FOREWORD

The problem presented by the rapidly increasing areas of cut-over lands in the coast counties of Oregon is of vital importance to the future welfare of the state. Of all the counties of Oregon, Clatsop county has the most seriously advanced land use problem and, of all the counties of Oregon, Clatsop county is the furthest advanced in land use study and policy. For this reason the problem of land use in this county has been chosen as an indicator of the common problem in western Oregon and as the probable indicator as to the policies and actions to be taken in the future in all counties of the western part of the state.

Notwithstanding the tremendous import of this problem it is exceedingly difficult to obtain facts and information concerning the land use situation. Publications are few in number because of the relatively short time during which active work has been done toward the development of a method of using these cut-overs. Those publications which are available are confined to a discussion of only one or another of the many phases of land use which must be considered. The lack of comprehensive printed material and the many ramifications of the problem make it difficult to obtain a broad view of the situation as it now exists.

It is, therefore, the purpose of this thesis to present the facts of the situation as they now exist.
The major portion of the material contained in this paper has been obtained through interviews with men directly interested in the Clatsop county problem and from interviews with men who are recognized experts on land use problems.

Few quotations are included in the text because of the difficulty to be encountered if the manuscript were to be submitted to all contributors for approval before publication.
INTRODUCTION

THE NEW PUBLIC DOMAIN IN CLATSOP COUNTY.

"The New Public Domain" -- In Clatsop County, Oregon. The phrase is more than an indefinite term for the solution of the problem of managing large areas of the new public domain is a problem that must be solved if Clatsop County is to exist in the future.

Of the 525,440 acres in the county, 52,908 acres are farm land, 90,000 acres are in commercial forest. The bulk of the remainder is cut-over or burn. (Table II.) Large areas of the cut-over and burned lands are restocking while other large areas are non-restocking. Whether restocking or not the lands are largely unsalable and unproductive of revenue.

As a result these extensive areas of forest land are rapidly reverting to county ownership, both through tax foreclosure and through quitclaim deeds. In 1936 Clatsop County had in its possession 58,809 acres of tax reverted lands and 17,000 acres of land acquired by quitclaim deed from the owners who had previously removed the timber. (10) The import of this ownership is obvious when it is realized that it represents 8% of Clatsop County's total assessed valuation or a value of $1,251,344.

The ominous consideration of the reversion of these lands is not in the present acreage, although that is quite
serious, but is in the fact that the tax reversion is advancing rapidly. On December 31, 1937, the county had a total accumulation of delinquent taxes of $3,337,312.61. Of these $2,650,861.05 were forecloseable in 1938. (10) At the present time a large portion of this area has been foreclosed and new foreclosure proceedings are in progress. Estimates have been made that in the near future 200,000 acres will be in county ownership.

In other words, Clatsop County will own and be forced to administer approximately 40% of its total area.

THE DECLINING TAX BASE

As a forested county, Clatsop's tax base was made up in a great part of forests. In 1926 these forest properties were valued at $18,500,000. In 1937 the assessed valuation of the forest properties in the county was a little more than $6,000,000. (Chart I.)

While the forest values were dropping because of the removal and the decline of the inflated post war prices, the value of the remainder of the tax base dropped from eighteen million dollars to ten million dollars. (Chart I)

Altogether the tax base of the county has decreased 50% since 1926. A decline of 44.2% has occurred since 1930. The average annual decrease since 1922 has been approximately one million dollars.

In 1937 the assessed valuation of the county totaled $15,799,372. It has been estimated that a tax base of less than eleven million dollars will result in the bank-
ruptcy of the present county government. If the decline of the valuation of the county continues as in the past this point will soon be reached.

This steady decline of taxable value has resulted in increasing difficulty in maintaining public services and has also resulted in high taxes. The county is at present in dire financial straits.

Let be said that although the tax levy of 15.1 mills is among the highest in the state, the county officials have done phenomenal work in reducing taxes. In 1928 the tax levy was 30 mills or twice the present levy. (Table VI)

It is interesting to note that both the tax base and the tax levy have been reduced thus having a redouble reduction upon the county revenues.

THE PORT INDEBTEDNESS

In the days of business activity immediately following the war, it was planned that Astoria should become a major seaport. To this end three enormous docks were built. This enterprise was incorporated as the Port of Astoria.

The building of the docks was financed by a bond issue the security for which was a bond district exactly conforming to the boundaries of the county. In other words, the county was given as security for the bonds. All property in Clatsop County is taxable for payment on the bonded debt.

The cost of the docks was four and one-half millions of dollars. The present debt is approximately three and one-half millions of dollars.
The financing of the project was at first hampered by the fact that the assessed valuation of the county was insufficient to permit the issue of such a large number of bonds but fortunately the next year saw a spurt in property values which, oddly enough, left the county with an assessed valuation of forty-four millions of dollars, just enough to permit the securing of the loan.

The decline of shipping from Astoria left the docks an unprofitable affair. As a result the Port has levied eight to twelve mills of tax each year in an effort to pay the interest and principal of the debt.

With this port construction the decline of the tax base takes on a new aspect. The tax base of the county is identical with the security of the port. Therefore as the tax base declines, so does the security on the port bonds decline.

The complications arising from this situation are serious. In addition to paying for the general expense of government there must be paid a huge debt all from taxes on property which has decreased in value by more than fifty per cent.

This means high taxes, economy in public service and wise management or else bankruptcy and default.

To date the task has been performed but the situation is becoming increasingly crucial. An answer must be found soon.
RESOURCES OF CLATSOP COUNTY

By far the major portion of the resources of the county lies in its forest land. (Table I) Of the 472,896 acres of forest land approximately 90,000 acres remain in virgin timber.

Farm land constitutes 52,908 acres or 10.1% of the area of the county. (Table II)

In addition municipal property, public utilities and fishing are valued at eight and three-fourths millions of dollars. (Chart I)

A perusal of Table I will quickly show that the massing of resources in timber makes the future of the county dependent upon the development and management of these forest resources.

