uplands of the Audrain Prairies on the east. The characteristic topography extends southward beyond the Chariton River basin to the northern border of the Ozark Province, but the name Chariton Hills is here applied to the entire hilly region. Most of the loess mantle of the region has been removed; the glacial till has become exposed and intricately dissected. Land slopes of 10 to 20 percent prevail, although local relief is no greater than in the Grand River basin. Lindley soils dominate the region, and much of their area is unsuited for cultivation because of steep slopes.

The region is approximately coextensive with the Shelby-Lindley type-of-farming area, and it is the eastern portion of the Missouri-Iowa Loess Flats and Drift Hills land-use area. Because of the hilly topography, crop land is limited and inferior to that of adjoining regions, and farm land and agricultural values are lower. One-half or more of the farm land is pastured, and 80 to 90 percent of farm incomes are derived from the sale of livestock and livestock products. The region has few resources other than its agricultural land and its people.

**Audrain Prairies.** The area of wide, nearly flat, tabular remnants of the upland plain lying along the Mississippi-Missouri-Chariton drainage divide forms the
Audrain Prairies Region. The distinguishing boundary criterion is depth of valleys and steepness of their sides, both of which increase toward the Missouri and Mississippi rivers. The change in character of the land and its uses is abrupt on the west, and the western boundary is quite distinct.

The Audrain Prairies Region is characterized by Putnam and Mexico soils on nearly level terrain. Extensive areas have slopes of less than 3 percent and none exceed 6 or 7 percent. Local relief is less than 100 feet over most of the area. The region is essentially the same as the Audrain Prairies land-use area (Fig. 7), from which its name is taken. It falls within State Economic Area 2b (Fig. 9) and the Putnam-Lindley type-of-farming subarea, but is less inclusive than either.

The economy of the region is largely agricultural, but includes coal mining, clay production, and a limited amount of manufacturing. The region includes the northeastern Missouri fire clay district and contains refractory brick manufacturing plants. The agricultural emphasis is on livestock production, and pasture land is extensive. The proportional contribution of crops to the total value of farm products, however, is greater than in the previously discussed livestock-farming regions to the west, at least in part because of the extent of well-adapted, level land.

*Mississippi River Hills.* The Mississippi River border of the northern Missouri glacial plain varies from gently rolling to hilly. Most of the area consists of rolling hills with slopes between 3 and 10 percent. The relief of the river border zone exceeds 200 feet and reaches a maximum of 520 feet in one area. Local relief of 200 to 300 feet prevails, decreasing westward to approximately 100 feet at the eastern boundary of the Audrain Prairies. Alluvial land along the Mississippi is limited. Relatively wide bands of alluvium extend up tributary stream valleys, however, almost to the western boundary of the region.

This region is approximately the same as the Missouri portion of the Quincy Hills land-use area (Fig. 7), which extends across the Mississippi River into Illinois. The region also corresponds to the Quincy-Peoria livelihood area (Fig. 8). It includes the eastern margin of the Putnam-Lindley type-of-farming subarea (the Lindley portion), together with the adjacent Cash Grain, Truck, and Fruit area of the Mississippi flood-plain and hilly border—the area of Menfro soils.

*Wyaconda Hills.* Lying in the northeastern corner of the state, the Wyaconda Hills region shares the qualities of the adjacent regions. Level lands having dark prairie soils occupy elongated, tabular divides similar to those of the Audrain Prairies. The southeastward trending valleys have relatively wide, level floors. Between the two types of level lands are steep hillsides with light-colored forest soils similar to those of the Chariton River Hills and Mississippi River Hills. The land-use pattern of the region consists of linear bands of cropland and pasture in the valleys and on the upland plain, separated by bands of pasture and woodland, with limited cropland on the hillsides.

The Wyaconda Hills Region is nearly identical in its delineation to the Keosauqua Loess Flats and Hills land-use area (Fig. 7). Its soils are its chief resource and farming its dominant activity.
URBAN REGIONS

The St. Louis and Kansas City Urban regions are distinguished by the extent and intensity of urban forms and influences. Other urban centers are distributed over the state, but the areas of significant influence are too small for recognition as separate regions in the present system.

