A POPULATION GEOGRAPHY OF THE GRANTS PASS DISTRICT, OREGON

by

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A THESIS

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APPROVED

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INTRODUCTION

The purpose of this paper is to describe and explain population distribution and movement in the Grants Pass District in light of its geographic setting. Before this is accomplished there are three questions of a general nature that need to be answered. Namely, what is the District, where is it located, and what is the physical and cultural nature of the District?

LOCATION AND DEFINITION OF THESIS AREA

In the southwestern part of the state of Oregon lies a rather loosely defined physical province variously named the Klamath Mountains, Rogue River Country, or Southwestern Oregon (locally, "Southern Oregon"). The bases for definition most generally used are drainage basins or landforms which, in part, accounts for the various boundaries ascribed to the province. For the purposes of this paper the province is arbitrarily bounded on the north by a line drawn roughly from Cape Blanco on the Pacific Coast to the city of Roseburg and then eastward to the Cascade Mountains which form the eastern boundary of the province. On the west the province reaches the Pacific Ocean and extends southward into northern California. As vague as these

boundaries may appear, they are justifiable in that the broad province is used in this paper only as a general frame of reference since the thesis is directed toward but one part of that province, the Grants Pass District.

The District is, essentially, the trade area of Grants Pass, a city of 10,000 persons and located on the Rogue River.[1] The boundaries of this trade area are derived from studies of newspaper circulation and school enrollment and by personal interviews. The outer boundaries are placed one-half mile beyond the end of access roads when there is little or no settlement (see figures 1 and 2).

The trade areas of two other cities in the province have a pronounced effect on the size of the Grants Pass trade area. The city of Medford (pop. 16,000), approximately 30 miles southeast of Grants Pass, comes into direct contact along two main roads east, i.e. the valleys of the Applegate and Rogue Rivers. To the north, along U.S. Highway 99, a contact zone occurs with the city of Roseburg (pop. 12,000) which is located about 50 miles north of Grants Pass. At these contact points the use of newspaper circulation tends to break down and necessitates

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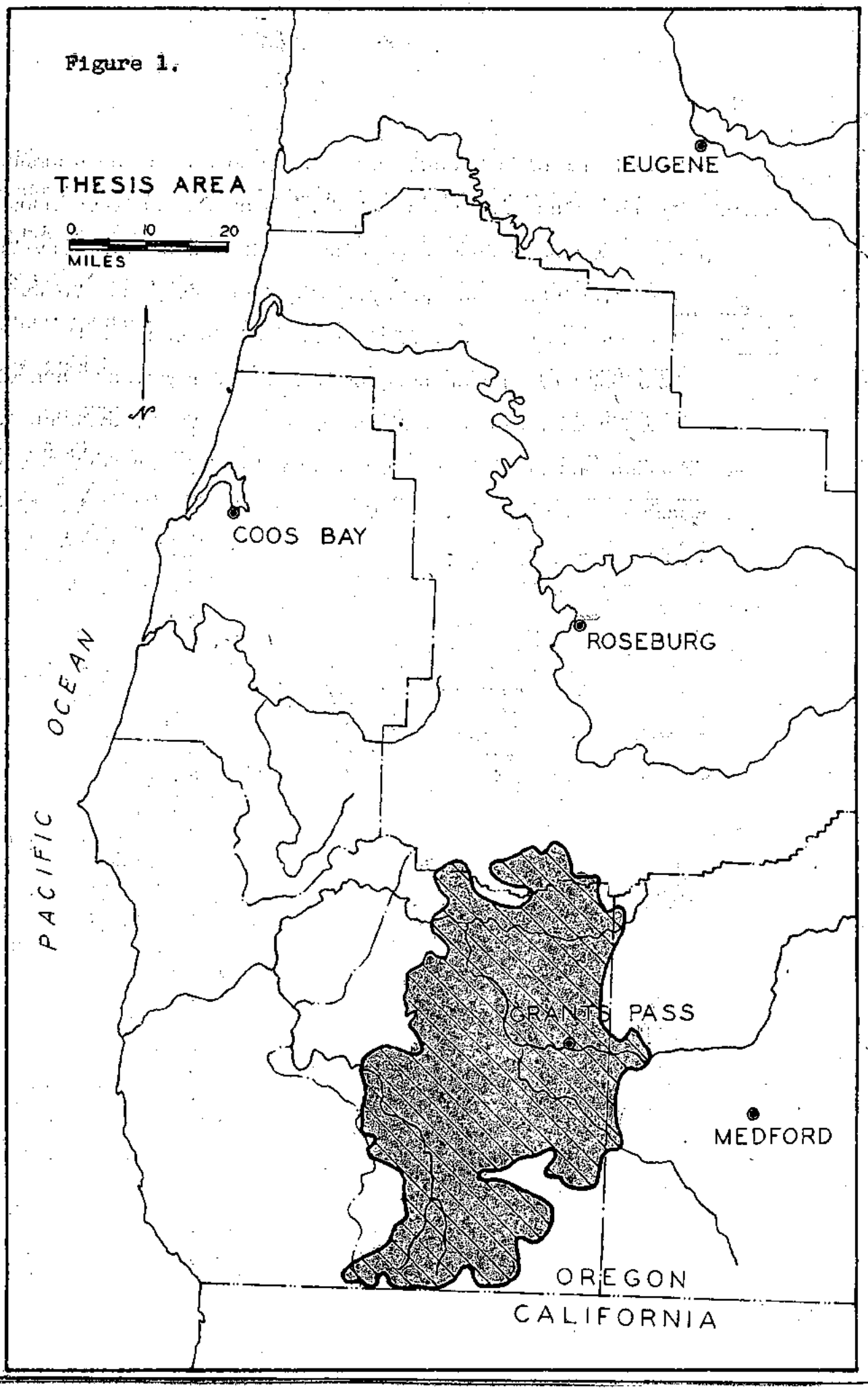
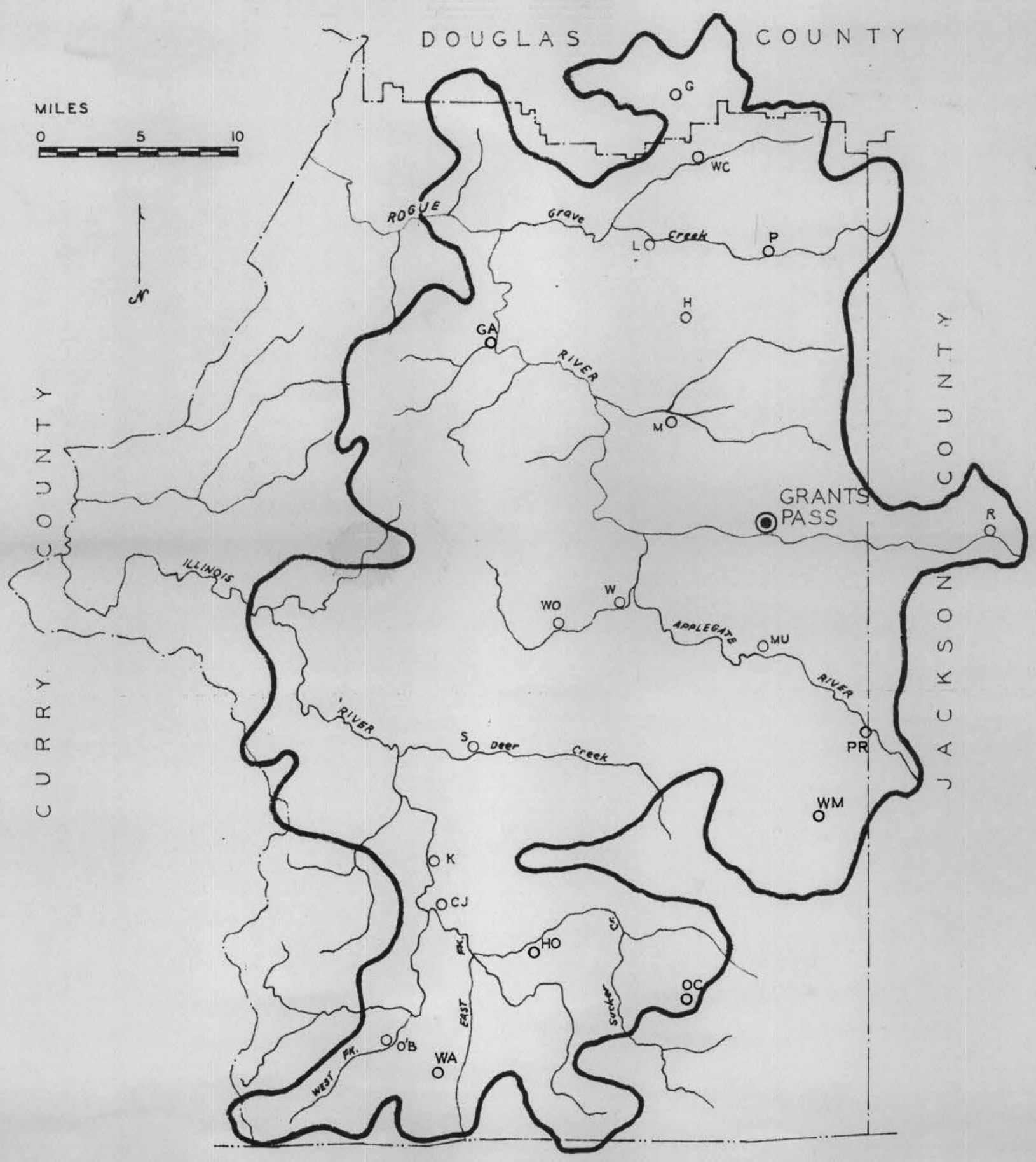
[1] The term, district, may be used interchangeably with trade or tributary area during the text of the paper. On several maps in the paper the term, sub-region, appears and may also be substituted for the term, district. This term implies the substitution of region for province.

Figure 1. Map of Thesis Area. The Grants Pass District, shown in blue, includes the greater part of Josephine Co. In the northeastern corner of the map, the Willamette River may be seen. Roseburg is situated on the Umpqua River; Grants Pass on the Rogue River. The towns of Coos Bay, Roseburg, and Eugene are three of the large lumber centers of the state.

Figure 1.


THESIS AREA
0 10 20
MILES
EUGENE
COOS BAY
ROSEBURG
PACIFIC OCEAN
GRANTS PASS
MEDFORD
OREGON
CALIFORNIA

GRANTS PASS SUB-REGION
JOSEPHINE CO.



CJ Cave Junction
G Glendale
GA Galice
H Hugo
HO Holland
K Kerby
L Leland
M Merlin
MU Murphy
OB O'Brien
OC Oregon Caves
P Placer
PR Provolt
R Rogue River
S Selma
W Wilderville
WA Waldo
WC Wolf Creek
WM Williams
WO Wonder

Figure 2. Base Map

the use of additional information to determine the trade area boundaries. Here, the information is supplemented by personal interview and study of school enrollment.

Using these techniques, the size and shape of the tributary area of Grants Pass is defined. The form is an irregularly shaped ellipse with many marked indentations. This shape is influenced by several factors, not the least important being relief and transportation routes. The trade area includes about 1,220 square miles and reaches a maximum length of 55 miles and a maximum width of 30 miles. The western edge lies approximately 40 miles inland from the Pacific Ocean. Basically, the District includes the inhabited portion of Josephine County plus the town of Rogue River in western Jackson Co., and the town of Glendale in southern Douglas County.

THE PHYSICAL FRAMEWORK

The physical makeup of the District is fundamental toward the understanding of the population pattern. The physical features have exerted and presently exert an indirect influence on the population through the economic base. This relation of the physical framework to the economy and, in turn, the economy to the movement and distribution of people, are the basic considerations in this thesis.

In light of this, it is desirable to look briefly at the physical setting before proceeding into the text of the paper. No attempt will now be made to relate or explain the physical phenomena in this section. It remains, simply, a brief description of four "key" elements in the physical framework of the District: climate, drainage, landforms, and vegetation.

Climate

The climate of the Grants Pass District reflects its latitude and its position near the west coast of the continent. The character of the climate is Mediterranean (see figure 3. for monthly data on the climate of Grants Pass). According to the classification of Koppen, it is represented by the symbol, Csb. The average temperature of the warmest month, however, places the climate very close to Csa.[1]

Air temperatures are influenced by the proximity of the Pacific Ocean which lies some 40 miles west of the District. Maritime air moves in an easterly direction, moderating the climate, and serves to keep valley temperatures uniformly mild with January averages above freezing

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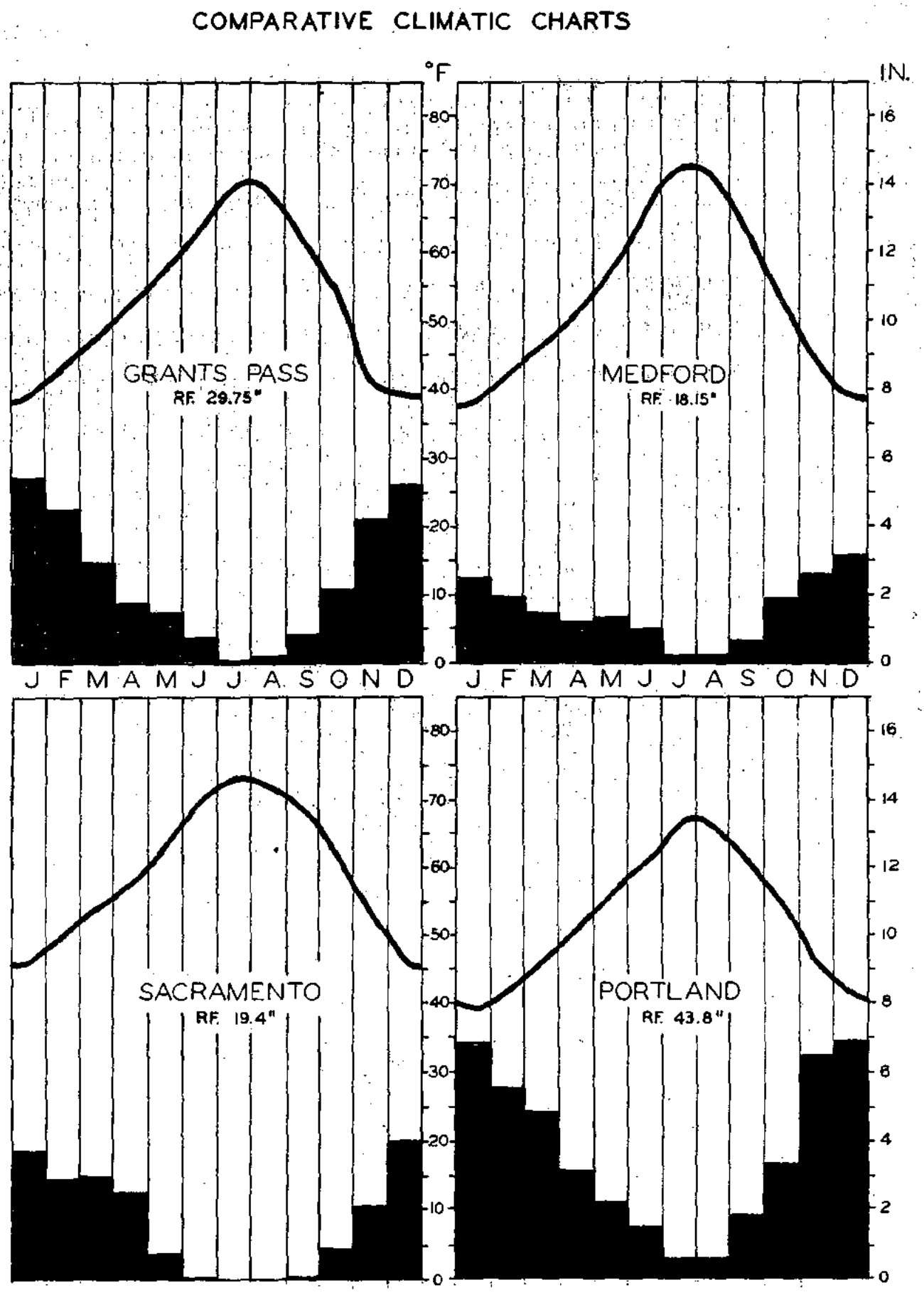
[1]The symbol, Cs, denotes a dry summer, subtropical climate; the small letter, a, indicates the average of the warmest month is over 71.6° F, and small b, below 71.6° F.

Figure 3. Comparative Climatic Charts. Four Mediterranean climates are represented, Medford and Sacramento being Csa, and Portland and Grants Pass being Csb. Sacramento is the only station of the four located outside the state of Oregon. There is a notable reduction of annual rainfall from north to south (Portland to Sacramento) and west to east (Grants Pass to Medford). There is also a trend toward increasing maximum temperatures from north to south, and west to east, reflecting the distance from maritime influences.

Figure 3.


COMPARATIVE CLIMATIC CHARTS
°F
IN.
GRANTS PASS
RF. 29.75"
MEDFORD
RF. 18.15"
SACRAMENTO
RF. 19.4"
PORTLAND
RF. 43.8"
J F M A M J J A S O N D
80
70
60
50
40
30
20
10
0
16
14
12
10
8
6
4
2
0

and July averages around 70° F and lower. In relation to western Oregon, this July average is high and it is not uncommon for summer temperatures of the District to exceed 100° F for short periods of time.

Vertical variations of temperature occur in the District and are most pronounced in summer. On the summit of Sexton Mountain (3,834'), 20 miles north of Grants Pass, the January average is 35.8° F and the July average is 63.2° F. In the basin to the south, Grants Pass (926') records a 39.2° F January average and a 70.1° F July average. As may be seen from the climatological data below, the temperatures are mild with some vertical zonation being of note.

STATION[1]	ELEV.	JAN. TEMP.	JULY TEMP.
Brookings	100'	46.0	58.0
Wolf Creek	1291'	38.0	67.4
Sexton Summit	3834'	35.8	63.2
Grants Pass	926'	39.2	70.1
Williams	1407'	38.7	67.0
Waldo	1567'	36.4	67.2
Medford	1314'	37.9	72.7

Broadly, it may be stated that progression eastward causes an increase in the continentality of the climate, characterized by decreasing length of growing season, high and lower maximum and minimum temperatures, res-

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[1]Two stations outside the trade area were introduced to illustrate regional differences. Brookings is located on the coast about 40 miles west of the District, while Medford lies approximately 20 miles east of the District.

pectively, and greater diurnal temperature range. The length of growing season while, generally, over 200 days, varies considerably.

Except for infrequent summer thunderstorms, the precipitation regime is governed by air masses moving inland from the Pacific Ocean. The seasonal shift of Pacific pressure belts in winter, causes the low cell in the Gulf of Alaska to be replaced by relatively high pressure in the summer. This fact is fundemental to understanding the areal and seasonal distribution of precipitation in the District.

Variations in the annual precipitation within the trade area are apparent. The western edge of the District receives in excess of 50 inches per year and outside the District, on the coast, rainfall is heavy with Brookings recording an annual rainfall of 74 inches. The interior valleys of the District exhibit a certain rain shadow effect. Grants Pass has the lowest average annual precipitation of the stations in the trade area, about 30 inches. Medford, east of the trade area, has only 18.15 inches per year.

STATION	AVERAGE PRECIPITATION		
	Jan.	July	Annual
Brookings	11.80	.52	74.00
Wolf Creek	6.42	.10	38.38
Sexton Summit	4.02	.32	30.96
Grants Pass	5.39	.14	29.75
Williams	5.89	.29	31.81
Waldo	8.90	.23	49.39
Medford	2.51	.17	18.15

Marked is the concentration of precipitation in the winter. At Grants Pass the combined average of the winter months of November, December, and January is 19.37 inches or approximately two-thirds of the total annual precipitation. In the valleys, most of the precipitation falls in the form of rain, snow cover usually being less than 10 days per year. Above 2,500 feet the snow cover becomes significant and nearly two feet of snow may cover the ground at times during the winter. Above 4,000 feet the depth of winter snow limits access into these elevations until the early part of May.

Drainage

The entire trade area of Grants Pass is drained by the Rogue River System, with one exception: the Glendale locality which is drained by Cow Creek, a tributary of the Umpqua System to the north. The Rogue and its largest tributaries, the Illinois and Applegate Rivers, so dominate the drainage pattern of the District that any discussion of the drainage features focuses attention on these rivers.

The Rogue River is about 210 miles in length and drains a basin of 5,050 square miles in southwestern Oregon and a small part of northern California. Rising at an elevation of about 6,000 feet in the Cascade Mountains,

the mainstream flows west, cutting through the Klamath Mountains and emptying into the Pacific 25 miles north of the California-Oregon border.

Of the 210 miles in its length, approximately 50 miles of the river winds its way through the Grants Pass District. This includes the distance from a point about 60 miles upstream from the mouth, near the confluence of Rogue River and Grave Creek, to a point near the town of Rogue River, roughly 110 miles upstream from the mouth. Along this middle route, the mainstream is fed by three major tributaries: the Applegate River, Jumpoff Joe Creek, and Grave Creek.

About ten miles downstream from Grants Pass the Applegate River enters the Rogue at an elevation of 850 feet. Of the Applegate's fifty miles of length, about 20 miles of the lower river is inside the Grants Pass District. The Applegate drains an area of 767 square miles and has a mean annual runoff of about 400,000 acre-feet.

Eleven miles downstream from the confluence of the Rogue and Applegate Rivers, Jumpoff Joe Creek enters the mainstream. This small stream drains a portion of the northern part of the District, flowing west during most of its 20 miles of length.

Near the northwestern corner of the District, Grave

Creek feeds the Rogue (see figure 4). Flowing west out of the northern highland area of Josephine County, Grave Creek is about 30 miles in length. Its stream gradient is one of the steepest of the larger streams in the District, dropping 3,400 feet in its 30 mile length.

West of the District, about 23 miles upstream from the mouth of the Rogue, the mainstream receives its largest tributary, the Illinois River. The Illinois drains an area of 970 square miles and has a mean annual runoff of 1,480,000 acre-feet, roughly half the runoff of the Rogue River at the confluence of the two rivers. Inside the trade area of Grants Pass, before the Illinois embarks on its tortuous journey to meet the Rogue, it forms a broad valley in the southern part of Josephine County, the largest uninterrupted lowland in the District.

Near the town of Cave Junction in the Illinois Valley, the East and West Forks of the river meet to form the mainstream. At this point the East Fork has dropped nearly 2,500 feet in its 20 miles of length to reach the valley floor. The gradient then flattens and drops only 450 feet in the next 24 miles where the stream leaves the trade area. At Kerby, two miles downstream from Cave Junction, the mean annual runoff is 734,000 acre-feet, or one-half the runoff of the Illinois at its mouth.

Sucker Creek and Deer Creek are two of the more im-

Figure 4. Above is the confluence of Grave Creek and Rogue River (foreground). The tributary was muddy at the time of the picture due to melting snows and hydraulic mining upstream.

Figure 5. Rogue River Canyon five miles north of the town of Galice.

portant tributaries of the Illinois in the valley, and form sizeable tributary valleys in themselves. Sucker Creek is 25 miles in length and feeds the East Fork about 5 miles upstream from the confluence of the two forks of the Illinois River. Deer Creek travels about 19 miles to enter the mainstream 15 miles downstream from Sucker Creek. Both creeks exhibit extremely sharp gradients with Sucker Creek dropping 2,600 feet in 23 miles and Deer Creek nearly 2,000 feet in 19 miles.

Closely allied to the precipitation regime are the seasonal changes in the flow of water of the streams. The late summer marks a time when the water levels are extremely low and the smaller streams may be completely dry. In the winter and spring, water levels are high due to the heavy winter rains and the melting of snow in the higher elevations. The Illinois River at Kerby, for instance, has in the months of August and September, a mean runoff of less than one per cent of the total mean runoff. The other extreme is represented by the runoff during the months of January and February, accounting for nearly 45 per cent of the mean annual runoff. This sharp seasonality of runoff may be seen in the river data for the major streams of the District introduced on the following page.

STREAM	1928-42 AVERAGE RUNOFF[1] in 1,000 Acre-Ft.			
	Nov-Mar	Apr-Jun	Jul-Sep	Annual
Rogue River (Grants Pass)	1,133	477	175	1,867
Applegate River	270	112	7	393
Jumpoff Joe Creek	28	5	0	33
Grave Creek	42	13	1	56
Illinois River (Kerby)	544	173	10	734
East Fork	77	28	3	110
West Fork	73	26	2	103
Sucker Creek	131	43	8	184
Deer Creek	32	9	0	41

This peculiar seasonality of stream flow may later be seen to manifest itself in the nature of the economy, particularly in mining and agriculture.

Landforms

The District lies near the center of the Oregon Klamath Mountains, a rugged, deeply dissected mountain province of northern California and southwestern Oregon. Generally, the structure trends northeast-southwest, but pronounced stream erosion has all but erased any apparent alignment to the structure. In its place erosion has left a landscape of many narrow, deeply incised valleys, a few broad alluvial basins, discontinuous ridges, and rounded peaks (see figure 5).