PRESENT STATUS OF LAND USE IN CLATSOP COUNTY

Of all the counties in Oregon, Clatsop County is the recognized leader in working toward the solution of its land use problems.

The following work has been done. (10)

1. Basic data has been gathered and is being gathered including base maps, tax reversion maps, assessed valuation maps, rural inventory cards, data sheets for maps and plats and a topographic map.

2. A committee has been set up to classify the land as to forest, agriculture, or grazing use.

3. Recreational tracts have been set aside.

4. Roadside timber is being preserved.

5. Logged off lands are being reforested and leased for grazing.
6. A separate department for managing tax reverted lands has been established.

7. Eight hundred acres have been set aside as an experimental tract to determine the adaptability and grazing values of various kinds of grasses.

8. The use of dune land is being studied.

9. The U. S. Department of Agriculture is making a land use survey of the county. (This work is being carried on by Mr. J. C. Moore of the Bureau of Agricultural Economics.)

10. A county planning board has been established.

11. A land use committee is studying the problems of the county.

12. A forest experimental area is maintained by the state forester.

Comparatively speaking this is an impressive record but in actuality the land use problems of the county are far from solution. The lands of the county are not under a suitable management program. Facilities for administration an organization are lacking. Experimentation and research are not being done in the most satisfactory manner.

These remarks do not imply a destructive criticism. The officials of the county have done excellent work and are aware of the necessity of further work but at the present time their attempts to solve the land use problem are in the earliest stages.

SUMMARY OF THE SITUATION

1. Lands are reverting to county ownership at a rapid pace. It is estimated that the county will be in possession of 200,000 acres of reverted property when the reversion process is completed.

2. The tax base of the county is declining at the rate of one million dollars per year. There has been a fifty per cent decline in valuation since 1926.
3. The tax rate, although halved since 1928, is still among the highest in the state.

4. The majority of the natural resources of the county lie in its forest lands.

5. Although considerable work has been done, the movement toward the solution of the land use problem has just begun.
CONSIDERATIONS IN LAND USE PLANNING
IN CLATSOP COUNTY

VIEWPOINTS

In surveying the land use situation in Clatsop County, we find that there are several viewpoints to be considered.

The Forester's Viewpoint

To the forester the proper use for the lands of the county, which were originally forested, is, of course, forest production. He is jealous of any attempts to convert the lands to other uses and thus encroach upon what he regards as his own private field.

Members of the forestry profession are prone to discount the claims of groups advocating any usage other than forestry. The forester holds that it is obvious that lands originally forested are best suited for the production of forest.

The Grazier's Viewpoint

Agricultural interests are most enthusiastic over the possibility of converting some of the cut-over lands into grazing areas. The grazier believes that this is the best possible use where the conversion is at all feasible. He views the immediate returns and the shorter term of investment as the only logical foundation upon which to judge
the use to which the land is to be put. Many of the graziers visualize the western portion of Oregon as the stock producing section of the state in the future.

The Viewpoint of the County

Clatsop County is sadly pressed for revenue. Any land use that offers immediate return is more or less favored by the county officials. The present financial crisis has caused a general tendency to sell short the future in favor of the present. The long term required by some of the suggested uses is very unsatisfactory to men who are interested in raising money for current expenses.

Submerged by still recognized is the need of the county for a permanent use of the lands and the need for the development of lands that cannot produce revenues for long periods of time. The long time needs will be met when and if the present needs are solved.

In short, the county believes that as large a portion of the lands as possible should be immediately returned to production and that deferred revenue is unsatisfactory if avoidable by any means.

The Viewpoint of the Public

The people of Clatsop County, being harrassed by heavy taxation and insufficient public funds, are enthusiastic about any procedure that will provide immediate revenue and financial relief. The citizens of the county are practically ignorant of the real causes for their problem and are un-
informed as to the problems facing anyone attempting to
determine a program for their relief.

This viewpoint is very similar to that of the county
government.

The Lumberman's Viewpoint.

The lumberman is a business man. His interest is in
managing his operation in such a manner as to show the
greatest profit. Perhaps as public spirited as any, he is
not a public servant. As a result he desires that form of
land management which will result in a lessening of his
taxes and favor his business.

The Viewpoint of the State

The State of Oregon is interested in having the lands
under management. The present needs of the county weigh
not so heavily with the state government. As a result the
state advocates those uses that will return the greatest
returns in the long run. However, the state is subject to
influence by pressure groups so perhaps the actual viewpoint
of the state is toward those land uses that will please the
most powerful group of voters.

The Broad Viewpoint.

The viewpoint that must be taken in order to evolve the
best uses for Clatsop's cut-over lands is the viewpoint that
considers the contentions of all the factions and makes the
decision that will do the most good to the greatest number
of people.

In the long run the proper use for any land is that use
that will return the greatest net revenue whether that revenue is in lamb chops or in two by fours. The broad viewpoint will search for and find these uses for the lands in question and will, regardless of profession or training, work for the establishment of those uses.

It is doubtful that the broad viewpoint will ever be applied to this or any other human undertaking.

**The Viewpoint to be Accepted.**

The broad viewpoint is, of course, the viewpoint that should be applied but as it seems probable that this viewpoint can never be fully obtained, the question arises as to which of the viewpoints should be used. Who shall be allowed to determine the objectives and set the policies.

The obvious answer to this is an organization of men from all of the different factions. In such an association all viewpoints would be represented and none neglected.

No professional group nor association of allied organizations should be permitted to determine the policy that should be followed in administering the lands of Clatsop County. If such control is allowed, full success will be accomplished by pure accident, for no viewpoint is completely correct.

For example, the forestry profession may be sincerely convinced that the one and only use for the land is the production of forests. Considerations advanced by other professions might well be put aside without proper study because of unrecognized professional bias. On the other hand,
the grazing interest might quite as sincerely believe that most of the area should be in grazing lands. Under a management organization controlled by either the best that could be expected would be an administration biased in favor of its own particular field.

