

# **THE PACIFIC NORTHWEST: A SELECTED BIBLIOGRAPHY**

**1930—1939**

**PUBLISHED BY  
NORTHWEST REGIONAL COUNCIL  
PORTLAND, OREGON**

**1939**

# THE PACIFIC NORTHWEST A SELECTED BIBLIOGRAPHY

## COVERING

*Completed Research in the Natural Resource and Socio-Economic  
Fields, an Annotated List of In-Progress and Contemplated Re-  
search, Together with Critical Comments Thereon*

1930-39

Compiled by

**JOHN B. APPLETON**

Assistant Director, Northwest Regional Council

**Price \$3.00**

Published by

**NORTHWEST REGIONAL COUNCIL  
PORTLAND, OREGON**

1939

## NORTHWEST REGIONAL COUNCIL

606 Bedell Building, Portland, Oregon

### BOARD OF TRUSTEES

GEORGE F. YANTIS, PRESIDENT

*Ch. Pacific Northwest*

*Regional Planning Commission*

B. H. KIZER, VICE-PRESIDENT

*Ch. Washington State Planning Council*

CHARLES MCKINLEY, VICE-PRESIDENT

*Dept. of Pol. Sci., Reed College, Portland*

HERMAN KEHRLI, SECRETARY-TREASURER

*Director, Bureau of Municipal Research  
University of Oregon*

A. A. CLEVELAND

*Dean, College of Education  
Washington State College*

J. W. CONDIE

*State Supt., Public Instruction, Idaho*

A. L. STRAND

*President, Montana State College*

### STAFF

KENNETH O. WARNER

*Director*

JOHN B. APPLETON

*Assistant Director*

JOHN BLANCHARD

*Technician*

## FOREWORD

*This volume is an attempt to compile a selected bibliography of research dealing with the physical and human resources of the Pacific Northwest. A conscious effort has been made to include a majority of the more significant contributions to varied aspects of the regional economy. In order to show trends in research, apparent gaps, and to point the way toward later productive investigations each major subject division carries an interpretative comment prepared by a specialist familiar with the field covered. These comments are not held to be completely definitive, but are offered in the hope that they will stimulate a continued critical appraisal of research so that new and important fields of investigation may be disclosed.*

*This compilation should serve several purposes: Provide a readily accessible reference volume for individuals with limited library facilities; show the diverse fields in which research is being done; offer the bases for more complete integration of future research on regional problems; stimulate thinking on the "regional" nature of economic, social, administrative, and political concepts in the Pacific Northwest; prevent needless duplication of research efforts; serve as a point of departure for persons engaged in translating research on Pacific Northwest subjects into forms suitable for consumption by the lay reader and by students at the various levels of education.*

KENNETH O. WARNER

DIRECTOR,  
*Northwest Regional Council*



## PREFACE<sup>1</sup>

In preparing this bibliography of Pacific Northwest materials, three main sources of information have been consulted: Library collections, published bibliographies, and the personnel of public and private research agencies. Listings are restricted to materials prepared or published since 1930 and relating specifically to the Northwest. Many items of more general application have been omitted. In addition to published works, this volume includes titles of unpublished manuscripts wherever such information could be obtained. In all cases of unpublished work, its present location is indicated.

The bibliography is arranged in three parts:

- I. Completed research—published and unpublished.
- II. Research in progress.
- III. Contemplated research.

Part I deals with a wide range of topics on natural resources and the various interrelated economic, social, and political factors which have a bearing on the human occupancy of the region. The breakdown follows with slight modification the classification generally employed in the several fields. The Table of Contents indicates the specific coverage of each section and contains notations regarding interrelated portions of the bibliography. Elaborate cross references have not been employed. Complete coverage of the subjects has not been possible. This is particularly true of agriculture owing to the great breadth and highly specialized nature of the field. All-inclusive bibliographies on agriculture do not exist, although excellent compilations covering particular aspects are available.

Part II comprises all the pertinent items of Research in Progress submitted by the individuals and agencies contacted. A number of researchers in the region are investigating extra-regional problems which do not fall within the scope of the present volume. Information on each item in Part II includes: (1) the probable date of completion, (2) the address of the researcher, (3) a brief statement of the scope of the project, and (4) the type of reader for whom the manuscript is being prepared. Readers interested in more detailed information may communicate directly with the researchers or with the COUNCIL.

Despite serious efforts to obtain reports from everyone engaged in full or part-time research the data on Research in Progress are incomplete. It would seem that some have been reluctant to disclose the nature of their current investigations, while others apparently have failed to cooperate because of lack of time or interest in the project.

The paucity of material in Part III—Contemplated Research—is evident. More complete information of this type is highly desirable. Such data might do much to prevent duplication of effort, to bring together researchers of allied interests, and to facilitate coordinated and cooperative research on a regional basis by persons connected with the various research agencies.

Readers are urged to supply this office with information about significant titles that have been omitted, new items as they become available, and new projects as they take form. These data will be useful in rounding out our project and in preparation of possible future supplements. The COUNCIL invites criticism.

<sup>1</sup> For the purposes of this bibliography, the Pacific Northwest Region includes Oregon, Washington, British Columbia, Alaska, Idaho and Montana.

Even allowing for existing gaps, the bibliography indicates both the fields and the agencies in which research is most active. It is clear that the major part of productive research in the Pacific Northwest is restricted to a relatively few agencies; that more intensive research activity is carried on in the physical than in the human resource field; that there is a noticeable dearth of urban and industrial studies; and that much of the work is of necessity highly specialized or local in application. The very nature, however, of most physical, economic, and social problems makes regional treatment essential.

The COUNCIL wishes to express its appreciation to all organizations and individuals who have cooperated in this project. A special word of thanks is due to those who prepared the critiques preceding each section: Messrs. R. W. Barthell, R. F. Bessey, I. Bloch, J. A. Craig, O. W. Freeman, P. Hetherton, E. T. Hodge, S. B. Morris, J. C. Rettie, H. E. Selby, J. F. Steiner, S. A. Wilson, and W. L. Uhl; and to Mrs. Frances Mouton for her valuable help in preparing this material for publication.

JOHN B. APPLETON.

Portland, Oregon  
June, 1939

# CONTENTS

LIST OF ABBREVIATIONS.....	xix-xx
----------------------------	--------

## PART I

### COMPLETED RESEARCH—Published and Unpublished

#### I. GENERAL CONCEPTS OF THE NORTHWEST

Page

CRITIQUE—R. F. BESSEY.....	5
ARCHAEOLOGY .....	8
CLIMATE (see also FORESTS).....	9
CONSERVATION (see also AGRICULTURE—CONSERVA- TION) .....	12
GEOLOGY—GENERAL AND ECONOMIC (see also MIN- ERAL RESOURCES) .....	12
HISTORY .....	20
PHYSIOGRAPHY (see also WATER RESOURCES).....	22
RECLAMATION (see also AGRICULTURE—LAND RE- CLAMATION) .....	23
RECREATION (see also FORESTS).....	23
REGIONAL SURVEYS—GEOGRAPHIC AND ECONOMIC..	25
VEGETATION: NATURAL (see also FORESTS, AGRICUL- TURE—RANGE AND GRAZING).....	27
WILDLIFE .....	28

#### II. AGRICULTURE

CRITIQUE—H. E. SELBY.....	31
GENERAL AGRICULTURE .....	33
AGRICULTURAL ECONOMICS.....	35
Cooperation	
Economics of Production	
Landholding and Ownership	
Markets and Marketing (Agricultural and Livestock Prod- ucts)	
Prices	
Statistics	
Trends	
CROPS .....	47
Cereals	
Fibers	
Forage Crops	
Fruits, Berries, Nuts	
Roots	
Techniques of Production	

	Page
DAIRYING AND LIVESTOCK (see also RANGE AND GRAZING) .....	55
FLOOD CONTROL .....	58
FOOD RESEARCH .....	60
INDUSTRIES BASED ON AGRICULTURE .....	61
Dairy Industry	
Farm Equipment, Machinery	
Food Products	
Industrial Research: Food Products	
Meat Industry	
Woollen Industry	
IRRIGATION AND IRRIGATION METHODS .....	62
LABOR (see HUMAN RESOURCES AND PROBLEMS)	
LAND CLASSIFICATION (see also LAND-USE PLANNING, MAPS) .....	64
LAND RECLAMATION .....	66
Clearing	
Drainage	
LAND UTILIZATION (see also AGRICULTURE—CROPS, RANGE AND GRAZING) .....	69
Land Uses	
Types of Farming	
LEGISLATION: AGRICULTURAL (see GOVERNMENT)	
PESTS AND DISEASES .....	74
PLANNING AND ZONING (see PLANNING and LAND UTILIZATION)	
POULTRY .....	81
RANGE AND GRAZING .....	82
RELIEF, RESETTLEMENT, REHABILITATION (see HUMAN RESOURCES AND PROBLEMS)	
SOILS (see also CROPS, LAND CLASSIFICATION, LAND UTILIZATION, LAND-USE PLANNING) .....	88
Classification	
Distribution of Types	
Soil Chemistry	
Soil Fertility	
SOIL CONSERVATION AND EROSION (see also RANGE AND GRAZING) .....	94
Conservation	
Controls	
Erosion	
Management	
Surveys	

**III. FOREST RESOURCES AND UTILIZATION**

CRITIQUE—SINCLAIR A. WILSON.....	111
GENERAL FORESTRY .....	113
ASSOCIATED USES OF FORESTS.....	114
Erosion Control	
Flood Control	
Grazing	
Recreation	
Water Power	
Wildlife	
CONSERVATION .....	116
Methods of Conservation	
Need for Conservation	
Problems of Conservation	
ECOLOGY AND BOTANY.....	117
Distribution of Forests	
Types	
ECONOMICS, FOREST AND LUMBER (see also MAPS).....	122
Costs and Prices	
Economic Significance of Forests	
Forest Influences	
Markets and Marketing	
Reserves	
Statistics	
LOGGING .....	130
Historical Aspects	
Logging Engineering	
Methods and Means of Exploitation	
Nature of Products	
Selective Cutting	
LUMBER INDUSTRIES (see also POWER, COMMERCE AND INDUSTRY).....	134
Pulp and Paper	
Rayon	
Sawmills	
Utilization of Waste Products	
Wood-Using Industries	
MANAGEMENT .....	138
Administration, Regulation	
Farm and Woodlot Forestry	
Finance—Taxation, Valuation, Insurance	
Forest Policy	
Growth, Yields, Mapping	
Mensuration	
Services	
Surveys	
Sustained Yield Management	

	Page
<b>OWNERSHIP</b> .....	145
Private	
Public	
<b>PLANNING (see PLANNING)</b>	
<b>PROTECTION: ENTOMOLOGY</b> .....	146
<b>PROTECTION: FIRE</b> .....	147
<b>PROTECTION: PATHOLOGY</b> .....	152
<b>SILVICULTURE</b> .....	157
Artificial Reproduction	
Cultural Practices	
Natural Reproduction	
Reforestation	
Slash Disposal	
Tree Breeding and Adaptation	
<b>WOOD TECHNOLOGY—RESEARCH</b> .....	164
By-Products	
Conditioning of Wood	
Properties of Wood—Timber Physics	
Uses of Various Types	
Wood and Paper Chemistry	
Wood Preservatives	

#### IV. MINERAL RESOURCES

<b>CRITIQUE—E. T. HODGE</b> .....	172
<b>INDUSTRIES BASED ON MINERALS (see also POWER</b>	
<b>RESOURCES, COMMERCE AND INDUSTRY)</b> .....	173
Actual	
Potential	
<b>MINES AND MINING</b> .....	176
Beneficiation, Ore Treatment, Processing	
Mine Studies	
Mine Surveys—Geological	
Mining Districts	
Mining of Specific Products	
Mining Problems	
Mining Techniques	
<b>PLANNING (see PLANNING)</b>	
<b>REGIONAL STUDIES AND SURVEYS (see also GENERAL</b>	
<b>CONCEPTS—GEOLOGY)</b> .....	183
Distribution of Resources	
Field Investigations—Geological and Mineralogical	
Geological Conditions of Mineral Occurrence	
Nature of Resources and Reserves	

	Page
RESEARCH: TECHNOLOGICAL (see also POWER RE- SOURCES) .....	190
Characteristics and Properties of Northwest Mineral Re- sources	
Chemical Engineering	
Industrial Techniques	
Metallurgical Techniques—Utilization Techniques	
Mining Engineering	
Potential Uses	
STATISTICS OF PRODUCTION .....	193
 <b>V. WATER RESOURCES</b>	
CRITIQUE—S. B. MORRIS .....	195
CONSERVATION .....	196
ECONOMICS OF WATER (see also AGRICULTURE—RE- CLAMATION) .....	197
Requirements (Agricultural, Livestock, Municipal, Indus- trial)	
Statistics of Water	
Supplies (Surface and Underground)	
Utilization of Water	
NAVIGATION (see COMMERCE AND INDUSTRY— TRANSPORTATION)	
PLANNING (see PLANNING)	
POLLUTION .....	201
REGIONAL SURVEYS .....	202
Drainage Basins	
Water Resources	
WATER POWER (see POWER)	
 <b>VI. POWER RESOURCES</b>	
CRITIQUE—I. BLOCH .....	207
ADMINISTRATION AND CONTROL .....	209
Private Utilities	
Public Utilities	
ECONOMICS OF POWER (see also WATER RESOURCES, LUMBER INDUSTRIES, MINERALS, and COMMERCE AND INDUSTRY) .....	209
Markets for Power (Actual and Potential)	
Problems of Distribution	
Rate Structure	
Resources—Statistics	
PLANNING (see PLANNING)	
PROJECTS: WATER POWER .....	214
Bonneville	
Grand Coulee	
Skagit	

	Page
RESEARCH .....	215
Economic	
Industrial	
Technical	
 <b>VII. FISHERIES</b>	
CRITIQUE—J. A. CRAIG.....	216
BIOLOGICAL RESEARCH.....	217
Biological Characteristics	
Diseases	
Habitat	
CONSERVATION AND PROPAGATION (see also WATER RESOURCES—REGIONAL SURVEYS).....	221
Exploitation Controls	
Hatcheries and Planting	
ECONOMIC ASPECTS .....	223
Local, Regional, Extra Regional Significance	
Markets and Marketing	
Statistics	
FISHING INDUSTRY (see also COMMERCE AND INDUS- TRY) .....	223
Commercial	
Industries Based on Fishing and Fish Products	
Recreational	
LABOR AND LABOR PROBLEMS (see HUMAN RE- SOURCEs AND PROBLEMS)	
PLANNING (see PLANNING)	
POLITICAL ASPECTS .....	225
International	
Inter-state	
POLLUTION (see WATER RESOURCES)	
 <b>VIII. HUMAN RESOURCES AND PROBLEMS</b>	
CRITIQUE—J. F. STEINER.....	226
FORMS OF SETTLEMENT.....	227
Rural	
Urban	
LABOR AND EMPLOYMENT.....	227
Employment Opportunity, Occupational Studies	
Labor Relations and Organization	
Labor Problems—Rural, Urban	
Seasonality	
Unemployment	



	Page
MIGRATION .....	231
Economic Implications	
History of	
Nature and Extent of	
Political Implications	
Social Implications	
Statistics	
PLANNING: SOCIAL (see PLANNING)	
POPULATION: CHARACTERISTICS AND DISTRIBUTION	
OF .....	234
Distribution	
National Origins	
Racial Patterns	
POPULATION TRENDS.....	236
SOCIAL CONDITIONS .....	237
Consumer Incomes	
Cost of Living	
Housing	
Race Problems and Studies	
Standard of Living	
SURVEYS: SOCIAL.....	238
Primitive Areas	
Rural Areas	
Urban Areas	
WELFARE AND WELFARE ORGANIZATIONS.....	240
Child Welfare	
Old-Age Pensions	
Public Health	
Relief—Urban and Rural	
Rehabilitation—Rural	
Resettlement—Rural	
Social Security	
Socialized Medicine	
 IX. COMMERCE AND INDUSTRY (see also GENERAL CONCEPTS —REGIONAL SURVEYS, and appropriate sections of AGRICULTURE, FORESTS, MINERALS, POWER, FISH- ERIES, PLANNING)	
CRITIQUE—J. C. RETTIE.....	246
HARBORS AND HARBOR IMPROVEMENT.....	248
INDUSTRIALIZATION .....	249
Commercial Industries	
Distribution of Industries	
Facilities for Industrialization	
Manufacturing (see also AGRICULTURE, FOREST RE- SOURCEs, MINERALS, POWER)	
Potentialities for Industry (see also MINERALS, PLAN- NING, POWER)	
Planning (see PLANNING)	
Trends, Industrial	

	Page
LABOR, INDUSTRIAL (see HUMAN RESOURCES AND PROBLEMS)	
MARKETS AND MARKETING (see also TRANSPORTATION) .....	251
Foreign	
Historical Aspects	
Local	
Marketing Facilities	
National	
Regional	
Statistics of Trade and Commerce	
PORT DEVELOPMENT .....	256
TRANSPORTATION .....	257
Media of Transportation	
Economics of	
Statistics	
<b>X. GOVERNMENT</b>	
CRITIQUE—R. BARTHELL .....	260
<b>A. POLITICS</b>	
POLITICAL PARTIES AND ELECTORATE .....	262
LEGISLATION .....	262
<b>B. ADMINISTRATION</b>	
ADMINISTRATIVE SURVEYS .....	263
ADMINISTRATIVE AREAS .....	263
ADMINISTRATIVE ORGANIZATION .....	264
PERSONNEL .....	265
FINANCE	
Fiscal Management .....	266
Financial Surveys and Statistics .....	267
Income .....	268
(a) Revenue Systems	
(b) Property Taxation and Assessment	
(c) Property Tax Limitation	
(d) Income, Inheritance and Other Taxes	
(e) Service Charges	
Costs and Expenditures .....	273
Debt .....	273
ADMINISTRATIVE LAW .....	274
ADMINISTRATIVE ACTIVITIES AND SERVICES (see also HUMAN RESOURCES AND PROBLEMS—WELFARE) .....	274
<b>XI. EDUCATION</b>	
CRITIQUE—W. L. UHL .....	277

ADMINISTRATION OF PUBLIC SCHOOLS.....	278
Administration	
Finance	
Policies	
School Surveys	
PLANNING (see PLANNING)	
SCHOOL CURRICULA.....	282
Agriculture	
Commerce	
Conservation	
Forestry	
General	
Geography	
Irrigation	
TECHNIQUES OF EDUCATION.....	285
VOCATIONAL GUIDANCE AND TRAINING.....	286
Adults	
Follow-up Studies	
Youth	

## XII. PLANNING

CRITIQUE—P. HETHERTON.....	289
AVIATION .....	290
CITY .....	290
COUNTY .....	292
EDUCATION .....	294
HIGHWAYS AND TRANSPORTATION FACILITIES.....	294
RECREATION .....	294
REGIONAL: PACIFIC NORTHWEST.....	295
RESOURCE-USE PLANNING.....	296
Fisheries	
Forests	
Human and Social	
Industrial	
Land-Use	
Minerals	
Power	
Water	
STATE .....	301

## XIII. MAPS AND DIAGRAMS

CRITIQUE—O. W. FREEMAN.....	306
ALASKA .....	307
IDAHO .....	307
MONTANA .....	308
OREGON .....	308

	Page
PACIFIC NORTHWEST .....	312
UNITED STATES .....	318
WASHINGTON .....	319

#### XIV. BIBLIOGRAPHIES

GENERAL CONCEPTS OF THE NORTHWEST .....	324
Geology	
Wildlife	
LAND UTILIZATION .....	324
Agricultural Economics	
Irrigation	
Land Use	
Soil Erosion and Conservation	
FOREST RESOURCES AND UTILIZATION .....	327
MINERAL RESOURCES .....	327
WATER RESOURCES AND POWER .....	328
HUMAN RESOURCES AND PROBLEMS .....	328
COMMERCE AND INDUSTRY .....	329
GOVERNMENT .....	329
PLANNING .....	329

### PART II

#### RESEARCH IN PROGRESS

##### I. GENERAL CONCEPTS OF THE NORTHWEST

ARCHAEOLOGY .....	333
CLIMATE .....	333
GEOLOGY—GENERAL AND ECONOMIC (see also MIN- ERAL RESOURCES) .....	335
HISTORY .....	336
RECLAMATION .....	337
RECREATION .....	337
REGIONAL SURVEYS—GEOGRAPHIC AND ECONOMIC .....	338
VEGETATION: NATURAL (see also FORESTS, LAND UTILIZATION—RANGE) .....	338
WILDLIFE .....	339

**II. AGRICULTURE**

GENERAL AGRICULTURE .....	340
AGRICULTURAL ECONOMICS.....	340
Economics of Production	
Cooperation	
Landholding and Ownership	
Markets and Marketing	
Prices	
Trends	
CROPS .....	343
Cereals	
Fibers	
Forage Crops	
Fruits, Berries, Nuts	
Roots	
Techniques of Production	
Vegetables	
DAIRYING AND LIVESTOCK (see also RANGE AND GRAZING) .....	346
FLOOD CONTROL.....	348
FOOD RESEARCH .....	348
INDUSTRIES BASED ON AGRICULTURE.....	349
Dairy Industry	
Farm Equipment, Machinery	
Food Products	
Industrial Research: Food Products	
Meat Industry	
Woolen Industry	
IRRIGATION AND IRRIGATION METHODS.....	350
LABOR (see HUMAN RESOURCES AND PROBLEMS)	
LAND CLASSIFICATION (see also LAND-USE PLANNING, MAPS).....	351
LAND RECLAMATION.....	351
Clearing	
Drainage	
LAND UTILIZATION (see also AGRICULTURE—CROPS, RANGE AND GRAZING).....	352
Land Uses	
Types of Farming	
LEGISLATION: AGRICULTURAL (see GOVERNMENT)	
PESTS AND DISEASES.....	353

	Page
PLANNING AND ZONING (see PLANNING and LAND UTILIZATION)	
POULTRY .....	360
RANGE AND GRAZING.....	361
RELIEF, RESETTLEMENT, REHABILITATION (see HUMAN RESOURCES AND PROBLEMS)	
SOILS (see also CROPS, LAND CLASSIFICATION, LAND UTILIZATION, LAND-USE PLANNING).....	366
Classification	
Distribution of Types	
Soil Chemistry	
Soil Fertility	
SOIL CONSERVATION AND EROSION (see also RANGE AND GRAZING) .....	369
Conservation	
Controls	
Erosion	
Management	
Surveys	
 <b>III. FOREST RESOURCES AND UTILIZATION</b>	
ECOLOGY AND BOTANY.....	375
Distribution of Forests	
Types	
ECONOMICS, FOREST AND LUMBER (see also MAPS).....	376
Costs and Prices	
Economic Significance of Forests	
Forest Influences	
Markets and Marketing	
Reserves	
Statistics	
LOGGING .....	380
Historical Aspects	
Logging Engineering	
Methods and Means of Exploitation	
Nature of Products	
Selective Cutting	
LUMBER INDUSTRIES (see also POWER, COMMERCE AND INDUSTRY).....	381
Pulp and Paper	
Rayon	
Sawmills	
Utilization of Waste Products	
Wood-Using Industries	

	Page
<b>MANAGEMENT</b> .....	<b>382</b>
Administration, Regulation	
Farm and Woodlot Forestry	
Finance—Taxation, Valuation, Insurance	
Forest Policy	
Growth, Yields, Mapping	
Mensuration	
Services	
Surveys	
Sustained Yield Management	
<b>PROTECTION: ENTOMOLOGY</b> .....	<b>384</b>
<b>PROTECTION: FIRE</b> .....	<b>386</b>
<b>PROTECTION: PATHOLOGY</b> .....	<b>388</b>
<b>SILVICULTURE</b> .....	<b>391</b>
Artificial Reproduction	
Cultural Practices	
Natural Reproduction	
Reforestation	
Slash Disposal	
Tree Breeding and Adaptation	
<b>WOOD TECHNOLOGY—RESEARCH</b> .....	<b>394</b>
By-products	
Conditioning of Wood	
Properties of Wood—Timber Physics	
Uses of Various Types	
Wood and Paper Chemistry	
Wood Preservatives	

#### IV. MINERAL RESOURCES

<b>INDUSTRIES BASED ON MINERALS (see also POWER RESOURCES, COMMERCE AND INDUSTRY)</b> .....	<b>399</b>
Actual	
Potential	
<b>MINES AND MINING</b> .....	<b>399</b>
Beneficiation, Ore Treatment, Processing	
Mine Studies	
Mine Surveys—Geological	
Mining District	
Mining of Specific Products	
Mining Problems	
Mining Techniques	
<b>REGIONAL STUDIES AND SURVEYS (see also GENERAL CONCEPTS—GEOLOGY)</b> .....	<b>402</b>
Distribution of Resources	
Field Investigations—Geological and Mineralogical	
Geological Conditions of Mineral Occurrence	
Nature of Resources and Reserves	

	Page
RESEARCH: TECHNOLOGICAL (see also POWER RE-SOURCES) .....	405
Characteristics and Properties of Northwest Mineral Resources	
Chemical Engineering	
Industrial Techniques	
Metallization Techniques—Utilization Techniques	
Mining Engineering	
Potential Uses	
 V. WATER RESOURCES	
ECONOMICS OF WATER (see also AGRICULTURE—RECLAMATION) .....	407
Requirements (Agricultural, Livestock, Municipal, Industrial)	
Statistics of Water	
Supplies (Surface and Underground)	
Utilization of Water	
REGIONAL SURVEYS .....	409
Drainage Basins	
Water Resources	
 VI. POWER RESOURCES	
ADMINISTRATION AND CONTROL .....	410
Private Utilities	
Public Utilities	
ECONOMICS OF POWER (see also WATER RESOURCES, LUMBER INDUSTRIES, MINERALS, AND COMMERCE AND INDUSTRY) .....	410
Markets for Power (actual and potential)	
Problems of Distribution	
Rate Structure	
Resources—Statistics	
 VII. FISHERIES	
BIOLOGICAL RESEARCH .....	411
Biological Characteristics	
Diseases	
Habitat	
CONSERVATION AND PROPAGATION (see also WATER RESOURCES—REGIONAL SURVEYS) .....	413
Exploitation Controls	
Hatcheries and Planting	
ECONOMIC ASPECTS .....	414
Local, Regional, Extra Regional Significance	
Markets and Marketing	
Statistics	



	Page
FISHING INDUSTRY (see also COMMERCE AND INDUS- TRY) .....	415
Commercial	
Industries Based on Fishing and Fish Products	
Recreational	
POLITICAL ASPECTS .....	415
International	
Inter-state	

## VIII. HUMAN RESOURCES AND PROBLEMS

FORMS OF SETTLEMENT .....	416
Rural	
Urban	
LABOR AND EMPLOYMENT .....	416
Employment Opportunity, Occupational Studies	
Labor Relations and Organization	
Labor Problems—Rural, Urban	
Seasonality	
Unemployment	
MIGRATION .....	417
Economic Implications	
History of	
Nature and Extent of	
Political Implications	
Social Implications	
Statistics	
POPULATION: CHARACTERISTICS AND DISTRIBUTION OF .....	419
Distribution	
National Origins	
Racial Patterns	
POPULATION TRENDS .....	419
SOCIAL CONDITIONS .....	419
Consumer Incomes	
Cost of Living	
Housing	
Race Problems and Studies	
Standard of Living	
SURVEYS: SOCIAL .....	421
Primitive Areas	
Rural Areas	
Urban Areas	

	Page
WELFARE AND WELFARE ORGANIZATIONS.....	422
Child Welfare	
Old-Age Pensions	
Public Health	
Recreation	
Relief—Urban and Rural	
Rehabilitation—Rural	
Resettlement—Rural	
Social Security	
Socialized Medicine	
 IX. COMMERCE AND INDUSTRY	
INDUSTRIALIZATION .....	425
Commercial Industries	
Distribution of Industries	
Facilities for Industrialization	
Manufacturing (see also AGRICULTURE, FOREST RE-SOURCES, MINERALS, POWER)	
Potentialities for Industry (see also MINERALS, PLANNING, POWER)	
Planning (see PLANNING)	
Trends, Industrial	
MARKETS AND MARKETING (see also TRANSPORTATION) .....	425
Foreign	
Historical Aspects	
Local	
Marketing Facilities	
National	
Regional	
Statistics of Trade and Commerce	
PUBLIC UTILITIES .....	427
Gas	
Telephone and Telegraph	
Water	
TRANSPORTATION .....	427
Media of Transportation	
Economics of	
Statistics	
 X. GOVERNMENT	
A. POLITICS	
POLITICAL PARTIES AND ELECTORATE.....	429
LEGISLATION .....	429
B. ADMINISTRATION	
ADMINISTRATIVE SURVEYS.....	429
ADMINISTRATIVE ORGANIZATION .....	430

	Page
PERSONNEL .....	431
FINANCE	
Fiscal Management.....	431
Financial Surveys and Statistics.....	431
Income .....	432
(a) Revenue Systems	
(b) Property Taxation and Assessment	
(c) Property Tax Limitation	
(d) Income, Inheritance and Other Taxes	
ADMINISTRATIVE LAW .....	433
ADMINISTRATIVE ACTIVITIES AND SERVICES (see also HUMAN RESOURCES AND PROBLEMS—WEL- FARE AND WELFARE ORGANIZATIONS).....	433
<b>XI. EDUCATION</b>	
ADMINISTRATION OF PUBLIC SCHOOLS.....	435
TECHNIQUES OF EDUCATION .....	435
VOCATIONAL GUIDANCE AND TRAINING.....	435
<b>XII. PLANNING</b>	
HIGHWAYS AND TRANSPORTATION FACILITIES.....	435
REGIONAL: PACIFIC NORTHWEST.....	436
RESOURCE-USE .....	436
Land-Use	
<b>XIII. MAPS AND DIAGRAMS</b>	
MONTANA .....	437
PACIFIC NORTHWEST.....	437
WASHINGTON .....	437
<b>XIV. BIBLIOGRAPHIES</b>	
GOVERNMENT .....	437

### PART III

## CONTEMPLATED RESEARCH

<b>I. GENERAL CONCEPTS OF THE NORTHWEST</b>	
ARCHAEOLOGY .....	441
GEOLOGY—GENERAL AND ECONOMIC (see also MIN- ERAL RESOURCES) .....	441
HISTORY .....	441
REGIONAL SURVEYS—GEOGRAPHIC AND ECONOMIC..	442
VEGETATION: NATURAL.....	442
<b>II. AGRICULTURE</b>	
AGRICULTURAL ECONOMICS.....	442
Loans	
Markets and Marketing	

	Page
CROPS .....	442
DAIRYING AND LIVESTOCK .....	443
LAND RECLAMATION .....	443
PESTS AND DISEASES .....	443
RANGE AND GRAZING .....	443
SOIL CONSERVATION AND EROSION .....	444
<b>III. FOREST RESOURCES AND UTILIZATION</b>	
ASSOCIATED USES OF FORESTS .....	445
ECONOMICS, FOREST AND LUMBER (see also MAPS) .....	445
MANAGEMENT .....	446
PROTECTION: FIRE .....	446
PROTECTION: PATHOLOGY .....	446
SILVICULTURE .....	449
WOOD TECHNOLOGY—RESEARCH .....	449
<b>IV. MINERAL RESOURCES</b>	
INDUSTRIES BASED ON MINERALS (see also POWER RESOURCES, COMMERCE AND INDUSTRY) .....	450
MINES AND MINING .....	450
PLANNING (see PLANNING)	
REGIONAL STUDIES AND SURVEYS (see also GENERAL CONCEPTS—GEOLOGY) .....	450
RESEARCH: TECHNOLOGICAL .....	452
<b>V. WATER RESOURCES</b>	
ECONOMICS OF WATER (see also AGRICULTURE—LAND RECLAMATION) .....	453
<b>VII. FISHERIES</b>	
BIOLOGICAL RESEARCH .....	453
CONSERVATION AND PROPAGATION (see also WATER RESOURCES—REGIONAL SURVEYS) .....	454
<b>VIII. HUMAN RESOURCES AND PROBLEMS</b>	
SOCIAL CONDITIONS .....	454
SURVEYS: SOCIAL .....	454
<b>IX. COMMERCE AND INDUSTRY</b>	
INDUSTRIALIZATION .....	455
MARKETS AND MARKETING .....	455
<b>X. GOVERNMENT</b>	
<b>B. ADMINISTRATION</b>	
FINANCE	
Income .....	455
(a) Revenue Systems	
(b) Service Charges	

## ABBREVIATIONS

Admin.....	Administration, administrative
Agr. Exp. Sta.....	Agricultural Experiment Station
Agron.....	Agronomy
Am.....	American
Ann.....	Annual, annals
Assoc.....	Association
Bd.....	Board
Biol.....	Biology, biological
Bull.....	Bulletin
Bur.....	Bureau
Bus. Adm.....	Business Administration
Cer.....	Ceramic
Chem.....	Chemurgic
Circ.....	Circular
Comm.....	Commission
Coll.....	College
Conf.....	Conference
Cong.....	Congress
Cons.....	Conservation
Dept.....	Department
Div.....	Division
Econ.....	Economic, economics
Ed.....	Editor
Engr.....	Engineering
Ent.....	Entomology
Ext. Serv.....	Extension Service
ff.....	And following pages
Gen. Pub.....	General Public
Geog.....	Geographic, geographical, geography
Geol.....	Geology, geological
H. Doc.....	House document
Hist.....	Historical
Illus.....	Illustrated
Ind.....	Industrial
".....	Inches
Infor.....	Information
Intl.....	International
Inst.....	Institute
Jour.....	Journal
Leaf.....	Leaflet

## ABBREVIATIONS (Continued)

Lib.....	Library
Lith.....	Lithographed
M.....	Miles
(Ms.).....	Manuscript
Met.....	Metallurgy, metallurgical
(Mimeo.).....	Mimeographed
Min. Exp. Sta.....	Mining Experiment Station
Misc.....	Miscellaneous
(Multi.).....	Multigraphed
N. S.....	New Series
Natl.....	National
(1940).....	Probable date of completion (Part II)
(     ).....	Date unknown (Part I)
No.....	Number
Pt.....	Part
(Plano.).....	Planographed
Pol. Sci.....	Political Science
Pop.....	Popular
Proc.....	Proceedings
Prof.....	Professional
Publ.....	Publication
Quart.....	Quarterly
Reg.....	Regional
Rev.....	Revised
Rept.....	Report
S. Doc.....	Senate Document
Sci.....	Scientific
Sec.....	Section
Sess.....	Session
Soc.....	Society
Spec.....	Special
Statis.....	Statistics, statistical
Supp.....	Supplement
Tech.....	Technical
Trans.....	Transactions
Univ.....	University
U. S. Govt. Print. Off.....	United States Government Printing Office
407 p.....	407 pages

## **PART I**

### **COMPLETED RESEARCH—PUBLISHED AND UNPUBLISHED**

#### **I. GENERAL CONCEPTS OF THE NORTHWEST**

Review of the bibliography discloses that research completed and in progress includes a considerable number of projects and covers a wide range of subject matter. Notwithstanding the limited number of institutions carrying on research and the limited budgets upon which most of them must operate, there is a wide interest in research, and a considerable capacity for carrying it forward. Much information concerning various aspects of the region and its economy is available.

The great majority of projects, as will be seen, follow rather narrow, specialized lines. This is particularly true of the completed material.

This criticism of Pacific Northwest material is undoubtedly applicable to research in general. The specialized work has advanced beyond the general in both physical and social sciences; exploration of the more concrete physical fields has gone ahead of that in the more imponderable social areas; research has produced many physical and social data that have not been digested for human consumption.

While it is recognized that it will always be necessary to know details in order to draw reliable general conclusions, the pattern of research work being carried on within a region should show a reasonable proportion of projects that provide a broad synthesis of outlook. A vast amount of modern scientific investigation is socially and economically sterile because no one has undertaken to fit it into a broader and more comprehensive analysis that has real significance. We expend great amounts of time and energy collecting facts that never get woven into any meaningful picture.

The dearth of broader type research projects in the Pacific Northwest is due, no doubt, in part to the general tendencies just mentioned, and in part to the fact that the comprehensive projects require larger organizations and more costly facilities than are generally available in the region at the present time.

The list of in-progress and contemplated research projects does, however, seem to indicate a greater emphasis on the broader type of study and hence a growing appreciation of its importance. It is to be hoped that these indications foretell an emerging trend—a trend which will lead toward a more complete correlation of the various branches of scientific inquiry,

toward a better absorption of the results of research in the educational process, toward closer collaboration in the development of research programs, and toward a much more thorough appraisal of the knowledge gained and an appreciation of its significance in terms of social well being and progress.

Review of the knowledge which we now have concerning the Pacific Northwest reveals a number of important gaps that should be filled by projects of the more comprehensive character.

There is, undoubtedly, a marked need of further analysis of existing data and of continuing effort to learn what the conditions disclosed may mean to the people, the communities, and the governmental, educational, industrial, and commercial institutions of the region. To illustrate roughly, some of our research might lead toward determination of what climate and other environmental factors may mean to population, energy, health, culture, or industry, of the present and future; what dominant racial and historical factors may have to do with regional culture and progress; what available resources may mean in regional security and advancement.

Elaborating somewhat, there is a lack of research studies that tend to bring out the interrelationships of work in various specialized fields, that tend to correlate research, and to bring together in joint consideration those engaged in various branches of physical and social science.

Little more than a beginning has been made with respect to the study of Pacific Northwest regionalism. In order to know what kind of policy to follow with respect to resource conservation and development; with respect to the services of local, state and federal government; with respect to industrial development, etc., we need more adequate researches that will bring into focus the whole picture of the social-economic-political structure of the region.

The relationship of the Pacific Northwest to the national economy is very imperfectly known, but this does have a very important bearing upon the whole policy of federal expenditures for public improvements within the region. We know, in general, that our national economy tends to drain an undue amount of wealth from the raw material producing areas and concentrate it in the financial and industrial centers. Not enough is being "plowed back" into the raw material producing regions in the shape of investment which creates a sustained yield economy. The gloomy picture of the Southeast, largely a result of this tendency, is now fairly well known as a result of the extensive studies of the Southern Regional Committee of the Social Science Research Council. Some broad-gauge study of the same order would be highly desirable in the Pacific Northwest region—not some years hence when the problem of resource depletion is hard upon us, but in the near future while there is yet time to avoid some of the most disastrous effects that have been felt in other regions.

As has been suggested, such comprehensive projects call for more broadly based facilities for research. Yet many such activities are within



the reach of the institutions of higher learning, an even greater number are susceptible of accomplishment through cooperative effort among such institutions, or through planning boards with the cooperation of the educational and other research institutions. In this field of cooperative research, it is believed that the Northwest Regional Council can aid very greatly in generating, stimulating, and guiding work, as well as in providing needed "clearing house" services.

To illustrate projects which might provide for better utilization of research material currently and potentially available, the following suggestive outlines are offered:

**Regional geography.** Integrated geographic study of broadest character covering the region's geological, physiographic, economic, cultural, human features; to involve correlated work of various branches of science; to provide for field work as required to fill gaps in knowledge.

Comprehensive survey of **regional physical resources.** The resource picture; the effect of resources of the region's past, present, future; evaluation of latent or inadequately developed resources and prospects of rational use; survey of exhausting resources, with studies of conservation, substitutes, possible compensation for losses.

Comprehensive survey of **human resources of the region.** Studies of regional anthropology, history, sociology, economics, population, etc.; interpretation of conditions and trends.

Further study of **Pacific Northwest regionalism.** Concepts of the region; historical background; approximate geographic limits; cohesive and divisive factors—physical, economic, political, cultural; relationships to other regions and to nation; regional needs.

Comprehensive survey of the **whole economy of the region.** Historical background; trends in various phases of development and in general progress; resources—strengths, weaknesses; internal relationships—basic resources and dependency thereon; wealth, income, industries, trade, communications; interdependence of various factors, external relationships—balances of trade and payments; analyses of prospects, dangers, needs disclosed.

Continuing scientific consideration of current research patterns and proposals will disclose other fruitful lines for broad regional research as well as a large number of specialized lines which occupy key positions in the regional research pattern and tend to promote sound regional progress.

R. F. BESSEY.

Consultant, Pacific Northwest  
Regional Planning Commission,  
Portland, Oregon

**I. GENERAL CONCEPTS OF THE NORTHWEST****ARCHAEOLOGY**

1. Cressman, L. S. **Aboriginal Burials in Southwestern Oregon**  
American Anthropologist, XXXV, '33
2. Cressman, L. S. **Aboriginal Life of Oregon and Some Responses to the Natural Environment**  
Economic Geography of Oregon, '38  
Oregon State System of Higher Education, Eugene
3. Cressman, L. S. **Archaeological Research in Oregon**  
Commonwealth Review, '38  
University of Oregon, Eugene
4. Cressman, L. S. **Archaeological Survey of the Guano Valley Region in Southeastern Oregon**  
University of Oregon Press, Eugene, '36
5. Cressman, L. S. **Contributions to the Archaeology of Oregon. Final Report on the Gold Hill Burials**  
University of Oregon Press, Eugene, '33
6. Cressman, L. S. **Early Man and Culture in the Northern Great Basin Region.** (Preliminary Report)  
Publications Committee, University of Oregon, Eugene, '38
7. Cressman, L. S. **Petroglyphs of Oregon**  
University of Oregon Press, Eugene, '37
8. Cressman, L. S. **The Wikiup Damsite No. 1 Knives**  
American Antiquity, III, No. 11, '37
9. Cressman, L. S. and Krieger, A. D. **Atlatis from South-Central Oregon**  
Publications Committee, University of Oregon, Eugene, '38
10. Cressman, L. S. and Perry, W. J. **Charcoal Cave—An Archaeological Puzzle**  
The Oregon Historical Quarterly, XXXIX, '38
11. Cressman, L. S. and Williams, H. **Early Man in South-Central Oregon—Evidence from Stratified Caves**  
Publications Committee, University of Oregon, Eugene, '38
12. Haeberlin, A. and Gunther, E. **The Indians of Puget Sound**  
Univ. of Wash. Publ. in Anthropology, IV, 84 p., '30  
Seattle, Wash.
13. Olson, R. **The Quinault Indians**  
Univ. of Wash. Publ. in Anthropology, VI, No. 1, 1-190, '36  
Seattle, Wash.
14. Randolph, Gladys C. **Ancient Peoples of the Northwest**  
The Mineralogist, IV, No. 1, 21-22, 40-46, '36
15. Ray, V. F. **The Historical Position of the Lower Chinook in the Native Culture of the Northwest**  
Pacific Northwest Quart., XXVIII, No. 4, 363-372, '37
16. Ray, V. F. **The Sanpoil and Nespelem: Salishan Peoples of Northwestern Washington**  
Univ. of Wash. Publ. in Anthropology, V, 237 p., '32  
Seattle, Wash.

**CLIMATE**

17. Antevs, E. **Rainfall and Tree Growth in the Great Basin**  
Carnegie Inst. of Washington Publ. No. 469, '38  
Washington, D. C.
18. Baylor, J. W. **Climate and Man in the Columbia Plateau Area**  
Jour. of Geog., XXX, 265 ff., '31
19. Beamer, C. **The Structure of Summer Wind Over San Juan Island, Washington**  
Yearbook of Assoc. of Pacific Coast Geographers, III, p. 31, '37
20. Cameron, D. C. **Great Dust Storm of Washington and Oregon, April 21-24, 1931**  
Monthly Weather Review No. 59, 195-197, '31  
U. S. Weather Bureau, Washington, D. C.
21. Christ, J. H. **Meteorological Records, Sandpoint, Idaho**  
Agr. Exp. Sta. Circ. No. 64, '31  
University of Idaho, Moscow
22. Church, P. E. **Climates of the Puget Sound Lowland**  
Yearbook of Pacific Coast Geographers, II, 19-20, '36  
University of Washington, Seattle
23. Church, P. E. **Mountains: Weather Breeders and Barriers**  
The Mountaineer, XXX, No. 1, 26-28, '37
24. Church, P. E. **Surface Details of a Warm Front in Straits of Juan de Fuca**  
Am. Meteorological Soc. Bull., XIX, 400-402, '38
25. Church, P. E. **A Zone of Stagnation between Gorge and Gradient Wind in British Columbia Fjords**  
Am. Meteorological Soc. Bull., XIX, 344-346, '38
26. Church, P. E. and Briggs, W. P. **Valley Fogs Caused Largely by Decrease in Pressure**  
Am. Meteorological Soc. Bull., XIX, 430-433, '38
27. Corless, D. E. **Climatic Factors of the Palouse Area and the Relation of Precipitation to Wheat Yields at Moscow, Idaho**  
Master's Thesis, '38  
Lib., University of Idaho, Moscow
28. Dague, C. I. **Fourteenth Annual Fire Weather Report for the State of Oregon, District No. 2, Season 1937**  
U. S. Weather Bureau Office, Portland, Oreg., '38
29. Deschutes County, Oregon, Planning Commission. **Compilation of Weather Statistics in Deschutes County and Flow of Deschutes River**  
Bend, Oreg.
30. Federal Land Bank of Spokane. **Rainfall and Growing Season Information for Idaho, Montana, Oregon, Washington**  
Spec. Bull. No. 269 (mimeo.), '35  
Spokane, Wash.
31. Fisher, L. C. **Precipitation Averages for the State of Washington**  
Monthly Weather Review, LXII, 241-243, '34  
U. S. Weather Bureau, Washington, D. C.

32. Fisher, L. C. **Precipitation, East Washington**  
Monthly Weather Review Separates, '35-'36  
U. S. Weather Bureau, Washington, D. C.
33. Fisher, L. C. **Precipitation, West Washington; Climatic Summary of United States**  
Monthly Weather Review Separates, '35-'36  
U. S. Weather Bureau, Washington, D. C.
34. Freeman, O. W. **Fifty Years of Weather in the Inland Empire**  
Northwest Science, VI, 67-68, '32
35. Freeman, O. W. **Fog Associated with a Stagnant Anticyclone in the Columbia Plateau Region**  
Am. Meteorological Soc. Bull., 108-110, '36
36. Freeman, O. W. **Geologic Climates of the Inland Empire**  
Northwest Science, VII, 28-32, '33
37. Gerlach, A. C. **Distribution of Air-Mass Types and Frequency of Change in the Western United States, 1937-1938**  
Monthly Weather Review, LXVI, No. 11, '38  
U. S. Weather Bureau, Washington, D. C.
38. Giles, A. W. **Peat as a Climatic Indicator**  
Geol. Soc. of Am. Bull., XLI, p. 414, '30
39. Gould, J. E. **The Climatic Resources of Washington**  
Rept. to Port of Seattle Commission, Seattle, Wash.
40. Hammar, G. W. **An Analysis of 45 Years Precipitation and Air Temperatures at Moscow, Idaho**  
University of Idaho, Moscow, '37
41. Holzman, B. **Sources of Moisture for Precipitation in the United States**  
U. S. Dept. of Agr. Tech. Bull. No. 589, 41 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
42. Hopson, Ruth E. **A Climate Map of Oregon**  
Master's Thesis, '35  
Lib., University of Oregon, Eugene
43. Jacobs, J. **Columbia Basin Report, Appendix B: Climatology**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
44. Jacobs, J. **Columbia Basin Report, Appendix C: Water Resources (Rainfall and Run-off)**  
12 p., '35  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
45. Jacobs, J. **Notes on Rainfall and Run-off**  
11 p., '36  
Washington State Planning Council, Olympia
46. Jessup, L. T. **Precipitation and Tree Growth in the Harney Basin, Oregon**  
Geog. Review, XXV, 310-313, '35
47. Johnson, E. C. **The Influence of Climate on Washington Agriculture**  
Northwest Science, VI, 17-24, '32

48. Keen, F. P. **Climatic Cycles in Eastern Oregon as Indicated by Tree Rings**  
Monthly Weather Review, LX, 175-188, '37  
U. S. Weather Bureau, Washington, D. C.
49. Merriam, W. B. **Climate of the Rogue River Valley, Oregon**  
Monthly Weather Review, LXIV, '36  
U. S. Weather Bureau, Washington, D. C.
50. Monson, O. W. **Snow Surveys as a Basis for Forecasting Summer Rainfall**  
Monthly Weather Review, LXII, p. 322, '34  
U. S. Weather Bureau, Washington, D. C.
51. Morris, W. G. **Fall Precipitation Comparisons**  
West Coast Lumberman, LXIV, No. 2, p. 23, '37
52. Morris, W. G. **Lightning Storms in Northwest Studied**  
Electrical Engineering, LIII, p. 1676, '34
53. Morris, W. G. **Unusual Thunderstorm Activity in the Mountains of Oregon and Washington in 1935**  
Monthly Weather Review, LXIII, 348-349, '35
54. Seeman, A. L. **Climate of the Columbia Basin**  
73d Cong., 1st sess.; H. Doc. No. 103, II, 592-602, '34  
U. S. Govt. Print. Off., Washington, D. C.
55. Simson, A. G. **Climatological Data 1911-1930, Wind River Station, Washington**  
(mimeo.), '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
56. Sprague, A. R. **Influence of Climatological Factors in the Development of Cercospora Foot Rot of Winter Wheat**  
U. S. Dept. of Agr. Circ. No. 451, 39 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
57. Starr, E. C. **Storm-Static Radio-Interference Phenomena Originating on Air Craft**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis
58. Thornthwaite, W. C. **The Climates of North America According to a New Classification**  
Geog. Review, XX, 633-655, '31
59. United States Department of Agriculture. **Measuring Fire Weather and Forest Inflammability**  
Circ. No. 398, 59 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
60. United States Department of Agriculture, Weather Bureau. **Average Conditions of Wind and Weather, North Pacific Ocean, Compiled for Information of Ocean Travelers, from Data in Marine Division of the Weather Bureau**  
12 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
61. Ward, R. A. **Pressure Distribution in Relation to Thunderstorm Occurrence on Oregon and Washington National Forests**  
Monthly Weather Review, LXIV, No. 2, 37-45, '36  
U. S. Weather Bureau, Washington, D. C.