The boundaries of the urban regions enclose urban and suburban forms and functional areas, but no attempt is made to encompass the full urban influence, such as all of the surrounding zones of dairying, truck farming, and other agricultural specialties related to the urban markets. The nature and density of the settlement pattern, traffic flow and commuting, urban-oriented recreational facilities, and similar phenomena were considered in drawing the boundary lines, an attempt being made to include such features of the rural-urban fringe within the urban regions.

The two urban regions are more inclusive than the respective urbanized areas as delineated in the 1950 Census of Population, but they are smaller and more exactly delineated than the standard metropolitan areas and metropolitan economic areas, which include entire counties (Fig. 9). The regions approximate the two suburban subareas of the Cash Grain, Truck, and Fruit type-of-farming area (Fig. 10).

REGIONS OF THE WESTERN PLAINS PROVINCE

The intermediate position of the Western Plains in the range of conditions contrasting the Ozark Province and the Northern Plains is one of its identifying characteristics. Much of its area is actually smoother than that of the Northern Plains. Its soils are generally of lower quality than the glacial and loessial soils of the latter but superior to those of the Ozarks. Its agricultural productivity, planes of living, and other conditions are similarly intermediate in quality or level. A twofold subdivision of the province can be made.

Osage Plains. The Osage Plains Region is the northern subdivision of the Western Plains Province. It is an area of limestone, sandstone, and shale strata, differential erosion of which has produced a more rolling surface than the predominantly shale area of the Cherokee Plains subdivision on the south. The region has been called the Scarped Plains\textsuperscript{13} and also the Osage Cuestas.\textsuperscript{14} The Osage Section of the Central Lowland physiographic province of Fenneman\textsuperscript{15} includes both subdivisions of the Western Plains Province. The Osage Plains Region is essentially the Oswego soil area (Fig. 6), the Osage Prairies land-use area (Fig. 7), and the Summit subarea of the Northern and Western Meat Production type-of-farming area (Fig. 10).

Agriculture is the major economic activity of the Osage Plains. More than one-third of the employed population is thus engaged, and more than one-half of


\textsuperscript{15} N. M. Fenneman, Physiography of Eastern United States, p. 605.
the area is cropland. Much of the remainder is pastured. Cultivated land is most extensive on the prairie divides and on the valley floors. Woodlands are confined largely to the valley sides. The agriculture of the region emphasizes livestock production, and more than three-fourths of the farm income is derived from the sale of livestock and livestock products.

Coal is the only important mineral resource of the region. It is mined in the southern part, primarily in Bates County. Stripping methods are used, and the coal seams are too deeply covered for economical mining except along the southern edge of the region. Mining is far more important in the Cherokee Plains Region, where the overburden is thinner.

Cherokee Plains. The southern part of the Western Plains province is a topographically old plain developed on relatively unresistant shales. The surface is gently undulating except for a few erosional remnants along the edge adjacent to the Osage Plains region. Most of the prairie interfluves have slopes of less than 3 percent and no areas exceed 10 percent. Local relief is nowhere greater than 200 feet and on the wider divides is under 100 feet. The valleys are wide, shallow, and flat-bottomed.

The Cherokee Plains region is identical to Marbut's Nevada Lowland (Fig. 1) and virtually identical to the Northern Cherokee Prairies land-use area (Fig. 7). It is characterized as level to gently rolling, with dark gray or dark brown silty soils having compact subsoils, and loams and sandy loams with friable subsoils. The region corresponds to the Cherokee-Bates-Oswego subarea of the Western Meat Production type-of-farming area.

The economy of the region is dominantly agricultural, emphasizing livestock production. More than one-half the total area is cropland and about one-third is pastured. Land values are lower than in the Northern Plains regions, but well above those of the Ozark regions. Coal mining is important, even though less than five percent of the employed inhabitants are engaged in mining. The coal seams are shallow and more accessible for strip mining than in other regions of the state.

REGIONS OF THE OZARK PROVINCE

The dissected plateau character of the Ozark Province as a whole is the key to its individuality and regional identity. It is unique among the several parts of the state in its extensive areas of rough, hilly land, its cherty soils, its limited areas of good agricultural land, its consequently lower agricultural productivity, and its extensive forest land. The degree of dissection and related characteristics are the chief basis of regional subdivision.