OBSTACLES TO PROPER LAND USE DEVELOPMENT

In this, as in any other similar problem there are myriads of difficulties to be overcome. It is obvious that a study of this sort cannot possibly consider or even learn all the obstacles to be overcome. However, a list of the most pressing and obvious is placed below:

I. Lack of cooperation among the agencies concerned.

In investigating the situation in Clatsop County perhaps the most striking circumstance is the distrust and lack of cooperation among the various groups and agencies concerned. Almost without exception the greatest antagonism is expressed by those involved. (Of course there are numbers of very fair and cooperative men but as a whole the distrustful attitude obtains.) The writer found that as a forestry student he was regarded as an opponent and a person to be distrusted by many of the men interested in grazing. Forestry and grazing interests are opposed, neither seeing worth in the claims of the other. County officials dislike the State Department of Forestry. In return the department of forestry distrusts the county.

This antagonistic attitude cannot but hurt the cause of proper use of Clatsop County's lands.
II. The Disinterest and Ignorance of the Public.

The public is at present not only ignorant of the facts of the situation but it is also disinterested in it. In the streets of Astoria the writer had difficulty in finding anyone who had even a hazy idea of the problem. A startling number were unaware of the existence and purpose of the Northrup Creek Grazing experiment. Cut-over lands are dismissed as being worthless and non-productive. The fact that the salvation of the county lies in the proper management of these lands does not appear to have occurred to a single common citizen of the county.

Projects of the magnitude of this cannot succeed without public recognition and support. The inertia of the people will prove a distinct obstacle to development until it is removed.

III. County Organization.

The present county organization is not conducive to the able management of a large tract of land. Each department is independent of the other. It would be difficult to carry on a management policy with such an unwieldy organization. In addition the political nature of the county government makes it probable that there will be changes in policy during the different administrations.

IV. County Finances.

The present desperate condition of the county finances makes it rather doubtful that any large scale management of forest or grazing land could be carried on under
county auspices without aid from other sources.

V. State Finance.

Oregon is not a rich state. As a consequence, the budget is limited. Even the appropriations for the State Department of Forestry are inadequate. It is therefore hardly plausible to imagine that there will be provided sufficient funds to promote a suitable organization to manage the lands in question.

VI. The Lack of Technically Trained Men in the Field.

There is a dearth of technicians engaged in work on the land use problem. Many of the men in responsible positions are laymen and unacquainted with even one of the phases of the work from a technical standpoint. Not one technical forester is engaged in study of the lands and this county was ninety per cent forested. Recreation experts are lacking as are fish and game men. Technical men in other fields are absent or few in number. Not only are technicians absent, but there are no provisions for employing such men. Until a suitable personnel is provided for this work, it is doubtful that a proper solution can be found to the problem.

VII. Lack of Adequate Study and Research.

Information regarding the possibilities of these lands is woefully scarce. Knowledge of the possibilities of grazing is extremely small. Recreational studies of the area are unknown. Even experimentation in the line of forestry has been neglected. Most certainly the lack of factual
knowledge will hamper planning efforts.

VIII. Taxation Methods.

The ad valorem system of taxation is a mighty force leading the timber land owners into immediate liquidation of their properties. Forced liquidation aggravates the situation of tax reversion. (11) (16)

The reforestation tax has failed as an incentive to reforestation by private enterprise. Reforestation lands are removed from the general tax rolls except for the $5 per acre per annum specified in the law. (26)

A workable and efficient tax law for forest lands would be a long step in aiding the work in proper usage of Clatsop County's cut-overs.

USES FOR THE CUT-OVER LANDS OF CLATSOP COUNTY

THE CUT-OVER AREAS

Clatsop County in 1936 included 112,905 acres of cut-over lands. Of these 105,295 were cut-over since 1920 and 6,610 were old, non-restocked areas. In addition there were 32,690 acres of deforested non-restocked burn. (The burn included the huge Wolf Creek burn of 1933.) (Table II.)

Where seed has been available more or less satisfactory natural reproduction has occurred. (Table I.) However, the most of the areas have been without seed supply and are covered with a brush or fern cover.

A portion of the cut-over areas occur in the spruce- hemlock type of the western part of the county. The Sitka
spruce (Picea sitchensis), and western hemlock (Tsuga heterophylla), of this type grow with extreme rapidity and are excellent woods for the manufacture of pulp. As a result these lands present only the usual problems found in timber growing. Most of this area (25% of the physical area of the county) is owned by the Crown-Zellerbach Company. The forests are being used on a short rotation for the production of pulp stock.

The lands east of the summit of the coast mountains are of the Douglas fir type. Although of excellent forest producing capacity, the technical rotations are so long as to make investment unattractive. This being the case, these lands are under no management of any sort and are neglected.

Most of the cut-over areas lie in the Coast Range at elevations varying from 200 to 1,200 feet. Much of the land is rough and steep but is not so precipitous as are the mountains of the more southern Coast Range. A number of areas are to be found which are of gently sloping topography and of a considerable size.

THE POSSIBLE USES

The lands under discussion are untillable. Therefore, the uses to which they can be put are limited, of a necessity, to the more extensive types.

Some of the possible uses are listed below:

1. Forestry
2. Grazing
3. Recreation
4. Fish and game
Much of the area will probably be suited to only one or two of the uses here listed but multiple use of much of the area is possible and desirable. Consideration of uses for any given area should by no means be limited to one type of management.

In making the final decision all of the various viewpoints of the problem should be kept in mind and the needs of each weighed and considered.

FORESTRY ON THE CUT-OVERS

In considering the problem of land use in Clatsop County, the most obvious solution lies in forestry. The land is ideal for the production of forest crops as is evidenced by the fact that in its natural state almost the entire county was covered by magnificent forests of Douglas fir (Pseudotsuga taxifolia), western red cedar (Thuja plicata), Sitka spruce (Picea sitchensis), and western hemlock (Tsuga heterophylla).