62. Yarnell, D. L. **Rainfall Intensity-Frequency Data**  
U. S. Dept. of Agr. Misc. Publ. No. 204.  
Washington, D. C.

### CONSERVATION

63. Bennett, H. H. **Saving Our Land Heritage**  
Forest Club Quarterly No. 10, 16-20, Autumn '36-'37  
University of Washington, Seattle
64. Clark, B. W. **Conservation Problems in Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 37-38, '37  
Portland, Oreg.
65. Glover, Katherine. **America Begins Again**  
McGraw-Hill Book Co., New York City, '39
66. Northwest Conservationist. **Conservation of Minerals**  
Northwest Conservationist, II, No. 1, '39
67. Parkins, A. E. and Whitaker, J. R. (eds.). **Our Natural Resources and Their Conservation**  
650 p., '36  
J. Wiley & Sons, Inc., New York City
68. Wood, J. D. **Conservation in Idaho**  
6 p. (multi.), '36  
Idaho State Planning Board, Boise

### GEOLOGY—GENERAL AND ECONOMIC

69. Allen, J. E. **Contributions to the Structure, Stratigraphy and Paleontology of Lower Columbia River Gorge**  
Master's Thesis, '32  
Lib., University of Oregon, Eugene
70. Anderson, A. L. **Geology of the Pearl-Horseshoe Bend Gold-Belt, Idaho**  
Pamphlet No. 41, '34  
Idaho State Bureau of Mines and Geology, Boise
71. Anderson, A. L. **A Preliminary Report on Recent Block Faulting in Idaho**  
Northwest Science, VIII, No. 2, 17-38, '34
72. Barnes, F. F. and Butler, J. W., Jr. **The Structure and Stratigraphy of the Columbia River Gorge and Cascade Mountains in the Vicinity of Mount Hood**  
Master's Thesis, '30  
Lib., University of Oregon, Eugene
73. Berry, E. W. **Miocene Plants from Idaho**  
U. S. Geol. Survey Prof. Paper No. 185-E, 97-125, '34  
U. S. Govt. Print. Off., Washington, D. C.
74. Berry, E. W. **Shorter Contributions to General Geology. (c) A Miocene Flora from Grand Coulee, Washington**  
U. S. Geol. Survey Prof. Paper No. 170, 31-42, '31  
U. S. Govt. Print. Off., Washington, D. C.
75. Bogue, R. G. **A Petrographic Study of the Mt. Hood and Columbia River Basalt Formations**  
Master's Thesis, '32  
Lib., University of Oregon, Eugene

76. Callaghan, E. **Geology of the Heceta Head District, Oregon**  
Master's Thesis, '27 (To be reissued for distribution, WPA project)  
Lib., University of Oregon, Eugene
77. Callaghan, T. **Some Features of the Volcanic Sequence in the Cascade Range in Oregon**  
Trans. of Am. Geophysical Union 14th Annual Meeting, 243-249, '33
78. Capps, S. R. **The Eastern Portion of Mount McKinley National Park, Alaska**  
U. S. Geol. Survey Bull. No. 836, 219-300, '33  
U. S. Govt. Print. Off., Washington, D. C.
79. Capps, S. R. **The Southern Alaska Range**  
U. S. Geol. Survey Bull. No. 862, 101 p., '35  
U. S. Govt. Print. Off., Washington, D. C.
80. Capps, S. R. and Tuck, R. **The Willow Creek-Kashwitna District, Alaska**  
U. S. Geol. Survey Bull. No. 864, 94-113, '35  
U. S. Govt. Print. Off., Washington, D. C.
81. Carpenter, J. T. **A Tentative Correlation of Northwestern Tertiary Strata**  
Master's Thesis, '32  
Lib., University of Idaho, Moscow
82. Chaney, R. W. **Central Oregon**  
Intl. Geol. Cong., XVI, United States, 1933. Guidebook 21, Excursion C-2, 14 p., '32
83. Chappell, W. M. **Geology of the Wenatchee Quadrangle, Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
84. Coombs, H. A. **Certain Features of the Volcanic Sequence and Geomorphology of Mt. Rainier**  
(Abstract) Geol. Soc. of Am. Bull., XLIV, Pt. 1, p. 148, '33
85. Coombs, H. A. **The Geology of Mt. Rainier National Park**  
Univ. of Wash. Publ. in Geology, III, No. 2, 131-212, '36  
Seattle, Wash.
86. Coombs, H. A. **Volcanic Sequence and Geomorphology of Mt. Rainier**  
(Abstract) Pan-American Geologist, LVII, p. 370, '32
87. Cooper, W. S. **Types of Pacific Coast Dunes**  
(Abstract) Annals Assoc. of Am. Geographers, XXIV, No. 1, p. 46, '34
88. Culver, H. E. **Geology of Washington**  
Bull. No. 32, 70 p., '36  
Washington State Dept. of Conservation and Development, Olympia
89. Culver, H. E. **Index to the Stratigraphy of Washington**  
(ms.), '38  
State College of Washington, Pullman
90. Deiss, C. F. **Paleozoic Stratigraphy in Northwestern Montana**  
Northwest Science, VII, 42-43, '33
91. Fisk, H. N. **The History and Petrography of the Basalts of Oregon**  
Master's Thesis, 132 p., '31  
Lib., University of Oregon, Eugene

92. Fuller, R. E. **The Geomorphology and Volcanic Sequence of Steens Mountain in Southeastern Oregon**  
Univ. of Wash. Publ. in Geology, III, No. 1, 1-130, '31  
Seattle, Wash.
93. Fuller, R. E. **The Petrology and Structural Relationship of the Steens Mountain Volcanic Series of Southeastern Oregon**  
Univ. of Wash. Publ. in Geology, III, No. 1, 1-130, '31  
Seattle, Wash.
94. Gilluly, J. **Replacement Origin of the Albit Granite near Sparta, Oregon**  
U. S. Geol. Survey Prof. Paper No. 175, 65-81, '33  
U. S. Govt. Print. Off., Washington, D. C.
95. Goodspeed, G. E. **Microstructures and Metallization of the Gold-Quartz Veins of Cornucopia, Oregon**  
Economic Geology, XXXI, No. 4, 398-416, '36  
University of Washington, Seattle
96. Hammerand, V. **Geology and Petrology of a Part of Paradise Ridge in Northwestern Idaho**  
Master's Thesis  
Lib., University of Idaho, Moscow
97. Harris, Q. P., Jr. **A Summary of Our Knowledge of Oregon's Igneous Geology**  
Master's Thesis, '35  
Lib., Oregon State College, Corvallis
98. Hite, T. H. **The Origin of Certain Clay Deposits in Latah County, Idaho**  
Master's Thesis, '30  
Lib., University of Idaho, Moscow
99. Hodge, E. T. **Age of Columbia River and Lower Canyon**  
Pan-American Geologist, LVIII, No. 1, p. 70, '32
100. Hodge, E. T. **Geology of the Lower Columbia River**  
Geol. Soc. of Am. Bull., XLIX, 831-930, '38
101. Hodge, E. T. **The History of the Columbia River**  
Geol. Soc. of the Oregon Country, Geol. News Letter, I, No. 1, 1-3, '35
102. Hodge, E. T. **Origin of the Washington Scablands**  
Northwest Science, VIII, No. 3, 4-11, '34
103. Hodge, E. T. **Progress in Oregon Geology Since 1925**  
Northwest Science, VI, 44-53, '32
104. Hodge, E. T. **Volcanic and Seismic History of Oregon**  
Proc. of Fifth Pacific Scientific Cong., Canada, 1933, III, 2451-2460, '34
105. Hoffman, M. G. **Several Phases of Geology of the Moses Coulee Area**  
Northwest Science, VI, 120-123, 129, '32
106. Kirkham, V. R. D. **Abstracts of Important Papers Dealing with the Geology of the Inland Empire and Adjacent Country**  
Northwest Science, I, 30-33, '27
107. Kirkham, V. R. D. **The General Geology of Eastern Washington and Northern Idaho**  
Northwest Science, I, 25-30, '27



108. Larsen, E. S., Hurlbut, C. S., Burgess, C. H., Griggs, D. T. and Buie, B. F. **The Igneous Rocks of the Highwood Mountains of Central Montana**  
Natl. Research Council Rept., p. 288, '35  
Washington, D. C.
109. Livingston, D. C. **A Major Overthrust in Western Idaho and North-eastern Oregon**  
Northwest Science, VI, 31-36, '32
110. Lupher, R. L. **Some Phases of Cenezoic Geology in East-Central Oregon**  
Northwest Science, VI, p. 53, '32
111. Mackay, D. K. **Geological Report of a Part of the Clarno Basin, Wheeler and Wasco Counties, Oregon**  
Bull. No. 5, 8 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland
112. Marshall, R. **Reconnaissance of the Northern Koyukuk Valley, Alaska**  
U. S. Geol. Survey Bull. No. 844, 247-264, '34  
U. S. Govt. Print. Off., Washington, D. C.
113. McKittrick, W. E. **The Geology of the Suplee Paleozoic Series of Central Oregon**  
Master's Thesis, '34  
Lib., Oregon State College, Corvallis
114. Mertie, J. B., Jr. **A Geologic Reconnaissance of the Dennison Fork District, Alaska**  
U. S. Geol. Survey Bull. No. 827, 44 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
115. Mertie, J. B., Jr. **Geology of the Eagle-Circle District, Alaska**  
U. S. Geol. Survey Bull. No. 816, 168 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
116. Mertie, J. B., Jr. **Notes on the Geography and Geology of Lituya Bay, Alaska**  
U. S. Geol. Survey Bull. No. 836, 117-135, '33  
U. S. Govt. Print. Off., Washington, D. C.
117. Mertie, J. B., Jr. **Pre-Cambrian and Paleozoic Vulcanism of Interior Alaska**  
Reports and Papers of 16th Annual Meeting of American Geophysical Union, p. 292, '35
118. Mertie, J. B., Jr. **The Tatonduk-Nation District, Alaska**  
U. S. Geol. Survey Bull. No. 836, 347-443, '33  
U. S. Govt. Print. Off., Washington, D. C.
119. Mertie, J. B., Jr. **The Yukon-Tanana Region, Alaska**  
U. S. Geol. Survey Bull. No. 872, 276 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
120. Moffit, F. H. **The Kantishna District, Alaska**  
U. S. Geol. Survey Bull. No. 836, 301-338, '33  
U. S. Govt. Print. Off., Washington, D. C.
121. Moffit, F. H. **The Suslota Pass District, Upper Copper River Region, Alaska**  
U. S. Geol. Survey Bull. No. 844, 137-162, '33  
U. S. Govt. Print. Off., Washington, D. C.

122. Moore, B. N. and Buwalda, J. P. **The Dalles and Hood River Formations, and the Columbia River Gorge**  
Contributions to Paleontology, Publ. No. 404, 11-26, '30  
Carnegie Institution of Washington, D. C.
123. Oregon State Department of Geology and Mineral Industries. **First Biennial Report, 1937-1938**  
Bull. No. 13, 42 p., '39  
Portland, Oreg.
124. Park, C. F., Jr. **The Girdwood District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 381-424, '33  
U. S. Govt. Print. Off., Washington, D. C.
125. Ray, J. C. **The Willow Creek Gold-Lode District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 165-229, '33  
U. S. Govt. Print. Off., Washington, D. C.
126. Reed, J. C. **The Mount Eielson District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 231-287, '33  
U. S. Govt. Print. Off., Washington, D. C.
127. Richards, R. W. and Waring, G. A. **Progress of Surveys in the Anthracite Ridge District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 1-27, '33  
U. S. Govt. Print. Off., Washington, D. C.
128. Ross, C. P. **Geology and Ore Deposits of the Bayhorse Region, Custer County, Idaho**  
U. S. Geol. Survey Bull. No. 877, 161 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
129. Ross, C. P. **The Geology of Part of the Wallowa Mountains**  
U. S. Geol. Survey Bull. No. 3, 74 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
130. Russell, I. C. **Notes on Geology of Southwest Idaho and Southeast Oregon**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
\*Spokane, Wash.
131. Schenck, H. G. **A Preliminary Report of the Geology of the Eugene Quadrangle, Lane and Linn Counties, Oregon**  
Master's Thesis, '23 (To be reissued for distribution, WPA project)  
Lib., University of Oregon, Eugene
132. Schenk, E. T. **Stratigraphy and Paleontology of the Triassic of the Suplee Region of Central Oregon**  
Master's Thesis, '31  
Lib., University of Oregon, Eugene
133. Sheets, M. M. **Contributions to the Geology of Cascade Mountains in the Vicinity of Mount Hood**  
Master's Thesis, '32  
Lib., University of Oregon, Eugene
134. Smith, W. D. **A Geologic Reconnaissance of the Central Portion of the Wallowa Mountain Region**  
Bull. No. 12, '39  
Oregon State Dept. of Geology and Mineral Industries, Portland

\*Region 11 is composed of Washington, Oregon and Idaho.

135. Smith, W. D. **Geology and Mineral Resources of Lane County, Oregon**  
Bull. No. 11, '39  
Oregon State Dept. of Geology and Mineral Industries, Portland
136. Smith, W. D. **Geology of Oregon Coast Line**  
Pan-American Geologist, LIX, No. 1, 33-44, '33; No. 2, 97-114, '33
137. Smith, W. D. and Swartzlow, C. R. **Mount Mazama: Explosion Versus Collapse**  
Reprint, Geol. Soc. of America Bull., XLVII, '36
138. Thayer, T. P. **Geology of the North Santiam River District, Oregon**  
Geol. Soc. of the Oregon Country News Letter, II, No. 11, 7-9, '36
139. Thayer, T. P. **Structural Relation of Central Willamette Valley to Cascade Mountains**  
Pan-American Geologist, LIX, No. 4, p. 317, '33
140. Tuck, R. **The Moos Pass-Hope District, Kenai Peninsula, Alaska**  
U. S. Geol. Survey Bull. No. 849, 469-530, '33  
U. S. Govt. Print. Off., Washington, D. C.
141. Tullis, E. L. **The Composition and Origin of Certain Commercial Clays in Northern Idaho**  
Master's Thesis, '32  
Lib., University of Idaho, Moscow
142. Twiss, S. N. **General Geology of the Goldendale Area**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
143. Twiss, S. N. **Geology and Earth Materials at the Malad Spring Reservoir Site**  
18 p. (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
144. Twiss, S. N. **Geology and Earth Materials at the Sublette Damsite, Idaho**  
10 p. (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
145. Twiss, S. N. **Geology of the Chehalem Mountain Area**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
146. Twiss, S. N. **Geology of the Kittitas Valley Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
147. Twiss, S. N. **Geology of the Lower Squaw Creek Watershed, Idaho**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
148. Twiss, S. N. **Geology of the Mill Creek Watershed, above Walla Walla, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

149. Twiss, S. N. **Geology of the Palouse Project**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
150. Twiss, S. N. **Geology of the Patit Creek Project (Dayton, Washington)**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
151. Twiss, S. N. **Geology of the Quartz Creek Area, Simnasho, Oregon**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
152. Twiss, S. N. **Geology of the Rock Creek Watershed, Condon, Oregon**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
153. Twiss, S. N. **Geology of the Rockford Worley Area, Idaho**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
154. Twiss, S. N. **Geology of the Wildhorse Project (Athena, Oregon)**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
155. Twiss, S. N. **Origin of the Sediment in the Palouse Snow Banks**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
156. Twiss, S. N. **Progress Report on Geology of the Palouse Project**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
157. United States Department of the Interior, Geological Survey. **Curry District, Alaska**  
Bull. No. 857-C, 42 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
158. United States Department of the Interior, Geological Survey. **Geology of the Chitina Valley and Adjacent Area, Alaska**  
Bull. No. 894, 137 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
159. United States Department of the Interior, Geological Survey. **Geology of the Slana-Tok District, Alaska**  
Bull. No. 904, 54 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
160. United States Department of the Interior, Geological Survey. **Geology of Tonsina District, Alaska**  
Bull. No. 866, 38 p., '35  
U. S. Govt. Print. Off., Washington, D. C.

161. United States Department of the Interior, Geological Survey. **Nushagak District, Alaska**  
Bull. No. 903, 96 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
162. United States Department of the Interior, Geological Survey. **Yukon-Tanana Region, Alaska**  
Bull. No. 872, 276 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
163. Waring, G. A. **Geology of the Anthracite Ridge Coal District, Alaska**  
U. S. Geol. Survey Bull. No. 861, 57 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
164. Weaver, C. T. **Geology and Its Relation to the Occurrence of Oil in Washington**  
Engr. Exp. Sta. Bull. No. 98, '38  
University of Washington, Seattle
165. Weaver, C. E. **Geology of the Coast Ranges of the Western United States**  
(ms.) ( )  
University of Washington, Seattle
166. Weaver, C. E. **Paleontology of the Tertiary Formations in Oregon and Washington** (ms.) ( )  
University of Washington, Dept. of Geology, Seattle
167. Weaver, C. E. **Stratigraphy of the Blakeley Formation in the Vicinity of Bremerton Inlet, Washington**  
Proc. of Geol. Soc. Am., 327-328, '37
168. Weaver, C. E. **Tertiary Stratigraphy of Western Washington and Northwestern Oregon**  
Univ. of Wash. Publ. in Geology, IV, 1-266, '37  
Seattle, Wash.
169. Wells, F. G. and Waters, A. C. **Basaltic Rocks in the Umpqua Formation**  
Geol. Soc. of Am. Bull., XLVI, No. 6, 961-972, '35
170. Wells, F. G. and Waters, A. C. **Basic Igneous Rocks of the Roseburg Quadrangle, Oregon**  
Geol. Soc. of Am. Bull., XLIV, Pt. 1, 107-108, '33
171. Wells, R. C. **Analyses of Rocks and Minerals from the Laboratory of the United States Geological Survey, 1914-36**  
U. S. Geol. Survey Bull. No. 878, 134 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
172. Wilkinson, W. D. **Petrography of the Clarno Formation of Oregon**  
Ph. D. Thesis, '33  
Lib., University of Oregon, Eugene
173. Williams, M. Y. and Bocoek, J. B. **Stratigraphy and Palæontology of the Peace River Valley of British Columbia**  
Rept. of Pacific Great Eastern Railway Lands Survey of Resources, 197-224, '30  
Victoria, B. C.
174. Wilmarth, M. Grace. **Lexicon of Geologic Names of the United States, Including Alaska**  
Pt. 1, A-L, 1-1244; Pt. 2, M-L, 1245-2396, '38  
U. S. Govt. Print. Off., Washington, D. C.

**HISTORY**

175. Bailey, T. A. **Theodore Roosevelt and the Alaskan Boundary Settlement**  
Canadian Hist. Rev., XVIII, p. 123, '37
176. Barry, J. N. **Drowned Forests of the Columbia Gorge**  
Wash. Historical Quarterly, XXVI, No. 2, 119-122, '35
177. Barry, J. N. **First Explorers of the Columbia and the Snake Rivers**  
Geog. Review, XXII, 443-456, '32
178. Bescoby, I. M. L. **Some Aspects of Society in the Cariboo from Its Discovery until 1871**  
B. A. Graduating Essay, '32  
Lib., University of British Columbia, Vancouver
179. Brown, G. D. and Lamb, W. K. **Captain St. Paul of Kamloops**  
British Columbia Hist. Quart., II, 115-128, '39
180. Christensen, O. C. **The Grand Old Man of Oregon; the Life of George H. Williams**  
M. A. Thesis, '37  
Lib., University of Oregon, Eugene
181. Davidson, D. G. **The Demarcation of the Alaska Boundary**  
B. A. Graduating Essay, '33  
Lib., University of British Columbia, Vancouver
182. Deutsch, H. J. **Economic Imperialism in the Early Pacific Northwest, 1780-1805**  
State College of Washington, Pullman, '39
183. Drews, R. A. **Cultural Sequences in the Mid-Columbia Region (ms.)**, '38  
Lib., University of Oregon, Eugene
184. Fitzsimmons, J. **Columbia River Chronicles**  
British Columbia Hist. Quart., I, 87-100, '37
185. Fullerton, J. **My Days Aboard the Beaver**  
British Columbia Hist. Quart., II, 185-232, '38
186. Gibbard, J. E. **Early History of Fraser Valley, 1808-1885**  
M. A. Thesis, '37  
Lib., University of British Columbia, Vancouver
187. Goldie, J. **In Memory of David Douglas**  
British Columbia Hist. Quart., II, 89-94, '38
188. Gomery, D. **A History of Early Vancouver**  
B. A. Graduating Essay, '36  
Lib., University of British Columbia, Vancouver
189. Grant, L. S. **Fort Hall on the Oregon Trail**  
M. A. Thesis, '38  
Lib., University of British Columbia, Vancouver
190. Green, G. **Some Pioneers of Light and Power**  
British Columbia Hist. Quart., II, 145-162, '38
191. Hacker, G. C. **The Methodist Church in British Columbia, 1859-1900**  
B. A. Graduating Essay, '33  
Lib., University of British Columbia, Vancouver

192. Hacking, N. **Early Marine History of British Columbia**  
B. A. Graduating Essay, '34  
Lib., University of British Columbia, Vancouver
193. Harvey, A. G. **The Mystery of Mount Robson**  
British Columbia Hist. Quart., I, 207-226, '37
194. Jacobs, M. C. **Winning Oregon: A Study of the Expansionist Movement**  
261 p., '38  
Caxton Printers, Ltd., Caldwell, Idaho
195. Jensen, M. **The Cession of the Old Northwest**  
Miss. Valley Hist. Rev., XXIII, 27-48, '36
196. Kennedy, M. E. **The History of Presbyterianism in British Columbia, 1861-1935**  
M. A. Thesis, '38  
Lib., University of British Columbia, Vancouver
197. Laing, F. W. **Hudson Bay Company Lands in the Mainland of British Columbia**  
British Columbia Hist. Quart., II, 75-100, '39
198. Lewis, F. S. **The British Attitude to the Oregon Question, 1846**  
M. A. Thesis, '31  
Lib., University of British Columbia, Vancouver
199. Morton, A. S. **The Northwest Company's Columbia Enterprise and David Thompson**  
Canadian Hist. Rev., XVII, 266-288, '36
200. Morton, A. S. **Sid Duncan McGillivray and David Thompson Cross the Rockies in 1801**  
Canadian Hist. Rev., XVIII, 156-162, '37
201. O'Day, M. E. **Early Oregon Press**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
202. Powers, A. and Corning, H. M. **History of Education in Portland**  
373 p. (mimeo.)  
U. S. Works Progress Administration, Washington, D. C.
203. Reid, R. L. **Captain Evans of Cariboo**  
British Columbia Hist. Quart., II, 233-246, '38
204. Reid, R. L. **Early Days at Old Fort Langley**  
British Columbia Hist. Quart., I, 71-85, '37
205. Reid, R. L. (ed.). **To the Fraser River Mines in 1858 (A Letter from S. C. Gardiner)**  
British Columbia Hist. Quart., I, p. 243, '37
206. Reuss, C. F. **The Pioneers of Lincoln County, Washington**  
Pacific Northwest Quart., '39
207. Rickard, T. A. **Indian Participation in the Gold Discoveries**  
British Columbia Hist. Quart., II, 3-18, '38
208. Ross, F. E. **The Retreat of the Hudson Bay Company in the Pacific Northwest**  
Canadian Hist. Rev., XVIII, 262-280, '37
209. Sage, W. N. **Sir James Douglas and British Columbia**  
Toronto Univ. Press, '30

210. Sage, W. N. **Spanish Explorers of the British Columbia Coast**  
Canadian Hist. Rev., XII, 390-406, '31
211. Snowsell, F. **Influence of the Fur Traders and Missionaries on the Opening of the Canadian West**  
B. A. Graduating Essay, '32  
Lib., University of British Columbia, Vancouver
212. Soward, F. H. **President Polk at the Canadian Frontier—A Study of the Oregon Boundary Settlement of 1846**  
Rept. of Canadian Hist. Assoc., 71-81, '30
213. Stacey, C. P. **The Hudson Bay Company and Anglo-American Rivalries during the Oregon Dispute**  
Canadian Hist. Rev., XVIII, 281-300, '37
214. Stewart, C. L. **Why the Spaniards Temporarily Abandoned Nootka Sound in 1789**  
Canadian Hist. Rev., XVII, 168-171, '35
215. Stewart, W. M. **David Thompson's Surveys in the Northwest**  
Canadian Hist. Rev., XVII, 289-303, '36
216. Wagner, H. R. and Newcombe, W. A. **The Journal of Jacinto Caamano**  
British Columbia Hist. Quart., II, 189-265, '38
217. Webster, J. C. and Sage, W. N. **Historical Renaissance in the Maritime Provinces and in British Columbia**  
Canadian Hist. Review, 413-418, '36
218. White, G. B. **A History of the Eastern Fraser Valley since 1885**  
M. A. Thesis, '37  
Lib., University of British Columbia, Vancouver
219. Whiteside, B. M. **Henry Villard and the Development of Oregon**  
M. A. Thesis, '31  
Lib., University of Oregon, Eugene
220. Wrinch, L. A. **Land Policy of the Colony of Vancouver Island**  
M. A. Thesis, '32  
Lib., University of British Columbia, Vancouver
221. Yoder, F. R. **Pioneer Social Adaptation in the Palouse Country of Eastern Washington, 1870-90**  
Research Studies, VI, No. 4, 131-159, '38  
State College of Washington, Pullman

#### PHYSIOGRAPHY

222. Ahrens, T. P. **The Utilization of Aerial Photographs in Mapping and Studying Land Features**  
Land-Use Planning Publ. No. 6, 27 p. (multi.), '36  
\*U. S. Resettlement Administration, Washington, D. C.
223. Coombs, H. A. **The Physiography of Western Washington**  
Yearbook of Assoc. of Pacific Coast Geographers, II, p. 20, '36  
University of Washington, Seattle
224. Ekman, L. C. **The Geography of Occupance in the Skykomish Valley**  
Master's Thesis, '36  
Lib., University of Washington, Seattle

\* Now secured from U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.



225. Freeman, O. W. **The Snake River Canyon**  
Geog. Review, XXVIII, 597-608, '38
226. Freeman, O. W. **Stagnation of the Okanogan Lobe of the Cordilleran Ice Sheet and the Resulting Physiographic Effects**  
Northwest Science, VII, No. 3, 61-66, '33
227. Glover, S. L. **Present Status of Topographic Mapping in Washington**  
Infor. Circ. No. 1, 10 p. (mimeo.), '35  
Washington State Dept. of Conservation and Development, Olympia
228. Jacobs, J. **Columbia Basin Report, Appendix A: Physiography**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
229. Jones, S. B. **Cordilleran Section of the Canada-United States Borderland**  
Geog. Jour., LXXXIX, 439-450, '37
230. Kirkham, V. R. D., Johnson, M. M. and Holm, D. **Origin of Palouse Hills Topography**  
Science, LXXIII, n. s., 207-209, '31
231. Rockie, W. A. **Snow Drifts and Palouse Topography**  
Geog. Review, XXIV, 380-385, '34
232. Smith, W. D. **Special Physiographic Features of Oregon Coast**  
Pan-American Geologist, LIX, No. 3, 190-206, '33; No. 4, 241-258, '33
233. Thomson, J. P. **Palouse Topography and Its Relation to Stream History**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
234. Victor, E. **Some Effects of Cultivation upon Stream History and upon the Topography of the Palouse Region**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
235. Wanser, H. M. **Physiographic and Climatic Features of the Walla Walla River Watershed**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

#### RECLAMATION

236. Tiffany, R. K. **Reclamation—A National as well as Regional Benefit**  
12 p. (mimeo.), '36  
Washington State Planning Council, Olympia
237. Weeks, D. **Reclamation Policies in the Pacific States**  
Jour. of Farm Econ., XIII, 246-258, '31

#### RECREATION

238. Clatsop County, Oregon, Planning Commission. **Proposed Recreational Area (Ridge Road Project)**  
Astoria, Oreg.

239. Grebe, G. W. **Recreational Problems in a Regional Land Program**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 9-17, '37  
Portland, Oreg.
240. Hayner, N. S. **The Auto Camp as a New Type of Hotel**  
Sociology and Social Research, XV, No. 4, 365-372, '31
241. Hayner, N. S. **Auto Camps in the Evergreen Playground**  
Social Forces, IX, No. 2, 256-266, '30
242. Idaho State Planning Board. **County Inventory (Section on Recreation)**  
107 p. (mimeo.), '36  
Boise, Idaho
243. Idaho State Planning Board. **First Statewide Recreation Conference, August 30-31, 1936, Hailey, Idaho**  
68 p. (multi.), '36  
Boise, Idaho
244. Idaho State Planning Board. **Preliminary Land Use for Wild Lands of Idaho**  
Boise, Idaho, '36
245. Idaho State Planning Board. **Use of Idaho's Recreational Resources; Preliminary Inventory and Suggested Procedure**  
15 p. (mimeo.), '36  
Boise, Idaho
246. King County, Washington, Planning Commission. **Report of the Recreational and Park Resources of King County, Public and Private**  
Seattle, Wash.
247. Merriam, J. C. **Human Values in Natural Resources**  
Natl. Parks Bull., XIII, 5-6, '36
248. Oregon Park Commission and State Planning Board. **Oregon's Parks, Recreational Areas and Facilities. Vol. I. Present Development**  
WPA Project A. P. N. 165-94-6063 and O. P. 465-94-3-99, '38  
Portland, Oreg.
249. Oregon State Planning Board. **Report on Development of the Lower Rogue River as a Recreation Area**  
6 p. (ms.), '35  
Portland, Oreg.
250. Oregon State Planning Board. **A Study of Parks, Parkways and Recreational Areas of Oregon**  
167 p. (mimeo.), '38  
Portland, Oreg.
251. Pacific Northwest Regional Planning Commission. **Columbia Basin Report, Appendix T: Recreational Resources**  
Portland, Oreg., '35
252. Pacific Northwest Regional Planning Commission. **Columbia Gorge Conservation and Development of Scenic and Recreational Resources**  
119 p., '37  
Portland, Oreg.
253. Rutledge, R. H. **Management of Idaho Wild Lands**  
Statewide (Idaho) Recreation Conf., Rept., 49-60, '36  
Idaho State Planning Board, Boise

- 254. Tobias, Nelle. **Recreation as an Idaho Industry**  
5 p. (multi.), '36  
Idaho State Planning Board, Boise
- 255. United States Department of the Interior, National Park Service.  
**Recreational Opportunities Available to Washington**  
57 p. (lith.), '35  
Washington, D. C.
- 256. United States Works Progress Administration, Division of Education  
and Recreation. **Recreation: State of Washington**  
98 p. (mimeo.), '37  
Olympia, Wash.

#### REGIONAL SURVEYS—GEOGRAPHIC AND ECONOMIC

- 257. Appleton, J. B. **The Hinterland of the Pacific Coast Ports**  
Proc. of Social Science Research Conf. of the Pacific Coast, San  
Francisco, '37
- 258. Baylor, J. W. **Geography of the Glaciated North Idaho Panhandle**  
Econ. Geog., XI, 191-205, '35
- 259. Bessey, R. F. **Economic Highlights of the Pacific Northwest Region**  
Proc. of Am. Soc. of Civil Engineers, Oregon Sec., '38
- 260. Demmery, J. **Economic Conditions in the Pacific Northwest**  
Am. Econ. Review, Supp., March, '31
- 261. Deutsch, H. J. **The Pacific Northwest and the Foreign Capitalist,**  
1875-1895  
(ms.), '38  
Prof. Hicks, University of Wisconsin, Madison
- 262. Dorisy, C. E. **Economic Development of Washington**  
12 p. (mimeo.), '35  
Washington State Planning Council, Olympia
- 263. Freeman, O. W. **Geologic and Geographic Inter-Relations in Wash-**  
**ington**  
Pan-American Geologist, LXVI, No. 5, 347-362, '36
- 264. Freeman, O. W. **Human Relations to Northwest Geology**  
Scientific Monthly, XLVI, p. 150, 156, '38
- 265. Henry, H. H. **Land Resources**  
Pacific Northwest Regional Planning Comm. Consultant's Rept.  
1934-35, 48-64 (mimeo.), '35  
Portland, Oreg.
- 266. Idaho State Planning Board. **Report on the Sawtooth Primitive Area**  
17 p. (mimeo.), '37  
Boise, Idaho
- 267. James, H. **The Pacific Northwest and Some National Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 38-39, '37  
Portland, Oreg.
- 268. King, W. A. and Fullenwider, E. D. **The Pacific Northwest; Its Re-**  
**sources and Industries**  
390 p., '38  
South-Western Publishing Co., San Francisco, Calif.

269. Martin, R. R. **The Inland Empire of the Pacific Northwest; A Regional Study**  
Ph. D. Thesis, '35  
Lib., University of Washington, Seattle
270. McMillion, O. M. **Alaska, The Yukon Basin: Present and Future**  
Jour. of Geog., XXXVII, 64 ff., '38
271. Merriam, W. B. **Geonomics of the Rogue River Valley**  
Master's Thesis, '33  
Lib., University of Washington, Seattle
272. Ormsby, M. A. **A Study of the Okanogan Valley of British Columbia**  
M. A. Thesis, '31  
Lib., University of British Columbia, Vancouver, B. C.
273. Portland, Oregon, Chamber of Commerce. **Oregon Economic Problems**  
'35-'36
274. Portland, Oregon, Chamber of Commerce. **The Resources of Oregon**  
'36-'37
275. Portland, Oregon, Chamber of Commerce. **Study of Oregon Agriculture and Industry**  
'36-'37
276. Sage, W. N. **Geographical and Cultural Aspects of the Five Canadas**  
Proc. of Canadian Hist. Assoc., 28-34, '37
277. St. John, H. **A Biological Survey of the Inland Empire**  
Northwest Science, III, 49-51, '29
278. Seeman, A. L. **Economic Adjustments on the Olympic Peninsula**  
Econ. Geog., VIII, 299-310, '32
279. Seeman, A. L. **Geonomics of the Columbia Basin**  
Annals Assoc. of Am. Geographers, XXII, '32
280. Seeman, A. L. **Regions and Resources of Alaska**  
Econ. Geog., XIII, 334-346, '37
281. Seeman, A. L. and Tennant, H. E. **Changing Frontier in the Columbia Basin**  
Econ. Geog., XIV, 419-427, '38
282. Shearer, M. H. **The Matanuska Valley of Southern Alaska**  
Jour. of Geog., XXXV, 186 ff., '36
283. Smith, W. D. **Geographical and Geological Features of Oregon**  
Oregon Blue Book, 124-126, '35-'36
284. Smith, W. D. **Geological and Geographical Elements in the Willamette Valley Project**  
Commonwealth Review, XX, 447-465, '38  
University of Oregon Publications, Eugene
285. Smith, W. D. **Physical and Economic Geography of Oregon**  
Published serially in Commonwealth Review, '24-'28  
University of Oregon Publications, Eugene
286. Stafford, H. W. **A Regional Geographical Study of Guano Valley, Oregon**  
Master's Thesis, '35  
Lib., University of Oregon, Eugene

287. Tennant, H. E. **The Columbia Basin Project**  
M. A. Thesis, '38  
Lib., University of Washington, Seattle
288. United States Congress, House. **Alaska—Its Resources and Development**  
Washington, D. C., '37
289. United States National Resources Committee. **Definition and Regionality of Pacific Northwest**  
Regional Planning, Pt. I, Pacific Northwest, Sec. III, 96-129, '36  
U. S. Govt. Print. Off., Washington, D. C.
290. United States National Resources Committee. **The Region: Its Resources, Problems, and Needs; and Its Future**  
Regional Planning, Pt. I, Pacific Northwest, Sec. II, 32-94, '36  
U. S. Govt. Print. Off., Washington, D. C.
291. United States National Resources Committee. **Regional Factors in National Planning**  
U. S. Govt. Print. Off., Washington, D. C., '35
292. Washington State Department of Conservation and Development, Division of Natural Resources. **Report of Natural Resources Survey from October 1, 1933, to March 1, 1935**  
30 p., '35  
Olympia, Wash.
293. Williams, M. Y. **Pacific Great Eastern Survey of Resources**  
(ms.), '31  
Provincial Government, Victoria, B. C.

#### VEGETATION: NATURAL

294. Benson, G. T. **The Trees and Shrubs of Western Oregon**  
Stanford University Contribution to Dudley Herbarium, II, 170 p., '30
295. Daubenmire, R. F. **Contributions to the Ecology of the Big Bend Area of Washington. I. Forage Resources of the Scabland Prairies and the Effect of Grazing upon Them**  
Northwest Science, XII, '39
296. Daubenmire, R. F. **Succession Due to Grazing in the Agropyron Bunchgrass Prairie of Southeastern Washington**  
(ms.), '39  
University of Idaho, Botany Dept., Moscow
297. Dayton, W. A. **Important Western Browse Plants**  
(ms.), '31  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
298. Forsling, C. L. **Vegetative Aspects of Erosion Control in the West**  
7 p. (mimeo.), '37  
U. S. Soil Conservation Service, Washington, D. C.
299. Gilkey, H. M. and Powell, G. M. **Handbook of Northwest Flowering Plants**  
407 p., '36  
Metropolitan Press, Portland, Oreg.

300. Green, J. **Composition of Montana Feeds and Forages**  
Agr. Exp. Sta. Bull. No. 283, 23 p., '34  
Montana State College, Bozeman
301. Hafenrichter, A. L. **Promising Grasses and Legumes from the Native Vegetation of the Pacific Northwest**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
302. Haskin, L. L. **Wild Flowers of the Pacific Coast**  
407 p., '34  
Metropolitan Press, Portland, Oreg.
303. Hitchcock, C. L. **A Key to the Grasses of Montana Based upon Vegetative Characters**  
22 p. (plano.), '36  
John S. Swift Co., St. Louis, Mo.
304. Jones, G. N. **A Botanical Survey of the Olympic Peninsula, Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
305. Kienholz, R. **The Vegetation of a Lava-Formed Lake in the Cascade Mountains**  
Am. Jour. of Botany, XVIII, 641-648, '36
306. Pechanec, J. F. **The Identification of Grasses on the Upper Snake River Plains by Their Vegetative Characters**  
Ecology, XVII, 479-490, '36
307. Pechanec, J. F., Pickford, G. D. and Stewart, G. **The Effects of the 1934 Drought on Native Vegetation of the Upper Snake River Plains, Idaho**  
Ecology, XVIII, 490-505, '37
308. Rollins, R. C. **The Genus *Arabis* L in the Pacific Northwest**  
Research Studies, IV, No. 1, 1-52, '36  
State College of Washington, Pullman
309. Stoddart, L. A. **Sagebrush**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries, Pullman, Wash.
310. Thalman, R. R. **When Grass Comes Back**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

#### **WILDLIFE**

311. Cliff, E. P. **Changes in the Status of Wildlife and Its Habitat in the Northwest**  
Forest Club Quarterly, IX, No. 3, 25-30, '35-'36
312. Compton, L. V. **Wildlife and the Range**  
Soil Conservation, IV, No. 9, '39
313. Coopey, R. W. **A Census of Water Bird Life on Upper Klamath Lake**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis

314. Cramer, A. **Organizing for Wildlife Management**  
9 p. (mimeo.), '37  
U. S. Forest Service, Region 1, Bozeman, Mont.
315. Crawford, E. E. **A Study of the Food Habits of Waterfowl in the Willamette Valley**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis
316. Dixon, J. S. **Birds and Mammals of Mount McKinley National Park, Alaska**  
Fauna Series No. 3, 1-235, '38  
U. S. Govt. Print. Off., Washington, D. C.
317. Engler, C. H. **A Preliminary Report on the Birds of Moscow, Idaho, and Vicinity**  
Master's Thesis, '38  
Lib., University of Idaho, Moscow
318. Grebe, G. W. **Wildlife Conservation and Restoration**  
Rept. of Statewide (Idaho) Recreation Conference, 3-10, '36  
Idaho State Planning Board, Boise
319. Idaho Legislature, Senate. **Senate Joint Memorial No. 8 Regarding Wildlife Conservation**  
Cong. Record, 74th Cong., 1st sess., LXXIX, No. 33, 2271-2272  
U. S. Govt. Print. Off., Washington, D. C.
320. Knowles, Mrs. J. E. **Montana Slaughters Antelope**  
Nature Magazine, XXVIII, p. 362, '36
321. Leffingwell, Anne M. **Food Habits of Some Game Birds of the Pacific Northwest**  
Northwest Science, V, 7-9, '31
322. Pacific Northwest Regional Planning Conference. **Report of Program and Policies Committee (Sections on "Wildlife and Recreation," "Fisheries and Wildlife")**  
25 p. (mimeo.), '37  
Portland, Oreg.
323. Rush, W. M. **Wildlife—Economic and Social Problems**  
Proc. of Pacific Northwest Regional Planning Conf., III, 60-61, '36  
Portland, Oreg.
324. Seeman, A. L. **Development of Reindeer Activities in Alaska**  
Econ. Geog., IX, 292-302, '33
325. Sexton, V. L. **Oregon's Wildlife Resources**  
126 p. (mimeo.), '36  
Oregon State Planning Board, Portland
326. Smith, R. T. **Report on the Puget Sound Otter Trawl Investigations**  
Biol. Rept. No. 36B, 1-61, '36  
Wash. State Fisheries Dept., Seattle
327. United States Department of Agriculture, Biological Survey. **Alaska-Yukon Caribou**  
North American Fauna Series No. 54, 93 p., '35  
U. S. Govt. Print. Off., Washington, D. C.
328. United States Department of Commerce, Bureau of Fisheries. **Fur-Seal Industry of Pribilof Islands, Alaska**  
Fisheries Econ. Circ. No. 71, 15 p., '30  
U. S. Govt. Print. Off., Washington, D. C.

329. Washington State Planning Council. **Report of the Committee on Wildlife and Game**  
5 p. (mimeo.), '34  
Olympia, Wash.
330. Washington State Planning Council, Wildlife and Game Division. **Statements of Wildlife and Game Problems**  
15 p. (mimeo.), '37  
Olympia, Washington
331. Young, V. A. **The Carrying Capacity of Big Game Range**  
Jour. of Wildlife Management, II, No. 3, 131-134, '38



## II. AGRICULTURE

In the Pacific Northwest region, consisting of Oregon, Washington, Idaho, and Montana, more than a fourth of the people live on farms and are directly supported by agriculture. A large part of the non-farm population is engaged in the marketing, transporting, and processing of agricultural products and in supplying goods and services to those engaged in agriculture. Either directly or indirectly, then, the major part of the population in the region is dependent upon agriculture for its livelihood.

It is appropriate, therefore, that research in agriculture has received major emphasis in this region. Comprehensive programs of fundamental and applied agricultural research have been carried on for at least four or five decades in each state in the region. Undoubtedly more research has been accomplished and is under way in this than in any other field.

The field of agricultural research is very broad and encompasses a large number of more specialized fields. The direct application of agricultural methods and techniques is studied in subject matter fields such as agronomy, horticulture, animal husbandry, and soils. Then there is research in physical and biological sciences as they pertain to agriculture, for example in agricultural chemistry, botany, entomology, bacteriology, plant pathology, and veterinary medicine. A third group of fields in which much agricultural research is conducted is in the social sciences, especially economics, political science, and sociology, in their application to the production and marketing of farm products and the problems of rural life. Within each of these broader fields are numerous still more specialized divisions, for example in economics such fields as marketing, farm management, land utilization, cooperation, land tenure, and agricultural prices.

The broad objective of all research in agriculture is to improve not only the economic and social welfare of those directly engaged in agriculture, but also the economic and social contributions of agriculture to the entire national economy. Because of the importance to the entire population of an adequate and efficiently produced supply of agricultural products and of a desirable type of rural population and economy, research in this field is a matter of general public concern. The more detailed objectives soon become very diverse in each of the many branches of the field. One of the very important considerations in connection with much of the research in the entire field is conservation of agricultural resources.

Agricultural research has been and is being carried on chiefly by the State Agricultural Experiment Stations and by the various bureaus and agencies of the United States Department of Agriculture including the Forest Service which makes range investigations and other land-use studies. Certain other agencies, however, are responsible for important contributions, for example the Farm Credit Administration, and the Bureau of Reclama-

tion and the Division of Grazing in the United States Department of the Interior.

The section of this bibliography pertaining to agriculture is neither complete nor representative of the field. For several branches of the field, the references included are only a fragmentary part of the available information, and several important branches are not covered at all, for example bacteriology and veterinary medicine. The reason for this is that the references included are chiefly those submitted by scattered workers in the field, a comprehensive and systematic accumulation of references to all available information not being feasible at this time. They are presented with the thought that, even though incomplete, they will be of interest and helpful to many people who do not have convenient access to more complete sources of references to agricultural information such as the libraries of the agricultural colleges. Those requiring more complete references on any particular phase should consult their State Agricultural College.

During the period covered by this bibliography (since 1930) agricultural research in certain fields has become directed more definitely toward planning, and planning for specific action programs has become in some instances an integral part of the research work. This has been a natural development because of the necessity of meeting problems and maladjustments resulting from the post-World-War period and the recent general economic depression. Other factors contributing to the increased need for planning and action programs in agriculture have been the passing of a frontier of new agricultural land in this country and the growing realization of the waste and depletion of our land resources in many places through soil erosion resulting from improper land use and farming methods.

The Soil Conservation Service of the United States Department of Agriculture is one of the more recently established agencies concerned not only with research but with planning and action activities directed toward conservation of our land resources. The section of references pertaining to Soil Erosion and Conservation is one of those that are more complete and gives some idea of recent activities in this field.

In several branches of the agricultural field there is need for further and more specific direction of research toward needed remedial action programs. This does not in any sense imply, however, that needed long-time fundamental research in any branch should be neglected.

The sections relating to Land Utilization and Land Classification also are among those that are more complete. These fields are of particular interest in connection with planning for agriculture as well as over-all planning for the Pacific Northwest Region. Type-of-farming, land-classification, and land-use studies in the region in recent years have made a considerable start toward providing a basis for sound agricultural programs for the region, but are still only fragmentary in relation to the field to be covered. A fundamental need in this connection is more complete inventories of

features of the agriculture of the region, such as soils, topography, climate, hydrology, land cover, and economic and social factors pertaining to land use.

Perhaps because agricultural research has been carried on chiefly by separate State institutions and by Federal agencies in cooperation with such institutions, relatively little of it has been conducted from a regional standpoint. There is need in certain fields for more of a regional approach, for example, in lines of work that bear upon land settlement and development, the balancing of agricultural production, marketing of agricultural products, and farm-labor problems. Progress in this direction is being made and doubtless will continue through regional organization of agencies such as the Bureau of Agricultural Economics, the Soil Conservation Service, and the Farm Security Administration; and the regional coordination of planning activities through the Pacific Northwest Regional Planning Commission.

H. E. SELBY.

Senior Agricultural Economist  
Bureau of Agricultural Economics  
U. S. Department of Agriculture

---

## II. AGRICULTURE

### GENERAL AGRICULTURE

- 332. Benton County, Oregon, Agricultural Outlook Conference. **Proceedings of Agricultural Outlook Conference**  
31 p., '36  
Corvallis, Oreg.
- 333. Besse, R. S. and Burtner, J. C. **Special Agricultural Investigations. A Preliminary Report of Research Authorized by the Oregon Legislature, 1937 Session**  
Agr. Exp. Sta. Circ. No. 130, '38  
Oregon State College, Corvallis
- 334. Carpenter, H. V. **Columbia Basin Report, Appendix L, Agriculture**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
- 335. Clatsop County, Oregon, Agricultural Outlook Conference. **Proceedings of Agricultural Outlook Conference**  
31 p., '36  
Astoria, Oreg.
- 336. Coos County, Oregon, Agricultural Outlook Conference. **Proceedings of Agricultural Outlook Conference**  
34 p., '36  
Coquille, Oreg.
- 337. Dexter, J. (ed.). **Recommended Farm Practices for Northern Montana**  
Ext. Serv. Bull. No. 108, '30  
Montana State College, Bozeman

338. Douglas County, Oregon, Agricultural Outlook Conference. **Proceedings of Agricultural Outlook Conference**  
31 p., '36  
Portland, Oreg.
339. Eastern Oregon Wheat League. **1938 Agricultural Conservation Program**  
Cong. Record, 75th Cong., 2d sess., LXXXII, No. 27, 2370-2371, '37  
U. S. Govt. Print. Off., Washington, D. C.
340. Farrell, G. E. **The Agricultural Conservation Program**  
Proc. of Western Farm Economics Assoc., 180-182, '36
341. Iddings, E. J., Linfield, F. B., Schoenfeld, W. A. and Johnson, E. C. **Regional Agricultural Adjustment; Recent Planning Research by Agricultural Experiment Stations of Region**  
Proc. of Pacific Northwest Regional Planning Conf., III, 39-49, '36  
Portland, Oreg.
342. McKinley, C. **Organization of the AAA in Oregon (The Agricultural Conservation Branch of the AAA) (Confidential)**  
(ms.), '38  
Reed College, Portland, Oreg.
343. Montana State College, Agricultural Experiment Station. **Reshaping Montana's Agriculture; The Forty-First Annual Report, July 1, 1933 to June 30, 1934**  
83 p.  
Bozeman, Mont.
344. Rutledge, R. H. **Interrelations of Forestry with Grazing and Agriculture**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 45-50, '37  
Portland, Oreg.
345. Schoenfeld, W. A. **Agriculture: Oregon**  
Proc. of Pacific Northwest Regional Planning Conf., p. 43, '36  
Portland, Oreg.
346. Severance, G., Hunter, B. and Eke, P. A. **Farming Systems for Eastern Washington and Northern Idaho**  
Agr. Exp. Sta. Bull. No. 244, 83 p., '30  
State College of Washington, Pullman
347. Shattuck, O. and Hutchison, R. E. **Progress Report of the Irrigated Eighty-Acre Demonstration Farm Unit of the Harney Branch Experiment Station, 1927-1930**  
Agr. Exp. Sta. Bull. No. 270, 38 p., '30  
Oregon State College, Corvallis
348. Slagsvold, P. L. **Agriculture on the Huntley Project**  
Agr. Exp. Sta. Bull. No. 342, '37  
Montana State College, Bozeman
349. Slagsvold, P. L. and Mathews, J. D. **Agriculture on the Flathead Project**  
Agr. Exp. Sta. Bull. No. 357, '38  
Montana State College, Bozeman
350. Starch, E. A. **Experiments in the Use of Large-Scale Machinery under Montana Conditions**  
Jour. of Farm Econ., XIV, 336-340, '32

351. Starch, E. A. **Readjusting Montana's Agriculture: VII. Montana's Dry-Land Agriculture**  
Agr. Exp. Sta. Bull. No. 318, 19 p., '36  
Montana State College, Bozeman
352. Stratton, O. S. **A Study of Early Oregon Agriculture**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
353. Twiss, S. N. **History of Agriculture in the Athena, Oregon, Region**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Spokane, Wash.
354. United States Department of Agriculture. **Agricultural Investigations at the Huntley, Montana, Field Station, 1927-1930**  
Agr. Tech. Bull. No. 353, 50 p., '33  
U. S. Govt. Print. Off., Washington, D. C.
355. United States Department of Agriculture, Agricultural Adjustment Administration. **Agricultural Conservation in Washington**  
U. S. Dept. of Agr., Agr. Adj. Admin. Reg. Infor. Series, WR Leaflet No. 102, '37  
Washington, D. C.
356. Washington County, Oregon, Agricultural Outlook Conference. **Proceedings of Agricultural Outlook Conference**  
67 p., '36  
Hillsboro, Oreg.

#### AGRICULTURAL ECONOMICS

357. Baldock, R. H. **Relation between Transportation Facilities, Stable Rural Populations and Land Utilization**  
Proc. of Pacific Northwest Regional Planning Conf., III, 73-75, '36  
Portland, Oreg.
358. Ballard, F. L. **Cooperating for Oregon Rural Betterment**  
Ext. Serv. Bull. No. 514, '38  
Oregon State College, Corvallis
359. Bean, L. H. **Relation between Production, Prices, and Acreage of Potatoes in Idaho**  
Abstracts of Addresses, Pacific Northwest Potato Committee Meetings at Rupert, Idaho Falls, Burley, Jerome, Eden, and Caldwell, week of Feb. 23, 1931  
6 p. (mimeo.), '31  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Division of Statistical and Historical Research, Washington, D. C.
360. Bell, E. J., Jr. **Current Problems of Montana Farmers' Elevators**  
Agr. Exp. Sta. Bull. No. 267, 56 p., '30  
Oregon State College, Corvallis
361. Bonney, Zaidée E. **A Study of the Use of Frozen-Pack Peas by the Home Consumer**  
(ms.), '36  
Lib., Oregon State College, Corvallis
362. Borum, C. J. **Fruit Tree and Berry Acreage Census**  
WPA—O. P. 465-94-3-60, W. P. 1794  
U. S. Dept. of Agriculture, Bureau of Crop Estimates, Portland, Oreg.

363. Borum, C. J. **Study of Agricultural Price Series**  
WPA—O. P. 465-94-3-60, W. P. 1794  
U. S. Dept. of Agriculture, Bureau of Crop Estimates, Portland,  
Oreg.
364. Breithaupt, L. **Agricultural Income in Oregon, Sources and Trends**  
Ext. Serv. Circ. No. 300, 8 p. (lith.), '37  
Oregon State College, Corvallis
365. Breithaupt, L. **Carlot Shipments of Fruits and Vegetables in Oregon  
by Point of Origin, 1925-1935**  
Ext. Serv. Circ. No. 299, 23 p. (mimeo.), '36  
Oregon State College, Corvallis
366. Breithaupt, L. **Carlot Unloads of Fruits and Vegetables from Oregon  
in Sixty-Six Markets, 1925-1935**  
Ext. Serv. Circ. No. 301, 17 p. (mimeo.), '36  
Oregon State College, Corvallis
367. Breithaupt, L. **Dried Fruit Shipments from Oregon by Water, 1927-  
1936**  
Ext. Serv. Circ. No. 305, 7 p. (mimeo.), '37  
Oregon State College, Corvallis
368. Breithaupt, L., Deremiah, J. W. and Horrell, E. **Relative Average  
Prices Received by Farmers in Oregon, by Districts and Counties,  
1926-1935**  
Agr. Exp. Sta. Circ. of Infor. No. 161, 8 p. (lith.), '36  
Oregon State College, Corvallis
369. Brown, H. **Relation of Tenancy to Type of Farming on the Minidoka  
Irrigation Project**  
Thesis, '33  
Lib., University of Idaho, Moscow
370. Burrier, A. S. and Gorton, W. W. **An Economic Study of Dry-Land  
Wheat Farming in the Columbia Basin, Oregon**  
Agr. Exp. Sta. Bull. (mimeo.), '37  
Oregon State College, Corvallis
371. Burrier, A. S., Knowlton, F. L. and Selby, H. E. **Cost of Producing  
Turkey Hatching Eggs in Oregon**  
Agr. Exp. Sta. Bull. No. 333, '34  
Oregon State College, Corvallis
372. Burrier, A. S. and Schuster, C. E. **Cost and Efficiency in the Filbert  
Enterprise in Oregon**  
Agr. Exp. Sta. Bull. No. 351, 60 p., '37  
Oregon State College, Corvallis
373. Burrier, A. S. and Schuster, C. E. **Costs and Practices in Establish-  
ing Walnut Orchards in Oregon**  
Agr. Exp. Sta. Bull. No. 315, 50 p., '33  
Oregon State College, Corvallis
374. Chesnut, L. C. **Hop Study**  
(ms.), '35  
Farm Credit Administration, Spokane, Wash.
375. Chesnut, L. C. **Wheat Study—As Related to Loaning Policy in the  
Twelfth Federal Land Bank District**  
(ms.), '35  
Farm Credit Administration, Spokane, Wash.

