THE RESOURCES OF HOOD RIVER COUNTY;
INVENTORY AND PROSPECT

by

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Hood River County is typical of much of the area of the western part of the United States, having a relatively large area of non-agricultural lands and a small intensively cultivated valley. The economy is based primarily on forestry and commercial fruit raising, with livestock of minor importance. Practically all the croplands of the county are irrigated. The water source is Hood River which rises in the glaciers on Mount Hood and provides an unfailing supply throughout the summer. With the exception of the area in croplands and pasture the entire county is forest covered; the greatest portion is within the Mount Hood National Forest. Urban settlement is based on the processing of fruit, sawmilling, service industries, and transportation. Manufacturing industries not based on the processing of forest or agricultural products are insignificant.

The purpose of this study is to inventory and evaluate the county's resource base and to analyze the present development as well as the potentials for the future. Field work for the study was done during the summer of 1956. The accessible areas of the county were visited and numerous interviews were conducted with local farmers, managers of industry, and public officials. Published material on the county was obtained from the Oregon State College library, public agencies, local industries, and the Hood River Chamber of Commerce. The General Highway map of Hood River County prepared by the Oregon
State Highway Department was used as a base for the maps which were compiled from various sources as noted in the text.
LOCATION OF HOOD RIVER COUNTY IN THE PACIFIC NORTHWEST
Chapter II

THE PHYSICAL BASE

Hood River County, located in the north central part of Oregon, has a land area of 529 square miles. Only Multnomah County is smaller. Its shape resembles an inverted bell, being 32 miles long from north to south and varying in width from 23 miles in the north to 10.5 miles in the extreme south.

On the north, the boundary follows the center of the main channel of the Columbia River. On the west, it joins Multnomah and Clackamas Counties along the main crest of the Cascade Mountains. The southern and eastern boundaries with Wasco County are surveyors' boundaries which follow township and range lines without regard for local topography.

Surface character: Hood River County is an area of diverse topography. Elevations vary from 11,226 feet atop Mount Hood to 72 feet at the surface of Bonneville pool. Between these two extremes of elevation are found hills, ridges, buttes, plateaus, valleys, and deep river gorges. The rugged topography of the greater portion of the county limits its use for agriculture and thus forestry, recreation, and watersheds are of primary importance. Only 40,000 acres are in farm ownerships.

Hood River County is a relatively compact physiographic unit, the unifying feature of which is the drainage basin of the Hood River. This basin is the southern portion of a great synclinal trough which extends from the slopes of Mount Hood in the southwestern part of the county across the Columbia River to the slopes of Mount Adams in the
state of Washington. The drainage basin of the Hood River encompasses about 63 per cent of the area of the county.

The area is underlain by basalt bedrock, a part of the great Columbia lava flows. This basalt consists of a number of successive horizontal layers with a total thickness varying from 300 feet to over 4,000 feet. The basalt layers have been folded into a shallow syncline. Atop the western rim of the syncline the volcano which formed Mount Hood poured out large amounts of ash and lava. Glaciers and rivers have distributed quantities of this material throughout the lower elevations. Glacial action in the lower elevations has been mainly depositional and a thick veneer of glacial material has been deposited on the floor of the valley. Glacial melt waters, or perhaps the forerunners of the present rivers, have reworked these deposits to a certain extent. At the present time all the streams of the valley flow in deep narrow gorges and are no longer actively reworking the material on the valley surface. Throughout the higher elevations the Hood River and its tributaries have cut deep V-shaped valleys, characteristic of an area that is in a stage of geologic youth.

Physical subdivisions: Hood River County can be subdivided into five physical units with the Hood River Basin as the focal point. These subdivisions are: (1) the Hood River Valley; (2) the northwestern rim or the Columbia Gorge area; (3) the high western rim; (4) the southern rim; and (5) the eastern rim (see figure 3).
FIGURE 2

PHYSICAL CHARACTERISTICS
HOOD RIVER COUNTY

SOURCE: U.S.G.S. TOPOGRAPHIC MAPS
Hood River Valley: The Hood River Valley occupies the bottom of the basin. It is approximately 10 miles wide at its widest part and 25 miles long from north to south. The valley is in reality a series of three northward sloping plateaus, each separated from the other by local relief. These three plateaus are locally known as the Lower, Middle, and Upper Valleys. Elevation ranges from 500 feet at its northern end to 3,000 feet at its southern extremity.

The largest and most important of the subdivisions is the Lower Valley. It extends from the entrenched gorge of the Columbia River to Middle Mountain, a precipitous ridge 2,000 feet in elevation that extends across the valley approximately six miles south of the Columbia River. On its eastern and western sides the land also rises abruptly. In elevation the Lower Valley ranges from 500 feet in the north to 1,200 at the foot of Middle Mountain. Local relief on the floor of the Lower Valley is provided by a few isolated buttes and by the entrenched gorges of the Hood River and its tributaries (see figure 5). These gorges have been cut down through the thick deposits of glacial material deep into the underlying basalt bedrock. The columnar structure of the basalt produces steep, almost vertical, walls in the lower parts of the gorges. The gorges vary from 100 feet to 500 feet in depth. At the northern edge of the Lower Valley the land drops in a series of narrow terraces to the Columbia River. The city of Hood River is located on these terraces.

The Middle Valley occupies a small bench on the northern slopes of Middle Mountain with a low ridge separating it from the Lower Valley.
FIGURE 3
PHYSICAL SUBDIVISIONS OF
HOOD RIVER COUNTY

COLUMBIA GORGE AREA

WESTERN RIM AREA

LOWER VALLEY

MIDDLE VAL.

MIDDLE MT.

UPPER VALLEY

SOUTHERN RIM

SOURCE: COMPILED FROM U.S.G.S. TOPOGRAPHIC MAPS
Figure 4. A view from the northeast rim of the Lower Valley. Note the plateau-like nature of the valley floor and the incised river gorges.

Figure 5. Looking southward across the Lower Valley. Note level valley floor with isolated buttes rising from it. In the background the eastern rim of the valley is visible.
This valley, consisting of a few hundred acres of gently sloping land, is the smallest and least important of the subdivisions. Drainage from this valley is northward by way of Neal Creek.

The Upper Valley located south of Middle Mountain is approximately 4 miles wide and 7 miles long and ranges in elevation from 1,500 feet to about 3,000 feet. As in the Lower Valley, the rivers are entrenched but here the gorges are not nearly as deep. The area is drained by the East and Middle Forks of the Hood River. The East Fork flows along the eastern margin of the valley and the West Fork follows the western side. The two forks unite at the lower end of the Upper valley. Two miles farther downstream the West Fork joins the main stem of the river; below this point the Hood River follows a single channel around the western shoulder of Middle Mountain, through the center of the Lower Valley, and enters the Columbia at the city of Hood River.

The Northwestern Rim or Columbia Gorge Area: The Columbia Gorge Area comprises about one-sixth of the county and includes all the northwestern section lying outside the Hood River drainage. The hydrographic divide is Wancoma ridge, a high broad elevation which branches off from the main axis of the Cascade range approximately nine miles south of the town of Cascade Locks. This ridge rising to 5,000 feet where it leaves the Cascade Range trends northeastward reaching the Columbia four miles west of the city of Hood River. At this point the ridge has decreased in elevation to about 2,000 feet. Drainage north of this hydrographic divide is mainly by way of Eagle and Herman Creeks. Numerous
other small short creeks are located along the Columbia Gorge. The gradient on these streams is extremely steep and where they flow over the rim of the Columbia Gorge, they often form spectacular waterfalls.

Both constructional geologic processes and dissection by the streams have made the interior of the area one of the roughest and most inaccessible in the Pacific Northwest. The Columbia Gorge is the only part accessible to automobile travel. Here the Columbia River has cut a spectacular gorge through the Cascade Range. Bold, often vertical basalt cliffs, rise over 500 feet above the river. Transportation lines through the gorge are located almost at water level and generally run within a few yards of the river.

The Western Rim Area: The Western Rim Area includes all the western section of the county, above the Hood River Valley lying within the Hood River drainage system. The land slopes eastward from the 4,000 foot crest of the Cascade Range to 2,000 feet where the foothills meet the valley floor. Mount Hood in the southwestern corner of the area is the dominant feature of the landscape. The upper slopes are covered with perpetual snow and ice and the widely radiating foothills are covered with dense stands of timber.

The valley of the West Fork of the Hood River provides a relatively easy route into the interior. The area is drained primarily by this stream; it has its headwaters in two principal sections, the Lost Lake area and the Mount Hood area.
The Southern Rim: This area comprises all of the county south of a high ridge which extends eastward from the southeastern shoulder of Mount Hood. This ridge is the hydrographic divide between the drainage of the East Fork and the tributaries of the Deschutes River. About 36 square miles in the southern section of the county lie in the Deschutes drainage. The rivers have their sources in the glaciers on the south side of Mount Hood. These streams have cut canyons over a thousand feet deep and have dissected the entire area. The position of the ridges and valleys makes the area inaccessible from the north. The lowest portion of the hydrographic divide is found next to the shoulder of Mount Hood. Here at Bennett Pass, 4,670 feet elevation, the Mount Hood Loop crosses the ridge.

The Eastern Rim: The Eastern Rim of the Hood River Basin is formed by the northward sweep of the ridge that comprises the Southern Rim. Elevations vary from over 5,000 feet in the south to slightly over 1,000 feet at the Columbia River. The eastern boundary of the county lies from two to six miles east of the crest of this ridge. The side facing the valley is abrupt. To the eastward, however, the ridge slopes more gently. The streams flowing to the west are small and therefore have not greatly dissected this ridge; on the east side the streams are larger and the degree of dissection is much greater. Drainage to the west is by way of the East Fork; to the east it is by way of Mill Creek and other northeastward flowing creeks. The forest cover of this ridge is not as heavy as in the other sections of the county. Considerable areas are covered only by scrub oak and grass.
Figure 6. A view of the rugged northwestern section of the county, looking southward from the Columbia River Highway.

Figure 7. A view of the eastern rim of the valley, showing steep western side. Note sparse forest cover and numerous bare spots.
Climate

Hood River County lies in a transition zone between the marine west coast climate found west of the Cascades and the dry continental climate of the intermountain region. The climate of the county is characterized by moderate winters and long, relatively cool summers. The entire county has wet and dry seasons similar to those of the Willamette Valley. Over 60 per cent of the precipitation falls from October to May. Winter precipitation comes as the result of gentle cyclonic storms of long duration. The type, snow or rain, depends on elevation and the daily temperature. During the summer months, showers occur at intervals, but are not dependable as a moisture supply. Normally summer rains are not heavy enough to damage most of the irrigated crops; in some years, however, they result in considerable damage to the cherry crop. At the lower elevations the summer rains are seldom accompanied by hail or violent winds; in the higher elevations lightning is a serious forest fire hazard and noticeable areas of the county's forests have been burned at some time in the past.

Controls: Climatic controls affecting the county include location in the belt of cyclonic westerlies, elevation, local topography, distance from the moisture supply, the Columbia Gorge wind gap, and the Cascade mountain barrier.

The dominant climatic control is the cyclonic westerly system. These storms are the source of most of the precipitation. The entire county lies on the lee slope of the Cascade Range; this results
FIGURE 8

AVERAGE ANNUAL PRECIPITATION OF HOOD RIVER COUNTY (IN INCHES)

SOURCE: U.S.D.A. YEARBOOK OF AGRICULTURE 1941
in decreasing precipitation from west to east across the county (see figure 8). Local topography as well as elevation is a governing factor resulting in a great deal of local variation in the county's precipitation. The arrangement of the valleys and ridges greatly influence the movement of the moisture laden winds. This affect of topography is especially noticeable at the beginning and the close of the rainy season. At these times certain parts of the county may receive heavy precipitation while others only a few miles away may receive none.

The Gorge of the Columbia acts as a gigantic flue which permits the passage of moisture laden maritime air through the Cascade Range at low elevations. Because of the narrowness of the Gorge, the winds along the Columbia sometimes blow with considerable force. Wind velocity in this area is greatest during the spring and early summer, and least during the winter months. This is due to the rapid heating of the intermountain region to the east, which produces a low pressure area. These high winds in the Columbia Gorge are seldom destructive.

At infrequent intervals, the prevailing wind direction may be reversed and the winds may blow from the east for a few days. It is on these occasions that the county experiences extremes of temperature. This condition can occur during both winter and summer. When the winds blow from the east during the winter months, cold, dry continental air flows into the county from the interior and the county has its lowest temperatures. The minimum recorded at the various climate stations in the county for the 21-year period (1931 to 1952) are Parkdale -27°F.;
Hood River -21° F., and Cascade Locks -7° F. During the summer months the reversal of wind direction produces the maximum temperatures. The records are Parkdale 105° F., Hood River 105° F., and Cascade Locks 108° F.

Within Hood River County climate stations are maintained at Cascade Locks, Hood River, and Parkdale. A study of the records of these three climate stations, located as they are at widely spaced points reveals the county's climatic characteristics. Each station shows the climatic influence of local physical conditions (see figure 9). Hood River County can be subdivided into three climatic sections. These are the Western Mountains, the Northeastern Lowland, and the Southeastern Uplands.

The Western Mountains: The Cascade Locks station is located in the northwestern corner of the county at the point where the great river of the Pacific Northwest cuts through the Cascade Mountain range. The station is at an elevation of 100 feet above sea level. Although practically all of the area it represents is at least a thousand feet higher in elevation, the climatic regime is much the same. The Cascade Locks station is located in the marine west coast climatic zone of the county. This climatic zone is found along the entire western edge of the county, and it also includes the high mountains northwestern section. The average annual precipitation recorded at Cascade Locks is 76.64 inches, most of which comes during the winter season. The annual precipitation varies from over 80 inches along the
CLIMATIC CHARACTERISTICS OF HOOD RIVER COUNTY

CASCADLOCKS (ELEVATION 100 FT.)
AVERAGE ANNUAL TEMP. 52.7°
AVERAGE ANNUAL PRECIP. 76.64 IN.

HOOD RIVER (ELEVATION 500 FT.)
AVERAGE ANNUAL TEMP. 50.6°
AVERAGE ANNUAL PRECIP. 28.1 IN.

PARKDALE (ELEVATION 1740 FT.)
AVERAGE ANNUAL TEMP. 47.3°
AVERAGE ANNUAL PRECIP. 45.1 IN.