Springfield Plain. The Springfield Plain is the western Ozark border region. The surface of the region is smooth except near the larger streams which are bordered by belts of hilly land separating broad, nearly level upland plains. Productive silty soils occupy the smooth prairie uplands, while the hilly zones have lighter colored, less productive silt loams or gravelly loams.

The region was recognized by both Sauer and Cozzens (Figs. 2 and 3), although
both included the hilly land in Barton County to the south, which is here placed within the White River Hills region. Because of its ruggedness most of this area is forested, with little or no cropland except in the narrow valleys. The present division agrees with these several systems in the core area of the region, and differs only in delineation of the boundary. The Springfield Plain includes part of the Ozark Plateau Dairy and Poultry type-of-farming area, and all of the Southwest Fruit, Dairy, and Poultry area except the hilly section in the south. It includes rural social subarea B-5, the southwest border recognized chiefly because of its lead and zinc mining and the urban influence of Joplin and Springfield, and much of subarea C-1, the less hilly western portion of area C.

The mineral resources and mining activity of the Springfield Plain are significant. The southwestern part of the region lies within the Tri-State mining area, whose production of lead and zinc have long been important. Tripoli is another mineral resource of significance, and Carthage “marble” from the region is a widely used building stone.

White River Hills. The maturely dissected basin of the White River in Missouri is one of the most rugged divisions of the state. Only the St. Francois Knobs area and the Courtois Hills Region exceed it in land relief and slope. In most parts of the region more than one-half the area is in slopes exceeding 14 percent and three-fourths or more of the area is in slopes steeper than 5 percent. The average ridge is from one and one-half to two miles wide and 500 to 700 feet high.

Most of the White River Hills Region is forested. Cropland is confined largely to valley floors, narrow ridge tops, or occasional bench lands.

The resources of the White River Hills region are limited. Its economy is dominantly agricultural, in spite of the very limited amount of good agricultural land. Little income is derived from its forests and few of its inhabitants are employed in forest industries. Scenic and recreational resources are considerable and well developed. Hydroelectric energy is supplied by dams on the White River, and the associated reservoirs contribute materially to recreational activities.

The region is recognized by both Sauer and Cozzens (Figs. 2 and 3), with little difference in boundaries except in the west as previously noted. It is approximately coextensive with the Southwestern Ozark Plateau land-use area (Fig. 7), and with the southwestern portion of the Clarksville-Huntington subarea of the Ozark Meat Production type-of-farming area (Fig. 10). Since the relatively undissected and agriculturally productive Springfield Plain adjoins the region on the northwest and the Central Plateau separates it from other deeply dissected sections of the Ozarks, there is little or no question of the regional identity of the White River Hills. It extends into Arkansas on the south and forms one of the recognized regional divisions of the Ozark Province.

Central Plateau. The comparatively undissected plateau remnant lying across the major drainage divide of the Ozark Province forms the Central Plateau Region. Bordered on most sides by hill regions, the Central Plateau forms the largest and best preserved penplain remnant of the province.
The Central Ozark Plateau is characteristically low in land relief and slopes are moderate. It is a dominantly agricultural region. Approximately one-half of its employed population are engaged in agriculture. From one-half to three-fourths of its land is in farms, but from one-half to three-fourths of the land in farms is forested. The emphasis is upon livestock production. The region lies within the Ozark Meat Production type-of-farming area. More than 90 percent of the farm income is derived from the sale of livestock and livestock products. Emphasis is given to dairying in the central and northwestern parts of the region.

The resources of the region provide little other than agricultural land. There are few minerals. The forests of the region are less valuable than those of the hilly regions. Manufacturing is little developed. The relative isolation of the region by the adjoining hilly areas has been a handicap to its development.

Osage-Gasconade Hills. North of the Central Ozark Plateau Region, the original peneplain surface has been thoroughly dissected and now forms a maze of hills among closely spaced dendritic valleys. The deepest and most intricately dissected areas border the larger streams, particularly the Osage and Gasconade and especially the latter. The hills rise 300 to 400 feet above valley floors over much of the area, and they exceed 400 feet along most of the length of the Gasconade River. Prevailing slopes exceed 10 percent in zones bordering the larger streams, but elsewhere in the region they are generally between 3 and 10 percent (Fig. 4).