376. Clackamas County, Oregon, Planning Board. **Farm Economics Survey**  
Oregon City, Oreg.
377. Clatsop County, Oregon, Planning Commission. **County Owned Property in City of Seaside**  
Astoria, Oreg.
378. Clawson, M. **Effect of Changing Prices upon Income to Land from Cattle and Sheep Ranching, as Illustrated by Data for Montana, 1910-1936**  
(mimeo.), '39  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Washington, D. C.
379. Comer, W. L. and Chesnut, L. C. **Fruit Price Data**  
(ms.), '38  
Farm Credit Administration, Spokane, Wash.
380. Coos County, Oregon, Planning Commission. **Inventory of County Owned Lands**  
Coquille, Oreg.
381. Crook County, Oregon, Planning Commission. **Land Ownership Record**  
Prineville, Oreg.
382. Curry County, Oregon, Planning Commission. **Land Ownership Record**  
Gold Beach, Oreg.
383. Douglas County, Oregon, Planning Commission. **Inventory of County Owned Lands, Rural**  
Roseburg, Oreg.
384. Dreesen, W. H. **An Economic Study of the Rye Grass Industry in Oregon**  
(ms.), '33  
Oregon State College, Corvallis
385. Dreesen, W. H. **Rural Tax Delinquency in Oregon**  
(ms.), '39  
Oregon State College, Corvallis
386. Dummer, E. F. **Financing Cooperative Marketing of Farm Products in Washington**  
Agr. Exp. Sta. Bull. No. 322, 63 p., '35  
State College of Washington, Pullman
387. Dummer, E. F. **The Meaning, Possibilities and Limitations of Co-operative Marketing**  
Agr. Exp. Sta. Popular Bull. No. 154, '37  
State College of Washington, Pullman
388. Dummer, E. F. **Recent Studies in Apple Economics**  
Proc. of Washington State Hort. Assoc., XXVI, 134-144, '30
389. Eke, P. A. **Trends in the Agriculture of the Pacific Northwest**  
Proc. of Pacific Coast Economics Assoc., 21-26, '30
390. Ellison, J. W. **An Historical Approach to Marketing Problems of the Apple Industry**  
First prize award in essay contest sponsored by the First National Bank of Portland, Oreg., '36

391. **Farm Credit Administration of Spokane, Washington. Loan Experience in Central Montana**  
(ms.), '37
392. **Food Research Institute. Wheat Studies: Pacific Northwest Wheat X, No. 10, '34**  
Stanford University, California
393. **Fryer, L. N. Relation of the Productivity of Certain Soil Areas in the Willamette Valley to the Internal Organization of Farms**  
Master's Thesis, '36  
Oregon State College, Corvallis
394. **Gorton, W. W. An Analysis of Methods and Procedure in Determining Pasture Costs**  
Master's Thesis, '36  
Oregon State College, Corvallis
395. **Gould, J. E. The Transportation and Marketing of Canned Agricultural Products**  
Rept. to Port of Seattle Commission, Seattle, Wash.
396. **Graham, T. E. Credit Unions in Washington**  
21 p. (mimeo.), '38  
Washington State Planning Council, Olympia
397. **Gusler, G. Land Surplus Saps up Farm Profits**  
Oregon Farmer, LIII, '31
398. **Hampson, C. C. Apple Prices Received by Washington Growers**  
Agr. Exp. Sta. Bull. No. 326, 59 p., '36  
State College of Washington, Pullman
399. **Hampson, C. C. Cost of Shipping Point Marketing Services for Apples in Washington**  
Agr. Exp. Sta. Bull. No. 312, 25 p., '35  
State College of Washington, Pullman
400. **Hampson, C. C. Indexes of Prices Received by Washington Farmers**  
Agr. Exp. Sta. Bull. No. 328, 29 p., '36  
State College of Washington, Pullman
401. **Hampson, C. C. Trends in the Apple Industry**  
Agr. Exp. Sta. Bull. No. 277, 108 p., '33  
State College of Washington, Pullman
402. **Hampson, C. C. and Dummeier, E. F. Washington Apple Prices and Costs of Shipping Point Marketing Services**  
Agr. Exp. Sta. Bull. No. 242, 111 p., '30  
State College of Washington, Pullman
403. **Hampson, C. C. and Landerholm, E. F. Cost of Producing Pears in Washington**  
Agr. Exp. Sta. Bull. No. 307, 24 p., '35  
State College of Washington, Pullman
404. **Hartman, H. A Peculiar Freezing Trouble of Pears in Cold Storage**  
Agr. Exp. Sta. Bull. No. 282, '31  
Oregon State College, Corvallis
405. **Hill, L. M. Financing of Cooperative Associations in the State of Washington**  
Master's Thesis, '33  
State College of Washington, Pullman



406. Hollands, H. F. **Washington Pears on the New York and Chicago Fruit Auctions**  
Agr. Exp. Sta. Bull. No. 361, 35 p., '38  
State College of Washington, Pullman
407. Hudson, G. T. **Preliminary Survey of Cooperative Marketing in Idaho**  
Master's Thesis, '33  
Lib., University of Idaho, Moscow
408. Idaho, University of, Agricultural Experiment Station. **The Farming Business in Idaho**  
Bull. No. 151, '37  
Moscow, Idaho
409. Idaho, University of, Agricultural Experiment Station. **Influences of Tenancy on Types of Farming and Agricultural Income by Soil Types, Minidoka Irrigation Project**  
Bull. No. 222, '37  
Moscow, Idaho
410. Idaho, University of, Agricultural Experiment Station. **Planning the Farm Business for the Year Ahead**  
Bull. No. 188, '37  
Moscow, Idaho
411. Idaho, University of, Agricultural Experiment Station, Department of Agricultural Economics. **Tables and Maps Giving Data on Land Classification, Assessed Valuation of Farm Land, Wheat Acreage and Production, Public and Private Service Facilities, Proportion of Agricultural Land, etc., for 14 Counties in Idaho**  
WPA 65-92-1541  
Moscow, Idaho
412. Jesness, O. B. **Agricultural Adjustment in Relation to Grain and Dairy Production**  
American Institute of Cooperation Rept., 722-731, '36
413. Johnson, N. W. **Economic Aspects of Apple Production in Washington**  
Agr. Exp. Sta. Bull. No. 239, '30  
State College of Washington, Pullman
414. Johnson, N. W. and Saunderson, M. H. **Types of Farming in Montana: Part I. Physical Environment and Economic Factors Affecting Montana Agriculture**  
Agr. Exp. Sta. Bull. No. 328, 79 p., '36  
Montana State College, Bozeman
415. Johnson, S. E. **Economic Analysis of Production Problems on the Flathead Irrigation Project**  
Agr. Exp. Sta. Bull. No. 237, 88 p., '30  
Montana State College, Bozeman
416. Johnson, S. E. **Organization, Feeding Methods and Other Practices Affecting Returns on Irrigated Dairy Farms in Western Montana**  
Agr. Exp. Sta. Bull. No. 265, '32  
Montana State College, Bozeman
417. Johnson, S. E. **Present and Prospective Development of Farming Systems in Western Montana**  
Agr. Exp. Sta. Bull. No. 239, 72 p., '30  
Montana State College, Bozeman

418. Jones, D. M. and Hergert, H. H. **Farm Management and Economic Survey Report for 1933, 1934, 1935, South Fork, Palouse River Project**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Spokane, Wash.
419. Josephine County, Oregon, Planning Commission. **Statistical Analysis of Crops Raised in the County, Both as to Quantity and Value**  
Grants Pass, Oreg.
420. Klemgard, J. G. **Large Scale Wheat Production with Power in the Palouse**  
Proc. of Western Farm Economics Assoc., V, 34-37, '31
421. Klemgard, J. G. **Wheat Production in the Palouse Country by Power Methods—History, Cost Analysis**  
Master's Thesis, '31  
State College of Washington, Pullman
422. Klemgard, J. G. and Cadisch, G. F. **Cost of Wheat Production by Power Methods of Farming, 1919-1929**  
Agr. Exp. Sta. Bull. No. 255, 1-24, '31  
State College of Washington, Pullman
423. Kuhlman, G. W. and Robinson, B. B. **Cost and Efficiency in Fiber Flax Production in the Willamette Valley, Oregon**  
Agr. Exp. Sta. Bull. No. 354, 25 p., '38  
Oregon State College, Corvallis
424. Kuhlman, G. W. and Smith, D. C. **Costs and Practices in Hop Production in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 167, 13 p. (mimeo.), '37  
Oregon State College, Corvallis
425. Lake County, Oregon, Planning Commission. **Inventory of County Owned Lands**  
Lakeview, Oreg.
426. Landerholm, E. F. **The Economic Relation of Tractors to Farm Organization in the Grain Farming Areas of Eastern Washington**  
Agr. Exp. Sta. Bull. No. 310, 51 p., '35  
State College of Washington, Pullman
427. Landis, P. H. **The Hop Industry: A Social and Economic Problem**  
Econ. Geog., XV, 85-94, '39
428. Landis, P. H. **Washington Farm Trade Centers, 1900-1935**  
Agr. Exp. Sta. Bull. No. 360, 40 p., '38  
State College of Washington, Pullman
429. Lane County, Oregon, Planning Commission. **Inventory of County Owned Lands, Rural**  
Eugene, Oreg.
430. Lindgren, H. A. and Potter, E. L. **Lamb Marketing Investigations in Western Oregon**  
Agr. Exp. Sta. Bull. No. 265, 15 p., '30  
Oregon State College, Corvallis
431. Linfield, F. B. **Relation of Agriculture to the Economic and Social Welfare of the Region**  
Proc. of Pacific Northwest Regional Planning Conf., III, 61-64, '36  
Portland, Oreg.

432. Lipman, J. G. **Sociological Aspects of the New Land Program**  
4 p. (mimeo.), '36  
U. S. Dept. of Agriculture, Extension Service, Washington, D. C.
433. Mann, L. B. **Western Cattle and Sheep Areas . . . Described for the Use of Cooperative Marketing and Credit Association**  
U. S. Farm Credit Admin. Circ. C-103, 101 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
434. Maughan, O. H. and Carlsen, E. W. **Sheridan County Loan Experience Study**  
(ms.), '37  
Farm Credit Administration, Spokane, Wash.
435. Maxwell, J. E. **The Financial Aspects of Agriculture in Oregon**  
Master's Thesis, '37  
Lib., University of Oregon, Eugene
436. McWhorter, O. T. **Income from Small Nut Farms**  
Better Fruit, XXX, No. 8, 22-23, '36
437. Mittelman, E. B. **Marketing Willamette Valley Wools through Pacific Cooperative Wool Growers**  
Agr. Exp. Sta. Bull. No. 260, '30  
Oregon State College, Corvallis
438. Montana State College. **A Study of Montana Land Ownership**  
Montana WPA, WP 1989  
Bozeman, Mont.
439. Montana State College, Agricultural Experiment Station. **Data on Wheat Growing in Montana Including Acres Seeded, Harvested and Abandoned, and Yield Per Harvested Acre**  
ERA S-F2  
Bozeman, Mont.
440. Montana State College. **Pioneer Study of Farm Finance**  
Montana WPA, WP 7008-1235  
Bozeman, Mont.
441. Motz, F. A. and Edwards, A. C. **Summary of the Apple and Pear Export Season, 1933-34**  
69+14 p. (mimeo.), '34  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.
442. Nelson, M. N. **Oregon Lands: Handbook of Statistics**  
Agr. Exp. Sta. Circ. of Infor. No. 169, 15 p. (mimeo.), '37  
Oregon State College, Corvallis
443. Nelson, M. N. and Belden, W. H. **The Market Situation and Outlook for the Oregon Canned Fresh Prune**  
Agr. Exp. Sta. Bull. No. 263, 30 p., '30  
Oregon State College, Corvallis
444. Nelson, M. N. and Sulerud, G. L. **An Economic Study of the Cherry Industry with Special Reference to Oregon**  
Agr. Exp. Sta. Bull. No. 310, 96 p., '33  
Oregon State College, Corvallis
445. Newman, P. C. **Fruit Tree and Berry Census**  
WPA—O. P. 465-94-3-37, W. P. 1635  
U. S. Dept. of Agriculture, Bureau of Crop Estimates, Portland, Oreg.

446. Oregon State College, Agricultural Experiment Station. **Oregon Lands: Rural Land Ownership Survey in Oregon**  
WPA 65-94-1054, 16 p. (mimeo.), '37  
Corvallis, Oreg.
447. Oregon State College, Agricultural Experiment Station, Harney County Branch Station. **Progress Report of the Cost of Producing Crops with Water Pumped from Deep Wells with Semi-Diesel Engines and Electric motors** 4  
(ms.) ( )  
Corvallis, Oreg.
448. Oregon State Planning Board. **Shipment of Apples and Pears from Oregon, 1927-34**  
17 p. (mimeo.), '36  
Portland, Oreg.
449. Oregon State Planning Board. **Statistics of Tax Reverted Lands in Oregon**  
38 p. (mimeo.), '36  
Portland, Oreg.
450. Orr, A. E., Heisig, C. P., Knott, J. C. and Vincent, C. L. **Trends and Desirable Adjustments in Washington Agriculture**  
Agr. Exp. Sta. Bull. No. 335, 45 p., '36  
State College of Washington, Pullman
451. Osika, C. S. **Financing of Cooperative Marketing Associations in Oregon**  
Master's Thesis, '32  
Oregon State College, Corvallis
452. Overholser, E. L. **Production and Marketing Problems of Apples in the States of Washington and New York Contrasted**  
Proc. of Washington State Hort. Assoc., XXXII, 87-101, '36
453. Pubols, B. H. **Agricultural Conservation and Farm Management Problems in Washington**  
Proc. of Western Farm Economics Assoc., 22-26, '36
454. Pubols, B. H. **Pacific Northwest Wheat Situation**  
(ms.), '35  
State College of Washington, Agricultural Experiment Station, Pullman
455. Pubols, B. H. and Orr, A. E. **Farm Tenancy in Washington**  
28 p. (mimeo.), '37  
Washington State Planning Council, Olympia
456. Renne, R. R. **The Economics of Bean Production and Marketing in Montana**  
Agr. Exp. Sta. Bull. No. 258, '32  
Montana State College, Bozeman
457. Renne, R. R. **The Flaxseed Market and the Tariff**  
Agr. Exp. Sta. Bull. No. 272, '33  
Montana State College, Bozeman
458. Renne, R. R. **Montana Farm Bankruptcies**  
Agr. Exp. Sta. Bull. No. 360, '38  
Montana State College, Bozeman

459. Renne, R. R. **Montana Farm Foreclosures, 1860-1938**  
Agr. Exp. Sta. Bull. No. 368, '38  
Montana State College, Bozeman
460. Renne, R. R. **Montana Land Ownership, An Analysis of the Ownership Pattern and Its Significance in Land Use Planning**  
Agr. Exp. Sta. Bull. No. 322, 58 p., '36  
Montana State College, Bozeman
461. Renne, R. R. **Readjusting Montana's Agriculture: I. The Need and Basis for Readjustment**  
Agr. Exp. Sta. Bull. No. 306, 24 p., '35  
Montana State College, Bozeman
462. Renne, R. R. **Readjusting Montana's Agriculture: IV. Land Ownership and Tenure**  
Agr. Exp. Sta. Bull. No. 310, 24 p., '36  
Montana State College, Bozeman
463. Renne, R. R. **Readjusting Montana's Agriculture: VIII. Tax Delinquency and Mortgage Foreclosures**  
Agr. Exp. Sta. Bull. No. 319, 27 p., '36  
Montana State College, Bozeman
464. Renne, R. R. **Research in the Rural Institutional Aspects of Agricultural Adjustment**  
Proc. of Western Farm Economics Assoc., 158-168, '36
465. Renne, R. R. **Western Land Policies and Recent Ownership Trends**  
Jour. of Land Public Utility Economics, XII, 33-43, '36
466. Renne, R. R. and Allin, B. W. **Montana Farm Taxes**  
Agr. Exp. Sta. Bull. No. 286, '34  
Montana State College, Bozeman
467. Renne, R. R. and Lord, H. H. **Assessment of Montana Farm Lands**  
Agr. Exp. Sta. Bull. No. 348, '37  
Montana State College, Bozeman
468. Rodenwold, B. W., Oliver, A. W. and Potter, E. L. **The Marketing of Country-Dressed Meat in Portland**  
Agr. Exp. Sta. Bull. No. 339, '35  
Oregon State College, Corvallis
469. Rothrock, A. C. and Willmore, L. **Economic Survey of Squaw Creek Area, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Spokane, Wash.
470. Saunderson, M. H. **Readjusting Montana's Agriculture: V. Economic Changes in Montana's Range Livestock Production**  
Agr. Exp. Sta. Bull. No. 311, 30 p., '36  
Montana State College, Bozeman
471. Saunderson, M. H. **Review of Montana Cattle Values. Economic Study is Being Made of the Montana Range Cattle Industry**  
Cattleman, XIX, No. 6, 14-15, '32
472. Saunderson, M. H. **A Study of the Trends of Montana Livestock Numbers, Prices, and Profits**  
Agr. Exp. Sta. Bull. No. 329, '36  
Montana State College, Bozeman

473. **Saunderson, M. H. and Vinke, L. The Economics of Range Sheep Production in Montana**  
Agr. Exp. Sta. Bull. No. 302, '35  
Montana State College, Bozeman
474. **Schoenfeld, W. A. Opportunities for More Interstate Cooperation and Research in Agriculture and Home Economics**  
Proc. of Assoc. of Land-Grant Colleges and Universities, LI, 154-156, '37
475. **Schoenfeld, W. A. and Carpenter, P. Basic Fundamentals of Coop Marketing**  
Cooperative Comment, V, p. 1, 4, '37
476. **Scudder, H. D. and Besse, R. S. Cost and Efficiency in Prune Production in Western Oregon**  
Agr. Exp. Sta. Bull. No. 292, 95 p., '31  
Oregon State College, Corvallis
477. **Scudder, H. D., et al. Cost and Efficiency in Commercial Egg Production in Oregon**  
Agr. Exp. Sta. Bull. No. 287, '31  
Oregon State College, Corvallis
478. **Selby, H. E., Burrier, A. S. and Brandt, P. M. Cost and Efficiency in Dairy Farming in Oregon**  
Agr. Exp. Sta. Bull. No. 318, 93 p., '33  
Oregon State College, Corvallis
479. **Selby, H. E. and Jones, I. R. Cost of Keeping Dairy Herd Sires and Suggestions on Their Selection and Management**  
Agr. Exp. Sta. Bull. No. 312, '33  
Oregon State College, Corvallis
480. **Selby, H. E. and Kuhlman, G. W. Cost and Efficiency in Raising Dairy Heifers in Oregon**  
Agr. Exp. Sta. Bull. No. 324, '34  
Oregon State College, Corvallis
481. **Selby, H. E., Nelson, O. M. and Gorton, W. W. Costs and Carrying Capacities of Farm Pastures in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 129 (mimeo.), '35  
Oregon State College, Corvallis
482. **Sifton, J. B. A Reorganization Plan for a Stock Farm in Benton County, Oregon**  
Master's Thesis, '30  
Oregon State College, Corvallis
483. **Slagsvold, P. L. An Analysis of Agriculture on the Valier Irrigation Project**  
Agr. Exp. Sta. Bull. No. 330, 47 p., '36  
Montana State College, Bozeman
484. **Slagsvold, P. L. An Analysis of Montana Farm Prices**  
Agr. Exp. Sta. Bull. No. 345, '37  
Montana State College, Bozeman
485. **Slagsvold, P. L. An Analysis of the Present Status of Agriculture on the Sun River Irrigation Project**  
Agr. Exp. Sta. Bull. No. 321, 60 p., '36  
Montana State College, Bozeman

486. Slagsvold, P. L. **Readjusting Montana's Agriculture: II. Montana Farm Prices**  
Agr. Exp. Sta. Bull. No. 308, 16 p., '36  
Montana State College, Bozeman
487. Slagsvold, P. L. and Bingham, G. H. **An Analysis of Agriculture on the Milk River Irrigation Project**  
Agr. Exp. Sta. Bull. No. 290, 80 p., '34  
Montana State College, Bozeman
488. Slagsvold, P. L. and Howard, C. **Production Requirements and Costs on Irrigated Farms in Montana**  
Agr. Exp. Sta. Bull. No. 338, '37  
Montana State College, Bozeman
489. Slagsvold, P. L. and Lord, H. H. **The Conservation of Montana's Irrigated Lands**  
Agr. Exp. Sta. Bull. No. 350, '37  
Montana State College, Bozeman
490. Slagsvold, P. L. and Mathews, J. D. **Some Economic and Social Aspects of Irrigation in Montana**  
Agr. Exp. Sta. Bull. No. 354, '38  
Montana State College, Bozeman
491. Stanbery, V. B. **Inventory of County Owned Lands**  
WPA—O. P. 465-94-3-83, W. P. 1838  
Oregon State Planning Board, Portland
492. Starch, E. A. **Economic Changes in Montana's Wheat Area**  
Agr. Exp. Sta. Bull. No. 295, 70 p., '35  
Montana State College, Bozeman
493. Starch, E. A. **Farm Organization as Affected by Mechanization**  
Agr. Exp. Sta. Bull. No. 278, 102 p., '33  
Montana State College, Bozeman
494. Sulerud, G. L. **An Economic Study of the Hop Industry in Oregon**  
Agr. Exp. Sta. Bull. No. 288, 77 p., '31  
Oregon State College, Corvallis
495. Sulerud, G. L. and Nelson, M. N. **An Economic Study of the Small Fruit Industry in Oregon**  
Agr. Exp. Sta. Bull. No. 274, 95 p., '31  
Oregon State College, Corvallis
496. Tootell, R. B. and Chesnut, L. C. **Dairy Study—As Related to Loaning Policy in Oregon and Tillamook County**  
(ms.), '35  
Farm Credit Administration, Spokane, Wash.
497. Turner, R. M. and Carroll, H. B. **Farm Trends in Washington Counties, 1936**  
Ext. Serv. Bull. No. 228, 23 p., '36  
State College of Washington, Pullman
498. United States Department of Agriculture. **Marketing Apples**  
Agr. Tech. Bull. No. 474, 82 p., '35  
U. S. Govt. Print. Off., Washington, D. C.

499. United States Department of Agriculture, Bureau of Agricultural Economics. **Enumeration of Fruit Trees and 1934 Crops in Montana, Especially Apples and Cherries**  
ERA S-F4-160  
Helena, Montana
500. United States Department of Agriculture, Bureau of Agricultural Economics. **Farm Management Problems in Shifting from Sack to Bulk Handling of Grains in the Pacific Northwest**  
Bull. No. 287, '32  
Washington, D. C.
501. United States Department of Agriculture, Bureau of Agricultural Economics. **Monthly Receipts from the Sale of Principal Farm Products, January 1929 to December 1934; and Revised Estimates, January 1934-December 1936, U. S. A.**  
Washington, D. C., '35
502. United States Department of Agriculture, Bureau of Agricultural Economics. **Special Pacific Northwest Fruit and Berry Survey, Washington Berries**  
28 p. (mimeo.), '37  
Washington State Planning Council, Olympia
503. United States Department of Agriculture, Bureau of Agricultural Economics. **Wheat Requirements in Europe**  
Bull. No. 535, '36  
Washington, D. C.
504. United States Department of Commerce, Bureau of the Census. **Agriculture. Number of Farms, Farm Acreage, and Values of Farm Land and Buildings, Farm Buildings, Farmers' Dwellings and Farm Implements and Machinery**  
Idaho-Montana-Oregon-Washington (separates)  
Washington, D. C., '31
505. United States Department of Commerce, Bureau of the Census. **Agriculture. Statistics by Counties of Selected Crops and Livestock, Mortgages, Taxes, etc.**  
Idaho-Montana-Oregon-Washington (separates)  
Washington, D. C., '31
506. United States Department of Commerce, Bureau of the Census. **Agriculture. Statistics by Counties of Type of Farm**  
Idaho-Montana-Oregon-Washington (separates)  
Washington, D. C., '32
507. United States Department of Commerce, Bureau of the Census. **Population, Agriculture, Final Bulletin, Alaska, Composition and Characteristics of Population, Number of Farms, Acreage, Tenure, Value, Production, and Livestock**  
24 p., '31  
U. S. Govt. Print. Off., Washington, D. C.
508. United States Department of Commerce, Bureau of the Census. **Statistics by Counties—Farms and Farm Acreage by Size, Land of Part Owners, Farm Population, Dwellings, Labor, Years on Farm, Part-Time Work; Specified Livestock and Livestock Products; Annual Legumes, Vegetables, Fruits and Miscellaneous Crops; and Irrigated Crop Land**  
Idaho-Montana-Oregon-Washington (separates)  
Washington, D. C., '36



509. United States Department of Commerce, Bureau of the Census. **Statistics by Counties—Farms, Farm Acreage and Value, and Selected Livestock and Crops**  
Idaho-Montana-Oregon-Washington (separates)  
Washington, D. C., '36
510. United States National Resources Committee. **Agricultural Exports in Relation to Land Policy**  
114 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
511. Washington State Planning Council. **Report on Economic Survey of Washington Tree Fruits**  
9 p. (mimeo.), '36  
Olympia, Wash.
512. Wheeler, A. W. **Labor Requirements for Certain Oregon Agricultural Enterprises**  
Master's Thesis, '38  
Oregon State College, Corvallis
513. Wilson, S. A., Judkins, D. H. and Kearns, R. S. **Statistics on Agricultural Development in Washington**  
Pac. Northwest Forest and Range Exp. Sta. and Wash. Agr. Exp. Sta. Misc. Joint Publ. No. 1, 25 p. (mimeo.), '36  
State College of Washington, Pullman
514. Wilson, S. A., Kearns, R. S. and Judkins, D. H. **Statistics on Agricultural Development in Oregon**  
Pac. Northwest Forest and Range Exp. Sta. and Wash. Agr. Exp. Sta. Misc. Joint Publ. No. 1, 25 p. (mimeo.), '36  
State College of Washington, Pullman
515. Youngstrom, C. O. **Index Numbers of Idaho Farm Prices**  
Agricultural Experiment Station, University of Idaho, Moscow, '35

### CROPS

516. Aldrich, W. W. **Pear Growing Problems in Rogue River Valley**  
Rogue River Valley Pear-O-Scope, III, p. 3, 9, '35
517. Aldrich, W. W. and Work, R. A. **Preliminary Report of Pear Tree Response to Variations in Available Soil Moisture in Clay Adobe Soil**  
Proc. of Am. Soc. for Hort. Sci., '32
518. Aldrich, W. W., Work, R. A. and Lewis, M. R. **Pear Root Concentration in Relation to Soil-Moisture Extraction in Heavy Clay Soil**  
Jour. of Agricultural Research, L, No. 12, p. 975, '35
519. Baker, G. O. and Klages, K. H. W. **Crop Rotation Studies**  
Agr. Exp. Sta. Bull. No. 227, '38  
University of Idaho, Moscow
520. Ballard, F. L. **Development of the Klamath County Potato Industry**  
Ext. Serv. Bull. No. 437, 11 p., '31  
Oregon State College, Corvallis
521. Ballard, F. L. **Legumes in the Inland Empire**  
Furrow, XLII, p. 4, 11, '37

522. Barbee, O. E. **A Comparison of Wheat Varieties in Eastern Washington**  
Agr. Exp. Sta. Bull. No. 289, '33  
State College of Washington, Pullman
523. Blodgett, E. C. **The Cherry Industry in the Lewiston Orchards with Cultural Recommendations**  
Agr. Exp. Sta. Bull. No. 171, 19 p., '30  
University of Idaho, Moscow
524. Bouquet, A. G. B. **Celery Production and Marketing**  
Ext. Serv. Circ. No. 309, 9 p. (mimeo.), '38  
Oregon State College, Corvallis
525. Bouquet, A. G. B. **The Farm Vegetable Garden**  
Ext. Serv. Bull. No. 495, 8 p., '37  
Oregon State College, Corvallis
526. Bouquet, A. G. B. **Greenhouse Vegetables: Tomatoes**  
Ext. Serv. Circ. No. 308, 10 p. (mimeo.), '37  
Oregon State College, Corvallis
527. Bouquet, A. G. B. **Growing and Marketing Tomatoes**  
Ext. Serv. Circ. No. 311, 9 p. (mimeo.), '38  
Oregon State College, Corvallis
528. Bouquet, A. G. B. **Planting the Subsistence Vegetable Garden**  
Ext. Serv. Bull. No. 457, 4 p., '33  
Oregon State College, Corvallis
529. Bouquet, A. G. B. **Production and Marketing of Onions**  
Ext. Serv. Circ. No. 312, 7 p. (mimeo.), '38  
Oregon State College, Corvallis
530. Brown, G. G. **Influence of Commercial Fertilizers on Yields, Grades, and Net Value of Potatoes in the Hood River Valley, Oregon**  
Agr. Exp. Sta. Bull. No. 343, 29 p., '36  
Oregon State College, Corvallis
531. Brown, R. L. and Hawk, V. B. **Effect of Type of Fertilizer on Vegetative Reproduction of European Beachgrass (*Ammophila Arenaria*)—A Progress Report for 1937**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.
532. Brown, R. L. and Hawk, V. B. **Effect of Date of Transplanting and Rate and Method of Fertilizer Application on Vegetative Reproduction of European Beachgrass (*Ammophila Arenaria*)—A Progress Report for 1937**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.
533. Brown, R. L., Hawk, V. B., and Lemmon, P. E. **Survival of European Beachgrass (*Ammophila Arenaria*) and American Dunegrass (*Elymus Mollis*) As Influenced by Date of Planting—A Progress Report for 1937**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.

534. Chesnut, L. C. and Comer, W. C. **Cherry Study**  
(ms.), '35  
Farm Credit Administration, Spokane, Wash.
535. Christ, J. H. **Alfalfa on the Cut-Over Lands of Northern Idaho**  
Agr. Exp. Sta. Bull. No. 169, '30  
University of Idaho, Moscow
536. Christ, J. H. **Grains for the Cut-Over Lands of Northern Idaho**  
Agr. Exp. Sta. Bull. No. 178, '31  
University of Idaho, Moscow
537. Clements, H. F. **Studies in the Drought Resistance of the Soy Bean**  
Research Studies, V, No. 1, 1-16, '37  
State College of Washington, Pullman
538. Clements, H. F. **Studies in the Drought Resistance of the Sunflower and the Potato**  
Research Studies, V, No. 2, 81-98, '37  
State College of Washington, Pullman
539. Cook, J. W. **The Occurrence of Nutritionally Important Sulphur Compound in Alfalfa as Influenced by Sulfur Fertilization**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis
540. Crowley, D. J. **The Cultivated Cranberry in Washington**  
Agr. Exp. Sta. Bull. No. 349, '37  
State College of Washington, Pullman
541. Duruz, W. P. **Grape Growing in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 150 (mimeo.), '36  
Oregon State College, Corvallis
542. Ellison, J. W. **The Beginnings of the Apple Industry in Oregon**  
Agricultural History, XI, 322-343, '37
543. Fell, M. D. **Fibers from the Farm**  
Proc. of Pacific Northwest Chemurgic Conf., 88-90, '37  
Washington State Planning Council, Olympia
544. Freeman, O. W. **Apple Industry of the Wenatchee Area**  
Econ. Geog., X, 160-171, '34
545. Freeman, O. W. **Hop Industry of the Pacific Coast States**  
Econ. Geog., XII, 155-163, '36
546. French, C. M. **The Substitute Farm Crop for the Pacific Northwest.**  
Proc. of Pacific Northwest Chemurgic Conf., 76-79, '37  
Washington State Planning Council, Olympia
547. Gaines, E. F. and Schafer, E. G. **Adaptation of Wheat Varieties in the Pacific Northwest**  
Northwest Science, VI, 98-107, '32
548. Gaines, E. F. and Schafer, E. G. **Wheat Varieties in Washington in 1934**  
Agr. Exp. Sta. Bull. No. 338, 24 p., '36  
State College of Washington, Pullman
549. Grunder, M. S. **Pasture Studies at the Western Washington Experiment Station**  
Annual Meeting, Am. Dairy Sci. Assoc., Western Division, XVI, 26-34 (mimeo.), '30

550. **Hafenrichter, A. L. Crested Wheat Seedings in Central Washington**  
U. S. Soil Conservation Service Nurseries Office, Pullman, Wash., '38
551. **Hastings, S. R. and Hansen, D. Irrigated Crops Rotations at the Huntley (Mont.) Field Station, 1919-35**  
U. S. Dept. of Agr. Tech. Bull. No. 571, 32 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
552. **Hegnauer, L. Western Washington Pastures**  
Ext. Serv. Bull. No. 155 (rev.), 10 p., '38  
State College of Washington, Pullman
553. **Heisig, C. P. and Pubols, B. H. Fruit Trees in Yakima County, Washington**  
Agr. Exp. Sta. Bull. No. 359, 58 p., '38  
State College of Washington, Pullman
554. **Hill, D. D. A Cereal Variety Survey of Oregon**  
Agr. Exp. Sta. Circ. No. 97, 16 p., '30  
Oregon State College, Corvallis
555. **Hill, D. D. Oats Production in Western Oregon**  
Agr. Exp. Sta. Bull. No. 285, 24 p., '31  
Oregon State College, Corvallis
556. **Hill, D. D., Stephens, D. E., Richards, E. E., Martin, J. F. and Hutchinson, R. E. Barley Production in Oregon**  
Agr. Exp. Sta. Bull. No. 355, 34 p., '38  
Oregon State College, Corvallis
557. **Hodgson, R. E. Pasture Management**  
Proc. of Forage School held at Washington State College, 24-26, '38  
Pullman, Wash.
558. **Hodgson, R. E., Grunder, M. S., Knott, J. C. and Ellington, E. V. A Comparison of Rotational and Continuous Grazing of Pastures in Western Washington**  
Agr. Exp. Sta. Bull. No. 294, '34  
State College of Washington, Pullman
559. **Hulbert, H. W. Crops to Replace Spring Wheat in Northern Idaho**  
Agr. Exp. Sta. Bull. No. 177, '31  
University of Idaho, Moscow
560. **Hulbert, H. W. and Burkart, F. L. Cultural Practices for Alfalfa in Northern Idaho**  
Agr. Exp. Sta. Circ. No. 72, '34  
University of Idaho, Moscow
561. **Hulbert, H. W., Christ, J. H. and Toevs, J. L. Adaptability of Alfalfa Strains and Varieties for Idaho**  
Agr. Exp. Sta. Bull. No. 199, '33  
University of Idaho, Moscow
562. **Hulbert, H. W., McDole, G. R. and Michels, C. A. Forage and Grain Crop Production in the Winchester Area**  
Agr. Exp. Sta., Dept. of Agron., '31  
University of Idaho, Moscow
563. **Hyslop, G. R. Flax and Oil Seed Possibilities**  
Proc. of Pacific Northwest Chemurgic Conf., 83-88, '37  
Washington State Planning Council, Olympia

564. Idaho, University of, Agricultural Experiment Station. **Cultural Practices for Alfalfa in Northern Idaho**  
Circ. No. 72, '34  
Moscow, Idaho
565. Idaho, University of, Agricultural Experiment Station. **Soybean Production in Idaho**  
Bull. No. 218, '35  
Moscow, Idaho
566. Iddings, E. J. **Irrigated Pasture Management: Individual Grasses and Legumes for Pasture**  
Agr. Exp. Sta. Ann. Rept., '30; Bull. No. 179, 42-43, '31  
University of Idaho, Moscow
567. Jackman, E. R., Stephens, D. E. and Richards, D. E. **Crested Wheat Grass in Eastern Oregon**  
Ext. Serv. Bull. No. 494, 38 p., '36  
Oregon State College, Corvallis
568. Jensen, H. J. and Morris, O. M. **Potato Growing in the Irrigated Districts of Washington**  
Agr. Exp. Sta. Bull. No. 246, 30 p., '31  
State College of Washington, Pullman
569. Jones, I. R. and Brandt, P. M. **Irrigated Pastures for Dairy Cattle**  
Agr. Exp. Sta. Bull. No. 264, '30  
Oregon State College, Corvallis
570. King, A. S. **Managing Irrigated Pastures**  
Proc. of Am. Dairy Sci. Assoc., Western Division, 26-30 (mimeo.), '37
571. King, A. S. **The Why and How of Irrigation for Walnuts**  
Proc. of Oreg. State Hort. Soc., XLIX, 133-135, '34
572. Klages, K. H. W. **Flax Production in Idaho**  
Agr. Exp. Sta. Bull. No. 224, '38  
University of Idaho, Moscow
573. Larson, C. A. **The Adaptability of Strawberry Clover to Saline Soils**  
Agr. Exp. Sta. Bull. No. 353, 15 p., '38  
State College of Washington, Pullman
574. Larson, H. W. E. **Fertilizer Suggestions for Idaho Farmers**  
Ext. Serv. Bull. No. 109, '38  
University of Idaho, Moscow
575. Lewis, M. R., Work, R. A. and Aldrich, W. W. **Influence of Different Quantities of Moisture in a Heavy Soil on Rate of Growth of Pears**  
Plant Physiology, X, 309-323, '35
576. Mark, F. A. **Effects of Crop Rotations, Manuring and Precipitation on Crop Yields, Protein Content of Wheat, Maintenance of Soil Organic Matter**  
Master's Thesis, '33  
Lib., University of Idaho, Moscow
577. Martin, J. F. **Cold Resistance of Pacific Coast Spring Wheats at Various Stages of Growth as Determined by Artificial Refrigeration**  
Jour. of Am. Soc. of Agron., '32

578. Montana State College, Agricultural Experiment Station. **Data on Wheat Growing in Montana Including Acres Seeded, Harvested and Abandoned, and Yield Per Harvested Acre**  
ERA S-F2  
Bozeman, Mont.
579. Moss, W. A. **Tillage Methods for High Altitude Dry Farming**  
Agr. Exp. Sta. Bull. No. 186, '31  
University of Idaho, Moscow
580. Norton, J. E. **Annual Forage Crops under Irrigation**  
Agr. Exp. Sta. Bull. No. 261, 17 p., '32  
Montana State College, Bozeman
581. Norton, J. E. and Powers, L. **Oat and Barley Varieties under Irrigation**  
Agr. Exp. Sta. Bull. No. 266, 27 p., '32  
Montana State College, Bozeman
582. Oregon State College, Department of Animal Husbandry. **Six Years Work on Irrigated Sheep Pastures**  
(ms.) ( )  
Corvallis, Oreg.
583. Oregon State College, Extension Service. **Development of the Klamath County Potato Industry**  
Ext. Serv. Bull. No. 437, '31  
Corvallis, Oreg.
584. Oregon State College, Medford Branch Experiment Station. **Experimental Research in Methods of Growing Pears**  
ERA 15-FA-12; WPA 65-94-124  
Medford, Oreg.
585. Overholser, E. L. and Overley, F. L. **Commercial Hand Pollination of Apples in Washington**  
Proc. of Am. Soc. of Hort. Sci., XXXVI, 39-42, '38  
State College of Washington, Pullman
586. Overholser, E. L. and Overley, F. L. **Some Relations of Water and the Essential Elements to Fruit Growing**  
Ann. Rept., Oreg. State Hort. Soc., XXVIII, 1-8, '36
587. Overley, F. L. and Overholser, E. L. **Progress Report of Fertilizer Studies with Jonathan Apples upon Ephrata Fine Sand Loam**  
Agr. Exp. Sta. Bull. No. 319, 34 p., '35  
State College of Washington, Pullman
588. Pearse, C. K. and Stewart, G. **Suggestions for Drilling Grass Seed on Ranges with Slopes Steeper than 35 Percent**  
(mimeo.), 4 p., '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
589. Portland, Oregon, Chamber of Commerce. **Survey of Pea Growing Areas**  
'35-'36
590. Portland, Oregon, Chamber of Commerce. **Vegetables—Oregon Grown**  
'35-'36

591. Powers, W. L. **Soil, Nutrient, and Irrigation Requirements of Fiber Flax**  
Agr. Exp. Sta. Circ. of Infor. No. 153 (mimeo.), '36  
Oregon State College, Corvallis
592. Pubols, B. H. and Heisig, C. P. **Historical and Geographic Aspects of Wheat Yields in Washington**  
Agr. Exp. Sta. Bull. No. 355, 30 p., '37  
State College of Washington, Pullman
593. Robinson, B. B. **Fiber Flax in Oregon**  
Agr. Exp. Sta. Circ. No. 118, 12 p., '36  
Oregon State College, Corvallis
594. Roterus, V. **Spring and Winter Wheat on the Columbia Plateau**  
Econ. Geog., X, 368-373, '34
595. Sander, A. F. **Alfalfa Seed Production and Some Factors which Affect Seed Yield in Western Oregon**  
Master's Thesis, '32  
Oregon State College, Corvallis
596. Schafer, E. G. **Crop Rotations: Part I. Effect of Crop Rotations on Succeeding Crops**  
Agr. Exp. Sta. Bull. No. 344, '37  
State College of Washington, Pullman
597. Schafer, E. G. **Hay Production on Dry Land**  
Proc. of Forage School Held at Washington State College, 31-32, '38  
Pullman, Wash.
598. Schafer, E. G. **Substitute Farm Crops for the Pacific Northwest**  
Proc. of Pacific Northwest Chemurgic Conf., 79-83, '37  
Washington State Planning Council, Olympia
599. Schoth, H. A. **Austrian Winter Field Peas in Oregon**  
Agr. Exp. Sta. Bull. No. 286, 23 p., '31  
Oregon State College, Corvallis
600. Schoth, H. A. **Ladino Clover for Western Oregon**  
Agr. Exp. Sta. Circ. No. 129, '38  
Oregon State College, Corvallis
601. Schoth, H. A. and Hyslop, G. R. **Alfalfa in Western Oregon**  
Agr. Exp. Sta. Bull. No. 246, 38 p., '29  
Oregon State College, Corvallis
602. Schuster, C. E. **Filberts**  
Ext. Serv. Bull. No. 417, 23 p., '30  
Oregon State College, Corvallis
603. Schuster, C. E. **Walnut Production in Oregon**  
Agr. Exp. Sta. Circ. No. 108, 38 p., '34  
Oregon State College, Corvallis
604. Singleton, H. P. **Hay Production on Irrigated Land**  
Proc. of Forage School Held at Washington State College, 27-30, '38  
Pullman, Wash.
605. Singleton, H. P. **The Production of Cereals under Irrigation in Washington**  
Agr. Exp. Sta. Bull. No. 240, 20 p., '30  
State College of Washington, Pullman

606. Singleton, H. P. **Production and Utilization of Corn Grown under Irrigation in Washington**  
Agr. Exp. Sta. Bull. No. 278, 22 p., '33  
State College of Washington, Pullman
607. Snyder, J. C. **Strawberry Growing in Washington**  
Ext. Serv. Bull. No. 246, 15 p., '38  
State College of Washington, Pullman
608. Stephens, D. E., Webb, R. B. and Martin, J. F. **Wheat Varieties for the Columbia River Basin of Oregon**  
Agr. Exp. Sta. Bull. No. 308, 37 p., '32  
Oregon State College, Corvallis
609. Tootell, R. B. (Revised by Chesnut, L. C.). **Apple Survey of Central Washington**  
(ms.), '35  
Farm Credit Administration, Spokane, Wash.
610. United States Department of Agriculture. **Experiments in Wheat Production on Dry Lands of Oregon, Washington, and Utah**  
Agr. Tech. Bull. No. 329, 68 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
611. United States Department of Agriculture. **Plum and Prune Growing in the Pacific States**  
Farmers' Bull. No. 1372, 56 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
612. United States Department of Agriculture. **Sugar-Beet Growing under Irrigation in Utah-Idaho Area**  
Farmers' Bull. No. 1645, '31  
U. S. Govt. Print. Off., Washington, D. C.
613. United States Department of Agriculture, Bureau of Agricultural Economics. **Bean Growing in Northern Idaho, Eastern Washington and Eastern Oregon**  
Farmers' Bull. No. 1509, '27 (rev.), '34  
Washington, D. C.
614. Vandecaveye, S. C. **Chemical Composition of Forage Crops as Affected by Soil Type and Commercial Fertilizers**  
(ms.), '38  
State College of Washington, Pullman
615. Vandecaveye, S. C. **The Effect of Repeated Applications of Fertilizers and Irrigation Waters on Soil Fertility and Yield and Composition of Fruit Trees**  
(ms.), '38  
State College of Washington, Pullman
616. Vandecaveye, S. C. **Yield and Composition of Pasture Grass and Other Forage Crops as Affected by Various Fertilizers and Soil Types**  
(ms.), '38  
State College of Washington, Pullman
617. Vandecaveye, S. C. and Bond, L. V. **Effect of Sulfite Waste Liquor on Soil and Plant Growth**  
(ms.), '38  
State College of Washington, Pullman



618. Vandecaveye, S. C. and Bond, L. V. **Yield and Composition of Alfalfa as Affected by Various Fertilizers and Soil Types**  
Jour. of Am. Soc. of Agron., XXVIII, 491-505, '36
619. Vandecaveye, S. C. and Nunns, F. K. **Effect of Nitrogen Fertilizers on the Composition of Wheat at Different Stages of Growth**  
(ms.), '38  
State College of Washington, Pullman
620. Wanser, H. M. **Forage Crops for Central Washington**  
Agr. Exp. Sta. Bull. No. 281, '33  
State College of Washington, Pullman
621. Washington, State College of, Agricultural Experiment Station. **Washington Fruit and Berry Survey, State Summary**  
31 p. (mimeo.), '38  
Pullman, Wash.
622. West, K. F. **Flax for Fiber**  
Proc. of Pacific Northwest Chemurgic Conf., 90-93, '37  
Washington State Planning Council, Olympia
623. Wiegand, E. H. and Bullis, D. E. **Factors for Consideration in Standardization of Oregon Dried Prunes**  
Agr. Exp. Sta. Bull. No. 291, 35 p., '31  
Oregon State College, Corvallis
624. Work, R. A. and Lewis, M. R. **Relation of Soil Moisture to Pear Tree Wilting in a Heavy Clay Soil**  
Jour. of Agron., XXVIII, p. 124, '36
625. Yamhill County Agent. **An Analysis of the Variations in Soil Moisture and Yield Resulting from Different Spacings in Fruit Tree Plantings**  
ERA 36-F2-136  
McMinnville, Oreg.

#### DAIRYING AND LIVESTOCK

626. Atkinson, A. **Beef Cattle**  
Ext. Serv. Bull. No. 136, 50 p., '33  
Montana State College, Bozeman
627. Ballard, F. L. **Oregon Sheep on Logged-Off Areas**  
Natl. Wool Grower, XXV, No. 9, 32-34, '35
628. Bendixen, H. A. and Ellington, E. V. **Grading Cream for Butter-making**  
Agr. Exp. Sta. Bull. No. 269, '32  
State College of Washington, Pullman
629. Boyce, T. V. **A History of the Cattle Industry in the Inland Empire**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
630. Chesnut, L. C. and Shanahan, W. P. **Montana Range Livestock Survey**  
(ms.), '36  
Farm Credit Administration, Spokane, Wash.
631. Curry County, Oregon, Planning Commission. **Livestock and Dairy Survey**  
Gold Beach, Oreg.

632. Eckert, P. S. and Slagsvold, P. L. **Montana Cattle Shipments**  
Agr. Exp. Sta. Bull. No. 358, 44 p., '38  
Montana State College, Bozeman
633. Favre, C. E. and Phinney, T. D. **Managing Farm Flock Sheep for Greater Profit in Southern Idaho**  
Agr. Exp. Sta. Bull. No. 228, '39  
University of Idaho, Moscow
634. Hackedorn, H. **Wool Growth**  
(ms.), '38  
State College of Washington, Pullman
635. Hackedorn, H. and McCall, R. **Beef Cattle Feeding Experiments**  
Agr. Exp. Sta. Bull. No. 302, '34  
State College of Washington, Pullman
636. Hackedorn, H., Singleton, H. P. and Sotola, J. **Lamb Feeding Experiments**  
Agr. Exp. Sta. Bull. No. 351, '37  
State College of Washington, Pullman
637. Hampson, C. C. **Dairy Ratios**  
Agr. Exp. Sta. Bull. No. 309, '35  
State College of Washington, Pullman
638. Hodgson, R. E. **Influence of Pasture Management upon the Grazing Habits of Dairy Cattle**  
Jour. of Agr. Research, XLVII, No. 6, 417-424, '33
639. Idaho, University of, Agricultural Experiment Station. **Potatoes as a Feed for Dairy Cows**  
Bull. No. 216, '35  
Moscow, Idaho
640. Idaho, University of, Agricultural Experiment Station. **Sunflower Silage for Milk Production**  
Bull. No. 215, '35  
Moscow, Idaho
641. Idaho, University of, Agricultural Experiment Station. **Sweet Clover as a Feed for Dairy Cows**  
Bull. No. 214, '35  
Moscow, Idaho
642. Jones, I. R. and Brandt, P. M. **The Comparative Value of Kale and Corn Silage for Milk Production**  
Agr. Exp. Sta. Bull. No. 272, '30  
Oregon State College, Corvallis
643. Jones, I. R., Brandt, P. M. and Haab, J. R. **Studies with Alfalfa Hay for Milk Production**  
Agr. Exp. Sta. Bull. No. 328, '34  
Oregon State College, Corvallis
644. Knott, J. C. and Hill, O. J. **Feeding Dairy Cows**  
Ext. Serv. Bull. No. 164 (rev.), 12 p., '35  
State College of Washington, Pullman
645. Knott, J. C., Hill, O. J. and Hodgson, R. E. **Raising Dairy Calves**  
Ext. Serv. Bull. No. 239, '38  
State College of Washington, Pullman

646. Knott, J. C., Hodgson, R. E. and Ellington, E. V. **Methods of Measuring Pasture Yields with Dairy Cattle**  
Agr. Exp. Sta. Gen. Bull. No. 295, '34  
State College of Washington, Pullman
647. Knott, J. C., Hodgson, R. E. and Ellington, E. V. **Raising Dairy Calves with Dried Skimmilk**  
Ext. Serv. Bull. No. 273, '32  
State College of Washington, Pullman
648. Maddox, C. S. **Fattening Cattle in Washington**  
Ext. Serv. Bull. No. 238, '37  
State College of Washington, Pullman
649. McCall, R. **Beef Cattle Feeding Experiments**  
Agr. Exp. Sta. Bull. No. 302, '34  
State College of Washington, Pullman
650. McCall, R. and Hackedorn, H. **Feeding Cattle at the Washington Experiment Station**  
Agr. Exp. Sta. Bull. No. 352, '37  
State College of Washington, Pullman
651. Miller, R. and Anderson, I. M. C. **Horses**  
Ext. Serv. Bull. No. 135, 35 p., '33  
Montana State College, Bozeman
652. Mittelman, E. B. **Willamette Valley Wools in Relation to Local Consumption**  
Agr. Exp. Sta. Bull. No. 261, 23 p., '30  
Oregon State College, Corvallis
653. Nelson, O. M. **The Angora Goat Industry of Oregon**  
Agr. Exp. Sta. Bull. No. 289, '31  
Oregon State College, Corvallis
654. Potter, E. L., Withycombe, R. and Edwards, F. M. **Fattening Calves and Yearlings**  
Agr. Exp. Sta. Bull. No. 276, '31  
Oregon State College, Corvallis
655. Price, F. E., Hurd, C. J., Wilster, G. H. **Cream Refrigeration on the Farm and the Quality of Butter Manufactured**  
Agr. Exp. Sta. Bull. No. 305, '32  
Oregon State College, Corvallis
656. Rinehart, E. F. **Wintering Range Stock**  
Ext. Serv. Circ. No. 39, 8 p., '31  
University of Idaho, Moscow
657. Rinehart, E. F. and Johnson, R. F. **Fattening Idaho Range Cattle**  
Agr. Exp. Sta. Bull. No. 209, 72 p., '34  
University of Idaho, Moscow
658. St. John, J. L. and Others. **Biological Value of Rations Containing Fish Meal**  
Jour. of Nutrition, VII, No. 1, 13-26, '34
659. Shaw, J. N. **Common Diseases of Oregon Sheep**  
Ext. Serv. Circ. No. 292 (mimeo.), '34  
Oregon State College, Corvallis

660. Sotola, J. **Digestion Experiments with Mixtures of Sweet Clover and Albit Wheat Ensiled and Cured as Hay**  
Proc. of Am. Soc. of Animal Production, 143-150, '36
661. Thorne, G. B. **Future Problems of Livestock Industry in West**  
American Cattle Producer, XVI, No. 10, 7-9, '35
662. United States Department of Agriculture. **Raising Reindeer in Alaska**  
U. S. Dept. of Agr. Misc. Publ. No. 207, 41 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
663. United States Department of Agriculture, Bureau of Agricultural Economics. **Preparing Wool for Market**  
Leaf. No. 92, '33  
Washington, D. C.
664. Vinke, L. and Dickson, W. F. **Maintenance of Beef Cows for Calf Production**  
Agr. Exp. Sta. Bull. No. 275, 35 p., '33  
Montana State College, Bozeman
665. White, W. T. **Feeding Dairy Cows in the Matanuska Region, Alaska**  
Agr. Exp. Sta. Circ. No. 5, '33  
University of Alaska, College
666. Wilster, G. H. **Methods of Controlling the Composition of Oregon Butter**  
Agr. Exp. Sta. Bull. No. 338, '35  
Oregon State College, Corvallis
667. Wilster, G. H. **Six Years of Progress in Improving the Quality and Standardizing the Composition of Oregon Butter**  
Agr. Exp. Sta. Bull. No. 335, '35  
Oregon State College, Corvallis
668. Wilster, G. H., Hoffman, H., and Price, F. E. **Comparative Efficiency of Farm Milk Coolers**  
Agr. Exp. Sta. Bull. No. 331, '34  
Oregon State College, Corvallis
669. Withycombe, R., Potter, E. L. and Edwards, F. M. **Deferred Breeding of Beef Cows**  
Agr. Exp. Sta. Bull. No. 271, '30  
Oregon State College, Corvallis

#### FLOOD CONTROL

670. Bailey, R. W. and Croft, A. R. **Contour Trenches Control Floods and Erosion on Range Lands**  
Emergency Conservation Work, Forestry Publ. No. 4, '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
671. Bailey, R. W., Forsling, C. L. and Becraft, R. J. **Floods and Accelerated Erosion in Northern Utah**  
U. S. Dept. of Agr. Misc. Publ. No. 196, 21 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
672. Bonner, J. P. **A Study of Run-off Phenomena**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
673. Brooks, C. F. and Baldwin, H. I. **How Forests Retard Floods**  
American Forests, XLIII, 274-277, '37

674. Clackamas County, Oregon, Planning Board. **Study of Flood Control and Irrigation**  
Oregon City, Oreg.
675. Fuller, G. L. and Eakin, H. M. **The Arrest and Prevention of Devastation by Floods**  
SCS-MP-12, 11 p. (mimeo.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Washington, D. C.
676. Grimm, C. I. **Flood Control Aspects in the Pacific Northwest**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 68-70, '37  
Portland, Oreg.
677. Hetherton, P. **Flood Damage Prevention**  
8 p. (mimeo.), '38  
Washington State Planning Council, Olympia
678. Hickson, R. E. **Flood Problems in the Portland Engineer District**  
8 p., '34  
U. S. Army, Corps of Engineers, Office of Division Engineer, Portland, Oreg.
679. Kellogg, Idaho, Chamber of Commerce and Associate Board of Trade of Wallace, Idaho. **Preliminary Engineering Survey and Cost Estimate of Flood Control on the South Fork of the Coeur d'Alene River and Its Tributaries from Mullan and Burke to Cataldo, Idaho**  
8 p. (mimeo.), '34
680. Lemke, W. **Flood Control by Water Conservation**  
Cong. Record, 74th Cong., 2d sess., House, LXXX, No. 62, 4615-4616, '36  
U. S. Govt. Print. Off., Washington, D. C.
681. Munger, T. T. **Flood Control and Land Management**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 70-72, '37  
Portland, Oreg.
682. Pacific Northwest Regional Planning Commission. **Columbia Basin Report, Appendix H, Flood Control Problems in the Pacific Northwest**  
Portland, Oreg.
683. Rockie, W. A. **How Cultivated Land Affects Run-Off**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 54-55, '37  
Portland, Oreg.
684. Rockie, W. A. **What Causes Our Floods?**  
Northwest Science, X, No. 4, 2-5, '36
685. Thomas, B. P. **White River Flood Control, Mud Mountain Dam**  
King and Pierce Counties' Inter-County River Improvement, Wash.
686. United States Department of Agriculture, Soil Conservation Service. **Conservation Farming Practices and Flood Control**  
U. S. Dept. of Agr. Misc. Publ. No. 253, 16 p., '36  
Washington, D. C.
687. United States National Resources Committee. **Reports on Proposed Flood or Flood Control Investigations**  
59 p., '36  
Washington, D. C.

688. Wanser, H. M. **Chehalis River and Tributaries, Washington.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
689. Wanser, H. M. **Skagit River and Tributaries, Washington.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
690. Wanser, H. M. **Spokane River and Tributaries in Idaho and Washington.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
691. Wanser, H. M. **Walla Walla River and Tributaries, Washington.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
692. Wanser, H. M. **Willow Creek Work Unit of the Boise River Watershed, Idaho.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
693. Wanser, H. M. and Rockie, W. A. **Lowell Creek, Alaska.** Preliminary Examination for Run-Off and Waterflow Retardation and Soil Erosion Prevention in the Interest of Flood Control (ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
694. Washington State Planning Council. **Report of Flood Control Committee**  
3 p. (mimeo.), '34  
Olympia, Wash.