SOURCE: U.S. WEATHER BUREAU LOCAL CLIMATOLOGICAL SUMMARIES
Cascade crest to 50 inches on the eastern margins of this section (see figure 8). Precipitation varies with local topography and exposure to winds. Much of the winter precipitation falls in the form of snow on the higher elevations. Snow remains on Mount Hood the entire year, but throughout the rest of the area which ranges in elevation from 3,000 to 5,000 feet the snow melts by early summer.

The frost free season in this zone varies with elevation, ranging from 200 days at Cascade Locks to 80 days in the southwestern corner of the county (see figure 10). The ruggedness of the terrain limits agriculture in this climatic zone, however, the heavy annual precipitation plus mild temperatures have resulted in a dense coniferous forest cover on all but the highest portions.

The Northeastern Lowland: The Northeastern Lowland is the driest area of the county. The climate station at the city of Hood River has an annual average precipitation of 28.1 inches. The lower precipitation is the result of a combination of lower elevation, descending air masses, and increased distance from the moisture supply. This station is located in the Lower Valley at an elevation of 500 feet above sea level. The area varies in elevations of from 500 to 1,200 feet. The moisture laden winds sweep up the valley parallel to the eastern valley rim. Thus this ridge averaging 1,500 feet elevation receives little in the way of orographic precipitation. Annual precipitation in this section varies from 40 inches to under 20 inches (see figure 8). The lower precipitation is reflected in the natural vegetation. A
transition occurs from coniferous forest on the west through mixed
coniferous and oak and madrone in the east.

The average annual temperature recorded at Hood River is 50.5°F. The average temperature for the month of July is 67°F and for January is 32.6°F. The frost free season in this northeastern section of the county averages from 160 days to 183 days, varying with elevation and air drainage. The average date of the last killing frost over a 40-year period (1898 to 1938) was April 20th and the average date of the first killing frost in the fall was October 20th (11, page 1076). The relative freedom from late season frosts makes this section of the county ideal for fruit raising.

**Southeastern Uplands:** Parkdale, located in the center of the Upper Valley, is the climate station for the southwestern section of the county. This area ranges in elevation from 1,200 to over 5,000 feet. Parkdale at an elevation of 1,740 feet above sea level has an average annual precipitation of 45.1 inches.

The average annual temperature at Parkdale is 47.3°F. The length of the frost free season varies from 143 days at Parkdale to less than 80 days in the higher mountain areas along the southern boundary of the county (see figure 10). In the agricultural part of this section the average date of the last killing frost is May 17th and the first in fall is October 7th. Winters are more severe in this part of the Hood River Valley and occasionally temperatures drop low enough to injure the dormant fruit trees.
FIGURE 10
AVERAGE LENGTH OF GROWING SEASON
(IN DAYS)
HOOD RIVER COUNTY

SOURCE: U.S.D.A. YEARBOOK OF AGRICULTURE 1941
As in the other sections of the county, the rainfall of this area decreases from west to east. Average annual precipitation ranges from 50 inches to under 30 inches. Snowfall is heavier than in other parts of the county. Parkdale receives over 90 inches, and the higher mountain areas receive much more. For this reason, the County Highway Department has not found it feasible to attempt to keep the Loop highway plowed beyond the Cooper Spur Inn.

Soils

The information on the soils of Hood River County was obtained from U.S.D.A. Soil Survey Bulletin and map, and from interviews with the soil conservation service soil scientist at Hood River. (APP. II, 3) The soil survey completed in 1912 covers only the Hood River Valley. At the present the survey is in the process of revision.

Soil forming factors: Factors which have affected the formation of the county's soils include the nature of the parent material, topography, climate, and the nature of the forest cover. The soils of the county are derived mainly from the basalt bedrock, however quantities of volcanic ash and tuft are also present in certain areas. The soils of the region contain varying quantities of basalt boulders and rock fragments; in addition small pellets are found throughout the soils of the county. These pellets are locally known as red shot.

The most important factor affecting the soils of the agricultural part of the county has been the glacier that flowed down from the
slopes of Mount Hood and covered the valley floor. Glacial action in the lower elevations was depositional rather than erosional. A sheet of glacial till of varying thickness was laid down over the entire valley floor. These deposits have since been reworked to a certain extent by either glacial meltwater or the forerunners of the present rivers. In some areas, particularly the Lower Valley, the deposits are more or less stratified.

Weathering has been a factor in the formation of both the glacial soils and the residual hill soils. The depth of these weathered soils is dependent on the degree of erosion which has taken place.

The soils of the county fall into five broad classifications based on the characteristics of the parent material and topography. These are the residual hill soils, the ice laid soils, the water laid sedimentary soils, the stream laid alluvial soils, and the non-agricultural types classed as riverwash and rough stony land.

Residual Hill soils: The residual hill soils are represented by the Underwood loam and Underwood stony loam. Of all the soil series found in the county, the Underwood is by far the most widely distributed. It is found in most of the hill and mountain areas of the county (see figure 11).

The soils of the Underwood series normally are light brown in color and contain considerable quantities of red shot. Both the loam and stony loam contain angular rock fragments in the topsoil; they differ in the size and quantity of these fragments.
FIGURE II

SOILS OF HOOD RIVER COUNTY

- PARKDALE LOAM
- HOOD SILT LOAM
- ROUGH STONY LAND
- RIVERWASH
- ROCKFORD SERIES
  1 CLAY
  2 STONY CLAY LOAM
  3 STONY CLAY LOAM ERODED PHASE
- WINANS SERIES
  1 LOAM
  2 GRAVELY SANDY LOAM
- WIND RIVER SERIES
  1 LOAM
  2 SANDY LOAM
  3 GRAVELY SANDY LOAM
- UNDERWOOD SERIES
  1 LOAM
  2 STONEY LOAM
  3 UNSURVEYED, PROBABLY MAINLY UNDERWOOD STONY LOAM SOILS

SOIL SURVEY BOUNDARY
NATIONAL FOREST BOUNDARY

SOURCE: U.S.D.A. BUREAU OF SOILS, SOIL OF OREGON
The Underwood loam is usually found on the more gentle slopes and on the rounded tops of hills and ridges. The topsoil varies from 8 to 10 inches in depth and has a fine smooth silky texture. The subsoil extends to a depth of six feet or more. The value of this soil for agricultural purposes varies considerably; on the gentle lower slopes and on hillside terraces it is well-suited to fruit production.

The stony loam phase is usually found above the loam phase on the steeper upper slopes. This soil has little value for agriculture. It is shallow and contains a large quantity of rock. Both phases of the Underwood soils developed under both coniferous and mixed oak and coniferous forest.

The ice laid soils: The soils of the county that are derived primarily from ice laid materials include those of the Rockford and Parkdale series. Although both of these series were formed by the same agency they differ greatly in their agricultural capabilities, the Parkdale being far superior. These two soils are located at opposite ends of the Hood River Valley, the Rockford in the northwestern corner of the Lower Valley and the Parkdale in the Upper Valley (see figure 11).

The rockford series includes a clay type and a stony clay loam type with an eroded phase. They occupy moderately sloping or undulating areas, elevated slightly above the main valley floor, but below the Underwood soils. They are reddish brown in color and contain quantities of glacial boulders. Both phases suffer from poor subdrainage due to the deep compact deposits of glacial till which underly them.
The clay type is the best agricultural soil of this series. It carries a much smaller quantity of rock in the topsoil and although the subsurface drainage is poor the surface drainage is good. A certain amount of material has been derived from the slopes directly above it and water action has somewhat modified the structure of the topsoil. The stony clay loam eroded phase carries a great deal more rock in its surface layers; in some areas so much rock is present that it is uneconomical to clear the land. Over much of this phase the rock has been cleared from the fields and piled up in wide stone walls along the margins. The drainage problem on this phase is greater due not only to the poor subsurface drainage but also to seepage from the slopes above.

Only the loam type of the Parkdale series is found in the county. It covers almost the entire Upper Valley and is considered second only to the Hood silt loam as an agricultural soil. The Parkdale loam is composed of weathered glacial outwash material. The topsoil is commonly about 12 inches in depth and has a fine sandy or silky texture. The subsoil extends down to depths of 20 feet or more. Large quantities of red shot are found in the top soil, decreasing in quantity in the subsoil. Glacial till is found underlying the B horizon. Both surface and subsurface drainage are good on this soil series and most of the area is being intensively utilized for fruit growing.
Water laid sedimentary soil: The Hood Silt Loam is the only soil falling within this classification. This soil, found in the bottom areas of the Lower Valley, appears to have been laid down in the quiet waters of a lake. The sedimentary material of which it is composed varies from 6 feet to 100 feet in depth; beneath this material, glacial till is found. In small scattered areas, the subsoil is compact and drainage is poor, but over most of this series the subdrainage is good. The topsoil is light gray or yellowish gray and has a silty or fine sandy texture. Both the topsoil and the subsoil are entirely free of rocks. The Hood silt loam is the best agricultural soil in the county and is intensively used for fruit production.

Stream laid alluvial soils: This soil classification includes the Wind River and Winans soils series. These soils are made up of materials that have been deposited in stratified layers by water action. Both are found in the lower part of the valley.

The Wind River series includes loam, sandy loam, and fine sandy loam types, a gravelly sandy loam and a stony loam phase. This series suffers from excessive subdrainage, due to the gravelly nature of the subsoil. The loam type is reddish brown in color and carries appreciable quantities of red shot in the topsoil. Small sub-angular rock fragments are found throughout the soil indicating that the material has been transported short distances by streams. The sandy loam type differs from the loam type in its greater sand content and in the absence of red shot in the topsoil. The gravelly sandy loam phase
carries the highest percentage of red shot of the series; it has a light friable texture.

The Winans series occupies narrow terraces and bottom lands along streams. Two types are found in the county, the loam type and the sandy loam type, which has a gravely phase. This series is typically light brown in color and is underlain by a substratum of stream laid gravels. The parent material consists primarily of basaltic rock that has been transported short distances. The gravelly sandy phase is not important as an agricultural soil due to excessive drainage. The loam type on the other hand suffers from poor drainage due to its occurrence in low areas near streams. This soil derived from alluvial material is the most recent of the valley soils.

Riverwash and rough stony land: This class has little agricultural value. It occurs chiefly in the river gorges and on the higher ridges. Riverwash consists of sand and gravel beds along the streams which are usually inundated each year during highwater.

Natural vegetation

Except for the area above timberline on Mount Hood, Hood River County was formerly entirely covered by forest. A transition in natural vegetation occurs both from west to east and from north to south. The prime factors responsible for this diversity are precipitation and elevation. From west to east in response to decreasing precipitation, the forest cover changes from Douglas fir to ponderosa pine and finally
FIGURE 12
NATURAL VEGETATION ZONES
HOOD RIVER COUNTY

SOURCE: S.C.S. MAPS
to oak and madrone. From north to south in response to increasing elevation the natural vegetation changes from oak to madrone to Douglas fir, lodgepole pine, mixed balsam fir, and mountain hemlock and finally to sub-alpine and alpine species on the slopes of Mount Hood.

Vegetation zones: Six general vegetation zones are found within the county. These include the oak-madrone, ponderosa pine, Douglas fir, true fir, sub-alpine, and alpine species (see figure 12).

The oak-madrone zone is located in the northeastern section. It comprises most of the Hood River Valley and the northern part of its eastern rim. Large oaks were formerly found on the valley floor but today the natural vegetation has been largely cleared from the level lands and only the river gorges and hill areas remain in forest. Madrone is the dominant vegetation type, however ponderosa pine and Douglas fir are found scattered throughout the area. Coniferous vegetation grows in the more favored spots whereas madrone covers the steep rocky areas. The remaining oak is generally too small and gnarled to be of commercial value. Sparse native grasses grow under the trees and in the open spaces throughout this area.

The ponderosa pine zone is located along the county's eastern boundary. This is a transition zone between the wetter fir region to the west and the pine region of the drier lands to the east. In the northeast, scattered oak and Douglas fir are found and in the south, cedar, hemlock, and true firs.
Figure 13. A dense stand of old growth timber along the Loop Highway, in the true fir zone between 3,500 and 5,000 feet elevation.

Figure 14. A stand of small subalpine species trees, in the Bennett pass area along the Loop Highway. Elevation 5,000 to 6,000 feet.
The Douglas fir zone covers more than half of the area of the county. It extends from the crest of the Cascades on the west to merge with the oak-madrone and ponderosa pine of the east. Tree size and density of stand varies with moisture supply, elevation, and depth of soil. From north to south it extends from the Columbia Gorge to the lower slopes of Mount Hood. In the mountainous area in the northwest it occurs in relatively pure stands up to 4,000 feet where it is replaced by spruce, hemlock, and true firs.

The true fir zone encompasses most of the southern section of the county. It occupies the area between 3,500 feet and 5,000 feet. Balsam firs and mountain hemlock are the dominant species. Trees are of large size on the lower slopes where the zone merges with the Douglas fir and ponderosa pine, but tree size decreases rapidly with elevation.

The sub-alpine zone lies from 5,000 feet to 6,500 feet. Sub-alpine species are too small to be of commercial value. In the alpine zone above 6,500 feet, the vegetation consists of hardy shrubs, mosses, and grasses.

Water resources

Hood River County is fortunate in that bountiful supplies of pure water are found throughout the county. All the major streams have their sources in heavily forested watersheds, most of which lie within the boundaries of the Mount Hood National Forest. The streams of the
county flow in deep rocky gorges. Stream gradients are steep, and throughout the county white water is the rule rather than the exception.

The drainage basin of the Hood River system comprises 335 square miles or 63 per cent of the area. The system has a total length of 39 miles and a total fall from source to mouth of 7,500 feet. The gradient averages 139 feet per mile in the upper reaches and 58 feet per mile in the lower twelve miles of its course (12, page K191). For the first twelve miles above its confluence with the Columbia, the river follows a single channel; at this point it forks and the West Fork branches off to the southwest. Two miles further upstream the river forks again, forming the East and Middle Forks. The hydrographic center for all three forks is Mount Hood, here the glaciers on the upper slopes provide an unfailing water supply. In view of the summer drought experienced in the county, and because this season corresponds to the period of greatest demands for irrigation, the glacial meltwater is of utmost importance to the county’s economy. Although glacial meltwater is an important source of late season water, the greatest percentage of the runoff comes from rains which fall during the months from December to May (see figure 9).