Within the District there are three broad alluvial basins: the Rogue River around Grants Pass, the Applegate

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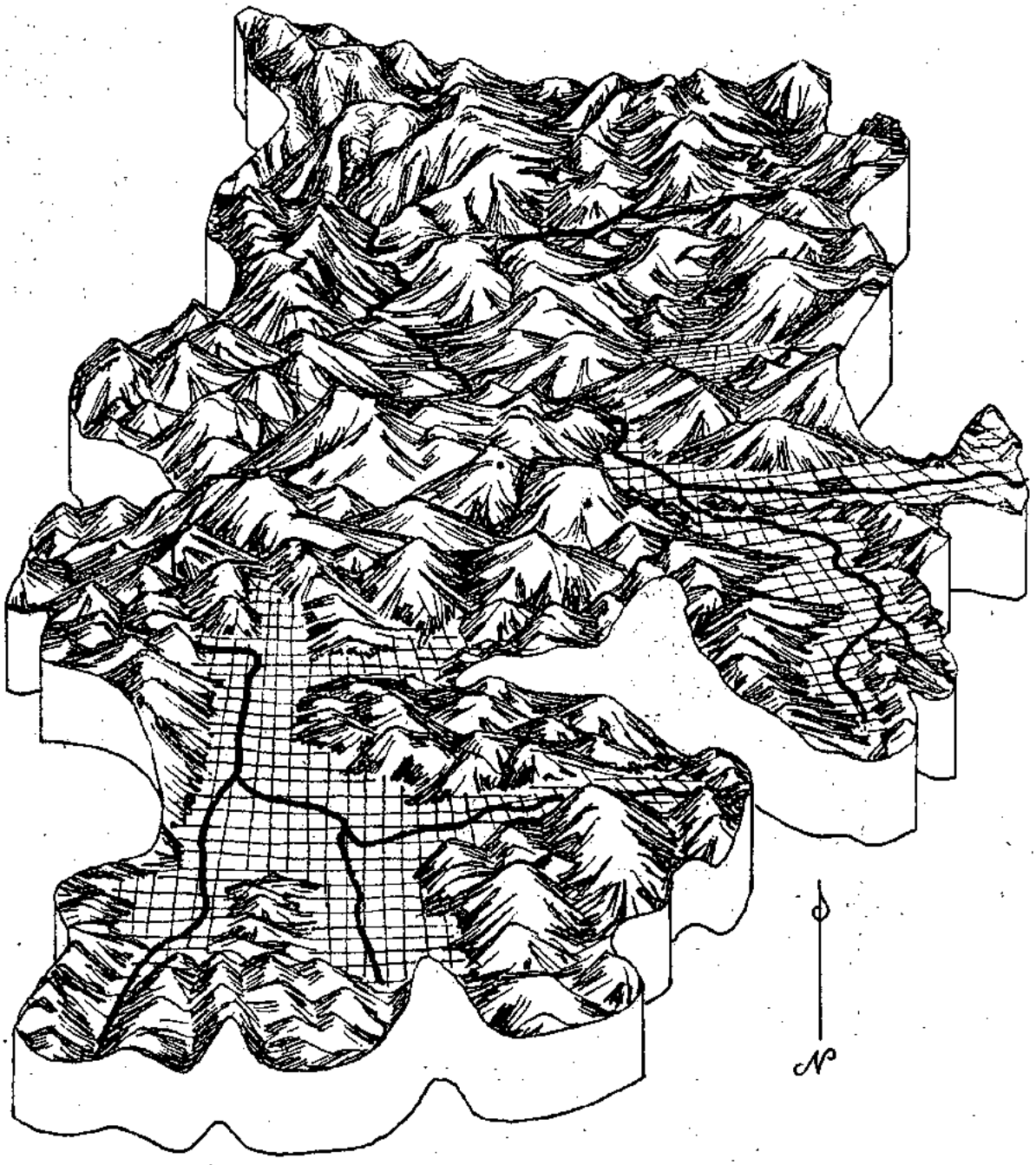
[1] Selected river data from Rogue River Basin Project, Oregon (proposed report), Boise: U.S. Bureau of Reclamation, 1950.

Figure 6. Generalized Relief. This is a sketch of the general relief features within the trade area. The lowlands are cross-hatched. There is a gradual increase of scale from south to north due to perspective. The basin at the bottom is the Illinois Valley. On the right are the basins of the Rogue and Applegate Rivers; the approximate location of Grants Pass is shown by the dark square in the Rogue Valley.

Figure 6. Generalized Relief



GENERALIZED RELIEF
GRANTS PASS
SUB-REGION

Valley, and the Illinois Valley. These basins are not large; the combined area of level land being on the order of 100 square miles. This combined area of level land comprises only 8.2 per cent of the 1,120 square miles in the Grants Pass trade area, yet, the great majority of agricultural land is concentrated in these three basins (see figure 6).

Upon initial observation, the ridges and mountains of the District exhibit a seemingly undefinable pattern of orientation and distribution. As they are studied more closely, it is evident that streams have played an important role in the formation of the upland pattern. Therefore, a name that could be applied to the ridge and mountain pattern is dendritic.

The peaks are, typically, rounded and 4,000 to 5,000 feet in elevation. They are not particularly prominent, often being surrounded by ridges of nearly equal height. The ridges, however, are usually much lower in elevation and average about 2,000 to 3,500 feet. They are steep, rising abruptly from the numerous, threadlike valleys, and dominate the upland pattern of the District.

Two features are common to the upland: the predominance of serpentine, granite, and basalt outcroppings in the higher areas and the rather uniform height of the

peaks. This latter fact led Diller to call the province the Klamath Peneplain.[1]

The steep slopes, narrow valleys, and rock outcroppings create a rugged topography, typical of most of the District. The nature of this rugged terrain is further emphasized by the vegetation pattern which varies from dense forest with heavy undergrowth, to scrub thickets of thorny brush and oak.

Vegetation

The District is situated in a vegetative transition zone between the extensive, humid coniferous forest zone of western Oregon and Washington and the dry broadleaf forest zone of California. That the District is a forested area dominated by the Douglas fir, is an over-simplification of the vegetation pattern. The distribution of vegetation is complex, notwithstanding the fact of man's modification of the landscape by fire and axe. Added to this, the forest types, themselves, are highly variable and complex. Needleleaf evergreen, broadleaf evergreen, and broadleaf deciduous types are widespread and at least four species may be recognized within each type. The species may grow singly, in pure stands, or mixed with

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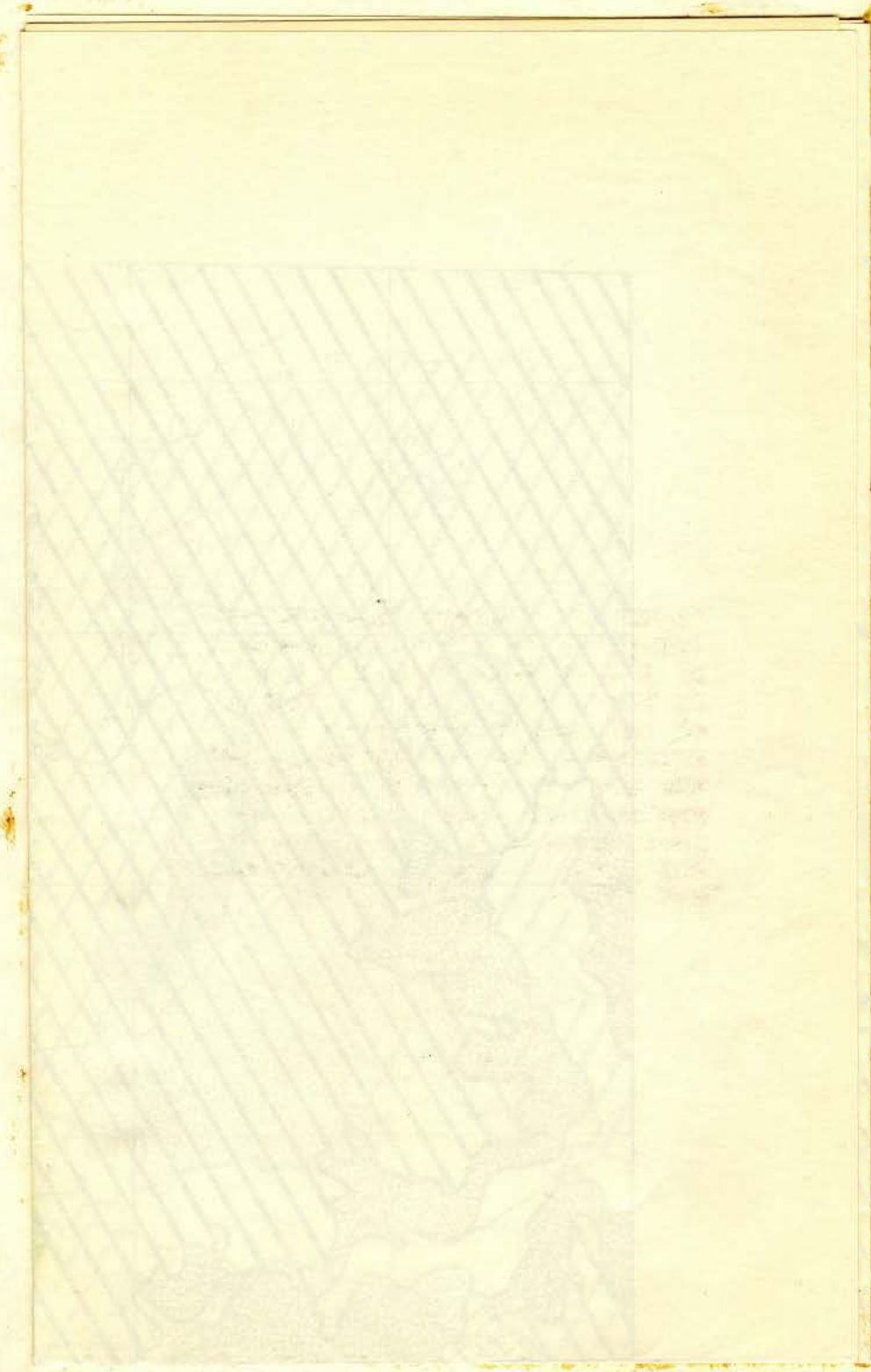
[1]Diller, J.J., "Topographic Development of the Klamath Mountains," U.S.G.S. Bulletin No. 196, 1902.

Figure 7. Forest Type Map of Josephine Co. The trade area of Grants Pass includes most of the county; the only parts of the county outside the District are the western edge and the northwestern and southeastern corners.(see figure 2. for further details). Douglas fir and pine forests include burns and second-growth timber.

Figure 7. Forest Type Map, Josephine County



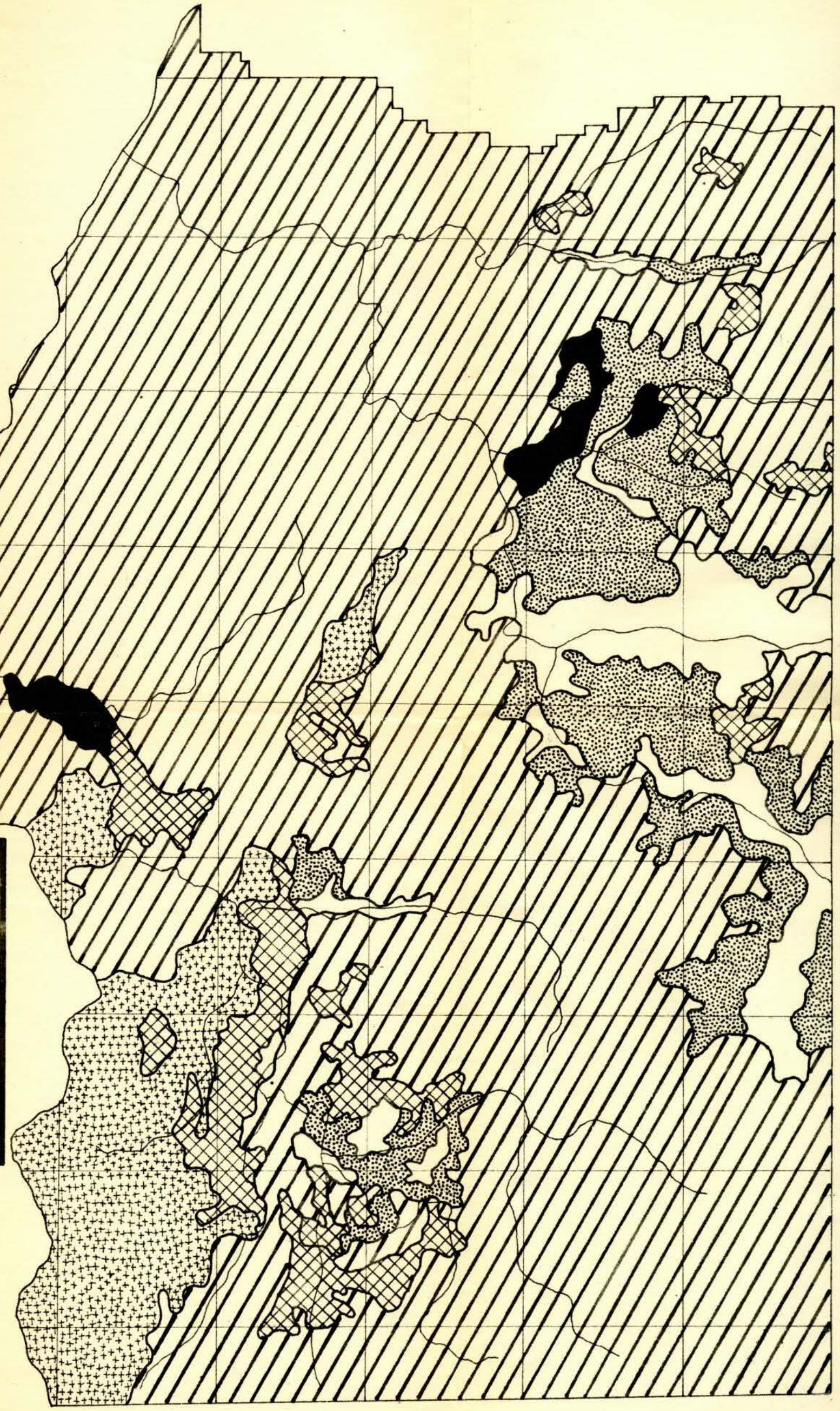
Source: Forest Type Map of Oregon, U.S. Forest Service, 1936.

est Type Map, Josephine County

FOREST TYPES
JOSEPHINE CO.

SCALE 1:250 000

N



LEGEND

- DOUGLAS FIR
- PONDEROSA PINE - MANZANITA
- SCRUB PINE - MADRONNE - OAK - MANZANITA
- OAK - MADRONNE
- SUB - ALPINE FOREST - MANZANITA
- NON - FORESTED

other species and/or types. The pronounced local relief of the District causes a marked vertical zonation of species and types within small areas (figure 7).

The Douglas fir and some cedar, true firs, and pine form a dense forest in the wetter areas of the District. These wetter areas are the higher and shadowed slopes of the uplands.

The vegetation of the valley floors and south-facing slopes reflect dryness. Pine, madronne, and oak grow singly or in scattered stands. However, the most characteristic type of dry vegetation is thick scrub brush, mainly dwarf live oak, manzanita, and ceanothus scrub undergrowth.

DISTRIBUTION AND MOVEMENT OF POPULATION

There are 33,000 people in the District, some 30,000 of whom live in Josephine County. Broadly, there are five characteristics of these 33,000 people that are of real significance: 1) distribution, 2) movement, 3) sex ratio, 4) age groupings, and 5) occupation.[1] The nature of the occupations of the people, the economic base, plays a dominant role in shaping the nature of the other four characteristics.

Population distribution and movement are of primary concern in this paper.

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[1]The selection of these five characteristics depends on the emphasis of study. To the list could be added: life expectancy, fertility, and marriage and divorce rates, to name only a few of the aspects of population worthy of demographic analysis.

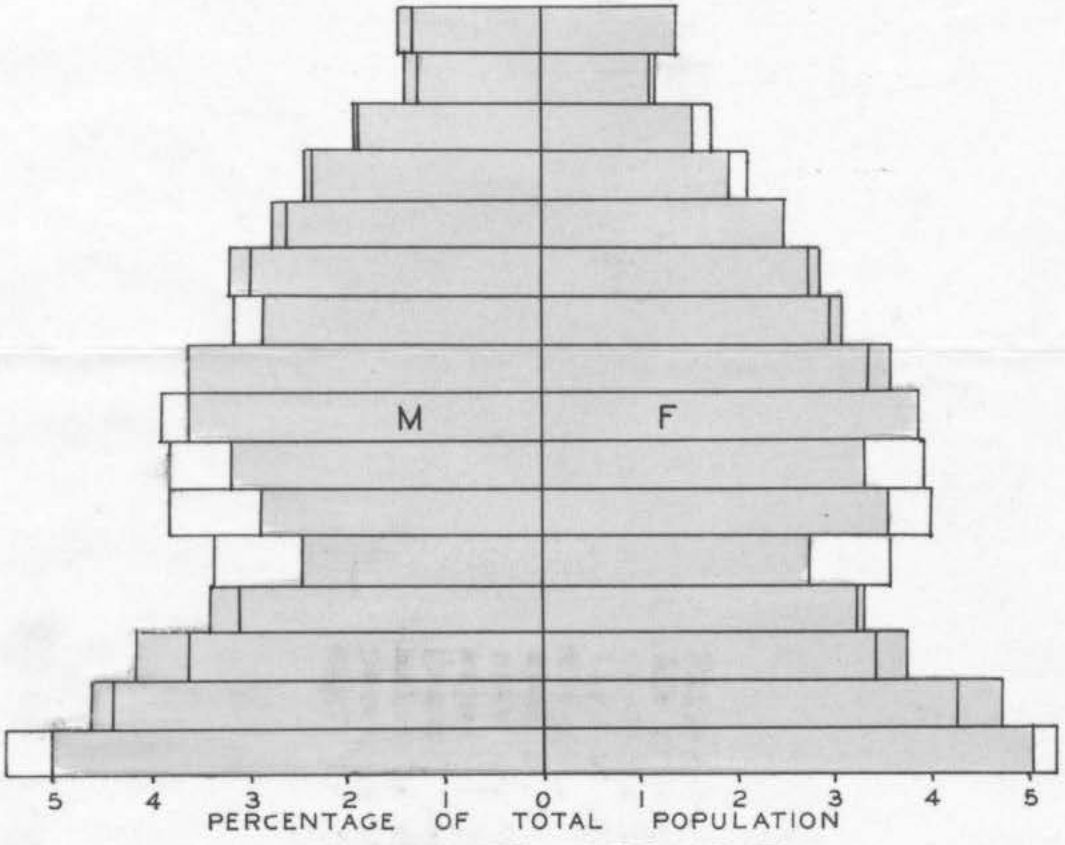
Age groupings and sex ratios are important indicators of the economic base of the people. The sex ratio, i.e. the number of males per 100 females, is highly significant. For the state of Oregon this figure is 103, a high ratio considering that there are few states in the U.S. having a dominance of males. This ratio is still higher in the District, being about 107. Contrary to most ratios in the population of the U.S., the sex ratio is even greater in the age groups over 60 years. This is most striking in Josephine County where the sex ratio of people over 60, is about 130. This very high figure may be explained by the emphasis on male labor in the economy, both past and present. That the District, and the state, economy rests on the exploitation of resources, is reflected in the population pyramids on the following page (figure 8).

Figure 8. Population Pyramids. Age groups are given as percentages of the total population of the county and state. The upper bar includes all persons over 75 years. Of special note are the dominance of males especially in the upper age groups, and the dominance of males in Josephine County compared to the state of Oregon, again in the upper age bracket.

Figure 8. Population pyramids for Josephine Co. and Oregon, 1950

Source: 1950 U.S. Census of Population, Washington D.C.: U.S. Bureau of the Census, 1951.

POPULATION
BY FIVE-YEAR AGE GROUPS



PERCENTAGE OF TOTAL POPULATION

RED INDICATES JOSEPHINE CO.
PLAIN LINE INDICATES OREGON

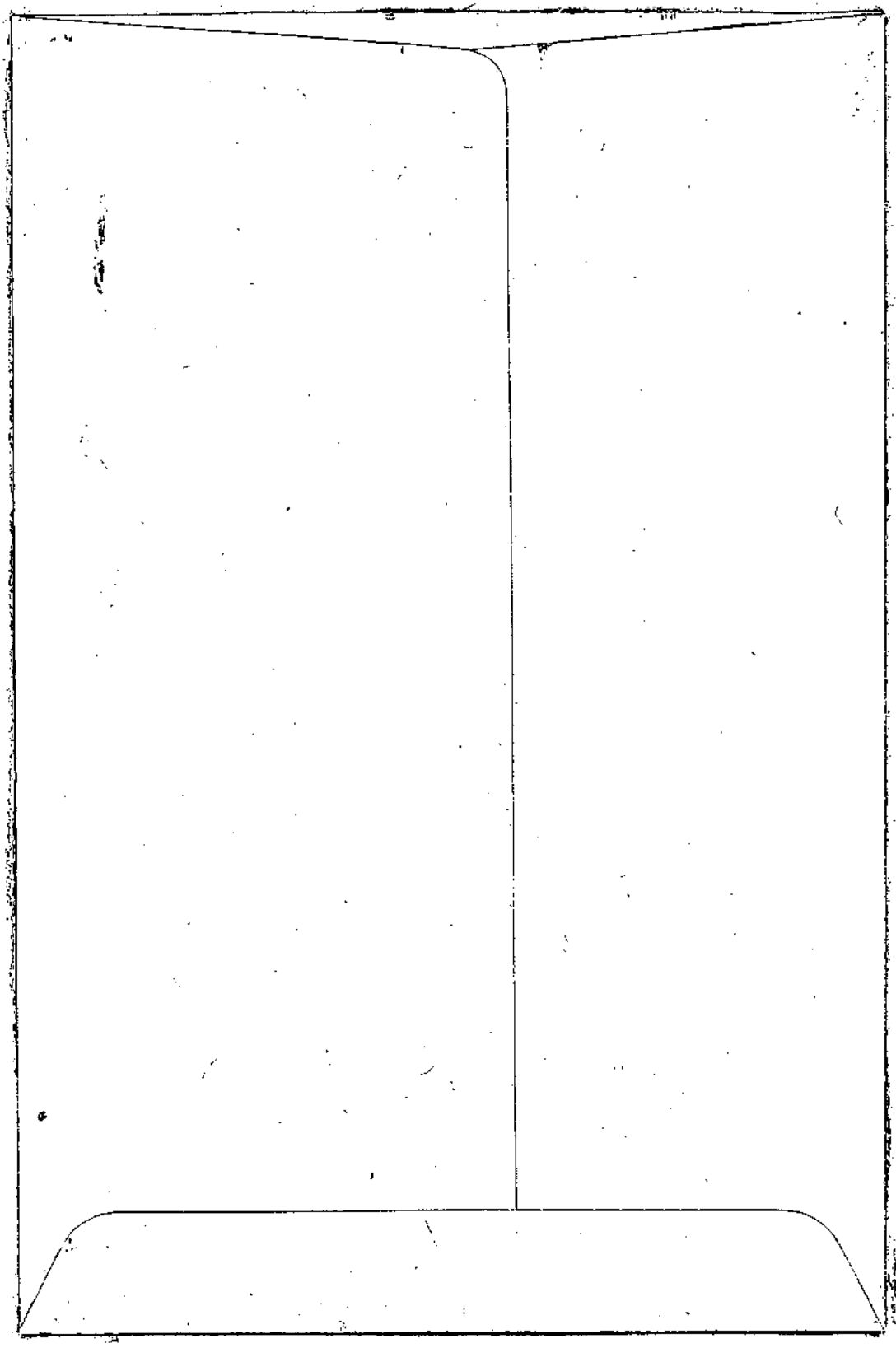
Figure 9. Dot Map Overlay of Population. The overlay is meant to used in conjunction with the three following maps (figs. 10-12). The dot map with figure 11, Transportation, reveals a concentration of people along lines of communication. String settlement along the streams is also evident. Figure 11 alone reveals the limited number of paved roads in the District. One of the most significant items in the distribution of the population is readily apparent when the dot map is placed over the map of the 1600 foot contour line, figure 12. As may be seen, nearly all of the people live in the lowlands, the areas below 1,600 feet. The distribution below this elevation is not continuous, since there are numerous local interruptions in the topography in the form of low ridges, hills, and forests.

Figure 10. Population Density Map. The dasymetric technique was employed, using the dot map as the basis of construction.

Figure 11. Transportation Map. Only railroads and paved highways are depicted.

Figure 12. 1600 Foot Contour Map. The contour line was drawn from U.S.G.S. Quadrangles.