#### FOOD RESEARCH

695. Douglass, Ruth. **A Study of the Vitamin C Content of Oregon Bosc Pears**  
Jour. of Nutrition, VII, 27-40, '34
696. Holloway, Mae L. **A Study of the Vitamin B (B<sub>1</sub>) Content of Bosc Pears**  
Jour. of Nutrition, VII, 27-40, '34

697. Spike, Frances M. **The Vitamin G (B<sub>2</sub>) Content of Frozen Strawberries**  
(ms.), '36  
Lib., Oregon State College, Corvallis
698. Todhunter, E. N. **The Nutritive Value of Apples**  
Agr. Exp. Sta. Popular Bull. No. 152, '37  
State College of Washington, Pullman
699. Todhunter, E. N. **Some Factors Influencing Ascorbic-Acid (Vitamin C) Content of Apples**  
Agr. Exp. Sta. Sci. Papers No. 352, '36  
State College of Washington, Pullman
700. Todhunter, E. N. **Vitamin C Content of Frozen Peas**  
(ms.), '38  
State College of Washington, Pullman
701. Todhunter, E. N. and Sparling, B. L. **The Vitamin Values of Garden-Type Peas Preserved by Frozen-Pack Method. I. Ascorbic Acid (Vitamin C)**  
Food Research, III, 489-498, '38
702. Webb, Iva N. **The Vitamin C Value of Commercially Canned Tomato Juice**  
(ms.), '36  
Lib., Oregon State College, Corvallis

#### INDUSTRIES BASED ON AGRICULTURE

703. Aslett, M. J. **The Utilization of Idaho Cull Potatoes for the Production of Power Alcohol**  
Master's Thesis, '37  
Lib., University of Idaho, Moscow
704. Beresford, H. **Power Alcohol from Farm Products**  
Proc. of Pacific Northwest Chemurgic Conf., 95-100, '37  
Washington State Planning Council, Olympia
705. Cardiff, I. D. **Fruit Surplus Utilization**  
Proc. of Pacific Northwest Chemurgic Conf., 58-61, '37  
Washington State Planning Council, Olympia
706. Diehl, H. C. **Freezing Preservation and Its Significance for Agriculture**  
Proc. of Pacific Northwest Chemurgic Conf., 71-76, '37  
Washington State Planning Council, Olympia
707. Diehl, H. C. **Frozen Pack of Fruits and Vegetables in Retail Packages**  
Proc. of Wash. State Hort. Assoc., XXVI, 213-217, '30
708. Gerritz, H. W. **The Utilization of Apple Waste and Preparation of New Products from Apples**  
Ph. D. Thesis, '34  
Lib., State College of Washington, Pullman
709. Hetherton, P. **Columbia Basin Report, Appendix M. Agriculture, Processing Industries**  
Pacific Northwest Planning Commission, Portland, Oreg., '35
710. McKenzie, F. B. **Industrial Uses of Grains**  
Proc. of Pacific Northwest Chemurgic Conf., 71-76, '37  
Washington State Planning Council, Olympia

711. Mottern, H. H. **By-Products from Apples and Other Fruits**  
Proc. of Pacific Northwest Chemurgic Conf., 62-67, '37  
Washington State Planning Council, Olympia
712. Oregon State College, Agricultural Experiment Station. **Preservation of Fruits and Vegetables by Freezing**  
Circ. No. 116, '36  
Corvallis, Oreg.
713. Oregon State College, Agricultural Extension Service. **An Improved Method of Making Sugar-Beet Sirup**  
Circ. No. 290 (mimeo.), '34  
Corvallis, Oreg.
714. Pacific Northwest Regional Planning Commission. **The Pacific Northwest as Location for a Laboratory for Research in New Uses and New Markets for Farm Commodities**  
33 p. (mimeo.), '38  
Portland, Oreg.
715. Portland, Oregon, Chamber of Commerce. **Agricultural Research Laboratory—Portland as Plant Location**  
'37-'38
716. Portland, Oregon, Chamber of Commerce. **Flax Industry**  
'36-'37
717. Wiegand, E. H. **Agricultural and Cannery Waste Utilization**  
Western Canner and Packer, XXIX, 13-16, '37
718. Wiegand, E. H. **Experimental Results on the Preservation of Fruits and Vegetables by Freezing**  
Agr. Exp. Sta. Circ. No. 122, 13 p., '37  
Oregon State College, Corvallis
719. Wiegand, E. H. **The "Frozen-Pack" Method of Preserving Berries**  
Agr. Exp. Sta. Bull. No. 278, 42 p., '31  
Oregon State College, Corvallis
720. Wiegand, E. H. **Preservation of Fruits and Vegetables by Freezing**  
Agr. Exp. Sta. Circ. No. 116, '36  
Oregon State College, Corvallis
721. Wiegand, E. H. **Study of Various Methods of Food Preservation**  
WPA—O. P. 465-94-3-110, W. P. 2106  
Oregon State College, Corvallis
722. Wiegand, E. H. and Bullis, D. E. **Canning of Green Asparagus**  
(ms.) ( )  
Oregon State College, Corvallis
723. Wiegand, E. H. and Fenner, K. P. **Dried Italian Prune Products**  
Agr. Exp. Sta. Bull. No. 353, 25 p., '38  
Oregon State College, Corvallis

#### IRRIGATION AND IRRIGATION METHODS

724. Aldrich, W. W. **Six Years' Study of Pear Irrigation**  
29th Ann. Rept. of Oreg. State Hort. Soc., 79-87, '37
725. Banks, F. A. **Irrigation Water**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 72-73, '37  
Portland, Oreg.



726. Brown, R. H. **Irrigation in a Dry-Farming Region: The Greenfields Division of the Sunhives Project, Montana**  
Geog. Review, XXIV, 596-604, '34
727. Brown, W. S. **Influence of Irrigation upon Yields, Quality, and Profits of Small Fruits**  
27th Ann. Rept. of Oreg. State Hort. Soc., 82-86, '35
728. Cummings, Margaret. **A History of Irrigation in Idaho**  
Tenth Biennial Rept. of Idaho State Dept. of Reclamation, 10-16, '38  
Boise, Idaho.
729. Harley, C. P., Reeves, E. L. and Diehl, H. C. **Irrigation of Orchards by Sprinkling**  
Agr. Exp. Sta. Bull. No. 268, 50 p., '32  
State College of Washington, Pullman
730. Idaho, University of, Agricultural Experiment Station. **Irrigation Pumping Plants**  
Circ. No. 66, '31  
Moscow, Idaho
731. Idaho, University of, College of Agriculture. **Farm Water Measurement**  
Ext. Serv. Circ. No. 43, '32  
Moscow, Idaho
732. Jacobs, J. **Columbia Basin Report, Appendix F, Irrigation**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
733. Kulp, M. R. **Conserving Irrigation Water**  
Ext. Serv. Circ. No. 61, 11 p., '38  
University of Idaho, Moscow
734. Lewis, M. R. **Design of Irrigation and Drainage Wells and Pumping Plants**  
Agr. Engr., Nov. '33
735. Lewis, M. R. **Irrigation of Alfalfa**  
Rogue River Valley Pear-O-Scope, III, No. 2, 4-5, '35
736. Lewis, M. R. **Irrigation of Garden Truck**  
Rogue River Valley Pear-O-Scope, III, No. 1, p. 7, '35
737. Lewis, M. R. **Irrigation of Pastures**  
Rogue River Valley Pear-O-Scope, III, No. 1, p. 6, '35
738. Lewis, M. R. **Orchard Irrigation, A Complex Problem**  
Rogue River Valley Pear-O-Scope, III, No. 3, p. 3, '35
739. Lewis, M. R. **The Rate of Infiltration of Water in Irrigation Practice**  
Trans. of Am. Geophysical Union, 361-368, '37
740. Lewis, M. R., Work, R. A. and Aldrich, W. W. **Studies of the Irrigation of Pear Orchards on Heavy Soil near Medford, Oregon**  
U. S. Dept. of Agr. Tech. Bull. No. 432, '34  
U. S. Govt. Print. Off., Washington, D. C.

741. Powers, W. L. **Investigation of Reasonable Duty of Water—Supplemental Contract Lands, Sunnyside Division, Yakima Project**  
Soils File 700-30, '31  
Oregon State College, Corvallis
  742. Powers, W. L. **The Removal of Soluble Salts from Virgin Black Alkali Soil**  
Proc. of 2nd International Cong. Soils Science, V, p. 335, '30
  743. Powers, W. L. **Twenty-Five Years of Supplemental Irrigation Investigations in Willamette Valley**  
Agr. Exp. Sta. Bull. No. 302, 30 p., '32  
Oregon State College, Corvallis
  744. Robertson, C. **Growing Cannery Crops with and without Irrigation**  
Oreg. State Hort. Soc. Rept., 1935, 46-49, '36
  745. Schuster, C. E., Besse, R. S., Rygg, G. L. and Powers, W. L. **Effect of Irrigation on Major Berry Crops in the Willamette Valley**  
Agr. Exp. Sta. Bull. No. 277, 51 p., '31  
Oregon State College, Corvallis
  746. Slagsvold, P. L. **Readjusting Montana's Agriculture. VI. Irrigation Resources**  
Agr. Exp. Sta. Bull. No. 315, '36  
Montana State College, Bozeman
- 
747. United States Department of Commerce, Bureau of the Census. **Irrigation of Agricultural Lands. Statistics for State and Counties Idaho-Montana-Oregon-Washington (separates)**  
13 p., '31  
U. S. Govt. Print. Off., Washington, D. C.

#### LAND CLASSIFICATION

748. Barnes, C. P. **A Classification of Natural Land-Types According to Productivity, Based on the Soil Survey**  
Am. Soil Survey Assoc. Bull., No. 16, 36-38, '35
749. Barnes, C. P. **Land Classification: Objectives and Requirements**  
Land-Use Planning Publ. No. 1, 44 p. (mimeo.), '36  
\*U. S. Resettlement Administration, Washington, D. C.
750. Bell, R. E., Tjerandsen, C. and Dwyer, C. H. **A Reconnaissance Land Classification of Boundary County, Idaho**  
27 p., '36  
\*\*U. S. Resettlement Administration, Region 11, Portland, Oreg.
751. Coos County, Oregon, Planning Commission. **Land Classification and Use Study**  
Coquille, Oreg.
752. DeYoung, W. **Classifying Irrigable Lands**  
Montana Farmer, XIX, p. 5, '32
753. Dorisy, C. E. **Agricultural Lands**  
6 p. (mimeo.), '34  
Washington State Planning Council, Olympia

\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.

\*\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Berkeley, California.

754. Idaho, University of, Agricultural Experiment Station. **Basic Data for Land Classification for Idaho Counties:**

Ada	Caribou	Kootenai
Adams	Cassia	Latah
Bear Lake	Clark	Lemhi
Benewah	Custer	Lewis
Bingham	Elmore	Madison
Blaine	Franklin	Minidoka
Bonner	Gem	Nez Perce
Boundary	Gooding	Oneida
Butte	Idaho	Payette
Camas	Jefferson	Teton
Canyon	Jerome	Washington

Mimeo. Series No. 2, '37 and '38  
Moscow, Idaho

755. Landerholm, E. F. **Land Classification and Utilization; The Present Land-Use Survey in Western Washington**  
Proc. of Pacific Northwest Regional Planning Conf., III, 37-39, '36  
Portland, Oreg.
756. Landerholm, E. F. and Bell, R. E. **A Reconnaissance Land-Use Classification of Grays Harbor County, Washington**  
(mimeo.), '36  
\*U. S. Resettlement Administration, Region 11, Portland, Oreg.
757. Landerholm, E. F., Bell, R. E. and Orr, A. E. **A Reconnaissance Land Classification of the Western Part of Snohomish County**  
\*U. S. Resettlement Administration, Region 11, Portland, Oreg., '36
758. Oregon State Planning Board. **A Land Classification Program for Agricultural Lands of Oregon**  
24 p. (mimeo.), '34  
Portland, Oreg.
759. Powers, W. L. **Land Classification and Soil and Water Surveys**  
Agricultural Engineering, XVI, '35
760. Reynolds, R. E. **Land-Use Study of Tillamook County, Oregon**  
(mimeo.), '37  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Corvallis, Oreg.
761. Selby, H. E. **Land Classification as a Factor in Improving the Economic and Social Welfare of the Region**  
Proc. of Pacific Northwest Regional Planning Conf., III, 70-72, '36  
Portland, Oreg.
762. Selby, H. E. and Fryer, L. **Willamette Valley Land Adaptability**  
Agr. Exp. Sta. Circ. No. 120, '37  
Oregon State College, Corvallis
763. Tillamook County, Oregon, Planning Commission. **Field Data on Land Classification and Use Survey**  
Tillamook, Oreg.

\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Berkeley, California.

764. Tjerandsen, C. **Land Classification in a Regional Land Program**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 60-63, '37  
Portland, Oreg.
765. Tjerandsen, C. **A Land-Use Classification of Latah County, Idaho**  
36 p., '37  
\*U. S. Resettlement Administration, Region 11, Portland, Oreg.
766. Tjerandsen, C. and Dwyer, C. H. **A Land-Use Classification of Benewah County, Idaho**  
\*U. S. Resettlement Administration, Region 11, Portland, Oreg.
767. Tootell, R. B. **Finding the Best Use for Land. There is a Definite Relation between Land Classification and Land Utilization**  
Montana Farmer, XX, No. 4, 3 p., '32
768. United States Department of Agriculture, Soil Conservation Service, Region 11. **Basis for Figures in Estimates of Land Suitable for Cultivation**  
(ms.), '37  
Spokane, Wash.
769. Washington State Planning Council. **Land Classification and Land Use Surveys—State of Washington**  
7 p. (mimeo.), '35  
Olympia, Wash.
770. Willard, R. E. **Land Classification and Land Use**  
6 p. (mimeo.), '34  
Washington State Planning Council, Olympia
771. Wilson, S. A. **Land Classification and Use**  
Commonwealth Series, II, No. 1, 60-62, '34  
University of Oregon, Eugene
772. Wright, M. S. **The Application of Aerial Photography to Mapping in Land-Use Mapping**  
Land Policy Circ. 25-29, '37

#### LAND RECLAMATION

773. Adams, F. **Planning the Use of Our Irrigation Resources**  
Agricultural Engineering, XVII, No. 8, 326-328, '36
774. Clackamas County, Oregon, Planning Board. **Study of Drainage Data**  
Oregon City, Oreg.
775. Douglas County, Oregon, Planning Commission. **Survey of Irrigation Dams and Reservoirs**  
Roseburg, Oreg.
776. Fortier, S. and Young, A. A. **Irrigation Requirements of the Arid Lands of the Columbia River Basin**  
U. S. Dept. of Agr. Tech. Bull. No. 200, '30  
U. S. Govt. Print. Off., Washington, D. C.
777. Fortier, S. and Young, A. A. **Irrigation Requirements of Arid and Semi-Arid Lands of Pacific Slope Basins**  
U. S. Dept. of Agr. Tech. Bull. No. 379, 1-69, '33  
U. S. Govt. Print. Off., Washington, D. C.

\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Berkeley, California.

778. Goodwin, G. E. **Benefits of Irrigation West of the Cascades**  
Civil Engineering, VI, 667-670, '36
779. Haw, J. W. **Irrigation—Its Place in Utilization of the Water Resources of the West and Its Interrelationship with Associated Water Uses**  
Proc. of Pacific Northwest Regional Planning Conf., III, 81-82, '36  
Portland, Oreg.
780. Jardine, J. T. **Economic Aspects of Land Reclamation in Eastern Oregon**  
Engr. News-Record, CVI, No. 11, 441-443, '31
781. Josephine County, Oregon, Planning Commission. **Survey of Irrigation, Dams and Reservoirs**  
Grants Pass, Oreg.
782. King, A. S. **The Cost of an Irrigation System**  
27th Ann. Rept. of Oreg. State Hort. Soc., 41-45, '35
783. King, A. S. and Lewis, M. R. **Irrigation in Western Oregon**  
Agr. Engr., XII, No. 1, 279-282, '31
784. Lewis, M. R. and Work, A. **Orchard Drainage in the Medford Area, Jackson County, Oregon**  
Agr. Exp. Sta. Circ. No. 100, 24 p., '31  
Oregon State College, Corvallis
785. Monson, O. W., McKee, C. and Slagsvold, P. L. **Irrigation Development in Montana: Part I. Water Supply**  
Agr. Exp. Sta. Bull. No. 353, '38  
Montana State College, Bozeman
786. Montana State College. **Study of Irrigated Lands**  
Montana WPA, WP 6000-1127  
Bozeman, Mont.
787. Oregon State Planning Board. **Land Development in Oregon through Flood Control, Drainage, and Irrigation**  
221 p. (mimeo.), '38  
Portland, Oreg.
788. Powers, W. L. **Drainage and Improvement of Wet Land**  
Agr. Exp. Sta. Circ. No. 102, '31  
Oregon State College, Corvallis
789. Powers, W. L. **Goose Lake Valley Irrigation Project, Lake County, Oregon**  
Soil Agr. and Econ. Rept. to Oreg. State Reclamation Comm., 1-22, '34  
Oregon State College, Soils Dept., Corvallis
790. Powers, W. L. **Reclamation and Use of Willamette Soils**  
(mimeo.), '35  
Oregon State College, Agricultural Experiment Station, Corvallis
791. Powers, W. L. and Wursten, J. L. **Reclamation of Virgin Black Alakli Soils**  
Jour. of Agronomy, XXVI, p. 752, '34
792. Reaugh, D. M. **Irrigation Districts in the State of Washington**  
Honors Thesis, '32  
Lib., State College of Washington, Pullman

793. Schuyler, P. **Owyhee Irrigation Project; Oregon-Idaho**  
Western Construction News, VI, No. 14, 318-325, '31
794. Slagsvold, P. L. **Readjusting Montana's Agriculture: VI. Montana's Irrigation Resources**  
Agr. Exp. Sta. Bull. No. 315, 18 p., '36  
Montana State College, Bozeman
795. Tiffany, R. K. **Irrigation—A National Problem**  
Civil Engineering, I, 1081-1086, '31
796. Tiffany, R. K. **Large Reclamation Development and Land Planning**  
11 p. (mimeo.), '36  
Washington State Planning Council, Olympia
797. Tootell, R. B. **An Inventory of Montana Irrigation Projects**  
Ext. Serv. Bull. No. 124, 104 p., '32  
Montana State College, Bozeman
798. Twiss, S. N. **Mineral Analysis of Materials Available for the Construction of Two Earth Fill Dams on the Pomeroy Project**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
799. Twiss, S. N. **The Proctor Method of Control in the Construction of Rolled Earth Dams**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
800. Twiss, S. N. **Testing and Control of Materials for Rolled-Fill Earth Dams**  
(mimeo.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
801. United States Department of Commerce, Bureau of the Census. **Drainage of Agricultural Lands** (Reports by states with statistics for counties, a summary for the United States, and a synopsis of drainage laws)  
15th Census of the United States, 1930, 453 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
802. United States Department of Commerce, Bureau of the Census. **Drainage of Agricultural Lands, Statistics for State and Counties Idaho-Oregon-Washington** (separates)  
15th Census of United States, 1930, 9 p., '31  
U. S. Govt. Print. Off., Washington, D. C.
803. United States Department of the Interior, Bureau of Reclamation. **General Information Concerning the Payette Division, Boise Irrigation Project, Idaho**  
Washington, D. C., '37
804. United States Department of the Interior, Bureau of Reclamation. **General Information Concerning the Upper Snake River Storage Project**  
Washington, D. C., '38

805. United States National Resources Committee, Water Resources Committee. **Report of the Special Subcommittee on Drainage Policy and Projects**  
22 p. (mimeo.), '36  
Washington, D. C.
806. Wallowa County, Oregon, Planning Commission. **Survey of Irrigation Needs in the County**  
Enterprise, Oreg.
807. Washington State Planning Council. **Reclamation: A Sound National Policy. The Yakima Valley and Other Irrigated Areas of Washington**  
Olympia, Wash., '36
808. Wursten, J. L. and Powers, W. L. **Reclamation of Virgin Black Alkali Soils**  
Jour. of Agron., XXVI, p. 752, '34

#### LAND UTILIZATION

809. Atkinson, A. **Land-Use Planning in Montana**  
Proc. of Pacific Northwest Regional Planning Conf., 70-73, '34  
Portland, Oregon
810. Baker, O. E. **Agricultural Regions of North America—Grazing and Irrigated Crops Region**  
Econ. Geog., VII, 325-364, '31; VIII, 325-377, '32
811. Baker, O. E. **Agricultural Regions of North America—Columbia Plateau Wheat Region**  
Econ. Geog., IX, 167-197, '33
812. Baker, O. E. **Agricultural Regions of North America—North Pacific Hay and Pasture Region**  
Econ. Geog., VII, 109-153, '31
813. Bell, R. E., Smith, J. W. and Deschamps, R. **A Reconnaissance Plan for Land and Water Use in Josephine County, Oregon**  
(ms.), '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Corvallis, Oreg.
814. Bodtker, A. N. **Survival and Factors in Survival in Farm Occupancy in Sherman County, Oregon**  
Master's Thesis, '37  
Oregon State College, Corvallis
815. Burrier, A. S. **Agricultural Lands of the Willamette Valley**  
32 p. (mimeo.), '35  
Oregon State Planning Board, Portland
816. Burrier, A. S. **Land-Use Problems in Oregon, An Abridged Report**  
64 p. (mimeo.), '35  
Oregon State Planning Board, Portland
817. Burrier, A. S. **The Organization of Land-Use Planning in Oregon**  
Proc. of Western Farm Economics Assoc., VIII, 58-62, '35
818. Burrier, A. S. **Preliminary Report on Land-Use Problems and Policy**  
20 p. (ms.), '34  
Oregon State Planning Board, Portland

819. Curry County, Oregon, Planning Commission. **Land-Use Survey**  
Gold Beach, Oreg.
820. Dachnowski-Stokes, A. P. **Peat Land in the Pacific Coast States in Relation to Land and Water Resources**  
U. S. Dept. of Agr. Misc. Publ. No. 248, 68 p., '36  
Washington, D. C.
821. Dachnowski-Stokes, A. P. **Peat Land Utilization**  
Geog. Review, XXIV, 238-250, '34
822. Freeman, O. W. **Land Utilization in the Scablands of Eastern Washington**  
Econ. Geog., VII, 28-40, '31
823. Garland, J. H. **The Columbia Plateau Region of Commercial Grain Farming**  
Geog. Review, XXIV, 371-379, '34
824. Gilman, V. D. **Extension Work in Relation to Land Utilization (Montana)**  
Jour. of Farm Economics, XIII, 605-611, '31
825. Gilman, V. D. **Types of Farming in Southeastern Montana**  
Agr. Exp. Sta. Bull. No. 287, '34  
Montana State College, Bozeman
826. Haight, R. B. **Rural Zoning in Relation to the Farm Tax Problem**  
Proc. of Pacific Northwest Regional Planning Conf., III, 49-51, '36  
Portland, Oreg.
827. Haight, R. B. and Drier, J. **An Area Land-Use Study: Illustrated by Material from Fergus County, Montana**  
Plan Age, III, 102-107, '37
828. Idaho State Planning Board. **Preliminary Report of Rural Land Use**  
65 p. (ms.), '34  
Boise, Idaho
829. Jarvis, T. D. **Soil Studies in Relation to Land Utilization Research**  
Scientific Agriculture, XV, 287-296, '35
830. Johnson, N. W. and Vogel, H. A. **Types of Farming in Idaho. Part II—The Type of Farming Areas**  
Agr. Exp. Sta. Bull. No. 208, '34  
University of Idaho, Moscow
831. Johnson, N. W. and Willard, R. E. **Nature and Distribution of Types of Farming in Washington. Types of Farming Series, Part III**  
Agr. Exp. Bull. No. 301, '34  
State College of Washington, Pullman
832. Johnson, N. W. and Willard, R. E. **Present Land Uses, Washington**  
Agr. Exp. Sta. Bull. No. 288, 40 p., '33  
State College of Washington, Pullman
833. Johnson, N. W. and Willard, R. E. **Trends in Agriculture in Washington, 1900 to 1930—Types of Farming Series, Part II**  
Agr. Exp. Sta. Bull. No. 300, 45 p., '34  
State College of Washington, Pullman
834. Kuhlman, G. W., Flippin, T. J. and Niederfrank, E. J. **Part-Time Farming in Oregon**  
Agr. Exp. Sta. Bull. No. 340, 49 p., '35  
Oregon State College, Corvallis



835. Landerholm, E. F. **Land-Use Study of Whitman County, Washington**  
(ms.), '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Division of State and Local Planning, Pullman, Wash.
836. Landerholm, E. F. **Present Land-Use Mapping in Washington**  
Planning News, Pacific Northwest Regional Planning Commission,  
III, p. 8, '35  
Portland, Oregon
837. Landerholm, E. F., Baker, V. W. and Henry, H. H. **Report of Major Land-Use Problems and Policies for Washington**  
10 p. (ms.), '34  
Washington State Planning Council, Olympia
838. Landerholm, E. F. and Johnson, C. E. **Present Land-Use Mapping (Methodology Used by High School Students, State of Washington, 1936)**  
Land-Use Planning Publ. No. 2, 17 p., '36  
\*Land-Use Planning Sec., Land Utilization Division, U. S. Resettlement Administration, Washington, D. C.
839. Landerholm, E. F., Johnson, C. E. and Nelson, L. A. **Present Land-Use Mapping in Six Counties in Western Washington, 1933-1936**  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Washington, D. C., '38
840. Montana State College. **Land Uses and Utilization**  
Montana WPA, WP 1738  
Bozeman, Mont.
841. Montana State Planning Board. **Land-Use Report to National Resources Board**  
4 p. (mimeo.), '34  
Helena, Mont.
842. Moore, J. C. **A Land-Use Study of Coos County, Oregon**  
39 p. (mimeo.), '37  
\*\*U. S. Dept. of Agriculture, Resettlement Administration, Region 11, Portland, Ore.
843. Moore, J. C. **A Land-Use Study of Curry County, Oregon**  
30 p. (mimeo.), '36  
\*\*U. S. Dept. of Agriculture, Resettlement Administration, Region 11, Portland, Ore.
844. Oregon State Planning Board. **Land-Use Problems in Oregon**  
64 p. (mimeo.), '35  
Portland, Ore.
845. Oregon State Planning Board. **Report of Eastern Oregon Public Land-Use Committee**  
14 p. (mimeo.), '36  
Portland, Ore.
846. Potter, E. L. **Land-Use Planning and the Sheep Industry**  
National Wool Grower, XXVI, 31-32, '36
847. Pratt, G. E. **Land Utilization and Conservation**  
Proc. of Natl. Conf. on Land Utilization, 83-88, '31

\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.

\*\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Berkeley, California.

848. Pubols, B. H. **Part-Time Farming in Washington**  
Agr. Exp. Sta. Bull. No. 316, 47 p., '35  
State College of Washington, Pullman
849. Reitz, L. P. **Crop Regions in Montana as Related to Environmental Factors**  
Agr. Exp. Sta. Bull. No. 340, 48 p., '37  
Montana State College, Bozeman
850. Renne, R. R. **Significance of the Ownership Pattern to Land-Use Planning**  
Jour. of Farm Economics, XVII, 423-432, '35
851. Reynolds, R. E. **A Land-Use Study of Tillamook County, Oregon**  
46 p. (mimeo.), '37  
\*U. S. Dept. of Agriculture, Resettlement Administration, Region 11, Portland, Oreg.
852. Rockie, W. A. **Land Abuse or Land Use**  
Proc. of Western Farm Economics Assoc., IX, 169-175, '36
853. Ronchetto, J. **Memorandum on Rural Zoning**  
18 p. (mimeo.), '36  
Oregon State Planning Board, Portland
854. Rush, W. M. **The Place of Wildlife in Land Planning**  
Proc. of Pacific Northwest Regional Planning Conf., III, 68-70, '36  
Portland, Oreg.
855. Saunderson, M. H. **Basic Inventory Materials for Research in Land Economics**  
Land Policy Circ., 18-23, '36  
\*\*U. S. Dept. of Agriculture, Resettlement Administration, Washington, D. C.
856. Saunderson, M. H., Haight, R. B., Peterson, E. M. and Willard, R. E. **An Approach to Area Land-Use Planning (With Particular Reference to Technique and Procedure)**  
Land-Use Planning Publ. No. 16, 60 p., '37  
Montana State College, Agricultural Experiment Station, Bozeman
857. Selby, H. E. **Land-Use Planning**  
Proc. of Western Farm Economics Assoc., VIII, 79-82, '35
858. Smith, L. M. **Land Utilization in Washington**  
Master's Thesis, '38  
Lib., State College of Washington, Pullman
859. Thomas, W. P. **Research for Land-Use Adjustment**  
Proc. of Western Farm Economics Assoc., IX, 145-150, '36
860. Tower, J. A. **Land Utilization in Mason County, Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
861. United States Department of Agriculture, Agricultural Adjustment Administration, Division of Program Planning. **Washington Surveys Its Land Uses**  
Land Policy Review, I, 3-5, '35

\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Berkeley, California.

\*\* Now secured from the U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.

862. United States Department of Agriculture, Soil Conservation Service.  
**Central Oregon Land Utilization Project**  
4 p., '38  
Washington, D. C.
863. United States Department of Agriculture, Soil Conservation Service.  
**Southeastern Idaho Land Utilization Project**  
4 p., '38  
Washington, D. C.
864. United States Department of Agriculture, Soil Conservation Service,  
Region 11. **Development of a Land-Use Program for Squaw Creek  
Watershed, Idaho**  
(mimeo.), '37  
Spokane, Wash.
865. United States Department of Agriculture, Soil Conservation Service,  
Region 11. **Land-Use Program for the Squaw Creek Watershed—  
Gem, Valley and Boise Counties, Idaho**  
(mimeo.), '38  
Spokane, Wash.
866. United States Department of Agriculture, Soil Conservation Service,  
Region 11. **Statistics of Forest Land, Non-Forest Land, and Farm  
Woodlands by Counties for the States of Idaho, Oregon and Wash-  
ington**  
(mimeo.), '37  
Spokane, Wash.
867. United States Department of Agriculture, Soil Conservation Service,  
Region 11, Agronomy-Range Division. **Coordinated Land-Use Pro-  
gram for Oregon Grazing District No. 1**  
(ms.), '39  
Spokane, Wash.
868. United States National Resources Committee. **Agricultural Land  
Requirements and Resources**  
64 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
869. Vass, A. F. **Agricultural Production and Land Utilization**  
Proc. of Western Farm Economics Assoc., VI, 42-55, '32
870. Vogel, H. A. **Preliminary Report of Rural Land-Use Problem Areas  
in Idaho**  
22 p. (ms.), '34  
Idaho State Planning Board, Boise
871. Vogel, H. A. and Johnson, N. W. **Types of Farming in Idaho. Part  
I—Agricultural Resources and Factors Affecting Their Use**  
Agr. Exp. Sta. Bull. No. 207, 60 p., '34  
University of Idaho, Moscow
872. Washington, State College of, Agricultural Experiment Station.  
**Present Land Uses—Washington Types of Farming Series, Part I**  
Bull. No. 288, '33  
Pullman, Wash.
873. Washington State Planning Council. **Model Rural Land Zoning Reso-  
lution**  
14 p. (mimeo.), '34  
Olympia, Wash.

874. Washington State Planning Council. **Preliminary Report on Land-Use Problems and Policy for Washington**  
10 p. (mimeo.), '34  
Olympia, Wash.
875. Washington State Planning Council. **Report of the Land-Use Committee**  
11 p. (mimeo.), '34  
Olympia, Wash.
876. Washington State Planning Council. **Report on Land-Use Problems**  
18 p. (mimeo.), '34  
Olympia, Wash.
877. Weeks, D. **The Economist's Approach and Objectives in Land Utilization**  
10 p. (mimeo.), '37  
University of California, Agricultural Experiment Station, Berkeley
878. Wheeting, L. C. and Willard, R. E. **The Land and Its Use**  
Proc. of Pacific Northwest Regional Planning Conf., 62-63, '34  
Portland, Oreg.
879. Willard, R. E. **A State Program of Land Use**  
Proc. of Western Farm Economics Assoc., VII, 67-74, '34
880. Wilson, S. A. **Land Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 43-44, '37  
Portland, Oreg.
881. Wilson, S. A. **Some Problems Confronting a Land Utilization Program for the Pacific Northwest**  
Proc. of Pacific Northwest Advisory Board, American Railway Assoc., 24th, 36-39, '33
882. Winters, R. K. **Forests in a Land-Use Program**  
Jour. of Farm Economics, XIX, 758-763, '37
883. Wood, J. D. **District Planning**  
5 p. (ms.), '36  
Idaho State Planning Board, Boise
884. Zundel, A. **A Study of Rural Land Zoning Problems and the Probable Benefits from Zoning**  
7 p. (mimeo.), '36  
Oregon State Planning Board, Portland

#### PESTS AND DISEASES

885. Baker, K. F. and Heald, F. D. **The Effect of Certain Cultural and Handling Practices on the Resistance of Apples to *Penicillium Expansum***  
Phytopathology, XXVI, 932-948, '36
886. Baker, K. F. and Heald, F. D. **The Importance of Lenticel Infection of Apples by *Penicillium Expansum***  
Agr. Exp. Sta. Bull. No. 264, 15 p., '32  
State College of Washington, Pullman
887. Baker, K. F. and Heald, F. D. **Investigations on Methods of Control of the Blue-Mold Decay of Apples**  
Agr. Exp. Sta. Bull. No. 304, 1-32, '34  
State College of Washington, Pullman

888. Baker, K. F. and Heald, F. D. **Some Problems Concerning Blue-Mold in Relation to Cleaning and Packing of Apples**  
Phytopathology, XXII, 879-898, '32
889. Bressman, E. N. **Varietal Resistance, Physiologic Specialization, and Inheritance Studies in Bunt of Wheat**  
Agr. Exp. Sta. Bull. No. 281, 44 p., '31  
Oregon State College, Corvallis
890. Brindley, T. A. and Hinman, F. G. **Distribution of Pea Weevil Infestations in the Palouse Area of Northern Idaho and Eastern Washington**  
U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Washington, D. C., '38
891. Chamberlin, W. J. **The Ticks of Oregon**  
Agr. Exp. Sta. Bull. No. 346, '37  
Oregon State College, Corvallis
892. Chamberlin, W. J. and Gray, K. W. **Suggestions for the Control of the Pea Weevil in Oregon with Especial Reference to Peas Grown for Processing**  
Agr. Exp. Sta. Circ. No. 126, 23 p., '38  
Oregon State College, Corvallis
893. Childs, L. and Kienholz, J. **Pear Scab in the Hood River Valley**  
Proc. of Oreg. State Hort. Soc., XLIX, 65-71, '34
894. Cooley, J. S. and Crenshaw, J. H. **Control of Botrytis Rot of Pears with Chemically Treated Wrappers**  
U. S. Dept. of Agr. Circ. No. 177, '31  
Washington, D. C.
895. Dana, B. F. **The Curly Top Disease of Vegetables in the Pacific Northwest**  
Agr. Exp. Sta. Circ. of Infor. No. 180, 5 p. (mimeo.), '38  
Oregon State College, Corvallis
896. Duruz, W. P. and Owens, C. E. **Powdery Mildew of Grape and Its Control**  
Agr. Exp. Sta. Circ. of Infor. No. 123 (mimeo.), '35  
Oregon State College, Corvallis
897. Dykstra, T. **Control of Potato Virus Diseases**  
Agr. Exp. Sta. Circ. of Infor. No. 107 (mimeo.), '31  
Oregon State College, Corvallis
898. Edwards, W. D. and Zeller, S. M. **Insect Pests and Diseases of Strawberry in Oregon**  
Agr. Exp. Sta. Bull., '38  
Oregon State College, Corvallis
899. Eichmann, R. D. **Cherry Aphid and Cherry Maggot in the Flathead Valley**  
Agr. Exp. Sta. Bull. No. 313, 1-11, '36  
Montana State College, Bozeman
900. Fischer, G. W. **Observations on the Comparative Morphology and Taxonomic Relationships of Certain Grass Smuts in Western North America**  
Mycologia, XXIX, No. 4, 408-425, '37

901. Fischer, G. W. **Some New Grass Smut Records from the Pacific Northwest**  
Mycologia, XXX, No. 4, 385-395, '38
902. Fischer, G. W. **The Susceptibility of Certain Wild Grasses to Tilletia Tritici and Tilletia Levis**  
Phytopathology, XXVI, No. 9, 876-886, '36
903. Fish, F. F. **The Effect of Physical and Chemical Agents upon the Oocysts of Eimeria Tenella**  
Science, LXXIII, 292-293, '31
904. Fish, F. F. **Quantitative and Statistical Analysis of Infections with Eimeria Tenella in the Chicken**  
American Journal of Hygiene, XIV, No. 3, 560-576, '34
905. Fish, F. F. **Some Factors in the Control of Coccidiosis of Poultry**  
Jour. of Am. Veterinary Medical Assoc., LXXX, 543-559, '32
906. Fisher, D. F. and Reeves, E. L. **A Cytospora Canker of Apple Trees**  
Jour. of Agr. Research, XLIII, No. 5, '31
907. Fisher, D. F., Harley, C. P. and Brooks, C. **The Influence of Temperature on the Development of Water Core**  
Northwest Fruit Grower, VI, No. 7, p. 5, 11, '34
908. Fisher, G. W. **Diseases of Forage Crops**  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries, Pullman, Wash.
909. Gentner, L. G. and Norris, R. K. **Codling-Moth Control in the Rogue River Valley**  
(ms.) ( )  
Oregon State College, Corvallis
910. Gentner, L. G. and Norris, R. K. **Dormant Sprays and Their Use for the Control of Insect Pests of Fruit Trees in Rogue River Valley**  
Agr. Exp. Sta. Bull. No. 321, '36  
Oregon State College, Corvallis
911. Heald, F. D. and Ruehle, G. D. **The Rots of Washington Apples in Cold Storage**  
Agr. Exp. Sta. Bull. No. 253, 40 p., '31  
State College of Washington, Pullman
912. Henry, H. H. **Brief of Economic Weed Study**  
(ms.), '36  
Farm Credit Administration, Spokane, Wash.
913. Holton, C. S. **A Probable Explanation of Recent Epidemics of Bunt in Durum Wheats**  
Phytopathology, XX, 353-357, '30
914. Holton, C. S. and Heald, F. D. **Studies on Control and Other Aspects of Bunt of Wheat**  
Agr. Exp. Sta. Bull. No. 339, 35 p., '36  
State College of Washington, Pullman
915. Jackman, E. R. **Control of Perennial Weeds in Oregon**  
Ext. Serv. Bull. No. 510, '38  
Oregon State College, Corvallis

916. Johnson, F. and Jones, L. K. **Two Mosaic Diseases of Peas in Washington**  
Jour. of Agr. Research, LIV, 629-638, '37
917. Johnson, W. T. **Coccidiosis of the Chicken**  
Agr. Exp. Sta. Bull. No. 314, '33  
Oregon State College, Corvallis
918. Johnson, W. T. **Fowl-Pox Control**  
Agr. Exp. Sta. Bull. No. 273, '30  
Oregon State College, Corvallis
919. Johnson, W. T. and Dickinson, E. M. **Pullorum Disease of Poultry**  
Agr. Exp. Sta. Bull. No. 313, '33  
Oregon State College, Corvallis
920. Jones, L. K. **Factors Influencing the Effectiveness of Organic Mercury Dusts in Pea Seed Treatment**  
Jour. of Agr. Research, XLII, 25-33, '31
927. Jones, S. C. and Mote, D. C. **Control of the Pear Thrip on Prunes in**  
Agr. Exp. Sta. Bull. No. 250, 16 p., '31  
State College of Washington, Pullman
922. Jones, L. K., Anderson, E. J. and Burnett, G. **The Latent Virus of Potatoes**  
Phytopathologische Zeitschrift, VII, 93-115, '34
923. Jones, L. K. and Baur, K. **Mosaic and Related Diseases of Raspberries in Washington**  
Agr. Exp. Sta. Bull. No. 324, 19 p., '36  
State College of Washington, Pullman
924. Jones, L. K. and Burnett, G. **Virous Diseases of Greenhouse-Grown Tomatoes**  
Agr. Exp. Sta. Bull. No. 308, 36 p., '35  
State College of Washington, Pullman
925. Jones, L. K. and Vincent, C. L. **The Susceptibility of Potatoes to the Vein-Banding Virus**  
Jour. of Agr. Research, LV, 69-79, '37
926. Jones, S. C. **The Currant and Gooseberry Maggot or Yellow Currant Fly (*Epochra Canadensis*) Loew**  
Agr. Exp. Sta. Circ. No. 121, '37  
Oregon State College, Corvallis
927. Jones, S. C. and Mote, D. C. **Control of the Pear Thrip on Prunes in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 147 (mimeo.), '36  
Oregon State College, Corvallis
928. Kadow, K. J. and Jones, L. K. **Fusarium Wilt of Peas with Special Reference to Dissemination**  
Agr. Exp. Sta. Bull. No. 272, 30 p., '32  
State College of Washington, Pullman
929. Larson, A. O. **Pea Weevil Control in the Willamette Valley**  
Agr. Exp. Sta. Circ. No. 99, '31  
Oregon State College, Corvallis
930. Marshall, J. and Groves, K. **Three Years' Study of Calcium Arsenate for Codling Moth Control**  
Jour. of Economic Entomology, XXIX, 658-659, '36

931. McKay, M. B. **Potato Diseases in Oregon and Their Control**  
Agr. Exp. Sta. Circ. No. 96, '30  
Oregon State College, Corvallis
932. McKay, M. B. and Dykstra, T. P. **Potato Virus Diseases; Oregon Investigations, 1924-1929**  
Agr. Exp. Sta. Bull. No. 294, '32  
Oregon State College, Corvallis
933. McLarty, H. R. **Perennial Canker of Apple Trees**  
Canadian Jour. of Research, VIII, No. 5, 492-507, '33
934. McLarty, H. R., Wilcox, J. C. and Woodbridge, C. G. **The Control of Drought Spot and Corky Core of the Apple in British Columbia Better Fruit, XXXI, No. 10, p. 12, 13, '37**
935. McWhorter, O. T. **Zinc Treatments for Little Leaf**  
Ext. Serv. Circ. No. 310, 2 p., '38  
Oregon State College, Corvallis
936. Miller, P. W. **Diseases of Nut Crops in the Pacific Northwest in 1935**  
Plant Disease Reporter, XIX, 280-283, '35  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Washington, D. C.
937. Miller, P. W. **Filbert Blight and Its Control**  
Ext. Serv. Bull. No. 486, '36  
Oregon State College, Corvallis
938. Miller, P. W. **Studies on Walnut Blight and Its Control in Oregon: Seventh Report of Progress**  
29th Ann. Rept. of Oreg. State Hort. Soc., 119-143, '37
939. Miller, P. W. and Thompson, B. G. **Walnut and Filbert Blight and Their Control**  
Ext. Serv. Bull. No. 476, '35  
Oregon State College, Corvallis
940. Mote, D. C. **Control of the Western Peach and Prune Root-Borer**  
Agr. Exp. Sta. Circ. No. 109, '35  
Oregon State College, Corvallis
941. Mote, D. C. **Strawberry Root-Weevil Control in Oregon**  
Agr. Exp. Sta. Circ. No. 115, '36  
Oregon State College, Corvallis
942. Mote, D. C. **Tree Borers and Their Control**  
Agr. Exp. Sta. Circ. No. 110, '35  
Oregon State College, Corvallis
943. Mote, D. C., Edwards, W. D. and Gray, K. W. **The Blackberry Mite**  
Agr. Exp. Sta. Circ. of Infor. No. 149 (mimeo.), '36  
Oregon State College, Corvallis
944. Offord, H. R., Van Atta, G. R. and Quick, C. R. **Methods of Propagating Ribes in Nutrient Solution for Use as Test**  
Mimeo. Series Tech. Papers of Bur. of Ent. and Plant Quar., p.6, '37  
U. S. Dept. of Agriculture, Washington, D. C.
945. Offord, H. R. and Winslow, L. P. **Sodium Second Alcohol Sulfates as Spreaders for Sodium Chlorate Herbicides**  
Northwest Science, XII, 95-96, '38



946. Oregon State College. **Experiments in Breeding Vegetable Plants with High Resistance to Fungus Diseases**  
WPA 65-94-1209  
Corvallis, Oreg.
947. Oregon State College, Extension Service. **Control of Perennial Weeds in Oregon**  
Ext. Serv. Bull. No. 510, '38  
Corvallis, Oreg.
948. Overholser, E. L. and Clore, W. J. **Six Years' Records of Amount of Cork Spot Fruit on Individual D'Anjou Pear Trees**  
Am. Soc. Hort. Sci., XXXIV, 192-198, '37
949. Owens, C. E. **Bacterial Gummosis of Cherry**  
Agr. Exp. Sta. Circ. of Infor. No. 121, 3 p., '35  
Oregon State College, Corvallis
950. Quick, C. R. **Chemical Control of Harmful Fungi during Stratification and Germination of Seeds of Ribes Roezli**  
Phytopathology, XXVI, 694-697, '36
951. Reeves, E. L. **Mottle Leaf of Cherries**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
952. Reeves, E. L. **Practical Aspects of Perennial Canker Control**  
Proc. of 28th Ann. Meeting Wash. State Hort. Assoc., '32
953. Remsberg, Ruth and Hungerford, C. W. **Certain Sclerotium Diseases of Grains and Grasses**  
Phytopathology, XXIII, 863-864, '33
954. Robinson, R. H. **Sprays, Their Preparation and Use**  
Agr. Exp. Sta. Bull. No. 336, '35  
Oregon State College, Corvallis
955. Robinson, R. H. and Hatch, M. B. **Spray Residue Information for the Orchardist and Fruit Packer**  
Agr. Exp. Sta. Bull. No. 341, '35  
Oregon State College, Corvallis
956. Ruehle, G. D. **New Apple Rot Fungi from Washington**  
Phytopathology, XXI, 1141-1152, '31
957. Shaw, J. N. **Lungworms (Dictyocaulus Filaria Rudolphi) in Sheep and Goats**  
Agr. Exp. Sta. Bull. No. 327, '34  
Oregon State College, Corvallis
958. Shaw, J. N. and Muth, O. H. **A Treatment for Scours in Calves**  
North American Veterinarian, XVII, 35-38, '36
959. Shaw, J. N. and Muth, O. H. **The Use of Acidophilus Milk in the Treatment of Dysentery in Young Animals**  
Am. Veterinary Medical Assoc. Jour., XC, 171-175, '37
960. Shaw, J. N. and Simms, B. T. **Studies in Fascioliasis in Oregon Sheep and Goats**  
Agr. Exp. Sta. Bull. No. 266, '30  
Oregon State College, Corvallis

961. Simms, B. T. and Muth, O. H. **The Establishment of Maintenance of Herds of Cattle Free from Bang's Disease (Infectious Abortion)**  
Agr. Exp. Sta. Bull. No. 332, '34  
Oregon State College, Corvallis
962. Thaanum, J. W. **Pea Diseases Influenced by the Introduction of Legumes in the Palouse, Athena and Dayton Areas**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
963. Wallowa County, Oregon, Planning Commission. **Weed Control Survey and Map**  
Enterprise, Oreg.
964. Washington, State College of, Poultry Council. **Coccidiosis in Chickens**  
Ext. Serv. Bull. No. 6, '37  
Pullman, Wash.
965. Washington, State College of, Poultry Council. **Fowl Pox**  
Ext. Serv. Bull. No. 28, '38  
Pullman, Wash.
966. Washington, State College of, Poultry Council. **Infectious Haryngo-tracheitis in Chickens and Colds and Roup**  
Ext. Serv. Bull. No. 8, '36  
Pullman, Wash.
967. Washington, State College of, Poultry Council. **Pullorum Disease: Poultry**  
Ext. Serv. Bull. No. 27, '35  
Pullman, Wash.
968. Washington, State College of, Poultry Council. **Worms in Poultry**  
Ext. Serv. Bull. No. 26, '37  
Pullman, Wash.
969. Webster, R. L. **A Ten-Year Study of Codling Moth Activity**  
Agr. Exp. Sta. Bull. No. 340, 40 p., '36  
State College of Washington, Pullman
970. Wellman, R. H. and Heald, F. D. **Steam Sterilization of Apple Boxes for Blue Mold**  
Agr. Exp. Sta. Bull. No. 357, 1-16, '38  
State College of Washington, Pullman
971. Wilcox, J., Gray, F. W. and Mote, D. C. **The Strawberry Crown Moth**  
Agr. Exp. Sta. Bull. No. 296, '32  
Oregon State College, Corvallis
972. Wilcox, J., Mote, D. C. and Childs, L. **The Root-Weevils Injurious to Strawberries in Oregon**  
Agr. Exp. Sta. Bull. No. 330, '34  
Oregon State College, Corvallis
973. Zeller, S. M. **Cherry Mottle Leaf**  
Oreg. State Hort. Soc. Rept., 4 p., '34
974. Zeller, S. M. **Controlling Peach Leaf Curl**  
Better Fruit, XXXI, No. 7, 16-17, '37
975. Zeller, S. M. **Nerticillium Wilt of Cane Fruits**  
Agr. Exp. Sta. Bull. No. 344, '36  
Oregon State College, Corvallis

976. Zeller, S. M. **Some New or Noteworthy Fungi or Ericaceous Hosts in the Pacific Northwest**  
Mycologia, '34
977. Zeller, S. M. **A Strawberry Disease Caused by Rhizoctonia**  
Agr. Exp. Sta. Bull. No. 295, '32  
Oregon State College, Corvallis

### POULTRY

978. Bearse, G. E. and Buchanan, W. D. **Cannibalism in Chickens**  
Ext. Serv. Bull. No. 12, '35  
State College of Washington, Pullman
979. Cagle, A. J. **Factors Affecting Poultry Profits**  
Ext. Serv. Bull. No. 31, '38  
State College of Washington, Pullman
980. Carver, J. S. **Control of Cannibalism in Chickens**  
Agr. Exp. Sta. Bull. No. 267, '32  
State College of Washington, Pullman
981. Carver, J. S. **Methods of Feeding Leghorn Hens**  
Agr. Exp. Sta. Bull. No. 254, '31  
State College of Washington, Pullman
982. Carver, J. S. **Washington Home Grown Laying Rations**  
Ext. Serv. Bull. No. 4, '31  
State College of Washington, Pullman
983. Carver, J. S., Brunstad, A., St. John, J. L., Frasier, F. W. and Athow, W. **Fish Oils as a Source of Vitamin D for Growing Chicks**  
Agr. Exp. Sta. Bull. No. 284, '33  
State College of Washington, Pullman
984. Carver, J. S. and Buchanan, W. D. **Turkey Raising in Washington**  
Ext. Serv. Bull. No. 159, '30  
State College of Washington, Pullman
985. Carver, J. S., Robertson, E. I., Brazie, D., Johnson, R. H. and St. John, J. L. **The Vitamin D Requirements of Chickens**  
Agr. Exp. Sta. Bull. No. 299, '34  
State College of Washington, Pullman
986. Carver, J. S., St. John, J. L., Miller, M. W. and Bearse, G. E. **The Comparative Efficiency of Various Proteins for Growing Chicks**  
Agr. Exp. Sta. Bull. No. 321, '35  
State College of Washington, Pullman
987. Carver, J. S., Wilhelm, L. A. and Cook, J. W. **Methods of Feeding Turkeys**  
Agr. Exp. Sta. Bull. No. 356, '38  
State College of Washington, Pullman
988. Hampson, C. C. and Willard, R. E. **Egg-Feed Ratio**  
State College of Washington, Agricultural Experiment Station, Pullman
989. Heiman, V., Carver, J. S. and St. John, J. L. **The Protein Requirements of Laying Hens**  
Agr. Exp. Sta. Bull. No. 331, '36  
State College of Washington, Pullman

990. Knowlton, F. L. **Force-Molting of White Leghorn Hens**  
Agr. Exp. Sta. Circ. No. 119, '36  
Oregon State College, Corvallis
991. Miller, M. W. **Washington Laying Rations**  
Ext. Serv. Bull. No. 161, '30  
State College of Washington, Pullman
992. Miller, M. W. and Bearse, G. E. **Mineral Supplements for Laying Hens**  
Agr. Exp. Sta. Bull. No. 320, '35  
State College of Washington, Pullman
993. Miller, M. W. and Bearse, G. E. **Phosphorus Requirements of Laying Hens**  
Agr. Exp. Sta. Bull. No. 306, '34  
State College of Washington, Pullman
994. Miller, M. W. and Bearse, G. E. **Protein Supplements for Laying Hens**  
Agr. Exp. Sta. Bull. No. 347, '37  
State College of Washington, Pullman
995. Schoth, H. A. **Green Feed and Pasture for Poultry**  
Agr. Exp. Sta. Circ. No. 123, '37  
Oregon State College, Corvallis
996. Washington, State College of, Poultry Council. **Duck Raising in Washington**  
Ext. Serv. Bull. No. 18, '37  
Pullman, Wash.
997. Washington, State College of, Poultry Council. **Summer Force Molting of Hens for Commercial Egg Production**  
Ext. Serv. Bull. No. 21, '38  
Pullman, Wash.
998. Washington, State College of, Poultry Council. **The Washington Breeders' Ration**  
Ext. Serv. Bull. No. 25, '38  
Pullman, Wash.
999. Washington, State College of, Poultry Council. **Washington Home Grown Rations**  
Ext. Serv. Bull. No. 19, '37  
Pullman, Wash.
1000. Washington, State College of, Poultry Council. **Washington Laying Rations**  
Ext. Serv. Bull. No. 20, '37  
Pullman, Wash.
1001. Wilhelm, L. A. and Heiman, V. **Seasonal Variations in Interior Egg Quality of New Laid Eggs**  
Agr. Exp. Sta. Tech. Paper No. 358, '38  
State College of Washington, Pullman

#### RANGE AND GRAZING

1002. Anderson, E. W. **Grazing Program in the Dry Land Section of Eastern Oregon**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

1003. **Anderson, E. W. Grazing Program on a Livestock Ranch in the Dry Land Section of Eastern Oregon**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1004. **Bailey, R. W. and Croft, A. R. Contour-Trenches Control Floods and Erosion on Range Lands**  
U. S. Emergency Conservation Work, Forestry Publ. No. 4, 22 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
1005. **Byrne, E. P. An Adjustment of the Livestock Industry of Idaho to Conform with a Rational Farm and Range Soil Conservation Program**  
Master's Thesis, '36  
Lib., University of Idaho, Moscow
1006. **Campbell, R. S. Problems of Measuring Forage Utilization on Western Ranges**  
Ecology, XVII, 528-532, '37
1007. **Chapline, W. R. Western Grazing Problems**  
Proc. of Western Farm Econ. Assoc., IX, 114-124, '36
1008. **Christ, J. H. Reseeding Burned-Over Lands in Northern Idaho**  
Agr. Exp. Sta. Bull, No. 201, 288 p., '34  
University of Idaho, Moscow
1009. **Clapp, E. H. The Major Range Problems and Their Solution. A Resume**  
74th Cong., 2d sess., S. Doc. No. 199, 1-69, '36  
U. S. Govt. Print. Off., Washington, D. C.
1010. **Craddock, G. W. The Erosion-Streamflow and Range Situation on the Boise River Watershed**  
Utah Juniper, V, '34  
Utah State Agricultural College, Logan
1011. **Craddock, G. W. Range Watershed Conservation: An Essential to Land Use Planning in the Arid West**  
American Bankers Assoc., Agricultural Committee Bull., X, No. 1, '36
1012. **Craddock, G. W. and Forsling, C. L. The Influence of Climate and Grazing on Spring-Fall Sheep Range in Southern Idaho**  
U. S. Dept. of Agr. Tech. Bull. No. 600, 42 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1013. **Craddock, G. W. and Pearse, C. K. Surface Run-Off and Erosion on Granitic Mountain Soils of Idaho as Influenced by Range Cover, Soil Disturbance, Slope and Precipitation Intensity**  
U. S. Dept. of Agr. Circ. No. 482, '38  
U. S. Govt. Print. Off., Washington, D. C.
1014. **Cramer, A. and Cooperative Western Range Survey Committee (Region E). An Inventory of the Range Resources in Petroleum County, Montana, with an Analysis of the Range Problems and Recommendations for Their Solution**  
51 p. (mimeo.), '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