The Douglas fir type (a class including most of the area) is, on the average, Site II for Pacific Coast Douglas fir. Forest land classified for Site II has a tremendous forest producing capacity. For instance, at the age of 90 years, an acre of this forest holds 113,500 board feet. Inspection of Table VII indicates, without doubt, that forest maintained on these lands will produce a quantity of return that will prove to be of high value to the county.

A factor particularly significant in consideration of forestry on these cut-overs is the fact that much of the
forest land is of value for no other purpose than that of growing forests. (16) Although the development of new uses has caused some doubt that forestry is the sole use for all of the land, there are large areas where forestry is admittedly the one suitable economic use. The steep, rough hillsides and the heavily log-littered slopes will probably never be found adaptable to any other than forest usage. This being the case, we can but conclude that for certain of the areas we must apply forest management or leave the lands unproductive.

The not inconsiderable areas now bearing reproduction will prove a great aid in establishing forest management. These lands will in a relatively short time produce revenue. On lands of this sort the practice of forestry is purely an economic proposition with great potential return.

NON-RESTOCKING AREAS

On the other hand, forestry on those lands now completely denuded of trees, covered with brush and fern and without opportunity for natural regeneration, may well be visualized in the light of a reclamation project. It is true that some returns may be anticipated from various minor items of product such as Christmas trees but returns sufficient to allay expenses and interest cannot be expected for long periods of time.

Even the prospect of a reclamation project is economically justified from the viewpoint of the state. Without such reclamation work these lands will lie in a non-
productive condition for a century or two even though the areas are fully protected from fire.

It would be impractical to plant in entirety all of the denuded and non-restocking areas because of their tremendous size and because of the expense involved in planting at an average cost of about $10.00 per acre. (Calculated) If the advantageous ridges and elevations of these areas were properly planted, a seed source could be established in a few years. With the aggressiveness of Douglas fir this seed supply could easily reforest the remaining area and thus establish a forest cover which would, with proper protection, readily become a valuable asset to the county and state.

Certainly the reclamation of these areas, even at a considerable initial expense and with a long time intervening before returns may be anticipated is preferrable to leaving these lands unproductive over an indefinite period. Even though the financial status of the county may be alleviated by methods that do not deal thoroughly with these denuded areas, it is certain that the county can never rise to a point approaching its true possibilities without these important lands in production.

MINOR PRODUCTS

In addition to the production of saw timber, which is the product thought of by the average person, there are other revenues that may be taken from these lands if properly managed.
In every suitably stocked forest there is an increasing mortality of young trees as the stands advance in age. Instead of permitting these trees simply to die and waste, it would be economically feasible to harvest at least a portion of them as Christmas trees. Such a procedure would finance the proper thinning of the young stands and would in addition return a revenue. In those areas which should be planted artificially it would be practicable to plant for the purpose of producing a crop or two of Christmas trees in the earlier years of the stands.

As the stands increase in age they will produce in turn fence posts and cordwood, poles, and piling. Of these, piling is the most valuable product. Under proper management sufficient piling could be produced to supply a substantial return.

Poles are also of considerable value if a market can be found. The manager of the forest can rely on at least a sufficient income to cover expenses involved in the operations of removing the poles, which would be of silvicultural value to the stands. The added value to the final crop of timber would make the operation a profitable one even though only the expenses were covered at the time of removal of the poles.

Cordwood and fence posts would probably produce insufficient money returns on the average market to show a profit but they should pay the expenses of the removal operation and would serve to improve the stand and aid in the payment of administrative costs.
The production of all of these products should be carefully studied. Good management should produce returns, sufficient to pay management costs and perhaps yield revenue to the county long before the final crop of timber is harvested.

In addition to the strictly timber products mentioned, there are numerous other forest products that show possibilities as producers of revenue. One of the most promising of these is seed collection. The movement toward the use of certified seed is strengthening rapidly in the forestry industries. At the present time several companies are engaged in this work which they report as profitable.

With these companies in the field it is still difficult to obtain ample supplies of properly certified seed. The collection, certification and sale of seed from the forests of Clatsop County could well be developed into a profitable enterprise which would add appreciably to the returns of practical forestry.

It is probable that the cut-over areas are not producing seed in the desirable quantities but seed are available in quantity in the environs of the county and a business established now would in the future be sustained by the forests on the now cut-over lands.

A possibility of yield lies in the establishment of Cascara (Rhamnus purshiana) plantations on areas suitable to the growth of this species. Cascara bark is of value for medicinal purposes and is easily salable. It is relatively
easy to establish plantations of the Cascara trees. The development of processes designed to extract cascara essence from the wood and berries as well as from the bark of the trees is giving indications of further value to be derived from holdings of this species. There are at present in existence a few commercial operations in the gathering and cultivation of cascara.

From the deep forests of the Pacific Coast are shipped, often in huge quantities, the common sword fern. This species is used in floral establishments in the East. In the later years of the forest rotation it is possible that some revenue could be derived from this source.

These secondary sources of income have been listed for a dual purpose: First, to point out directly some of the possibilities for income in management of the forest lands, and second, to indicate that management of these forests should include more than the simple production of the ultimate forest yield.

CHEMICAL UTILIZATION

In discussing the production of future forest crops the average person is prone to disregard or overlook the tremendous possibilities offered by the development of new methods of chemical utilization of wood. It is quite possible that in the future tremendous quantities of wood will be required to meet the demands of a rapidly expanded chemical industry. During the past few years we have seen the economic set-up of vast areas in the South changed by the advent of a
new method of converting southern pines into paper pulp. At the present time many men like Dr. Herty, who perfected the new process in the South, are working on new methods.

Until last year most of the lignin in the wood was wasted. Lignin constitutes almost half of the material in wood. Experiments in utilizing this material are successful and indicate the possibility of another tremendous new industry being developed. Where could it find a more favorable field than in the forest producing regions of the Northwest?

It must be considered that chemical utilization permits the use of small material. Forests could be grown on short rotations providing immediate revenues.

Of course this consideration of heavy utilization by chemical concerns is not now a reality in so far as Clatsop county's forests are concerned but it is such an imminent possibility that it should not be overlooked in evaluating the potentialities of forest practice. Experts in the line of wood utilization predict that the development of chemical process will provide an outlet for seventy-five per cent of the wood grown in the United States.