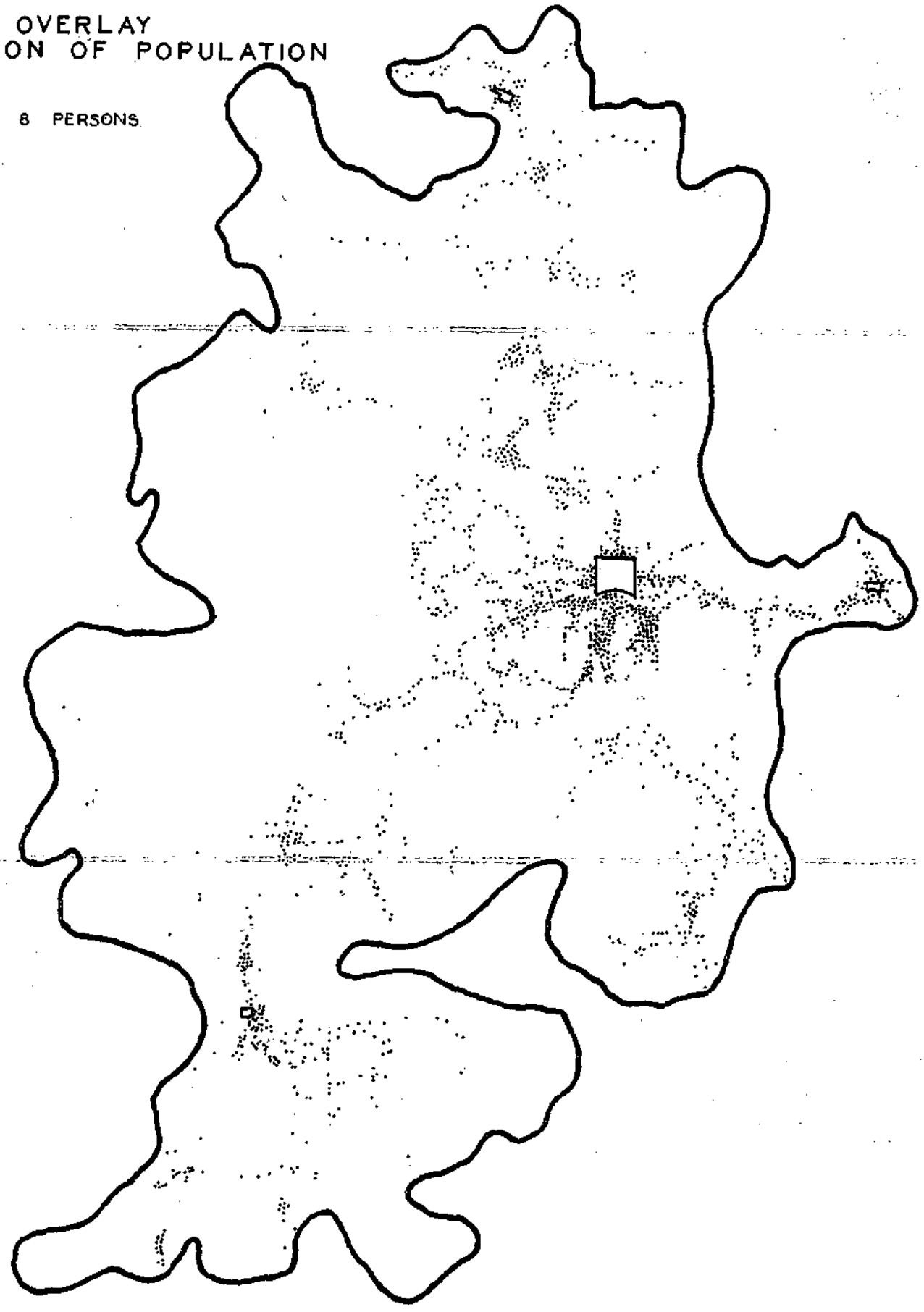
Figure 9. Dot Map Overlay of Population



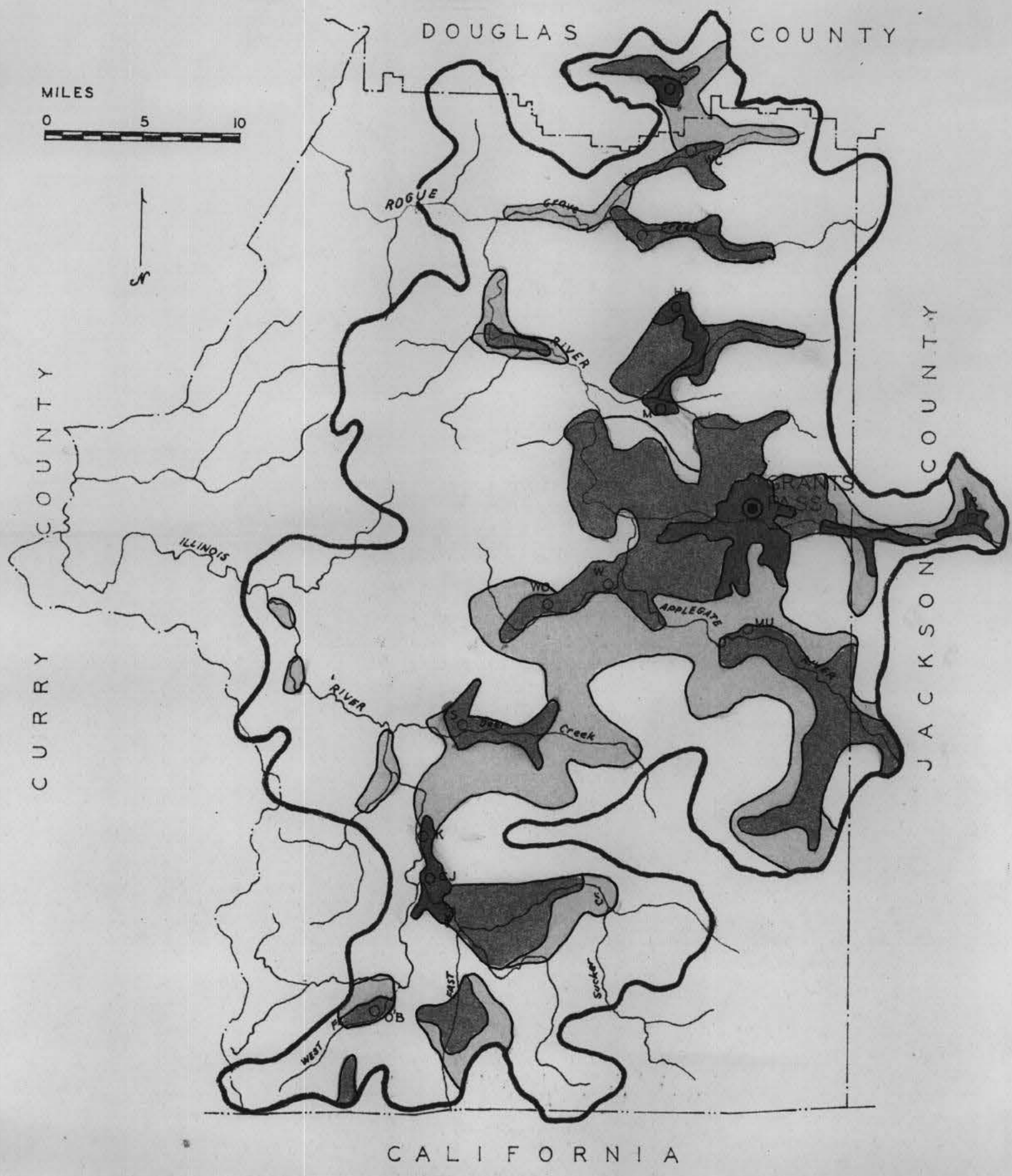
OVERLAY

DISTRIBUTION OF POPULATION

ONE DOT EQUALS 8 PERSONS



GRANTS PASS SUB-REGION
JOSEPHINE CO.
POPULATION DENSITY

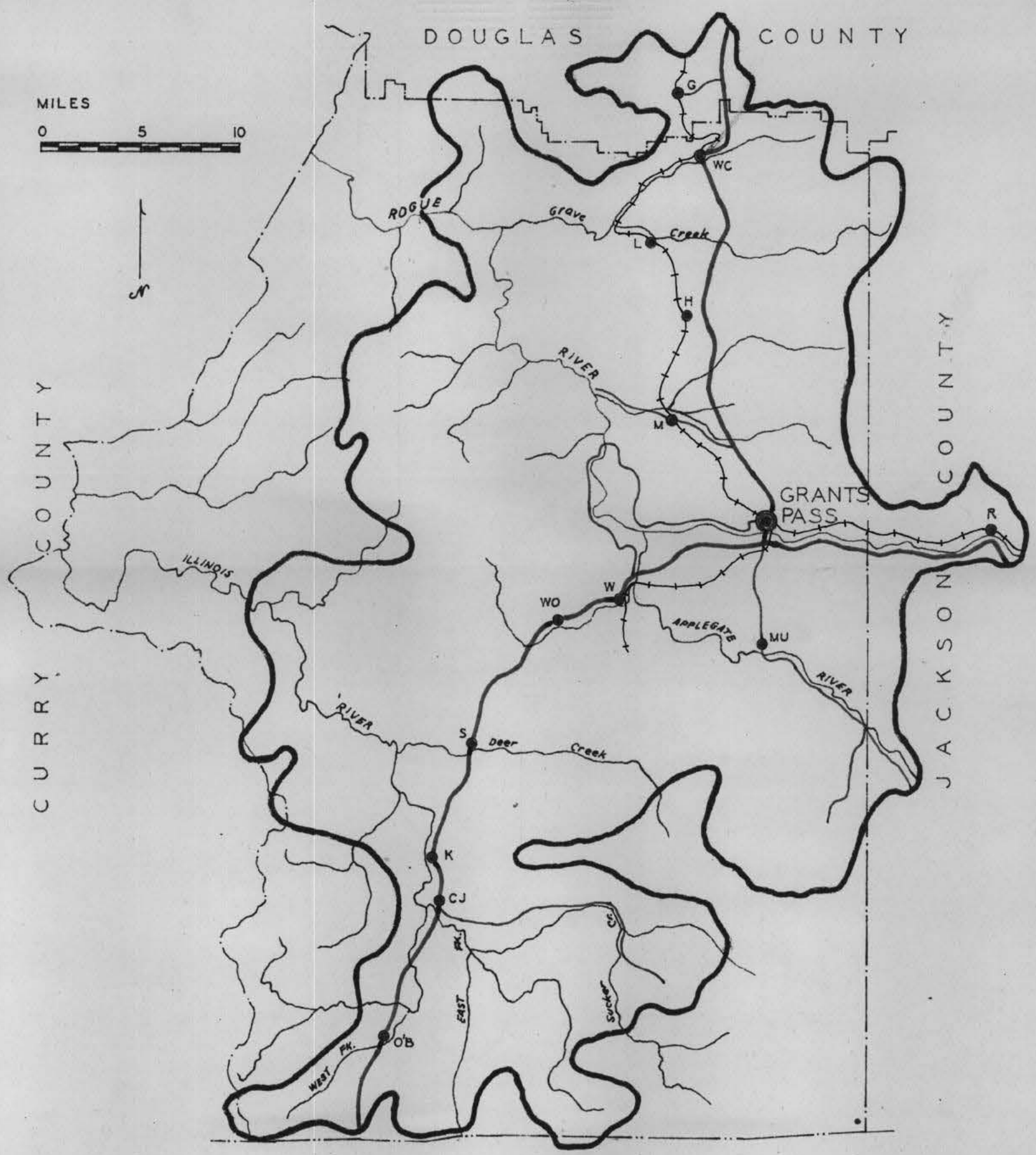


NO. PERSONS PER SQ. MILE

OVER 100
25 - 100
5 - 24
LESS THAN 5

Figure 10. Population Density Map

GRANTS PASS SUB-REGION
JOSEPHINE CO.
TRANSPORTATION



PRIMARY PAVED HIGHWAY

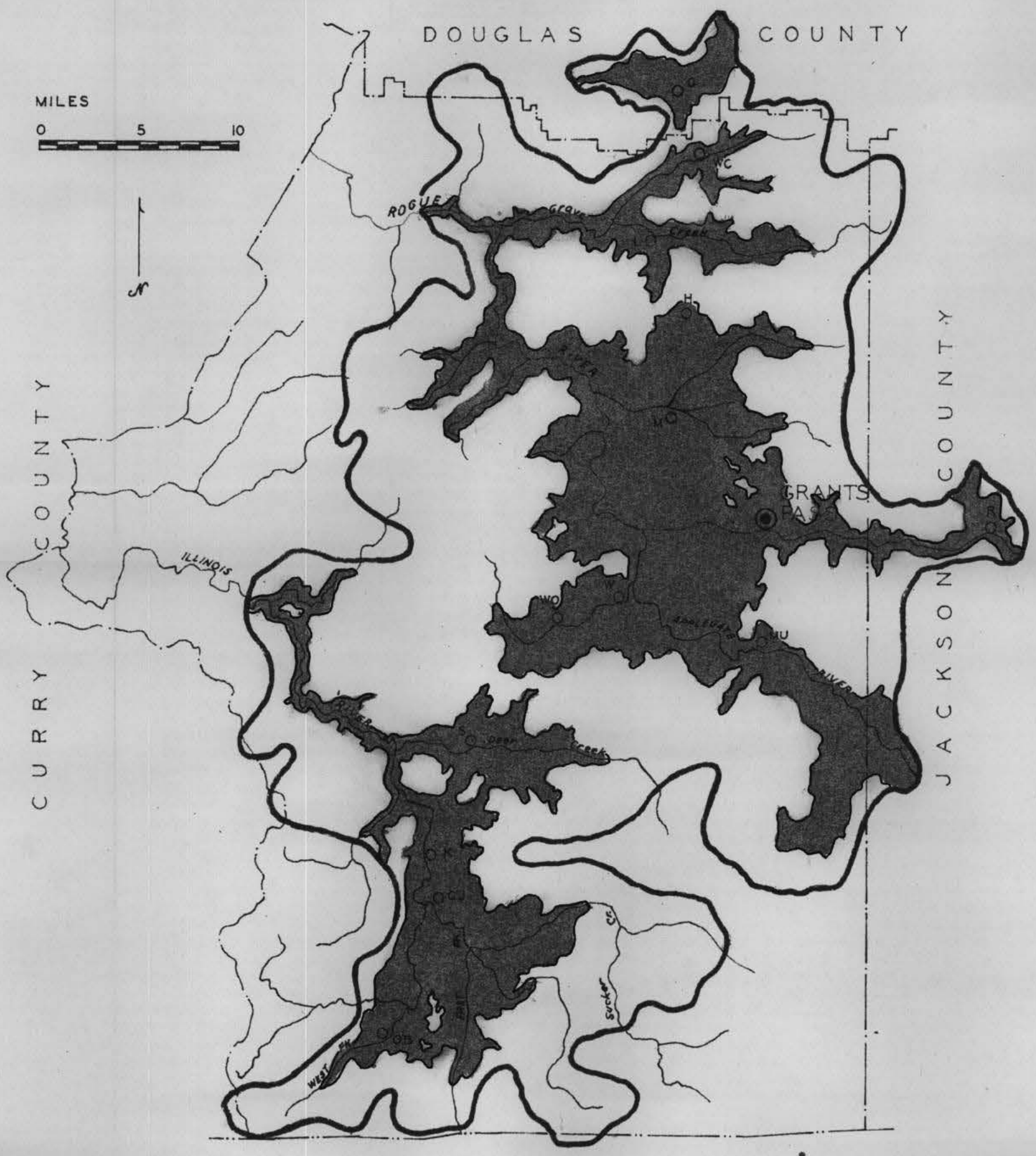
SECONDARY PAVED HIGHWAY

RAILROAD

Source: General Highway Map, Josephine County, Salem: State Highway Dept., 1954.

Figure 11. Transportation Map

GRANTS PASS SUB-REGION
JOSEPHINE CO.
1600 FOOT CONTOUR



AREAS BELOW 1600 FEET SHOWN IN GREEN

Source: U.S.G.S. Quadrangles, Washington D.C.: U.S.G.S., 1954.

Figure 12. 1600 Foot Contour

DISTRIBUTION

Two features are outstanding in the distribution of population within the District. First, the significant proportion of settlement in the valleys (areal distribution) and, secondly, the dominance of rural non-farm in the population structure (structural distribution).

Areal Distribution

The pattern of areal distribution is readily apparent from inspection of the dot map overlay (figure 9) and the population density map (figure 10). The valley settlement is linear and non-contiguous, a pattern which appears even in the core area around the city of Grants Pass. This city and its immediate area along the Rogue River contain the greatest population densities. Other densities of over 100 persons per square mile, occur in the valleys of Cow Creek at Glendale, Jumpoff Joe Creek between Hugo and Merlin, and in the valley of the Illinois River at Kerby and Cave Junction. These nuclei occur where overland transportation lines cross streams(see figure 11). Outside the lowland population clusters, densities tend to drop off abruptly to less than five persons per square mile (see figures 10 and 12). These sparsely populated lands comprise over fifty per cent of the total area of the District and serve to re-emphasize the pattern

of concentration.

Lumbering and mining, particularly placer mining, have served to make settlement in the valley attractive. The gold placers are not only located in or near the valley floors, but the operations are usually connected to the use of stream water. In lumbering, the larger mills need pond water, a nearby labor supply, and level land for buildings and lumber storage, all of which are found in the valleys.

It is, however, with agriculture that the most pronounced orientation toward valley settlement occurs, and a variety of physical factors are closely related to the farming endeavors. The climatic regime is such that it requires the use of supplementary water on some lands during the late summer months. To use the water of the streams, the farms must be relatively low in elevation and close to a supply of water, a position which most of the valley sites provide. Reduction of wind velocities in the valleys and the relative lack of winter snows and temperature extremes have made the valleys favorable to settlement.

Nearly all the level land or gently sloping land of the District is to be found in the valleys. This fact, and that of the deep valley alluviums, often suitable for cultivation, are leading elements in the explanation of

lowland farming and settlement.

Main transportation and communication lines are principally oriented in a north-south direction while the drainage pattern is east-west in general nature. Where these transportation lines cross the stream valleys, the population has tended to concentrate. With the railroad this occurs at, or near, the communities of Glendale, Leland, and Merlin. Main highways cross streams at Wolf Creek, Sunny Valley, Murphy, Wilderville, Selma, Cave Junction, and O'Brien.

Grants Pass is situated on the Rogue River where both of these forms of transportation cross the largest single stream in the District. The location of the city possesses additional attributes that are conducive to population concentration. It lies within one of the three broad alluvial basins, most of the lowland being irrigable; mining activity has been noteworthy around the perimeter of the basin, an economy which gave an early stimulus to agriculture; the city possesses direct access to the logging areas of the northern District; and it has direct overland communication, by rail and road, with the broad alluvial basin of Medford to the east.

From a negative standpoint, the rugged interfluves offer little encouragement to settlement --- steep slopes, poor and rocky soils, heavy snow in the higher elevations,

and dense coniferous and scrub forests. In this connection, the coniferous forest has led to an emphasis on lumbering, yet, the logger and mill worker still live in the valleys. Scattered lode gold mining in the past, and recent chrome mining led men into the ridge and mountains areas, but the settlement was temporary in nature with little lasting effect on the present distribution pattern.

Structural Distribution

Structural distribution may be defined in this paper as the percentage distribution of population according to the characteristics which pertain to the place of residence.[1]

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[1]Information on structural distribution was derived from the 1950 U.S. Census of Population. Certain limitations on the accuracy of the information are, therefore, very apparent.

First, the age of the data, which is as much as eight years old, leaves much to be desired. The use of the 1950 data presupposes, a bit erroneously, that population changes within the last eight years have not been significant in the District.

Secondly, the Census recognizes political subdivision rather than natural subdivision. The trade area of Grants Pass is not restricted to man's political boundaries. This means the statistics for Josephine County must be enlarged to include the trade area outside the county boundary, specifically, the towns of Rogue River and Glendale.

Lastly, the Census recognizes three groups in the structural distribution: rural, rural non-farm, and urban. The thin line drawn between rural non-farm communities and urban communities is based on the number of people residing in the community. This definition almost completely disregards the function of the community which is certainly not governed by size alone. This comes to light when it is found that the only town in Josephine Co. classed as urban is Grants Pass.

Structural distribution in its broadest sense could include age groupings, sex ratios, and other related characteristics of the population. Although it is true these subjects have a definite distribution pattern within the population, the paper is primarily concerned with understanding where people live and why they live there.

The rural population of the District comprised about 21.3 per cent of the total population which in 1950, was slightly over 29,500. This ratio of rural population is relatively small considering that the District lacks general urban development outside Grants Pass and its immediate area along the Rogue River. Logically, another segment of the non-urban population must be of great nummerical importance.

The most significant feature of the non-urban category and,indeed, the entire structural distribution, is the dominant position of the rural non-farm population. This single group is larger than any other segment of the population and over twice the size of the rural group. It comprised roughly 43.1 per cent of the 1950 population or numbered about 12,700 persons. The District, particularly the Illinois Valley and narrow valleys north of Grants Pass, contain many examples of small rural non-farm communities. The minute business area may consist, simply, of a store and gasoline pump or, in some cases, the community may be completely devoid of any commercial function.

Clusters of non-farm housing may be seen around a central place such as a store and/or in string settlement along roads and sideroads leading into a central place. The rural non-farm population is also significant in and around the suburbs of Grants Pass, where, to the north and south, string settlements along transportation lines are especially noteworthy.

The nature of the lumbering economy is an important consideration in understanding the dominance of rural non-farm in the population structure. The large proportion of small scale logging and milling has led to small nucleations of lumber workers in rural areas. The somewhat isolated nature of the commercial forests has attracted this rural settlement, but not on a farming basis. Consequently, the dwelling of the man engaged in lumber production, particularly logging, is rural non-farm in nature. The large rural-urban fringe around Grants Pass comprises a sizeable portion of the rural non-farm population. Mills in Merlin and Grants Pass daily draw workers who may live twenty miles distant.

Tourism is becoming an important industry in the District and summer vacationists and retired people form part of the rural non-farm population. Although their numbers are relatively small, they are, nevertheless, of note. Summer homes are particularly noteworthy along the

Rogue River where automobile access is available. Retired and semi-retired persons operating small businesses are evident around the core area. Motel owners and their families makeup some of the rural non-farm population along the main highways.

The urban population of the District constitutes 35.6 per cent of the total. Other than Grants Pass, the larger urban areas are Glendale (pop. 1,855) and Rogue River (pop. 590). The towns of Cave Junction, Kerby, and Wolf Creek are smaller. All these towns mentioned above assume a minor role when compared to the city of Grants Pass which dominates the District, not merely in size, but in commercial, service, educational, administrative, and transportational functions. In a description of the urban distribution, this dominating city deserves special attention.

Although gold mining occurred in a wide area around the city and influenced the development of the entire province, the origin of Grants Pass, itself, is more closely linked to the development of transportation and agriculture. In 1860 the California Stagecoach Company succeeded in establishing a stageroad from Sacramento, California to Portland, Oregon via Ashland, Jacksonville, and Roseburg. Three years later a post office was erected on the stageroad in the middle Rogue Valley and named

Grants Pass, most probably in honor of General Grant's victory at Vicksburg in that same year. An agricultural and trade community evolved to supply local gold miners with needed supplies and services. In 1884 the Southern Pacific Railroad Company extended a railroad from the Willamette Valley to Grants Pass; three years later the same railroad was completed, establishing the first north-south railroad on the West Coast. Thus, the city of Grants Pass enjoyed the location of being on the only railroad connecting the Pacific Northwest and California. Further impetus to growth occurred in the Twentieth Century with the building of automobile roads, particularly U.S. Highways 99 and 199, and the growth of the lumber industry.

Today the city limits of Grants Pass encompass about 2.6 square miles and 9,500 persons. The development of the city is not restricted to the corporate limits, but extends outward along transportation axes, forming a sizeable rural-urban fringe of nearly 4,200 persons. Thus, virtually one-half of the population of the District is concentrated in the valley of the Middle Rogue, in and around Grants Pass.

The city is located on the north side of a protracted curve of the Rogue River and is advantageously situated at a focus of overland transportation. Immediately south of the river U.S. Highways 99 and 199 merge to cross the Rogue

Figure 13. Grants Pass and the Middle Rogue Valley. The photo is taken facing northeast. The city lies just left of center at right angles to the railroad which runs through the center of the city. The Rogue River crosses the length of the photo flowing from right to left (east to west). The photo illustrates the intensive use of available level land in the valley. In the background the rugged ridge and mountain topography can be seen. In the upper right, the dry, sterile south-facing slopes are of note. (Courtesy of Delano Aerial Surveys)


5174

Figure 14. Map of Land Use in Grants Pass.

GRANTS PASS

SCALE:

0 .25
MILES

N

U.S. HIGHWAY 99

CITY LIMITS

CITY LIMITS

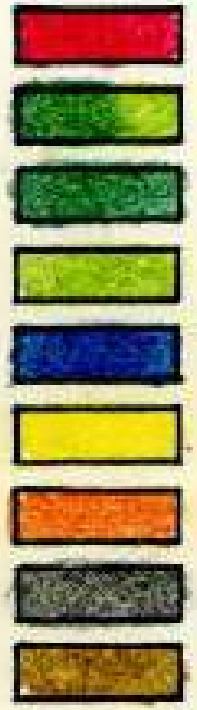
CITY LIMITS

ROGUE RIVER

U.S. HIGHWAY 199

U.S. HIGHWAY 99

COMMERCIAL
RESIDENTIAL
MIDDLE CLASS
LOW CLASS
INSTITUTIONAL
TRANSPORTATIONAL
UTILITIES
INDUSTRIAL
AGRICULTURE & FOREST



River Bridge and enter the commercial area of the city. Highway 99 continues north from the city and connects Grants Pass with the northern valleys of the District. Supplementary state and county roads provide local access to the agricultural areas of the Rogue Valley south and west of the suburbs (see figure 13).