Flooding is not a serious problem in the county, even during the periods of unusually high water. Slight damage may occur to irrigation diversion works and to the improvements at the mouth of the river. This damage normally results from silting of the irrigation
FIGURE 15

STREAM FLOW GRAPH
OF THE HOOD RIVER
AT THE CITY OF HOOD RIVER
BASED UPON 1953-1955 INCLUSIVE

WATER RESOURCES
OF HOOD RIVER COUNTY

SCALE IN MILES

SOURCES: GENERAL HIGHWAY MAP—OREGON STATE HIGHWAY DEPARTMENT, CORPS OF ENGINEERS REPORTS AND U.S.G.S. RECORDS OF STREAM FLOW
works and the harbor. The average annual loss due to floods is estimated to be $2,800 (12, page K191).

The late summer flow of the Hood River is now being utilized almost to its fullest potential for irrigation and power generation. Approximately 27,400 acres are under ditch, of which 25,100 are presently being irrigated (15, page 281). Eight irrigation distribution and ditch companies are in operation within the valley (see figure 16). The water supply for these projects comes mainly from the upper tributaries; only one takes water from the main stem.

The physical conformation of the Hood River valley renders it ideal for irrigation. The slope of the valley floor and the gradient of the rivers make it inexpensive to put water on the land and to drain off the excess. Water is usually diverted several miles upstream by a small low diversion dam and conducted along the lower slopes of the valley wall, from which laterals take the water to the land. Open unlined ditches are used for the main canals, and gravity flow is employed.

Potentially irrigable lands are confined to the areas already within the irrigation districts, and any increase in the irrigated area of the county will have to come about through more intensive utilization of these presently unirrigated lands rather than the opening up of new districts.

In some irrigation districts a shortage of late season water exists and supplemental water is needed. Any increase in the irrigated
FIGURE 16
GROUP IRRIGATION ENTERPRISES

[Map showing various irrigation districts and their boundaries.]

SOURCE: S.C.S. MAPS
Figure 17. A view of the Upper East Fork of the Hood River. Note steep river gradient, characteristic of streams throughout the county.

Figure 18. Siltation in the upper reaches of the East Fork, characteristic of streams flowing from glaciers on Mount Hood. The silt deposit is over six feet deep. Photo taken July 9, 1956.
acres will therefore depend on the development of upstream storage and more efficient water use. At the present only two small reservoirs with a combined capacity of 859 acre feet are in existence within the basin (15, page 281). These are the Green Point Reservoirs located on Pitch creek (see figure 15).

Physical conditions in the Hood River Basin do not favor the development of low cost storage because of the steep river gradients and heavy silt load carried by the streams. However, the area is highly developed and the high value of irrigated land makes it probable that despite costs, storage dams will be built at some time in the future.

Two storage projects are considered possible by the Corps of Engineers; one site is on Neal Creek and another is at Horse Thief Meadows (see figure 15). Of the two, Horse Thief Meadows is the larger. The site is located in a narrow canyon on the upper reaches of the East Fork. This project would consist of a dam 220 feet high which would impound 50,000 acre feet of water (12, page 193). The chief drawback to this project is the heavy load of silt and sand brought down from the glaciers on Mount Hood. This would necessitate special desilting structures.

The Neal Creek site is located at the mouth of a small tributary of Neal Creek. It would consist of an earth fill structure 94 feet high, and would store 5,700 acre feet of water (12, page 194). The reservoir would be filled during the winter months with water
Figure 19. A view of the 6,000 KW Powerdale hydroelectric plant in the canyon of the Hood River four miles above the Columbia.

Figure 20. A view of the conduit through which water is conducted from a small diversion dam to the Powerdale plant three miles downstream.
carried from the East Fork of the Hood River by the main canal of the East Fork Irrigation District. Water from this project would provide supplemental irrigation water to 3,600 acres of the District's land tributary to Neal Creek. Surplus water could be used to bring under cultivation 500 acres of additional lands. Some pumping would be necessary because of the elevation of these areas.

**Hydroelectric developments:** Two hydroelectric developments are in existence within the county. Both are located on the main stem of the Hood River. The largest is Pacific Power and Light's Powerdale plant located approximately four miles above the mouth. This project consists of a small diversion dam from which the water is dropped through a conduit to the powerhouse three miles downstream. The rated capacity of this plant is 6,000 KW (9, page 52).

The other hydroelectric plant is owned by the Oregon Lumber Company and is located at Dee. This project produces 150 KW of electricity, all of which is utilized at the site by the company's sawmill and hardboard plant.

Additional power potential exists on the main stem but due to the availability of low cost power from nearby plants on the Columbia, its development is not practical at the present. No hydroelectric potential exists on the portion of the Columbia River bordering the county; Bonneville Dam completely utilizes the fall of the river.

The Columbia River offers little potential for irrigation within Hood River County due to the limited extent of irrigable lands along
its bank. However, for industrial purposes the Columbia would provide an unlimited supply of relatively pure water.

Navigable waters within the county are confined to the Columbia where a channel with a minimum slack water depth of 15 feet traverses the entire width of the county.

Fish: Under the lower tributaries plan of the Corps of Engineers, the first use of the Hood River system was to be as a spawning and rearing area for salmonoid fish. Formerly the river supported good runs of both Chinook salmon and steelhead trout. At the present, however, the salmon run has been greatly reduced. This has come about through the reduction of the already low late summer flow, through the diversion of water for irrigation and power purposes. Unfortunately, the salmon spawning season corresponds to this period of lowest flow and heaviest water use. The steelhead run occurs earlier in the season. Thus these fish are able to take advantage of high water, and are not adversely affected by either diversion for irrigation or power generation.

The Fish and Wildlife Service proposes the removal of natural obstacles, the construction of hatcheries, and other habitat improvements in the Hood River system. In the construction of future hydro-electric or storage dams it will be necessary to weigh the benefits of these structures against the detrimental affects on anadromous fish life.
There has been little mining activity in Hood River County. The rocks of the county are largely barren of minerals. The entire county is underlain to depths of from 500 to 4,000 feet by layers of the Columbia basalt flows. These flows which occurred in Miocene times covered deep layers of sedimentary marine rocks. On the west the rock layers have been warped up to form the Cascade Range. In Tertiary times andesitic lava was ejected from vents in the top of this anticline and a mantle of this material overlies the basalt.

Both basalt and tertiary rocks are notoriously barren of minerals. However, block faulting has apparently brought up mineralized rocks in local areas, where small deposits of low grade gold ore have been worked. In the 1930's several claims were staked in the vicinity of Horse Thief Meadows, east of Mount Hood. The Corps of Engineers Report on the Columbia River and Tributaries indicates traces of gold and garnets on the West Fork of the Hood River in the vicinity of Dee.

Future discoveries of metallic minerals in commercial quantities are possible but highly improbable. The chance for petroleum is little better. Oil might exist in the sedimentary layers beneath the basalt; however, the geologic processes which built the Cascade Range renders this unlikely. The most promising area for petroleum is in the vicinity of Cascade Locks (13, page 63). Rock and gravel is in bountiful supply throughout the county and several gravel pits and rock quarries furnish material for road and building construction.
Chapter III

EVOLUTION OF SETTLEMENT

Hood River County gets its name from the high snow clad mountain which dominates the landscape. Mount Hood was named by Lieutenant William Robert Broughton, who first viewed the mountain from the mouth of the Willamette River while an officer in Vancouver's command. He named the mountain for his patron, Lord Samuel Hood.

The first white men to explore the Hood River Valley were Hudson Bay Company trappers who came early in the nineteenth century. However, it was mainly through the expeditions of Lewis and Clark, 1804 - 1805, the Hunt-Astor party, 1810 - 1812, and Fremont, 1843 - 1844, that definite information about the area was obtained (10, page 9).

The first permanent settlement in the county was at Cascade Locks in 1848. Prior to the building of the Barlow Road in 1846 all travel to the lower Columbia passed through this area. Travelers usually came overland to the Dalles, loaded their wagons on rafts and floated down the Columbia to the rapids located at what is now the city of Cascade Locks. Here the wagons were portaged around the falls.

The settlement that grew up was based on the portage trade. Eventually a mule drawn portage railroad was built. In 1862 the mules were replaced by a small steam locomotive, which operated until completion of the locks in 1896. Construction work on the locks from 1878 to 1896 provided further impetus to the growth of Cascade Locks.
The era of the steamboat on the Columbia began in 1852 with the building of the James P. Flint, the first steamboat above the falls, and continued until the completion of the railroad line along the south bank of the Columbia in 1884 (4). During this period the steamboat was the most important form of transportation in the region; boats plied between the Dalles and Cascade Locks making regular stops at the city of Hood River.

Settlement did not start in the Hood River Valley until 1852. The first settlers, Dr. W. C. Laughlin and Dr. Farnsworth, attempted to raise cattle in the Lower Valley. The venture was abandoned when a severe winter killed the cattle.

In 1854, Nathaniel Coe settled in the area. Coe, interested in founding a town, plotted the town of Hood River and donated a home site to each person who would build a house on it. The settlement which grew became a stopping place for immigrants on their journey to the lower Columbia. From this site settlement spread up the valley.

The most important early enterprises were cattle raising and the cutting of cordwood for use by the river steamers. The cattle were marketed in the settlements on the lower Columbia. An important route to market was the Chitwood Trail. This trail led up the valley of the West Fork, crossed the Cascade Range via the Lolo Pass, and entered the Willamette Valley through the valley of the Sandy River.

Strawberries were the first fruit grown commercially. They were first marketed in Portland in 1872 (1, page 39). With the completion
of the railroad to the east in 1880, apple raising became increasingly important. The first carload was shipped to New York in the year 1900 (3). The building of the Mount Hood Railroad up into the valley further increased the possibilities for commercial fruit production.

In 1901 Jeremiah Davenport built a sawmill and planer nine miles southwest of the city of Hood River. This marked the beginning of large scale logging operations. At first logging operations were concentrated on the valley floor and the cutover lands were sold to the new settlers.

Jeremiah Davenport also financed and built an irrigation ditch called the Farmers Ditch which is still in use today. It was extremely expensive, being cut out of solid rock along part of its course. This enterprise was the first large scale irrigation project in the valley.

During the period 1900 to 1910 the county experienced its greatest development. Prior to 1900 the population of the entire county did not exceed 1,000 people (App. II, 2). Prime factors in the rapid settlement after 1900 were a publicity campaign conducted by the Hood River Chamber of Commerce and the Oregon Washington Railroad and Navigation Company in the east, and the Lewis and Clark Exposition in 1905. These activities focused attention on the valley.

The settlers who came to the Hood River Valley fall into four general groups: (1) the settlers who filtered in before 1900; (2) the Japanese group; (3) the Finnish group; and (4) the college group. The people who came in before 1900 belonged to no special religious
or racial group. They settled chiefly in the Lower Valley and at Cascade Locks.

The Japanese originally came to the valley to work on the Farmers Irrigation Ditch; later many of them stayed and took up farming. The Finnish group came between 1905 and 1909. They migrated from North Dakota where they had been living for a number of years. They settled mainly in the Oak Grove district. The most unusual group came about 1907 and was comprised mainly of wealthy retired business men, retired army officers, and young men who had just graduated from college. In some cases wealthy families would purchase land in the valley, then send their sons to farm it. This group settled mainly in the Upper Valley.

Present settlement pattern

Since 1910 the population increase has been slow but steady. The influence of the construction work on Bonneville Dam is shown in the period 1930 to 1940 (see figure 21). In 1950 the resident population of Hood River County numbered 12,940 (8, page 37-13). This represented a density of population for the county as a whole of 24.1 people per square mile.

The county's population is composed of a mixture of people belonging to a variety of nationalities. It is predominantly white, with a small minority of people of Japanese descent. However, racial problems have never been noteworthy in the county.
FIGURE 21

POPULATION CHARACTERISTICS OF HOOD RIVER COUNTY

POPULATION INCREASE (1900-1950)

NUMBER OF PEOPLE

13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000

1900 1910 1920 1930 1940 1950

COMPOSITION OF POPULATION (1920-1950)

PER CENT

100
90
80
70
60
50
40
30
20
10

1920 1930 1940 1950

SOURCE: U.S. CENSUS OF POPULATION REPORTS
In addition to the permanent population as many as 4,000 migratory workers come into the county during the fruit season. As a rule these people come in the spring for the pruning and thinning, migrating north when the work is finished. As each type of fruit ripens, the workers return, leaving again when it is harvested. Migratory agricultural workers are usually housed on the farms on which they work. Most of them leave the county during the winter season, and thus do not constitute a serious unemployment problem.

Settlement pattern

Settlement is concentrated in two relatively small sections of the county, the Hood River Valley and the area around Cascade Locks. The rest of the county is in National Forest lands (see figure 22). The great preponderance of the county's population is in the Hood River Valley; here are found 91 per cent of the people living on 11.5 per cent of the total area. The density of population on the agricultural lands averages 148 people to the square mile. This reflects the small size of farms characteristic of fruit regions. The average is under 40 acres. The close spacing of the farmsteads along the roads often makes it difficult for one unfamiliar with the valley to tell when he is entering a town. The main roads pass through the most densely settled parts of the valley. In the early days settlement advanced slowly up the valley. Roads all led northwest back to Hood River. A through highway (Mount Hood Loop) was not established until
POPULATION DISTRIBUTION IN HOOD RIVER COUNTY

EACH DOT REPRESENTS 50 PEOPLE

TOTAL POPULATION IN 1950: 12,740 PEOPLE

SOURCE: U.S. CENSUS OF POP. 1950
1924, long after settlement was established throughout the valley. The population of Hood River County has long been predominantly rural (see figure 21). Today 81 per cent of the people live outside of incorporated areas.

The predominance of rural areas in the population pattern shows the influence of intensive farming, the county's major economic enterprise. The lumber industry employs a sizeable percentage of the working population, however the mills are widely dispersed. Individually these mills do not provide employment for enough workers to foster the development of urban settlements.

The loggers and mill workers usually live on part-time farms or in small unincorporated nodes. The compactness of the valley has also favored the dispersal of settlement rather than concentration. It is possible for workers to commute to work from almost any part of the valley.