1015. Darling, J. N. **The Jokers in Western Grazing**  
Successful Farming, XXXIV, No. 4, p. 9, 22, 47-49, '36
1016. Des Camp, R. M. and Allyn, W. J. **Grazing Survey of the Plateau Block of the Klickitat River Drainage**  
(ms.), '38  
University of Washington, College of Forestry, Seattle
1017. Ellison, L. and Woolfolk, E. J. **Effects of Drought on Vegetation near Miles City, Montana**  
Ecology, XVIII, 329-336, '37
1018. Forsling, C. L. **Maintaining Forage Production on the Range**  
Natl. Wool Grower, XXIV, 1-6, '34
1019. Forsling, C. L. and Dayton, W. A. **Artificial Reseeding on Western Mountain Range Lands**  
U. S. Dept. of Agr. Circ. No. 178, 48 p., '31  
U. S. Govt. Print. Off., Washington, D. C.
1020. Forsling, C. L. and Stewart, G. **Management of Uncultivated Lands**  
Proc. of World's Grain Exhibition and Conference, Canada, II, 177-182, '33
1021. Gaddis, C. W. and Henderson, E. W. **Preliminary Report of Range Survey, North Fork Ahtanum Drainage and Recommendations for Completion of Range Conservation Program**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1022. Hurtt, L. C. **Downy Brome (Cheatgrass) Range for Horses**  
Applied Forestry Notes No. 89, 4 p. (mimeo.), '35  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1023. Hurtt, L. C. **Drought, A Decisive Factor in Range Management**  
(ms.) In preparation for U. S. Dept. of Agr. Tech. Bull., '40
1024. Hurtt, L. C. **Overgrazing Increases Cattle Production Costs**  
Applied Forestry Notes No. 71, 5 p. (mimeo.), '35  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1025. Idaho Federal Range. **Inter-Agency Conference to Consider Establishing a Standard Forage-Use Table**  
(mimeo.), '39  
Moscow, Idaho
1026. Ingram, D. C. **Vegetative Changes and Grazing Use on Douglas Fir Cut-Over Land**  
Jour. of Agr. Research, XLIII, 387-417, '31
1027. Johnson, R. G. **Some Oregon Grazing Problems**  
Commonwealth Review, XIX, 261-267, '37  
University of Oregon Publications, Eugene
1028. Kavanagh, E. N. **Range Management in the Northwest**  
Proc. of Am. Natl. Livestock Assoc., 1930, 138-148, '31
1029. Kelley, E. W. **Range Grass; How It Lives—How It Must Be Treated to Insure Against Its Extermination**  
9 p. (mimeo.), '37  
Montana Stockgrowers' Assoc., Bozeman

1030. Kinney, J. P. **Range Management on Indian Lands**  
Idaho Forester, XV, 11-12, 48, '33  
University of Idaho, Moscow
1031. Lister, P. B., Frandsen, W. R. and Thomson, J. P. **Range Reconnaissance in the Drainage Basins of Methow and Okanogan Rivers**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1032. McCall, R. **The Nutritive Value of Range Grasses. (Chemical Analysis of Festuca Idahoensis)**  
Agr. Exp. Sta. Bull. No. 260, '31  
State College of Washington, Pullman
1033. McCall, R. **Seasonal Variation in Composition and Digestibility of Certain Species of Range Bunch Grass**  
Proc. of Am. Soc. of Animal Production, 15th An. Meeting, p. 95, '32
1034. McLaughlin, W. T. and Roaf, J. **Range Survey Report: The Boise Area, Ada County, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1035. Montana State College. **A Study of Range Lands and Livestock**  
Montana WPA, WP 804  
Bozeman, Mont.
1036. Montana State College, Agricultural Extension Service. **Grazing District—Nature and Possibilities in Range Land Utilization**  
Bull. No. 127 (rev.), 40 p., '34  
Bozeman, Mont.
1037. National Land-Use Planning Committee and National Advisory and Legislative Committee on Land Use. **Conservation of the Grazing Resources of the Remaining Public Domain**  
Publ. No. 4, 21 p. (mimeo.)  
Washington, D. C.
1038. Oregon State Planning Board. **Development of Watering Places on the Oregon Range**  
26 p. (processed), '37  
Portland, Oreg.
1039. Pearse, C. K. **Soil Factors Influencing the Infiltration Rates of Range Soils**  
(ms.), '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1040. Pearse, C. K. and Woolley, S. B. **The Influence of Range Plant Cover on the Rate of Absorption of Surface Water by Soils**  
Jour. of Forestry, XXXIV, 844-847, '36
1041. Pechanec, J. F. **The Identification of Grasses on the Upper Snake River Plains by Their Vegetative Characters**  
Ecology, XVII, 479-490, '36
1042. Pechanec, J. F. and Pickford, G. D. **A Comparison of Some Methods Used in Determining Percentage Utilization of Range Grasses**  
Jour. of Agr. Research, LIV, 753-765, '37

1043. Pechanec, J. F. and Pickford, G. D. **A Weight Estimate Method for the Determination of Range or Pasture Production**  
Jour. of Agron., XXIX, 894-904, '37
1044. Pechanec, J. F., Pickford, G. D. and Stewart, G. **Effects of the 1934 Drought on Native Vegetation of the Upper Snake River Plains, Idaho**  
Ecology, XVIII, 490-505, '37
1045. Peterson, W. **Grazing in Relation to Land Planning**  
Proc. of Western Farm Economics Assoc., VI, 34-41, '32
1046. Rachford, C. E. **Some Problems of Range Administration on National Forests**  
Am. Cattle Producer, XVI, 18-19, '35
1047. Rinehart, R. H. **Grazing Relationships**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 50-53, '37  
Portland, Oreg.
1048. Saunderson, M. H. and Monte, N. W. **Grazing Districts in Montana: Their Purpose and Organization Procedure**  
Agr. Exp. Sta. Bull. No. 326, 39 p., '36  
Montana State College, Bozeman
1049. Short, L. R. **Summary of Results on Cooperative Reseeded Areas**  
(ms.), '39  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1050. Sotola, J. **Nutrition Value of Crested Wheat Grass**  
(ms.), '38  
State College of Washington, Pullman
1051. Spence, L. E. **Root Studies of Important Range Plants of the Boise River Watershed**  
Jour. of Forestry, XXXV, 747-754, '35
1052. Stewart, G. **Nature and Degree of Deterioration on Public Domain of the Intermountain Region**  
Proc. of Utah Acad. Sci., XI, p. 107, '34
1053. Stewart, G. **Plant Cover and Forage Conditions on Spring, Fall and Winter Ranges, Largely on Public Domain Lands in the Intermountain Region**  
Utah Juniper, VI, '36  
Utah State Agricultural College, Logan, Utah
1054. Stewart, G. **A Tentative Recommendation of Technique for Grazing Experiments on Range Pastures in Arid or Seriarid Regions**  
Jour. of Am. Soc. of Agron., XXVII, 1018-1019, '35
1055. Stewart, G. and Hutchings, S. S. **The Point-Observation-Plot (Square-Foot Density) Method of Vegetation Survey**  
Jour. of Am. Soc. of Agron., XXVIII, 714-722, '36
1056. United States Department of Agriculture, Forest Service. **Range Plant Handbook**  
U. S. Govt. Print. Off., Washington, D. C., '37



1057. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Western Range Survey. Inventory of the Range Resources in Petroleum County, Montana, with an Analysis of the Range Problems and Recommendations for Their Solution** (ms.), '38  
Missoula, Mont.
1058. United States Department of Agriculture, Soil Conservation Service, Region 11. **Erosion-Range Survey**  
Bald Butte, Whitman County, Washington  
Bannock Creek Area, Power and Oneida Counties, Idaho  
Beulah Project, Malheur, Baker, Grant and Harney Counties, Oregon  
Condon Area, Morrow and Gilliam Counties, Oregon  
Gibbon Project, Umatilla County, Oregon  
Hatwai Creek Area, Idaho  
Warm Springs Indian Reservation, Wasco and Jefferson Counties, Oregon  
(mss., separates), '35  
Agronomy-Range Files, Spokane, Wash.
1059. United States Department of Agriculture, Soil Conservation Service, Region 11. **Range Report on Cashmere Area, Mission Creek, Washington, Drainage** (ms.), '37  
Agronomy-Range Files, Spokane, Wash.
1060. United States Department of Agriculture, Soil Conservation Service, Region 11. **Range Survey of the Russell-Mill Creek Area, Walla Walla County, Washington** (ms.), '35  
Agronomy-Range Files, Spokane, Wash.
1061. United States Department of Agriculture, Soil Conservation Service, Region 11. **Range Surveys—Oregon, Washington, Idaho** (ms.) ( )  
Spokane, Wash.
1062. United States Department of Agriculture, Soil Conservation Service, Region 11. **Reconnaissance Survey, Wilson Unit and Cow Creek Unit, Idaho, Grazing District No. 1, Owyhee County, Idaho** (ms.), '38  
Spokane, Wash.
1063. United States Department of Agriculture, Soil Conservation Service, Region 11. **Steptoe Butte Range Report** (ms.), '35  
Agronomy-Range Files, Spokane, Wash.
1064. United States Department of Agriculture, Soil Conservation Service, Region 11. **Western Range Survey. Analysis of Range Problems and a Plan for Their Solution**  
Kittitas County, Washington-Morrow County, Oregon (separates) (mimeo.), '38  
Spokane, Wash.

1065. United States Department of Agriculture, Soil Conservation Service, Region 11. **Western Range Survey. Range Conservation in Gem County, Idaho**  
(ms.) ( )  
Spokane, Wash.
1066. United States Department of Agriculture, Soil Conservation Service, Region 11. **Western Range Survey Conference. Instructions for Range Surveys as Formulated by the Inter-Agency Range Survey Committee**  
(mimeo.), '37  
Spokane, Wash.
1067. Watts, L. F. **Relation of Range to Economic and Social Welfare**  
Proc. of Pacific Northwest Regional Planning Conf., III, 65-68, '36  
Portland, Oreg.
1068. Watts, L. F., Hurtt, L. C., et al. **The Western Range**  
S. Doc. No. 199, '36  
U. S. Govt. Print. Off., Washington, D. C.
1069. Withycombe, R., Edwards, F. M. and Potter, E. L. **Winter Rations for the Farm Flock in Eastern Oregon**  
Agr. Exp. Sta. Circ. No. 101, '31  
Oregon State College, Corvallis
1070. Young, V. A. **Soil Erosion in Relation to Over-Grazing**  
State College of Washington, Extension Division, Forage School, Pullman, '38

### SOILS

1071. Alberts, H. W. **Soil Investigations of the Alaska Stations**  
Agr. Exp. Sta. Rept. No. 8, 22-23, 30-31, '30  
University of Alaska, College
1072. Bartholomew, O. F. **The Chemical Changes Resulting from the Application of Sulphur and Sulphates on Alkali Soils**  
Master's Thesis, '30  
Oregon State College, Corvallis
1073. Black, W. V. **The Removal of Soluble Salts from Virgin Black Alkali Soils**  
Master's Thesis, '30  
Oregon State College, Corvallis
1074. Brown, G. G. **Summary of Fertilization Usage in Hood River Valley, Oregon**  
(ms.) ( )  
Oregon State College, Corvallis
1075. Brown, I. C. and Byers, H. G. **Chemical and Physical Properties of Dry-Land Soils and of Their Colloids**  
Tech. Bull. No. 502, 56 p., '35  
U. S. Dept. of Agriculture, Washington, D. C.
1076. Burnham, C. **Bellingham Nursery Soils**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

1077. Burnham, C. **Feasibility of Partial Neutralization in Correcting Soil Acidity**  
Ph. D. Thesis, '35  
Oregon State College, Corvallis
1078. Carder, D. S. **Origin of the Palouse Soil in the Vicinity of Moscow, Idaho**  
Master's Thesis  
Lib., University of Idaho, Moscow
1079. Clackamas County, Oregon, Planning Board. **Soil Survey**  
Oregon City, Oreg.
1080. DeYoung, W. **Method and Purpose of a Soil Survey**  
Agr. Exp. Sta. Circ. No. 139, 11 p., '32  
Montana State College, Bozeman
1081. DeYoung, W., Nunns, F. K. and Smith, L. H. **Soils of Lower Yellow-stone Area**  
(ms.) ( )  
Montana State College, Agricultural Experiment Station, Bozeman
1082. Doneen, L. D. **Nitrogen in Relation to Composition, Growth, and Yield of Wheat**  
Agr. Exp. Sta. Bull. No. 296, '34  
State College of Washington, Pullman
1083. D'Urbal, R. P. and Offord, H. R. **The Detection and Estimation of Chlorate in Soils by the Thiocyanate Test Paper Method**  
Northwest Science, X, No. 3, 8-12, '36
1084. Fowells, H. A. and Stephenson, R. E. **Effect of Burning on Forest Soils**  
Soil Science, XXXVIII, 175-181, '34
1085. Gieseke, L. F. **Soil Reconnaissance of Montana**
- | County       | Agr. Exp. Sta. Bull. No. | Date |
|--------------|--------------------------|------|
| Cascade      | 337                      | '37  |
| Chouteau     | 252 (Prelim. rept.)      | '31  |
| Fergus       | 355                      | '38  |
| Judith Basin | 349                      | '37  |
| Petroleum    | 363                      | '38  |
- Montana State College, Bozeman
1086. Gieseke, L. F. **Soils of Counties of Montana**
- | County          | Agr. Exp. Sta. Bull. No. | Date |
|-----------------|--------------------------|------|
| Blaine          | 228                      | '30  |
| Broadwater      | (ms.) ( )                |      |
| Custer          | (ms.) ( )                |      |
| Glacier         | 274                      | '33  |
| Golden Valley   | (ms.) ( )                |      |
| Hill            | 246                      | '31  |
| Lewis & Clark   | (ms.) ( )                |      |
| Liberty & Toole | 273                      | '33  |
| McCone          | (ms.) ( )                |      |
| Meagher         | (ms.) ( )                |      |
| Musselshell     | (ms.) ( )                |      |
| Pondera         | 291                      | '34  |
| Teton           | 332                      | '37  |
| Wheatland       | (ms.) ( )                |      |
- Montana State College, Bozeman

1087. Holtz, H. F. **Effect of Calcium and Phosphorus Content of Various Soil Series in Western Washington upon the Calcium and Phosphorus Composition of Oats, Red Clover and White Clover**  
Agr. Exp. Sta. Bull. No. 243, '30  
State College of Washington, Pullman
1088. Isaac, L. A. **Soils, with Particular Reference to Those of the Forest** (mimeo.), '34  
U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1089. Isaac, L. A. and Hopkins, H. G. **The Forest Soil of the Douglas Fir Region and the Changes Wrought upon it by Logging and Slash Burning**  
Ecology, XVIII, 264-279, '37
1090. Jones, J. S. and Whitaker, D. F. **Commercial Fertilizers: A Report Covering the Biennium, 1929-1930**  
Agr. Exp. Sta. Circ. No. 98, '31  
Oregon State College, Corvallis
1091. Kardos, L. T. and Bowsby, C. C. **Physical and Chemical Studies of the Profiles of Some Zonal Soil Types** (ms.), '38  
State College of Washington, Pullman
1092. Keaton, C. M. **Chemical Studies of Some North Idaho Soil Series**  
Master's Thesis, '36  
Lib., University of Idaho, Moscow
1093. Kellogg, C. E. **Development and Significance of the Great Soil Groups of the United States**  
U. S. Dept. of Agr. Misc. Publ. No. 229, 40 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
1094. Lewis, R. D. **A Study of Some Alfalfa Soils**  
Master's Thesis, '30  
Oregon State College, Corvallis
1095. Nikiforoff, C. C. **The Inversion of the Great Soil Zones in Western Washington**  
Geog. Review, XXVII, 200-213, '37
1096. Nunns, F. K. **Soils of Big Horn Area** (ms.) ( )  
Montana State College, Agricultural Experiment Station, Bozeman
1097. Oveson, M. M. **Soil Nitrogen and Organic Matter as Affected by Austrian Winter Peas**  
Master's Thesis, '30  
Oregon State College, Corvallis
1098. Pearse, C. K. **A Simple Device for Measuring the Absorption Rates of Soils**  
Science, LXXXV, 459-460, '37
1099. Powers, W. L. **Characteristics of Forest Soils of the Northwestern United States**  
Soil Science, XXXIV, No. 1, '32
1100. Powers, W. L. **Characteristics of Organic Colloids in Peaty Soils**  
Jour. of Agr. Research, XL, p. 97, '32
1101. Powers, W. L. **Chemical Composition of Peat and Muck Soils in Northwestern United States**  
Proc. of 2nd International Cong. of Soil Science, '32

1102. Powers, W. L. **Major Soil Types of Oregon**  
(mimeo.), '38  
Oregon State College, Agricultural Experiment Station, Corvallis
1103. Powers, W. L. **The Minor Elements in Soil Fertility and Plant Nutrition**  
Agr. Exp. Sta. Circ. of Infor. No. 176, 4 p. (mimeo.), '37  
Oregon State College, Corvallis
1104. Powers, W. L. **The Role of Sulfur in Plant Nutrition**  
Jour. of Am. Soc. of Agron., XXII, p. 371, '30
1105. Powers, W. L. **Significance of Replaceable Bases in Organic Soil Horizons**  
Soil Research, III, No. 1, '32
1106. Powers, W. L. **Soil Fertility in Relation to Productive Land Value**  
Agr. Exp. Sta. Circ. No. 113, 9 p., '35  
Oregon State College, Corvallis
1107. Powers, W. L. **Subsidence and Durability of Peaty Lands**  
Agricultural Engineering, XIII, '32
1108. Powers, W. L. and Bollen, W. B. **Chemical and Biological Nature of Certain Forest Soils**  
Soil Science, XL, p. 321, '35
1109. Powers, W. L. and Lewis, R. D. **Nitrogen and Organic Matter as Related to Soil Productivity**  
Jour. of Agron., XXII, '30
1110. Powers, W. L. and Richards, D. E. **Maintaining Fertility of Grande Ronde Soils**  
Agr. Exp. Sta. Bull. No. 311, 23 p., '33  
Oregon State College, Corvallis
1111. Powers, W. L. and Ruzek, C. V. **Care, Use and Economic Value of Farm Manure**  
Agr. Exp. Sta. Circ. No. 105, 15 p., '31  
Oregon State College, Corvallis
1112. Powers, W. L. and Ruzek, C. V. **Soils of Chehalis Series and Their Utilization**  
Agr. Exp. Sta. Bull. No. 299, '32  
Oregon State College, Corvallis
1113. Ruzek, C. V. **Fertilizers in the Productive Program**  
Proc. of Idaho State Hort. Assoc., XXXIX, 13-21, '34
1114. Ruzek, C. V. and Powers, W. L. **The "Red Hill" Soils of Western Oregon**  
Agr. Exp. Sta. Bull. No. 303, 20 p., '32  
Oregon State College, Corvallis
1115. Schuster, C. E. **Study of Soil Nutrients**  
WPA—O. P. 465-94-3-39, W. P. 1656  
Oregon State College, Corvallis
1116. Singleton, H. P. and Wheeting, L. C. **The Effects of Fertilizers on the Productivity of Sagemoor Fine Sandy Loam under Irrigation**  
Agr. Exp. Sta. Bull. No. 346, 26 p., '37  
State College of Washington, Pullman
1117. Southwick, R. W. **Phosphate Availability in Red Hill Soils**  
Master's Thesis, '32  
Oregon State College, Corvallis

1118. Stanbery, V. B. **Soil and Cover Surveys**  
66 p. (ms.), '35  
Oregon State Planning Board, Portland
1119. Stephenson, R. E. **Colloidal Properties of Willamette Valley Soils**  
Northwest Science, III, 86-88, '29
1120. Stephenson, R. E. **Cover Crops and Soil Moisture**  
Oreg. State Hort. Soc. Ann. Rept. No. 27 (1935), 168-175, '36
1121. Stephenson, R. E. **Do Soil Organisms Compete for Nutrients Useful to Crops?**  
Jour. of Agron., XXVI, '34
1122. Stephenson, R. E. **Nitrification Process and Plant Nutrition**  
Soil Science, XLI, p. 187, '36
1123. Stephenson, R. E. and Chapman, H. D. **Phosphate Penetration in Field Soils**  
Jour. of Agron., XXIII, p. 759, '31
1124. Stephenson, R. E. and Marquardt, A. R. **A Study of Soil Structure**  
Jour. of Agron., XXIV, p. 167, '32
1125. Stephenson, R. E. and Powers, W. L. **Liming Western Oregon Soils**  
Agr. Exp. Sta. Bull. No. 325, '34  
Oregon State College, Corvallis
1126. United States Department of Agriculture, Bureau of Chemistry and Soils. **Soil Surveys**

County or Area	State
Bear Lake Valley Area	Idaho
Benewah County	Idaho
Gooding Area	Idaho
Jerome Area	Idaho
Kootenai County	Idaho
Minidoka Area	Idaho
Nez Perce & Lewis Counties	Idaho
Portneuf Area	Idaho
Twin Falls Area	Idaho
Flathead Valley Area	Montana
Gallatin Valley Area	Montana
Milk River Area	Montana
Northern Plains	Montana
Benton County	Oregon
Clackamas County	Oregon
Columbia County	Oregon
Eugene Area	Oregon
Grande Ronde Valley Area	Oregon
Josephine County	Oregon
Linn County	Oregon
Marion County	Oregon
Multnomah County	Oregon
Polk County	Oregon
Washington County	Oregon
Benton County	Washington
Columbia Basin Area	Washington
Franklin County	Washington
Kitsap County	Washington
(Separates)	
U. S. Govt. Print. Off., Washington, D. C.	

1127. Vandecaveye, S. C. **Pertinent Points Concerning the Soil and Its Management**  
Ext. Serv. Bull. No. 218, 32 p., '36  
State College of Washington, Pullman
1128. Vandecaveye, S. C. and Baker, G. O. **Microbial Activities in Soil: III. Activity of Specific Groups of Microbes in Different Soils**  
Soil Science, XLV, 315-353, '38
1129. Vandecaveye, S. C. and Holtz, H. F. **Organic Residues and Nitrogen Fertilizers in Relation to the Productivity and Humus Content of Palouse Silt Loam**  
Soil Science, XLV, 143-163, '38
1130. Vandecaveye, S. C., Horner, G. M. and Keaton, C. M. **Unproductiveness of Certain Orchard Soils as Related to Lead Arsenate Spray Accumulations**  
Soil Science, XLII, 203-215, '36
1131. Vandecaveye, S. C. and Katznelson, H. **Microbial Activities in Soil: IV. Micro-Flora of Different Zonal Soil Types Developed under Similar Climatic Conditions**  
Soil Science, XLVI, 54-74, '38
1132. Vandecaveye, S. C. and Katznelson, H. **Microbial Activities in Soil: V. Microbial Activity and Organic Matter Transformation in Palouse and Helmar Soils**  
Soil Science, XLVI, 139-167, '38
1133. Washington State Advisory Council on Soils and Soil Fertility. **The Use of Fertilizers for Washington Soils, Second Annual Report**  
Ext. Serv. Bull. No. 176, '33  
State College of Washington, Pullman
1134. Wheeting, L. C. **Changes in Organic Matter in Western Washington Soils**  
Soil Science, XLIV, 139-149, '37
1135. Wheeting, L. C. **Effects of Fertilizers on Irrigated Soils**  
Agr. Exp. Sta. Bull. No. 346, '37  
State College of Washington, Pullman
1136. Wheeting, L. C. **Rates and Ratios of Fertilizer Application for Washington Soils**  
(ms.), '38  
State College of Washington, Pullman
1137. Wheeting, L. C. **Soil Profiles of Southeastern Washington**  
Soil Science, XLIV, 65-85, '37
1138. Wheeting, L. C. **Use of Commercial Fertilizers on Greenhouse Soils Growing Tomatoes and Carnation**  
(ms.), '38  
State College of Washington, Pullman
1139. Wheeting, L. C. and Vandecaveye, S. C. **Crop Rotations: Part II. Effect of Crop Rotations on Productivity of the Soil**  
Agr. Exp. Sta. Bull. No. 344, 31-74, '37  
State College of Washington, Pullman
1140. Wolfanger, L. A. **Major Soil Division of the United States**  
150 p., '30  
Wiley, New York City

1141. Work, A. **The Control of Soil Moisture**  
29th Ann. Rept. of Oreg. State Hort. Soc., 41-48, '37
1142. Work, R. A. and Lewis, M. R. **Moisture Equivalent, Field Capacity, and Permanent Wilting Percentage and Their Ratios in Heavy Soils**  
Agricultural Engineering, XV, '34

### SOIL CONSERVATION AND EROSION

1143. Alutin, A. N. **Measurement of Soil Losses**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1144. Anderson, C. L. **Types of Strip Farming Used in Montana**  
Dakota Zephyr, II, 23-24, '36
1145. Anderson, L. L. **Soil Erosion Report of Walla Walla Flood Control Survey**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1146. Anderson, L. L. and Hite, T. H. **Soil Erosion Survey of the Maryhill Estate, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1147. Bayer, L. D. **Some Soil Factors Affecting Erosion**  
Agricultural Engineering, XIV, 51-52, '33
1148. Baylor, J. W. **Soil Conservation Education in SCS-CCC Camps in the Pacific Northwest**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1149. Bennett, H. H. **Menace of Soil Erosion**  
Nation's Agriculture, XI, No. 6, 4-5, 18, 19, '36
1150. Bennett, H. H. **The Problem of Soil Erosion in the United States**  
Assoc. of Am. Geographers, Annual, XXI, 147-170, '31
1151. Boatright, W. C. **Erosion and Related Land-Use Conditions on the Froid Demonstration Project, Montana**  
U. S. Dept. of Agr., Soil Conservation Service, '39  
U. S. Govt. Print. Off., Washington, D. C.
1152. Burnham, C. **The Condon Plateau Area, Oregon**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash., '37
1153. Burnham, C. **Conservation Inspection Report of the Chehalis Area, Southwestern Washington**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.



1154. Burnham, C. **Conservation Inspection Report of the Montesano Area, Southwestern Washington**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1155. Burnham, C. **Conservation Inspection Report of the Pilchuck River Area, Washington**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1156. Burnham, C. **Conservation Survey Inspection Report of the Weiser River Watershed, Idaho**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1157. Burnham, C. **Florence, Oregon, Dunesand Area**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash., '38
1158. Burnham, C. **Little Pocatello Creek Area, Bannock County, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1159. Burnham, C. **The Marsh Creek Area, Bannock County, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1160. Burnham, C. **The Monument Area, North Fork, John Day River, Grant County, Oregon**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1161. Burnham, C. **Proposed Work Project Area for Lincoln County, Washington**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1162. Burnham, C. **Reconnaissance Conservation Survey of the Preston Area, Franklin County, Idaho**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1163. Burnham, C. **The Roseburg Area, Douglas County, Oregon**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1164. Burnham, C. **Soil and Erosion Conditions, Kittitas County, Washington**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

1165. Burnham, C. and Jacklin, A. W. **Reconnaissance Erosion Survey of the Rockford-Worley Area, Rock Creek Watershed, Idaho**  
(ms.), Project No. 6, '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1166. Burnham, C. and Sandoz, M. **Reconnaissance Report of Central Adams County, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1167. Burnham, C. and Starr, W. A. **Conservation Survey Report for Neppel Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1168. Burnham, C. and Starr, W. A. **Conservation Survey Report for Tekoa Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1169. Burnham, C. and Starr, W. A. **Conservation Survey Report for Wilbur Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1170. Burnham, C. and Twiss, S. N. **Erosion Studies of Cottonwood Creek Area, Grangeville, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1171. Burnham, C. and Twiss, S. N. **Gold Beach Area, Oregon**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1172. Burnham, C. and Ward, W. W. **The Erosion Problem and Agricultural Features of the Rexburg Bench, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1173. Chapin, R. W. and Burnham, C. **Detailed Conservation Survey of the Sherman County Branch Station, Moro, Oregon**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1174. Christ, J. H. **The Land-Use Program of the Soil Conservation Service in Idaho**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1175. Cutting, C. D. **Development of Sand Dune Control, Warrenton, Oregon, Area**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

1176. Davis, A. M. **Erosion on Roads and Adjacent Lands**  
U. S. Dept. of Agr. Leaf. No. 60L, 8 p., '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Washington,  
D. C.
1177. Deardorff, C. E. **Progress Report of Investigations at the Pacific Northwest Soil Erosion and Moisture Conservation Experiment Station, Pullman, Washington. Progress for the Year Ending June 30, 1934**  
(ms.), '34  
U. S. Dept. of Agriculture, Bureau of Agricultural Engineering,  
Pullman, Wash.
1178. Dorsey, R. W. **Soil Conservation: As a Factor in Farm Finance**  
Northwest Science, X, No. 1, 3-5, '36
1179. Dutton, W. L. **Erosion Control Proves Successful on Ranges in Southeast Oregon**  
U. S. Dept. of Agr. Yearbook, 187-189, '32  
Washington, D. C.
1180. Friberg, W. **Construction of Dams for Gully Control**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1181. Goodsell, W. D. **Farm Management Survey of Erosion Control Project No. 6**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1182. Hafenrichter, A. L. **Erosion Conditions in the Pacific Northwest as Determined by the Reconnaissance Erosion Survey**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1183. Hafenrichter, A. L. **Erosion Conditions in the State of Washington as Determined by Reconnaissance Erosion Survey Conducted by the U. S. Soil Erosion Service**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1184. Hafenrichter, A. L. **Forage Crops in Soil Conservation**  
Proc. of Forage School Held at State College of Washington, 15-19,  
'38  
Pullman, Wash.
1185. Hafenrichter, A. L. **Land Use and Erosion in the West**  
Land, Today and Tomorrow, II, 5-8, '35
1186. Hafenrichter, A. L. **Soil Conservation Crops for the Pacific Northwest**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries  
Office, Pullman, Wash.

1187. **Hafenrichter, A. L. Study of Species, Varieties and Strains of Perennial Grasses and Legumes for Erosion Control**  
(ms.), '33  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1188. **Hafenrichter, A. L. Work of the U. S. Soil Erosion Service in Washington, Present and Prospective**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1189. **Hafenrichter, A. L. and Deardorff, C. E. Study of Forage Crops and Mixtures of Grasses and Legumes for Erosion Control**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries  
Office, Pullman, Wash.
1190. **Hafenrichter, A. L. and Rockie, W. A. Ecological Aspects of Soil Erosion in the Pacific Northwest as Determined by the Reconnaissance Erosion Survey**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries  
Office, Pullman, Wash.
1191. **Hafenrichter, A. L. and Wanser, H. M. Wind Erosion on the Summer-Fallowed Wheat Lands of the West**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1192. **Hill, C. E. Control of Erosion on Cultivated Lands of Eastern Oregon by Tillage and Utilization of Crop Residues**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1193. **Hill, W. W., et al. Soil and Conservation Survey of the South Palouse Project, Idaho and Washington**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1194. **Horning, T. R. and Burnham, C. Reconnaissance Erosion Survey of the Upper Rogue River Valley, Oregon**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1195. **Hougen, V. H. Report on Cottonwood Creek Area, Idaho County, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1196. **Huxley, E. Erosion. II. Man the Desert Maker**  
(photostat), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

1197. Jacklin, A. W. **Reconnaissance Erosion Survey of the Nez Perce-Winchester Area**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1198. Jacklin, A. W. **Reconnaissance Erosion Survey of the Squaw Creek Area, Gem and Boise Counties, Idaho**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1199. Jacklin, A. W. **Reconnaissance Erosion Survey of the Yakima Area, Ahtanum Creek Watershed**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1200. Jacklin, A. W. and Bond, L. **Detailed Soil Erosion Survey of the Johnson Estate**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1201. Jacklin, A. W. and Burnham, C. **Reconnaissance Erosion Survey of the Russell-Mill Creek Area, Washington**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1202. Jacklin, A. W. and Engstrom, L. W. **Reconnaissance Erosion Survey of the Simnasho Area, Quartz Creek Watershed, Warm Springs Indian Reservation, Oregon**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1203. Johnson, L. A. **Soil Conservation**  
Cong. Record, 74th Cong., 2d sess., House, LXXX, No. 39, 2802-2803, '36  
U. S. Govt. Print. Off., Washington, D. C.
1204. Jones, M. **Protection of Land Against Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 83, p. 6440, '35  
U. S. Govt. Print. Off., Washington, D. C.
1205. Kaiser, V. and Engstrom, L. W. **Report on Green Manure Investigations on Palouse Project**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1206. King, A. S. **Wind Erosion and Dust Storms in Oregon**  
Commonwealth Review, XX, 400-405, '38  
University of Oregon Publications, Eugene
1207. King, W. H. **Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., Senate, LXXIX, No. 81, 6237-6239, '35  
U. S. Govt. Print. Off., Washington, D. C.

1208. Klemgard, G. **Practical Erosion Control as Applied to Grain Growing in the Palouse Country**  
(ms.), 6 p., '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1209. Knight, H. G. **Soil Conservation a Major Problem of Agricultural Adjustment**  
Proc. of Natl. Conf. on Land Utilization, 153-162, '31
1210. Magness, H. N. and Sandoz, M. F. **Soil and Conservation Survey of the Chehalem Mountain Project, Oregon**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1211. Martin, J. A. **Soil Conservation**  
Cong. Record, 75th Cong., 1st sess., House, LXXXI, No. 78, 4918-4919, '37  
U. S. Govt. Print. Off., Washington, D. C.
1212. Massingale, S. C. **Protection Against Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 70, 5385-5386, '35  
U. S. Govt. Print. Off., Washington, D. C.
1213. McDole, G. R. **Soil Conservation on Orchard Lands**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1214. McGrew, P. C. **Engineering Experiments at the Pacific Northwest Soil Erosion Experiment Station**  
(ms.), '34  
U. S. Dept. of Agriculture, Bureau of Agricultural Engineering, Pullman, Wash.
1215. McGrew, P. C. **Engineering Experiments in Soil Erosion Control in the Northwest**  
Agricultural Engineering, XVI, 187-189, '35
1216. McGrew, P. C. **Terracing for Soil and Water Conservation**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Washington, D. C.
1217. McGrew, P. C. and Horner, G. M. **Soil and Water Conservation Investigations—Progress Report 1931-35**  
SCS-ESR-2, 123 p. (mimeo.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Washington, D. C.
1218. McKay, H. C. **Crop Residue Utilization—Erosion Studies in the Dry Farm Areas in Southern Idaho**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1219. McKay, H. C. **Tillage-Erosion Studies in the Dry Farm Areas of Southern Idaho**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

1220. McKinley, C. **Organization of the Soil Conservation Service in Oregon**  
(ms.), '38  
Reed College, Portland, Oreg.
1221. Mitchell, G. A. **Maintenance of Soil Organic Matter and Crop Yields  
by Soil-Building Crop Rotations at the Pendleton Field Station**  
Oregon State College, Agricultural Experiment Station, Corvallis
1222. Morgan, G. W. **Strip Cropping to Stop Blowing**  
Montana Farmer, XX, p. 3, '33
1223. Morse, H. H. **A Graphic Method of Showing the Relationships of  
Erosion, Slope and Cover**  
Soil Conservation, II, p. 67, '36
1224. Newton, R. **Controlling Soil Blowing**  
Montana Farmer, XIX, p. 3, '32
1225. Nichols, J. **The Problem of Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., LXXIX, No. 56, 4290-4291, '35  
U. S. Govt. Print. Off., Washington, D. C.
1226. Nielson, A. B. **Soil Conservation Practices on Range and Pasture  
Lands Show Increased Ranch Income**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1227. O'Brien, M. P. and Rindlaub, B. D. **The Transportation of Sand by  
Wind**  
Civil Engineering, VI, No. 5, 325-327, '36
1228. Pieters, A. J. **Soil-Depleting, Soil-Conserving, and Soil-Building Crops**  
U. S. Dept. of Agr. Leaf. 165L, 8 p., '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Washing-  
ton, D. C.
1229. Powers, W. L. **Prevention of Soils Against Degeneration**  
Soil Science, '34
1230. Renner, F. G. **Causes of Erosion on the Boise River Watershed**  
Science, LXXXIV, 62-63, '36
1231. Renner, F. G. **Conditions Influencing Erosion on the Boise River  
Watershed**  
U. S. Dept. of Agr. Tech. Bull. No. 528, 32 p., '36  
Govt. Print. Off., Washington, D. C.
1232. Renner, F. G. **Erosion Studies Under Way in Southern Idaho**  
U. S. Forest Service Forest Worker, VII, No. 2, p. 10, '31
1233. Riesbol, H. S. **The Design of Terraces for Agricultural Lands of the  
Red Plains Region**  
Master's Thesis, '36  
Lib., University of Idaho, Moscow
1234. Rockie, W. A. **Brief Report on Erosion Potentialities in Alaska**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1235. Rockie, W. A. **Causes of Erosion in the Pacific Northwest**  
(ms.), '33  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

1236. Rockie, W. A. **Effects of Snowdrifting and Associated Erosion upon the Topography of the Palouse**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1237. Rockie, W. A. **Erosion Control Problems in the Wheatlands of the Pacific Northwest**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1238. Rockie, W. A. **Erosion Control Report on Matanuska Valley**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1239. Rockie, W. A. **Erosion Control Report of the Yukon-Tanana Territory**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1240. Rockie, W. A. **Erosion in Its Relation to Land Use in the Pacific Northwest**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1241. Rockie, W. A. **Geographic Aspects of Erosion Problems in the Pacific Northwest**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1242. Rockie, W. A. **Is the Palouse Topography Resultant from Snowdrift Erosion?**  
(ms.), '33  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1243. Rockie, W. A. **Land Planning in Relation to Soil Erosion Control in the Northwestern States**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1244. Rockie, W. A. **Man's Effect on the Palouse**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1245. Rockie, W. A. **Pacific Northwest Soil Erosion and Moisture Conservation Experiment Station**  
Agr. Exp. Sta. Bull. No. 260, 69-75, '31  
State College of Washington, Pullman.
1246. Rockie, W. A. **Preliminary Erosion Report on Matanuska and Fairbanks Area**  
(ms.), '37  
Pullman, Wash.
1247. Rockie, W. A. **Serious Erosion Caused by Heavy Rain of July 20, 1931, near Colfax, Wash.**  
U. S. Monthly Weather Review, LX, 22-23, '32



1248. Rockie, W. A. **Some Important Effects of the Summer Fallow System of Farming on Soil in the Pacific Northwest**  
Northwest Science, VII, 19-22, '33
1249. Rockie, W. A., Hafenrichter, A. L. and Wanser, H. M. **Reconnaissance Erosion Survey—Pacific Northwest**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1250. Rockie, W. A. and McGrew, P. C. **Erosion Effect of Heavy Summer Rains in Southeastern Washington**  
Agr. Exp. Sta. Bull. No. 271, 8 p., '32  
State College of Washington, Pullman
1251. Roe, H. B. **Soil Erosion Control and Soil Moisture Regulation in Relation to State and National Land-Use Planning**  
Agricultural Engineering, XV, 428-430, '34
1252. Ross, G. T. **Grangeville—Cottonwood Area, Idaho**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1253. Rowalt, E. M. **Anchoring the Clatsop Dunes with Vegetation**  
Soil Conservation, II, 61-63, '36
1254. Rowalt, E. M. **Soil and Water Conservation in the Pacific Northwest**  
Farmers' Bull. No. 1773, 59 p., '37  
U. S. Dept. of Agriculture, Washington, D. C.
1255. Sandoz, M. and Burnham, C. **Reconnaissance Report of the Chehalem Mountain Area, Oregon**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1256. Sandoz, M. and Burnham, C. **Reconnaissance Report of Kittitas Valley Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1257. Sloan, S. **Soil Blowing and Its Control**  
Montana Farmer, XXI, p. 5, '34
1258. Sloan, S. L., Jacklin, A. W. and Kaiser, V. G. **Soil-Conserving and Soil-Improving Crop Rotations for the Palouse**  
Jour. of Am. Soc. of Agron., XXXI, p. 4, '39
1259. Smith, R. E. **The Brogan Area, Malheur County, Oregon**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Spokane, Wash.
1260. Snell, B. H. **Soil Erosion and Conservation**  
Cong. Record, 74th Cong., 2d sess., House, LXXX, No. 39, 2803-2805, '36  
U. S. Govt. Print. Off., Washington, D. C.

1261. Spence, L. E. **Monument Area—Cottonwood Drainage, Grant County, Oregon**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1262. Spence, L. E. **Reconnaissance Erosion Survey of the Hermiston-Boardman Rangeland, Oregon**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1263. Starr, W. A. and Burnham, C. **Conservation Survey Report for Endicott Area**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1264. Starr, W. A. and Burnham, C. **Conservation Survey Report for Kahlotus Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1265. Starr, W. A. and Burnham, C. **Conservation Survey Report for Pomeroy Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1266. Starr, W. A. and Burnham, C. **Conservation Survey Report for Walla Walla Area, Washington**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1267. Stebbins, V. O. **Reconnaissance Erosion Survey of the Walla Walla River Watershed**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1268. Stebbins, V. O. **Soil and Conservation Survey of the Patit Creek Project, Washington**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1269. Steele, T. A. **The Clatsop Plains of Oregon**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.
1270. Stoddart, L. A. **The Relationship of Native Vegetation to Erosion**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1271. Sutphin, W. H. **Soil-Erosion Control Program**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 20, 1270-1271, '35  
U. S. Govt. Print. Off., Washington, D. C.

1272. **Thaanum, J. W. The Conconully Area, Washington**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1273. **Thaanum, J. W. Problems in Pea Culture in the Pacific Northwest  
as Related to Erosion Control**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1274. **Thomson, J. P. The Gearhart-Fort Stevens Dune Area of the Oregon  
Coast**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1275. **Thomson, J. P. Some Relationships between the Soil Canyons of  
Certain Southeastern Washington Valleys and Summer-Fallow  
Cultivation**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1276. **Thomson, J. P. Waterville Area, Douglas County, Washington**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1277. **Tolley, H. R. The Objectives of the Soil Conservation Program**  
15 p. (mimeo.), '36  
U. S. Dept. of Agriculture, Washington, D. C.
1278. **Tolley, H. R. Soil Conservation and Agricultural Adjustment**  
15 p. (mimeo.), '36  
U. S. Dept. of Agriculture, Agricultural Adjustment Administra-  
tion, Washington, D. C.
1279. **Tumelson, F. O. and Engstrom, L. W. Reconnaissance Erosion Sur-  
vey of the Cashmere Area, Mission Creek Watershed, Washington**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Project No. 6, Spokane, Wash.
1280. **Twiss, S. N. Erosion on the Squaw Creek Watershed, Idaho**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1281. **Twiss, S. N. A Suggested Program of Geologic Work for the Soil  
Conservation Service**  
(ms.), '34-'35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
1282. **United States Congress, House. Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., LXXIX, No. 65, 4972-4977, '35  
U. S. Govt. Print. Off., Washington, D. C.

1283. United States Department of Agriculture. **Native and Adapted Grasses for Conservation of Soil and Moisture in the Great Plains and Western States**  
Farmers' Bull. No. 1812, 44 p., '39  
U. S. Govt. Print. Off., Washington, D. C.
1284. United States Department of Agriculture. **Terracing for Soil and Water Conservation**  
Farmers' Bull. No. 1789, 60 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1285. United States Department of Agriculture, Bureau of Chemistry and Soils. **Properties of Soils Which Influence Soil Erosion**  
U. S. Dept. of Agr. Tech. Bull. No. 178, 16 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
1286. United States Department of Agriculture, Extension Service. **Strip Farming in Montana Combats Wind Erosion**  
U. S. Ext. Serv. Review, VII, 107 p., '36  
Washington, D. C.
1287. United States Department of Agriculture, Forest Service. **Handbook of Erosion Control Engineering on the National Forests**  
90 p., '36  
Washington, D. C.
1288. United States Department of Agriculture, Soil Conservation Service. **Annual Report Pacific Northwest Erosion Control Projects—1934-35**  
SCS-AR-1, 44 p. (mimeo.), '36  
Washington, D. C.
1289. United States Department of Agriculture, Soil Conservation Service. **Contour Furrowing on Pasture and Range Lands**  
U. S. Govt. Print. Off., Washington, D. C., '37
1290. United States Department of Agriculture, Soil Conservation Service, Region 11. **Annual Report on Evaluation Studies of Tillage Practices (Wildhorse Creek Project, Ore-1, Athena, Oregon, 1937-38)**  
(ms.) ( )  
Spokane, Wash.
1291. United States Department of Agriculture, Soil Conservation Service, Region 11. **Annual Report, 1936-37, Soil Conservation Service, U. S. D. A., Washington, Oregon and Idaho**  
(ms.) ( )  
Spokane, Wash.
1292. United States Department of Agriculture, Soil Conservation Service, Region 11. **Annual Report, 1936-37, for the Following Projects:**  
Pattit Creek, Wash-2, Dayton, Wash.  
Badger Pocket Area, Wash-3, Ellensburg, Wash.  
South Fork Palouse, Wash-1, Moscow, Idaho  
Wildhorse Project, Ore-1, Athena, Oreg.  
Rock Creek Project, Ore-2, Newberg, Oreg.  
Squaw Creek Project, Idaho-2, Emmett, Idaho  
(ms.) ( )  
Spokane, Wash.
1293. United States Department of Agriculture, Soil Conservation Service, Region 11. **Annual Report, 1937-38**  
(ms.) ( )  
Spokane, Wash.

1294. United States Department of Agriculture, Soil Conservation Service, Region 11. **Annual Report, 1937-38, Soil Conservation Nurseries, Region 11, Pullman, Washington**  
(ms.) ( )  
Spokane, Wash.
1295. United States Department of Agriculture, Soil Conservation Service, Region 11. **Complete Legend Reconnaissance Erosion Surveys for Idaho Counties:**
- |           |            |          |           |            |
|-----------|------------|----------|-----------|------------|
| Ada       | Boise      | Canyon   | Idaho     | Nez Perce  |
| Bannock   | Bonner     | Caribou  | Jefferson | Oneida     |
| Bear Lake | Bonneville | Franklin | Kootenai  | Payette    |
| Benewah   | Boundary   | Fremont  | Lewis     | Power      |
| Bingham   | Butte      | Gem      | Madison   | Washington |
- (ms.), '34  
Spokane, Wash.
1296. United States Department of Agriculture, Soil Conservation Service, Region 11. **Conclusion Reports**  
Gibbon Area, Oregon — Beulah Area, Oregon — Mission Creek Watershed  
(ms.), '38  
Spokane, Wash.
1297. United States Department of Agriculture, Soil Conservation Service, Region 11, Project No. 6. **Conservation Working Plan of the Following:**  
Cashmere Area, Mission Creek Watershed, Washington  
Nez Perce Area, Idaho  
Owyhee Watershed, Oregon, Idaho and Nevada  
Russell-Mill Creek Area, Washington  
(ms.), '35  
Spokane, Wash.
1298. United States Department of Agriculture, Soil Conservation Service, Region 11. **Description of Watershed Area, SCS-O-4, Moro, Oregon**  
(ms.), '36  
Spokane, Wash.
1299. United States Department of Agriculture, Soil Conservation Service, Region 11. **Erosion, Land Use, Soils and Topography of the Squaw Creek Watershed**  
(ms.), '37  
Spokane, Wash.
1300. United States Department of Agriculture, Soil Conservation Service, Region 11. **Erosion Problem Areas of the Pacific Northwest**  
(ms.), '36  
Spokane, Wash.
1301. United States Department of Agriculture, Soil Conservation Service. **Erosion and Related Land-Use Conditions on the Froid Demonstration Project, Montana**  
28 p., '38 (map)  
U. S. Govt. Print. Off., Washington, D. C.

1302. United States Department of Agriculture, Soil Conservation Service, Region 11. **Geology, Soils and Erosion Conditions of Morrow County, Oregon** (ms.), '38  
Spokane, Wash.
1303. United States Department of Agriculture, Soil Conservation Service, Region 11. **Grasses and Trees Valuable in Conserving Soil and Water** (mimeo.), '35  
Pullman, Wash.
1304. United States Department of Agriculture, Soil Conservation Service. **Procedure for Making Soil Conservation Surveys** Outline No. 4, 32 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
1305. United States Department of Agriculture, Soil Conservation Service, Region 11. **Reconnaissance Erosion Survey of the Condon Area—Rock Creek Watershed** (ms.), Project No. 6, '35  
Pullman, Wash.
1306. United States Department of Agriculture, Soil Conservation Service. **Reconnaissance Erosion Survey of Montana** (ms.), '37  
Washington, D. C.
1307. United States Department of Agriculture, Soil Conservation Service, Region 11. **Reconnaissance Erosion Survey of the Pomeroy Areas** (ms.), Project No. 6, '35  
Pullman, Wash.
1308. United States Department of Agriculture, Soil Conservation Service. (Technical Cooperation—Bureau of Indian Affairs.) **Reconnaissance Survey of the Following:**  
Nez Perce Indian Reservation, Idaho  
Coeur d'Alene Indian Reservation, Idaho  
Spokane Indian Reservation, Washington  
Umatilla Indian Reservation, Oregon  
(mimeo.), '38  
Spokane, Wash.
1309. United States Department of Agriculture, Soil Conservation Service, Region 11. **Rockford-Worley Area** (ms.) ( )  
Spokane, Wash.
1310. United States Department of Agriculture, Soil Conservation Service, Region 11. **Soil Erosion Survey—Wildhorse Drainage—Umatilla County, Oregon** (ms.), '34  
Spokane, Wash.
1311. United States Department of Agriculture, Soil Conservation Service. **Strip Cropping for Soil Conservation** Farmers' Bull. No. 1776, 37 p., '37  
Washington, D. C.

1312. United States Department of Agriculture, Soil Conservation Service, Region 11. **Suggested Outline for State Soil Conservation Program** (ms.) ( )  
Spokane, Wash.
1313. United States Department of Agriculture, Soil Conservation Service. **To Hold This Soil**  
U. S. Dept. of Agr. Misc. Publ. No. 321, 123 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1314. United States Department of Agriculture, Soil Erosion Service, Project No. 6. **Diagrams Showing Average Wheat Yields, Profitable and Unprofitable Land, and the Erosion Control Program of Vegetative Cover and Strip Seedings** (ms.) ( )  
Spokane, Wash.
1315. United States National Resources Committee. **Soil Erosion, A Critical Problem in American Agriculture**  
112 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
1316. Wanser, H. M. **The Erosion Problem and Its Control in the Pacific Northwest** (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1317. Ward, W. W. **Boise Area, Ada County, Idaho** (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1318. Ward, W. W. **Mann Creek, Washington County, Idaho** (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1319. Ward, W. W. **Mayfield Area, Elmore County, Idaho** (ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1320. Ward, W. W. **Soil Conservation Service Operations in Idaho** (ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1321. Washington, State College of, Agricultural Experiment Station. **Pacific Northwest Soil Erosion and Moisture Conservation Experiment Station**  
Agr. Exp. Sta. Bull. No. 260, 69-75, '31; Bull. No. 275, 67-75, '32; Bull. No. 291, 59-64, '34  
Pullman, Wash.
1322. Washington State Planning Council, Technical Advisory Committee on Forestry. **Preliminary Report of Subcommittee on Watersheds and Erosion**  
1 p. (mimeo.)  
Olympia, Wash.

1323. **Whelchel, B. F. Protection Against Soil Erosion**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 66, 5077-5078, '35  
U. S. Govt. Print. Off., Washington, D. C.
1324. **Woodruff, R. O. Soil Erosion and Conservation**  
Cong. Record, 74th Cong., 2d sess., House, LXXX, No. 41, 2982-2986, '36  
U. S. Govt. Print. Off., Washington, D. C.
1325. **Yesland, A. and Burnham, C. The Puyallup Valley Area, Washington**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1326. **Young, A. E. Reconnaissance Erosion Survey of the Goldendale Area, Washington**  
(ms.), '34  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Project No. 6, Spokane, Wash.
1327. **Young, A. E. Reconnaissance Erosion Survey of the Pocatello Area, Bannock and Rattlesnake Watersheds**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Project No. 6, Spokane, Wash.
1328. **Young, A. E. and Engstrom, L. W. Reconnaissance Erosion Survey of the Squaw Creek Area, Umatilla County, Oregon**  
(ms.), '35  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
1329. **Young, A. E., Yesland, A. and Burnham, C. The Boise Area, Ada County, Idaho**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service, Spokane, Wash.



### III. FOREST RESOURCES AND UTILIZATION

The objective of forest research is to devise methods by which forests can, to the greatest degree, serve the purposes of man. Its field encompasses all of the services a forest may render—an abundant supply of timber of suitable quality at reasonable prices; a supply of forage as a basis for the livestock industry; opportunities to improve the national health and welfare through gainful and recreative occupation; a suitable habitat for wild animals, which are sources of food, raiment and recreation; protection of watersheds so that the waters therefrom may be usable for domestic, livestock, and wildlife purposes; regulation of streamflow; prevention of silting in reservoirs; and in general and always, the conservation of soils within and adjacent to the forests.

The problems of forestry are as manifold as the role the forests play in the social life of the people. In the Pacific Northwest that role is unusually significant and important and many problems urgently press for early solution. The forests of the Pacific Northwest cover more than one-third of the land area; contain over one-half of the Nation's remaining store of saw timber and furnish nearly one-half of the Nation's demands for softwood lumber; afford a normal gainful employment directly and indirectly for about one-third of a million persons and are the chief support for hundreds of communities; are a source of recreation for several million persons annually; contain the summer ranges essential to our important livestock industries. They are the natural coverage of our major watersheds and are the conservors of the soils lying thereon and the waters flowing therefrom.

In the United States the practice of forestry is relatively new and forest research is still in an early developmental stage. In the face of its youth and under the need for immediate results, much of the work has had to be performed by empirical methods and by observations of cut and try methods of every day experience. It is recognized that the most logical, economic, and efficient order of forest research is to proceed from the exploratory phase through the fundamental and application phases to demonstration. The trend has been definitely in this direction of late without surrendering the high emergency values of empirical and observational methods.