The main line of the Southern Pacific Railroad runs through the center of the city, along the north side of the river and bends north toward Merlin just west of the city. This line gives the city connections with Medford and San Francisco to the south and with Roseburg and Portland to the north.

Land use patterns within the city, particularly the commercial zone, reflect a similar orientation toward transportation (see figure 14). The business district of Grants Pass is confined almost entirely to the areas adjacent to Highway 99, the only exception being the older commercial zone along the railroad, now essentially a zone of discard, comprising saloons, small trade and pawn shops, and feed stores.[1] On the basis of pedestrian and vehicular traffic, the peak value intersection appears to be located approximately two and one-half blocks south of the railroad.

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[1]Murphy, R.E., Vance, J.E., and Epstein, B.J., "Internal Structure of the CBD," Economic Geography, vol. 31 (1955), no. 1.

Other than normal retailing and service functions, significant from the standpoint of size, are overnight lodging facilities situated at either end of the commercial zone, and expanded banking facilities which includes three banks, indicative of a large trade area.

Also an indicator of the size of the tributary area is the strong institutional character of the city. Significant in this respect, is the large size, in area and enrollment (approx. 2,000 students) of the Grants Pass High School located in the northeastern portion of the city. The areas of high-class residential are located outside the city limits on elevated tracts north and south of the city. This is not a surprising fact considering the present suburban trends in residential home development.

The blight area of low-class dwellings surrounds the expanding commercial core and railroad near the old town. New low-class homes are evident on the western limits of the city where urban residence comes into contact with agriculture.

MOVEMENT

Two types of population movement may be distinguished: internal migration inside the District and external migration to and from the District itself. In all cases, the figures on the actual number of persons involved in the migrations are not available. The size and nature of the

migrations may be inferred from the figures on population and from economic data. In some instances, there remains some physical evidence in the landscape indicating migration.

Internal Migration

Migration is indicated by numerous abandoned town, home, and farm sites. Old gold mining towns such as Golden or Placer, have ceased to serve any urban function, and as these towns have declined, certain other urban areas have witnessed accelerated development, as in the case of Cave Junction. Few statistics are available on internal migration, but certain data suggests its occurrence.

From 1940 to 1950, the number of people engaged in mining dropped by 300, and those in agriculture by nearly 200. Yet, this decade was marked by a significant population increase. Further evidence of this movement occurs in the increase in average farm size, from 61.6 acres in 1950 to 67.3 acres in 1954. This rather marked increase in farm size cannot be explained by the clearing of new agricultural lands, for the land area in farms actually dropped by 6,000 acres in the same four-year period. In mining, the number of mines, and mineral production show a similar decline. The answer lies somewhere in the nature of the lumbering economy.

Many of the farm sites and nearly all the mines are located in rural areas near present logging operations. A shift of occupation, from farming or mining to logging, would not necessarily entail a change of residence. Therefore, the milling phase of the lumber economy most probably accounts for a significant part of the internal migration.

Sawmilling is concentrated in and around the lumbering communities and towns. The mills pay relatively high wages and, until recently, provided year-round employment. This has created a certain amount of gravitational attraction on the part of the strictly rural people to migrate to sites near mills and milling operations. This may explain a significant part of the recent internal migration.

External Migration

This pattern of movement is characterized by two features: 1) the large net in-migration of the past 20 years --- on the order of one-half the present population, and 2) the fluctuating nature of the movement. As in all the population patterns previously discussed, the economic geography of the District is an important consideration in explaining these trends.

The past 26 years, 1930 through 1955, have seen a total net in-migration of 13,167 persons into Josephine

TABLE I

POPULATION, JOSEPHINE COUNTY,
1930 to 1955

Year	Total Population	Death Rate	Birth Rate	Natural Increase	Net Migration
1930	11,592	12.8	17.7	4.9	+ 318
1931	11,967	12.6	17.7	5.1	+ 313
1932	12,000	12.5	18.2	5.7	- 35
1933	12,200	12.0	17.5	5.5	+ 133
1934	12,400	13.9	19.0	5.1	+ 138
1935	12,550	15.5	17.3	1.8	+ 128
1936	12,700	16.9	18.4	1.5	+ 130
1937	12,850	15.1	18.6	3.5	+ 105
1938	15,300	10.8	17.6	6.8	+ 346
1939	15,800	10.4	16.1	5.7	+ 410
1940	16,421	11.7	18.2	6.5	+ 515
1941	16,901	9.6	17.4	7.8	+ 349
1942	14,619	13.1	21.1	8.0	- 399
1943	14,595	13.6	21.5	7.9	- 140
1944	15,680	14.1	21.9	7.8	- 37
1945	15,739	13.9	21.3	7.4	+ 58
1946	23,970	9.6	21.0	11.4	+7,959
1947	27,454	8.3	20.8	12.5	+3,140
1948	29,200	9.6	21.1	11.5	+1,435
1949	26,300	9.7	22.0	12.3	-3,224
1950	26,542	9.9	23.6	13.7	- 122
1951	28,000	10.3	22.4	12.1	+1,117
1952	29,100	9.2	21.5	12.3	+ 741
1953	29,200	9.3	21.8	12.5	- 263
1954	29,680	9.0	23.3	14.3	+ 54
1955	29,990	10.2	20.7	10.5	- 3

Source: Vital statistics, Portland: State Board of Health, 1931-1956.

Figure 15. Graph of Population Movement, Josephine County. The fluctuating nature of the movement is evident on the graph. In the cases of in-migration, the natural increase must be subtracted to give the net figure; in the cases of out-migration the natural increase must be added to give the net out-migration.

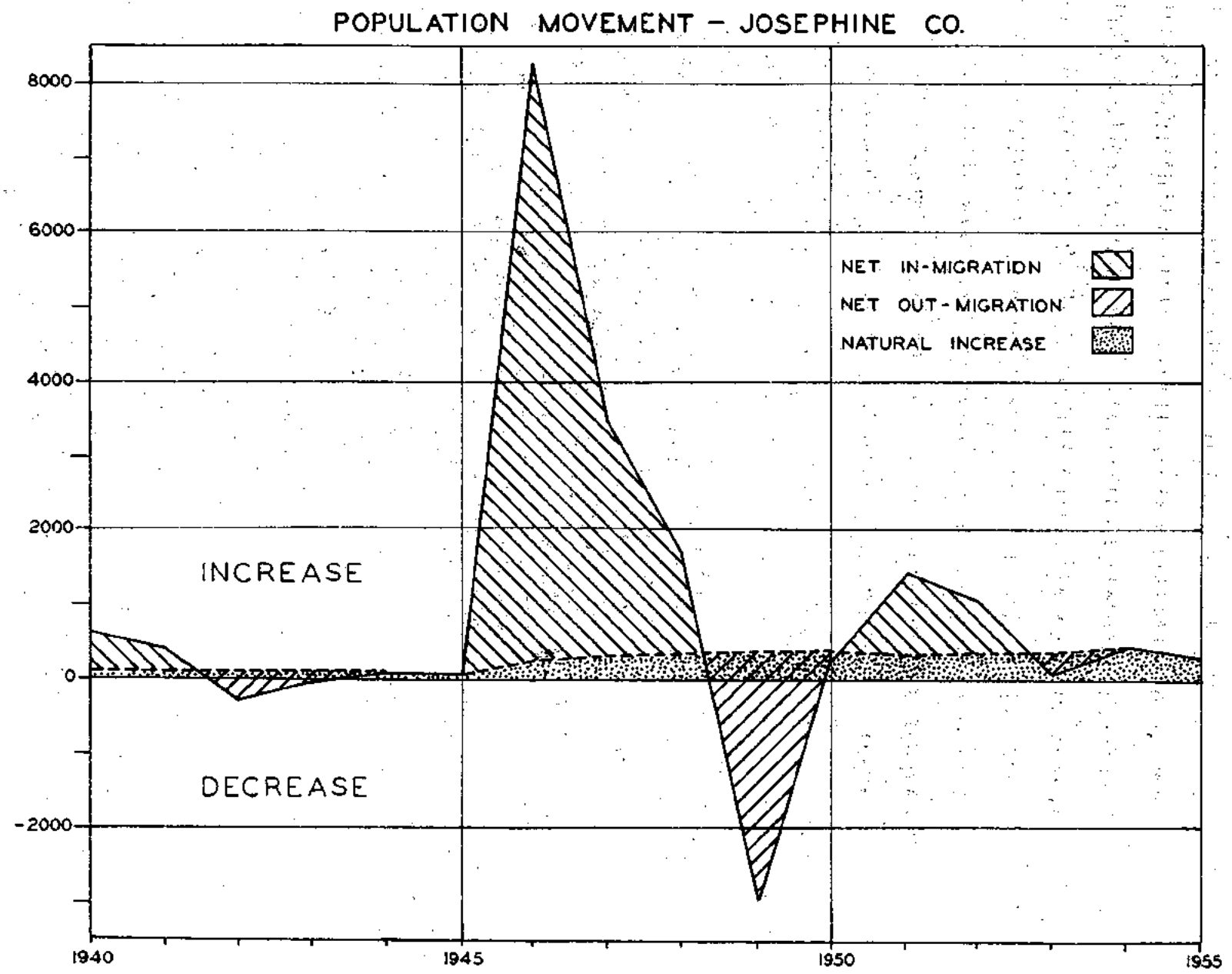
POPULATION MOVEMENT – JOSEPHINE CO.
8000
6000
4000
2000
0
-2000
INCREASE
DECREASE
NET IN-MIGRATION
NET OUT-MIGRATION
NATURAL INCREASE
1940
1945
1950
1955

Figure 15.

County. This figure takes on considerable proportions when it is realized that the total population of the county in 1955 was only 29,990. Though the trend has been toward in-migration, there were years when out-migrations were quite large. The greatest out-migration in these 26 years occurred in 1949, when in only one year, the county lost 3,224 people (see figure 15).

The considerable recent net in-migration may be attributed to lumbering, an industry which directly supports about one-third of the population. Historically, mining has played a strategic part in bringing people into the District, but at present, mining has little attraction. Lumbering has provided high wages, a demand for labor, and increasing employment in the past 20 years. The economic base was broadened by the lumber industry which provided more support for more people. Moreover, the indirect effect of changing logging techniques and equipment has proved to be the fundemental stimulus for migration into the District, as will be brought out later in the paper.

The fluctuating nature of migration, toward the District in some years, then away in others, is very characteristic. In attempting to explain this phenomenon, the economic framework is consequential. First, the District, for many years, has been unable to produce enough food to

supply the needs of the people. This is partially explained by the limited amount of arable land in the District. For these reasons, the people import food from outside the trade area. Secondly, this "slack" in the agricultural economy has been "taken up" by mining and recently, by lumbering. Both of these activities are sensitive to outside economic trends and may fluctuate rather violently. Lastly, the economy of the United States has, in the past 30 years, witnessed prosperous years, depression in the 1930's, wartime industrial and military demands on the population, post-war inflation, post-war recession in 1948-49, recovery, and again, recession in 1957-58. Within each of these broad periods there were numerous minor fluctuations.

Directly, the fluctuations in the migration pattern may be traced to the oscillations of the economy and the sensitivity of mining and lumbering. In this way, the unstable nature of migration may be indirectly traced to the relative lack of arable land in the District. At the time of this writing, the District appears to be losing population due to a recession in the lumber economy.[1]

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[1]Through personal interview with the Josephine County Assessor, it was revealed that the number of homes for sale has increased by 50 per cent in the last year in the county. This trend is further evidenced by recent mill closures and a reduction in the amount of timber being logged.

Four features of the movement and distribution patterns are significant: 1) the concentration of valley settlement, 2) the large rural non-farm population, 3) the heavy net in-migration in the past two decades, and 4) the unstable nature of the population movement. These aspects are closely related to the economy of the District, which in turn, is influenced by the physical setting. These physical and economic factors, by no means, exhaust the list of influences on the population. However, the relation of the physical setting to the economic base and the relation of the economy to distribution and movement, are significant items in explaining these population features.

THE ECONOMIC BASE AND POPULATION

The past and present economic pattern of the District is an important factor in the study of population distribution and movement. As man has been influenced by his physical environment, so too, has he been influenced by the actions he has taken to make a living. Many of these actions are economic in motive and areal in location, actions of the economic geography.

The fundemental activities of man, the basic industries, will be used to describe the economic geography. In a semblance of historical order, these industries are mining, agriculture, lumbering, and tourism.[1]

MINING

Any real study of the population of the Grants Pass District, historical or otherwise, should firmly be grounded on a basic understanding of the part played by mining, more specifically, the mining of gold.[2] Today

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[1]Manufacturing, other than that allied with lumber, is not of significant size, past or present, to warrant separate discussion.

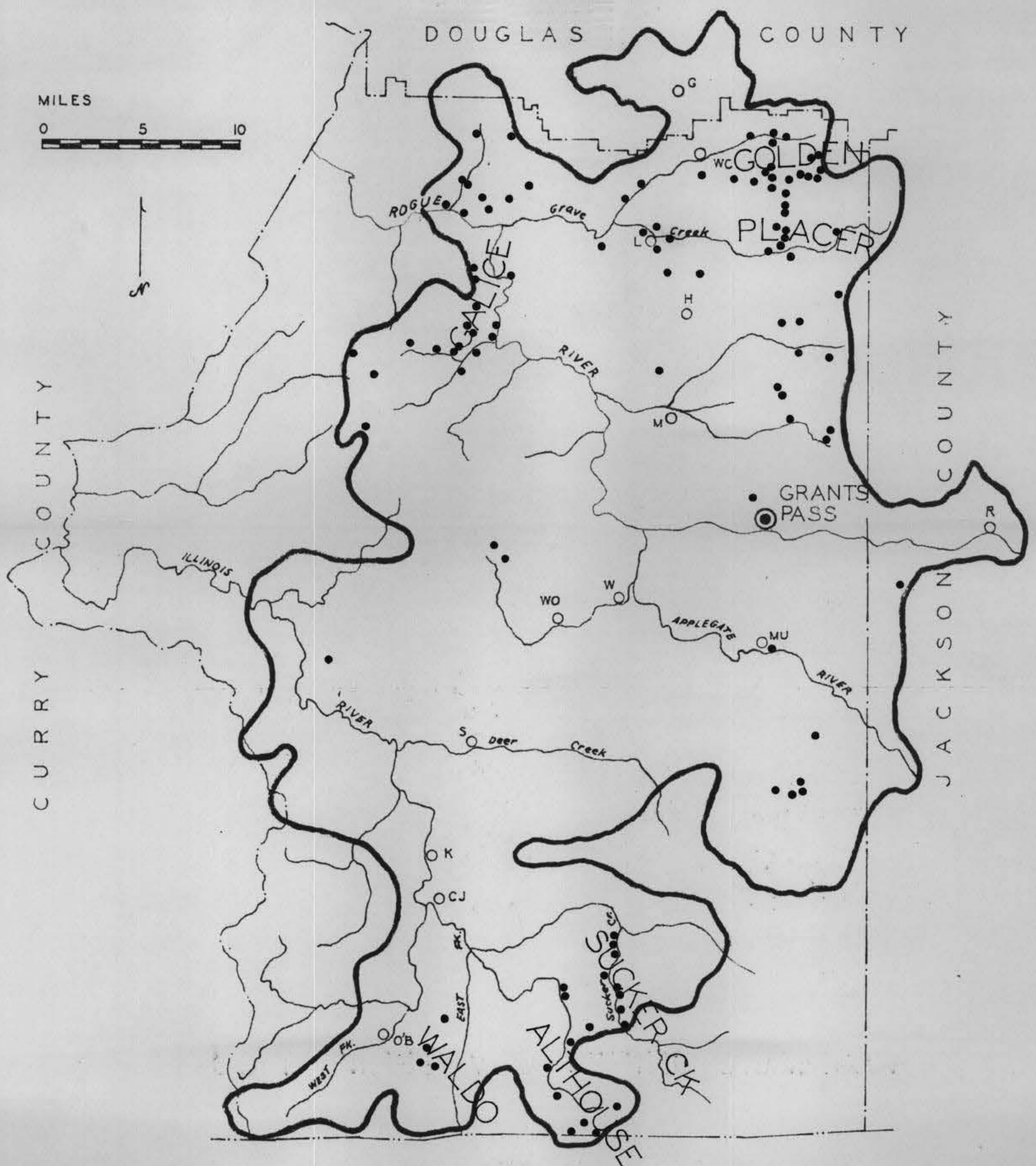
[2]Federally subsidized chrome mining has reached some minor importance in the last decade, but its nature is temporary.

the extraction of gold from the earth possesses little of its past importance, but the effect on the landscape is pronounced.

Two years after gold was found in California, placer gold was discovered at two places within, what is today, the Grants Pass trade area: near Waldo at the southern end of the Illinois Valley and on Galice Creek in the Rogue River canyon. This precipitated the gold rush of 1853 into the Klamath Mountain Province. In 1855 high-grade placers were discovered on Althouse Creek, Sucker Creek, and Grave Creek. The town of Waldo grew to some 2,500 persons (see figure 16). In 1858 the town of Jacksonville in nearby Jackson County, emerged as the center of gold production in Oregon.

During the Civil War, the District's gold production reached its peak and by 1873 the great "boom" was over. Lode mining and the smaller low-grade placers now became important on a limited scale until the 1920's. It was during the inflationary period of the twenties that gold mining became increasingly unprofitable and in 1927 gold production reached the lowest point since its discovery. The depression of the 1930's gave gold mining, particularly lode and dredge mining, new vigor and in 1938 Oregon production rallied to a second high, second only to that attained in the years, 1864-65.

Figure 16. Gold Mines and Mining Sites. Dots represent the major named sites of abandoned or active gold mining appearing on the U.S. Geological Survey Sheets. Golden is located on Coyote Creek, running west toward the town of Wolf Creek. Of note are the peripheral locations of the mines in the District, and the location of the mines on the upper reaches of the streams. With the exception of the Galice area, most of the mines are stream placers.



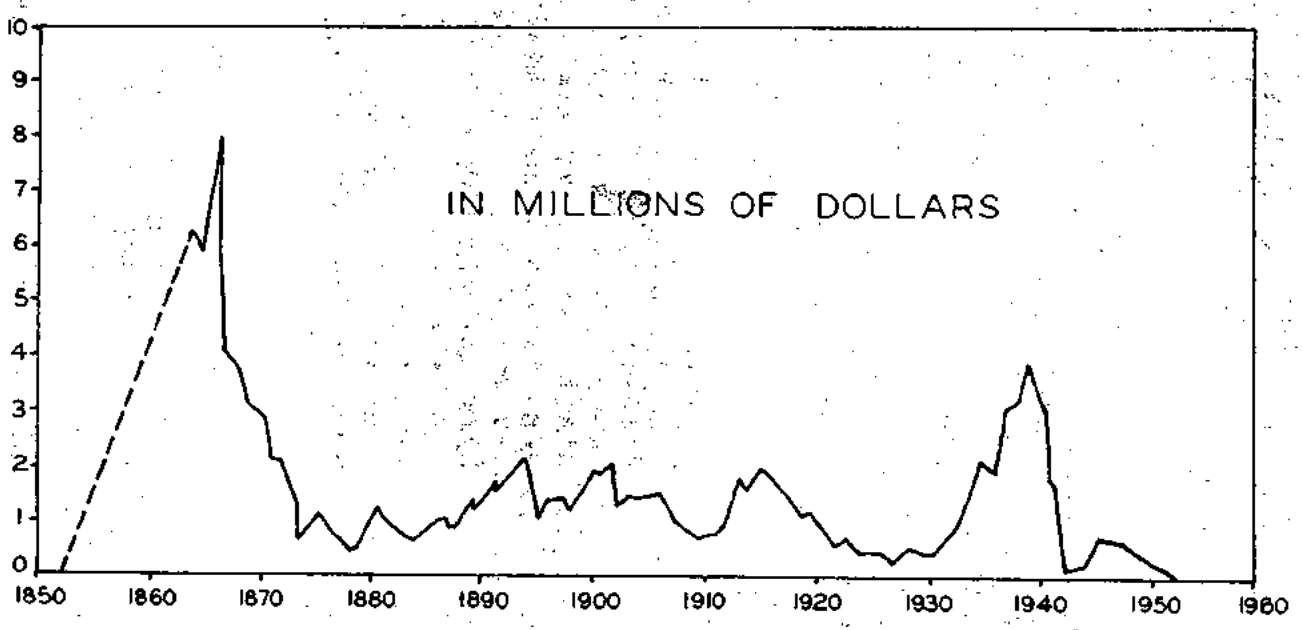
ONE DOT REPRESENTS ONE MINING SITE

Source: U.S.G.S. Quadrangles, Washington D.C.: U.S.G.S., 1954.

Figure 16. Gold Mines and Mining Districts

Figure 17. Oregon Gold Production (Graph). As the title indicates, the graph includes the total gold production of the state, but it reflects the general trends of gold mining in the Grants Pass District. Notice the two highs in the 1860's and late 1930's; times of economic prosperity are generally indicated by low points in production, the 1920's and 1950's.

100 YEARS OF OREGON GOLD
PRODUCTION
1852 - 1952



Source: The Ore-Bin, Vol. 15, No. 7

Figure 17. Oregon Gold Production

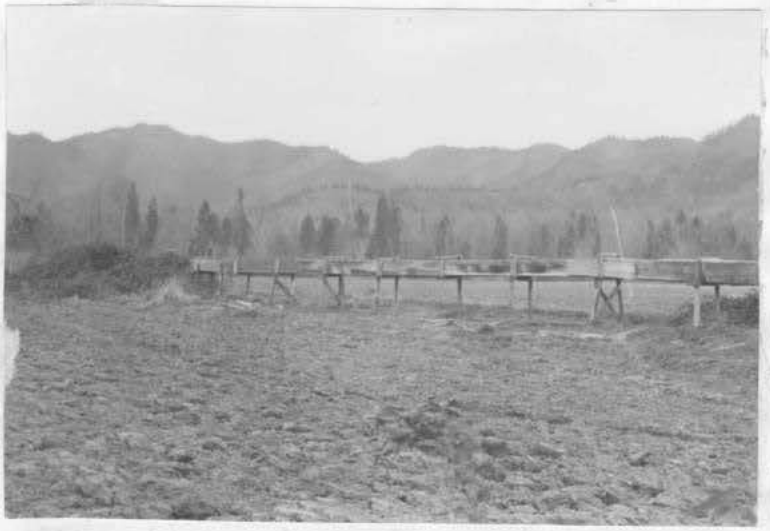


Figure 18. A vestige of the past remains in the form of this mining flume now overgrown with vines, found in the Applegate Valley between the towns of Murphy and Provolt. The photograph also illustrates two other past or present economies: the plowed field in the foreground and the logged off slope in the Background.

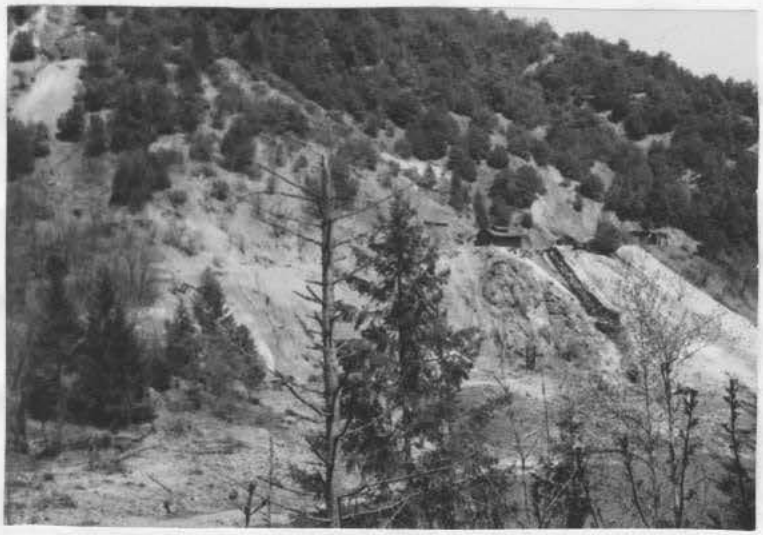


Figure 19. The Almeda gold mine and smelter in Rogue River Canyon reached peak production in 1908-16. The only physical remains of its operation are pictured above. Of a longer lasting nature is the destruction of the forest by wind-borne fumes from the operation. Fumes killed trees up to 3 miles distant.

Figure 20. Golden. One of several examples of early gold mining towns in the Grants Pass District. Located on Coyote Creek, one of the small streams eventually entering Grave Creek, Golden was originally a tent-town of Chinese miners. White miners replaced the Chinese about 1880 and built the church and store pictured above and below. Today the population consists of two families of loggers, correctly classed as rural non-farm.

In 1942 the war years, high wages in logging, and a declining population combined to drop gold production to a new low in the District, a low from which it is yet to recover. Today, gold still runs in the streams of the District, but there are less than ten active placers, small scale, sporadically worked in the off-season only to supplement other means of income of the operator (see figure 17).