THE PROBLEM OF FIRE PROTECTION

One of the major difficulties arising in the way of forest management in this area is the matter of fire protection. In Oregon the stress of protection is placed on virgin and large second growth stands. There is a strong tendency to neglect the smaller second growth and to ignore
the non-producing cut-overs. Those lands which bear reproduction are also disregarded.

Although the record of fire protection in the western part of Oregon has been, relatively speaking, an enviable one, it is far from being sufficiently effective to serve the purposes of forestry as a permanent enterprise. There is in the state a 3.9% annual reburn. (T. T. Munger in Lecture before Senior seminar.) This means that in twenty-five years, on the average, the entire cut-over area has been reburned. Even though some of the lands are completely protected from fire, this percentage of reburn indicates that the establishment of forests is not possible on large areas of the potentially forest producing lands.

The present conception that reproduction, cut-overs, and second growth is not valuable must be rectified and a more efficient system of fire protection must be set up before permanent forestry can be a profitable possibility in the coast counties of Oregon.

FOREST EXPERIMENTATION

Forest experimentation is very incomplete for the county. For the most part information regarding the area is limited to observations of past events and conditions.

The State Department of Forestry maintains on the upper north fork of the Nehalem River a forest experiment. Here, on a one thousand acre tract deeded to the state by Clatsop County, are plantations of thirteen varieties of trees. At this writing only one hundred and twenty-seven acres of the
tract were being utilized. Seven varieties of trees not before planted in this area are represented in the experimental plantations. (23)

Information as to the problems that may arise in establishing forest plantations are being studied and already some results are being obtained. However, much more experimentation is desirable in order to facilitate the best forest use of the lands.

SUMMARY.

I. On a large portion of the area forestry is the only feasible land use.

II. Forestry under proper management can be a profitable enterprise to the administrative agency.

III. All the possibilities of revenue should be considered.

IV. Forestry on the denuded and non-restocking areas is to be regarded as a reclamation project.

V. Fire damage is a major obstacle in the way of forest management on the cut-over areas.

VI. A tremendous amount of forest experimentation should be done.

VII. The possibilities in Chemical utilization of wood should not be overlooked.

GRAZING ON THE CUT-OVERS

During the last few years the possibility of utilizing large areas of Clatsop county's cut-over lands as permanent grazing units has been a subject of great interest. It is suggested that certain of the lands be seeded permanently to grass for the purpose of grazing sheep and cattle while other suitable areas be seeded to grass as temporary grazing units
until forest reproduction becomes established. Some of the
men interested in grazing are tremendously enthusiastic
over this type of land use and advocate that huge areas of
land be immediately seeded to grass. Others are more con-
servative.

There has been a certain amount of friction between
forestry and grazing interests with each group more or less
inclined to discredit the claims and statements of the other.
This antagonistic attitude on the part of both interests is
detrimental to the aims of both, and to the welfare of the
county.

The Farm Security Administration, after its land use
survey of the county, has recommended highly the conversion
of large areas of forest land to grazing use. Mr. J. C.
Moore of this organization states "Forest use, under present
circumstances, can never compete with grazing where it is
possible to establish and maintain grass."

The government of Clatsop county regards favorably the
conversion of forest lands to grazing because it gives
promise of immediate use of the lands with corresponding
immediate revenue from taxes and/or rentals.

Without doubt some of the lands can be converted to
and maintained as grass lands. Whether such conversion is
feasible or not from a practical standpoint is apparently
unknown even to the best authorities. Some state emphati-
cally that grazing is undoubtedly a practical solution to
the problem of use of the cut-over lands but these men are
unable to answer authoritatively many pertinent questions. Only estimates can be made as to the cost of establishing and maintaining grazing land; as to the probable returns and as to the types of grass and stock to be placed on the areas. Returns, in comparison to the returns from other land uses are not known. Certain experimentation has been done and is now in progress.

The Northrup Creek Experiment

As a result of seeding experiments on cut-over hill land begun in 1935 a committee of Clatsop county farmers at the County Agricultural Outlook Conference conducted by the extension service recommended the seeding and grazing of logged-off lands. It added that knowledge of management of the lands as grazing areas was inadequate and suggested that the Clatsop County Court set up an area for the purpose of studying the problems in the conduct of grazing on these cut-over areas. (31)

Accordingly in the spring of 1936 the county in cooperation with the Oregon State Board of Forestry and the State Extension Service set up an experimental area of approximately 830 acres in and near section 9, township 6 North, Range 6 West on the Nehalem River watershed. (8) (31) Clatsop County and the State Extension Service each contributed one thousand dollars and the State Forester supplied CCC labor and heavy equipment. In 1937 the state legislature appropriated five thousand dollars of field experiments a large portion of which was available for the Northrup range study.
The area consists of typical rolling stump and log-littered Douglas fir cut-over land. There is little site depreciation or erosion and the land is in good productive condition. (31)

In October and November, 1936, the area was seeded with four different seed mixtures at an average cost of $1.59 for the seed per acre and 40¢ per acre for the seeding. "An excellent stand of grass was obtained." (9) Approximately 75% of the ground seeded was covered with grass in 1937. In 1938 the stand of grass was heavier than it was during the previous year.

In 1937 forty-nine cows, one bull and nine calves of eastern Oregon cattle were placed on the area. Later thirty-eight heifers from the coast region were added. The native cattle made an average gain of 148 pounds while the unsettled Eastern Oregon cattle made an average gain of 74 pounds. (9)

In April, 1938, 727 ewes with lambs and 50 head of cows and calves were placed upon the area. The livestock grazed a total of 43,653 sheep days and 10,547 cow days. The lambs were sold September 1 at an average weight of 68 pounds having made an average gain of 44 pounds. (9) Average gains for the cattle were not computed as it is intended to keep them on the area during the winter of 1938-1939.