The settlement in the Cascade Locks area is the exception to the rule. Here 77 per cent of the population lives in the incorporated area. Agriculture is of minor importance, due to the limited amount of arable land. The industries which make up 70 per cent of the Cascade Locks area's economy are located close at hand; the other 30 per cent is based on tourism associated with the Columbia River Highway which passes through the city (App. II, 15).

The distribution of rural population in the Hood River Valley is influenced by land forms, distribution of agricultural lands, trans-
portation routes, and location of places of employment. The Lower Valley area is by far the most populous rural district of the county. The combined population of the Lower and Middle Valleys, exclusive of the city of Hood River, is 7,479, or approximately 58 per cent of the county total. The prime factor governing the settlement pattern is the distribution of agricultural land. Transportation routes are not so much a factor on the valley floor, however on the fringes houses are located only along roads. The steep hills surrounding the valley limit the number of farm sites, and consequently these areas are sparsely populated. Many of the people in the Lower Valley live on part-time farms and work in the city of Hood River or in the lumber industries. These part-time farms are especially numerous on the poorer lands on the west side of the valley.

Middle Mountain, located between the Lower and Upper Valleys, is mainly unpopulated. The road around the east shoulder is bordered by a number of small part-time farms; here the poor soils and steep slopes limit agriculture. Most of the inhabitants work either in the woods or in the Neal Creek sawmill. The prime factor in settlement here has been the highway.

In the Upper Valley the distribution of agricultural land again determines settlement patterns. In the extreme northern section transportation replaces soils as the governing factor. Here as in the Lower Valley work in the lumber operations provides the main source of income for a sizable portion of the population.
Unincorporated settlement nodes

Scattered throughout the rural areas of the valley are a number of small unincorporated nodes of settlement such as Odell, Rockford, Oak Grove, Dee, and Mount Hood. For the most part these nodes of settlement are historical remnants of an era of slower transportation. Today they usually consist of a Grange Hall, a gas station and garage, a general store and a few scattered houses clustered around a crossroads. The economy of these nodes is based on local emergency trade and on the local residents who are mainly retired farmers or workers in the valley's industries. Most of the shopping for staple goods is done in Hood River. Specialty items are usually purchased in The Dalles or Portland.

Urban Centers

Hood River: Hood River with a 1950 population of 3,701, (8, page 37-4) is the major urban center of the county. The city is situated on a series of terraces on the south wall of the Columbia Gorge. Most homesites in the city have views of the river and one or both of the snow clad peaks of the mid-Columbia region. Hood River is the trade, transportation, and fruit processing center of the area.

Located at the entrance to the Hood River Valley, it has a rich hinterland. Practically all commerce from the valley passes through the city. Eight fruit processing plants are located here. The city is the focal point for the highway and rail routes of the county. The
only manufacturing industries in the county, other than saw mills, are located here. These include a steel boat building plant and a nationally famous fishing tackle industry.

Hood River is the county seat and the center of social activities. The churches, schools, clubs and the county's newspaper and radio station are located here. The city layout shows the influence of transportation and local landforms. On the east and north it is confined by the Hood and Columbia Rivers, which prevent expansion to the north and east. Present expansion is to the south and west, most being to the south on the valley floor at the plateau edge. The town shows a definite vertical zonation with respect to its industrial, commercial, and residential districts; industry is on the lowlands along the Columbia, the commercial district on the intermediate slopes, and the residential district on the heights. The main transportation routes run east-west through the city and are located along the river below the industrial district.

Cascade Locks: Cascade Locks is the second urban center of the county. It has a population of 733 (8, page 37-4). It is located on a bench in the Columbia Gorge. The Columbia River highway and the Union Pacific Railway pass through. Unlike Hood River, it has no agricultural hinterland, however transportation routes have always been important in the city's development.

The economy of Cascade Locks is based primarily on Bonneville Dam, located 4 miles to the west. About 50 per cent of the employed
population works at the dam; 15 per cent depend on forest based industries; and 30 per cent receive their main source of income from service industries, and tourism and traffic associated with the Columbia River Highway. The city has no industries other than a sawmill. Considerable potential for industrial expansion exists, based on cheap hydroelectric power and level land associated with the main transportation routes.

Parkdale: Parkdale located in the center of the upper valley had a population of 426 in 1950. It presents none of the characteristics of a trade center. The business district consists of general store, a grocery store, a service station and a few garages and cafes. Most of the people of the area do their shopping in Hood River or other larger urban centers. Parkdale is located on the Mount Hood Loop Highway, but very little in the way of tourist facilities has been developed. The population consists mainly of retired farmers and workers in the two packing plants and in the small sawmill.

Transportation

The populated section of the county is well served with transportation facilities; however, large sections of the forested interior are inaccessible. The county has 90 miles of paved roads, plus a network of gravelled country roads and unsurfaced forest service trails (see figure 23).

The most important highway route is U.S. 30, the Columbia River Highway. This super highway, built at waterlevel, traverses the width
of the county giving it easy access to Portland on the west and The Dalles on the east.

The Mount Hood Loop Highway, Oregon 35, runs south from Hood River through the length of the valley, winds around the east slopes of Mount Hood, and crosses the Cascade range via the Barlow Pass. This road provides a scenic route into the county from points in both the Willamette Valley and central Oregon. Highway connections with U.S. 330 on the north side of the Columbia River are provided by two toll bridges, one located at Cascade Locks and the other at Hood River.

Two railroads serve the county, the Union Pacific and the Mount Hood Railway. The main line of the former follows the Columbia River, passing through the cities of Hood River and Cascade Locks. A switching yard is located at Hood River. Here fruit from the packing plants in the city and cars of fruit and lumber brought down from the valley by the Mount Hood Railroad are sent to all parts of the country. Both freight and passenger service is provided by the Union Pacific.

The Mount Hood Railway runs from Hood River to Parkdale. This route, serving only the valley, has 22 miles of track, two Diessel locomotives, and employs only nine men. Freight service only is maintained. Normally only one round trip per day is made, however the railroad runs at the convenience of the shipper, and during the rush season as many as four trips per day may be made. The company owns no rolling stock of its own other than a few flat cars for maintenance. Cars are switched from the Union Pacific at Hood River, hauled to the
URBAN CENTERS AND TRANSPORTATION FACILITIES OF HOOD RIVER COUNTY

SOURCE: GENERAL HIGHWAY MAP—OREGON STATE HIGHWAY DEPARTMENT
Figure 24. A view of water level transportation and communication routes in the Columbia Gorge. Note the bold basalt cliffs which come almost to the water's edge.

Figure 25. A view of the old navigation locks at Cascade Locks, a potential port site on the Columbia River.
mills and packing plants in the valley, loaded with fruit or lumber, and switched back on the main line. An average of nine cars of lumber per day, five days per week, and an equal number of cars of fruit, during the fruit season, are shipped via this route.

The Columbia River provides considerable potential for water transportation. The lake behind Bonneville Dam provides a channel with a minimum depth of 15 feet to the city of Hood River (2, page 88). Both Cascade Locks and Hood River have port commissions; neither has a port. Cascade Locks has an excellent location for a port at the site of the old navigation locks. The port commission of Hood River is planning a mooring basin for small boats.

Air transportation is provided by landing fields suitable for small planes, located at Cascade Locks, Hood River, and Odell.

Energy facilities

Hydroelectricity is the only low cost energy source available in the county. A total of 6,150 KW are produced within the county's boundaries. Production is from two plants, the 6,000 KW capacity plant at Powerdale and a 150 KW plant at Dee. Both plants are located on the main stem of the Hood River. The Powerdale plant is owned and operated by Pacific Power and Light Company, the plant at Dee by the Oregon Lumber Company. Power produced at Dee is utilized at the site in the company's sawmill and hardboard plant (see figure 15).
In addition to the power sources within the county, two large hydroelectric dams are located on the Columbia River in the general area, one at Bonneville, the other at The Dalles. Cascade Locks lies within 15 miles of Bonneville Dam; therefore it is able to take advantage of the At the Site Rate for power produced there (see figure 26).

Cascade Locks is served by a municipally owned transmission system. The City of Hood River is serviced by Pacific Power and Light Company. The rural area of the valley is served by both Pacific Power and Light Company and the Hood River Electric Cooperative. The Hood River Electric Cooperative receives its power from Bonneville Power Administration. Pacific Power and Light's power comes from the Powerdale Plant and other company owned plants in the region. In addition, the company is hooked into the Northwest Power Pool and is able to draw on the resources of the large Federal dams in periods of peak demand.
FIGURE 26
ENERGY FACILITIES

SOURCE: S.C.S. MAPS
Table I

BUSINESS AND INDUSTRY IN HOOD RIVER COUNTY, 1954

<table>
<thead>
<tr>
<th></th>
<th>Number of establishments</th>
<th>Annual payroll (dollars)</th>
<th>No. of employees week ending November 15, 1954</th>
<th>Annual Sales (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale trade</td>
<td>21</td>
<td>2,068,000</td>
<td>819</td>
<td>11,950,000</td>
</tr>
<tr>
<td>Retail trade</td>
<td>175</td>
<td>1,218,000</td>
<td>411</td>
<td>15,463,000</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>47</td>
<td>2,969,000</td>
<td>890</td>
<td>5,221,000 (value added by manufacture)</td>
</tr>
</tbody>
</table>

Sources: 1954 Census of Business, Retail trade — preliminary report.
1954 Census of Manufacturers — preliminary report.

Trade and industry

The city of Hood River dominates the retail and wholesale trade picture in the county, manufacturing, however, is more evenly divided between Hood River and the remainder of the county. In 1954 a total of 2,120 workers were employed in business and industrial establishments. Total payroll from this source amounted to $6,255,000. (See Table I).
Chapter IV

AGRICULTURE

Agriculture is the primary source of basic income to the county. The annual gross from this source exceeds $12 million (App. I, 1). One thousand three hundred and forty-one people, or 29.72 per cent of the employed population is engaged in agriculture, or in industries based on agriculture (7, page 37-73). The income from agriculture exceeds that from forestry, its nearest competitor, by an estimated $2 million. Fruit accounts for 86 per cent of the agricultural income (App. I, 1), with the remaining 14 per cent coming mainly from the sale of livestock and livestock products. Dairy products account for 44 per cent of the income from livestock, meat products 35 per cent, and poultry 21 per cent (6).

Croplands

Approximately 39,070 acres or 11.5 per cent of the county is in farm ownership. Of this 31,164 acres presently are being used for some form of agriculture, and 7,906 acres are used only as woodland.

The croplands of the county are placed in the general classification Class II land and Class IV land (see figure 27). The absence of extensive areas of Class I and Class III is explained by the physical structure of the Hood River Valley, in which practically all the cropland is found. There are no large areas of level river plain where
FIGURE 27
LAND CAPABILITY CLASSES
HOOD RIVER COUNTY

CLASS NUMBER

SOURCE S.C.S. MAPS
Class I land is usually found. The hills rise abruptly from the valley floor; thus there are no important areas of gently rising foothills where Class III land is normally found.

Class II lands make up the bulk of the cropland of the valley. They are found on the gently rolling valley floor. Above the stream gorges the soils are generally moderately deep, and are easily cultivated. Local areas of both poor drainage and excessive subdrainage are found. Stoniness is also a local problem, especially on the west side of the Lower Valley. The soils found on Class II lands include the Parkdale loam, Hood silt loam, and the Rockford, the Winans, and the Wind River Soils Series.

Class IV lands are found chiefly in a semi-circle around the Class II lands of the Lower Valley. They are located on the lower slopes of the hills which encircle it, and on the slopes of the small isolated buttes which rise from the valley floor. In the Upper Valley and on the east side of the Lower Valley the surrounding hills rise so steeply that an abrupt change is made from Class II to Class IV land. The chief soil of Class IV land is the Underwood loam. The soils are fairly deep and drainage is good. However, the slope of these lands makes them subject to erosion if not properly handled.

Both Class II and IV lands are extensively utilized for orchards whenever the correct combination of soils, water drainage, and air drainage is found. The remaining land of both classes is generally in hay or pasture.
Erosion is not usually a limiting factor controlling the type of crops grown. The practices of cover cropping and sprinkler irrigation permit the use of rather steep lands for orchards. The quality of the soils and air drainage are of greater importance. Air drainage for the valley in general is good; however, small areas of fairly level lands with good soils are excluded from fruit raising because they are frost pockets; these areas are generally devoted to hay and pasture.

Irrigation is practiced on 18,899 acres. In 1951, this included 12,286 acres of orchard, 6,613 acres of hay, small grains, and pasture, 133 acres of small fruits, and 10 acres of vegetables. Hay and pasture are produced on 12,265 acres of unirrigated land (6, page 1). Approximately 65 per cent of the irrigated acreage is watered by the sprinkler method.

Farms and Farmers

In 1954, there were 1,002 farms in Hood River County (6, page 1). The average farm size is listed as 39 acres. A great deal of variation exists, however; the greatest number are from 10 to 29 acres (see figure 28). The majority of the farms have under ten acres of harvested cropland (see figure 28). This reflects the high percentage of pasture and forest lands on the larger farms, as well as the great number of small part-time and residential farms.

The average value of the land and buildings on farms in the county in 1954 was $19,321 with the average value per acre being
FARM CHARACTERISTICS

FARMS BY SIZE

FARMS BY CROPLAND HARVESTED

SOURCE: 1954 CENSUS OF AGRICULTURE—PRELIMINARY
$532.23 (6, page 1). The high average per acre value reflects the large acreages of fruitland which sells for from $700 to $1,500 per acre, depending on the age and quality of the orchard.

Five hundred and twenty, or 48 per cent of the county's farms, are classed as fruit farms and 165, or 19 per cent, as livestock farms with 365, or 33 per cent, classed as part-time and residential farms (6, page 2).

Intensive commercial agriculture is characteristic of the rural areas of the county. Six hundred and ninety or 66 per cent are classed as commercial farms. Over 28 per cent of these commercial farms sold products valued at $25,000 or more in 1954 (6, page 2), (see figure 29). The farms of Hood River County are as modern as those found anywhere in the Northwest. Upkeep on the buildings is generally above average. Practically every farm has electricity and over 80 per cent have telephones.

A high degree of mechanization is evident throughout the rural areas of the county. In 1954 there were 800 motor trucks and 1,135 tractors in use. Only 130 farms reported owning horses and mules, for a total of 182 (6, page 2).