An example of one of these presently active placers is Speaker Placer, a small hydraulic mine on Wolf Creek, located about 10 miles east of the town bearing the same name. It is typically isolated at the upper end of a narrow stream valley in the midst of rugged ridge and mountain country. Speaker Placer is only one of a series of four placers on upper Wolf Creek, the largest and oldest being Hole-in-the-Ground Placer which was initially worked about 1890, but is now inactive.

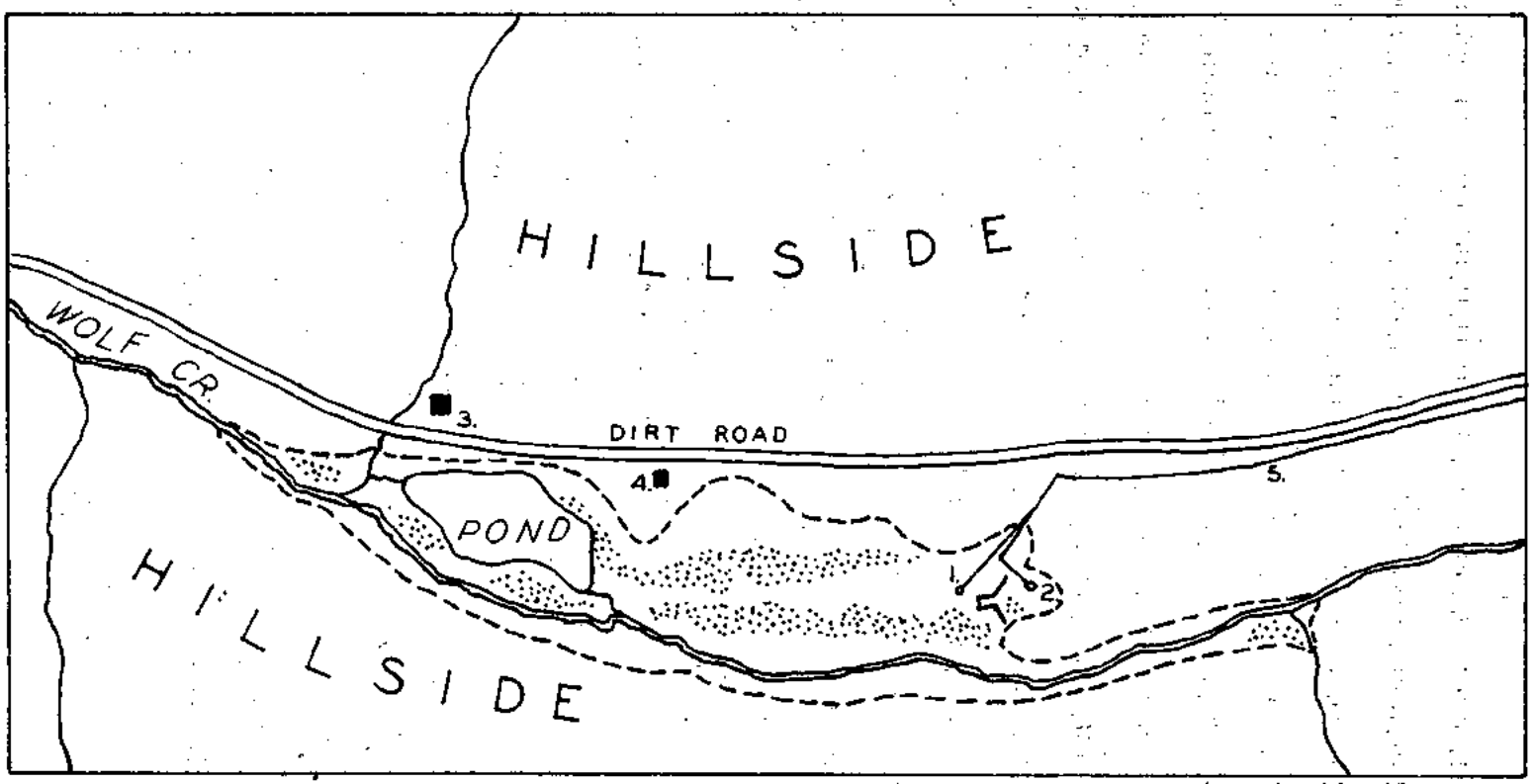
The actual operation of the mine has changed very little since the earliest days of hydraulic mining, and remains relatively simple. Water is diverted upstream into a ditch with a gradient less than the stream, and the ditch subsequently rises in relation to the stream. Two miles below this diversion, the ditch is about thirty feet above the valley floor and placer. Here, the water is again diverted into steel pipes leading to a mining

device called a "giant" located on the valley floor. The "giant" is nothing more than a large nozzle mounted on a turning disc and balanced by weights to afford the operator an easy means of changing the direction of the flow of water. By means of the giant, water under pressure is directed onto the alluvial banks of the valley floor, cutting and breaking down the loose bank material. These loose gravels and silts are then directed over a sluice; the riffles on the floor of the sluice catch the heavier gold and the washed tailings are piled behind the sluice by means of a tailing giant. As mining proceeds upstream, the sluice is moved upstream. (see figures 21 - 26).

Speaker Placer is only worked in the winter and early spring when the stream level is high. At maximum production, the owner and one helper are able to move about 1,000 cubic yards of alluvium per day. Most of this material averages less than four cents per cu. yard, but may reach 20 cents in the "pay streak", the old stream channel. The miner, naturally, attempts to follow the old channel, but it is a very difficult process due to the sinuous and interrupted nature of the old channel. The seasonal operation of this mine annually provides the owner about 1,000.00 dollars, only supplementing his primary income which is derived from logging during the rest of the year.

The direct effects of gold mining on the physical

SPEAKER PLACER



SCALE 1: 7920

1. TAILING GIANT
2. FLUME GIANT
3. MINER'S HOME
4. LOGGER'S CABIN
5. DITCH

N

TAILINGS

EDGE OF STREAM TERRACE

Figure 21.

Figure 22. Hydraulic mining on Wolf Cr. At the left center is a miner directing wash material with a giant, toward a sluice located off the photo at the right.

Figure 23. Speaker Placer. Bank at the right is typical valley alluvium that is washed for gold. The giant in the left center of the photo was not being operated at the time the picture was taken.

Figure 24. Speaker Placer. View looks west. The giant at the lower right is the same as appears in figure 23. Bank material is pushed over the sluice (1) and piles up as tailings (2). Wolf Creek (3) runs along the south side of the mine.

Figure 25. Speaker Placer. Giant (1) and pipe lie atop bedrock (2). Water pressure for the giant is achieved by dropping the water from a ditch located above the bank of valley alluvium (3).

Figure 26. Speaker Placer. Gold-catching riffles in sluice are made of steel to resist wear.

landscape are numerous. Hydraulic mining has served to create many deep bowl-shaped depressions in the alluvial material along the edges of the valley floors, leaving steep dirt cliffs and scattered piles of tailings on the bedrock below the cliffs. Today many of these old placers are overgrown with vegetation and are only recognizealbe upon close observation. The scars left by dredge operations, while less numerous, are more prominent. This is partially due to the recent nature of their operation and the great amount of debris left in their wake. Of a less prominent nature are the small exploratory mine shafts, the so called "glory hole" of prospecting, and the abandoned lode, or "hardrock" mines near the town of Galice.

More important, however, are the effects of gold mining on the present settlement pattern. The present communities of Wolf Creek, Leland, and Placer are located at or near the sites of early mining towns. Although most of the mining communities of the Illinois Valley are now abandoned, as Waldo, several towns remain, the largest of which is Kerby. The agricultural stimulus of mining also exerted an influence in the development of lowland centers, the prime example of which is Grants Pass.

As an example of the effect of mining on the present settlement pattern, it is interesting to look at the town

of Leland. The present community numbers approximately fifty persons, and is located on the Southern Pacific Railroad line, near Grave Creek in the northern part of the Grants Pass trade area. The present town lies on the north side of a ridge and faces the narrow western end of the open valley formed by Grave Creek.[1]

To explain why some fifty people have chosen this site to live seems, on the surface, a very difficult task. The town is situated on a steep hillside above the agricultural land of the valley, shadowed most of the day even in the summer, and located over five miles from the main highway. The answer lies in the fact that less than one-half century ago Leland was an important mining community advantageously situated on the primary mode of overland travel, the railroad. Shortly after 1900, Leland was composed of two stores, two saloons, a dance hall, a blacksmith shop, a livery stable, and a hotel. Most of these buildings were constructed on the hillside near the railroad (see figures 27 and 28).

In the 1920's mining lost its earlier importance, as did the railroad. The commercial function of the town declined, but the people remained and entered the new lumbering economy. The old town was moved about 100 yards

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[1]The lowland section along Grave Creek is often referred to as Sunny Valley and is about 12 miles in length, stretching from Leland upstream to Placer.

down the slope of the ridge, but the fact that the early families stayed near the site is an excellent example of the significant connection between an earlier mining economy and the present population distribution.

Since the Second World War chrome mining has achieved some emphasis in the District. The ore is found most frequently in the serpentines of the area, particularly around the periphery of the Illinois Valley (see figure 31). The ore occurs in nodes, called kidneys, which are excavated with caterpillar tractors. The kidneys are broken up with dynamite and the rock ore is shipped by truck to a collecting station near Grants Pass. After the ore has been assayed, the ore of high chromic oxide content is stored, awaiting shipment (see figures 32-34). The low-grade ores are sent to one of three concentrating mills in the District to raise the chromic oxide content.[1]

It is doubtful that the mining of chrome has produced any great effect on the distribution of population, or the pattern of movement. Its youthful nature, small scale and temporary status all tend to substantiate this.

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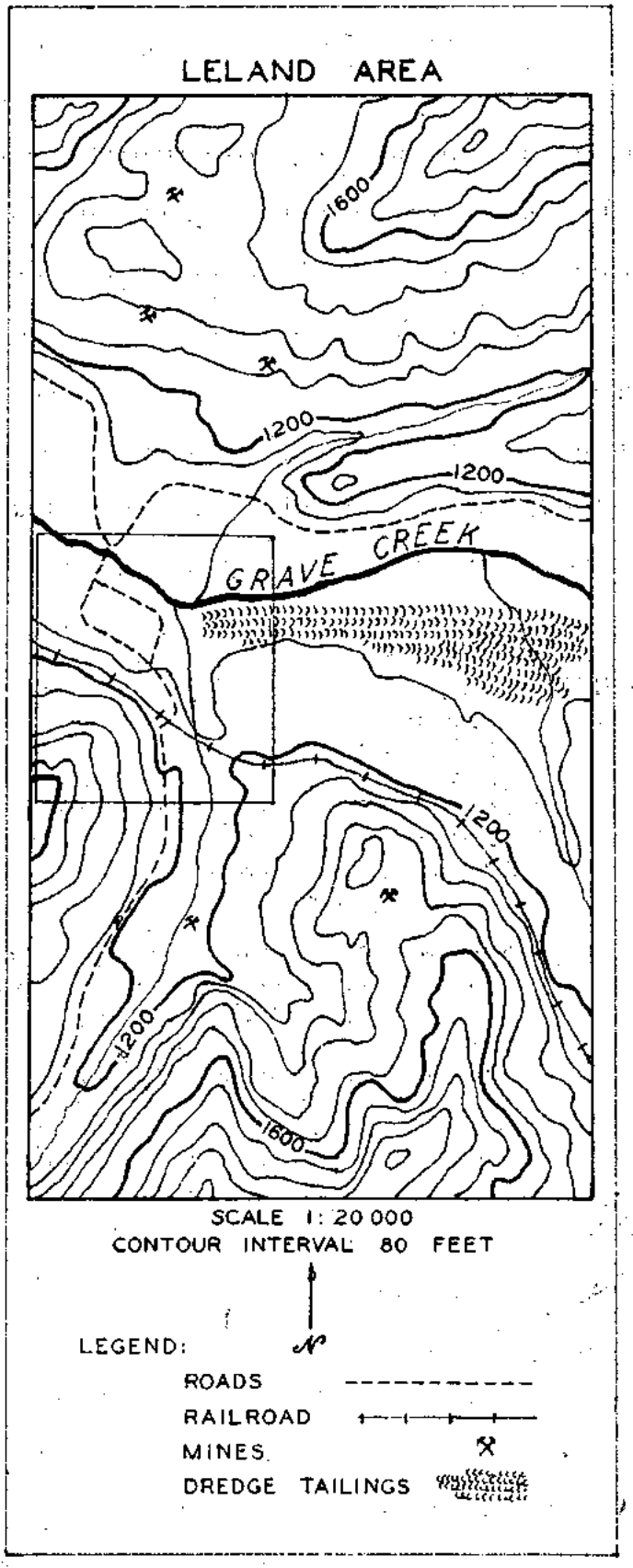
[1]The purest chrome in the District assayed at 58.74 per cent chromic oxide, and came from the Eight Dollar Mine located about three miles southwest of Selma.

Figure 27. Leland Area. The map is constructed to give a general reference as to location of the town. The area marked off in the left center is the same area that appears in figure 28.

Figure 28. Leland, 1958-1914. The two maps show the changes of the town in site, buildings, and function. The orientation of the town toward the railroad in 1914 is noteworthy. Most of the residences depicted in the 1958 map, are rural non-farm.

Figure 27.


LELAND AREA
1600
1200
1200
GRAVE CREEK
1200
1200
1600
SCALE 1: 20 000
CONTOUR INTERVAL 80 FEET
N
LEGEND:
ROADS
RAILROAD
MINES
DREDGE TAILINGS

LELAND

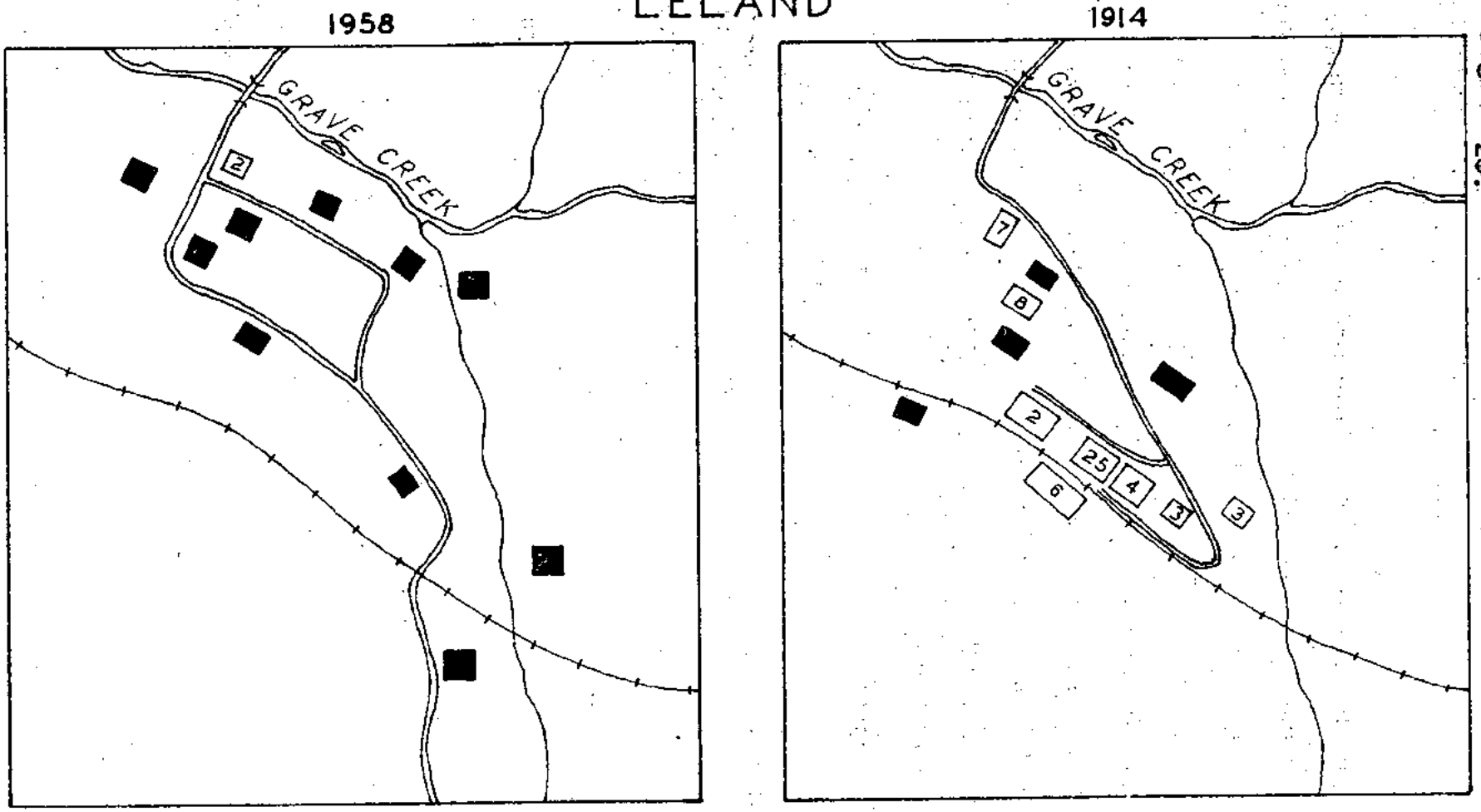


Figure 28.

SCALE 1: 6100

RESIDENCE	■	DANCE HALL	5
STORE	2	DEPOT	6
SALOON	3	BLACKSMITH	7
HOTEL	4	LIVERY STABLE	8

Figure 29. An Old Placer. The placer is located near Leland and is approximately fifty years old. Overgrowth of pine and manzanita partially hides the original bank-cut. Bedrock and small tailing piles may be seen in the foreground.

Figure 30. Dredge Tailings near Leland. To the north of the tailings at the left of the picture, is the channel of Grave Creek.

Figure 31. Serpentines and Chrome Mines. The dots represent active chrome mines (at this writing). There is a noticeable correllation between the mines and serpentine rocks. As may be seen, the structure is generally north-south and the drainage pattern is east-west.

GRANTS PASS SUB-REGION
JOSEPHINE CO.
SERPENTINE AND CHROME MINES

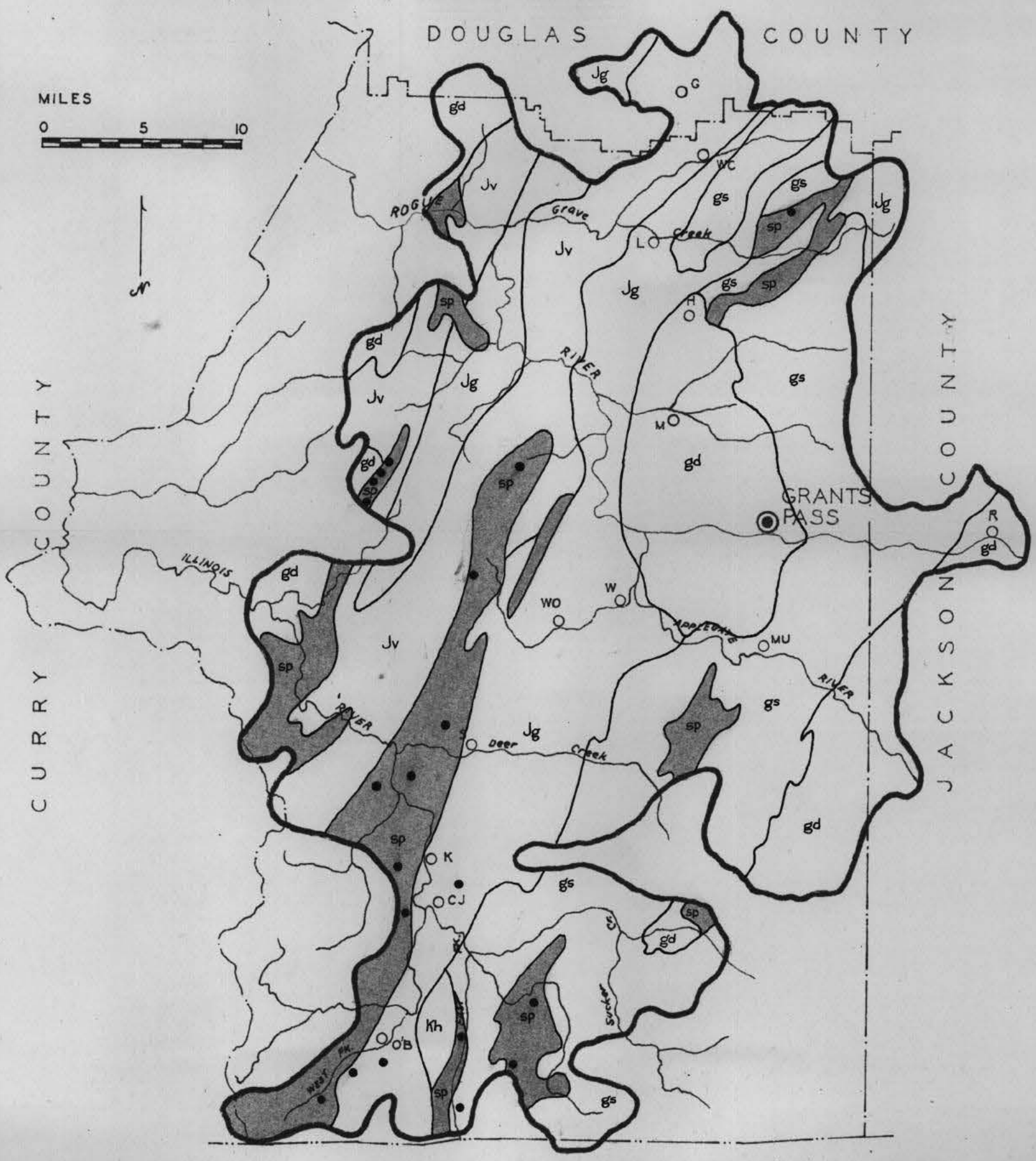


Figure 31. Serpentines and Chrome Mines

Cretaceous	Kh	Horsetown
Jurassic-Cretaceous	gd	Diorite
Jurassic	sp	Serpentine
	Jv	Greenstone
	Jg / Jd	Galice; Dothan
Triassic (?)	gs	Greenstone

Figure 32. Chrome Ore Receiving Station near Grants Pass. The chunk ore in the foreground is sufficiently high in chromic oxide that it requires no milling before shipment. In the background are black mounds of milled ore.

Figure 33. A small chrome mill approximately 10 miles southwest of Grants Pass on U.S. Highway 199. On the left is a small rock crusher and under the shed on the right is a concentrating table.

Figure 34. Chrome Concentrating Table. A small gasoline engine vibrates the table and the crushed raw ore is carried onto the table with water. Separation occurs on the lower right side of the table, the chrome being carried off the near right corner into a trough leading to a storage bin.

Other than gold and chrome mining, mineral production in the District has been of a very small scale, although there is a wide occurrence of a variety of minerals. Copper has been mined near the former site of Waldo and marble has been quarried just south of Grants Pass. At the Empire Mine, about 10 miles west of Grants Pass, there is an occurrence of low-grade cinnabar and on the lower Illinois River near the western edge of the District, magnetite assayed at 66.12 per cent iron, has been found. But, generally, these minerals are neither of sufficient high-grade nor extensive distribution to ever warrant full scale mining.

AGRICULTURE

The agricultural history of the District dates back to the early days of gold mining when small grains, potatoes, and beef cattle were raised around Grants Pass and Kerby to supply the local needs of miners. As mining could usually be carried on only a few months of the year, a small "semi-subsistence" type of agriculture prevailed among the miners. In the late 1930's, mining was largely replaced by logging which was also seasonal in operation, and some of these small semi-subsistence farms have remained. Logging also brought in more people and dairying gained importance. This, along with new markets created by

modernized transportation facilities, led to commercial farming in the District. At present, most of the farms are of a commercial nature, but the farm income is supplemented, in some cases. This is borne out in the fact that of the 1,443 farms in Josephine County in 1954, 1,001 of the operators worked off the farm part of the year and 840 of these persons were off the farm in excess of 100 days per year.[1]

Most of the farms are small, 1,000 farms of the 1,443 total, being less than fifty acres. For the state of Oregon, approximately 50 per cent of the farms are over fifty acres which points up the intensive nature of farming in the District, as may be seen from the data below.

SIZE AND TOTAL AREA OF FARMS[1]
1954

Size in acres	Total acres	No. of farms
0 - 10	2,089	431
10 - 29	6,294	400
30 - 49	6,444	169
50 - 69	3,719	64
70 - 99	6,825	82
100 - 139	9,534	82
140 - 179	12,292	78
180 - 219	6,519	33
220 - 259	6,631	28
260 - 499	16,744	50
500 - 999	14,977	22
over 1000	5,049	4
total	97,117	1,443

[1] 1954 U.S. Census of Agriculture, Washington D.C.: Bureau of the Census, 1956. Farm data for Josephine Co. is used in the paper since the agricultural figures for the county are very close to those which apply to the Grants Pass District.

In relation to total area, the area in farmland is quite small, comprising only 97,117 acres of land. This is 9.3 per cent of the total area of the county, the lowest ratio of farmland to total area recorded among the counties of Oregon. Most of this farmland is located in three lowlands: the basin of Grants Pass, the Applegate Valley, and the Illinois Valley. Other than these basins and a few narrow stream valleys, most of the area is too steep or too rocky to cultivate and often heavily forested.