In July of 1938 a fire destroyed more than three hundred acres of the experimental area which included approximately 60% of the available feed supply. Despite this loss
ample feed remained to take care of all the cattle. The
burned area was reseeded and a good stand of grass obtained.

(9)

The experiment is being continued and is expected to
answer many of the questions confronting the advocates of
grazing in the Clatsop County area.

The New Zealand Grasslands

(Taken from articles by E. Bruce Levy as indicated in
the list of references. As all information is from this
source no reference numbers are included in the text.)

Advocates of grazing in the Pacific Northwest are
studying with interest the large scale conversions of rain
forests to grass lands in the Dominion of New Zealand. The
work in the dominion is particularly interesting because of
the fact that the situation is and was in many respects com-
parable to that encountered in Oregon. The islands lie in
precisely the same south latitudes as does Oregon in the
north. The forests were somewhat similar in type although
not in species. The terrain and climate is much the same.

A description of the methods of conversion follow.

A steady hot fire leaving a white ash is essential to
the success of the seeding. A poor burn may mean the ruin-
ation of the development of the area. The land is sowed by
hand immediately after the burn with seed mixtures varying
considerably with the area being developed.

As soon as possible after sowing the land is fenced
at rather a high cost especially where heavy timber and logs must be cleared from the fence line.

Stocking of the new burn takes place about eight weeks after sowing. Both sheep and cattle are placed on the area in varying proportions according to the conditions found locally. The stock factor is of paramount importance in subsequent development as the sown grasses in themselves are powerless against the myriads of seedlings and sporelings of shrubs and ferns that arise as soon as the forest shade is removed.

"It is a struggle often for many years against these growths, and success or failure of the grassland sward depends on the number of stock that are maintained on the area to eat off and tread out fern and scrub growth and thus to maintain the ecological balance in favor of grass rather than forest." (1)

Much deforested hill country went repeatedly back to secondary growth until suitable seed mixtures were devised from carefully conducted experiments." (1)

Adequate fencing and proper management of the grazing lands including a rotational type of grazing with often a spell from grazing for a whole growing season are essential to the success of the grazing conversion.

Here is quoted Mr. Levy's conclusion:

"Rain forest in New Zealand is convertible to grass land and there is a distinct correlation between the original forest cover and the grassland species that will thrive when
the forest is removed. The climate that makes possible
the development of rain forest is a grassland climate and
it is not difficult with the aid of stock and/or fire and
agricultural implements to maintain a bias in favor of
grassland rather than forest. The maintenance of soil
fertility at an appropriate level for high grassland pro-
duction, together with strict adherence to sound principles
in pasture establishment and utilization, tend to increase
the stability of grassland and to make more and more re-
move the possibility of reversion to forest."

In an article printed in March, 1922 (2), Mr. Levy
states that he is no advocate of the indiscriminate clear-
ing of forest on steep broken ground for grazing purposes
and further states that he is in sympathy with the view
that a large portion of such country would, for various
considerations, be better preserved in its native state.

It appears from the experience of the New Zealand
graziers that it is practical to convert the rain forests
into grazing lands but not without considerable expense and
difficulty. It seems probable that such expense and diffi-
culty in management would prove stumbling blocks in the way
of Clatsop county's grazing conversions under the present
financial and managerial set-up.

It must be remembered in considering the experience
of New Zealand that the circumstances are similar but are
far from parallel. The rainfall in New Zealand is less than
that in western Oregon and is distributed throughout the year.
(2)
Market conditions are different and industrial conditions vary. The forest species are by no means comparable in value with Oregon coast species. The experiments in foreign lands cannot provide the answer to Oregon's problems, they can but point the way. Oregon must by suitable experimentation determine her own course.

Grazing as an Adjunct to Forestry

Grazing is thought of as being a desirable land use during the period that a new forest crop is being established. Many men interested in the problem say that the lands can be seeded immediately after logging and maintained in grazing land until the young trees are well established without detriment to the trees and with considerable income to the county and other interested parties.

That this can be done in so far as combined grazing and forestry use is concerned there is little doubt. Although there have been reports of serious damage to seedlings and saplings by grazing animals, particularly sheep and goats, practically all the serious damage is caused by too heavy grazing and faulty handling of the live stock.(3)

Grazing experiments on unseeded cut-over lands indicate that such grazing can be done with some profit for a period of not more than 11 to 15 years. During the first three to seven years the supply of feed is ample but thereafter it dwindles until at the end of the 11 to 15 year period there is insufficient food to support a practical number of animals. (3) (6) (7)
Sheep have been grazed on the cut-over lands of Columbia county during the summers for a number of years with successful results. (5) It seems quite probable that seeded lands of a similar nature could return a revenue to the operators and to the county without interfering seriously with the establishment of new forests. Like the other suggested land uses, this operation is in need of considerable investigation.

**Considerations**

All in all, grazing does offer strong indications of providing at least one means of utilizing forest denuded lands, particularly those under 25% in slope. (The maximum set by the Farm Security Administration.) The results of the experiments have been favorable and encouraging but grazing is, despite all this, something of an unknown quantity. There are many problems that are yet to be solved before undertakings can be made with real assurances of success. A problem of this kind could be disproved in three years but it cannot be satisfactorily proved in such a short time.

It seems probable that the tendency to rush into large scale operations without long and conclusive experiment should be avoided. A gradual expansion of the grazing areas would seem more likely to give desirable results.

It would be an easy matter to include in this discussion a lengthy argument for the cause of grazing. It would be equally easy to present a strong argument against the practice of grazing. Both arguments have merit and both are
largely empirical and prejudiced. The author prefers to leave the facts as stated without giving air to the arguments of either side. Let it be stated again that only by experimentation and not by verbiage can this problem be solved.

Summary

I. The establishment of permanent grazing areas in Clatsop county holds favorable possibilities of a solution of a portion of the land use problem.