Forest research falls within several major functional categories involving a wide variety of specialized subjects and sciences that interweave and overlap with one another and comprise a complex relationship. These categories are forest management, forest protection, forest influences, forest range management, wildlife and recreation, utilization of wood and other forest products and forest economics. Some of the specialized subjects are plant physiology and ecology, forest pathology and entomology, forest fire causes and behavior, forest mensuration, logging engineering, wood technology, marketing and finance. The trend here is in two directions, (1) actual operation in all of the functional fields and (2) a broader basic education and equipping of foresters for well-rounded research activity. The problem is to secure adequate funds for maintaining going projects and at the same time initiating new long-term projects, for the results of which there is pressing and urgent demand.

The over-all question forest research attempts to answer is, what are the physical, biotic and economic factors and relationships affecting the use of forest lands and products? The solution of practically every wide or complex forest problem lies in a united attack along all three fronts—the physical, the biotic, and the economic. Without the physical and biotic, the

economic front is superficial; without the economic the physical and biotic fronts may lead to a waste of human energy and public and private funds.

The most difficult task of forest research is to lift out of the unknown cores of knowledge related to the surroundings. Recognizing the desirability of a united three-front attack, the serious handicaps of isolated endeavor, and the usual impracticality and pitfalls of unrelated knowledge, the trend of forest research has been toward the association of specialists in the physical, biotic, and economic sciences at centers, each under a single head, and toward broader cooperation between such associations, individual specialists, and research agencies in fields where endeavor is interwoven with forestry.

In the Pacific Northwest as elsewhere, and to the betterment of its development, forest research has been undertaken by numerous agencies. Various units of the Federal Government are engaged upon such work. Each of the four States has a forest school of recognized standing, in which the research activities play an important part. Because of the close relationship between agriculture and forestry, certain phases of the work of the State agricultural experiment stations is of great significance to forest research. This is notably true in the field of range management, a field so complex that both agricultural and forest research must participate. Industrial forest research is also playing its part in the development of valuable knowledge. Various associations and companies are carrying on specialized investigations, each designed to solve a particular problem. An encouraging trend in this region has been for various agencies to engage in cooperative undertakings, allowing a freer interplay in the exchange of plans, findings, and opinions and hence a broader and more practical approach to the subject being investigated. Another significant trend has been the stimulus given by such exchange to individual initiative in making preliminary explorations in new and untried fields.

Obviously what was fundamental research for the structures of yesterday may not be fundamental today or tomorrow. And, obviously, in any new field all of the fundamental problems can neither be explored nor even formulated at once. And again, obviously, research endeavor is always drawn toward most pressing necessity. For these reasons gaps in existing research will occur, regardless of private or public endeavor. Perhaps the greatest present-day opportunities for fundamental studies are in relationships of topography, soils, climate, and vegetal cover to the short and long term economic uses of forest land, and in the physical and chemical properties of wood.

In the field of applied research the most obvious gaps appear in the physical, economic, and social effects of different methods of woods operations; the proper management and protection of different kinds of forests under different types of logging operations and the steps necessary to overcome economic obstacles thereto; the relative efficiencies of various types and sizes of woods and mill operations; practical refinements in the manufacture of forest products; marketing of forest products; and the whole field of forest finance, including valuation, capitalization, taxation, and credits.

Then there is another gap—as broad as the ones within research itself—that of adequately conveying investigative results to potential beneficiaries. This involves the dissemination of knowledge gained through publication, demonstration and technical assistance in application. Although there has been a tendency to initiate and increase private and public forest extension facilities, actual accomplishment lags research and demand for

service diverts the investigator from his researches to a greater degree than necessary contact with practical application ordinarily would dictate.

To span those gaps and to benefit the intensive and extensive phases of fundamental and applied forest research, it is highly desirable to relieve the investigator of some of the ministrative functions of extension through broadening extension service, to point publications more definitely in the direction of the different groups of beneficiaries, to adequately staff and equip both short and long term projects, and to encourage further cooperation and coordinated endeavor between public and private forest research agencies and researchers.

SINCLAIR A. WILSON.

Senior Forest Economist,  
Pacific Northwest Forest and Range  
Experiment Station,  
U. S. Forest Service,  
Portland, Oregon

---

### III. FOREST RESOURCES AND UTILIZATION

#### GENERAL FORESTRY

1330. Oregon State Forester. **Annual Reports, 20th-27th, 1930-1938**  
(23rd and 24th contained in 25th report)  
Salem, Oreg.
1331. Oregon State Planning Board. **Report of the Forestry Division**  
(A Summary and Reports of Separate Committees)  
(mimeo), '34  
Portland, Oreg.
1332. United States Department of Agriculture, Forest Service, Northern  
Rocky Mountain Forest and Range Experiment Station. **Annual  
Report of Station**  
(mimeo. annually)  
Missoula, Mont.
1333. United States Department of Agriculture, Forest Service, Pacific  
Northwest Forest and Range Experiment Station. **Annual Reports**  
Portland, Oreg.
1334. Washington Division of Forestry. **Annual Reports**  
25th-28th 1928-1932  
29th-30th 1932-1934  
31st-32nd 1934-1936  
33rd-34th 1936-1938  
Olympia, Wash.
1335. Washington State Forestry Conference. **Proceedings of the 16th  
Annual Washington State Forestry Conference, Held in Seattle,  
Washington**  
Shindell Reporting-Publishing Service, Seattle, Wash., '37

1336. Washington State Forestry Conference. **Proceedings of the 17th Annual Washington State Forestry Conference, Held in Seattle, Washington, November 18, 1938**  
79 p., '38  
Shindell Reporting-Publishing Service, Seattle, Wash.
1337. Western Forestry and Conservation Association. **Proceedings of Western Forestry and Conservation Association, 1937**  
Shindell Reporting-Publishing Service, Seattle, Wash.

#### ASSOCIATED USES OF FORESTS

1338. Beard, W. P. **Living in Forest Lands**  
42 p. (mimeo.), '38  
U. S. Forest Service, Washington, D. C.
1339. Brandner, H. P. **Systematic Development of Recreational Resources on Forest Lands**  
Master's Thesis, '30  
Lib., University of Washington, Seattle
1340. Brandt, I. **The Olympic Forests for a National Park**  
Emergency Conservation Committee, New York City, '38
1341. Broadbent, S. **Cutting Forest Grazing Permits—Where Does It Lead To?**  
Natl. Wool Grower, XXV, 29 p., '35
1342. Buck, C. J. **The Place of Recreation in the Forest Program**  
Jour. of Forestry, XXXI, No. 2, 191-198, '33
1343. Buck, C. J. **The Proposed Mount Olympus National Park**  
Jour. of Forestry, XXXIV, 836-839, '36
1344. Connaughton, C. A. **Forests Catch Less Snow than Bare Ground but are Superior in Regulating Melting**  
Am. Meteorological Society, XVII, 48-49, '36
1345. Connaughton, C. A. **Forest Fires and Accelerated Erosion**  
Jour. of Forestry, XXXIII, No. 8, 751-752, '35
1346. Cowan, C. S. **The Proposed Mount Olympus National Park**  
Jour. of Forestry, XXXIV, 757-759, '36
1347. Curtis, A. **The Proposed Mount Olympus National Park**  
American Forests, XL, 166-169, '36
1348. Davis, K. P. **Relation of the Forest Industry to Soil Conservation**  
Northwest Science, XII, No. 4, 81-86, '38
1349. Drake, G. L. **Should Large Areas of Productive Forest Lands Be Devoted Solely to a Limited Recreational Use?**  
Jour. of Forestry, XXXIII, 900-902, '35
1350. Dutton, W. L. **Forage Utilization on the Forests of the Northwest**  
Annual Cruise, XIII, 34-35, 72, '32  
Oregon State College, Corvallis.
1351. Hall, L. G. **Recreation in the National Forests**  
Parks and Recreation, XIX, 382-387, 411-417, 475-480, '36
1352. Heisley, M. F. **National Forest Playgrounds of the Pacific Northwest**  
Recreation, XXVII, No. 4, 180-182, 204-205, '33

1353. Jeffers, D. S. **State Parks and Reserves for Recreation**  
Rept. of Statewide (Idaho) Recreation Conf., 25-30, '36  
Idaho State Planning Board, Boise
1354. Lake County, Oregon, Planning Commission. **Booth State Park Project**  
Lakeview, Oreg.
1355. Lowdermilk, W. C. **Studies in the Role of Forest Vegetation in Erosion Control and Water Conservation**  
Proc. of Pacific Science Congress, V, 2963-3990, '33
1356. Mason, D. T. **Relation of Forestry to the Economic and Social Welfare of the Region**  
Proc. of Pacific Northwest Regional Planning Conf., III, 64-65, '36  
Portland, Oreg.
1357. McNeil, F. H. Wy'east **"The Mountain."** (A Chronicle of Mount Hood)  
Metropolitan Press, Portland, Oreg., '37
1358. Meagher, G. S. **Forest Cover Retards Snow Melting**  
Jour. of Forestry, XXXVI, No. 12, 1209-1210, '38
1359. Olsen, C. J. **National Forest Recreational Problems in a Regional Land Program**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 58-60, '37  
Portland, Oreg.
1360. Preston, J. F. **Forestry and Soil Conservation**  
American Forests, XLIII, 394-396, '37
1361. Rutledge, R. H. **Interrelations of Forestry**  
Commonwealth Review, XIX, 1-8, '37  
University of Oregon Publications, Eugene
1362. Simson, A. G. **The Interception of Summer Rains by Forest Cover**  
Forest Research Notes No. 5, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1363. Spaulding, T. C. **The Multiple Usage of Our Forested Land**  
Proc. of Pacific Northwest Regional Planning Conf., III, 53-56, '36  
Portland, Oreg.
1364. \*United States Department of Agriculture, Forest Service, Region 6. **Breitenbush Loop Recreation Area. Mount Hood and Willamette National Forests, Oregon**  
Guide No. 39, '38  
Portland, Oreg.
1365. United States Department of Agriculture, Forest Service, Region 6. **Economic and Sociological Analysis of the 75 Counties in Oregon and Washington (North Pacific Region)**  
(mimeo.), '35  
Portland, Oreg.
1366. United States Department of Agriculture, Forest Service, Region 6. **Goat Rocks Recreation Area. Columbia and Snoqualmie National Forests, Washington**  
Guide No. 9, Revised, '38  
Portland, Oreg.

\* Region 6 is composed of Oregon and Washington.

1367. United States Department of Agriculture, Forest Service, Region 6.  
**Improved Public Camps of the National Forests of Oregon**  
35 p. (mimeo.), '38  
Portland, Oreg.
1368. United States Department of Agriculture, Forest Service, Region 6.  
**Improved Public Camps of the National Forests of Washington**  
23 p. (mimeo.), '38  
Portland, Oreg.
1369. United States Department of Agriculture, Forest Service, Region 6.  
**Mount Hood Timberline Lodge**  
4 p. (mimeo.), '38  
Portland, Oreg.
1370. United States Department of Agriculture, Forest Service, Region 6.  
**Mount Hood Winter Sports. Mount Hood National Forest, Oregon**  
Guide No. 21, '38  
Portland, Oreg.
1371. United States Department of Agriculture, Forest Service, Region 6.  
**North Bend Recreation Area. Snoqualmie National Forest, Washington**  
Recreation Guide No. 29, '38  
Portland, Oreg.
1372. United States Department of Agriculture, Forest Service, Region 6.  
**Oregon Skyline Trail, Pacific Crest Trail System**  
Revised, '38  
Portland, Oreg.
1373. United States Department of the Interior, National Park Service.  
**Crater Lake National Park, Oregon**  
Washington, D. C., '38
1374. United States Department of the Interior, National Park Service.  
**Mount Rainier National Park, Washington**  
Washington, D. C., '38
1375. Woods, J. B., Jr. **Ligneous Plants for Erosion Control**  
(ms.), '36  
Lib., University of Washington, Seattle.

#### CONSERVATION

1376. Benson, E. A. **Conservation and the Lumberjack**  
American Forests, XLIII, 381-383, 418-419, '37
1377. Byam, F. M. **Some Economic Factors Affecting Timber Conservation as Applied to the Douglas Fir Region in the Pacific Northwest**  
6 p., '35-'36  
Portland Chamber of Commerce, Research Department, Portland, Oreg.
1378. Graves, H. S. **Forest Conservation as a Function of State Government**  
American Forests, XXXVIII, 210-214, '32
1379. Jeffers, D. S. **Further Comments on the C. C. C.**  
Jour. of Forestry, XXXIV, No. 3, 298-302, '36
1380. Kochs, E. **The Approaching Timber Shortage—Can It Be Avoided?**  
Jour. of Forestry, XXVIII, 295-301, '30

1381. Kuhns, J. C. **Forestry Problems in the State of Washington and Suggested Solutions**  
5 p. (mimeo.), '35  
Washington State Planning Council, Olympia
1382. Mason, D. T. and Bruce, D. **Sustained Yield Forest Management as a Solution to American Forests Conservation Problems**  
Rept. of Advisory Comm. to Timber Conserv. Bd., 33-34, '31  
Mason & Stevens, American Bank Bldg., Portland, Oreg.
1383. Mason, I. J. **Preservation of Oregon Roadside Timber**  
118 p. (mimeo.), '38  
Oregon State Planning Board, Portland
1384. Meyer, W. H. **Washington's Forests—Their Perpetuity**  
Proc. of 17th Annual Wash. State Forestry Conf., 61-66, '38
1385. Munger, T. T. **Program for Public Action to Promote Forest Conservation**  
Proc. of Third Pacific Northwest Regional Planning Conf., 57-60, '36  
Portland, Oreg.
1386. Murray, L. T. **A Private Forest Owner Looks at Conservation in the State of Washington**  
Cong. Record, LXXXII, No. 27, 2372-2374, '37  
U. S. Govt. Print. Off., Washington, D. C.
1387. Staley, L. E. **Conservation and Land Use in State Forestry**  
Jour. of Forestry, XXXI, 265-269, '33
1388. Washington State Planning Council, Technical Advisory Committee on Forestry. **Report of Subcommittee on Forest Protection**  
5 p. (mimeo.)  
Olympia, Wash.
1389. Washington State Planning Council, Technical Advisory Committee on Forestry. **Report of Subcommittee on Public Responsibilities**  
9 p. (mimeo.), Exhibit A—2 p. (mimeo.)  
Olympia, Wash.
1390. Western Forestry and Conservation Association. **Forest Policy Conference of the Private Western Lumber and Forest Organizations with State, Federal and British Columbia Forest Departments and Proceedings of the Western Forestry and Conservation Association, 28th Annual Meeting, Portland, Oregon, December 8, 9 and 10, 1937**  
Shindell Reporting-Publishing Service, Seattle, Wash.
1391. Western Pine Association. **Forest Conservation in the Western Pines**  
Portland, Oreg., '37
1392. Wilson, S. A. **Comments on the Timber Problem in Conservation**  
Jour. of Forestry, XXXI, No. 2, 171-174, '33
1393. Woods, J. B. **State Opportunity in Forest Conservation**  
American Forests, XLIII, 332-333, '37

#### ECOLOGY AND BOTANY

1394. Abrams, L. **The Mahonias of the Pacific States**  
Phytologia, I, No. 2, 89-94, '34
1395. Beck, G. F. **Exotic Ancient Forests of Washington**  
Northwest Science, 22-24, '36

1396. Beck, G. F. **Spruce in the Western Miocene**  
Northwest Science, 18-20, '36
1397. Benson, G. T. **Trees and Shrubs of Western Oregon**  
Stanford University Press, 170 p., '30
1398. Betts, H. S. **Alaska Cedar**  
3 p., '37  
U. S. Forest Service, Washington, D. C.
1399. Betts, H. S. **Incense Cedar**  
5 p., '37  
U. S. Forest Service, Washington, D. C.
1400. Betts, H. S. **Maple**  
10 p., '37  
U. S. Forest Service, Washington, D. C.
1401. Betts, H. S. **Northern White Pine**  
7 p., '37  
U. S. Forest Service, Washington, D. C.
1402. Betts, H. S. **Ponderosa Pine**  
7 p., '37  
U. S. Forest Service, Washington, D. C.
1403. Betts, H. S. **Port Orford Cedar**  
5 p., '37  
U. S. Forest Service, Washington, D. C.
1404. Betts, H. S. **Sugar Pine**  
6 p., '37  
U. S. Forest Service, Washington, D. C.
1405. Betts, H. S. **Western Hemlock**  
7 p., '38  
U. S. Forest Service, Washington, D. C.
1406. Betts, H. S. **Western Red Cedar**  
5 p., '37  
U. S. Forest Service, Washington, D. C.
1407. Betts, H. S. **Western White Pine**  
5 p., '37  
U. S. Forest Service, Washington, D. C.
1408. Bulchis, R. **Variation in Needles Per Fascicle in White-Bark Pine**  
Forest Club Quarterly, XII, No. 1, p. 19, '38  
University of Washington, Seattle
1409. Cooper, W. S. **The Layering Habit in Sitka Spruce and the Two Western Hemlocks**  
Botanical Gazette, XCI, No. 4, 441-451, '31
1410. Cooper, W. S. **The Strand and Dune Flora of the Pacific Coast of North America; A Geographic Study**  
University of California Press, 141-187, '36  
Berkeley, California
1411. Cowlin, R. W. **The Making of a Forest Type Map of the Pacific Northwest**  
Jour. of Forestry, XXXIV, 598-600, '36



1412. Cowlin, R. W. **Type Areas in Selected Oregon and Washington Counties**  
Forest Research Notes No. 8, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1413. Eliot, W. A. **Forest Trees of the Pacific Coast**  
565 p., '38  
Putnam's Sons, New York City
1414. Gail, F. W. and Long, E. M. **A Study of Site, Root Development, and Transpiration in Relation to the Distribution of Pinus Contorta**  
Ecology, XVI, No. 1, 88-100, '35
1415. Gisborne, H. T. **Paired Minimum Temperatures as Indices of Fair or Foul Weather**  
Applied Forestry Notes No. 65 (mimeo.), '34  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1416. Haasis, F. W. **Exotics and Natives at the School of Forestry**  
Idaho Forester, XI, 31-32, '30  
University of Idaho, Moscow
1417. Hansen, P. H. **Post Glacial Forest Succession and Climate in the Puget Sound Region**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
1418. Harlow, W. M. and Harrar, E. S. **Textbook of Dendrology, Covering the Important Forest Trees of the United States and Canada**  
527 p., '37  
McGraw-Hill Book Company, New York City
1419. Harrar, E. S. **Forest Dendrology. Part I. The Hardwoods**  
172 p., '35  
The George Minor Press, Seattle, Wash.
1420. Harrar, E. S. and Rigg, G. B. **The Root Systems of Trees Growing in Sphagnum**  
Am. Jour. of Botany, XVIII, 391-397, '31
1421. Jemison, G. M. **Beaufort Scale of Wind Force as Adapted for Use on Forested Areas of the Northern Rocky Mountain Region**  
Jour. of Agricultural Research, XLIX, No. 1, 77-82, '34
1422. Jemison, G. M. **Climatological Summary for the Priest River Forest Experiment Station, 1912 to 1931**  
(mimeo.), '32  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1423. Jemison, G. M. **Significance of the Effect of Stand Density upon the Weather beneath the Canopy**  
Jour. of Forestry, XXXII, No. 4, 446-451, '34
1424. Keen, F. P. **A Ponderosa Pine Tree Classification**  
U. S. Bureau of Entomology and Plant Quarantine, Forest Insect Laboratory, Portland, Oreg., '37
1425. Kienholz, R. **The Vegetation of a Lava-Formed Lake in the Cascades**  
Am. Jour. of Botany, XVIII, 641-648, '31

1426. Kolbe, E. L. **Phenology an Instrument of Forest Administration**  
Northwest Science, V, 62-74, '31
1427. Larsen, J. A. **Forest Types of the Northern Rocky Mountains and Their Climatic Controls**  
Ecology, XI, No. 4, 631-672, '30
1428. Lawrence, D. B. **The Submerged Forest of the Columbia River Gorge**  
Geographical Review, XXVI, No. 4, '36
1429. Lawrence, D. B. **Trees on the March, Notes on the Recent Volcanic and Vegetational History of Mount St. Helens**  
Reprint from the Mazama Annual, '38  
Portland, Oreg.
1430. Markwardt, L. J. **Distribution and Mechanical Properties of Alaska Woods**  
U. S. Dept. of Agr., Forest Service Tech. Bull. No. 226, '31  
U. S. Govt. Print. Off., Washington, D. C.
1431. Marshall, R. **An Experimental Study of the Water Relations of Seedling Conifers with Special Reference to Wilting**  
Ecological Monographs, I, 38-98, '31
1432. Mattoon, W. R. **Forest Trees and Forest Regions of the United States**  
U. S. Dept. of Agr. Misc. Publ. No. 217, 54 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
1433. McMinn, H. E. and Maino, E. **An Illustrated Manual of Pacific Coast Trees**  
409 p., '35  
University of California, Berkeley
1434. Mirov, N. T. **Phylogenetic Relations of Pinus Jeffreyi and Pinus Ponderosa**  
Madrona, IV, No. 6, 169-171, '38
1435. Morris, W. G. **Photoelectric Cell Measurement of Crown Canopy Density**  
Jour. of Forestry, XXXIV, 52-53, '36
1436. Munger, T. T. **Red Alder—Long Considered but a Weed Tree Now an Important Raw Material for West Coast Woodworkers**  
Hardwood Record, 7-8, March, '38
1437. Munns, E. N. **Distribution of Important Forest Trees of the United States**  
U. S. Dept. of Agr., Forest Service Misc. Publ. No. 287, '38  
U. S. Govt. Print. Off., Washington, D. C.
1438. Neubrech, W. L. **American Western Pines and Their Uses—Idaho White Pine, Ponderosa Pine, Sugar Pine**  
U. S. Bureau of Foreign and Domestic Commerce Trade Promotion Series No. 180, '38  
Washington, D. C.
1439. Peters, W. H. **In the Forests of the Olympics: The Great Central Range of the Olympic Mountains**  
American Forests, XLII, 170-176, '36
1440. Randall, C. E. and Edgerton, D. P. **Famous Trees**  
U. S. Dept. of Agr. Misc. Publ. No. 295, '38  
U. S. Govt. Print. Off., Washington, D. C.

1441. Schrader, O. H., Jr. **Acid and Alkaline Resistance of Various Conifers**  
(ms.), '31  
Lib., College of Forestry, University of Washington, Seattle
1442. Starker, T. J. and Wilcox, A. R. **Cascara**  
Am. Jour. of Pharmacy, CIII, Nos. 2 and 3, '31
1443. United States Department of Agriculture, Forest Service. **Cotton-wood**  
8 p., '37  
Washington, D. C.
1444. United States Department of Agriculture, Forest Service. **Douglas Fir**  
5 p., '30  
Washington, D. C.
1445. United States Department of Agriculture, Forest Service. **Sitka Spruce**  
4 p., '31  
Washington, D. C.
1446. United States Department of Agriculture, Forest Service. **Western Larch**  
5 p., '30  
Washington, D. C.
1447. United States Department of Agriculture, Forest Service. **White Fir (Abies Concolor) and Lowland White Fir (Abies Grandis)**  
7 p., '36  
Washington, D. C.
1448. Wangaard, F. F. **Some Exotic Conifers in the Northwest**  
Forest Club Quarterly, XI, No. 2, 25-34, '38  
University of Washington, Seattle
1449. Weidman, R. H. **Racial Influences in a 25-Year Test of Ponderosa Pine**  
(ms.), '37  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1450. Wellner, C. A. **The Relationship of Stand Density to Light Intensity Beneath the Canopy in Stands of Western White Pine**  
(ms.), '38  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1451. Western Pine Association. **Idaho White Pine**  
64 p., '37  
Portland, Oreg.
1452. Western Pine Association. **Larch**  
48 p., '37  
Portland, Oreg.
1453. Western Pine Association. **Ponderosa Pine**  
76 p., '37  
Portland, Oreg.
1454. Western Pine Association. **Sugar Pine**  
52 p., '38  
Portland, Oreg.

1455. Western Pine Association. **Western Pines**  
(mimeo.), '37  
Portland, Oreg.
1456. Winkenwerder, H. and Wangaard, F. F. **Short Keys to the Native Trees of Oregon and Washington**  
Imperial Press, Seattle, Wash., '39

### **ECONOMICS, FOREST AND LUMBER**

1457. Ames, F. E. **The Forest Resources of the Pacific Slope**  
Proc. of Pacific Science Cong., II, 995-1006, '33
1458. Anderson, I. V. **Lumber Production for the Northern Rocky Mountain Region**  
Jour. of Forestry, XXXVI, No. 5, '38
1459. Andrews, H. J. **The Forest Survey in the Douglas Fir Region**  
Jour. of Forestry, XXX, No. 3, 264-275, '32
1460. Andrews, H. J. **What the Pacific Slope Forests Now Have and Are Now Growing in Relation to National Supplies and Demands**  
Jour. of Forestry, XXXV, No. 2, 171-176, '37
1461. Andrews, H. J. and Cowlin, R. W. **Forest Resources of the Douglas Fir Region—A Summary of the Forest Inventory of Western Oregon and Western Washington**  
Forest Research Notes No. 13, '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1462. Andrews, H. J. and Cowlin, R. W. **Forestry Survey Statistics for Three Selected Counties in Oregon**  
West Coast Lumberman's Logger's Daily, Oct. 21, '32
1463. Andrews, H. J., Cowlin, R. W., Moravets, F. L. and Meyer, W. H. **Pulpwood Resources of Western Oregon and Western Washington**  
Forest Research Notes No. 17, '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1464. Andrews, H. J., Cowlin, R. W. and Survey Staff. **Forest Resources of Eastern Oregon and Eastern Washington**  
(ms.), '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1465. Andrews, H. J., Cowlin, R. W. and Survey Staff. **Present and Future Forest Resources of the Douglas Fir Region**  
(ms.), '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1466. Aseman, D. L. **Oregon Timber Land Frauds**  
(ms.), '37  
Lib., Reed College, Portland, Oreg.
1467. Benson, H. K. **Industrial Uses of Wood**  
Proc. of Second Dearborn Conf., Farm Chemurgic Council, 192-198, '36  
University of Washington, Seattle

1468. Bolles, W. H. **The Olympic Blowdown Fifteen Years Later**  
(ms.), 36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1469. Bradner, M. T. **An Analysis of Log Production in the "Inland Empire" Region**  
U. S. Dept. of Agr. Tech. Bull. No. 355, '33  
U. S. Govt. Print. Off., Washington, D. C.
1470. Bradner, M. T. **Progress of Research in Forest Economics with Particular Reference to the Inland Empire Region**  
Northwest Science, VII, 97-104, '33
1471. Brandstrom, A. J. F. **Analysis of Logging Costs and Operating Methods in the Douglas Fir Region**  
Pack Foundation, 117 p., '33
1472. Briegleb, P. A. **Potential Forest Productivity of National Forest and Other Lands in the Douglas Fir Region**  
Forest Research Notes No. 23, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1473. Briegleb, P. A. **Timber Resources (Logger's Handbook, Section 1)**  
Timberman, XXXVI, No. 12, 16-25, '35
1474. Brown, L. L. **Canadian Sitka Spruce: Its Mechanical and Physical Properties**  
Forest Service Bull. No. 77, '38  
Dept. of Mines and Resources, Div. of Timber Mechanics, Forest Products Laboratory, Vancouver, B. C.
1475. Brundage, M. R. and Krueger, M. E. **Tree Size . . . An Index to Operating Costs and Values**  
Timberman, XXXV, No. 5, 40-47, '34
1476. Brundage, M. R., Krueger, M. E. and Dunning, D. **The Economic Significance of Tree Size in Western Sierra Lumbering**  
Agr. Exp. Sta. Bull. No. 549, '33  
University of California, Berkeley
1477. Buck, C. J. and United States Forest Service. **Columbia Basin Report, Appendix N: Forest Resources**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
1478. Burrell, O. K. **Forecasting Fluctuations in Demand for Douglas Fir Lumber**  
Bus. Adm. Series, II, No. 2, 51 p., '31; Studies in Bus. No. 9  
University of Oregon Publications, Eugene
1479. Butler, O. **The Oregon Checkmate; How the Federal Government is Blocking the Conservation of the Nation's Greatest Remaining Forest**  
American Forests, XLII, No. 4, 157-162, 196-197, '36
1480. Carrothers, W. A. **Forest Industries of British Columbia**  
(Included in The North American Assault on the Canadian Forests by Lower, A. R. M.)  
Yale Univ. Press, '37-'38  
New Haven, Conn.

1481. Compton, W. **Our Future Forest Needs**  
Jour. of Forestry, XXVIII, 138-146, '30
1482. Cowlin, R. W. **Forest Resources of Western Washington and Oregon**  
West Coast Lumberman, LXI, No. 6, 16-17, 34, '34
1483. Cowlin, R. W. **Oregon's Forest Resources**  
Annual Cruise, XIX, 38-39, 94, '38  
Oregon State College, Corvallis
1484. Cowlin, R. W. and Moravets, F. L. **Forest Statistics for Eastern Oregon and Eastern Washington**  
Forest Research Notes No. 25, '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1485. Cowlin, R. W., Moravets, F. L. and Forest Survey Staff. **Timber Volume and Type Acreage on the National Forests of the North Pacific Region**  
Forest Research Notes No. 22, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1486. Cummings, L. J. and Varney, R. M. **Western Red Cedar Pole Resources in North Idaho and Northeastern Washington**  
Forest Survey Release No. 16, '39  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1487. Cummings, L. J., Varney, R. M. and Swanson, R. E. **Taking the Guess out of Cedar Pole Inventories**  
Applied Forestry Notes No. 88, 8 p. (mimeo.), '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1488. Curran, C. E. and Behre, C. E. **National Pulp and Paper Requirements in Relation to Forest Conservation**  
Paper Trade Jour., CI, 16-18, '35
1489. Gibbons, W. H., Johnson, H. M. and Spelman, H. R. **The Effect of Tree Sizes on Western Yellow Pine Lumber Values and Production Costs**  
6 pts.: Timberman, XXX, No. 12, 44-49, XXXI, No. 1, 241-244, No. 2, 49-55, No. 3, 54-56, No. 4, 49-52, No. 5, 194-198, '29-'30  
Portland, Oreg.
1490. Gould, J. E. **Timber Resources, Production and Marketing in the Northwest**  
Rept. to the Port of Seattle Commission, Seattle, Wash.
1491. Hessler, H. E. **Pond Values of Various Sizes and Grades of Douglas Fir and Hemlock Logs**  
(mimeo.), '31  
Hessler and Co., Seattle, Wash.
1492. Hinkley, H. S. **The Limit of Profitable Utilization in Southern Idaho Ponderosa Pine**  
(ms.), '35  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1493. Hutchison, S. B. **A Century of Lumbering in Northern Idaho**  
Reprint, Timberman, XXXIX, Nos. 10, 11, and 12, '38

1494. Hutchison, S. B. and Whitney, C. N. **Consumption of Timber Products in the Northern Rocky Mountain Region**  
(ms.), 110 p., '39  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1495. Jenkins, J. H. and Guernsey, F. W. **Ocean Shipment of Seasoned Lumber**  
Forest Service Circ. No. 49, '37  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
1496. Johnson, H. M. **The Economic Importance of Farm Timberlands in Western Washington and Western Oregon**  
Forest Research Notes No. 16, p. 5, '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1497. Johnson, H. M. **Loss in Oversize Sawing of Douglas Fir Lumber**  
Forest Research Notes No. 8, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1498. Johnson, H. M. **Lumber Production in Oregon and Washington, 1925-1933**  
Timberman, XXXVI, No. 8, p. 89, '35
1499. Johnson, H. M. **Production and Consumption of Minor Timber Products in Oregon and Washington, 1930**  
Forest Research Notes No. 9, '32  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1500. Johnson, H. M. **Timber Depletion in Western Washington and Western Oregon, 1925-1929**  
Timberman, XXV, No. 4, p. 11, '34 and Jour. of Forestry, XXXII, No. 3, p. 274, '34
1501. Johnson, H. M. **Timber from the Farm Woods Has New Markets in the Pacific Northwest**  
U. S. Dept. of Agr. Yearbook, 1934, 350-353, '35  
Washington, D. C.
1502. Johnson, H. M. **Trends in Lumber Production in Oregon and Washington**  
Timberman, XL, No. 3, p. 15, 22, '39
1503. Johnson, H. M. **Utilization of Bigleaf Maple of the Pacific Northwest**  
U. S. Dept. of Agr. Circ. No. 225, '32  
U. S. Govt. Print. Off., Washington, D. C.
1504. Kline, C. W. **Comparisons of National Forest Timber Estimates in the Douglas Fir Region**  
(mimeo.), '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1505. Kotok, E. I. **Economic Problems of Pacific Coast Forestry**  
Proc. of Pacific Coast Econ. Assoc., '38
1506. Lodewick, J. E. **Present Trends in the Use of Shingles**  
Timberman, XXXIV, No. 6, p. 30, '33

1507. **Lodewick, J. E. Retail Prices of Selected Douglas Fir Lumber Items in Seattle, Washington, 1922-1935**  
(photostat)  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1508. **Lodewick, J. E. A Study of Annual Lumber Shipment and Market Location**  
8 p., '36  
Oregon State Planning Board, Portland
1509. **Maki, T. E. Forests of the Intermountain Region**  
So. Idaho Forester, II, No. 2, 16-20, '38
1510. **Matthews, D. N. Memorandum to Accompany the Fire Depletion Statistics of the Douglas Fir Region, Prepared for the Forest Survey**  
(ms.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1511. **McElhanney, T. A. and Perry, R. S. Some Commercial Softwoods of British Columbia: Their Mechanical and Physical Properties**  
Forest Service Bull. No. 78, '38  
Dept. of Mines and Resources, Division of Timber Mechanics, Forest Products Laboratory, Vancouver, B. C.
1512. **Merriam, W. B. Forest Situation in the Pacific Northwest**  
Econ. Geog., XIV, 103-108, '38
1513. **Meyer, W. H. Volume Tables for Silver Fir (*Abies Amabilis*)**  
(mimeo.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1514. **Meyer, W. H. Volume Tables for Sitka Spruce**  
(mimeo.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1515. **Meyer, W. H. Volume Tables for Western Hemlock**  
(mimeo.), '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1516. **Meyer, W. H., Andrews, H. J. and Others. Pulpwood Resources of the Pacific Northwest**  
(mimeo.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1517. **Moravets, F. L. Size and Volume of Ponderosa Pine in Klamath, Deschutes and Lake Counties, Oregon**  
Forest Research Notes No. 23, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1518. **Mulholland, F. D. The Forest Resources of British Columbia, 1937**  
153 p., '37  
British Columbia Forest Service, Dept. of Lands, Victoria, B. C.
1519. **Munger, T. T. The Pulpwood Forests of Oregon and Washington**  
Pacific Pulp and Paper Industry, VIII, No. 9, 20-23, '34



1520. Myrick, E. H. **North Idaho's Forestry Future**  
Northwest Science, IV, 72-73, '30
1521. Pacific Northwest Regional Planning Commission. **Pacific Northwest Forest Resources**  
258 p., '37  
Portland, Oreg.
1522. Rapraeger, E. F. **Influence of Ponderosa Pine Log Size and Quality of Overrun, Lumber Grades and Conversion Values**  
West Coast Lumberman, LIX, No. 8, 12-14, No. 10, 8-10, 60, No. 5, 18-20, '32-'33
1523. Rapraeger, E. F. **Movement of Douglas Fir Log Prices in Puget Sound, 1896-1933**  
Timberman, XXXV, No. 10, 12-13, '34
1524. Rapraeger, E. F. **Relative Cost of Making Logs from Small and Large Trees**  
Forest Research Notes No. 7, p. 5, '31  
Pacific Northwest Forest Experiment Station, Portland, Oreg.
1525. Reynolds, R. V. and Pierson, A. H. **Forest Products Statistics of the Pacific States**  
U. S. Dept. of Agr. Statis. Bull. No. 65, 30 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1526. United States Department of Agriculture, Forest Service. **The Forests of Alaska**  
8 p. (mimeo.), '37  
Washington, D. C.
1527. United States Department of Agriculture, Forest Service. **Tables of Basic Timber Statistics and Basic Forest Land Statistics for the Four Columbia Basin States**  
(mimeo.), '38  
Portland, Oreg.
1528. United States Department of Agriculture, Forest Service, North Pacific Region. **The Forestry Problem in the Columbia Basin States . . . by Regions I, IV and VI**  
Appendix N of Columbia Basin Rept., 63 p. (mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
1529. United States Department of Agriculture, Forest Service, North Pacific Region. **The National Forest Resources, Problems and Solutions in the North Pacific Region**  
(ms.), '38  
Portland, Oreg.
1530. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Cutting Depletion for the Northern Rocky Mountain Including Sawlog Depletion in Southern Idaho (1936 Progress Report)**  
(mimeo.), '36  
Missoula, Mont.
1531. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Forest Statistics for Following Counties in Idaho from Inventory Phase of the Forest Survey** (separates)  
Benewah      Boundary      Idaho      Latah      Nez Perce  
Bonner      Clearwater      Kootenai      Lewis      Shoshone  
Missoula, Mont., '37-'38

1532. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Forest Statistics for Following Counties in Washington from Inventory Phase of Forest Survey (1937 Progress Report)** (separates)

Pend Oreille	Spokane	Stevens
(mimeo.), '37		
Missoula, Mont.		

1533. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Lumber Production for the Northern Rocky Mountain Region** (multi.), '36  
Missoula, Mont.

1534. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Production of Lumber and Timber Products in Idaho and Montana** Applied Forestry Notes No. 86, 4 p. (mimeo.), '38  
Missoula, Mont.

1535. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Stumpage Prices Since 1912**  
Missoula, Mont., '36

1536. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **Forest Statistics for Following Counties of Oregon** (separates)

Baker	Deschutes	Josephine	Morrow	Wasco
Benton	Douglas	Klamath	Multnomah	Washington
Clackamas	Gilliam	Lake	Polk	Wheeler
Clatsop	Grant	Lane	Sherman	Yamhill
Columbia	Harney	Lincoln	Tillamook	
Coos	Hood River	Linn	Umatilla	
Curry	Jackson	Malheur	Union	
Crook	Jefferson	Marion	Wallowa	
Portland, Oreg., '34-'38				

1537. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **Forest Statistics for Following Counties of Washington** (separates)

Adams	Douglas	King	Pacific ('39)	Walla Walla
Asotin	Ferry	Kitsap	Pierce ('39)	Whatcom
Benton	Franklin	Kittitas	San Juan	Whitman
Chelan	Garfield	Klickitat	Skagit	Yakima
Clallam	Grant	Lewis	Skamania	
Clark	Grays Harbor	Lincoln	Snohomish	
Columbia	Island	Mason	Thurston	
Cowlitz	Jefferson	Okanogan	Wahkiakum	
Portland, Oreg., '34-'38				

1538. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **The Forest Survey of Eastern Oregon and Eastern Washington: Explanatory Text to Accompany Forest Statistics for Each County** (mimeo.), '36  
Portland, Oreg.

1539. United States Department of Agriculture, Forest Service, Regions 1, 4 and 6. **The Forest Resources, Problems and Solutions of the Four Columbian Basin States** (ms.), 4 pts., '38  
North Pacific Region, Portland, Oreg.
1540. United States Department of Agriculture, Forest Survey Staff, Northern Rocky Mountain Forest and Range Experiment Station. **Volume Tables for Commercial Timber Species of Northern Rocky Mountain Region** (multi.)  
Missoula, Mont.
1541. United States National Forest Reservation Commission. **Annual Reports, 1930-1937**  
U. S. Govt. Print. Off., Washington, D. C.
1542. United States National Resources Committee. **Alaska—Its Resources and Development**  
Regional Planning, Pt. VII, 213 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1543. United States National Resources Committee. **Forest Land Resources Requirements, Problems, and Policy**  
114 p., '35  
U. S. Govt. Print. Off., Washington, D. C.
1544. United States National Resources Committee. **Forest Resources of the Pacific Northwest**  
86 p., '38  
Washington, D. C.
1545. United States War Department, Corps of Engineers, U. S. Army, the Forest Service, and the Research Department, Portland, Oregon, Chamber of Commerce. **The Pulp and Paper Industry of the Pacific Northwest. Part I. Economics. Part II. The Pulpwood Resources of the Lower Columbia River Area. Part III. Statistics (1937)**  
Portland, Oreg.
1546. Washington State Planning Council, Technical Advisory Committee on Forestry. **Forest Stands and Forest Growth in the State of Washington**  
8 p. (mimeo.)  
Olympia, Wash.
1547. West Coast Lumbermen's Association. **The Douglas Fir Region: Present Timber Stand, Future Supply**  
Seattle, Wash.
1548. West Coast Lumbermen's Association. **West Coast Lumber Facts**  
25 p., '37  
Seattle, Wash.
1549. West Coast Lumbermen's Association. **What are the Facts about the West Coast Lumber Industry**  
11 p., '35  
Seattle, Wash.

1550. Western Pine Association. **Timber Supply and Future Outlook by Districts:**  
(1) timber supply, by species  
(2) ownership pattern, by species  
(3) accessibility  
(4) cut, by species  
(5) forecast of possible future supply  
(mimeo.), '38  
Portland, Oreg.
1551. Wilson, H. O. **Management Plan and Plan of Utilization of the Suiattle Working Circle**  
(ms.), '36  
Lib., University of Washington, Seattle
1552. Wilson, S. A., Kearns, R. S. and Judkins, D. H. **Statistics on Agricultural Development in Oregon**  
24 p. (mimeo.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1553. Wilson, S. A., Kearns, R. S. and Judkins, D. H. **Statistics on Agricultural Development in Washington**  
25 p. (mimeo.), '36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.

#### LOGGING

1554. Ames, F. E. **Selective Logging on the National Forests of the Douglas Fir Region**  
Jour. of Forestry, XXIX, 768-774, '31
1555. Anderson, E. A. **Power Saws for Felling and Bucking**  
Timberman, XXXVIII, No. 5, 78-79, '37
1556. Anderson, I. V. **Application of Selective Logging to a Ponderosa Pine Operation in Western Montana**  
Univ. of Montana Studies No. 2, '34  
Missoula, Mont.
1557. Anderson, I. V. **Breakage Losses and Cull Percent of Timber in the Inland Empire**  
Applied Forestry Notes No. 63, 3 p. (mimeo.), '34  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1558. Anderson, I. V. **Clean Cutting of Ponderosa Pine Versus Selective Cutting**  
Jour. of Forestry, XXXII, p. 886, '34
1559. Anderson, I. V. **An Economic Tree Classification for Ponderosa Pine**  
Applied Forestry Notes No. 64 (mimeo.), '34  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1560. Anderson, I. V. **Log Damage on Gravity Chutes**  
Timberman, March '30

1561. Anderson, I. V. **Memorandum Report on a Selective Logging Study of the Kinshella and Sons Tiemill Operation near Lupfer, Montana** (mimeo.), '36  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1562. Anderson, I. V. **Why Selective Cutting of Ponderosa Pine Pays**  
Timberman, XXXV, No. 11, 12-20, '34
1563. Anderson, I. V. and Duncan, G. **Power Saw Development in the Northern Rocky Mountain Region**  
Timberman, XXXIX, 12-15, '38
1564. Baker, E. **Tractors as Selective Logging Units**  
Timberman, XXXV, No. 12, 31-32, '34
1565. Baroidan, B. P. **Modern Diesel Tractor Equipment and Methods and Their Suitability in Tropical Forest Operation**  
Thesis  
Lib., University of Washington, Seattle
1566. Brandstrom, A. J. F. **Advantages of Selective Logging with Tractors**  
Logger's Daily, Oct. 26, '34
1567. Brandstrom, A. J. F. **Application of Selective Logging in Douglas Fir**  
Timberman, XXXII, No. 1, 46-48, '30
1568. Brandstrom, A. J. F. **Flexibility in Logging Makes Economic Selection Practical and Profitable**  
West Coast Lumberman, LX, No. 3, 13-14, '33
1569. Brandstrom, A. J. F. **Solution No. 8. Pacific Logging Congress "Logging One Billion Feet of Timber in Ten Years"**  
15 p. (mimeo.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1570. Brandstrom, A. J. F., Munger, T. T. and Kolbe, E. L. **Maturity Selection System Applied to Ponderosa Pine**  
West Coast Lumberman, LXIII, No. 11, p. 33, 44, '36
1571. Brandstrom, A. J. F. and Rapraeger, E. F. **Tractor Trails—Where Do They Lead?**  
Annual Cruise, XVI, 26-27, '35  
Oregon State College, Corvallis
1572. Dunford, E. G. **The Application of the Diameter Limit System of Cutting to Sitka Spruce**  
Thesis, '36  
Yale University, New Haven, Conn.
1573. Grondal, B. L. **The Standard Gang Saw**  
West Coast Lumberman, LVII, No. 5, p. 14, 15, '30
1574. Hawley, R. C. and Goodspeed, A. W. **Selection Cuttings for the Small Forest Owner**  
Yale Univ. School of Forestry Bull. No. 35, '32  
New Haven, Conn.
1575. Hodgson, A. H. **Logging Waste in the Douglas Fir Region**  
Pacific Pulp and Paper Industry and West Coast Lumberman, '30
1576. Kinney, T. E. **Selective Logging from a Logger's Viewpoint**  
Timberman, XXXII, No. 1, p. 84, '30

1577. Kirkland, B. P. **Regulating the Cut by the Continuous Inventory Flexible Rotation System**  
Jour. of Forestry, XXXII, 818-825, '34
1578. Kline, C. W. **Economic Availability of Saw Timber in the Douglas Fir Region**  
Timberman, XXXVI, No. 10, 32-34, '35
1579. Kolbe, E. L. and McKay, D. F. **Seven Methods of Cutting Tested at Pringle Falls (Ponderosa Pine)**  
Forest Research Notes No. 27, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1580. Lamb, W. K. **Early Lumbering in the Vancouver Island**  
Pt. I, 1844-1855; Pt. II, 1855-1866  
British Columbia Hist. Quart., II, 31-57; II, 95-144, '39
1581. Lodewick, J. E., Johnson, H. M. and Rapraeger, E. F. **Mill Production Studies in Douglas Fir Sawmills in the Willamette Valley**  
(ms.), '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1582. Lyford, C. A. **Application of Economic Selection to Logging Operations in the Douglas Fir Region**  
Jour. of Forestry, XXXII, 716-724, '34
1583. Madigan, F. H. **Selective Logging in the Douglas Fir Region**  
West Coast Lumberman, LXI, No. 9, p. 24, '34
1584. Madigan, F. H. **A Selective Logging Plan That Works**  
Am. Lumberman, No. 2898, 36-37, '30
1585. Madigan, F. H. **Selective Logging under the Lumber Code**  
Timberman, XXXV, No. 4, 10-11, '34
1586. Madigan, F. H. **Some Possibilities of Tractor Logging**  
Timberman, XXXIII, No. 2, 105-106, '31
1587. Madigan, F. H. **Tractors Ideal in Selective Logging**  
Timberman, XXXIV, No. 9, 17-20, '33
1588. Martin, A. C. **Logging of State Timber**  
Proc. of 17th Ann. Wash. State Forestry Conf., 21-24, '38
1589. Martin, C. S. **Rules of Forest Practice for Pine Regions**  
Western Pine Assoc., Portland, Oreg.
1590. Mills, R. **Tension in Logging Skylines**  
Engr. Exp. Sta. Bull. No. 66, 30 p., '32  
University of Washington, Seattle
1591. Mowat, E. L. **Damage to Reserve Stands and Reproduction by Logging and Slash Disposal in Ponderosa Pine in Central Idaho**  
(ms.), 42 p., '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1592. Mowat, E. L. **Methods of Cutting Ponderosa Pine**  
44 p. (mimeo.), '35  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1593. Munger, T. T. **Logging Profitable Logs—A Discussion of Economic Selection in Logging. Part I, Introduction**  
West Coast Lumberman, LVIII, No. 12, p. 42, '31

1594. Munger, T. T. **What is "Selective Logging?"**  
West Coast Lumberman, LIX, No. 3, p. 21, '32
1595. Munger, T. T. and Brandstrom, A. J. F. **Profitable Logs: Economic Selection in Logging**  
Timberman, XXXIII, No. 1, 27-34, '31
1596. Olzendam, R. **Timber is a Crop, An Address Delivered at the Pacific Logging Congress, Seaside, Oregon**  
Weyerhaeuser Timber Co., Tacoma, Wash., '37
1597. Pacific Forest Industries. **The Douglas Fir Plywood Industry and the Development of Its Export Trade**  
Tacoma, Wash., '38
1598. Pearce, J. K. **Selective Logging with Skylines**  
West Coast Lumberman, LXI, No. 1, p. 4, 5, 28, '34
1599. Pike, M. J. **The Quality and Quantity of Lumber Produced and the Efficiency of Utilization in the Cutting of Second Growth Douglas Fir Logs**  
(ms.), '30  
Lib., University of Washington, Seattle
1600. Rapraeger, E. F. **Comparative Cost of Making Logs from Small and Large Western White Pine Trees**  
West Coast Lumberman, LXIV, No. 6, '36
1601. Rapraeger, E. F. **Cubic Measurement of Pulp Logs**  
Pacific Pulp and Paper Industry, VI, No. 7, '32
1602. Rapraeger, E. F. **The Iniquitous Board Foot**  
Timberman, XXXIII, No. 5, 18-19, '32
1603. Rapraeger, E. F. **How Motor Trucks Are Used in Douglas Fir Logging**  
Jour. of Forestry, XXXII, No. 1, 24-28, '34
1604. Rapraeger, E. F. **Isn't Cubic Measure Logical?**  
Forest Club Quarterly, XI, No. 2, 22-24, '38  
University of Washington, Seattle
1605. Rapraeger, E. F. **Log Scaling and Grading Practice in the Douglas Fir Region**  
(mimeo.), '32  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1606. Rapraeger, E. F. **Motor Truck Log Hauling in Oregon and Washington**  
Timberman, XXXIV, Nos. 8, 10, 11, 12, '33
1607. Rapraeger, E. F. **Results and Application of a Logging and Milling Study in the Western White Pine Type of Northern Idaho**  
Univ. of Idaho Bull., XXXIII, No. 16, '38  
Moscow, Idaho
1608. Rapraeger, E. F. **Tree Breakage and Felling Practice in the Douglas Fir Region**  
Timberman, XXXIII, No. 11, 9-13, 24, '32
1609. Rapraeger, E. F. **Two Pacific Coast Log Loading Methods for Motor Trucks**  
Am. Lumberman, No. 3002, p. 38, '33

1610. Rapraeger, E. F. and Spelman, H. R. **The Effect of Tree and Log Size on Felling and Bucking Costs in the Douglas Fir Region**  
West Coast Lumberman, XXXVIII, No. 12, '31
1611. Rettig, E. C. **Selective Logging**  
West Coast Lumberman, LVIII, No. 12, 55-58, '31
1612. Sherman, D. M. **A Brief History of the Lumber Industry in the Fir Belt of Oregon**  
M. A. Thesis, '34  
Lib., University of Oregon, Eugene
1613. Stamm, E. P. **Influence of Motor Truck Logging**  
Timberman, XXXV, No. 12, p. 40, '34
1614. Stevens, C. M. and Bruce, D. **Selective Cutting and How It Should Be Planned**  
West Coast Lumberman, LVIII, No. 12, 36-41, '31
1615. Tilton, W. G. **Forest Practices Now in Force within the Douglas Fir Industry**  
9 p. (mimeo.)  
West Coast Lumbermen's and Pacific Northwest Loggers' Assoc., Seattle, Wash.
1616. United States Bureau of Foreign and Domestic Commerce. **American Douglas Fir Plywood and Its Uses**  
Trade Promotion Series No. 167, '37  
U. S. Govt. Print. Off., Washington, D. C.
1617. Washington State Planning Council, Technical Advisory Committee on Forestry. **Report of Subcommittee on Forest Products**  
5 p. (mimeo.)  
Olympia, Wash.
1618. Weidman, R. H. **Timber Growing and Logging Practice in Ponderosa Pine in the Northwest**  
U. S. Dept. of Agr. Tech. Bull. No. 511, 92 p., '36  
Washington, D. C.
1619. West Coast Lumbermen's Association. **Annual Report and Reference Book for Year Ending December 31, 1937**  
Seattle, Wash.
1620. West Coast Lumbermen's Association. **Logging in the Douglas Fir Region**  
Seattle, Wash.
1621. Western Pine Association. **Selection in Idaho White Pine**  
(mimeo.), '38  
Portland, Oreg.
1622. Woods, J. B. **Selective Cutting in Western Yellow Pine**  
Am. Forests, XXXVII, No. 1, 17-19, 60-61, '31

#### LUMBER INDUSTRIES

1623. Anderson, I. V. **Matchplank from Western White Pine Trees**  
Timberman, XXXVI, No. 6, 15-18, '35
1624. Anderson, I. V. **Railroad Ties from Small Mills**  
Timberman, XXXVIII, No. 1 and 2, '36



1625. Anderson, I. V. and Rapraeger, E. F. **The Christmas Tree Industry** (ms.), '39  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1626. Cox, A. H., Jr. **An Analysis of the Power Requirements of a Sawmill** (ms.), '31  
Lib., University of Washington, Seattle
1627. Dominion of Canada, Department of Mines and Resources, Division of Timber Products, Forest Products Laboratory. **Improved Utilization of Sawmill Waste in the Southern Coast Region of British Columbia**  
British Columbia Lumberman, '35
1628. Doumani, T. **Wood Chemical Industries of Washington** 100 p., '37  
Washington State Planning Council, Olympia
1629. Harrar, E. S. and Lodewick, J. E. **Identification and Microscopy of Woods and Wood Fibers Used in the Manufacture of Pulp**  
The Paper Industry, Feb., May, Aug., '34
1630. Hatch, R. S. **By-Products of the Pulp Industry**  
Proc. of Pacific Northwest Chemurgic Conf., 31-34, '37  
Washington State Planning Council, Olympia
1631. Hetherton, P. **Columbia Basin Report, Appendix O: Forests, Processing Industries**  
5 p. (mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
1632. Hodgson, A. **The Development of the Pulp and Paper Industry in Oregon and Washington**  
Undergraduate Thesis, '36  
Lib., Reed College, Portland, Oreg.
1633. Hodgson, A. H. **The Present Utilization of Sawmill "Waste" in the Douglas Fir Region**  
Timberman, XXXII, No. 9 to 12, '31
1634. Hull, J. D. **Mineral Products Used in the Pulp and Paper Industry Which Have Possibilities of Local Production**  
3 p. (mimeo.)  
Washington State Planning Council, Olympia
1635. Jahn, E. C. **Chemical Utilization of Waste Wood**  
Proc. of Pacific Northwest Chemurgic Conf., 27-44, '37  
Washington State Planning Council, Olympia
1636. Jahn, E. C. **Trends in the Utilization of Wood Waste**  
Timberman, July '36
1637. Jahn, E. C. **Waste Utilization and Waste Products—Introduction—Pulp and Chemical Products from Sawmill Wastes**  
Timberman, XXXIII, No. 6, 22-25, '32
1638. Jenkins, J. H. **Fuel Value of Sawdust**  
British Columbia Lumberman, '31
1639. Jenkins, J. H. **Preliminary Report: Lumber Manufacturing Studies at British Columbia Sawmills**  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C., '36

1640. Jenkins, J. H. **Sawmill Waste and Its Utilization in British Columbia**  
Forest Service Bull. No. 83, '31  
Dept. of Mines and Resources, Division of Timber Products, Forest  
Products Laboratory, Vancouver, B. C.
1641. Jenkins, J. H. **Sizes of Hemlock Mill-Waste Utilized for Pulpwood**  
(mimeo.), '31  
Dept. of Mines and Resources, Division of Timber Products, Forest  
Products Laboratory, Vancouver, B. C.
1642. Jenkins, J. H. and Guernsey, F. W. **Effect of Moisture Content and  
Storage on the Heating Value of Sawdust**  
Forest Service Circ. No. 33, '32  
Dept. of Mines and Resources, Division of Timber Products, Forest  
Products Laboratory, Vancouver, B. C.
1643. Jenkins, J. H. and Guernsey, F. W. **Utilization of Sawmill Waste and  
Sawdust for Fuel**  
Forest Service Circ. No. 48, '37  
Dept. of Mines and Resources, Division of Timber Products, Forest  
Products Laboratory, Vancouver, B. C.
1644. Johnson, H. M. **Production of Lumber, Lath, and Shingles in Wash-  
ington and Oregon, 1869-1936**  
Forest Research Notes No. 24, '38  
Pacific Northwest Forest and Range Experiment Station, Port-  
land, Oreg.
1645. Johnson, H. M. **Small Sawmill Industry in the Douglas Fir Region**  
Timberman, XXXIV, No. 12, 9-12, 15, '33
1646. Kuhn, R. M. **Investigation of the Sources and Characteristics of Dirt  
in Bleached Sulphate Pulp**  
Pacific Pulp and Paper Industry, XIII, 14-17, '39
1647. Livingston, L. F. **Wood as a Raw Material for Chemical Commodi-  
ties, Including Chemical Pulp, Plastics, Wall Board, Explosives**  
Proc. of Pacific Northwest Chemurgic Conf., 26-31, '37  
Washington State Planning Council, Olympia
1648. Lodewick, J. E. **Forest Research and the Pulp Industry in the Pacific  
Northwest**  
Pacific Pulp and Paper Industry, X, No. 5, 24-26, '36
1649. Lodewick, J. E. **Inventory of Sawmill Waste and Its Present Utili-  
zation**  
Timberman, XXXIII, No. 6, 23-25, '32
1650. Lodewick, J. E. **A Mill Production Study**  
Timberman, XXXVI, No. 4, 16-23, '35
1651. Lodewick, J. E. **Sawmill Waste and Its Utilization in Scandinavia  
and the Pacific Northwest**  
Jour. of Forestry, XXX, No. 7, 867-870, '32
1652. McIndoe, W. C. **Economic Feasibility of a Rayon Plant in the Pacific  
Northwest**  
Proc. of Pacific Northwest Chemurgic Conf., 46-50, '37  
Washington State Planning Council, Olympia

1653. Melton, W. R. **The Lumber Industry in Washington, Including Logging, Sawmills, Shingle Mills, Pulp and Paper Specialties, Distribution**  
Industrial Study No. 1, 159 p. (mimeo.), '38  
National Youth Administration of Washington, Tacoma
1654. Miller, R. M. **The Pulp and Paper Industry of the Pacific Northwest**  
3 vols., '37  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, North Pacific Division, Portland, Oreg.
1655. Munger, T. T. **Forests of the Northwest, as a Source of Raw Materials for the Nation's Industries**  
Proc. of Pacific Northwest Chemurgic Conf., 20-22, '37  
Washington State Planning Council, Olympia
1656. Nevin, J. V. **New Developments in Plywood**  
Proc. of Pacific Northwest Chemurgic Conf., 44-46, '37  
Washington State Planning Council, Olympia
1657. Plunguian, M. and Jahn, E. C. **A Preliminary Study of the Fireproofing of Fibre Boards**  
Fifth Pacific Science Congress, VII, No. 13, 3923-3939, '31
1658. Portland, Oregon, Chamber of Commerce. **The Lumber Industry of Oregon**  
'36-'37
1659. Portland, Oregon, Chamber of Commerce. **Pressure Treated Wood as Raw Material for Sewer and Water Pipe Construction**  
'36-'37
1660. Portland, Oregon, Chamber of Commerce. **Pulp and Paper Industry**  
'36-'37
1661. Rapraeger, E. F. **Matches from Idaho's White Pines**  
American Forests, XLV, No. 3, 112-114, '39
1662. Rapraeger, E. F. **The Use of Idaho White Pine for Matches**  
Timberman, XXXVIII, No. 10 and 11, '37
1663. Resner, H. A. **Trees and Men. A Survey of Forestry and the Lumber Industry in Washington**  
113 p. (mimeo.), '38  
Works Progress Administration, Division of Education and Recreation, Seattle, Wash.
1664. Spaur, G. **A Study of the Pulp and Paper Industry in Oregon in regard to Land Use**  
Master's Thesis, '37  
Oregon State College, Corvallis
1665. United States Department of Agriculture, Forest Service. **Douglas-Fir Plywood (Domestic Grades), Recorded Standard of the Industry (2nd edition)**  
Commercial Standard CS45-36, 16 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
1666. United States Department of Agriculture, Forest Service. **Douglas-Fir Plywood (Export Grades), Recorded Standard of the Industry**  
Commercial Standard CS45E-36, 10 p., '36  
U. S. Govt. Print. Off., Washington, D. C.