The lesser stream valleys are narrow and often V-shaped. Occasional reduction of stream gradients allows the valley floor to open into small level tracts, seldom over 5 or 6 miles in length or one-half mile in width. The small valleys of Cow Creek (Glendale), Wolf Creek, Grave Creek (Leland-Placer), Jumpoff Joe Creek (Merlin-Hugo), and Deer Creek (Selma) fall into this class. Even smaller lowlands, often little more than three or four acres, exist along the streams of the District in a scattered nature.

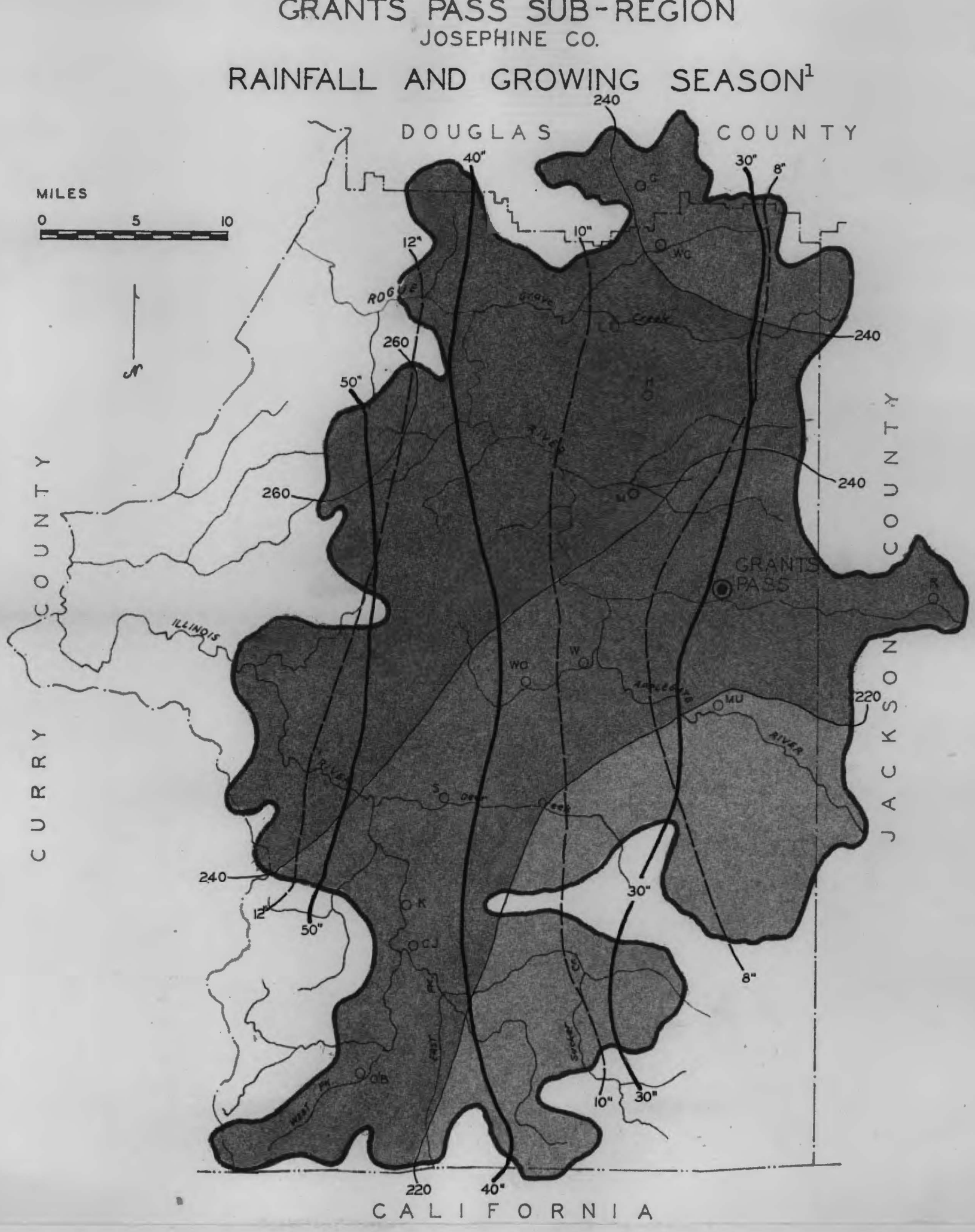
The remaining portions of level land in the District are to be found at the bottoms of isolated canyons where the valley floor constitutes little more than stream bars, several feet in width. Such is the case of the canyon of the Rogue River north of Galice, where a difference in

elevation of 2,500 feet may be observed within the distance of a mile.

A generous estimate of the percentage of level land is 15 per cent of the total area of the District. This leaves the remaining 85 per cent in upland --- a great majority of the District in high, rugged ridges and mountains. The limited amount of level land, and arable land, in the District is an important consideration in the location of agricultural areas and, in turn, the distribution of population.

Mild temperatures and long growing season permit a wide variety of farm products to be raised. The growing season in the District is in excess of 200 days and the length of the frost-free period at Grants Pass is 186 days, the greatest length of the five weather stations in the trade area. Of the lowland areas, Waldo, in the upper Illinois Valley, recorded the shortest frost-free period of 171 days (see figure 35).

Much of the land immediately bordering the streams is not cultivated and is left to pasture, and only 100 to 200 yards back from the edges of the streams does cropland become important. Flooding by the Rogue River and its affluents, partially explains this land use pattern. Heavy winter rains or sudden snow melt in the higher area, or the combination of both, cause frequent



Source: Rogue River Basin Project (proposed report), Boise: U.S. Bureau of Reclamation, 1950.

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[1]The map shows only approximate boundaries. Little special attention was given to the important factors of relief and air drainage which account for significant climatic variation within the District.

Figure 35. Rainfall and Growing Season

floods during the months of November through March.

Flood damage on the Rogue will occur when the discharge at Raygold on the upper Rogue, reaches 25,000 cu. ft. per second. The river has surpassed this figure on no less than twenty separate occasions during the last fifty years. The highest recorded discharge occurred on February 20, 1927, when it reached 91,500 cfs. However, evidence from the flood of 1861-62 tends to put the highest known discharge around 131,000 cfs. Since 1930 damaging floods have occurred in 1932, 1942, 1943, twice in 1945, 1948, and 1956. Although many other factors are involved, it appears that there is a correllation between these dates of flooding and the dates of out-migration of people (see Table I, page 28).

The damage stage on the Applegate River is 7,500 cfs and, from records kept since 1927, this stage has been reached nine times in the last thirty years. Records are not available for many smaller streams, but evidence of recurring floods appears in the form of water lines on buildings, uprooted trees and brush scattered above the present water line, and water-borne debris in fence lines and trees.

Agricultural land use may be separated into three categories according to use: 1) livestock and pasture, 2) field crops, and 3) specialty crops.

Livestock and Pasture

The District's primary agricultural activity is dairying. Roughly 20,000 acres, or 20 per cent of farming land, is devoted to pasture, and this figure does not include an additional 21,000 acres of woodland pasture. In 1954 the value of dairy products constituted 42 per cent of the value of farm products sold.

This emphasis on milk production is relatively recent, beginning in the early 1940's. Since this time the number of milk cows has nearly doubled and the area devoted to pasture has increased by one-half. This vigorous dairy activity has more than kept pace with consumption and, at present, there is a surplus of whole milk in the District. The data below illustrates the increase in number of dairy cattle since 1935.

NO. of DAIRY CATTLE

1935.....3,500
1945.....6,000
1954.....6,200
1957.....6,500[1]

There are also about 2,400 beef cattle in the District and, roughly, an equal number of sheep. Besides poultry raised on many small farms, there are two large

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[1]Estimate made by the Josephine Co. Home Extension Agent.

chicken ranches and one turkey ranch in the District. Beef, sheep, and poultry products annually value about one million dollars and comprise 25 per cent of the value of farm products sold. Thus, the combined value of all livestock products makeup nearly 70 per cent of the value of agricultural produce.

Field Crops

The large number of dairy cattle and limited area of lowland pasture, partially explains the importance of hay forage. Hay is grown on about 10,500 acres in the District, or over 10 per cent of the total area in farmland. Alfalfa and Ladino clover are the dominant varieties of hay, although some red clover, fescue, field pea, and Sudan grass are grown. Recently, the hay production of the District has not been able to keep pace with the increased numbers of livestock (see Table II, page 46).

Other than hay, field crops are not particularly important in the agricultural framework of the District. In 1954 the area in small grains was only 900 acres, most of which was in oats and spring wheat. Some hybrid corn is grown, mainly as a forage crop. Truck vegetables are characterized by a large number of green beans in current production, with lesser emphasis on onions and potatoes. The relative value of vegetable produce is quite low,

TABLE II

LIVESTOCK AND FORAGE TRENDS

Josephine County

Item	1944-45	1949-50	1954-55
Horses and Mules	1,300	1,000	750
Units (.9)	1,200	900	700
Beef Cattle	1,700	1,700	2,400
Units (1.6)	2,700	2,700	3,840
Dairy Cows	6,500	6,000	6,600
Units (1.6)	9,700	9,000	9,900
Sheep	2,300	1,700	2,500
Units (.2)	500	300	500
Total Forage Consumer Units	14,100	12,900	16,500
Hay			
Total acres	13,892	9,583	10,156
Acres/Unit	.98	.74	.61
Total production (tons)	25,892	16,999	20,254
Production/Unit	1.84	1.32	1.23
Pasture (acres)			
Cropland pasture	10,095	15,074	14,120
Pasture/Unit	.72	1.17	.86
Other pasture land[1]	15,119	4,116	5,230
Other pasture/Unit	1.07	.32	.32

[1]Excludes woodland pasture comprising 21,361 acres in 1954.

Source: Josephine Co. Home Extension Agent.

being in the neighborhood of two per cent of the total value of farm products sold annually.

It may be inferred that there is a sizeable portion of vegetables grown on a non-commercial basis on the farms, not to mention private garden crops on plots in many of the small towns. Figures on the size of production for home-consumption are, however, lacking.

Specialty Crops

The division between field crops and specialty crops is very arbitrary. Mint, hops, and tree fruits could be included under field crops as readily as they could under specialty crops. However, these specialty crops are, generally, commercially grown and intensive in nature. The primary specialty crops of the District are grass seed, tree fruits, mint, hops, and bulbs.

Ladino clover seed production has declined from 1,891 acres in 1950 to only 16 acres in 1956. For many years clover seed was produced on numerous small acreages, but lower prices and changes in quality specifications have caused the recent marked decline.

Hop and tree fruit acreages have witnesses a similar decline. In the six years from 1949 to 1954, the area in hops decreased from 1,912 to 425 acres. The number of fruit trees, particularly pears and peaches, has dropped

off 40 per cent during the same period.

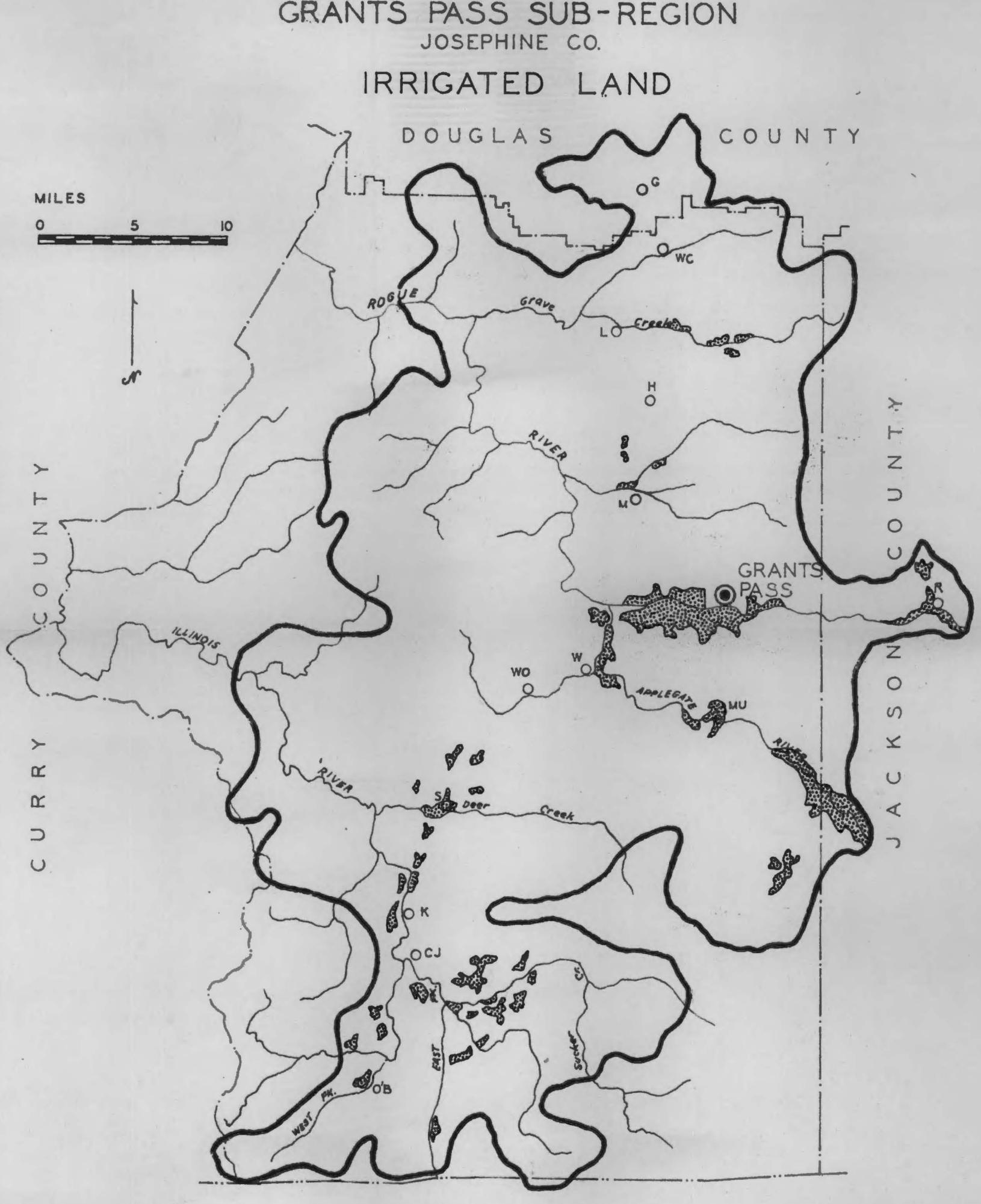
In 1955, 376 acres and 1956, 600 acres of black peppermint were harvested for oil. This is the first record of commercial mint oil production in the District, but already exceeds the acreage devoted to hops and grass seed

Irrigation

Quite naturally, with a winter concentration of precipitation in the District, the summers are dry. Grants Pass, for instance, has only a total average of 2.02 inches in the four months of June, July, August, and September. Added to the droughty conditions that exist in summer, humidities are low, skies are clear, and evaporation is intense.[1]

These dry summer conditions of the trade area have stimulated the use of supplementary water to raise the moisture content of the soil. Of the 97,117 acres of farmland, some 20,820 acres were under irrigation (see figure 36). Nearly 72 per cent of the total number of farms were using supplementary water on some portion of the farmland. Pasture and forage crops take up the great-

[1]In July, 1938, a pan evaporation of almost 10 inches in one month was recorded only 20 miles outside the District at Medford.



Source: Rogue River Basin Project (proposed report), Basin: U.S. Bureau of Reclamation, 1950.

Figure 36. Irrigated Land

Figure 37. Savage Rapids Dam
The dam is located on the Rogue River at the boundary of Josephine and Jackson Counties. The primary function of the dam is to provide water for irrigation. No electric power is generated.

est proportion of the irrigated land, with over 80 per cent of the annual hay crop under irrigation.

Water for irrigation is surface water, diverted or pumped into ditches upstream from the irrigated land. Small pumps in the lowlands tap the ditches and the water is spread on the farmland either by direct flooding or sprinkling.

The irrigation project around the city of Grants Pass is an example of the largest single irrigation project in the District. Irrigation water is derived from the Rogue River at Savage Rapids Dam, supplying water to 8,980 acreas in the basin. The dam is located about five miles east of the city and three canals lead into the basin to the west (see figure 37). Two of the canals are high canals situated on either side of the river, and the remaining is a low canal on the north side of the river. Water is pumped from the reservoir to the high canals and water is directed by gravity into the low canal. In late summer, during dry years, the flow of water is not adequate to supply irrigation requirements and operate both pump lifts simultaneously. Consequently, it is necessary to alternate the operation of the high canals and pumps.

Microclimatic Effects

In the Grants Pass District microclimates are sig-

nificant from the standpoint of agriculture. These microclimates, while of recognized local importance, lack adequate recording at the present. The effects are numerous: increased relative humidities and reduced wind speeds in the forest, the haze conditions in Grants Pass, and the lower temperatures of the countryside, to mention only a few. Of greater importance to agriculture, however, are the effects of air drainage and "wind shadows."

On clear nights, particularly in the fall and winter, cold, dense air drains into the lowlands causing fog and frost. At the same time, the areas of slightly higher elevation around the valley may not experience these conditions and a pronounced temperature inversion often occurs. This pattern of air drainage produces some remarkable disparities between valley floor and slope temperatures. Near the Rogue River the temperature of the valley floor was once 12 degrees lower than the slope only fifty feet higher.[1] Consequently, most of the orchards of the District are located away from the lowest portion of the valley along the rivers, and are found around the lower slopes of the valleys.

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[1]Merriam, W.B., "Climate of the Rogue River Valley, Oregon," U.S. Weather Bureau, vol. 64 (1936). The recorded lowland temperature near the Rogue River was 23° F while 50 feet higher on the slope, a temperature of 35° F was recorded.

Secondly, wind velocities are markedly reduced in the valleys. Grants Pass, while lying only some 50 miles from the Pacific Ocean and in the zone of westerlies and Pacific cyclonic storms, records the second lowest wind velocity in the United States.[1] In these protected valleys the wind speeds, commonly, increase from west to east and cause minor variations within individual valleys. At the higher elevations, winds, primarily from the west and southwest, become increasingly stronger and at the elevations over 4,000 feet, individual trees reflect an adaptation to the prevailing winds. The reduced wind velocities in the valleys only serve to add further inducement to agricultural, and settlement, concentration in the valleys.

Agricultural Basins

In the District there are, as previously mentioned, three broad alluvial basins capable of supporting agriculture. Of these three, the basin around Grants Pass has undergone the greatest expansion, in terms of agricultural intensity, amount of irrigated land, and variety

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[1]Ibid., Merriam, W.B., "Grants Pass, lying in what might be termed the 'wind shadow' of the coastal mountains, has the second lowest average wind velocity of any station in the U.S."

of crops grown.

The middle Rogue River Valley is a nearly level plain approximately two miles in width and eleven miles in length. Near its eastern end the lowland widens to about 4.5 miles near Grants Pass. The basin has an almost east-west alignment and lies at an elevation between 900 and 1,000 feet, which makes this basin the lowest of the three broad lowlands.

In this centrally located basin, approximately 9,780 acres of land are under irrigation, with most of the farmland located west of the city of Grants Pass. It is here that hop,mint, and dairy farms dominate the land use pattern (see figure 39). East of the city are scattered bulb farms and on the slopes of the surrounding hills, tree fruits are grown. The effects of air drainage and night frosts are significant factors in the location of the orchards. Some truck farming occurs on the outskirts of the city. But, regardless of the variety of crops grown, dairying remains the foremost agricultural activity in the basin where approximately 70 per cent of the irrigated land is in pasture or forage crops.

The Lewis Farm typifies dairy farming in the Rogue Valley. The farm is located three miles west of Grants Pass, situated on the flood plain of the Rogue River. Up to the spring of 1955, the 74-acre farm area was in hops.

At present, there are 50 milk cows, 10 heifers, and 25 calves on the farm, all of which are Jerseys. Irrigated forage crops comprise about two-thirds of the acreage, 12 acres of hybrid corn and 35 acres of hay. The remaining third of the farm is in pasture and farm buildings (see figure 38).

The land on the farm is irrigated directly from two sources: a ditch which is part of the Savage Rapids low canal and from the river where water is pumped up by an electric pump. A portion of the water of the latter, supplies drinking water for the cattle, the remaining part being pumped onto the pasture and cornfield during the summer months.

Only slightly higher, south and southeast of the Rogue Valley, the Applegate River forms a long narrow valley that extends from the Rogue River southeast into Jackson County. Approximately 60 per cent or some 16 miles of the westernmost part of the lowland, is inside the Grants Pass trade area. The valley is seldom over a mile wide, but tributary valleys, such as Williams Creek near the county line, form significant exceptions to this statement. The lowland area of the Applegate Valley within the District is roughly 26 square miles, or two square miles less than the Rogue Valley.

Much of the Applegate Valley is irrigated, nearly 6,000 acres in the District alone. Agricultural emphasis

Figure 38. Dairy Farm. The farm pictured is the Lewis Dairy. The irrigation ditch in the upper part of the map, flows from right to left. Underground pipes carry the water to the different parts of the farm. Additional water is pumped from the river into underground pipes.

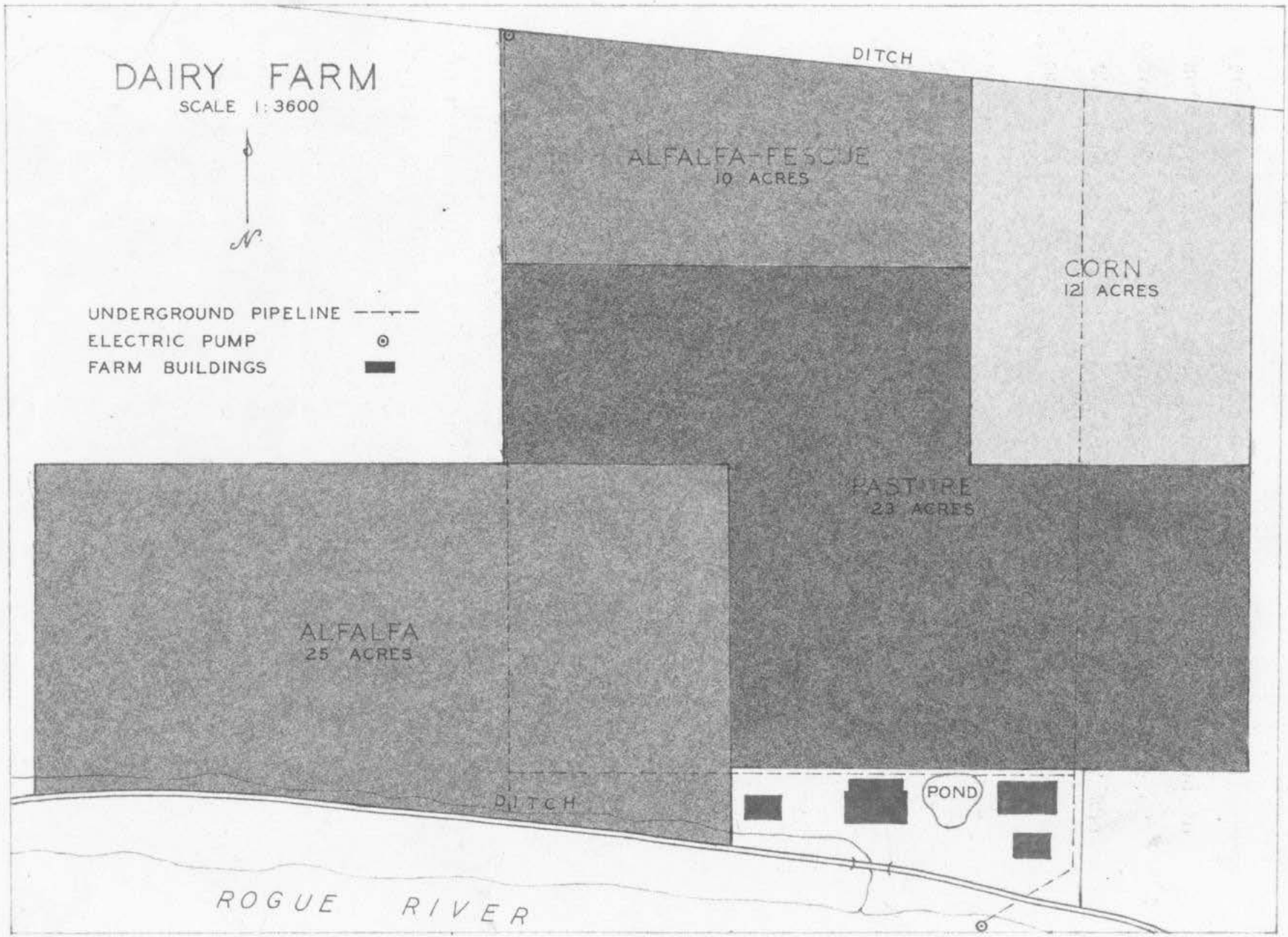

DAIRY FARM
SCALE 1:3600
N
UNDERGROUND PIPELINE
ELECTRIC PUMP
FARM BUILDINGS
DITCH
ALFALFA-FESCUE
10 ACRES
CORN
12 ACRES
PASTURE
23 ACRES
ALFALFA
25 ACRES
DITCH
POND
ROGUE RIVER

Figure 38.