II. Grazing experiments have been encouraging but far from conclusive or actually convincing.

III. Experiments in other countries indicate feasibility of conversion of some types of forest lands to grazing areas.

IV. Grazing on areas during the period of forest regeneration shows promise of being a suitable land use.

VI. Further and conclusive study should be done before a definite policy of grazing use is adopted.

RECREATION ON THE CUT-OVERS

There has been no study made of the use of cut-over lands for recreation in Clatsop county. Neither is the writer well informed on recreational possibilities. However, there is no doubt that in the management of large forest areas, recreation will become an important factor. An examination of the forest uses in the eastern and Lake States areas shows a tremendous use of the forests for recreational purposes. The use cannot be denied consideration in this state.
During the last decade the population of Oregon has been increasing steadily. It is probable that this increase will continue for some time as the population of the country moves from the crowded East to the more sparsely populated West. An increase in population, especially urban population, presages an increase in outdoor recreation.

The increase in population of the West is accompanied by an increase in the volume of tourist traffic. Hundreds of thousands of people enter the state of Oregon each year on pleasure trips. Their use of the forest areas is tremendous and is increasing steadily.

With this large and increasing demand for forest recreation, it is certainly shortsighted to prepare a plan for the use of Clatsop county's lands without including provisions for recreational use. Such use will meet an undeniable social demand and will, in addition, promise revenues at least in the future to the management of the lands.

**FISH AND GAME ON THE CUT-OVERS**

Hand in hand with recreation goes fish and game management. Clatsop county is the natural habitat for Columbian blacktailed deer, brown bear, Roosevelt elk, cougar, and many of the smaller game animals. The streams are stocked with trout. Steelhead and other ocean fish run at various times of the year. There is no doubt that the management of the fish and game on the areas will prove to be
a vital factor in social good and probably in financial
good to the county and state. All this, provided the ad-
ministration of the lands is far sighted enough to take
the broad viewpoint of the situation and not prostitute
the lands to uses suggested by any one agency.

THE EXPERIENCES OF OTHER STATES

The problem of depletion of timber resources and tax
reversion of lands is not a new one. It has appeared pro-
gressively in the eastern states, in the South and in the
Lake States. The process has been repeated time and again.
The handwriting is on the wall for those in Oregon who care
to read it.

The problem of tax reversion appeared in Michigan,
Wisconsin, and Minnesota as early as 1900. "These three
states have adopted definite management policies and are
effectively handling their tax reverted lands." (10) Of the
three, Michigan is perhaps the most advanced.

Michigan

In Michigan the laws are so constructed as to give
absolute title to the state six months after the time of
the recording of the deed to the lands to the State De-
partment of Conservation. Thirty-four per cent of the area
of lands acquired through tax delinquencies are reserved for
forest, park and game refuge uses. On these lands the state
pays a tax of twenty-five cents per acre to the counties and
an annual tax of ten cents an acre from the game protection
fund. The remainder of the lands are subject to homestead-
ing, sale or exchange at the discretion of the Department of Conservation. The state pays a tax of ten cents an acre from its general fund to the counties in which these lands are situated.

Unreserved lands are subject to sale at prices fixed by the Department. The policy is to block up the state holdings.

"In 1929, 9,114,000 acres of Michigan lands were tax delinquent, two-thirds of which were forest and cut-over lands. In 1934, the state owned two million acres of tax reverted lands, and was holding in suspense before taking title approximately three million acres." (10)

Wisconsin

The Wisconsin problem is somewhat more recent than that of Michigan. In this state delinquent lands revert to the counties which are authorized to block lands so acquired and list such lands under the forest-crop law which entitles the counties to ten cents per acre from the state.

Wisconsin also has a zoning law which prevents the return of land to unsatisfactory use after its reversion.

This state is somewhat tardy in acquiring tax deeds and in coordinating land use programs.

Minnesota

Minnesota provides that tax delinquent lands revert to the state but their actual control is vested in the counties. Reverted lands must be classified as agricultural or non-agricultural before they can be offered for resale. The
county boards and courts have power to sell at their discretion and may attach conditions to the sale contract that will limit the uses to which the land may be put.

Many of the county boards have shown a tendency to classify all the lands as agricultural lands in order to resell them as soon as possible. Settlement on these lands has caused huge public debts often in excess of the assessed valuation of the lands. The problems here are far from solved.

**New York**

New York State has a policy originating in 1885 of setting aside forest preserves in the tax reverted areas. The state obtains absolute title to the land after the tax sale conveyance has been on record for a period of two years.

Chronic tax delinquency has not been a serious problem in recent years.

**Summary**

Various states have suffered from the chronic reversion of lands and the depletion of forest resources. Some of these states have found that a system of public acquisition and administration together with a scientific land classification policy has been effective in solving or alleviating the situation. Lands have, for the most part, been put to forest, recreation and wildlife uses.
CONCLUSIONS

In solving the land use problem in Clatsop county, perhaps the first steps must be toward the development of cooperation between the various interested factions and toward the arousing of public interest and advancement of public education. These things must be done before a satisfactory policy can be worked out.

A suitable policy of county or state acquisition of lands should be established and an administrative policy set up. This should provide for an absolute title to the lands and for adequate finance for the administration. Neither the counties nor the state should be deprived of just revenues from the lands.

A permanent administrative body should be set up for the control of the lands. This administration should be made up of technically trained men in order that the problems of administration may be dealt with intelligently.

A system of scientific land classification should be set up and land use regulated by this classification in order that uneconomic use of the lands may be avoided.

Further study and investigation should be made into all possible methods of utilizing the lands. No steps should be taken without the backing of scientific knowledge nor without the convictions of an unbiased group.

Definite action should be taken immediately before the problem becomes even more aggravated. Action should be determined by a definite plan taking into consideration all
types of use and including provisions for long time management.
### TABLE I.