1667. United States War Department, Corps of Engineers. **Economic Possibilities for Rayon Production in the Pacific Northwest**  
U. S. Govt. Print. Off., Washington, D. C., '37
1668. West Coast Lumbermen's Association. **Lumber Manufacture in the Douglas Fir Region**  
Seattle, Washington

#### MANAGEMENT

1669. Alexander, J. B. **Effect of Rate of Growth upon the Specific Gravity and Strength of Douglas Fir**  
Forest Service Circ. No. 44, '38  
Dept. of Mines and Resources, Division of Timber Mechanics, Forest Products Laboratory, Vancouver, B. C.
1670. Anderson, I. V. **The Farm Woodlot**  
(ms.), '37  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1671. Anderson, I. V. **The Forest Problem in Western Montana**  
Jour. of Forestry, XXXI, 4-13, '33
1672. Anderson, I. V. **Ponderosa Pine Volume Tables**  
West Coast Lumberman, LIX, No. 5, p. 28, '32
1673. Anderson, I. V. **Western Larch and Douglas Fir Volume Tables**  
West Coast Lumberman, LVIII, No. 11, '31
1674. Andrews, H. J. **Problems Encountered in Forest Survey of the Douglas Fir Region**  
Annual Cruise, XIII, 37-39, 83-85, '32  
Oregon State College, Corvallis
1675. Bolles, W. H. **The Forest Survey**  
Idaho Forester, XIII, 20-21, 46-47, '31  
University of Idaho, Moscow
1676. Brandstrom, A. J. F. and Kirkland, B. P. **Selective Timber Management in the Douglas Fir Region**  
Pack Foundation, 122 p., '36
1677. Brundage, F. H. **Federal Responsibilities under Clark-McNary, McSweeney-McNary, and Fulmer Laws and Forest Credit Bill**  
13 p. (mimeo.)  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1678. Buck, C. J. **Economic and Social Significance of Sustained Yield Forest Management**  
Proc. of Pacific Northwest Regional Planning Conf., III, 51-53, '36  
Portland, Oreg.
1679. Chapman, C. S. **Industrial Problems of Forest Practice in Northwest**  
Jour. of Forestry, XXXVI, No. 2, 188-193, '38
1680. Clackamas County, Oregon, Planning Board. **Forest Problem Study**  
Oregon City, Oreg.
1681. Connaughton, C. A. **Growth in Virgin Ponderosa Pine Stands in Central Idaho**  
Jour. of Forestry, XXXIII, No. 1, 73-79, '33

1682. Cowlin, R. W. **Allowable Cut, Depletion and Current Growth in the Douglas Fir Region**  
West Coast Lumberman, LXVI, No. 3, 30-31, '39
1683. Cowlin, R. W. and Briegleb, P. A. **Some Practical Aspects of Sustained Yield; A Cutting Budget for the Douglas Fir Region**  
Timberman, XXXIX, No. 5, 22-26, '38
1684. Cronemiller, L. F. **State Forestry in Oregon**  
Master's Thesis, '36  
Lib., Oregon State College, Corvallis
1685. Cummings, L. J. **Larch-Douglas Fir Board Foot Yield Tables**  
Applied Forestry Notes No. 78, 5 p. (mimeo.), '37  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1686. Dittman, C. P. **The Relation of Bark Thickness to the Diameter of Western Yellow Pine**  
Idaho Forester, XIII, p. 39, 44, '31  
University of Idaho, Moscow
1687. Eberly, H. J. **Oregon Reforestation Tax Law**  
Jour. of Forestry, XXIX, 83-86, '31
1688. Eberly, H. J. **Tax Reform and Protection**  
Proc. of Western Forestry and Conservation Assoc., 16-17, '30
1689. Fairchild, F. R. **Principles of Forest Taxation**  
Progress Rept. of the Forest Taxation Inquiry, No. 2, '28-'33  
U. S. Forest Service, Washington, D. C.
1690. Fairchild, F. R. and Associates. **Forest Taxation in the United States**  
U. S. Dept. of Agr. Misc. Publ. No. 218, '35  
U. S. Govt. Print. Off., Washington, D. C.
1691. Flint, H. R. **Present and Future Role of the Airplane in Forestry**  
Northwest Science, V, 25-34, '31
1692. Galloway, C. V. and Others. **Oregon's Timber Taxation Problems and Recommendations toward Their Solution, A Report Submitted by Special Committee on Timber Taxation**  
Salem, Oreg., '37
1693. Greeley, W. B. **Outlook for Timber Management by Private Owners**  
Jour. of Forestry, XXXI, 208-214, '33
1694. Greenwood, F. **Forest Credits**  
Proc. of Pacific Northwest Regional Planning Conf., III, 56-57, '36  
Portland, Oreg.
1695. Haig, I. T. **Comparative Timber Yields**  
Jour. of Forestry, XXX, 575-578, '32
1696. Haig, I. T. **Second-Growth Yield, Stand and Volume Tables for the Western White Pine Type**  
U. S. Dept. of Agr. Tech. Bull. No. 323, 68 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
1697. Haig, I. T. **Stand Tables for Second-Growth Western White Pine**  
Northwest Science, V, 94-98, '31

1698. Hall, J. K. **Forest Taxation**  
Proc. of Pacific Coast Economic Assoc., '36  
University of Washington, Dept. of Economics, Seattle
1699. Hall, R. C. **Methods of Research in Forest Taxation**  
Progress Rept. of the Forest Taxation Inquiry, No. 8  
U. S. Forest Service, Washington, D. C.
1700. Hall, R. C. **The Move for Better Forest Taxation**  
American Forests, XXX, 261-272, '34
1701. Hall, R. C. **Taxation of Timber Properties in Oregon and Washington**  
Progress Rept. of the Forest Taxation Inquiry, No. 14  
U. S. Forest Service, Washington, D. C.
1702. Hatch, A. B. **Wilderness Areas**  
Soc. of American Foresters Affairs, IV, 171-174, '38
1703. Hayward, S. B. **Yield of Spruce-Hemlock Stands in the Pacific Northwest Revealed by Forest Service Growth Study**  
Pacific Pulp and Paper Industry, X, No. 7, 38-41, '36
1704. Hill, I. B. **Timber Taxation**  
Master's Thesis, '34  
Lib., University of Oregon, Eugene
1705. Isaac, L. A. **Concerning the Reburning of Douglas Fir Cut-Over Land**  
Forest Research Notes, No. 7, p. 3, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1706. Jacobson, N. G. **What Should Be the Management of Merchantable Second Growth Timber**  
Proc. of 17th Ann. Wash. State Forestry Conf., 5-11, '38
1707. Jeffers, D. S. **The Practical Application of Sustained Yield Management**  
University of Idaho, School of Forestry, Moscow, '36
1708. Jeffers, D. S. **Private Forestry and Sustained Yield**  
University of Idaho, School of Forestry, Moscow, '36
1709. Jeffers, D. S. **Rural Zoning, with Special Reference to Long Time Forest Management**  
University of Idaho, School of Forestry, Moscow, '36
1710. Johnson, H. M. **Farms Include Valuable Timber; Products of Woodlots Worth Millions**  
Washington Farmer, LXI, No. 14, '36
1711. Kachin, T. **Crop Tree Thinning and Pruning in Ponderosa Pine Cut-overs**  
Forest Research Notes No. 27, p. 5, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1712. Kirkland, B. P. **Nation-Wide Solution of Forest Production Problems of the United States**  
Jour. of Forestry, XXVIII, No. 4, 430-435, '30
1713. Kline, C. W. **The Forest Problem in the Port Orford Cedar Region**  
(ms.), '36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.

1714. Kuhns, J. C. and Grondal, B. **Necessary Research for Economic Forest Practice**  
Proc. of 17th Ann. Wash. State Forestry Conf., 41-55, '38
1715. Martin, C. S. **Where Are We Heading under Sustained Yield?**  
Western Pine Association, Portland, Oreg.
1716. Mason, E. G. **Forest Mapping**  
3rd ed., 66 p., '36  
Co-op Bookstore, Corvallis, Oreg.
1717. Matthews, D. N. **New Method of Mapping Forest Types from Air**  
West Coast Lumberman, LVIII, 23-24, '31
1718. McIntyre, R. W. and Others. **Log Scaling**  
Timberman, 157 p., '36
1719. McKinley, C. **Organization of the Forest Service in Region 6 (Oregon and Washington)**  
Social Science Research Council, Committee on Public Administration, New York City, '38
1720. Meyer, W. H. **Diameter Distribution Series in Even-Aged Forest Stands**  
Yale Forestry Bull. No. 28, 105 p., '30  
Yale University, New Haven, Conn.
1721. Meyer, W. H. **Effect of Release upon the Form and Volume of Western Yellow Pine**  
Jour. of Forestry, XXIX, 1127-1133, '31
1722. Meyer, W. H. **Growth Cycles in the Western Yellow Pine Region of Oregon and Washington**  
Forest Research Notes No. 8, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1723. Meyer, W. H. **Growth in Selectively Cut Ponderosa Pine Forests of the Pacific Northwest**  
U. S. Dept. of Agr. Tech. Bull. No. 407, '34  
U. S. Govt. Print. Off., Washington, D. C.
1724. Meyer, W. H. **Height Curves for Even-Aged Stands of Douglas Fir**  
(mimeo.), '36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1725. Meyer, W. H. **Interregional Volume Tables for Old-Growth Douglas Fir**  
20 p. (mimeo.), '32  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1726. Meyer, W. H. **A Method of Constructing Growth Tables for Selectively Cut Stands of Western Yellow Pine**  
Jour. of Forestry, XXVIII, No. 8, 1076-1084, '30
1727. Meyer, W. H. **More about the Growth of Douglas Fir**  
Forest Research Notes No. 11, p. 9, '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.

1728. Meyer, W. H. **Yield of Even-Aged Stands of Ponderosa Pine**  
U. S. Dept. of Agr. Tech. Bull. No. 630, 60 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1729. Meyer, W. H. **Yield of Even-Aged Stands of Sitka Spruce and Western Hemlock**  
U. S. Dept. of Agr. Tech. Bull. No. 544, 85 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
1730. Meyer, W. H. **Yield Tables for Trees 6.6 Inches and More in Diameter in Even-Aged Stands of Sitka Spruce and Western Hemlock**  
Supp. to Tech. Bull. No. 544 (mimeo.), '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1731. Meyer, W. H., Briegleb, P. A. and Forest Survey Staff. **Forest Growth in the Douglas Fir Region**  
(mimeo.), '36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1732. Meyer, W. H. and Hayward, S. B. **Effect of Increment Boring on Douglas Fir**  
Jour. of Forestry, XXXIV, 867-869, '36
1733. Meyer, W. H. and McArdle, R. E. **The Yield of Douglas Fir in the Pacific Northwest**  
U. S. Dept. of Agr. Tech. Bull. No. 201, '30  
U. S. Govt. Print. Off., Washington, D. C.
1734. Munger, T. T. **Oregon's Experimental Forests**  
Annual Cruise, XIX, 54-55, 88-92, '38  
Oregon State College, Corvallis
1735. Munger, T. T. **A Program for Intensive Forest Management**  
U. S. Cong., 73d, 1st sess., S. Doc. No. 12, 1455-1483, '33  
(Copeland Report)  
U. S. Govt. Print. Off., Washington, D. C.
1736. Munger, T. T. **The Silviculture of Tree Selection Cutting in the Douglas Fir Region**  
Forest Club Quarterly, '39  
University of Washington, Seattle
1737. Munger, T. T. **Timber Tax Destroying Great Oregon Industry**  
Portland Spectator, p. 5, 15, '33  
Portland, Oreg.
1738. Munger, T. T. and Matthews, D. N. **Slash Disposal and Forest Management after Clear Cutting in the Douglas Fir Region**  
Forest Research Notes No. 27, 1-3, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1739. Munger, T. T., Rapraeger, E. F. and Kolbe, E. L. **Financial Aspects of Ponderosa Pine Forest Management under Public Ownership**  
(ms.), '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.



1740. Murray, L. T. **Should the State of Washington Be Authorized to Co-operate with Private Companies and the Federal Government So As to Block Out Sustained Units?**  
Proc. of 17th Ann. Wash. State Forestry Conf., 18-19, '38
1741. Oregon State Forester. **Oregon Forest Laws, 1937**  
78 p., '37  
Salem, Oreg.
1742. Oregon State Planning Board. **Oregon's Forest Problems**  
23 p. (multi.), '36  
Portland, Oreg.
1743. Oregon State Planning Board. **Oregon's Timber Taxation Problems and Recommendations toward Their Solution**  
40 p., '37  
Portland, Oreg.
1744. Oregon State Tax Commission. **Oregon's Timber Taxation Problems**  
Salem, Oreg., '37
1745. Overman, C. H. **Effects of Taxation on Holding Forest Property**  
Jour. of Forestry, XXIX, 925-929, '31
1746. Pender, T. C. **Timber Stand Improvement in the Ponderosa Pine Type**  
10 p. (mimeo.), '35  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1747. Pingree, D. **Tax Delinquency in the Selected Counties of Oregon and Washington**  
Progress Rept. of the Forest Taxation Inquiry No. 11  
U. S. Forest Service, Washington, D. C.
1748. Pingree, D. and Hall, R. C. **Assessment Ratios of Rural Real Estate in Oregon and Washington**  
Progress Rept. of the Forest Taxation Inquiry No. 6, '28-'33  
U. S. Forest Service, Washington, D. C.
1749. Rapraeger, E. F. **Development of Branches and Knots in Western White Pine**  
Jour. of Forestry, XXXVII, No. 3, '39
1750. Rapraeger, E. F. **What Percent of Tree Volume Is in Each Log of a Western White Pine Tree?**  
West Coast Lumberman, LXIII, No. 8, '36
1751. Rettie, J. C. **Application of the Discount Principle in Forest Taxation**  
Proc. of Pacific Coast Econ. Assoc., 6-10, '36
1752. Rettie, J. C. and Sexton, V. L. **The Discount Principle Applied in the Assessment of Forest Property**  
22 p. (mimeo.), '36  
Oregon State Planning Board, Portland
1753. Seely, H. E. **Aerial Photography in Forest Surveys**  
Empire Forest Jour., XIII, 244-247, '34
1754. Silcox, F. A. **Some Fundamentals of Our Forest Problem**  
15 p. (mimeo.), '34  
U. S. Dept. of Agriculture, Washington, D. C.

1755. **Smith D. H. The Forest Service, Its History, Activities and Organization**  
U. S. Govt. Service Monographs No. 58, 268 p., '30  
Institute for Government Research, Brookings Institution, Washington, D. C.
1756. **Spaulding, T. C. The Multiple Usage of Our Forested Land**  
Proc. of Pacific Northwest Regional Planning Conf., III, 53-56, '36  
Portland, Oreg.
1757. **Twerdal, M. P. A Development Plan of the Lee Forest**  
Forest Club Quarterly, X, No. 1, 21-24, '36  
University of Washington, Seattle
1758. **United States Congress, House. Program for Forest Land Management**  
Cong. Record, 74th Cong., 1st sess., LXXIX, No. 106, 8289-8297, '35  
U. S. Govt. Print. Off., Washington, D. C.
1759. **United States Congress, Senate. National Program of Forest-Land Management**  
Cong. Record, 74th Cong., 1st sess., LXXIX, No. 158, 12743-12744, '35  
U. S. Govt. Print. Off., Washington, D. C.
1760. **United States Department of Agriculture, Forest Service. Changes in the Tax System Relating Especially to Forests—Conclusions and Recommendations**  
Progress Rept. of the Forest Taxation Inquiry No. 18  
Washington, D. C.
1761. **United States Department of Agriculture, Forest Service. Compilation of State Laws on Forestry . . . for the State of Oregon**  
(mimeo.), '38  
Washington, D. C.
1762. **United States Department of Agriculture, Forest Service. Digest of State Forest Tax Laws**  
Progress Rept. of the Forest Taxation Inquiry No. 4, '28-'33  
Washington, D. C.
1763. **United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. Growth after Logging of Larch-Douglas Fir Stands of Northwestern Montana**  
Applied Forestry Notes No. 79, 4 p. (mimeo.), '37  
Missoula, Mont.
1764. **United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. Annual Reports of the Pacific Northwest Forest Experiment Station, 1935-1936-1937**  
(mimeo.)  
Portland, Oreg.
1765. **United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. Facts about the Forest Survey of the Douglas Fir Region**  
8 p., '30  
Portland, Oreg.

1766. Washington Division of Forestry. **Forestry Laws of the State of Washington (annotated) with Rules and Regulations**  
64 p., '34  
Olympia, Wash.
1767. Washington, State of. **Supplemental Forest Protection Laws of Washington**  
27 p., '37  
State Print. Off., Olympia, Wash.
1768. Washington State Planning Council. **Report of Technical Advisory Committee on Forestry of the Washington State Planning Council**  
22 p. (mimeo.)  
Olympia, Wash.
1769. Washington State Planning Council, Technical Advisory Committee on Forestry. **Outline of the Report on Forest Management in the State of Washington**  
3 p. (mimeo.)  
Olympia, Wash.
1770. Washington State Planning Council, Technical Advisory Committee on Forestry. **Report of Subcommittee on Forest Management**  
8 p. (mimeo.)—Supplemental Statements 3 p. (mimeo.)  
Olympia, Wash.
1771. Weidman, R. H. **Timber Growing and Logging Practice in Ponderosa Pine in the Northwest**  
U. S. Dept. of Agr., Forest Service Tech. Bull. No. 511, '36  
U. S. Govt. Print. Off., Washington, D. C.
1772. Welch, D. C. **Pruning of Selected Crop Trees in Douglas Fir**  
Forest Research Notes No. 27, p. 4, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1773. West Coast Lumbermen's Association and Pacific Northwest Loggers' Association. **Forest Practice Handbook, Presenting the Rules of Forest Practice for the Douglas Fir Region**  
31 p. (revised), '37  
Seattle, Wash.
1774. Western Forestry and Conservation Association. **Proceedings of Forest Management Conference, Portland, Oregon, 1930**  
22 p., '30
1775. Western Pine Association. **Forest Practice Rules**  
Portland, Oreg., '37
1776. Wilson, S. A. **Land Tax Delinquency and Abandonment in the Forest Regions of Western Washington and Oregon**  
Forest Research Notes No. 11, 1-2, '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1777. Wilson, S. A. **Land-Use Zoning in the Timbered Sections of Oregon and Washington West of the Cascades**  
Proc. of Pacific Northwest Regional Planning Conf., II, 171-176, '34  
Portland, Oreg.

#### OWNERSHIP

1778. Cary, A. **A Defense of Private Forest Ownership**  
Jour. of Forestry, XXXIII, 964-967, '35

1779. Caverhill, P. Z. **Forestry: Is State Monopoly Necessary or Desirable?**  
Jour. of Forestry, XXXII, 712-715, '34
1780. Cowan, C. S. **The Ownership of Forested Lands in the State of Washington and Its Effects on Forestry and Forest Management**  
Prof. of 17th Ann. Wash. State Forestry Conf., 67-69, '38
1781. Cowlin, R. W. **Timber Ownership in the Douglas Fir Region**  
West Coast Lumberman's Handbook and Directory, 8-9, '35-'36
1782. Dana, S. T. **What Are the Possibilities of Private Forestation?**  
Proc. of Natl. Conf. on Land Utilization, 90-95, '31
1783. Kneipp, L. F. **Uncle Sam as a Buyer of Forest Lands**  
American Forests, XL, 147-150, '34
1784. Washington State Planning Council, Technical Advisory Committee on Forestry. **Place of Federal, State and Privately Owned Timber in Promoting the Sustained Yield Management in Washington**  
3 p. (mimeo.)  
Olympia, Wash.
1785. Wilson, S. A. **Facts Bearing upon Instability of Forest Land Ownership in Western Oregon**  
(mimeo.), '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1786. Wilson, S. A. **Facts Bearing upon Instability of Forest Land Ownership in Western Washington**  
(mimeo.), '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1787. Wilson, S. A. **Forest Taxation and Private Ownership**  
Washington Purchasing Agent and Manufacturer, XI, No. 11, 8-9, 49-51, '36

#### PROTECTION: ENTOMOLOGY

1788. Beal, J. A. **Low Temperatures Fatal to Western Pine Beetle**  
Forest Research Notes No. 11, '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1789. Evenden, J. C. **Economic Status of Forest Insects in the Northern Intermountain Region**  
Northwest Science, IV, 51-54, '30
1790. Furniss, R. L. **Bark Beetles Active Following Tillamook Fire**  
Timberman, XXXVII, No. 3, 21-22, '36
1791. Furniss, R. L. **Salvage on the Tillamook Burn as Affected by Insect Activity**  
Timberman, XXXIX, 11-13, 30, 32, '37
1792. Furniss, R. L. and Keen, F. P. **Effect of Subzero Temperatures on Populations of Western Pine Beetle, Dendroctonus Brevicomis Lec.**  
Jour. Econ. Ent., XXX, No. 3, 482-504, '37
1793. Herrick, G. W. **Insect Enemies of Shade Trees**  
417 p., '38  
Comstock Publishing Co., Cornell Heights, Ithaca, New York

1794. Keen, F. P. **Annual Report of the Forest Insect Conditions in Oregon and Washington for 1933**  
U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Forest Insect Laboratory, Portland, Oreg.
1795. Keen, F. P. **The Control of Hemlock Loopers by Airplane Dusting**  
Jour. of Forestry, XXX, No. 4, 506-507, '32
1796. Keen, F. P. **An 8-Year Campaign against the Mountain Pine Beetle**  
Forest Worker, p. 13, Jan. '33
1797. Keen, F. P. **Insect Enemies of Western Forests**  
Misc. Publ. No. 273, 209 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
1798. Keen, F. P. **Pine Beetle Control Costs Reduced through Logging and Salvage**  
U. S. Dept. of Agr. Yearbook, 428-430, '31  
Washington, D. C.
1799. Keen, F. P. **Relative Susceptibility of Ponderosa Pines to Bark Beetle Attack**  
Jour. of Forestry, XXXIV, No. 10, 919-927, '36
1800. Keen, F. P. **Thick Bark Protects Pine Beetles from Fatal Subzero Temperatures**  
Forest Worker, p. 12, July '33
1801. Keen, F. P. **Tussock Moth Menace**  
Timberman, XXX, No. 11, p. 108, '29
1802. Keen, F. P., Craighead, F. C., Miller, J. M. and Evenden, J. C. **Control Work against Bark Beetles in Western Forests and an Appraisal of Its Results**  
Jour. of Forestry, XXIX, No. 7, 1001-1008, '31
1803. Keen, F. P. and Jaenicko, A. J. **Forest Insect Handbook, North Pacific Region**  
(mimeo.), '33  
U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Forest Insect Laboratory, Portland, Oreg.
1804. Keen, F. P. and Solinsky, F. **Pine Beetles Killed by New Method**  
Forest Worker, VIII, No. 5, 11-12, '32
1805. Martin, C. S. **Pine Beetle Logging Company**  
American Forests, March '37

#### PROTECTION: FIRE

1806. Anderson, I. V. **Does Fire Protection in Ponderosa Pine Pay?**  
Forestry Kaimin, '33  
University of Montana, Missoula
1807. Anderson, I. V. **Fire-Scarred Ponderosa Pine . . . What Is the Loss?**  
Timberman, XXXV, No. 6, 14-15, '34
1808. Beal, J. A., Kimmey, J. W. and Rapraeger, E. F. **Deterioration of Fire-Killed Douglas Fir**  
Timberman, XXXVII, No. 2, 13-17, '35
1809. Bradner, M. and Anderson, I. V. **Fire-Damaged Logs—What Is the Loss?**  
Timberman, XXXI, No. 7, '30

1810. Connaughton, C. A. **Fire Damage in the Ponderosa Pine Type in Idaho**  
Jour. of Forestry, XXXIV, No. 1, 46-51, '36
1811. Connaughton, C. A. **Forest Fires and Accelerated Erosion**  
Jour. of Forestry, XXXIII, 751-752, '35
1812. Connaughton, C. A. and Maki, T. E. **Trends of the Volatile Content (Particularly Moisture) of Evergreen Foliage during Periods of Drought Stress**  
Progress Rept., 18 p., '35  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1813. Flynn, T. P. **Specifications and Construction Report: Special Forest Service Trail Tractor**  
U. S. Dept. of Agriculture, Forest Service, Region 6, Equipment Laboratory, Portland, Oreg.
1814. Fowells, H. A. and Stephenson, R. E. **Effect of Burning on Forest Soils**  
Soil Science, XXXVIII, No. 3, 175-181, '34
1815. Gisborne, H. T. **Determination of Normal Fire Danger**  
The Ames Forester, 27-31, '38  
Ames, Iowa
1816. Gisborne, H. T. **A Five-Year Record of Lightning Storms and Forest Fires**  
Monthly Weather Review, LIX, No. 4, 139-150, '31  
U. S. Weather Bureau, Washington, D. C.
1817. Gisborne, H. T. **Forest Pyrology**  
Scientific Monthly, '39 (in press)
1818. Gisborne, H. T. **Hornby's Principles of Fire Control Planning**  
Jour. of Forestry, '39 (in press)
1819. Gisborne, H. T. **Lightning and Forest Fires**  
Pulp and Paper of Canada, XXXIV, No. 6, 327-329, '33
1820. Gisborne, H. T. **Lightning on the Lookouts**  
American Forests, XXXVII, No. 9, 515-518, 574-575, '31
1821. Gisborne, H. T. **Measuring Fire Weather and Forest Inflammability**  
U. S. Dept. of Agr. Circ. No. 298, 58 p., illus., '36  
U. S. Govt. Print. Off., Washington, D. C.
1822. Gisborne, H. T. **Measuring Forest Fire Danger**  
Natl. Fire Protective Assoc. Quart., '34
1823. Gisborne, H. T. **Paired Minimum Temperatures as Indices of Fair or Foul Weather**  
Applied Forestry Notes No. 65 (mimeo.), '34  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1824. Gisborne, H. T. **Principles of Measuring Forest Fire Danger**  
Jour. of Forestry, XXXIV, 786-793, '36
1825. Gisborne, H. T. **Progress in Forest Fire Research**  
Northwest Science, VII, No. 3, 71-76, '33

1826. Gisborne, H. T. **The Rating of Forest Fire Danger**  
Applied Forestry Notes No. 67 (mimeo.), '35  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1827. Gisborne, H. T. **The Scheme of Forest Fire Control**  
Jour. of Forestry, XXIX, 1077-1079, '31
1828. Gisborne, H. T. **Shaded Fire Breaks**  
Jour. of Forestry, XXXIII, 86-87, '35
1829. Gisborne, H. T. **When a "Normal" Is Not Normal**  
Am. Meteorological Soc. Bull. No. 16, 6-7, '35
1830. Gisborne, H. T. **Where Is the Forest Meteorologist?**  
The Michigan Forester, XVI, p. 9, 44, '35
1831. Gisborne, H. T. **The Wood Cylinder Method of Measuring Forest Inflammability**  
Jour. of Forestry, XXXI, No. 6, 673-679, '33
1832. Gisborne, H. T. **Woodlands Cut by the Selection Method Less Liable to Fire Damage**  
U. S. Dept. of Agr. Yearbook, 376-378, '34  
Washington, D. C.
1833. Hayes, G. L. **Variations of Some Fire Danger Factors with Altitude, Aspect, and Time of Day**  
Applied Forestry Notes No. 80 (mimeo.), '37  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1834. Hornby, L. G. **Fire Control Planning in the Northern Rocky Mountain Region** (Progress Report No. 1)  
179 p. (multi.), '36  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1835. Hornby, L. G. **Fuel Type Mapping in Region One**  
Jour. of Forestry, XXXIII, No. 1, 67-72, '35
1836. Hornby, L. G. **Fuel Type Mapping, Its Relation to Forest Fire Control Planning**  
Northwest Science, X, No. 3, 3-7, '36
1837. Jemison, G. M. **Beaufort Scale of Wind Force as Adapted for Use on Forested Areas of the Northern Rocky Mountain Region**  
Jour. of Agr. Research, XLIX, No. 1, 77-82, '34
1838. Jemison, G. M. **Climatological Summary for the Priest River Forest Experiment Station, 1912 to 1931**  
(mimeo.), '32  
Northern Rocky Mountain Forest and Range Experiment Station,  
Missoula, Mont.
1839. Jemison, G. M. **Influence of Weather Factors on Moisture Content of Light Fuels in Forests of the Northern Rocky Mountains**  
Jour. of Agr. Research, LI, No. 10, 885-906, '35
1840. Jemison, G. M. **Meteorological Conditions Affecting the Freeman Lake (Idaho) Fire**  
Monthly Weather Review, LX, No. 1, 1-2, '32  
U. S. Weather Bureau, Washington, D. C.

1841. Jemison, G. M. **Significance of the Effect of Stand Density upon the Weather Beneath the Canopy**  
Jour. of Forestry, XXXII, No. 4, 446-451, '34
1842. Kachin, T. and Gisborne, H. T. **Technique of Duff Hygrometer Calibration**  
Jour. of Forestry, XXXV, No. 8, 736-743, '37
1843. Kolbe, E. L. **Burning Ponderosa Pine Snags by the Base-Fire Method**  
(ms.), '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1844. MacDaniels, E. H. **Section on Forest Fire Protection**  
4 p. (mimeo.), '34  
Washington State Planning Council, Olympia
1845. Maki, T. E. **Man-Caused Fires—An Insolvable Problem?**  
4 p., '39  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1846. Martell, E. R. **What Is a Forest Fire Hazard?**  
Jour. of Forestry, XXXV, No. 11, 1056-1059, '37
1847. Matthews, D. N. **Fire Hazard on Slash-Burned Versus Unburned Cutover Lands**  
Forest Research Notes No. 27, 2-3, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1848. Matthews, D. N. **New Devices for the Forest Fire Protectionist**  
Northwest Science, IX, No. 4, 18-20, '35
1849. Matthews, D. N. **Weather and Fire Danger**  
(mimeo.), '34  
U. S. Forest Service, North Pacific Region, Portland, Oreg.
1850. Matthews, D. N. and Campbell, J. F. **Region Six Fire-Danger Board Fire Control Notes, III, No. 1, 32-34, '39**  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1851. McArdle, R. E. **Some Visibility Factors Controlling the Efficient Location and Operation of Forest Fire Lookout Stations**  
Jour. of Forestry, XXXIV, No. 8, 802-811, '36
1852. McArdle, R. E. **The Wolf Creek Fire in August Hit 1½ Billion Feet of Timber**  
Four L Lumber News, Oct. 15, '33
1853. McArdle, R. E. and Byram, G. M. **Goggles for Increasing the Efficiency of Forest Fire Lookouts**  
Jour. of Forestry, XXXIV, No. 8, 797-801, '36
1854. McArdle, R. E. and Matthews, D. N. **Fire Research**  
Forest Research Notes, No. 15, '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1855. Morris, W. G. **Coordinating Fire Plans for Detection, Transportation and Guard Placement Facilities**  
(ms.), '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.



1856. Morris, W. G. **Details of the Tillamook Fire from Its Origin to Salvage of the Killed Timber**  
(ms.), '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1857. Morris, W. G. **Fires in Forests of Oregon Traced**  
Sunday Oregonian, Sec. 5, 1-2, Sept. 23, '34  
Portland, Oreg.
1858. Morris, W. G. **Forest Fires in Western Oregon and Western Washington**  
Oregon Historical Quart., XXXV, 313-339, '34
1859. Morris, W. G. **Lightning Storms and Fires on the National Forests of Oregon and Washington.** Summarized in Monthly Weather Review, LXII, 370-375, '34  
(mimeo.), '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1860. Morris, W. G. **The Occurrence and Behavior of Lightning Storms on the National Forests of Oregon and Washington**  
(Abstract) Bull. of Am. Meteorological Soc., XIII, p. 173, '32
1861. Morris, W. G. **A Preliminary Report, Giving Some of the Results Obtained in a Study of Lightning Storm Occurrence and Behavior on the National Forests of Oregon and Washington**  
Forest Research Notes No. 10, '32  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1862. Morris, W. G. **The Tillamook Burn—Its Area and Timber Volume**  
Forest Research Notes No. 18, 2-4, '36  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1863. Munger, T. T. and Cronemiller, L. F. **Report of the Committee on Prevention of Forest Fires to Governor Julius L. Meier**  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1864. Oregon State Planning Board. **Forest Fire Protection**  
5 p. (mimeo.), '35  
Portland, Oreg.
1865. Pearce, J. K. **Public Enemies in the Douglas Fir**  
Trees, I, No. 4, p. 7 and 17, '38
1866. Rapraeger, E. F. **Deterioration of Fire-Killed Douglas Fir**  
Forest Research Notes No. 16, p. 2, '35  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1867. Rapraeger, E. F. **Effect of Repeated Ground Fires upon Stumpage Returns in Western White Pine**  
Jour. of Forestry, XXXIV, No. 7, 715-718, '36
1868. Robinson, J. T. **Forestry Fire Protection**  
Cong. Record, 74th Cong., 1st sess., Senate, LXXX, No. 60, 4431-4432, '36  
U. S. Govt. Print. Off., Washington, D. C.

1869. Schroeder, G. H. **The Art and Science of Protecting Forest Lands from Fire**  
184 p., '38  
Oregon State College Cooperative Assoc., Corvallis, Oreg.
1870. Schroeder, G. H. **Forest Protection: Fire**  
11 p. (lith.), '37  
Oregon State College Cooperative Assoc., Corvallis, Oreg.
1871. Shepard, H. B. **Forest Fire Insurance in the Pacific Coast States**  
Forest Research Notes No. 14, '34  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1872. Shepard, H. B. **The Influence of Local Climate on Forest Fire Hazard in the Douglas Fir Region**  
(mimeo.), '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1873. Shepard, H. B. **Rating Summer Climate for Forest Fire Insurance Purposes**  
Am. Meteorological Soc. Bull. No. 14, 62-64, '33
1874. United States Department of Agriculture, Forest Service. **Fire Control Meeting, Spokane, Washington, February 10-21, 1936**  
(mimeo.)
1875. United States Department of Agriculture, Forest Service, North Pacific Region. **Fuel Type Mapping**  
22 p. (mimeo.), '37  
Portland, Oreg.
1876. United States Department of Agriculture, Forest Service, North Pacific Region. **Projects Developed at Region 6 Equipment Laboratory**  
Circular E-2070, '38  
Portland, Oreg.
1877. Washington Forest Fire Association. **Annual Reports of the Washington Forest Fire Association, 1930-1937**  
Seattle, Wash.
1878. Western Forestry and Conservation Association. **The Western Fire Fighter's Manual**  
8 chaps., '34  
Portland, Oreg.

#### PROTECTION: PATHOLOGY

1879. Anderson, B. A. **Toxicity of Water-Soluble Extractives of Western Yellow Pine to Lenzites Sepiaria**  
Phytopathology, XXI, No. 10, 927-940, '31
1880. Bailey, A. J. **The Penetration of Fungi through Wood**  
Jour. of Forestry, XXXII, p. 1010, '34
1881. Bedwell, J. L. **Blister Rust Found on Sugar Pine**  
Plant Disease Reporter, XX, No. 10, 173-174, '36
1882. Bedwell, J. L. **Factors Affecting Asiatic Chestnuts in Forest Plantations**  
Jour. of Forestry, XXXV, No. 3, 258-262, '37 (Portion of Ph. D. dissertation)

1883. Bedwell, J. L. **Present Status of Chestnut Blight in the Pacific Northwest**  
Plant Disease Reporter, XXII, No. 4, 66-68, '38
1884. Bedwell, J. L. **Twig Blight of Asiatic Chestnuts, Especially that Caused by Phomopsis**  
Phytopathology, XXVII, No. 12, 1143-1151, '37 (Portion of Ph. D. dissertation)
1885. Bedwell, J. L. and Childs, T. W. **Verticillium Wilt of Maple and Elm in the Pacific Northwest**  
Plant Disease Reporter, XXII, No. 1, 22-23, '38
1886. Bedwell, J. L. and Fowler, M. E. **Fungi Found on Chestnut and Chinquapin in Oregon, Washington, and British Columbia**  
Plant Disease Reporter, XXII, No. 11, 208-210, '38
1887. Boyce, J. S. **A Canker of Douglas Fir Associated with Phomopsis Lokoyae**  
Jour. of Forestry, XXXIX, No. 6, 664-672, '33
1888. Boyce, J. S. **Decay and Other Losses in Douglas Fir in Western Oregon and Washington**  
U. S. Dept. of Agr. Tech. Bull. No. 286, '32  
Washington, D. C.
1889. Boyce, J. S. **Decay in Pacific Northwest Conifers**  
Bull. No. 1, 51 p., '30  
Yale University, Osborn Botanical Laboratory, New Haven, Conn.
1890. Buchanan, T. S. **An Alinement Chart for Estimating Number of Needles on Western White Pine Reproduction**  
Jour. of Forestry, XXXIV, No. 6, 588-593, '36
1891. Buchanan, T. S. **Annual Growth Rate of Cronartium Ribicola Cankers on Branches of Pinus Monticola in Northern Idaho**  
Phytopathology, XXVIII, No. 9, 634-641, '38
1892. Buchanan, T. S. **Blister Rust Damage to Merchantable Western White Pine**  
Jour. of Forestry, XXXVI, No. 3, 321-328, '38
1893. Buchanan, T. S. **Branching Habit of Western White Pine in Relation to Blister Rust Infection**  
Phytopathology, '39 (in press)
1894. Buchanan, T. S. **Fungi Causing Decay in Wind-Thrown Northwest Conifers**  
Jour. of Forestry, '39 (in press)
1895. Buchanan, T. S. and Englerth, G. H. **Decay and Other Volume Losses in Wind-Thrown Timber on the Olympic Peninsula, Washington**  
U. S. Dept. of Agr. Circ., '39 (in press)  
Washington, D. C.
1896. Buchanan, T. S. and Kimmey, J. W. **Initial Tests of Distance of Spread to and Intensity of Infection on Pinus Monticola by Cronartium Ribicola from Ribes Lacustre and R. Viscosissimum**  
Jour. of Agr. Research, LVI, No. 1, 9-30, '38
1897. Childs, T. W. **Decay of Slash on Clear-Cut Acres in the Douglas Fir Region**  
Jour. of Forestry, '39 (in press)

1898. Childs, T. W. **Variability of Polyporus Schweinitzii in Culture**  
Phytopathology, XXVII, 29-50, '37 (Ph. D. dissertation)
1899. Childs, T. W., Bedwell, J. L. and Engierth, G. H. **Blister Rust Infection on Pinus Albicaulis in the Northwest**  
Plant Disease Reporter, XXII, No. 8, 139-140, '38
1900. Childs, L. and Brown, G. G. **A Study of Tree Stocks in Relation to Winter Injury and Its Prevention**  
Agr. Exp. Sta. Circ. No. 103, 15 p., '31  
Oregon State College, Corvallis
1901. Childs, T. W. and Kimmey, J. W. **Studies on Probable Damage by Blister Rust to Some Representative Stands of Young Western White Pine**  
Jour. of Agr. Research, LVII, No. 8, 557-568, '38
1902. Craig, R. W. **Epidemic Forest Diseases**  
Forest Club Quart., XI, No. 3, 12-16, '38  
University of Washington, Seattle
1903. Eades, H. W. **British Columbia Softwoods: Their Decays and Natural Defects**  
Forest Service Bull. No. 80, '32  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
1904. Garin, G. I. **A Study of the Cause of Kiln Brown Stain in Idaho White Pine (Pinus Monticola Don) and Western Yellow Pine (Pinus Ponderosa Lawson)**  
Thesis, '30  
Lib., University of Idaho, Moscow
1905. Haasis, F. W. **A Study of Laboratory Methods for Investigating the Relation between Moisture Content of Wood and Fungal Growth**  
Phytopathology, XXII, No. 1, 71-84, '32
1906. Hansbrough, J. R. **Occurrence and Parasitism of Aleurodiscus Amorphus in North America**  
Jour. of Forestry, XXXII, 452-458, '34
1907. Hatch, A. B. **The Physical Basis of Mycotrophy in Pinus**  
Black Rock Forest Bull. VI, 1-168, '37
1908. Hatch, A. B. **The Role of Mycorrhizae in Afforestation**  
Jour. of Forestry, XXXIV, No. 1, 22-29, '36
1909. Hubert, E. E. **A Disease of Conifers Caused by Stereum Sanguinolentum**  
Jour. of Forestry, XXXIII, No. 5, 485-489, '35
1910. Hubert, E. E. **Fighting Forest Diseases. The Counter Attack on Blister Rust, Larch Canker and Other Tree Enemies Is Now in Full Swing**  
Four L Lumber News, XII, No. 13, p. 12, 53, '30
1911. Hubert, E. E. **The Forest Disease Situation in the Northwest**  
Idaho Forester, XII, 12-13, 62-63, '30  
University of Idaho, Moscow
1912. Hubert, E. E. **Forest Pathology**  
Science, LXXII, 351-356, '30

1913. Hubert, E. E. **How Weather Causes Tree Diseases**  
Northwest Science, VI, No. 10, '32
1914. Hubert, E. E. **Observations on Tuberculina Maxima, A Parasite of Cronartium Ribicola**  
Phytopathology, XXV, No. 2, 253-261, '35
1915. Hubert, E. E. **An Outline of Forest Pathology**  
John Wiley & Sons, Inc., New York City, '31
1916. Hubert, E. E. **Progress of Research in Forest Pathology**  
Northwest Science, VII, No. 4, 88-91, '33
1917. Kimmey, J. W. **Susceptibility of Principal Ribes of Southern Oregon to White Pine Blister Rust**  
Jour. of Forestry, XXXIII, No. 1, 52-56, '35
1918. Kimmey, J. W. **Susceptibility of Ribes to Cronartium Ribicola in the West**  
Jour. of Forestry, XXXVI, No. 3, 312-320, '38
1919. Kimmey, J. W. **Time of Growth of Cronartium Ribicola Cankers on Pinus Monticola**  
Phytopathology, '39 (in press)
1920. Lachmund, H. G. **Damage to Pinus Monticola by Cronartium Ribicola at Garibaldi, British Columbia**  
Jour. of Agr. Research, XLIX, No. 3, 239-249, '34
1921. Lachmund, H. G. **Growth and Injurious Effects of Cronartium Ribicola Cankers on Pinus Monticola**  
Jour. of Agr. Research XLVIII, No. 6, 475-503, '34
1922. Lachmund, H. G. **Methods of Determining Age of Blister Rust Infection on Western White Pine**  
Jour. of Agr. Research, XLVI, No. 8, 675-693, '33
1923. Lachmund, H. G. **Mode of Entrance and Periods in the Life Cycle of Cronartium Ribicola on Pinus Monticola**  
Jour. of Agr. Research, XLVII, No. 10, 791-805, '33
1924. Lachmund, H. G. **Resistance of Current Season's Shoots of Pinus Monticola to Infection by Cronartium Ribicola**  
Phytopathology, XXIII, No. 11, 917-922, '33
1925. Lachmund, H. G. **The Seasonal Development of Ribes in Relation to Spread of Cronartium Ribicola in the Pacific Northwest**  
Jour. of Agr. Research, XLIX, No. 2, 93-114, '34
1926. Lachmund, H. G. and Hansbrough, J. R. **Preliminary Report on Relative Susceptibility of Sugar Pine and Western White Pine to Blister Rust**  
Jour. of Forestry, XXX, No. 6, 687-691, '32
1927. Lachmund, H. G. and Hansbrough, J. R. **Survival of Blister Rust Mycelium in Western White Pine**  
Jour. of Agr. Research, XLVIII, No. 11, 1043-1047, '34
1928. Mielke, J. L. **Comparison of Pycnial Stage of Cronartium Ribicola on Pinus Lambertiana and Pinus Monticola**  
Phytopathology, XXIII, No. 2, 204-205, '33
1929. Mielke, J. L. **An Example of the Ability of Ribes Lacustre to Intensify Cronartium Ribicola on Pinus Monticola**  
Jour. of Agr. Research, LV, No. 12, 873-882, '37

1930. Mielke, J. L. **Rodents as a Factor in the Control of White Pine Blister Rust**  
Jour. of Forestry, XXXIII, No. 12, 994-1003, '35
1931. Mielke, J. L. **Tuberculina Maxima in Western North America**  
Phytopathology, XXIII, No. 3, 299-305, '33
1932. Mielke, J. L., Childs, T. W. and Lachmund, H. G. **The Susceptibility to Cronartium Ribicola of the Four Principal Ribes Species Found within the Commercial Range of Pinus Monticola**  
Jour. of Agr. Research, LV, No. 5, 317-346, '37
1933. Mielke, J. L. and Hansbrough, J. R. **Susceptibility to Blister Rust of the Two Principal Ribes Associates of Sugar Pine**  
Jour. of Forestry, XXXI, No. 1, 29-33, '33
1934. Mielke, J. L. and Kimmey, J. W. **Dates of Production of the Different Spore Stages of Cronartium Ribicola in the Pacific Northwest**  
Phytopathology, XXV, No. 12, 1104-1108, '35
1935. Offord, H. R., Van Atta, G. R. and Swanson, H. E. **Chemical and Mechanical Methods of Ribes Eradication in the White Pine Regions of the Western United States**  
U. S. Dept. of Agr. Tech. Bull., '38  
U. S. Govt. Print. Off., Washington, D. C.
1936. Opie, R. S. **The Relationship of Cronartium Ribicola to Pinus Ribicola to Pinus Monticola**  
Thesis, '37  
Lib., University of Idaho, Moscow
1937. Pierson, R. K. **Fusion of Pycniospores with Filamentous Hyphae in the Pycnium of the White Pine Blister Rust**  
Nature (Great Britain), CXXXI, No. 3316, 728-729, '33
1938. Pierson, R. K. **A Method of Separating the Teliospores of Cronartium Ribicola**  
Phytopathology, XXVI, No. 9, 923-925, '36
1939. Pierson, R. K. **Studies on the Function of the Pycniospore of the White Pine Blister Rust Fungus**  
Thesis, '33  
Lib., University of Idaho, Moscow
1940. Pierson, R. K. and Buchanan, T. S. **Age of Susceptibility of Ribes Petiolare Leaves to Infection by Aeciospores and Urediospores of Cronartium Ribicola**  
Phytopathology, XXVIII, No. 10, 709-715, '38
1941. Pierson, R. K. and Buchanan, T. S. **Susceptibility of Needles of Different Ages on Pinus Monticola Seedlings to Cronartium Ribicola Infection**  
Phytopathology, XXVIII, No. 11, 833-839, '38
1942. Pierson, R. K. and Ehrlich, J. **Effects of the Autumn 1935 Cold Wave on Forest Trees in Northern Idaho**  
Plant Disease Reporter, XXI, No. 3, 64-65, '37
1943. Pierson, R. K. and Ehrlich, J. **Effect of Early Frosts on Pinus Monticola in Northern Idaho in 1935**  
Plant Disease Reporter, XXI, No. 3, p. 65, '37

1944. Proctor, P., Jr. **A New Technique in the Study of the Penetration of Wood by Fungi**  
(ms.), '38  
Lib., University of Washington, Seattle
1945. Putnam, H. N. **Spread and Development of White Pine Blister Rust in the Inland Empire**  
Northwest Science, V, 53-57, 58, '31
1946. Stillinger, C. R. **Distribution, Hosts and Internal Telia of Puccinia Parkeræ**  
Mycologia, XXX, No. 2, 235-242, '38
1947. Stillinger, C. R. **Pest Control Activities of Federal Plant Quarantine and Control Administration**  
Northwest Science, IV, 33-35, 44-47, '30
1948. Stouffer, D. J. **A Study of Fungi Found Growing on White Pine Blister Rust Lesions**  
Master's Thesis, '32  
Lib., University of Idaho, Moscow
1949. Wyckoff, S. N. **Development of Blister Rust Control in the Inland Empire**  
Northwest Science, IV, 48-50, '30

#### SILVICULTURE

1950. Albensky, A. **Our Achievements in Acclimatizing Forest Tree Species**  
U. S. Forest Service, Division of Silvics, Washington, D. C., '33
1951. Alutin, A. N. **Report on Hammond Tree Planting Demonstration Area, SCS-O-7, Warrenton, Oregon**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash., '37
1952. Brandstrom, A. J. F. **The Role of Selective Cutting in Promoting Sustained Yield, with Special Reference to Ponderosa Pine**  
Jour. of Forestry, XXXV, 142-147, '37
1953. Chapin, W. E., Peters, B. L. and Hafenrichter, A. L. **Root Pruning and Thinning Compared with Lining Out for the Production of Coniferous Field Planting Stock**  
(ms.), '39  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.
1954. Clarke, S. C. **Farm Tree Planting**  
Ext. Circ. No. 46, 3-12, '33  
University of Idaho, Moscow
1955. Clatsop County, Oregon, Planning Commission. **Recapitulation of Total Acreage under Reforestation, Both Public and Privately Owned**  
Astoria, Oreg.
1956. Cowlin, R. W. **The Stocking Classification of Lands Logged in 1920 to 1923 as Shown by the Forest Survey**  
Forest Research Notes No. 11, '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.