The highly commercial nature of agriculture is shown by expenditures for 1954. These include $2,224,875 for labor, $316,786 for commercial fertilizers, $268,265 for motor fuel, and $75,700 for machine hire. Three thousand three hundred and fourteen tons of commercial fertilizer were applied to 14,375 acres of farmland in 1954; the
FARMS BY ECONOMIC CLASS
HOOD RIVER COUNTY

NUMBER OF FARMS

220
200
180
160
140
120
100
80
60
40
20

25,000 & OVER
10,000-24,999
5,000-9,999
2,500-4,999
1,200-2,499
250-1,199
PART-TIME
RESIDENTIAL UNDER 250

COMMERCIAL FARMS

VALUES OF 1954 PRODUCTS (IN DOLLARS)

PART-TIME FARMS — OPERATOR WORKED OFF HIS FARM 100 DAYS OR MORE OR HAD OTHER INCOME EXCEEDING THE VALUE OF AGRICULTURAL PRODUCTS SOLD

SOURCE: U.S. CENSUS OF AGRICULTURE 1954
breakdown by crop was: (6, page 2)

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Tons</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>fruits, vegetables</td>
<td>3,066</td>
<td>12,525</td>
</tr>
<tr>
<td>hay &amp; cropland pasture</td>
<td>182</td>
<td>1,315</td>
</tr>
<tr>
<td>other pasture</td>
<td>46</td>
<td>470</td>
</tr>
<tr>
<td>other crops</td>
<td>10</td>
<td>50</td>
</tr>
</tbody>
</table>

Tenancy is low in the rural areas of the county. Approximately 96.2 per cent of the farms were owner operated and 94.3 per cent of the farm owners lived on their farms in 1954. Approximately 64 per cent of the farm owners worked at jobs off their farms at some period during the year (6, page 1).

In general the farmers of Hood River County are very progressive; they avail themselves of the services of both the County Extension Agent and the Soil Conservation Service personnel to a marked degree and they readily adopt the latest scientific farming methods and improved crops. The rural population is highly organized, with farmers supporting numerous farm, fraternal, and social organizations. Enrollment in the 4-H Club and home economics classes by farm children and farm wives is high.

Sample Farms

The sampling method was used to gain detailed knowledge of agriculture in the county. A farm of each of the three major economic classes was visited. Farms were also selected for distribution on
FIGURE 30
LOCATION OF SAMPLE FARMS AND EXTENT CROPLANDS IN HOOD RIVER COUNTY

SOURCE: COUNTY AGENT'S REPORT
the various land classes and soil series. A commercial fruit farm, a commercial livestock farm, and a part-time or residential farm were visited (see figure 30).

**Commercial fruit farm:** The Harris Higgins farm is located in the Upper Valley, one-fourth mile east of Parkdale. The farmstead consists of the owner's large white house, a small barn, a machinery shed, one tenant house, and four cabins for seasonal workers. The farmstead is almost obscured by a grove of large shade trees; fruit orchards crowd close to the farmstead on all but the west side which is in pasture and young fruit trees.

The farm was homesteaded by Harris Higgins' grandfather who came to the valley from New England in 1908. The original holding consisted of 60 acres, which was later divided in half. The other half is now operated by Mr. Higgins' uncle. The farm contains 30 acres of Class II land located on rolling Parkdale loam soils. Twenty acres are in mature fruit trees, approximately 60 per cent pears and 40 per cent apples. Individual trees are replaced as they pass their prime. About one acre of young trees have been planted on new land located on the west side of the holdings.

The varieties of apples grown are mainly red and striped delicious, however some golden delicious and corties are being introduced in an attempt to improve the pollination of all varieties. At present the plan is to bud a branch of the pollinators into the delicious trees; artificial pollination has been tried without too much success in the past.
The bulk of the pear acreage is in the Bartlett variety with some d’Anjou also grown.

The regular work on the farm is done by Mr. Higgins, his son, and a hired man who is employed the year around. In addition, seasonal help is hired, usually four or five men, to help with the thinning, and ten to fifteen during the harvest. The farm has housing facilities for ten men. The harvest season usually lasts one week for the Bartlett pears, two weeks for the d’Anjou pears, and two weeks for the apples. The apple harvest, which comes last, is usually finished by the third week of October.

Mr. Higgins is a member of the Apple Growers Association and all his fruit is marketed by this agency. All fruit but the Bartlett pears are hauled to the cold storage and packing plant at Parkdale. The Bartlett pears are hauled to the cannery at Hood River.

Irrigation water is provided by the Middle Fork Irrigation District. Sprinkler irrigation is used exclusively. Mr. Higgins buys two miners’ inches of water and irrigation goes on constantly throughout the summer months. The entire orchard is not sprinkled simultaneously, but rather a small section at a time, because of the necessity of keeping up the pressure to operate the sprinklers.

The machinery owned by Mr. Higgins consists of a wheel tractor, a jeep, a spray rig, a hydraulic pruner, a roto-tiller, and four trailers for hauling fruit from the orchard.

Commercial fertilizer is used on all the fruit land, mainly nitrogen, often ammonium sulfate. Sawdust is being used on small areas of
Figure 31. Mature fruit trees on the Harris Higgins farm, characteristic of commercial fruit land on the better soils of the valley.

Figure 32. A view of the Harris Higgins farmsite. The buildings are almost obscured by shade trees, with fruit trees crowding close to the yard, characteristic of commercial fruit farms in the valley.
heavy soils in an attempt to improve productivity. A cover crop consisting of volunteer quack grass and seeded clover is used on the entire orchard. The established practice is to beat the cover crop down with the roto-tiller every year and to plow it under every three or four years.

There is no livestock on the farm at present; however, Mr. Higgins plans to diversify his enterprise by raising a few beef cattle. The main limitation is that he would have to buy hay unless he can acquire additional pasture and hay land.

**Dairy farm:** The Eugene Wright farm, located on the west side of the Lower Valley, is an example of a full-time dairy farm. The farm lies on Class II land, on soils of the stony loam eroded phase of the Rockford series. The land is gently rolling; however, the soil is shallow and rocky, and thus better suited to hay and pasture than to fruit production.

Mr. Wright bought the farm in 1941. At the time of the purchase the land was in low grade orchard. The orchard had been interplanted with potatoes, and the naturally poor soils were badly depleted by this intensive land use.

The trees were pulled out and alfalfa hay and permanent pasture planted. At present there are 21 acres of permanent pasture and 25 acres of alfalfa hay on the farm.

Commercial fertilizer is used extensively. This year about four tons of superphosphate were applied to the alfalfa and from three to four tons to the pasture land.
The farm is in the Farmers Irrigation District. Sprinkler irrigation is used exclusively. The combination of heavy use of commercial fertilizer and irrigation has resulted in high yields on the hay land. Very little hay is purchased. The pasture land is carrying nearly three head of cattle to the acre.

The livestock on the farm consists of 30 cows, 20 calves and heifers, one bull, six ewes, seven lambs, and three pigs. The cattle are all registered purebred Jerseys. Practically all the income of the farm is from the sale of fresh milk. Only about $500 annually is realized from the sale of calves, heifers, and lambs. Approximately 80 gallons of milk is sold each day, mainly in The Dalles. Mr. Wright delivers milk both from house to house and to stores in that city.

The machinery on the farm consists of a wheel tractor, a mower, a rake, and a milking machine. A field chopper is hired to put up silage.

Last year Mr. Wright experimented with corn silage. The corn yield was good; however, he has decided not to plant corn in the future because of the difficulty of securing labor to fill the silo. The corn harvest coincides with the fruit harvest which draws all available labor in the county. In the future he plans to use the first cutting of alfalfa for silage due to the fact that late spring rains have often ruined this cutting in the past.

Part-time farm: The Asa Dogget farm is an example of one of the part-time farms found scattered throughout the valley. Mr. Dogget
operates a yarder in the woods ten months of the year and works his farm in his spare time with the aid of his wife and children.

The farm was purchased 15 years ago from the county which had taken it over for taxes. At the time it was purchased the place was somewhat dilapidated. A succession of tenants had depleted the land and allowed the buildings to run down. Since acquisition, Mr. Dogget has built a house and a large open shed; the original barn is still in use.

The farm is located on the Loop Highway where it crosses the low pass around the eastern shoulder of Middle Mountain. It consists of 45 acres of sloping Class IV land on Underwood loam soils. The farm contains 18 acres of hay land, 25 acres of pasture, and two acres in farmstead.

Mr. Dogget has 13 head of grade Guernsey dairy cattle and one beef type bull. These include seven cows, five heifers, and one steer. The latter is being raised for home consumption. At the present milk is being sold to the Dairy Cooperative in Hood River, however Mr. Dogget is toying with the idea of buying another calf for each cow and going into beef.

The hay land is in alfalfa and the pasture in improved grasses. There is no woodland pasture on the farm. Commercial fertilizer is applied to both the hay land and the pasture. The hay is baled by a hired baler. All the hay required is produced on the farm and Mr. Dogget has no plans to expand his herd beyond the limits of his own
Figure 33. A view of the Eugene Wright farm. Note improved irrigated pasture in the foreground. In the background the western mountain rim of the valley is visible.

Figure 34. A view of the Asa Doggett farm showing buildings and irrigated pasture in the foreground. In the background the eastern rim of the valley is visible.
hay production. Both the hay land and the pasture are irrigated by sprinklers. Water is supplied by the Mount Hood Irrigation District. The normal pressure is too low for sprinklers; therefore an electric pump is used.

**Agricultural enterprises**

The agricultural enterprises on the various farms of the county are governed by the climatic conditions, value of the land, labor supply, markets, and the capabilities of the various pieces of land.

Fruit orchards are widely distributed throughout the Hood River Valley. All the fruitland is irrigated and there is little local specialization of fruit types, either by area or by individual farmer. Fruit raising is the most profitable of the farm enterprises. Thus practically all suitable land is devoted to this use. In general the county specializes in two kinds of fruit, apples and pears; but some cherries, peaches, and strawberries are grown.

The valley is a comparatively old fruit area and many of the trees are over 40 years old. The life cycle for apples and winter pears is from 50 to 60 years and about 40 years for the Bartlett pears. In general the orchards are perpetuated by removing individual trees past their prime and planting young trees. The block replanting is used in some cases, however.

**Apples:** Until the big freeze of 1919, apples were the chief crop of the valley. At this time they exceeded 10,500 acres. Since
TRENDS IN FRUIT PRODUCTION IN HOOD RIVER COUNTY (1920–1955)

SOURCE: COUNTY AGENT'S REPORT 1955
then the plantings have steadily declined to approximately 4,000 acres. They are expected to continue at this level for some time (see figure 35).

The two chief varieties grown are Delicious - 45.1 per cent, and Newtows - 53.1 per cent. The other 1.8 per cent is made up of Spitzenbergs, Arkansas Blacks, Jonathans, Winter Bananas, and Ortleys (App. I, 3). At present the trend is to the Red Delicious variety.

The trees are spaced from 24 to 36 feet apart in the orchards. They are pruned low to make them spread out and thus facilitate picking and thinning while keeping the trees healthy and growing vigorously. The orchards are sprayed several times during the season. Over an eight year period from 1947 to 1954 the average yield per acre was 586 loose boxes at an average cost of 86 cents per box (App. I, 4).

In 1955 a total of 1,192,994 packed boxes of fresh apples, and 10,112 tons for cider and canning were produced in the county (App. I, 3).

**Pears:** Pear acreages have increased steadily since 1919 at the expense of apples and cherries. The present plantings total about 6,900 acres (see figure 35). Three varieties predominate: Bartletts, 6.9 per cent; Anjous, 77 per cent; and Bosc, 11.9 per cent (App. I, 3). At present the trend is toward Bartletts.

The spacing for winter pears in the orchards is about the same as for apples. Bartlett trees, however, are much smaller and are spaced from 18 to 24 feet apart. Yields per acre for the two pear varieties are about the same. Total pear production for the county
in 1955 was 1,109,213 boxes of winter pears and 18,995 tons of Bartletts, most of which were canned (App. I, 3). The eight year 1947 to 1954 average cost of production per box of fresh pears was $1.04 and the average yield per acre was 460 boxes (App. I, 4).

Other fruit: Cherries have never occupied large acreages in the county. At their peak in 1940 there were about 700 acres; since 1940 plantings have declined steadily to about 500 acres in 1955 (see figure 35). The steady decline is expected to continue due to the frequent loss of the crop from rains and the heavy cost of spraying to control the cherry fruit fly. Sweet cherries predominate. Total production in 1955 amounted to 1,244 tons (App. I, 3).

Peaches have never been important. The acreage is on the increase but at present amounts to only 150 to 160 acres (see figure 35). It is doubtful that peaches will ever become a major crop in the county.

Strawberries were the first commercial fruit crop grown in the county. However, plantings almost disappeared during the late 1930's owing to a combination of low prices and attacks of the Cyclamen mite. New varieties and new markets have revived interest somewhat. Today there are about 200 acres. Northwest and Marshalls are the most common varieties. Usually the strawberries are interplanted between the rows of young fruit trees. Labor supply is a problem to the growers. The regular transient workers have not been coming into the county in sufficient numbers, the reasons being the small acreages and short season. The fruit is marketed both fresh and processed; the bulk is handled by the Libby Company and the Vancouver Berry Growers Cooperative.
Livestock: Dairying is the most important livestock enterprise of the county. Beef cattle are secondary. The total income to the county from livestock in 1954 was $489,203 (6, page 3). The total cropland devoted to livestock rearing was 13,828 acres. This included 10,245 acres of pasture, 3,254 acres of which was irrigated, and approximately 3,583 acres of hayland, most of which was also irrigated. Approximately 1,196 acres of pasture lands were planted to improved grasses (6, page 1).

The livestock generally are not of high quality due to the prevailing practice of trying to make the cattle serve the dual purpose of providing both beef and milk. The small size of the average herd is another drawback. The average farmer cannot afford purebred breeding stock.

Sheep and hogs are unimportant. Those found in the county are reared mainly for home use or as 4-H projects by the farm children. Grazing of cattle or sheep on National Forest lands is not important in the county.

Poultry is of minor importance. A total of 32,339 chickens and 5,232 turkeys were raised in 1954; only 113 farms reported poultry. The income from the sale of poultry and eggs amounted to $134,558 (6, page 3). The lack of locally raised small grains is a limitation to further expansion.
Marketing

The fruit is marketed chiefly through the Apple Growers Association. This cooperative, with about 350 active members, handles approximately 65 per cent of the total. Under the agreement between the grower and the cooperative, the grower agrees to deliver all his fruit to the cooperative which in turn agrees to market all the grower's fruit. To sell to some other agency and still remain in good standing, a member must first get a release.