**TIMBER RESOURCES OF CLATSOP COUNTY**

<table>
<thead>
<tr>
<th>CONIFEROUS</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 20&quot; Diameter</td>
<td>192,455</td>
</tr>
<tr>
<td>6&quot; - 20&quot; Diameter</td>
<td></td>
</tr>
<tr>
<td>Cut over</td>
<td>63,775</td>
</tr>
<tr>
<td>Burns</td>
<td>28,405</td>
</tr>
<tr>
<td>0&quot; - 6&quot; Diameter</td>
<td></td>
</tr>
<tr>
<td>Cut over</td>
<td>34,460</td>
</tr>
<tr>
<td>Burns</td>
<td>3,915</td>
</tr>
</tbody>
</table>

| HARDWOOD | 8,485 |

| NON-COMMERCIAL | 535 |

| CUT OVER AND BURNS | |
| Recent, since 1920 | 105,295 |
| Old cut over and burns | 40,060 |

| NON-FOREST | 48,090 |

| Total | 525,475 |
### TABLE II.

**FARM AND FOREST LANDS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres of farm land</td>
<td>52,908#</td>
</tr>
<tr>
<td>Per cent of total in farm land</td>
<td>10.1</td>
</tr>
<tr>
<td>Old cutovers un-restocked. Prior to 1920</td>
<td>6,610</td>
</tr>
<tr>
<td>Total recent cutovers</td>
<td></td>
</tr>
<tr>
<td>Since 1920</td>
<td>105,295</td>
</tr>
<tr>
<td>Deforested non-restocked burn</td>
<td>32,690*</td>
</tr>
</tbody>
</table>

# Includes pasture lands.

* Includes Wolf Creek burn.

### TABLE III.

**LANDS ON TAX ASSESSMENT ROLLS 1936**

<table>
<thead>
<tr>
<th>Lands</th>
<th>Acres</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tillable lands</td>
<td>13,201</td>
<td>$ 748,573</td>
</tr>
<tr>
<td>Timber lands</td>
<td>188,743</td>
<td>5,053,845</td>
</tr>
<tr>
<td>Non-tillable lands</td>
<td>109,124</td>
<td>1,107,978</td>
</tr>
</tbody>
</table>

(15)
<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>17,493</td>
</tr>
<tr>
<td>Elementary school</td>
<td>30,259</td>
</tr>
<tr>
<td>County</td>
<td>146,696</td>
</tr>
<tr>
<td>County school</td>
<td>56,997</td>
</tr>
<tr>
<td>High School</td>
<td>19,721</td>
</tr>
<tr>
<td>Irrigation and drainage</td>
<td>5,572</td>
</tr>
<tr>
<td>Other (excluding fire patrol and reforestation)</td>
<td>735,846</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,012,584</strong></td>
</tr>
<tr>
<td>Fire patrol</td>
<td>3,893</td>
</tr>
<tr>
<td>Reforestation</td>
<td>6,956</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,023,434</strong></td>
</tr>
</tbody>
</table>

(15)
TABLE V.

TABLE OF Tax Reverted Lands

<table>
<thead>
<tr>
<th></th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber</td>
<td>19,215</td>
</tr>
<tr>
<td>Reforestation</td>
<td>9,206</td>
</tr>
<tr>
<td>Nontillable</td>
<td>30,099</td>
</tr>
<tr>
<td>Tillable</td>
<td>289</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58,809</strong></td>
</tr>
</tbody>
</table>

Assessed valuation $1,251,311$

Total charges against property $2,634,096$

(30)
<table>
<thead>
<tr>
<th>Year</th>
<th>Assessed Valuation</th>
<th>Total Levy (mills)</th>
<th>Selected Key Levies (mills)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port</td>
</tr>
<tr>
<td>1926</td>
<td>36,601,325</td>
<td>22.5</td>
<td>8.71</td>
</tr>
<tr>
<td>1927</td>
<td>33,356,797</td>
<td>26.6</td>
<td>8.87</td>
</tr>
<tr>
<td>1928</td>
<td>31,423,444</td>
<td>30.0</td>
<td>9.714</td>
</tr>
<tr>
<td>1929</td>
<td>29,810,135</td>
<td>28.9</td>
<td>11.20</td>
</tr>
<tr>
<td>1930</td>
<td>28,388,306</td>
<td>17.9</td>
<td>11.50</td>
</tr>
<tr>
<td>1931</td>
<td>27,281,157</td>
<td>13.4</td>
<td>12.40</td>
</tr>
<tr>
<td>1932</td>
<td>24,270,163</td>
<td>14.8</td>
<td>10.70</td>
</tr>
<tr>
<td>1933</td>
<td>20,123,417</td>
<td>19.8</td>
<td>12.10</td>
</tr>
<tr>
<td>1934</td>
<td>19,219,113</td>
<td>18.4</td>
<td>5.90</td>
</tr>
<tr>
<td>1935</td>
<td>18,390,577</td>
<td>19.1</td>
<td>9.10</td>
</tr>
<tr>
<td>1936</td>
<td>16,170,228</td>
<td>16.5</td>
<td>9.50</td>
</tr>
<tr>
<td>1937</td>
<td>15,799,372</td>
<td>15.1</td>
<td>10.80</td>
</tr>
</tbody>
</table>
TABLE VII.

YIELD TABLE FOR DOUGLAS FIR ON FULLY STOCKED ACRE
SITE CLASS II
SCRIBNER LOG RULE

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Bd. Ft. Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>41,900</td>
</tr>
<tr>
<td>60</td>
<td>64,200</td>
</tr>
<tr>
<td>70</td>
<td>83,600</td>
</tr>
<tr>
<td>80</td>
<td>99,900</td>
</tr>
<tr>
<td>90</td>
<td>113,500</td>
</tr>
<tr>
<td>100</td>
<td>124,200</td>
</tr>
<tr>
<td>110</td>
<td>133,000</td>
</tr>
<tr>
<td>120</td>
<td>140,300</td>
</tr>
<tr>
<td>130</td>
<td>146,500</td>
</tr>
<tr>
<td>140</td>
<td>152,000</td>
</tr>
<tr>
<td>150</td>
<td>156,700</td>
</tr>
<tr>
<td>160</td>
<td>161,100</td>
</tr>
</tbody>
</table>

Data from U. S. Department of Agriculture, Technical Bulletin 201. (29)
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AUTHORITIES INTERVIEWED

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