The Osage-Gasconade Hills region is dominated by stony Clarksville soils. Forests are extensive, occupying practically all hillsides and covering all but the widest ridge tops. In the most rugged areas, only the valley bottoms have cropland of any value. The region of Osage-Gasconade Hills is chiefly agricultural from an occupational point of view. Almost one-half of its employed inhabitants are engaged in farming. About 10 percent are engaged in manufacturing, chiefly of forest or agricultural products.

The region was originally delineated and named by Sauer. Cozzens combined it with the Courtois Hills. The core of the region is recognizable in the state economic areas and types-of-farming areas. It is combined with other hilly areas in other systems.

Northern Ozark Border Region. The northern border region of the Ozark Province is transitional between the rugged hill regions of that province and divisions of the Northern Plains Province on the north. It is intermediate between the two provinces in topography, quality of soils, productivity of agriculture, and several other respects.

The topography of the Northern Ozark Border Region is less rugged, soils are generally superior, and agricultural productivity is higher than in the Osage-Gasconade Hills and the Courtois Hills regions adjoining it on the south. The regions

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16 For a more detailed discussion of this region see James E. Collier, "Geography of the Northern Ozark Border Region in Missouri," University of Missouri Studies, Vol. XXVI, No. 1. (1953).
of the Northern Plains Province on the north are, on the whole, better in these respects.

The Northern Ozark Border Region is recognized by Sauer. It is combined with the eastern Ozark border, with which it has several features in common, in Cozzens' natural regions, and in the land-use, livelihood, types-of-farming, and state economic areas.

**Courtois Hills Region.** The irregularly-shaped Courtois Hills Region sprawls across the major Ozark divide and extends well down both north and south slopes of the dome. It is the most hilly subdivision of the Ozark Province and, as a whole, the most rugged area of Missouri. Deeply and minutely dissected by the Meramec and Big rivers in the north and by the Black and Current rivers in the south, the region is a maze of narrow, steep-sided, chert-covered ridges, monotonous in their similarity and most of them forested, chiefly with oaks.

More than three-fourths of the Courtois Hills Region is forested. Forest trees on the narrow ridge tops and steep hillsides are small. Those of the better watered valleys are larger, but limited in number. Forestry is thus handicapped and is contributing less than its potential to the economy of the region.

Except along the major drainage divide in the central part, the population of this region is confined chiefly to the valleys. Only on the narrow strips of moderately good farmland in the valleys and on occasional ridge tops have the forests been removed and the land converted to farmland. Farming is not highly developed and living conditions are poor. Many farms are self-sufficing. Corn is the principal crop. Cattle and hogs grazed on hillside pasture, much of it woodland pasture, are the chief livestock and source of cash income.

The Courtois Hills Region was originally defined by Sauer (Fig. 2). In the system of regions outlined by Cozzens it is included within the Osage-Gasconade-Meramec Hills Forest Region (Fig. 3). The region is essentially the Ozark Center land-use area (Fig. 7).

**St. Francois Knob and Basin Region.** The St. Francois Knob and Basin Region is unique among the hilly regions of the Ozark Province in the origin and character of the hills. Most of the hills are formed of granite or porphyry rocks which have been etched into relief because of their greater resistance to erosion than the sedimentary rocks. The latter form basins among the knobs. The knobs rise as much as 1,000 feet above the basin floors, although most are around 750 feet high (Fig. 5) and some are low and only a few tens of feet in diameter. The floors of the basin lowlands are gently to moderately rolling. They contain prosperous agricultural communities, more or less surrounded by a wilderness of knobs and ridges.

Physiographically the St. Francois Knob and Basin Region is at the center of the Ozark Province. Geographically it may be considered a border region because of its nearness to the Mississippi River and the eastern edge of the province.

The St. Francois Knob and Basin Region is the most important mining region of the state, and among the least important in agriculture, as measured by occupa-
tional employment. Mineral resources are extensive and varied, including lead, iron, barite, granite, and others.

Because of its unique geologic and physiographic characteristics and the resulting cultural features, the St. Francois Knob and Basin Region is recognized in practically all systematic divisions of the state. It has been given full regional status in most instances.

Fig. 12. Geographic Regions of Missouri, based upon a composite of physical and cultural features.