The Apple Growers Association maintains a total of six plants with locations at Odell, Parkdale, Van Horn, Oak Grove, and Hood River. These plants include both packing and cold storage facilities. From 2,500 to 3,000 box cars of fruit are shipped per year. Rail transport is used almost exclusively.

Fresh fruit is marketed on a world wide basis. Approximately one-third goes to California, one-third to the eastern states, and one-third is exported, mainly to Sweden, the United Kingdom, and South American countries. Before the war the European market was the most important foreign market; in recent years it is again taking an increasing percentage of the export fruit.

In addition to the Apple Growers Association, plants are operated by Duckwall Brothers, Stadelman's, Webster Orchards, Pooley Fruit Company, and the American Fruit Company. Many of these buy for plants located outside the county. Payments to growers selling fruit to the
private fruit companies is made in cash; those to the members of the cooperative are made on a pool basis. Under this system, the fruit is held in warehouses owned by the cooperative. When a sale is made, each member receives a share, based on the amount of fruit he has delivered to the cooperative. Since these sales are usually distributed over the year, the members have a more stable income than would normally be expected in a cash crop enterprise.

The bulk of packing plant work is seasonal. The labor supply comes mainly from the local population, especially the women employees. Transient workers fill the gaps. No shortage of labor exists even in the skilled or semi-skilled jobs since a supply of fully qualified transient labor comes into the county every year.

The marketing of livestock products is done chiefly through the Dairy Cooperative in Hood River. Whole milk is shipped by the cooperative to Portland for processing.

Problems, needs, and possibilities

The agricultural economy of the county leans heavily on the commercial production of only two types of fruit, apples and pears, and the trend seems to be toward further concentration. Agriculture in the county will probably remain based predominantly on fruit production; however, a degree of diversification seems desirable, both in the types of fruit grown and in the type of farming enterprises.
Potential exists for the raising of greater numbers of livestock on farms presently devoted to the commercial production of fruit. Small acreages of idle lands are found on many farms; these poorer lands could well become the basis of a livestock sideline. With irrigation the county's hay and pasture lands are very productive. At present there are large acreages of unimproved pastures. Through the application of commercial fertilizers and the sowing of improved grasses, the carrying capacity of an acre of pasture land in the county can be increased from less than one cow per acre to three or four cows per acre.

The quality of the cattle in the county can stand considerable improvement. In view of the small average herd size, artificial insemination seems the best approach to this problem and such a program is already under way.

The trend toward sprinkler irrigation has reduced the water requirements of the presently irrigated lands, thus leaving some potential for expansion of the irrigated acreage. The shortage of irrigation waters is a problem in the Hood River Irrigation District. Here one-half of the water entering the main canal is lost through seepage. "Colloidal" silt is a problem in the Middle Fork Irrigation District. This silt is very fine and is difficult to settle out. The problem arises from the fact that it plugs up the sprinkler systems.

More and more farmers are studying the moisture requirements of the soil and are thus able to use as much as two-fifths less water than
they formerly did. Studies show that many farmers are still beginning to irrigate too early in the season. The waters of the Hood River are extremely cold and they tend to retard plant growth if applied too early.

Orchard heating offers possibilities for the expansion of fruit into areas of poor air drainage. The local weather station and radio station are cooperating in issuing frost warnings during the blossoming season.

Dwarf and semi-dwarf apple trees offer possibilities for the small or part-time fruit enterprise. The trees are planted in rows about twelve feet apart; spacing between trees is from four to six feet. The trees are then pruned to form a hedge about six feet high. Heavy yields have been obtained using this method by the Oregon Agricultural Experiment Station at Corvallis.

Strawberries offer possibilities if the labor problem can be solved. With increased acreages a greater number of transient workers would no doubt come for the picking season. Disease is a problem. The Northwest variety acts as a carrier for diseases which are jeopardizing the planting of the Marshall variety.

One of the biggest problems connected with the fruit industry is the decision which the grower must make when he plants his trees. Once he plants he is committed for from 40 to 50 years. In selecting his fruit trees, the grower is usually influenced by the market the year before. However, it requires about ten years for most varieties of
fruit to come into full production. The market can change completely. This tends to encourage concentration on the stable proven varieties.
Chapter V
FORESTRY AND FOREST BASED INDUSTRIES

Based on the number of people who derive the main portion of their livelihood from it, forestry is second only to agriculture as the primary economic enterprise of Hood River County. A total of 507 people, or 11 per cent of the working population, was employed in forestry or forest based industries in 1950 (8, 37-73). The great percentage of the county's lands are suited only for forestry; of a total of 338,560 acres, 293,100 acres or 84.6 per cent are timberland (App. I, 2).

Appraisal of Resources

The county has reserves of approximately 4,397,600,000 board feet of live sawtimber within its boundaries (App. I, 2). Softwoods are the dominant forest type; hardwoods are insignificant. Douglas fir is the most important species, accounting for slightly over 50 per cent of the total, followed by western hemlock, true fir, and mountain hemlock in that order. There are a variety of other species of lesser importance (see Table 2).
Table 2

<table>
<thead>
<tr>
<th>Species</th>
<th>Sawtimber in millions of bd. ft.</th>
<th>Growing Stock in millions of cu. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas fir</td>
<td>2,205</td>
<td>480</td>
</tr>
<tr>
<td>Western hemlock</td>
<td>442</td>
<td>95</td>
</tr>
<tr>
<td>Noble fir</td>
<td>401</td>
<td>83</td>
</tr>
<tr>
<td>Pacific silver fir</td>
<td>399</td>
<td>113</td>
</tr>
<tr>
<td>Mountain hemlock</td>
<td>278</td>
<td>82</td>
</tr>
<tr>
<td>Grand fir</td>
<td>236</td>
<td>73</td>
</tr>
<tr>
<td>Englemann spruce</td>
<td>120</td>
<td>26</td>
</tr>
<tr>
<td>Western white pine</td>
<td>99</td>
<td>23</td>
</tr>
<tr>
<td>Ponderosa pine</td>
<td>83</td>
<td>16</td>
</tr>
<tr>
<td>Western larch</td>
<td>82</td>
<td>17</td>
</tr>
<tr>
<td>Subalpine fir</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Lodge pole pine</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>Western red cedar</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Total softwoods</td>
<td>4,394</td>
<td>1,059</td>
</tr>
</tbody>
</table>

**Hardwoods**

<table>
<thead>
<tr>
<th></th>
<th>Sawtimber</th>
<th>Growing Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red alder</td>
<td>x</td>
<td>1</td>
</tr>
<tr>
<td>Bigleaf maple</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Black cottonwood</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Oregon White oak</td>
<td>x</td>
<td>1</td>
</tr>
<tr>
<td>Total hardwoods</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total all species</td>
<td>4,397</td>
<td>1,062</td>
</tr>
</tbody>
</table>

x = less than 500,000.

Source: D. R. Gedney, U. S. D. A. Forest and Range Experiment Station, Portland, Oregon.
Quality of forestlands

Timber of commercial quality occupies 242,092 acres of the county's total of 293,100 acres of forest land. Parks, watersheds, or lands otherwise restricted from commercial timber use occupy 25,410 acres, and only 25,600 are not of commercial quality due to elevation, rockiness, or excessive slope (see figure 36).

Most of the timber in the county is of sawmill quality or lower. The trees are usually too small to make high grade peeler logs. Much of the reserve is in virgin timber; thus, the percentage of over-ripe timber is high. By species, the sawtimber reserve is approximately 60 per cent Douglas fir, 26 per cent true fir and spruce, 8 per cent ponderosa pine, with the remaining 6 per cent composed of hemlock, sitka spruce, western white pine, lodgepole pine, larch, and hardwoods. About 28 per cent of the total commercial forest land is in pole timber or seedlings and saplings (App. I, 2) (see Table 3).

Ownership

Approximately 77 per cent of the forest land is owned by public agencies, including the state, the county, the Bureau of Indian Affairs, the Bureau of Land Management, Municipalities, and the U.S. Forest Service. Only the Federal Government and the county are important land holders (see Table 4). In volume of sawtimber, the public agencies control 93.4 per cent of the county total, with private agencies controlling only 6.6 per cent (see Table 5).
FOREST RESOURCES OF HOOD RIVER COUNTY

- **Areas of Present Logging Operations**
- **Commercial Timber Stands**
- **Seedlings, Saplings and Pole Timber**
- **Non-Commercial Timber Land, Rocky, High Elevation or Cleared for Agriculture**

Sources: Mt. Hood Nat. Forest Trail Maps and Forest Type Map of the Pacific Northwest Forest & Range Exp. Station
Table 3

AREA OF COMMERCIAL FOREST LAND OF HOOD RIVER COUNTY
BY FOREST TYPE AND STAND SIZE
(In Acres)

<table>
<thead>
<tr>
<th>Forest type</th>
<th>Total</th>
<th>Sawtimber</th>
<th></th>
<th>Pole timber</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Large</td>
<td>Small</td>
<td></td>
</tr>
<tr>
<td>Douglas fir</td>
<td>157,760</td>
<td>60,070</td>
<td>30,880</td>
<td>48,780</td>
</tr>
<tr>
<td>Fir, spruce</td>
<td>52,990</td>
<td>22,840</td>
<td>18,660</td>
<td>7,270</td>
</tr>
<tr>
<td>Ponderosa pine</td>
<td>13,810</td>
<td>9,600</td>
<td>1,560</td>
<td>2,290</td>
</tr>
<tr>
<td>Ponderosa pine</td>
<td>13,810</td>
<td>9,600</td>
<td>1,560</td>
<td>2,290</td>
</tr>
<tr>
<td>Hemlock, sitka spruce</td>
<td>6,410</td>
<td>3,470</td>
<td>1,980</td>
<td>600</td>
</tr>
<tr>
<td>Lodgepole pine</td>
<td>3,640</td>
<td>-</td>
<td>-</td>
<td>3,520</td>
</tr>
<tr>
<td>Larch</td>
<td>1,120</td>
<td>-</td>
<td>24</td>
<td>880</td>
</tr>
<tr>
<td>Western white pine</td>
<td>200</td>
<td>-</td>
<td>-</td>
<td>200</td>
</tr>
<tr>
<td>Hardwoods</td>
<td>1,530</td>
<td>-</td>
<td>160</td>
<td>660</td>
</tr>
<tr>
<td>Seedlings and saplings</td>
<td>4,630</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>242,090</td>
<td>95,980</td>
<td>53,480</td>
<td>64,200</td>
</tr>
</tbody>
</table>

Source: D. R. Gedney, U. S. D. A. Forest and Range Experiment Station, Portland, Oregon.
FIGURE 37
LAND OWNERSHIP IN HOOD RIVER COUNTY

SOURCE: S.C.S. MAPS
<table>
<thead>
<tr>
<th>Ownership</th>
<th>Per cent of county total</th>
<th>Total acres</th>
<th>Sawtimber</th>
<th>Poletimber</th>
<th>Seedlings and saplings</th>
<th>Non-re-stocked areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>National forest</td>
<td>64.1</td>
<td>155,370</td>
<td>110,350</td>
<td>29,750</td>
<td>12,630</td>
<td>2,640</td>
</tr>
<tr>
<td>Indian</td>
<td>0.2</td>
<td>570</td>
<td>400</td>
<td>130</td>
<td>40</td>
<td>-</td>
</tr>
<tr>
<td>B.L.M.</td>
<td>0.1</td>
<td>310</td>
<td>270</td>
<td>-</td>
<td>40</td>
<td>-</td>
</tr>
<tr>
<td>Total federal</td>
<td>64.4</td>
<td>156,250</td>
<td>111,020</td>
<td>29,880</td>
<td>12,710</td>
<td>2,640</td>
</tr>
<tr>
<td>Private</td>
<td>23</td>
<td>56,920</td>
<td>22,450</td>
<td>21,520</td>
<td>8,280</td>
<td>1,670</td>
</tr>
<tr>
<td>County</td>
<td>12.2</td>
<td>27,860</td>
<td>15,200</td>
<td>9,580</td>
<td>2,760</td>
<td>320</td>
</tr>
<tr>
<td>State</td>
<td>0.4</td>
<td>1,030</td>
<td>760</td>
<td>270</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Municipal</td>
<td></td>
<td>30</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total all ownerships</td>
<td>242,090</td>
<td>149,450</td>
<td>64,250</td>
<td>23,750</td>
<td>4,630</td>
<td></td>
</tr>
</tbody>
</table>

Source: D. R. Gedney, U. S. D. A. Forest and Range Experiment Station, Portland, Oregon.
Table 5

NET VOLUME OF LIVE SAWTIMBER AND GROWING STOCK ON COMMERCIAL FOREST LAND BY OWNERSHIP CLASS IN HOOD RIVER COUNTY - 1954

<table>
<thead>
<tr>
<th>Ownership class</th>
<th>Sawtimber Millions of bd.ft.</th>
<th>Per cent of county total</th>
<th>Growing stock in cu. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>National forest</td>
<td>3,907</td>
<td>87.8</td>
<td>896</td>
</tr>
<tr>
<td>Indian</td>
<td>3</td>
<td>0.1</td>
<td>1</td>
</tr>
<tr>
<td>B.I.M.</td>
<td>3</td>
<td>0.1</td>
<td>1</td>
</tr>
<tr>
<td>Total federal</td>
<td>3,913</td>
<td>88</td>
<td>898</td>
</tr>
<tr>
<td>Private</td>
<td>290</td>
<td>6.6</td>
<td>101</td>
</tr>
<tr>
<td>State</td>
<td>6</td>
<td>1.1</td>
<td>2</td>
</tr>
<tr>
<td>County</td>
<td>188</td>
<td>4.3</td>
<td>61</td>
</tr>
<tr>
<td>Total all owners</td>
<td>4,397</td>
<td>100</td>
<td>1,062</td>
</tr>
</tbody>
</table>

Source: D. R. Gedney, U. S. D. A. Forest and Range Experiment Station, Portland, Oregon.
Logging has been in progress on private lands since the late 1800's and the present commercial timber represents trees that were bypassed when the areas originally were cut over. The private lands also contain most of the non-commercial hardwoods found in the county. On the other hand, the high volume of commercial timber found on the public lands is due mainly to the large blocks of virgin timber in the Mount Hood National Forest. It will be noted from study of Table 4 that there are sizeable areas in young growth, and moreover much of the noncommercial forestland is in public ownership.