Figure 39. Mint Farm. The farm is located near the confluence of the Rogue and Applegate Rivers. There are about 70 acres of mint on the farm. Grants Pass is located at the right center (northeast), at the foot of the ridge in the background.

Figure 40. Irrigated Hayfield. It is located just west of Kerby, close to the old site of the town on the west side of the Illinois River. Hay in the middle distance is dominantly a mixture of alfalfa-clover-fescue. In the foreground an irrigation ditch is noticeable.

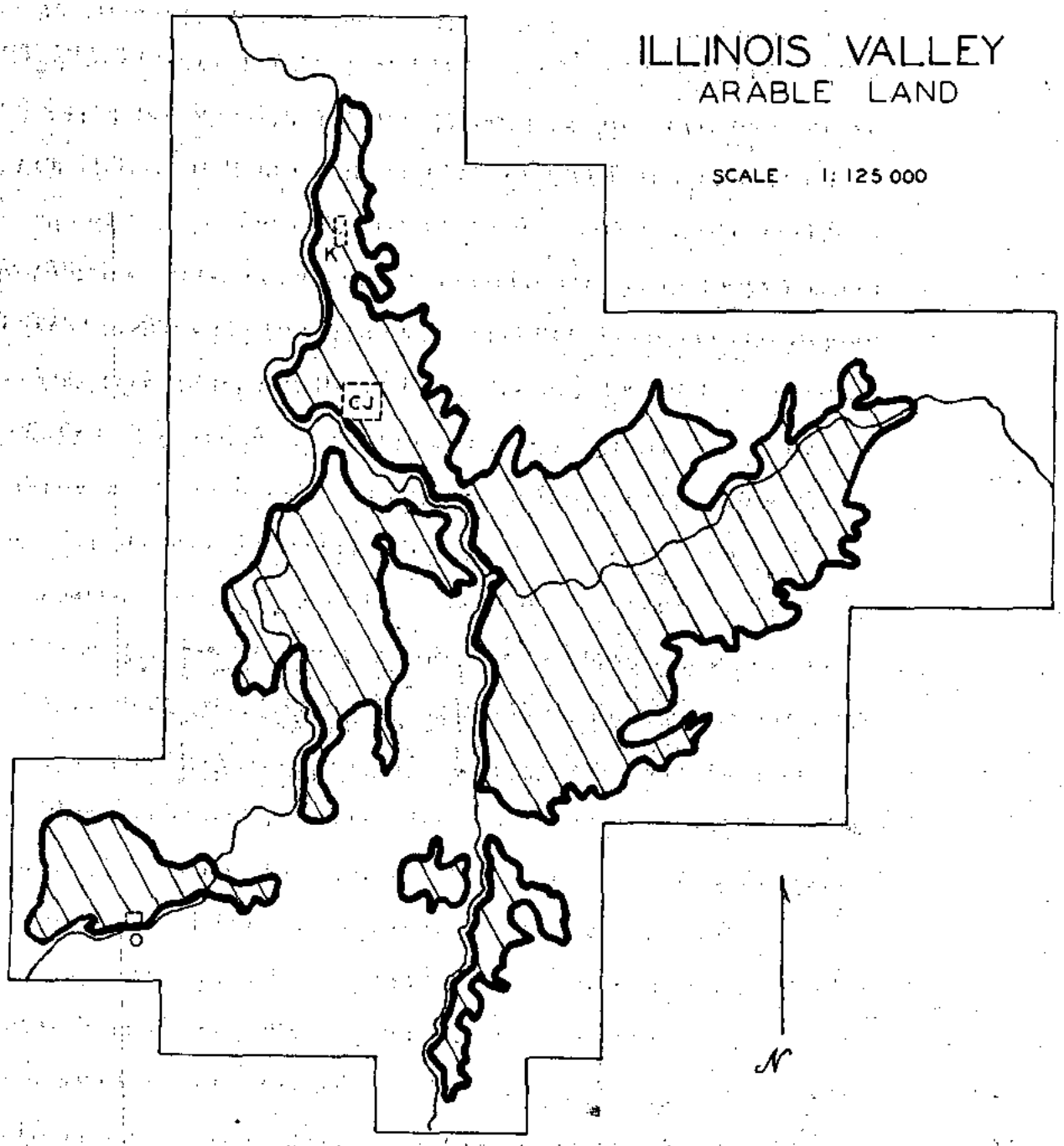
is directed toward the raising of livestock and nearly 87 per cent of the farmland is in pasture and forage crops. In addition to dairy cattle, beef cattle makeup a sizeable share of the livestock. The sale of hay is an important agricultural activity in the Valley and it is one of the few large areas in the District producing a surplus of forage crops. Near Williams on the eastern edge of the District, some grass seed is grown.

In the southernmost part of the trade area, the Illinois Valley contains about 46 square miles of level land. This, largest of the alluvial basins, is nearly fan-shaped with the apex of the fan situated in the northwest, near the towns of Kerby and Cave Junction. Toward a point near these towns, the valley floor gently dips about 100 feet from the outer arc, approximately 6.5 miles distant. The regular shape of the fan is broken by finger-like projections of the valley on the periphery of the arc. Much of the valley is gravelly (in the west) or poorly drained (in the east) and covered with open forest or brush vegetation. The average elevation of the basin is about 1,400 feet which makes it the highest of the three major valleys in the District.

Nearly 60 per cent of the arable land of the Illinois Valley is still in forest or scrub woodland (see figure 41). Today, there are about 3,000 acres under irrigation, the

Figure 41. Arable Land, Illinois Valley. The U.S. Bureau of Reclamation recognizes 6 classes of use-potential. The first five classes are arable and are those depicted on the map. It includes both cleared and uncleared lands.

Figure 41.



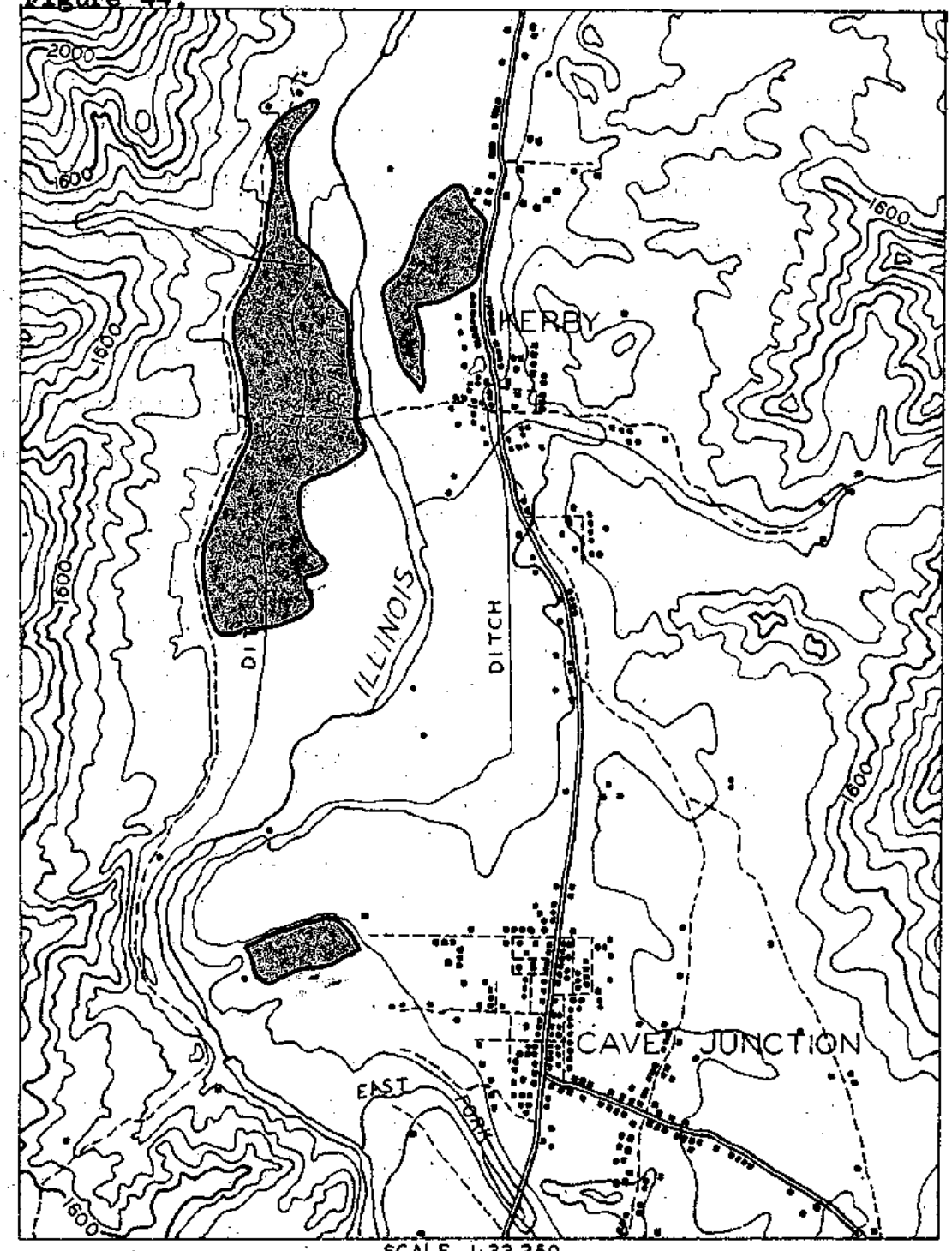
Source: Rogue River Basin Project, Illinois Valley Division, Boise: U.S. Bureau of Reclamation, 1955.

Figure 42. Beef cattle in an irrigated pasture near the town of Holland on the eastern edge of the Illinois Valley.

Figure 43. Rail fence in the Illinois Valley near Bridgeview. This type of fence construction and the decaying wood in the fence tends to indicate an early agricultural use of the eastern Valley.

IRRIGATED LAND
KERBY-CAVE JUNCTION

Figure 44.



SCALE 1:33 250
CONTOUR INTERVAL 80 FEET

N

PAVED HIGHWAY
IMPROVED ROAD
BUILDINGS

Figure 44. Irrigated Land, Kerby-Cave Junction. The irrigated land is shown in green and includes one of the oldest irrigated areas in the District. Two ditches are of note on the map, one on either side of the river. The north-south highway is U.S. 199; to the lower left, a highway leads to the Oregon Caves.

lowest such figure of the three major basins. Beef cattle rival the importance of dairy cows, particularly in the eastern portion of the valley where some swine are also raised (see figures 42 and 43).

The area around Kerby in the Illinois Valley illustrates a variety of economic pursuits in the District. Kerby is a small town of roughly 150 persons, located in the northern part of the valley on Highway 199. On the lowland of the Illinois River, west of the town, irrigated forage crops are grown and beef and dairy cattle are raised (see figures 40 and 44). This area is probably the oldest irrigated land in the District and dates back to 1855. Outside the scope of agriculture, but representative of the entire economy, is the fact that Kerby is an old mining center, the present site of a large sawmill, and situated near the Oregon Caves, national tourist attraction.

In summary, the agriculture of the District is oriented toward the lowlands. Many factors account for this, as the amount of arable and level land in the District, climatic regime, and transportation facilities. Dairying is the primary agricultural activity of the District and over one-fifth of the land is under irrigation, adding further inducement to lowland settlement. Finally, most of the agricultural lands (and most of the people) are located in the three alluvial basins of the District.

LUMBERING

In number of persons employed and value of production, lumbering is the paramount economic activity of the District today. It employs over 30 per cent of the working population and nearly all of this labor is engaged in logging and primary sawmilling. Presently Josephine County is producing about 250 million board feet of lumber annually, but this emphasis on lumber production has only been attained during the last 17 years.

Closely allied to the lumbering economy is the nature of the vegetation pattern in the District. The plants of this pattern may be grouped into two categories: those plants which reflect adaptation to dryness and those that do not. The former may be called the sub-humid category and the latter, humid. From an economic standpoint, the more important category, at the present time, is the latter, to which attention will be initially focused.

Humid Vegetation

The time, angle, and exposure of the slopes to the sun's rays is an important consideration in the location of humid forest types. The shadowed north and east-facing slopes exhibit a tendency toward these humid types, but the configuration of the land surface and the nature of

the soil cover and bedrock modify this generalization. Areally, the humid types are commonly limited to the ridge and mountain areas of the northern and southeastern parts of the District.

The humid forest is primarily coniferous, fairly dense, and dominated by the Douglas fir species. Varieties of pine, particularly ponderosa and sugar pine, are numerous in the open areas and drier margins of the forest. Incense cedar and western yew are conspicuous, singly or in clusters, in the wetter and deeply-shadowed portions of the forest. At the higher elevations in the District, the true firs, noble and grand firs, replace the Douglas fir types. However, all these lesser species are dwarfed by the Douglas fir, not only in size, but in number.

The Douglas fir is a large coniferous tree which reaches a maximum height of 260 feet and a base diameter of 10 feet.[1] Its growth rate is slow, taking nearly 180 years to reach a base diameter of 41 inches. Fire and logging have caused the age of the individual stands to differ, and subsequently the size. Also, the individual size may reflect adaptation to slope, root conditions, and other plant competition. By far, its greatest sig-

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[1]The Douglas fir, botanically, is more closely related to spruce than fir. Lumber from the tree also reaches national markets under the name of "Oregon pine."

nificance lies in the fact that this species is the most important lumber tree of the Pacific Northwest, the leading lumber producing region in the United States.

The understorey of the humid forest is dense. Various forms of ceanothus brush are particularly numerous, along with golden chinquapin. Dwarf live oak, salal, and manzanita constitute a thick understorey near the open and drier parts of the forest.

Sub-Humid Vegetation

Plants of this category possess characteristics which tend to be slightly xerophitic in nature, reflecting adjustment to the prevailing dry summers. The angle of the sun and the hot summer temperatures combine with the rugged nature of the terrain to produce a definite effect. The south and west-facing slopes of the District absorb the hot rays of the sun almost at right angles during the long clear summer afternoons. Temperatures are commonly excessive and evaporation intense, and the exposed slopes exhibit characteristics of dryness, particularly in the vegetation pattern. A pointed example of this differential insolation occurs in the mountains where winter snows may be melted off the south slope by the end of February and remain on the north slope into the month of May.

In many cases, the dry characteristics of vegetation

cannot be directly attributed to the climatic regime and slope of the land. Physiographic dryness is noteworthy on widespread serpentine rocks, on gravelly areas in the alluvial basins, and on the porous granitic soils of the area north of the city of Grants Pass.

In the District, the south and west-facing slopes, broad basins, open valley floors, serpentine rocks, and porous soils exhibit a common tendency toward sub-humid vegetation types. These types are fairly well represented in the western part of the Illinois Valley, the mountains of the southwestern part of the District, and the basin and hill-land around and north of Grants Pass. To a lesser degree, they are represented in the ridge and mountain country of the northern portion of the trade area.

Four groupings of the sub-humid vegetation are recognizeable: 1) oak-dwarf oak-maple; 2) madronne-manzanita-dwarf oak; 3) madronne-pine-manzanita; and 4) pine-manzanita.

Oak-dwarf oak-maple is usually found on the dry canyon slopes,on the valley floors, and oak is particularly noticeable on serpentines. The big-leaf maple is an important species near the streams. Dwarf oak forms a sizeable part of the understorey, frequently brush patches of huckleberry oak and canyon live oak.

Madronne-manzanita-dwarf oak is a common grouping found on many of the dry slopes throughout the District. Madronne may form a fairly dense forest and, in and around the madronne groves, manzanita-dwarf oak creates a high, thorny scrub undergrowth which could be correctly called chaparral.

Madronne-pine-manzanita and pine-manzanita are, generally, found at the higher elevations of the District. A significant exception to this occurs on the gravels at the western edge of the Illinois Valley which is dominated by manzanita and scattered pine. These three species adjust themselves well to highland areas up to 4,000 feet in elevation, and pure stands of manzanita are often present over 5,000 feet on the higher south-facing slopes of the rounded peaks.

The secondmost important lumber tree of the District is the widespread ponderosa pine, or western yellow pine. It is found in both the humid and sub-humid zones, displaying a remarkable ability to adapt to a variety of physical conditions. It may compete with cedar and yew in the wetter areas, grow in the dry sterile slopes, or adjust to the cold, snowy, and windy conditions of the high elevations. Yet, with the adaptibility that the pine possesses, there are no great pine forests in the District, such as the deep Douglas fir forests. On the

TABLE III

IMPORTANT SPECIES OF HIGHER PLANTS[1]
Grants Pass District

Common Name	Generic Name	Max. Height in feet
HUMID:		
Weeping Spruce	Picea Breweriana	115
Douglas fir	Pseudotsuga taxifolia	260
Grand fir	Abies grandis	260
Noble fir	Abies procera	245
Ponderosa pine	Pinus ponderosa	230
Sugar pine	Pinus lambertiana	200
Incense cedar	Libocedrus decurrens	180
Western yew	Taxus brevifolia	85
Golden chinquapin	Castanopsis chrysophylla	100
Snow brush	Ceanothus cordulatus	2
Deer brush	Ceanothus integerrimus	10
Buckbrush	Ceanothus cuneatus	10
Salal	Gaultheria Shallon	8
Huckleberry oak	Quercus vaccinifolia	4
Green manzanita	Arctostaphylos patula	6
SUB-HUMID:		
Ponderosa pine	Pinus ponderosa	230
Jeffrey pine	Pinus Jeffreyi	210
Madronne	Arbutus menziesii	115
California black oak	Quercus kelloggi	80
Oregon white oak	Quercus garryana	60
Canyon live oak	Quercus chrysolepis	65
Huckleberry oak	Quercus vaccinifolia	4
Bigleaf maple	Acer macrophyllum	100
Green manzanita	Arctostaphylos patula	6
White-leaved manzanita	Arctostaphylos viscida	9
Salal	Gaultheria Shallon	8

[1]For photographs of some of the species see figures 45-53.

other hand, the ponderosa pine tends to be scattered, growing singly or in small stands.

In summary of this short discussion on the vegetation types of the District, it should be said that lines between humid and sub-humid zones are, by no means, intended to be absolute, but generalizations of a complex vegetation pattern. Certainly, many variations occur; humid types can be found scattered or even in groups among the sub-humid types, or the situation may be reversed.

Growth of the Lumber Industry

Around 1900, the timbermen of the United States recognized the lumber potential of the Pacific Northwest. The large Douglas fir forests were entered and logged along the rivers, and later, along the spurs of logging railroads. By 1930, the Pacific Northwest was the leading lumber producing region of the nation, but the virgin forests of the Grants Pass District remained virtually untouched.

It was not for lack of forest resources, but the rugged nature of the District and prevalent transportation facilities of the logging industry, which limited access into the forests. Up to 1930, logging had been carried on by large cumbersome donkey yarding and the logs were transported by rail or stream. The terrain of

Figure 45. Several vegetation types are visible on this south-facing slope in the northern part of the District. In the foreground three types are apparent: 1) madronne; 2) white oak; and 3) deer brush. In the background at 4) a large ponderosa pine and at 5) the tops of Douglas fir.

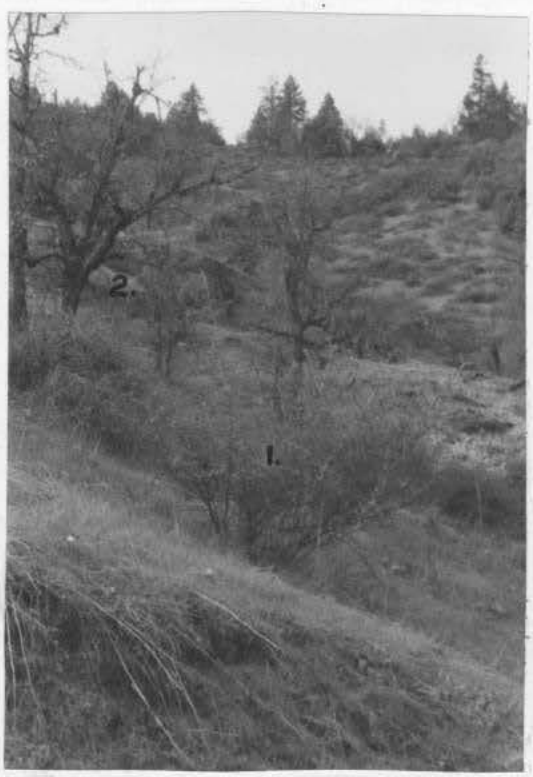


Figure 46. A dry south-facing slope near the confluence of Rogue River and Grave Cr. In the foreground, buckbrush at 1) and in the background are some scattered black oaks at 2).

Figure 47. A medium-sized chinquapin on a hillside in the valley of Coyote Creek.

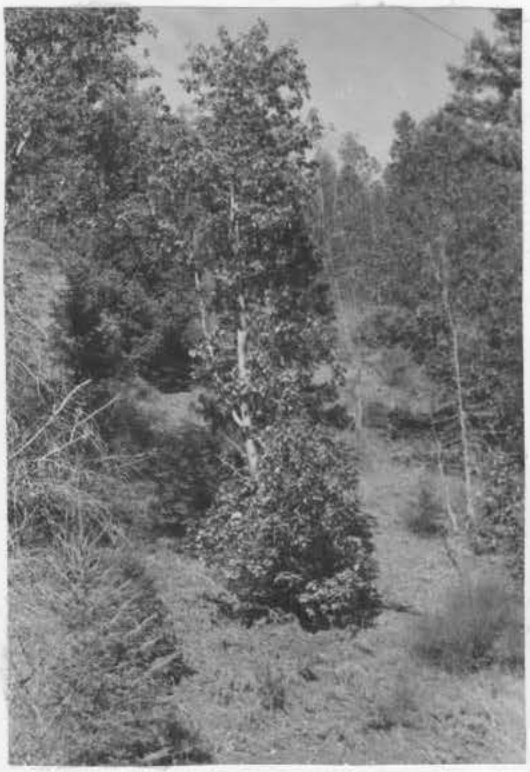


Figure 48. In the center of the photo is a madronne about 30 feet in height. This smooth red-barked tree is common on the dry slopes of the District. It is often misnamed by the local inhabitants, "laurel."

Figure 49. White-leaved manzanita and scattered pine growing on a gravelly lowland west of the West Fork of the Illinois River about 7 miles north of the town of O'Brien.

Figure 50. This narrow outcropping of serpentine is a striking, yet typical, example of the sparce vegetation cover that this rock is able to support. Along the road-cut at 2) the bedrock may be seen. Two vegetation types are notable: 1) scattered patches of snow brush and 3) isolated ponderosa pine.

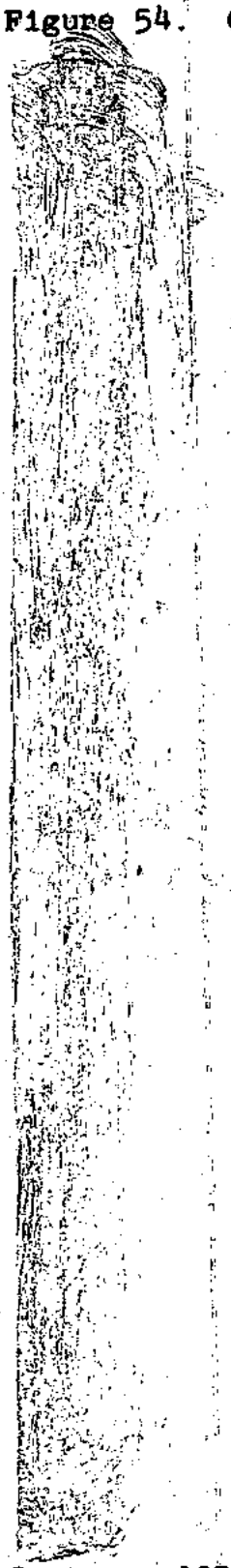
Figure 51. Green manzanita on the left at 1) and yellow pine on the right at 2) growing on a valley floor in the northern part of the District.

Figure 52. The tall Douglas fir in the center of the picture has a base diameter of approximately four feet. This species is the most important lumber tree in the District, as it is in the Pacific Northwest.