Eastern Ozark Border Region. The Eastern Ozark Border Region extends between the St. Francois Knob and Basin Region and the Mississippi River from the St. Louis Urban Region and the Northern Ozark Border Region to the Southeastern Lowland Province (Fig. 12). The accessibility of this Mississippi River border from the earliest period of settlement to the present has been one of its outstanding characteristics.

The Eastern Ozark Border Region is the lowest in elevation of the Province.
Its rocks are less cherty and its topography less rough than most subdivisions. Superior soils have developed on the loess which smooths the outlines of the hills along the Mississippi River. Southward the region broadens into a rolling limestone plain with karst features.

The resources of the Eastern Ozark Border Region are largely agricultural. Its minerals are limited to quarry products, chiefly clay and silica sand, and its forests have been extensively cleared to permit cultivation of the land.

The Eastern Ozark Border Region was initially recognized and given regional status by Sauer (Fig. 2). Cozzens combined it with the Northern Ozark Border as the "Cleared River Border" (Fig. 3). These two are similarly combined as the Northeastern Ozark Border land-use area (Fig. 7) and the Ozark Border Dairy and Wheat type-of-farming area (Fig. 10). The combined regions correspond to recognized livelihood and state economic areas (Figs. 8 and 9).

REGIONS OF THE SOUTHEASTERN LOWLANDS

The Mississippi River lowland in the southeastern "boot heel" of Missouri is unquestionably a logical regional division of the state. It contrasts strongly with other areas, particularly with the adjacent Ozark upland, which rises abruptly above it on the northwest in an escarpment 100 to 250 feet high.

The Southeastern Lowland consists of an alluvial plain divided by isolated hills and ridges into a series of poorly drained basins. It is distinct among the areal divisions of Missouri socio-economically and culturally as well as physically. Agriculturally the region emphasizes the production of cash crops, particularly cotton, and in recent years soybeans. Except for minor areas in nearby portions of the Ozark Province, cotton culture is limited to this part of the state. Nearly three-fourths of the total area of the Province is cropland and less than one-fifth is pasture.

Culturally the Southeastern Lowlands Province of Missouri is more like the South than the Midwest. Its agriculture has much in common with the South, and it is the only section of the state in which Negroes occur in significant numbers in the rural population.

Most of the hills and ridges of the Lowland are in the northwest. On the basis of the resulting soils, land-use, agricultural conditions, and other characteristics, the province can logically be subdivided into a Southeastern Ridge and Basin Region in the northwest and a Southeastern Alluvial Basin Region in the southeast (Fig. 12). This twofold subdivision is made, with minor differences in boundary, in the land-use areas, livelihood areas, state economic areas, and types-of-farming areas (Figs. 7, 8, 9, and 10).

Southeastern Ridge and Basin Region. The highest and most conspicuous ridges of the Lowland Province are contained in the Southeastern Ridge and Basin Region, together with their associated basins. The region consists of areas of recent alluvium, "second-bottom" terraces, and low ridges. The surface is predominantly level to undulating, although some of the loessial ridges are rolling.
The soils range from leached and poorly drained clays on the first-bottoms to well drained, fine sandy loams on the terraces, and productive but easily eroded brown silt loams on the ridges. Cotton, corn, and wheat are the principal crops, with recently expanded acreages devoted to soybeans.

The region correlates with the Mississippi Silty Terraces and Low Ridges land-use area, the Mississippi Terrace Ridge livelihood area, state economic area 9a (unnamed), and the Northern Corn, Cotton, and Wheat subarea of the Southeast Lowlands Cash Crops type-of-farming area.

**Southeastern Alluvial Basin Region.** The broad alluvial lowland of the Mississippi River is called the Southeastern Alluvial Basin Region. The only ridges of significance in this southeastern subdivision of the Lowland Province are two low “sand” ridges, which rise only 10 to 20 feet above the adjacent basins. The surface of the region is nearly level and naturally poorly drained. Some of the low-lying lands are subject to overflow. Most of the area has been drained artificially and is devoted to crop production. Cotton is the dominant crop, with recently increasing acreages devoted to soybeans. Approximately three-fourths of the farms are operated by tenants.

The region is the equivalent of the Mississippi River Bottoms land-use area, the Upper Delta, Missouri Section, livelihood area, state economic area 9b, and the Southern Cotton subarea of the Southeast Lowlands Cash Crops type-of-farming area. It is the least typical of Missouri and the Midwest of all parts of the State.