An unusual situation exists with regard to the county's forest land. Unlike most other counties throughout the United States, Hood River County did not dispose of its forest land. These lands now bring an annual return to the county of approximately $75,000. This source of revenue has been a prime factor in eliminating the county road tax, and reducing land taxes in general.

National Forest timber sales are also an important source of income for the county. Twenty-five per cent of all sales is turned over to the county government for roads and schools. In 1955 money from this source amounted to approximately $200,000.

Management

The Mount Hood National Forest administers the county's forest lands as well as its own. A ten year contract with the county expired in 1956 and was replaced by a 100 year contract.
Sustained yield forestry is practiced on all the federally owned or managed lands. There are 155,370 acres of National Forest land located within the county; however only approximately 80,000 are open to commercial logging. The rest is in parks, watersheds, a wilderness area, and lands otherwise reserved for recreation.

The absence of access roads into many of the National Forest lands has greatly hampered the sustained yield program (see figure 23). At the present time logging is actually going on in all the accessible areas, where timber has been put up for sale. Timber from the National Forest lands is sold by open bids. First the timber to be sold is appraised as to selling value at the nearest market place for its particular type. For example, there are no plywood mills in the county. Therefore any timber of peeler quality would be appraised at its value, less transportation costs, at one of the mills on the lower Columbia. The cost of bringing these logs to market is then deducted from the selling price. This includes costs of transportation, road building, slash disposal, and fire protection during logging operations. A margin for profit is then deducted, and the resulting figure is the minimum for which the Forest Service will sell the timber. The average cost per thousand board feet of stumpage cut is $41.4 of which the value of the timber itself is only $17.89 (App. I, 5).

The private lands are being heavily logged and are not being managed on a sustained yield basis. The prime reason for this is that no private concern in the county has holdings large enough to operate
them on a long term basis. The common practice by mill operators is to buy as much timber as they can from the National Forest and to supplement these acquisitions with timber from their own holdings if it is needed. At the present, private lands in the county are being overcut at the rate of over 20 million board feet per year.

The shortage of available timber has resulted in high recovery of small and cull logs. Reforestation practices are being carried out fairly well on the cutover lands of the lumber companies. However, the forest areas on farms are generally not being managed for tree production. Often after the commercial species have been cut, madrone has come in.

Forest fire control is well-established on both the public and private lands of the county. The five year average 1950 - 1954 for the entire Mount Hood National Forest, including areas outside the county, was 490 acres burned, and for 1955 it was one acre (App. I, 5).

Logging

Present logging operations within the county are concentrated in the Indian Creek area of the West Fork and in the region of the upper Middle Fork of the Hood River (see figure 36).

Logging methods used in the county are comparable to those used on the west side of the Cascades. Both crawler tractor and high lead methods are employed, with the latter the most extensively used because of the rugged terrain. About 15 logging outfits, employing a total of
approximately 125 men, are operating within the county. Most of them are logging for the lumber companies on a contract basis. All or part of the logging equipment is often owned by the mill. The contractor working for the Oregon Lumber Company is the largest, employing 35 men. The average logging contractor employs 6 or 7 men. Transportation of logs from the woods is exclusively by truck.

Most logging is between elevations of 2,500 and 3,500 feet; thus loggers have a fairly long season. Logging usually goes on without interruption until Christmas; during the month of January it is carried on intermittently; during February operations are usually closed down completely; and in the early part of March logging is again resumed.

**Milling**

Five large mills are operating in the county. They fall into two main categories — those located in the valley and those located on the Columbia River. The two mills located on the Columbia are the Cascade Lumber Company at Cascade Locks, and the Jaymar Lumber Company west of the city of Hood River. The valley mills are the Oregon Lumber Company at Dee, the Hanel Lumber Company at Parkdale, and the Neal Creek Lumber Company at Odell.

The mills located on the Columbia are farther from the timber supply but they have the advantage of better transportation for their logs. Both the Jaymar Lumber Company Mill and the Cascade Lumber Company use the Columbia to raft in logs and as a log pond. Cheap water
Figure 38. Log transportation on the Columbia River. Picture taken near Cascade Locks.

Figure 39. Log pond and cold deck at the Dee mill, characteristic of the valley mills.
transportation enables them to draw their raw material from an extensive area; at the present most of the logs for these mills come from sources outside the county. Practically unlimited storage space is available for log rafts, making it unnecessary to cold deck. Neither of the mills utilizes water transportation to market its lumber; in both cases the lumber is shipped to the east by rail.

The Jaymar Lumber Company employs approximately 35 men and cuts an average of 40,000 board feet of lumber per shift. The Cascade Lumber Company is the larger of the two, employing 45 men and having a daily cut of 140,000 board feet.

The Cascade Lumber Company: A clearer understanding of the Columbia sawmills is made possible by a more detailed examination of the Cascade Lumber Company's operation.

The mill, owned and managed by Merl Sielsinger, is somewhat larger than the Jaymar mill, but its method of operation is much the same. This mill is the only industry in the county which at present benefits from the At the Site Rate for electricity from Bonneville Dam.

The mill is completely electrified. The high efficiency of this mill is shown by the high output per man. The labor force is very stable; most of the workers are local men who live in Cascade Locks. Only one shift is operated.

The Columbia River is utilized as a log pond; in addition to storage at the mill, the company has storage facilities about one mile up river. Two 125 horsepower pond boats are used to transport the
company's log rafts. The timber supply comes mainly from sources outside the county, chiefly the Wind River basin across the river in Washington and from the North Grasshopper area in Wasco County. In addition logs are purchased from rafting companies.

In the company's logging operations, the logs are trucked from the woods to the nearest point on the river and rafted to the storage pond where they are held until needed.

The big problem facing this company is the long distance it has been forced to go to get logs. The most expensive part of the log haul is the trucking from the woods down to the river. Once the logs are in the water the distance they must be hauled is not too important. At the present the company is dumping logs at Rowena about 30 miles east of Cascade Locks.

The Valley mills: The valley mills are more seriously affected by the shortage of timber. They are confined almost entirely to timber produced in the basin, since the expense of hauling from one drainage basin to another is usually prohibitive. None of the sawmills in the valley owns enough timber to operate on a sustained yield basis. No water transportation is utilized in the valley. Logs are brought in by truck and finished lumber is shipped by rail via the Mount Hood Railroad.

At the present the degree of utilization of waste products by all but the Dee mill is not as high as it could be. All of the mills except the Oregon Lumber Company have waste burners.
The mill at Parkdale is the smallest of the major mills in the valley. Thirty-five men are employed and the daily cut is approximately 40,000 board feet. The Neal Creek mill employs 60 men and its daily cut is approximately 60,000 board feet. The Oregon Lumber Company is the largest and in addition it is the only mill in the county with a by-product plant. In addition to these mills there are several small semi-portable sawmills in operation in the county. A box mill is located at Odell. This mill produces wooden boxes for use by the county's fruit industry. A small plant specializing in sash and doors and other millwork is located in Hood River.

The Oregon Lumber Company is located at Dee. It is situated in the narrow valley of the Hood River where it flows around Middle Mountain. The company operates a sawmill, planner, and a hardboard plant. A small dam on the river provides the log pond. The dam also provides head which is used to generate electricity for use in the mill. In addition to the hydroelectric plant the company operates a steam plant with a capacity of 3,100 KW on the basis of sawmill waste.

The company employs approximately 300 men, 225 in the sawmill operation and 75 in the hardboard plant. With the exception of three small steam engines, the mill is completely electrified.

The most unusual part of the operation is the hardwood plant which produces a product called "Allwood". The allwood process is unusual in that it is a wet hardboard process and therefore is able to utilize the whole log including bark. This process was developed by the Edward
Hines Company, of which the Oregon Lumber Company is a subsidiary. At the present sawmill, slabs are being used as raw material. The Allwood process can utilize any softwood, and hardwoods such as cottonwood, poplar, applewood, and willow.

At the present the Allwood plant employs 25 men each shift, and three shifts are operated. The slabs for the Allwood plant have been furnished entirely by the company’s sawmill operation, but in the future the Oregon Lumber Company plans to expand and purchase chips from the other mills in the valley.

The company owns housing facilities, and about 10 per cent of the workers are housed at the plant. Marketing is done by the Edward Hines Company of Chicago where most of the lumber and hardboard is sold.

The most serious problem facing this company is the shortage of timber. The Company owns about 15,000 acres of forest land but depends mainly on National Forest timber. The company logs its own holdings only when it is unable to purchase sufficient timber. The small size of the company’s holdings rule out any sustained yield program.

Problems, Needs, and Possibilities

The most serious problem facing the lumber industry of Hood River County is the inability of the industry to operate on a sustained yield basis. With private holdings small the future of the county’s lumber industry is closely related to the policies of the Mount Hood National Forest.
The National Forest is on a sustained yield program, but it is required to sell its timber to the highest bidder. Normally the policy of appraising the value of the timber at its nearest market provides a sufficient advantage for local mills. However, in this respect the Columbia River is both a blessing and a curse. On one hand it permits the county's mills located on the Columbia to utilize timber sources outside the county, and on the other hand it works against the mills in the valley by providing a low cost means of transportation to the big mills on the lower Columbia. Competition for timber is keen, both among the mills in the county and with downstream mills. The county's mills have no pulp or plywood operations connected with their sawmills; thus they are at a disadvantage in competing with the integrated mills of the lower Columbia.

The lack of logging roads over much of the forested area is a serious drawback to good management of the forest resource. In the past the roads have been built by the logging companies. However, these roads do not extend beyond the logged areas and it is in the area of virgin timber that roads are most needed to salvage diseased, wind blown, and over-mature timber. Unless a logging company can be assured that it can log a large area, the rugged terrain makes road building uneconomical. In spite of the fact that the cost of road building is deducted from the sale price of the timber, the initial cost is often prohibitive to the smaller operators.
A case in point is the Herman Creek area back of Cascade Locks. Here approximately 100,000,000 board feet of Douglas fir are ready for harvest, but the area is at present inaccessible and the rugged terrain has discouraged private road building operations. In the near future the Forest Service will probably embark on a road building campaign in all the remote areas of the county. At the present lack of funds is the chief drawback; if this problem can be solved, forestry will be on a sounder basis throughout the region.

In order to compete in the bidding for timber, the county's mills will have to institute a program of more complete utilization of waste products. Integration with the Oregon Lumber Company's Allwood operation seems to be an excellent possibility. All the mills in the valley are located within easy hauling distance of the Allwood plant. For the two mills on the Columbia, water transportation offers possibilities. For example waste products could be sent by barge to the pulp mills on the lower Columbia.

It is unlikely that a plywood operation will be set up in the valley due to the lack of a dependable supply of high grade peeler logs.

Water transportation for finished lumber and hardboard offers possibilities. At the present, lumber is shipped entirely by rail. The most important market is in the Chicago area. Completion of the St. Lawrence Seaway would permit shipment entirely by water. However, at the present no dock facilities exist in the county, the nearest are at The Dalles more than twenty miles away.
A possibility exists for the commercial growing of Christmas trees on steep or rocky lands on the farms in the valley. Most of these lands are presently in madrone or other non-commercial hardwoods. This type of forestry would yield a return much sooner than any other type. In addition, land not suited for commercial timber could be utilized. At the present this is being tried on an experimental basis.

A plan has been proposed by the lumber companies of Hood River County to put the county's forest lands both public and private on a sustained yield basis. Under this plan, timber grown in the county could be manufactured only by mills located within the county's boundaries.

The plan is vigorously opposed by the mills on the lower Columbia who now count on the area as a source of supply. The Forest Service is cool toward this proposal because it is more inclined to take a broader view to encompass the economy of the whole Columbia region. The proposed plan would provide the local mills with a virtual monopoly and would probably adversely affect the selling price of National Forest timber.

On the other hand, it appears to be folly for one company to haul logs down out of a drainage basin and for another to haul up into the same basin. All of this transportation activity adds little to the economy of the region as a whole. In view of the importance of the forest based industries to the county, the proposed plan would do much to stabilize the local economy.
Chapter VI

RECREATION AND TOURISM

Recreation and tourism have never played a major role in the county's economy. The present significance is difficult to evaluate because commercial recreational developments are insignificant and no adequate measurements exist for the other aspects. The major transportation routes skirt the northern fringe and by-pass the rest of the county. The future for expanding income from the recreational attractions of the county, however, appears to be brighter.

Cascade Locks now receives the greatest benefit from the Columbia River Route. Approximately 30 per cent of its economy is based on tourism, associated with this route (10). The city of Hood River is by-passed and thus no doubt loses a great deal of tourist business.

Motels and hotels benefit the most; approximately 30 per cent of the motel income and 10 to 15 per cent of the hotel income comes from this source. There are no tourist facilities in the valley.

The importance of tourism has actually declined in one area of the county -- the Mount Hood area. Prior to the building of Timberline Lodge on the west slope, Cloud Cap and Cooper Spur Inns were the most important in the area. Today Cloud Cap Inn is closed and business at the Cooper Spur Inn has greatly declined. More direct transportation routes from Portland and modern winter sports facilities were the deciding factors.
Physical attractions

The natural beauty of the county has played an important role in its development. Many of the present residents are living there today because they or their parents were struck by the scenic beauty of the area. During the promotion campaign of the early 1900's, this was an important selling point.

Snow capped Mount Hood, the most outstanding physical feature, is the trade mark of the county. It appears in some way on practically all of the commodities produced here. Dwarfed by distance, Mount Adams to the north is secondary in scenic importance. In addition to the snow capped peaks, scenic attraction are provided by the rugged forested mountains of the interior and bold cliffs along the Columbia. In the spring when the fruit trees are in blossom, the Hood River attracts several thousand visitors, especially amateur photographers.

Rivers and lakes are noteworthy recreational resources. Good cutthroat and rainbow trout fishing is to be had during the summer months throughout the county. From February to May steelhead run in the Columbia and tributary streams and from the middle of August to the middle of September salmon fishing is important. Good sturgeon fishing is to be had in the Columbia the year round.