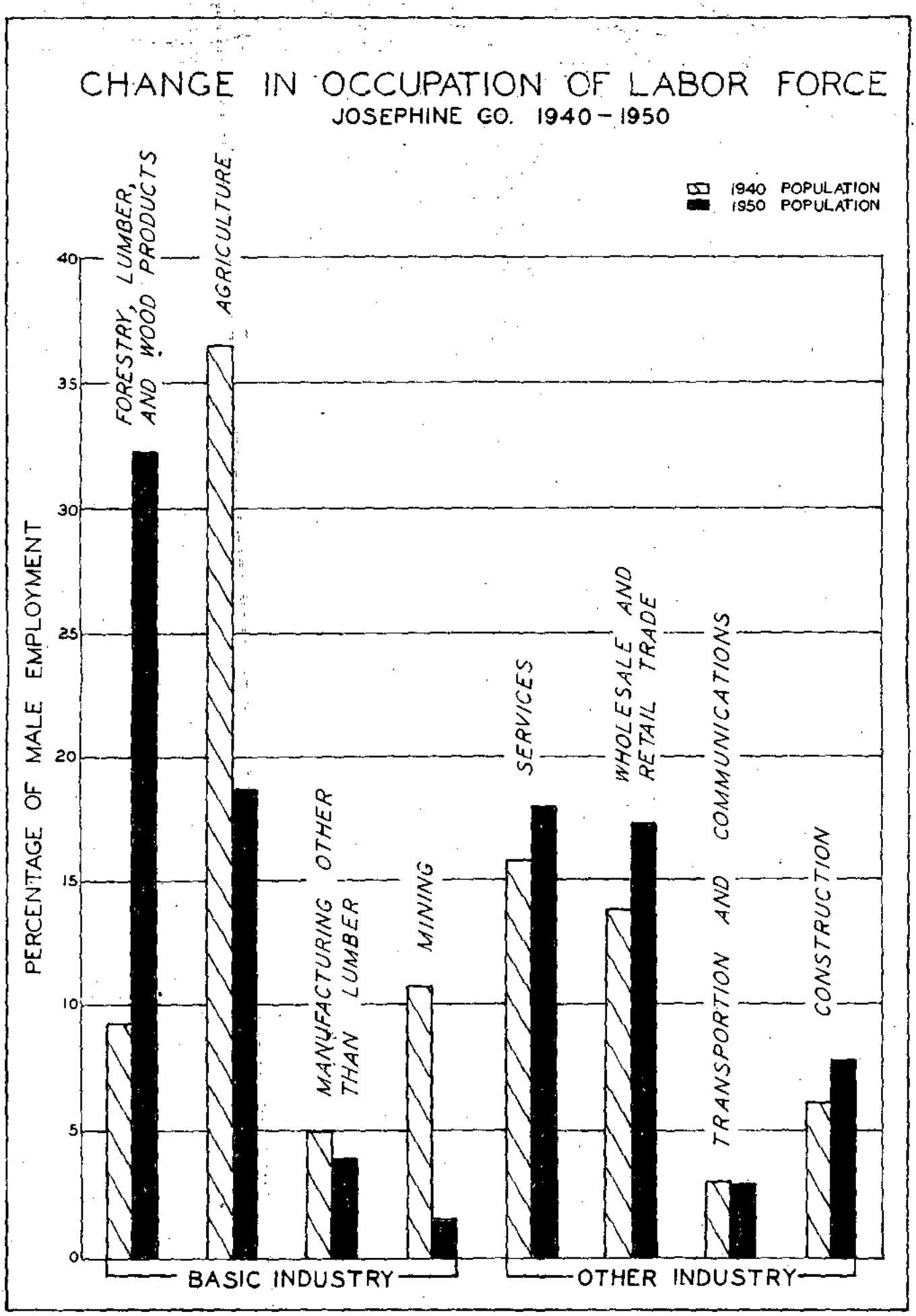
Figure 53. Two sub-alpine vegetation types found about 5,000 feet on King Mountain in the northeastern corner of Josephine County. In the photo at the left is a stunted ponderosa pine and on the right is an incense cedar.

Figure 54. Change in Occupation of Labor Force. The percentage changes in three occupations are especially noteworthy: the marked rise in lumbering and equally significant drops in agriculture and mining. The rise in lumbering assumes even more importance when the change in actual number of persons employed is considered. This represents a rise of 399 in 1940 to 2,374 in 1950 of those engaged in lumbering.

Figure 54. Change in Occupation of Labor Force.



Source: 1950 U.S. Census of Population, Washington D.C.: Bureau of the Census, 1951.


CHANGE IN OCCUPATION OF LABOR FORCE
JOSEPHINE CO. 1940 – 1950
1940 POPULATION
1950 POPULATION
PERCENTAGE OF MALE EMPLOYMENT
0
5
10
15
20
25
30
35
40
FORESTRY, LUMBER, AND WOOD PRODUCTS
AGRICULTURE
MANUFACTURING OTHER THAN LUMBER
MINING
SERVICES
WHOLESALE AND RETAIL TRADE
TRANSPORTION AND COMMUNICATIONS
CONSTRUCTION
BASIC INDUSTRY
OTHER INDUSTRY

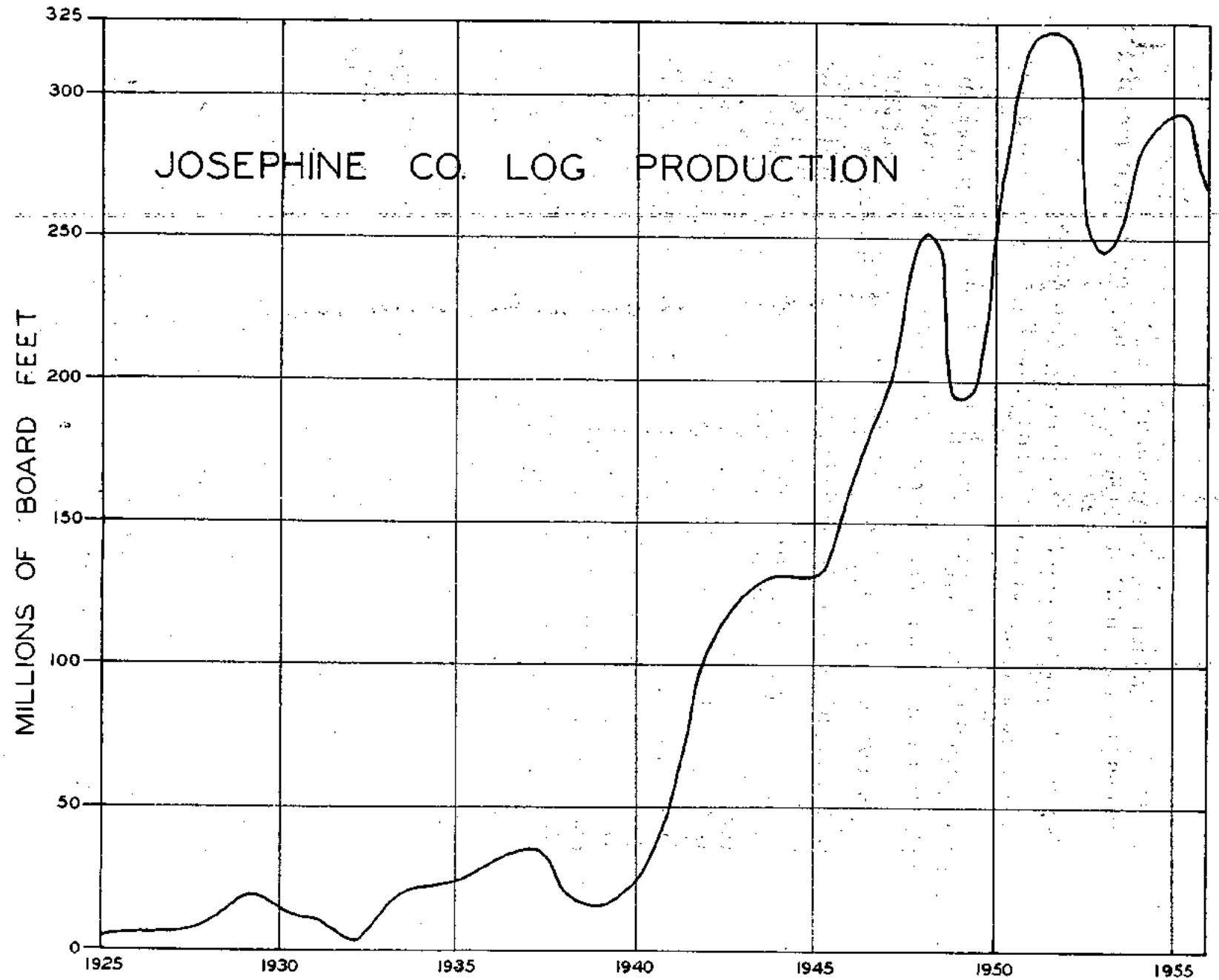
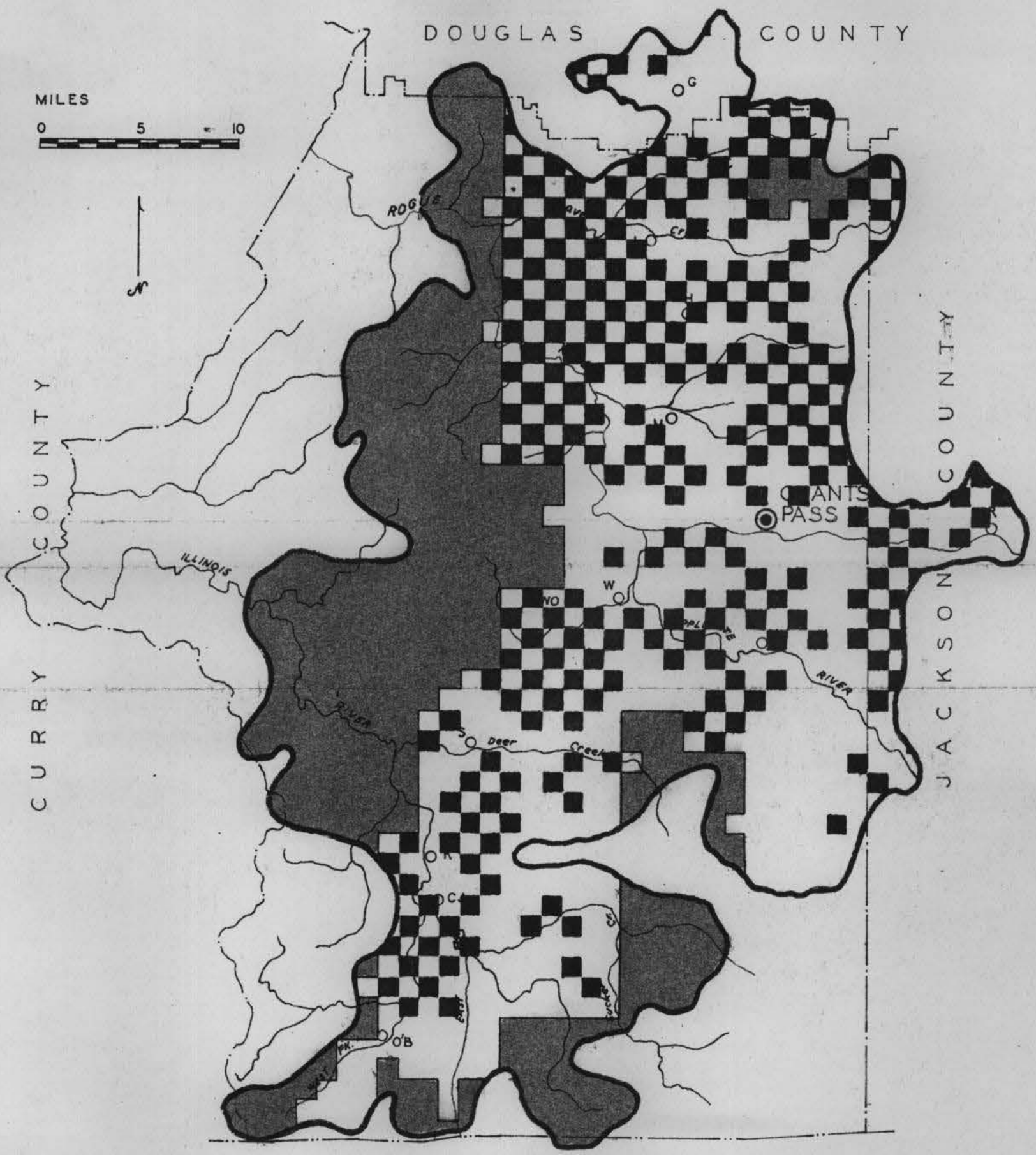

JOSEPHINE CO. LOG PRODUCTION
MILLIONS OF BOARD FEET
325
300
250
200
150
100
50
0
1925
1930
1935
1940
1945
1950
1955

Figure 55.



National Forest shown in green

Original O & C RR Grants in black

Figure 56. O & C Lands and National Forest

the District is not suited to this type of logging. Steep slopes and sharp valleys make railroad building difficult, often economically impossible. The drainage pattern is such that is discourages log transport by water. Most of the District is drained by the Rogue River which, in its lower course, has many rapids and rocky canyon sidewalls as it travels over 40 miles through a wilderness before it disgorges itself on the rugged, sparcely populated southern Oregon coast. This is quite different from the Willamette Valley to the north, where the Willamette River flows nearly 130 miles at a gentle gradient, through a wide valley, and culminates at the large port of Portland. The lack of contiguity in the vegetation pattern of the District also discouraged donkey yarding which needs broad tracts of commercial timber to make the operation profitable.

In the 1930's, the advent of the caterpillar tractor and the logging truck profoundly affected the entire nature of logging in the District, which at the time lagged far behind other forested areas of the Northwest. The "cat", using ground yarding techniques, enabled the logger to penetrate the smaller tracts of Douglas fir and yellow pine forest. With the tractor, motor roads could be constructed cheaply and the logging truck could negotiate the steep slopes. In the 1940's, the Second World

War, better economic conditions, and increased construction for an increasing national population, created a demand for lumber and the District was now able to compete in the lumber market. That it did, for lumber production in Josephine County grew from 25,000,000 board feet in 1940 to 251,268,000 bd. ft. in 1950. The District reached peak production in 1951 when 320 million board feet were cut and the production since then has exceeded 250 million annually (see figures 54 and 55).

The greater portion of commercial timberland lies in the northern part of the District and is mainly privately owned. Much of the timberland of the District is a part of the original Oregon and California Railroad Land Grant, the so-called "O and C Lands." In order to harvest the timber on these lands, the timberman must prove the mining value of the area and put in a claim. Most of the O & C Lands are no longer under Federal control due to the numerous mining claims on the lands of the District in the past. The Federally-owned timberlands, therefore, are largely the lands in National Forest, along the western edge and southeastern part of the District. The National Forests may be logged, but only on a sustained-yield basis (see figure 56). In 1956 only 16 per cent of the lumber cut in Josephine County came from Federally-owned land, the remaining 84 per cent being cut on privately-owned

lands. Most of the larger logging companies are in a position to bid favorably on public lands, and the smaller operators, the "gypos", work many of the smaller tracts of privately-owned woodland.

Lumbering operations may be broken down into two distinct phases: logging and milling. Each of these may further be broken down into large and small scale logging or milling.

Logging Operations

The logging operations are usually highly seasonal in nature, lasting from April to October, the dry season. During the winter months and early spring, heavy rains, mud, and snow combine to make access into the forest difficult. With improved access roads, loading by logging arch, and donkey yarding, a few of the larger "outfits" are able to continue sporatic operation through the winter months. In general, it may be said that during the winter lull, most of the loggers are out of work, but enjoy the benefits of unemployment insurance.

Two stages of the logging operations are similar, whether carried on by small or large scale operators. The initial stage, falling and bucking by chain saw, varies little with the scale of the operation. The same is true of the final stage, the transportation of the logs by

truck, but the essential differences in operation occur in the yarding technique and, naturally, the number of men employed and the size of the cutting area.

Large scale logging in the District employs the use of a donkey engine and high-lead yarding techniques.[1] They operate on the larger tracts of timberland, the smaller areas being economically unfeasible, i.e. to set up operation for a short duration on small, scattered stands would not be profitable. The donkey is set up in a central location, preferably on high ground, close to a large tree that is topped and trimmed for use as a spar pole. To this spar, logs are high-lead yarded from the cutting areas by using the drum and cable system of the donkey and spar. Here, the logs are collected, loaded onto trucks, and carried to the larger mills, usually connected to the operation (see figure 57).

The "gypo", the small scale logger, ordinarily cuts the smaller tracts of forest on private land. The caterpillar tractor is used to yard the logs from the woods. Ground yarding, as this is called, simply drags the logs over the ground behind the tractor. At some centrally

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[1]High-lead yarding normally suggests the use of a spar pole and donkey engine. The logs are dragged by cable to a spar with the leading end of the log raised to avoid snags and obstacles --- hence, the name "high-lead" yarding.

Figure 57. Large Scale Logging (high-lead yarding). Logs are yarded from the forest by cable and donkey engine (above) to a collection point near the spar pole (below). Here, using a logging arch (bottom left), the logs are loaded onto waiting trucks.

Figure 58. Small Scale Logging (ground yarding). Logs are skidded from the forest by caterpillar tractor (above) to a point where a gin pole (below) has been reared. Here, using the winch on the tractor and a block and tackle system, the logs are loaded onto trucks.

Figure 59. Skid roads leading out of an area where logging operations are being carried on. These narrow roads are built for tractor skidding to avoid "hang-ups."

Figure 60. LEFT: Rotating chains carry logs from the pond into this small, but efficient sawmill in Wolf Creek. MIDDLE: German gangsaws are, here, set for 2 inches. These saws make the first cut since there is no headsaw in the mill. Resaws may be seen in the left rear. RIGHT: Trimmer saws pictured here, make the final end cuts and the rough lumber is then carried on the "green chain" (background) to the end of the dock where it is stored or loaded.

located point, usually in a valley, the "gypo" logger erects a makeshift loading device, such as a gin pole, to load the logs on trucks. From here, the logs are sent by truck to either the larger mills or small "gypo" mills (see figures 58-59).

Milling Operations

The main emphasis of sawmilling in the District, is directed toward the production of lumber. Basically, there is little difference between the operation of large and small mills, except in the volume of lumber produced per mill. Only the coldecks are higher, the ponds wider, the saws larger and more numerous, and the employment greater in the large mills. Quite simply, the fundemental operation of the mill consists of raising the logs from a pond, making a series of two cuts in the log, one vertical and one horizontal, trimming the edges to length, and loading or stacking the finished rough lumber (see figure 60).

The two largest mills in the District are located at Glendale and Merlin, each employing about 500 men at peak production. There are also large mills in Grants Pass, Selma, Kerby, and O'Brien. Small mills are more numerous and may be noticed in and around nearly every small town along the highway from Glendale to O'Brien, the en-

tire length of the District. Wolf Creek, for example, has two lumber mills and a planing mill, and five miles upstream from the town, there is another small sawmill. Yet, the town has only some 150 persons, at a most generous estimate.

Effects of Lumbering on Population

The effects of lumbering are most apparent in the patterns of structural distribution and external migration. The pronounced rural non-farm nature of the population clearly demonstrates a reaction to the lumbering economy. This is notable in the logging phase where the locations of logging operations are found in the rural areas of the District. Thus, logging gives rise to a large rural population that is not gainfully employed in agriculture.

The milling phase of lumbering also tends to encourage the growth of rural non-farm population. While it is true that mills in Grants Pass and Glendale employ part of the urban population in their immediate areas, still, these mills in the urban areas draw a sizeable part of their labor supply from rural locations. The remaining number of mills in the District, the majority of mills, are situated in rural communities and labor is almost exclusively provided by rural non-farm peoples.

There are many of these small mill towns in the District, O'Brien, Kerby, Selma, Merlin, and Wolf Creek, to name only the larger rural communities.

The effects of lumbering have also manifested themselves in the pattern of external movement. As previously discussed, the dates of large recent in-migration coincide with the dates of increase in lumber production in the District and the fluctuating nature of the movement is related to the relative instability of the lumbering economy.

TOURISM

The recreational value of the trade area has, in recent years, led to the development of a summer tourist industry. Physical evidence of this industry presents itself in the form of motels, summer homes, and small stores catering to outdoor sportsmen. This is particularly true of Grants Pass where overnight lodging facilities are located along the main highways in and around the city. At least four stores in the city are exclusively tackle or gun shops, not to mention the normal sporting goods stores, hardware stores, and various businesses carrying outdoor sports equipment.[1] Along the Rogue River, northwest of

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[1]In Grants Pass, a tire store actually sells hunting rifles and shotguns which are displayed in the tire showroom.

the city, summer home development is notable where adequate automobile transportation is available. Other than Grants Pass and vicinity, there is but one other town catering to tourists: Cave Junction in the Illinois Valley, a community of 300 persons possessing overnight accomodations for nearly 1,000 motorists. In addition to the motels, Cave Junction has a small business district of restaurants, drug stores, and gasoline stations, typically oriented toward the highway.

There are a variety of physical and cultural features of the District that attract the tourist. Summer days are normally clear and temperatures are warm, but not commonly excessive. The rugged and isolated nature of much of the country provides an ample opportunity for the outdoorsman to hunt, fish, or hike in the remote parts of the area. The Oregon Caves National Monument lies within the trade area, high on the eastern rim of the Illinois Valley. These limestone caverns are connected to U.S. Highway 199 at Cave Junction, by paved road and annually attract thousands of tourists. Historically, the old gold mining towns, placers, and smelters invite the curious traveler to the District. Indian battle sites, such as that of Battle Mountain, near Calico, where the Rogue Indians massacred a company of Infantry over 100 years ago, provide interesting, but little known scenic attractions.

Within a one-hundred mile radius of Grants Pass lie the Redwoods of California, Crater Lake, and the Cascade Mountains. With all these attractions available in and around the District, it is odd that tourism is not more fully developed, but there are certain disadvantages which, at present, limit the development of a large scale tourist industry.

The primary limitation is probably the remote nature of the District, remote in two senses. First the District is situated nearly 2,000 miles from the great population centers of the United States, with the possible exception of southern California. Secondly, though paved highways provide access "through" the District, they do not provide access "into" the District. In other words, paved roads off the main highways are lacking, and access roads within the area are often little more than "jeep trails."

Another disadvantage to tourism that is difficult to evaluate, but important, is the psychological factor. The residents of the trade area, from appearances, tend to be adversely inclined toward tourists. This is particularly characteristic of the lumbering and farming populations which seem to look with distaste upon "outsiders." Only a few local merchants in Grants Pass have tried to advertise the scenic attraction of the District, but this is on a limited scale, seldom reaching national publications.

Regardless of the obstacles to tourism, the industry has grown and produced some effects on the population characteristics under study in this paper. As previously noted, summer homes along the Rogue River are part of the pattern of areal distribution. The recent growth of the town of Cave Junction is closely related to tourism and the location of the Oregon Caves. The rural non-farm population of the District has elements of retired people and summer vacationists among their numbers.

In summary of this chapter, it is evident that the economy has been, and still is, in an early stage of resource exploitation. The nature of the early mining-agricultural economy and the change to and nature of the later lumbering-agricultural-tourist economy are basic considerations of population study in the District. The economic base has, in turn, been affected by the physical nature of the area.

SUMMARY

The paper is concerned with population distribution and movement in the trade area of Grants Pass, a city lying in the rugged Klamath Mountains of southwestern Oregon. Main emphasis is placed on the relation of the economic base to population, and the relation of the physical setting to the economy.

Four features of distribution and movement are peculiar to the District: 1) a valley focus of settlement; 2) a large rural non-farm group; 3) a marked in-migration of people in the last twenty years; and 4) a fluctuating migration pattern. The effects of the physical and economic base on these features are summarized in the following considerations.

VALLEY FOCUS

1. Gold mining led to an early settlement of the lowlands where stream water for hydraulic mining and the placers were found. Mining also gave stimulus to agriculture and even to early logging for mine timbers.

2. The extent of arable land is small, being less than 15 per cent of the total area of the District. This limited

amount of farming land tends to concentrate agriculture in the lowlands. Dry summers and irrigation requirements promote farming activity near the streams. Other factors exert some influence on the valley location of farming, such as mild temperatures, lack of snow, and reduced wind velocities.

3. The milling phase of the lumber industry requires water and level areas, conditions that a valley location affords. Presently, mills and mill towns dot the large and small valleys crossed by main transportation lines.

RURAL NON-FARM DOMINANCE

1. Old mining sites are located around the periphery of the District in rural areas, as may be seen in figure 16. Although gold mining is no longer important, it has tended to promote rural non-farm settlement. Many mining communities have since disappeared, but others remain, as Placer or Leland, in the form of rural non-farm logging communities.

2. The limited amount of arable land in the District does not tend to promote a large farming population.

3. The lumbering economy is presently the "key" to understanding the rural non-farm nature of the population. The

rural location of timberlands stimulates small rural settlement, particularly on the part of those engaged in logging. This is given importance by the large size of the lumber industry which employs about one-third of the male population.

4. The pleasant climate, fishing and hunting opportunities, the scenic attractions of the District have contributed to the growth in the number of tourists and retired people, most frequently part of the rural non-farm population.

RECENT IN-MIGRATION

1. Neither mining nor agricultural populations have grown in recent years, and the influences on in-migration appear to be negative.

2. Again, the growth of the lumbering economy is the most important factor. Ultimately, the drainage system, the discontinuity of the coniferous forest pattern, and the rugged terrain of the District have delayed the exploitation of its timber resources. Recent changes in logging techniques and transportation have introduced lumbering and a broader economic base. This expansion of the economy has, in turn, demanded more labor --- labor supplied largely from areas outside the trade area.

FLUCTUATING MOVEMENT

1. The lack of arable land, as mentioned previously, limits the development of agriculture.

2. Mineral and timber resources have stimulated other economic emphasis, mining and lumbering, respectively. Both endeavors have induced past and present in-migration, but the sensitive and unstable nature of these economies causes marked fluctuations in the patterns of movement. This characteristic of the recent lumbering economy can been seen in the graph of population movement, figure 15.

Economic factors probably have a direct effect on the population patterns, whereas, the effects of the physical setting are more indirect in nature. No matter how strong the influence, no single factor determines where an individual will live. This decision is left to man who adapts the landscape to suit his needs, but the process of this adaptation is influenced by economic and physical elements.

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