The Lost Lake and Wahtum Lake regions are the most important highland lake areas in the county. These regions, located in the northwestern section of the county, are dotted with small lakes accessible for the most part only by trail. These lakes are kept stocked by the
state game commission. Lost Lake and Wahtum Lake are accessible by Forest Service roads, and cabins are available at Lost Lake during the summer. The Columbia is steadily becoming more important both for sports fishing and for pleasure boating. In recent years, pleasure craft have begun to make trips up the Columbia from Portland; they pass through the locks at Bonneville Dam and often travel as far as The Dalles.

**Developed facilities**

The most extensive development of recreational facilities has been by the Forest Service. Forest camps are located all along the Loop Highway where it passes through the National Forest lands. These camps are suitable for picnicking and overnight camping. In addition, forest camps are located in the lake area of the northeastern section of the county (see figure 40). Numerous roadside parks are maintained in the Columbia Gorge.

Within the county the Forest Service has set aside two areas to be used primarily for recreation; these are the Mount Hood and Columbia Gorge recreational areas (see figure 40). In both timber cutting is restricted. The Forest Service is actively acquiring lands in the Columbia Gorge to assure that they will remain in their natural state. Lands are either bought or traded for other Forest Service lands. Since 1940, 623 acres have been acquired and negotiations are going on for an additional 3,295 acres (App. I, 5). Private land owners have
SOURCE: MOUNT HOOD NATIONAL FOREST MAP
been especially cooperative in these efforts to preserve the scenic beauty of the Gorge.

The high mountain areas of the county are traversed by a network of trails of the Pacific Crest Trail System. These trails are extensively used by hikers during the summer and fall months (see figure 40).

The Mount Hood Loop Highway provides a scenic route through the valley, and through the heavily forested area on the slopes of Mount Hood. The road is open during all but the winter months when it is blocked by snow. Access across the Cascade Range is by way of the Barlow Pass. The Cooper Spur Inn, the only important commercial tourist enterprise in this section of the county, is located on this road. The road is kept plowed to the Inn. However, it is too low on the slopes to be of major importance as a winter resort.

Cloud Cap Inn, located high on the north side of the mountain, has been closed since 1940. It is now owned by the Forest Service and used by the Craig Rats, a local climbing club.

The Hood River County Chamber of Commerce conducts guided tours through the valley. Eight to ten parties a day are taken on these tours throughout the summer months. The motto of the Chamber of Commerce is "An hour to see, a lifetime to remember". In addition to the guided tours, the Chamber of Commerce has set up tours that cover the points of interest throughout the gorge area.
Figure 41. An example of the Forest Service developments in the county. This forest camp is located on the scenic Loop Highway in the Mount Hood National Forest.

Figure 42. A panoramic view of the Hood River Valley, from a viewpoint in the northeast section of the county. An example of sites visited by Chamber of Commerce tours.
Problems, Needs, and Possibilities

The county has great potential for an important tourist and recreation industry. Every day over a thousand potential visitors pass down the Columbia Gorge highway. At present only a few stop. Local people are in agreement that what the county needs is a large resort on Mount Hood, something to bring in tourists and keep them there.

Cloud Cap Inn offers possibilities, the snow is claimed to be drier and therefore better for skiing than that on the west side of the mountain. In addition the snow comes on sooner in the fall and stays longer in the spring. The factors which led to the decline of Cloud Cap in the past were competition from Timberline Lodge and inferior transportation facilities. The plowing of the Loop Highway from Government camp to Cooper Spur would largely remedy the transportation problem. Competition from Timberline could probably be met by installing a ski lift or tow. Indications are that Timberline Lodge may be getting over-crowded and that Cloud Cap could expect to take the overflow.

There seems to be a lack of local capital willing to take the risks of this venture. Local feeling is that it will take some outside agency to put up enough money to make the improvements on the lodge and to conduct a large scale advertising campaign to attract tourists from outside the region.

More roads are needed to open up the inaccessible areas of the county for big game hunting in the fall. At the present, there is
little big game hunting by other than local sportsmen. This problem will be solved when the Forest Service completes its road system. At the present there are no professional guides or packers operating in the county. Deer are the most important big game animals in the county, with a few elk found in the southeast.

The Hood River port commission has plans for a mooring basin. This would be mainly for the pleasure boats which have begun to come up river from Portland. Many of these boats undoubtedly would tie up at Hood River for the night rather than to try to get back to Portland in the dark. In the future, as Portland grows and the system of dams and locks on the Columbia River system is extended, pleasure boating may well become of major importance on the river. With developed facilities, Hood River has an opportunity to become one of the major stopping places for these boats.
Primary industries other than those based on agriculture or forestry are not of major significance to the county's economy. Two industries are located in the county which fall into this classification: the Nichols Boat Works and the J. M. Jensen and Sons fishing lure company. Both are based on the personal ingenuity of the founder, rather than on superior labor supply, transportation, or local resources. In both cases the market for the product and the source of raw material lie mainly outside the county.

**Nichols Boat Works**

The Nichols Boat Works is located on a small peninsula which extends out into the Columbia just below the mouth of the Hood River. The operation consists of a small plant where the boats are built and a shipway for launching the boats.

The company was founded in 1942 by G. M. Nichols and his son Frank; later the other two brothers came into business. Originally the Nichols family operated a repair shop in Yakima, Washington. In 1942 they came to Hood River to repair a boat belonging to G. M. Nichols' brother that had been burned. When the job was finished the family stayed on and began building welded steel boats.
The Nichols Company employs nine men throughout the year. Since 1942 the company has built 93 hulls and boats, averaging about eight per year. The boats are custom made to the buyer's specifications and boats and barges up to 90 feet in length have been built by the company. The average size, however, is a boat 40 feet long with about 15 tons displacement. Most of the boats built are used on the lower Columbia.

The company specializes in building a small steel tugboat suitable for hauling log booms on the river and for pushing logs around in log ponds. Others are used for pushing barges.

The greatest problem connected with the firm's operation is the sand bar that is being built up by the Hood River opposite the launching ramp. Water depth fluctuates here a good deal due to the drawdown on Bonneville pool. At times the depth is only four feet; some of the boats require a minimum of eight feet.

The future of the operation looks dim at Hood River. The uncertain river depth and the absence of a local market are disadvantages. The major advantage is the relatively low overhead. There is a possibility that the highway may come through the site. In that event the company would probably move to a location on the lower Columbia.

**Luhr Jensen and Sons**

The Luhr Jensen Company represents an industry that grew out of a local man's hobby. Mr. Jensen was an avid fisherman who also liked to make his own tackle. He began selling his lures to his friends about
1930. Today the business is one of the largest of its kind in the West and its products are sold throughout the United States and Canada. The firm employs about 30 workers, mostly women. It specializes in metal lures of all kinds and does not make any other type of tackle.

Luhr Jensen is the inventor of several nationally famous fishing lures, the most widely known of which is the Ford Fender. Sales fluctuate a great deal with season, however the factory runs steadily and the product is stored for release during the next fishing season.

Problems, Needs, and Possibilities

New industry would help stabilize the county's economy. It has little in the way of raw materials, but it does have cheap electric power. The At the Site Rate available at Cascade Locks is the lowest to be had in the region. The Columbia River provides possibilities of cheap transportation. Level land along the bank is limited, however sites exist at Hood River and at Cascade Locks. These areas have the added advantage of being on the main east-west highway and rail routes. The labor supply is limited, however there is a reserve of women who would be willing to work in certain types of industry. The labor supply for any large new industry would probably have to move in from other areas. Housing would then be a problem temporarily. The area does offer attractions for living in the way of pleasant scenery, available outdoor recreation space, and excellent transportation to the Portland area.
Chapter VIII

THE PROSPECT

The future of Hood River County is closely related to that of the entire Mid-Columbia region. The county lies between two rapidly growing urban centers, Portland and The Dalles. Due to its proximity the county will probably receive the most direct benefit from industrialization at The Dalles. This city seems destined to undergo a great deal of industrial expansion, in as much as it is centrally located with respect to the region's major hydroelectric developments—being within one hundred miles of three of the large existing Federal dams on the Columbia. The construction of the proposed John Day Dam about thirty miles upstream from the city will further increase the available power. Moreover, The Dalles lies within five miles of the newly constructed The Dalles dam and thus will benefit from the "At The Site Rate". A large aluminum reduction plant is under construction at present, and other industries will undoubtedly be attracted to the area. In addition to cheap power the Dalles area has good highway and rail connections, a port on the river, and a considerable area of level land.

Transportation routes will probably play a major role in the county's future development; being on the main routes between Portland and The Dalles, it cannot fail to benefit from normal traffic between the two cities. The Columbia River offers a potential for
industrial transportation. The county is fortunate in that it fronts on the river along its entire northern border. Improvement of the navigation system will probably usher in a new era in river transport between the up-river cities and Portland.

It does not seem likely that the county will become the site of major primary industries in the near future. The chief deterrent is that there are more favored areas nearer the major urban centers outside the county. The county lacks the requirements of heavy industry; it has no extensive areas of level land associated with ample labor supply and local raw materials.

There is considerable potential for light industries, especially those based on cheap plentiful electric power. Manufacturing within the county, however, will probably remain based primarily on the two abundant local raw materials, timber and agricultural products. Expansion along these lines is somewhat limited because of the present high degree of utilization. However, there are possibilities from some remanufacture such as an expansion of the millworking industry.

The lumber companies of the county are presently in an unstable position; none of them own sufficient forest lands to operate on a sustained yield basis. There is little prospect of them acquiring sufficient forest land since most of the timber land of the county is in public ownership. The public forest lands are on a sustained
program, but most of the county's mills are in a poor position to compete for the timber with the integrated mills on the lower Columbia. The private forest lands are being heavily overcut and it seems likely that some of the smaller sawmills will have to close down in the near future.

The various Allwood hardboard products are able to replace plywood in many types of interior construction because of their much lower price. As the supplies of large old growth timber decrease, the trend toward hardboard undoubtedly will be accelerated; whereas plywood requires the cream of the log, hardboard is able to utilize the poorest parts. Of the existing hardboard processes the Allwood process is one of the most efficient, because it utilizes the entire slab including the bark; most other hardboard processes must use debarked slabs. The Allwood process is patented and at present is being employed only at the Dee mill. These products have the further advantage of being marketed by the extensive facilities of the Edward Hines Company.

Much of the county's area will probably remain devoted to forestry. When the Forest Service road system is completed a much higher order of forestry will be possible. In the future commercial forestry will probably receive greater emphasis on those lands presently reserved for recreation; the two types of land use are not necessarily incompatible, however. Farm forestry offers possibilities on the untillable farm lands. The production of Christmas trees is
another possibility, especially on the non-commercial timber land in
the valley.

It is unlikely that the county's cultivated area will be greatly
expanded in the future due to the limited amount of potential crop-
land. Most of the croplands irrigable by gravity flow are presently
under cultivation and the more expensive pumping methods will have
to be employed on any new lands. Potential areas of commercial crop-
lands that could be irrigated by pumping are not extensive. Addi-
tional areas might be utilized on a semi-subsistence basis by part-
time farmers who would be able to apply a great deal of labor and
capital to a small area.

The advent of scientific irrigation has done much to forestall
water shortage problems. This includes the use of sprinkler irriga-
tion and the study of soil moisture needs. Application of these
has reduced the water requirements of a given piece of land by as
much as forty per cent. Water problems are being encountered by
two of the irrigation districts. These arise from losses through
seepage in the main canal of the Hood River Irrigation District,
and through the plugging up of the sprinkler systems by "colloidal
silt" in the Middle Fork Irrigation District. Both problems are
presently under consideration by the local Soil Conservation Service
personnel. The flow of the Hood River with the potential storage
facilities is sufficient to supply all foreseeable future agricultural
needs.
The cropping pattern of the county seems destined to remain much the same as it is at present, with horticultural crops taking first choice of the cropland. The present concentration on apples and pears will probably continue, with a degree of diversification coming about through greater plantings of small fruits such as strawberries, raspberries, and blueberries.

The possibility for increased numbers of high quality livestock is good; much of the land in farms is best suited to hay and pasture. These crops, when fertilized and irrigated, yield well. Within the county, livestock can be given better than average care because there is very little possibility for grazing on open range lands. As the population of the region expands the markets for livestock products will increase proportionally. Poultry would fit in on many fruit and part-time farms should interest develop in this enterprise.

The county has great potential for a recreation and tourist industry. A large percentage of the tourists who annually come to the Pacific Northwest pass along the Columbia Gorge routes. The county has a sufficiently wide variety of recreational resources to make it an all season playground. The greatest recreational attraction is the Mount Hood area; this is one of the finest potential winter sports areas in the Northwest. The greatest need is the development of commercial facilities to supplement those of the Forest Service. With a greater influx of winter sports enthusiasts the competition between the Timberline Lodge area and the north side
area will probably become lessened and the two areas may even become mutually complementary, with the resorts on both sides of the mountain being considered one extensive winter sports area.

The Hood River Valley, especially the Upper Valley could become more important as a tourist area if there were more commercial tourist facilities along the Loop Highway. The Columbia Gorge area is one of the most scenic in the Northwest. The present policy of the Forest Service is to acquire lands in this area to preserve them in their natural state. However, this section offers considerable potential as a resort area. The advantages are the natural scenery, fishing and boating on the Columbia, location on the main tourist route, and proximity to Portland, the main city of Oregon.

The highland lake area in the northeastern mountain section of the county offers potential as a summer home, or hunting and fishing cabin area. Its attractions include hunting, fishing, swimming, boating, hiking, and berry picking. The completion of the Forest Service road system will do much to open this area for recreation since it is not too far from major population centers.

The natural beauty of the region may benefit the county indirectly through the attraction of new residents. Many of these might be retired people or people who would commute to work in industrial areas outside the county. The trend for workers in industrial cities is toward suburban and rural living; modern automobile transportation
makes it possible for a worker to live some distance from his place of work.

The valley offers possibilities for numerous residential or part-time farms. View homesites in Hood River and Cascade Locks are also an attraction to people seeking to get away from the crowded industrial areas.

Most of the commuters from the county would probably work in The Dalles. The new aluminum plant is being built on the west side of the city, less than twenty-five miles by an excellent highway from Hood River. Precedent exists; during the construction of The Dalles Dam an estimated one-fourth of the workers commuted from homes within Hood River County.
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APPENDIX II
PERSONAL INTERVIEWS


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