1957. Cushman, W. H. and Weidman, R. H. **Survival Increased by Carefulness in Field Planting**  
Applied Forestry Notes No. 81, 3 p., '37  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1958. Davis, K. P. **A Method of Determining Spacing in Thinning**  
Jour. of Forestry, XXXIII, No. 1, 80-81, '35
1959. Davis, K. P. **Stand Improvement Measures for the Western White Pine Type**  
(mimeo.), '36  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1960. Davis, K. P. **Test of Pruning Equipment and Methods in Western White Pine**  
Applied Forestry Notes No. 76, 8 p., '36  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1961. Davis, K. P. **Weedings and Thinnings in the Western White Pine Forests**  
Southern Idaho Forester, II, No. 2, 28-31, '38  
University of Idaho, Southern Branch, Pocatello
1962. Davis, K. P. and Klehm, K. A. **Controlled Burning in the Western White Pine Type**  
(ms.), '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1963. Fisher, G. M. **Comparative Germination of Tree Species on Various Kinds of Surface-Soil Material in the Western White Pine Type**  
Ecology, XVI, No. 4, 606-611, '35
1964. Haig, I. T. **Factors Controlling Initial Establishment of Western White Pine and Associated Species**  
Bull. No. 41, 149 p., '36  
Yale University, Forestry School, New Haven, Conn.
1965. Haig, I. T. **Premature Germination of Forest Tree Seed during Natural Storage in Duff**  
Ecology, XIII, No. 3, 311-312, '32
1966. Haig, I. T. **A Quarter Century of Silviculture in the Western White Pine Type**  
Forestry Kaimin, 36-41, 72-76, '30  
University of Montana, Missoula
1967. Haig, I. T. **The Stocked-Quadrat Method of Sampling Reproduction Stands**  
Jour. of Forestry, XXIX, No. 5, 747-749, '31
1968. Haig, I. T. **Treatment of Understory Hemlock in the Western White Pine Type**  
Jour. of Forestry, XXXI, No. 5, 578-583, '33
1969. Haig, I. T., Davis, K. P. and Weidman, R. H. **Natural Regeneration in the Western White Pine Type**  
289 p. (ms.), '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.



1970. Haig, I. T., Davis, K. P. and Weidman, R. H. **Natural Regeneration in the Western White Pine Type (Summary)**  
13 p. (mimeo.), '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
1971. Huberman, M. A. **The Role of Western White Pine in Forest Succession in Northern Idaho**  
Ecology, XVI, No. 2, 137-151, '35
1972. Isaac, L. A. **Destiny of Douglas Fir Seeds that Fall in the Virgin Forest**  
Forest Research Notes No. 5, p. 4, '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1973. Isaac, L. A. **Direct Seeding in the Fog Belt**  
(ms.), '31  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1974. Isaac, L. A. **Factors Affecting Establishment of Douglas Fir Seedlings**  
U. S. Dept. of Agr. Circ. No. 486, '38  
U. S. Govt. Print. Off., Washington, D. C.
1975. Isaac, L. A. **Highlights of Douglas Fir Natural Regeneration**  
Forest Research Notes No. 21, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1976. Isaac, L. A. **Life of Douglas Fir Seed in the Forest Floor**  
Jour. of Forestry, XXXIII, No. 1, 61-66, '35
1977. Isaac, L. A. **Northwest Scene of Active Forest Planting**  
West Coast Lumberman, LVII, No. 5, 96-98, '30
1978. Isaac, L. A. **Reforestation by Broadcast Seeding in the Spruce-Hemlock Type**  
Forest Research Notes No. 11, '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1979. Isaac, L. A. **Reforestation by Broadcast Seeding with Small-Seeded Species**  
Forest Research Notes No. 27, p. 9, '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1980. Isaac, L. A. **Seed Flight in the Douglas Fir Region**  
Jour. of Forestry, XXVIII, No. 4, 492-499, '30
1981. Isaac, L. A. **Seedling Mortality and the Restocking of Douglas Fir Logged-Off Land**  
Annual Cruise, XI, 26-29, '30  
Oregon State College, Corvallis
1982. Isaac, L. A. **Seedling Survival on Burned and Unburned Surfaces**  
Jour. of Forestry, XXVIII, No. 4, 569-571, '30
1983. Isaac, L. A. **Survival of Douglas Fir Seed Trees**  
Forest Research Notes No. 4, 1-2, '30  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.

1984. Isaac, L. A. **Ten Years' Growth of Douglas Fir Spacing-Test Plantations**  
Forest Research Notes No. 23, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1985. Isaac, L. A. and Dunford, E. G. **Broadcast Seeding with the Small Seeded Species of the Spruce-Hemlock Types**  
(ms.), '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1986. Isaac, L. A. and Dunford, E. G. **Natural Restocking on a Douglas Fir Cut-Over Area in the Lower Columbia Region**  
(ms.), '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1987. Isaac, L. A. and Dunford, E. G. **Twenty Years of Natural Regeneration on a Douglas Fir Cut-Over Area**  
10 p. (ms.), '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1988. Isaac, L. A. and Meagher, G. S. **Natural Reproduction on the Tillamook Burn Two Years after the Fire**  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg., '36
1989. Isaac, L. A. and Meagher, G. S. **Natural Reproduction on the Tillamook Burn Four Years after the Fire**  
(mimeo.), '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
1990. Kelp, F. G. **Reforestation**  
Paper Trade Jour., CIII, 20-21, '36
1991. Krauch, H. **Does It Pay to Reserve Thrifty Mature Trees of Ponderosa Pine for Future Cuttings?**  
Jour. of Forestry, XXXII, 72-75, '34
1992. Lemmon, P. E. and Miller, H. W. **Dry Storage Tests with Chinese Elm (*Ulmus Pumila*) Seed**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service Nurseries Office, Pullman, Wash.
1993. Maki, T. E. **Artificial Seeding of Tree Species in the Intermountain Region**  
45 p., '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1994. Maki, T. E. **A Method of Determining Maturity of Ponderosa Pine Seed**  
10 p. (mimeo.), '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1995. Maki, T. E. **Preliminary Results from Exploratory Studies on Forest Planting in Central Idaho**  
40 p., '39  
Intermountain Forest and Range Experiment Station, Ogden, Utah

1996. Maki, T. E. **Significance and Applicability Seed Maturity Indices to Ponderosa Pine**  
32 p. (ms.), '38  
Intermountain Forest and Range Experiment Station, Ogden, Utah
1997. Marshall, R. **An Experimental Study of the Water Relations of Seedling Conifers with Special Reference to Wilting**  
Ecological Monographs, I, No. 1, 38-39, '31
1998. McArdle, R. E. and Isaac, L. A. **The Ecological Aspects of Natural Regeneration of Douglas Fir in the Pacific Northwest**  
Proc. of Fifth Pacific Science Cong., V, 4009-4015, '34
1999. McConkie, A. R. and Mowat, E. L. **A Preliminary Study of Factors Affecting Establishment of Ponderosa Pine and Douglas Fir Seedlings in Central Idaho**  
(ms.), '36  
Intermountain Forest and Range Experiment Station, Ogden, Utah
2000. McKeever, D. G. **The Effect of Various Methods of Treatment on the Germination of Seeds of Some Plants Valuable for Game and Erosion Purposes**  
Thesis, '38  
Lib., University of Idaho, Moscow
2001. McKeever, D. G. **A New Black Locust Seed Treatment**  
Jour. of Forestry, XXXV, No. 5, 500-501, '37
2002. Meyer, W. H. **Thinning Experiments in Young Douglas Fir**  
Jour. of Agr. Research, XLIII, No. 6, 537-546, '31
2003. Miller, D. R. **A Study of the Germination of Ribes Seeds**  
Thesis, '32  
Lib., University of Idaho, Moscow
2004. Morris, W. G. **Viability of Conifer Seed as Affected by Seed-Moisture Content and Kiln Temperature**  
Jour. of Agr. Research, LII, 855-864, '36
2005. Mowat, E. L. and McConkie, A. R. **A Study of Natural Reproduction in the Ponderosa Pine Type of Central Idaho the First Year Following Fire**  
(ms.), '36  
Intermountain Forest and Range Experiment Station, Ogden, Utah
2006. Munger, T. T. **Ecological Aspects of the Transition from Old Forests to New**  
Science, LXXII, No. 1866, 327-332, '30
2007. Munger, T. T. **How Fast Can We Grow Timber? Growth Study Plots Tell Their Story**  
Timberman, XXXVII, No. 4, 13-14, '36
2008. Munger, T. T. **Practical Application of Silviculture to Overmature Stands Now Existing on the Pacific**  
Proc. of Pacific Science Cong., 1933, V, 4023-4030, '34
2009. Munger, T. T. **The Silviculture of Second-Growth Fir**  
Proc. of 17th Ann. Wash. State Forestry Conf., 12-13, '38
2010. Munger, T. T. and Barrett, L. I. **The March of Silviculture**  
Jour. of Forestry, XXXVI, No. 9, 837-840, '38

2011. Munger, T. T. and Matthews, D. N. **Slash Disposal and Forest Management after Clear Cutting in the Douglas Fir Region**  
(ms.), '39  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
2012. Munger, T. T. and Morris, W. G. **Growth of Douglas Fir Trees of Known Seed Source**  
U. S. Dept. of Agr. Tech. Bull. No. 537, '36  
Washington, D. C.
2013. Munger, T. T. and Westveld, R. H. **Slash Disposal in the Western Yellow Pine Forests of Oregon and Washington**  
U. S. Dept. of Agr. Tech. Bull. No. 259, '31  
U. S. Govt. Print. Off., Washington, D. C.
2014. Olson, D. S. **Growing Trees for Forest Planting in Montana and Idaho**  
U. S. Dept. of Agr. Circ. No. 120, '30  
U. S. Govt. Print. Off., Washington, D. C.
2015. Oregon State Board of Forestry. **The Planting and Care of Trees on Oregon Farms**  
Oreg. State Board of Forestry, Bull. No. 4, '38  
State Forester, Salem, Oreg.
2016. Rapraeger, E. F. **Some Facts about Knots—How They are Formed**  
Timberman, XXXIX, No. 10, 16-18, '38
2017. Read, W. B. **Preliminary Report on the Boise Basin Burn Planting Project**  
(ms.), '35  
Intermountain Forest and Range Experiment Station, Ogden, Utah
2018. Reid, E. H., Isaac, L. A. and Pickford, G. D. **Plant Succession on a Cut-Over, Burned and Grazed Douglas Fir Area**  
Forest Research Notes No. 26, '38  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
2019. Scheffer, T. C. **Sterilization of Coniferous Seed-Beds with Low-Pressure Steam**  
Jour. of Forestry, XXVIII, No. 1, 42-49, '30
2020. Schopmeyer, C. S. **Brushfield Reforestation in the St. Joe National Forest, Idaho**  
Applied Forestry Notes, No. 83, 4 p., '38  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
2021. Schopmeyer, C. S. **Survival in Forest Plantations in the Northern Rocky Mountain Region**  
Accepted for publication in Jour. of Forestry, '39  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
2022. Schroeder, G. H. **The Milling Practices and Silvicultural Factors Affecting Forestry in Benton County, Oregon**  
Master's Thesis, '36  
Lib., Oregon State College, Corvallis

2023. Thrupp, A. C. **The Influence of Soil on the Germination of Western Coniferous Seed**  
Thesis, '37  
Lib., University of Idaho, Moscow
2024. Thrupp, A. C. **Some Observations on Sulphuric Acid and Calcium Hydroxide Damage to the Roots of Conifer Seedlings Grown in Sphagnum Peat**  
Forest Club Quart., XI, No. 3, 17-23, '38  
University of Washington, Seattle
2025. Tiedemann, H. **The Establishment of Douglas Fir Reproduction in Relation to Certain Natural Environmental Factors**  
Master's Thesis, '34  
Lib., Oregon State College, Corvallis
2026. Tinsley, S. L. **Direct Seeding in the Northern Rocky Mountain**  
Jour. of Forestry, XXXVI, No. 11, 1158-1160, '38
2027. United States Civilian Conservation Corps. **Reforestation by the CCC**  
12 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
2028. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **A Guide to the Deception Creek Experimental Forest (Idaho)**  
16 p. (multi.), '38  
Missoula, Mont.
2029. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **A Guide to the Cascade Head Experimental Forest**  
(multilith.), '38  
Portland, Oreg.
2030. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **A Guide to the Pringle Falls Experimental Forest**  
(multilith.), '38  
Portland, Oreg.
2031. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. **Interesting Species of Trees and Shrubs Suitable for Planting in Mild Localities of the Pacific Northwest**  
(ms.), '33  
Portland, Oreg.
2032. Wahlenberg, W. G. **Effect of Ceanothus Brush on Western Yellow Pine Plantations in the Northern Rocky Mountains**  
Jour. of Agr. Research, XLI, 601-612, '30
2033. Wahlenberg, W. G. **Experiments in the Use of Fertilizers in Growing Forest Planting Material at the Savenac Nursery**  
U. S. Dept. of Agr. Circ. No. 125, 38 p., '30  
Washington, D. C.
2034. Wahlenberg, W. G. **Investigations in Weed Control by Zinc Sulphate and Other Chemicals at the Savenac Forest Nursery**  
U. S. Dept. of Agr. Tech. Bull. No. 156, 36 p., '30  
Washington, D. C.

2035. Weidman, R. H. **Progress of Silvicultural Research in the Inland Empire**  
Northwest Science, VII, No. 3, 67-71, '33
2036. Zumwalt, E. V. **Planting Records and Program on the Pack Demonstration Forest**  
Thesis, '38  
Lib., University of Washington, Seattle

#### WOOD TECHNOLOGY—RESEARCH

2037. Anderson, I. V. **Match Plank from Western White Pine Trees**  
Timberman, XXXVI, No. 6, 15-18, 28, '35
2038. Anderson, I. V. **Residual Wood after Logging in the Larch-Douglas Fir and Lodgepole Pine Types**  
(mimeo.), '32  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
2039. Anderson, I. V. **Residual Wood after Logging in the Ponderosa Pine Region**  
(mimeo.), '32  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
2040. Anderson, I. V. **Residual Wood after Logging in the Western White Pine Type**  
(mimeo.), '32  
Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.
2041. Anderson, I. V. **Woods and Mill Utilization in Northern Idaho and Western Montana**  
Jour. of Forestry, XXX, 734-740, '32
2042. Bailey, A. J. **The Detection, Identification and Gravimetric Determination of Pentosans and Pentoses**  
Mikrochimica Acta, II, 35-36, '37
2043. Bailey, A. J. **The Distribution of Lignin in Wood**  
(ms.), '36  
Lib., University of Washington, Seattle
2044. Bailey, A. J. **Lignin in Douglas Fir**  
Thesis, '34  
Lib., University of Washington, Seattle
2045. Bailey, A. J. **Lignin in Douglas Fir—Composition of the Middle Lamella**  
Ind. and Engr. Chemistry, VIII, 52-55, '36
2046. Bailey, A. J. **Lignin in Douglas Fir—The Pentosan Content of the Middle Lamella**  
Ind. and Engr. Chemistry, VIII, 389-391, '36
2047. Bailey, A. J. **The Mechano-Chemical Dissection of Wood Fibers**  
The Paper Industry, 15-19, '36
2048. Bailey, A. J. **The Micro-Determination of Lignin**  
Mikrochemie (Zurich), XIX, 98-107, '36

2049. Bailey, A. J. **A New Imbedding Technique for Hard or Soft Tissue**  
Jour. of Forestry, XXXIII, 688-690, '35
2050. Bailey, A. J. **Structure of the Middle Lamella**  
The Paper Industry, 15-17, '36
2051. Benson, H. K. **Wood Chemistry Research**  
Proc. of the Pacific Northwest Chemurgic Conf., 50-52, '37  
Washington State Planning Council, Olympia
2052. Bickford, C. A. **The Oleoresin of Alpine Fir, *Abies Lasiocarpa* (Nutt.). Its Properties, Constituents, and Possible Uses**  
Thesis, '31  
Lib., University of Idaho, Moscow
2053. Bickford, C. A., Clarke, S. C. and Jahn, E. C. **A Study of the Nature of Certain Fir (*Abies*) Oleoresins**  
Press. Bull., VII, No. 14, 3941-3948, '34  
University of Toronto, Ontario, Canada
2054. Bradner, M. and Johnson, R. P. A. **Properties of Western Larch and Their Relation to Uses of the Woods**  
U. S. Dept. of Agr. Tech. Bull. No. 285, '32  
U. S. Govt. Print. Off., Washington, D. C.
2055. Clarke, S. C. **The Seasonal Variation and Distribution of Arraboga-lactan in Western Larch Wood (*Larix Occidentalis* Nuttall)**  
Thesis, '34  
Lib., University of Idaho, Moscow
2056. Coppick, S. **The Properties of Molded Gelatinized Wood**  
Thesis, '37  
Lib., University of Idaho, Moscow
2057. Doumani, T. **Wood Chemical Industries of Washington**  
100 p., '37  
Washington State Planning Council, Olympia
2058. Greeley, W. B. **Chemical Seasoning of Lumber**  
West Coast Lumberman, LXVI, No. 2, p. 21, 52, '39
2059. Grichuhin, F. T. **Tests to Determine the Column Strength of Plywood**  
(ms.), '38  
Lib., University of Washington, Seattle
2060. Grondal, B. L. **Certigrade Handbook of Red Cedar Shingles**  
Red Cedar Shingle Bureau, 1st ed.  
Seattle, Wash.
2061. Grondal, B. L. (in cooperation with West Coast Lumbermen's Assoc.)  
**The Effect of Variations in Methods of Nailing in Laminated Floors on the Distribution of Stresses Due to Concentrated Loads**  
(mimeo.), '38  
West Coast Lumbermen's Assoc., Seattle, Wash.
2062. Grondal, B. L. **The Nail-Holding Properties of Douglas Fir Plywood**  
(mimeo.), '38  
Douglas Fir Plywood Assoc., Tacoma, Wash.
2063. Grondal, B. L. **Plywood for Subfloors—What Tests Show**  
American Builder, Dec., '38

2064. Grondal, B. L. **The Relative Strength of Douglas Fir under Impact Loading and a Comparison with Other Materials**  
(ms.), '38  
Douglas Fir Plywood Assoc., Tacoma, Wash.
2065. Grondal, B. L. **Strength Tests on MacPherson Culvert Pipe**  
9 p., '38  
West Coast Lumbermen's Assoc., Seattle, Wash.
2066. Grondal, B. L. **West Coast Hemlock Floors; a Table of Arithmetical Averages from Original Data on Hardness and Abrasion Tests**  
West Coast Lumbermen's Assoc., Seattle, Wash., '38
2067. Grondal, B. L. **What Kiln Drying Does**  
West Coast Lumberman, LIX, No. 1, '32
2068. Harris, T. H. **A Preliminary Study of the Commercial Use of Wood-Rotting Fungi in the Reduction of Wood to Cellulose**  
Thesis, '30  
Lib., University of Idaho, Moscow
2069. Hephher, W. S. **Action of Ammonion Sulphite on Lowland White Fir Wood (Abies Grandis)**  
Thesis, '32  
Lib., University of Idaho, Moscow
2070. Hopping, G. R. and Jenkins, J. H. **Effect of Kiln Temperatures and Air-Seasoning on Ambrosia Insects (Pinworms)**  
Forest Service Circ. No. 38, '33  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2071. Hubert, E. E. **The Protection of Jointed Wood Products against Decay and Stain**  
School of Forestry Bull. No. 4, '34  
University of Idaho, Moscow
2072. Hubert, E. E. **Tests on the Relative Resistance of Wood to Decay**  
School of Forestry Bull. No. 5, '34  
University of Idaho, Moscow
2073. Jahn, E. C. **Place of Chemical Research in Forestry**  
Idaho Forester, XV, 15-16, 49-50, '33  
University of Idaho, Moscow
2074. Jahn, E. C. **Testing Fiber Building Boards and Pulp**  
Paper Trade Jour., CI, No. 12, 34-39, '35
2075. Jahn, E. C. **Uses of Cellulose Other Than for Paper**  
Paper Trade Journal, XCIII, No. 23, 37-40, '31
2076. Jahn, E. C. **Wood Chemistry at Idaho**  
Four L Lumber News, XIV, No. 3, 7-8, 35-36, '32
2077. Jahn, E. C. and Hephher, N. S. **Action of Ammonium Sulphite on White Fir**  
Paper Trade Jour., XCV, No. 19, 33-38, '32
2078. Jahn, E. C. and Hibbert, H. **Studies on Reactions Relating to Carbohydrates and Polysaccarides. XLV. The Polymerization, under the Influence of Heat, of Certain Compounds Containing the Ethylene Oxide Ring**  
Canadian Jour. of Research, VIII, 199-209, '33



2079. Jahn, E. C., Larson, L. C. and McCarthy, J. L. **Testing Samples of Molded Wood or Fiber Products**  
Paper Industry and Paper World, Oct. '38
2080. Jenkins, J. H. **Absorption of Moisture by Kiln-Dried Lumber in Storage**  
Forest Service Circ. No. 23, '38  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2081. Jenkins, J. H. **Change in Moisture Content of Kiln-Dried Lumber when Shipped by Rail**  
Forest Service Circ. No. 32, '31  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2082. Jenkins, J. H. **Kiln-Drying and Storage of Western Red Cedar Shingles**  
(mimeo.), '38  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2083. Jenkins, J. H. **Kiln-Drying British Columbia Lumber**  
Forest Service Bull. No. 86, '34  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2084. Jenkins, J. H. **Kiln-Drying of Douglas Fir Door Stock and Factory Lumber**  
(mimeo.) (rev.), '35  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2085. Jenkins, J. H. **Moisture Content of Lumber: Its Determination and Effect on Weight**  
(mimeo.) (rev.), '38  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2086. Jenkins, J. H. **Prevention of Collapse in the Kiln-Drying of Western Red Cedar**  
(mimeo.), '32  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2087. Jenkins, J. H. **Recommended Schedules for the Kiln-Drying of Certain Species of British Columbia Lumber**  
(mimeo.), '38  
Dept. of Mines and Resources, Division of Timber Products, Forest Products Laboratory, Vancouver, B. C.
2088. Jenkins, J. H. and Guernsey, F. W. **Air-Seasoning of Lumber in British Columbia**  
British Columbia Lumberman, '32 and '36
2089. Johnson, H. M. **Northern Black Cottonwood; Properties and Utilization**  
Timberman, XXXVI, No. 8, 15-20; No. 9, 45-48, '35
2090. Johnson, H. M. **Oregon White Oak; Its Properties and Uses**  
Timberman, XXXIV, No. 11, 14-16, '33

2091. Kaiser, J. G. **Air Velocity as a Factor in Kiln Drying**  
(ms.), '32  
Lib., University of Washington, Seattle
2092. Kearns, R. S. **The Relation of Air Circulation to Kiln-Drying of Lumber**  
Master's Thesis, '31  
Lib., Oregon State College, Corvallis
2093. Kienholz, R. **Effect of Environmental Factors on the Wood Structure of Lodgepole Pine**  
Ecology, XII, No. 2, 354-379, '31
2094. Kienholz, R. **The Wood Structure of a "Pistol-Butted" Mountain Hemlock**  
Am. Jour. of Botany, XVII, No. 8, 739-764, '30
2095. Kupfer, C. A. **Dry Kiln Methods in the Douglas Fir Region**  
Timberman, XXXVII, No. 9, Supp. 82-84, '36
2096. Larson, L. C. **Plasticization of Wood through Lignin Reaction Products**  
Thesis, '36  
Lib., University of Idaho, Moscow
2097. Lodewick, J. E. **Salvaging Fire-Killed Timber**  
West Coast Lumberman, LX, No. 9, 13-14, '33
2098. Lodewick, J. E. **Temperature and Humidity Controls in Douglas Fir Dry Kilns**  
Forest Research Notes No. 23, p. 7, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
2099. Lodewick, J. E. **White Paper from Douglas Fir**  
Forest Research Notes No. 23, p. 1, '37  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
2100. Loughborough, W. K. **Chemical Seasoning of Douglas Fir**  
Timberman, XXXIX, No. 4, 13-14, 58-60, '38
2101. Lowden, M. S. **Use of the Equilibrium Content Principle in the Kiln Drying of Douglas Fir**  
Master's Thesis, '33  
Lib., Oregon State College, Corvallis
2102. MacLean, J. D. **Temperature and Moisture Changes in Coast Douglas Fir**  
Am. Wood Preservers Assoc., '35
2103. Makara, F. R. **A Comparative Study of Ethylene Glycol Lignin with the Residual Lignin in Lowland White Fir (Abies Grandis) and the Investigation of Possible Commercial Lignin Condensation Products**  
Thesis, '32  
Lib., University of Idaho, Moscow
2104. McCarthy, J. L. **The Coalescence of Wood Particles by the Chemical and Physical Alteration of Their Polysaccharide Constituents**  
Thesis, '36  
Lib., University of Idaho, Moscow

2105. McCarthy, J. L. and Jahn, E. C. **Measurement of Gelatinization of Wood and Wood Pulp**  
Paper Trade Jour., CIII, p. 27 ff., '36
2106. McNair, J. J. **The Preparation and Properties of Lignin Esters**  
Thesis, '34  
Lib., University of Idaho, Moscow
2107. Mennell, R. D. **A Study of the Effects of Heat and Pressure on the Coalescence of Wood**  
Thesis, '38  
Lib., University of Idaho, Moscow
2108. Mumaw, W. C. **Available Pulp Timber of the Columbia River, Puget Sound and Grays Harbor Districts**  
(mimeo.), '36  
Special Industries Committee of Grays Harbor, Wash.
2109. Nelson, E. E. **A Method for Predicting the Drying Times for Douglas Fir Heartwood**  
Master's Thesis, '34  
Lib., Oregon State College, Corvallis
2110. Nelson, L. A. **Chemical Seasoning to Prevent Checking**  
Timberman, XXXIX, No. 9, 100-102, '39
2111. Neubrech, W. L. **American Western Pines and Their Uses**  
U. S. Bur. of Foreign and Domestic Commerce, Trade Promotion Series No. 180, '38  
U. S. Govt. Print. Off., Washington, D. C.
2112. Nordblom, G. F. **The Preparation and Properties of Sulphur-Lignin Plastics**  
Thesis, '37  
Lib., University of Idaho, Moscow
2113. Rao, D. A. R. **Studies on Lignin**  
(ms.), '33  
Lib., University of Washington, Seattle
2114. Saling, M. W. **The Effect of Blue Stain on the Penetration and Absorption of Preservatives**  
Proc. of Am. Wood Preservers' Assoc., 26th Ann. Meet., 183-195, '30
2115. Schenstrom, S. **A Study of the Length of the Tracheids in Western Hemlock**  
(ms.), '35  
Lib., University of Washington, Seattle
2116. Schrader, O. H., Jr. **Variation in the Specific Gravity of the Springwood and Summerwood of Southern Yellow Pine**  
(ms.), '32  
Lib., University of Wisconsin, Forest Products Laboratory, Madison, Wis.
2117. Sedoff, A. **Measurement of the Degree of Gelatinization of Cellulose by Water Retention under Pressure**  
Thesis, '38  
Lib., University of Idaho, Moscow
2118. Sherrard, E. C. **Forest Products Laboratory's Work on Plastics from Wood Lignin**  
Proc. of Pacific Northwest Chemurgic Conf., 34-37, '37  
Washington State Planning Council, Olympia

2119. Slattery, J. E. **The Penetration of Inorganic Salt Solutions in Douglas Fir**  
(ms.), '33  
Lib., University of Washington, Seattle
2120. Smoot, C. C. and Frey, R. W. **Western Hemlock Bark, an Important Potential Tanning Material**  
U. S. Dept. of Agr. Tech. Bull. No. 566, '37  
U. S. Govt. Print. Off., Washington, D. C.
2121. Starker, T. J. **Preservation of Wood**  
(mimeo.), '33  
Oregon State College, Corvallis
2122. Stone, C. D. **Penetration of Liquids in Douglas Fir as Affected by the Position of the Tori in the Pit-Pairs**  
(ms.), '36  
Lib., University of Washington, Seattle
2123. Stone, C. D. **The Relationship of Wood Structure to Industrial Research**  
Forest Club Quarterly, XII, No. 1, 9-14, '38  
University of Washington, Seattle
2124. Stone, C. D. **A Study of the Bordered Pits of Douglas Fir with Reference to the Permeability of the Wood to Liquids**  
(ms.), '39  
Lib., University of Washington, Seattle
2125. Technical Association of the Pulp and Paper Industry. **Official Program**  
Portland, Oreg., '34
2126. Thomson, W. G. **The Effect of High Temperatures upon the Strength of a Softwood**  
(ms.), '32  
Lib., University of Washington, Seattle
2127. Voorhies, G. **Improved Dry Kiln Control**  
Timberman, XXXVIII, No. 3, 53-58, '37
2128. Voorhies, G. **Kiln Drying Problems in the Douglas Fir Region**  
Master's Thesis, '30  
Lib., Oregon State College, Corvallis
2129. Voorhies, G. **The Seasoning of Oregon Myrtle**  
Timberman, XXXIX, No. 10, 32-37, '38
2130. Wangaard, F. F. **Identification of Fibers Other Than Wood Used in Paper Manufacture**  
The Paper Industry, XIX, 777-784, '37
2131. Wangaard, F. F. **The Strength and Behavior of Mortise and Tenon Joints at Different Moisture Contents**  
Tech. Publ. No. 47, VIII, No. 3-a, 30 p., '35  
New York State College of Forestry, Syracuse, New York
2132. Wangaard, F. F. **The Transverse Heat Conductivity of Wood**  
(ms.), '39  
New York State College of Forestry, Syracuse, New York
2133. Welch, D. C. **Specific Hardness Tests of Wood**  
(ms.), '32  
Lib., University of Washington, Seattle

2134. West Coast Lumbermen's Association. **Continued Chemical Seasoning Experiments—Douglas Fir**  
(mimeo.), '38  
Seattle, Wash.
2135. West Coast Lumbermen's Association. **Douglas Fir Use Book; Structural Data and Design Tables**  
209 p., '38  
Seattle, Wash.
2136. West Coast Lumbermen's Association. **The Durability of West Coast Woods**  
Seattle, Wash.
2137. West Coast Lumbermen's Association. **West Coast Woods and Their Uses**  
Seattle, Wash.
2138. West Coast Lumbermen's Association. **Wood: Its Characteristics and Uses**  
Seattle, Wash.
2139. Western Pine Association. **Permalot—A Wood Preservative**  
Tech. Bull. No. 6, '38  
Portland, Oreg.
2140. Western Red Cedar Lumber. **Information Series; Western Red Cedar Lumber, Technical Data**  
Seattle, Wash., '35
2141. Weyerhaeuser Timber Company, Pulp Division. **West Coast Hemlock Pulp**  
94 p., illus., '37  
Tacoma, Wash.
2142. Williams, S. **A Comparative Study of the Wood Anatomy of Some of the Major Shrubs and Smaller Tree Species of the Pacific Northwest**  
(ms.), '36  
Lib., University of Washington, Seattle
2143. Woodruff, S. A. **A Study of the Analysis of Arbogalactan in Larix Occidentalis (Nuttall) and Its Seasonal Variations**  
Thesis, '37  
Lib., University of Idaho, Moscow

#### IV. MINERAL RESOURCES

Mineral investigations during the past nine years in the Northwestern States have become more practical and quantitative. Previously the mineral reports were reconnaissances or dispersed regional surveys. Investigators were more like prospectors, seeking private fortunes in the mineral wealth of the Northwest. What they knew definitely and quantitatively they kept to themselves.

Public interest in hydro-electric developments at Bonneville and Grand Coulee, however, has brought mineral research field men seeking specific objectives and working for a result that could be put to practical uses. The accompanying bibliography shows the change in the character of research during the period 1930-39.

Researchers see in the great potential hydro-electric energy the possibility for increased mining activity. This energy can make possible great electrochemical and electrometallurgical industries—a type that depends upon minerals as raw materials. This energy also can be used to furnish cheap power at the mines and reduce one of the major cost elements in mining. If this were done, new outlets would be found for our population and active mining operations would spring up in the hinterlands of the Northwest.

Consequently, to the research carried on by the United States Geological Survey and the several state surveys on the distribution and genesis of mineral deposits there were added investigations of an economic nature. These new studies took various forms. The planning boards of each state prepared summaries and bibliographies on the mineral resources of their respective states. These reports are all characterized by an indefiniteness as to exact location of many reported minerals and by a total lack of information as to quality, quantity, and cost of production. They clearly pointed out the need for detailed quantitative studies. In the light of these reports the Northwest Regional Planning Commission worked out a program for future research. This plan was comprehensive in that it envisioned mineral development as an integrated part of resource use throughout the Northwest.

During this period the Montana, Idaho and Washington Geological Surveys gave attention to specific deposits of minerals that might be sources of supply for electro-industries. In Washington, a Department of Conservation and Development was created for this specific purpose. It was thought by the people of Washington State that the Grand Coulee, Skagit and Bonneville power projects gave them an exceptional opportunity.

Special note must be given to the investigations made to purify raw minerals and to extract their metals. At Butte, Montana; Moscow, Idaho; Pullman and Seattle, Washington, the United States Bureau of Mines co-operated with the schools of mining and engineering in many practical researches on aluminum, magnesium, chromite, zinc, copper, manganese, and refractories.

Finally, as a part of this practical approach in research, are the reports published by the United States Army Engineers. In an attempt to evaluate commercially the market both for electric power and for products fabricated from minerals with such power, Colonel Thomas M. Robins, Division Engineer, U. S. Army Engineers, set up the Northwest Mineral Survey. The purpose of this survey was to locate and determine the tonnage, quality, costs, uses, and markets for minerals suitable for direct or indirect treat-

ment by electrical methods. In this survey the emphasis was placed upon qualitative data and economics, with emphasis on those minerals that required large blocks of low cost electric energy for their economic production. The result was a series of reports on iron and steel, manganese, clay, aluminum and alumina, silica, limestone, dolomite, magnesite and magnesium, chromite, zinc, ferro-alloys, coal, phosphate and other minerals.

The above brief statement gives the trend of mineral research during the last decade—a trend that rose to a climax in 1938 and then suddenly stopped. The cessation in interest was due to a change in governmental policy. About this time those in favor of the reservation of large blocks of power for non-industrial use received governmental recognition. Thus, the dreams of those who hoped for localized industrial development based upon water power and available mineral supplies were broken. Only the precious minerals can be mined and shipped in bulk out of the country. The greater part of the mineral wealth of the Northwest must await the development of electrochemical and electrometallurgical industries. These depend, in turn, upon large blocks of low cost power which can only be obtained close to power sites. The larger power sites can only be developed through governmental financing.

The need to explore those phases of activity which will best promote the economic security and well-being of the region, the necessity for providing additional employment opportunities, and the desire to develop a well balanced regional economy will revive both public and private interest. When that time comes it will be the minerals adapted to electrochemical and electrometallurgical treatment that will receive attention.

The mineral investigations of the Northwest have much work yet to do. Hardly one per cent of the area is geologically mapped. Little is known of the mineral resources of the unmapped areas. Much laboratory research must be done on methods of ore treatment and of mineral extraction. Economic studies of minerals with reference to world competition and markets are also urgent needs. Such research is, however, costly, too costly for private individuals, and funds from governmental sources or from private foundations are essential.

EDWIN T. HODGE.

Department of Geology,  
Oregon State College,  
Corvallis, Oregon.

---

## IV. MINERAL RESOURCES

### INDUSTRIES BASED ON MINERALS

2144. Butler, C. Chemical Fertilizer Industry  
(ms.) ( )  
Washington State Planning Council, Olympia
2145. Daniels, J. Iron and Steel Manufacture in Washington, Oregon, California and Utah  
Engr. Exp. Sta. Rept. No. 2, 69 p., '29  
University of Washington, Seattle

2146. Diamond, R. W. **The Fertilizer Plants of the Consolidated Mining and Smelting Company of Canada, Limited**  
Proc. of Pacific Northwest Chemurgic Conf., 110-113, '37  
Washington State Planning Council, Olympia
2147. Doerner, H. A. **Present Outlook for a Magnesium Metal Industry in the Northwest and a Discussion of Methods by Which Magnesium Metal May Be Obtained from Magnesite Ores**  
Min. Exp. Sta. Bull. P, '37  
State College of Washington, Pullman
2148. Drucker, A. E. **Estimated Electric Power Demands for Certain Electro-chemical and Metallurgical Industries in the Pacific Northwest over a Period of Thirty Years**  
5. p. (mimeo.), '34  
Washington State Planning Council, Olympia
2149. Drucker, A. E. and Floe, C. F. **Cheap Power and New Industries in Washington. Possible Applications of Large Amounts of Cheap Hydro-Electric Power to Mineral and Metal Production in the Pacific Northwest**  
Dept. of Min. and Met. Inform. Circ. 3, 6 p. (mimeo.), '33  
State College of Washington, Pullman
2150. Drucker, A. E. and Floe, C. F. **Economic Possibilities for Electro-metallurgical Industries within the State of Washington and the Pacific Northwest**  
Inform. Circ. No. 4, 17 p. (mimeo.), '33  
Washington State Planning Council, Olympia
2151. Drucker, A. E. and Tatman, M. E. **A Survey of the Manganese Industry in the U. S. A. and the Feasibility of Establishing an Electrolytic Metal Plant in the Pacific Northwest, Utilizing the High-Silica Manganese Ores of the Olympic Peninsula**  
Dept. of Min. and Met. Bull. S, '38  
State College of Washington, Pullman
2152. Floe, C. F. **Possibilities for the Production of Aluminum and Magnesium from Washington Ores**  
Dept. of Min. and Met. Infor. Circ. No. 7, '34  
State College of Washington, Pullman
2153. Floe, C. F. **Power Developments and Electrometallurgical Industries in the Pacific Northwest**  
Dept. of Min. and Met. Infor. Circ. No. 13, '37  
State College of Washington, Pullman
2154. Floe, C. F. **Relation of Research to the Establishment of Electro-metallurgical Industries in the State of Washington**  
Infor. Circ. No. 9, 5 p. (mimeo.), '34  
Washington State Planning Council, Olympia
2155. Hetherton, P. **Columbia Basin Report, Appendix Q: Minerals, Processing Industries**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2156. Hodge, E. T. **Available Raw Materials for a Pacific Coast Iron Industry**  
I-IV, '35; V, '38  
U. S. Army, Office of the Division Engineer, Portland, Oreg.



2157. Hodge, E. T. **The Market for Electric Furnace Iron**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 88-97, '37  
Portland, Oreg.
2158. Kriegel, W. W. **The Purification of Kaolin at the Plant of the Aberdeen Clay and Color Company, Aberdeen, Washington**  
Thesis, '32  
Lib., College of Mines, University of Washington, Seattle
2159. Lenhart, W. B. **Gypsum Industry on the Pacific Coast**  
Rock Products, XXXIII, 33-40, 54-60, 48-53, '30
2160. Melder, F. E. **History of the Discoveries and Physical Development of the Coal Industry in the State of Washington**  
Pacific Northwest Quart., XXIX, 151-165, '38
2161. Miller, R. M. **The Feasibility of Electrolytic Zinc and Cadmium Production in the Lower Columbia River Area**  
War. Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, Portland, Oreg
2162. Miller, R. M. **The Feasibility of Establishing an Iron and Steel Industry in the Lower Columbia River Area Using Electric Pig Iron Furnaces**  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, Portland, Oreg., '37
2163. Miller, R. M. **Feasibility of the Production of Ferro-Alloys in the Columbia River Area**  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, Portland, Oreg., '37
2164. Miller, R. M. **An Investigation of the Feasibility of a Steel Plant in the Lower Columbia River Area near Portland, Oregon**  
Bull. No. 8, 55 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland
2165. Miller, R. M. **A Survey of the Aluminum Industry and Its Metallurgical Process with Reference to the Utilization of Northwest Clays**  
Dept. of Min. and Met. Bull. D, '35  
State College of Washington, Pullman
2166. Parkman, H. C. and Durway, C. **The Establishment of a Calcium Carbide Industry in Washington**  
Dept. of Min. and Met. Bull. H, '36  
State College of Washington, Pullman
2167. Rickard, T. A. **The Use of Iron and Copper by the Indians of British Columbia**  
British Columbia Hist. Quart., II, 25-30, '39
2168. Roberts, M. **Rich Ores Await Cheap Power**  
The Spokesman-Review Annual Prog. Ed. 55, No. 247, Pt. 5, p. 8, '38  
Spokane, Washington
2169. Vaughn, K. F. and Hetherton, P. **The Calcium Carbide Industry**  
6 p., '37  
Washington State Planning Council, Olympia
2170. Washington, State College of. **Report on Phosphoric Acid and Phosphate Fertilizer as a Possible Power-Consuming Industry for the Pacific Northwest**  
Pullman, Wash., '35

2171. Wilson, H. and Pate, C. R. **The Consumption and Use of Silica Sand in the Pacific Northwest**  
(mimeo.), '38  
Pacific Northwest Section, Am. Ceramic Soc., Columbus, Ohio
2172. Wood, T. R. **Glass Wool from Washington Products**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle

#### MINES AND MINING

2173. Adams, P. A., Ewing, P. L. and Warren, H. V. **A Determination of the Source of Cobalt in the Ore of the Little Gem Mine, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2174. Alaska Planning Council. **Mining**  
Juneau, Alaska, '38
2175. Allen, A. R. and Warren, H. V. **A Mineralographic Study of Ore from Salmon Gold Property, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2176. Auant, W. D. **Placer Mining in Northwest Shows New Activity**  
Oregon Journal, Sunday Magazine Section, May 24, 1936  
Portland, Oreg.
2177. Bacon, W. R. and Warren, H. V. **A Mineralographic Study of Ore from Island Mountain Mine, Cariboo District, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2178. Beatty, W. B. **Geology of the Placer Deposits of Porcupine, Alaska**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2179. Beede, H. C. **Concentration of Hematite Ore from Peshastin Creek**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2180. Christensen, C. F. U. **Mining Methods and Washing Practice at the Elk Coal Mine**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2181. Corpuz, J. M. **Investigation of Possible Methods of Mining High-Bench Alluvial Deposits**  
Master's Thesis, '38  
Lib., University of Idaho, Moscow
2182. Cospers, D. L. **The American Gold Mine, Dixie, Idaho**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2183. Cox, W. L. **An Economic Study of the Comet Mine, Berners Bay Region, Alaska**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle

2184. Dickson, J. **Inspection of Mines. Part G of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2185. Dubail, G. R. **The Bird Vein on the Copper Mining Company's Property, Yakima County, Washington**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2186. Elmer, W. W. **Mining Methods and Costs at the Black Butte Quick-silver Mine, Lane County, Oregon**  
U. S. Bur. of Mines, Infor. Circ. No. 6276, 8 p., '30  
Washington, D. C.
2187. Emigh, G. D. **A Mineralogical and Metallurgical Investigation of Ore from the Center Star Mine, Idaho**  
Master's Thesis, '33  
Lib., University of Idaho, Moscow
2188. Foster, E. F. **The Nature and Treatment of a Lead-Zinc-Silver Ore from the Mount Baker District, Washington**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2189. Harris, D. L. **The Flotation Process Applied to the Concentration of Washington Medium and Low-Grade Magnesite Ore for the Production of Magnesium Metal or Refractories**  
Min. Exp. Sta. Bull. Q, '37  
State College of Washington, Pullman
2190. Hill, J. M. **Lode Deposits of the Fairbanks District, Alaska**  
U. S. Geol. Survey Bull. No. 849-B, 29-163, '33  
U. S. Govt. Print. Off., Washington, D. C.
2191. Hodge, E. T. **Preliminary Report on Some Northwest Manganese Deposits, Their Possible Exploration and Uses**  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, Portland, Oreg.
2192. Holdsworth, P. R. **The Nabesna Gold Mine and Mill**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2193. Howatson, C. H. and Warren, H. V. **A Mineralographic Study of Some Ore from Rey Oro Mine, Zabellos, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2194. Ingersoll, G. E. **Small Scale Methods of Placer Mining and Placer Mining Districts of Washington and Oregon**  
Engr. Exp. Sta. Bull. No. 43, 59 p., '33  
State College of Washington, Pullman
2195. Jackson, C. T. and Knaebel, J. B. **Small-Scale Placer Mining Methods**  
U. S. Bur. of Mines Infor. Circ. No. 6611, '32  
Washington, D. C.
2196. Johnson, C. H. and Gardner, E. D. **Placer Mining in the Western United States**  
U. S. Bur. of Mines Infor. Circ. Nos. 6786-6788, '34-'35  
Washington, D. C.

2197. Johnson, H. **The Geology of the Copper King Mine, Safety Harbor Creek, Chelan County, Washington**  
Thesis, '34  
Lib., College of Mines, University of Washington, Seattle
2198. Kaiser, A. E. **The Geology of the Yankee Boy Mine, Snohomish County, Washington**  
Thesis, '34  
Lib., College of Mines, University of Washington, Seattle
2199. Kemple, J. H. (ed.) **Coal from the Northwest Coast, 1848-1850**  
British Columbia Hist. Quart., II, 123 ff., '38
2200. Kieburztz, R. W. **The Nickel Prospect of the Pacific Nickel Company near Mount Vernon**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2201. Killin, A. F. and Warren, H. V. **A Mineralographic Study of the Ores of the Windpass, Vidette, Savona, and Glacier Gulch Mines, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2202. Kipp, H. and Warren, H. V. **A Mineralographic Study of Ore from Relief Arlington Mine, Salmo, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2203. Kotschevar, D. D. **Geology and Ore Treatment of the Keep Cool Mine, Lakeview, Idaho**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2204. Lamb, J. and Warren, H. V. **A Mineralographic Study of Ore from Privateer Gold Mine, Zabellos, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2205. Lane County, Oregon, Planning Commission. **Study of Mineral Processing for Bohemia Mining District**  
Eugene, Oreg.
2206. Langness, O. O. **Concentration of Chromite Ores**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2207. Lewis, A. A. **The Scribner Silver-Copper Mining Property, Washington County, Idaho**  
Thesis, '35  
Lib., College of Mines, University of Washington, Seattle
2208. Little, H. W. and Warren, H. V. **A Mineralographic Study of Ore from Mamie Mine, Hudson Bay Mountain, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2209. Madsen, C. and Warren, H. V. **A Study of the Tailings Losses of the Kelowna Exploration Company**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.

2210. McCammon, J. W. and Warren, H. V. **A Mineralographic Study of the Ores of the Kootenay Belle, Gold Belt, Queen, and Reno Mines, Sheep Creek District, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2211. McLellan, R. B. and Warren, H. V. **A Mineralographic Study of Ore from Lucky Strike Property, Bridge River, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2212. Mertie, J. B., Jr. **Gold Placers of the Fortymile, Eagle, and Circle Districts, Alaska**  
U. S. Geol. Survey Bull. 897, i-iv, 133-261, '38  
U. S. Govt. Print. Off., Washington, D. C.
2213. Mertie, J. B., Jr. **Mineral Deposits of the Rampart and Hot Springs Districts, Alaska**  
U. S. Geol. Survey Bull. No. 844, 163-246, '34  
U. S. Govt. Print. Off., Washington, D. C.
2214. Mertie, J. B., Jr. **Mineral Deposits of the Ruby-Kuskokwim Region, Alaska**  
U. S. Geol. Survey Bull. No. 864, 115-255, '36  
U. S. Govt. Print. Off., Washington, D. C.
2215. Moffit, F. H. **Mining Development in the Tatlanika and Totatlanika Basins, Alaska**  
U. S. Geol. Survey Bull. No. 836, 339-345, '33  
U. S. Govt. Print. Off., Washington, D. C.
2216. Nesbitt, B. I. and Warren, H. V. **A Mineralographic Study of Ore from Timmins Property, West Homathko River, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2217. Newell, J. L. **Separation of an Iron-Copper Ore from Mount Andrew Mine, Alaska**  
Thesis, '30  
Lib., College of Mines, University of Washington, Seattle
2218. O'Connor, D. M. **Treatment of Ore from the Dixie Comstock Gold Mine, Dixie, Idaho**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2219. Ohlson, R. F., Little, H. W. and Warren, H. V. **A Study of the Tailings Losses of the Cariboo Gold Quartz Mine**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2220. Ohlson, R. F., Little, H. W. and Warren, H. V. **A Study of the Tailings Losses of the Hedley Mascot Mine**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2221. Ohlson, R. F. and Warren, H. V. **A Mineralographic Study of Ore from the Trites Property, Zabellos, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.

2222. Oregon State Department of Geology and Mineral Industries. **Mining Laws of Oregon**  
Bull. No. 1, 32 p., '37  
Portland, Oreg.
2223. Pacific Northwest Regional Planning Commission. **Mineral and Mining Development and Mining Community Roads in the Pacific Northwest**  
8 p. (mimeo.), '36  
Portland, Oreg.
2224. Pate, M. L. **Four Square Gold Mine, Murray, Idaho**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2225. Perrenoud, W. P. **Concentrating Low-Grade Cinnabar Ore of the Non Pareil Mine, Sutherlin, Oregon**  
Thesis, '34  
Lib., College of Mines, University of Washington, Seattle
2226. Phillips, W. S. **Geological, Mining, and Milling Problems of the Independence Mine, Alaska**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2227. Roberts, M. **How Can the Bureau of Mines Most Effectively Serve Mining in the Pacific Northwest?**  
Min. Cong. Jour., XX, No. 1, 38-40, '34
2228. Roberts, M. **Mining Activity in Washington**  
Min. Cong. Jour., XXIV, No. 4, 30-34, '38
2229. Roberts, M. **Mining in the Cascades**  
Northwest Mining, III, No. 22, 7-8, '37
2230. Roberts, R. J. **The Petrography and Ore Deposits of the Dixie District, Idaho**  
M. S. Thesis, '38  
Lib., University of Washington, Seattle
2231. Ross, C. P. **Mineral Deposits near the West Fork of the Chulitna River, Alaska**  
U. S. Geol. Survey Bull. No. 849, 289-333, '33  
U. S. Govt. Print. Off., Washington, D. C.
2232. Ross, C. P. **The Valdez Creek Mining District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 425-468, '33  
U. S. Govt. Print. Off., Washington, D. C.
2233. Schmidt, E. A. and Warren, H. V. **A Study of the Tailings Losses of the Privateer Mine, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2234. Scott, W. A. **Production of Diatomite by Modern Methods from Central Oregon Deposit**  
Pit and Quarry, XX, No. 10, 57-59, '30
2235. Singson, J. D. **Development of the Ghost Mine and Treatment of the Ore**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle

2236. Staples, A. B. and Warren, H. V. **A Mineralographic Study of Ore from Highland Belle Silver Mine, Beaverdale District, British Columbia**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2237. Staples, A. B. and Warren, H. V. **The Place of Silver in British Columbia's Mining Industry**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2238. Stewart, D. A. **The Sliscovitch Antimony—Gold Mine near Nome, Alaska**  
Thesis, '33  
Lib., College of Mines, University of Washington, Seattle
2239. Sylliaasen, C. T. **Treatment of a Gold-Silver-Lead-Zinc Ore from the Gold Hill Mine, Whatcom County, Washington**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2240. Thomson, F. A. **Effect of Placer Gold Production on the Northwest**  
Northwest Science, III, 6-8, '29
2241. Trindle, W. H. **Geology and Mining of the Jordan Valley, South-eastern Oregon**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2242. Trueman, A. S. **Placer Gold Mining in Northern British Columbia, 1860-1880**  
M. A. Thesis, '35  
Lib., University of British Columbia, Vancouver, B. C.
2243. Tuck, R. **The Valdez Creek Mining District, Alaska, in 1936**  
U. S. Geol. Survey Bull. No. 897, 109-131, '38  
U. S. Govt. Print. Off., Washington, D. C.
2244. United States Department of Interior, Geological Survey. **Mineral Industry of Alaska and Administrative Report in 1935**  
Geol. Bull. 880-A, '35  
U. S. Govt. Print. Off., Washington, D. C.
2245. Ward, H. B. **Placer Mining on the Rogue River, Oregon, in Its Relation to the Fish and Fishing in that Stream**  
Bull. No. 10, 31 p., '38  
Oreg. State Dept. of Geol. and Min. Industries, Portland
2246. Warren, H. V. **Mineralogy of the Cariboo Gold Quartz Mine, British Columbia**  
British Columbia Miner, VII, p. 287, '34
2247. Warren, H. V. **Mineralogy of the Morris and Langara Veins, Chilcotin District, British Columbia**  
British Columbia Miner, IX, p. 22, '36
2248. Warren, H. V. **Mineralogy of the W. W. R. Veins**  
British Columbia Miner, VIII, No. 10, p. 29, '35
2249. Warren, H. V. and Cummings, J. M. **Geology and Mineralogy of the Dentonia Mine, British Columbia**  
British Columbia Miner, IX, No. 7, p. 27, '36

2250. Warren, H. V. and Cummings, J. M. **Mineralogy of Nickel Plate Mine, British Columbia**  
British Columbia Miner, IX, p. 27, '36
2251. Warren, H. V. and Cummings, J. M. **Mineralogy of the Olympic Veins**  
British Columbia Miner, VIII, No. 6, p. 22, '35
2252. Warren, H. V. and Cummings, J. M. **Mineralogy of Some Abco High Grade Samples, British Columbia**  
British Columbia Miner, IX, No. 9, p. 23, '36
2253. Warren, H. V. and Cummings, J. M. **Mineralogy of Surf Point and Hunter Veins, British Columbia**  
British Columbia Miner, IX, No. 6, p. 26, '36
2254. Warren, H. V. and Cummings, J. M. **Mineralogy of the Unuk Gold Groups, British Columbia**  
British Columbia Miner, IX, No. 8, p. 21, '36
2255. Warren, H. V., Madsen, C., White, W. H. and Davis, P. **The Mineralogy of the Bayonne Mine, British Columbia**  
British Columbia Miner, XI, p. 30, '38
2256. Waters, A. E., Jr. **Placer Concentrates of the Rampart and Hot Springs Districts, Alaska**  
U. S. Geol. Survey Bull. No. 844, 163-246, '34  
U. S. Govt. Print. Off., Washington, D. C.
2257. Wells, F. G. **Lode Deposits of Eureka and Vicinity, Kantishna District, Alaska**  
U. S. Geol. Survey Bull. No. 849, 335-379, '33  
U. S. Govt. Print. Off., Washington, D. C.,
2258. White, W. H., Davis, E. P. and Warren, H. V. **Studies of Ore and Tailings, Chelan Division of the Howe Sound Company, Holden, Washington**  
(ms.), '39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2259. White, W. H. and Warren, H. V. **Geology and Ore-Deposition of the Silbak Premier Mine**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2260. White, W. H. and Warren, H. V. **A Study of the Tailings Losses of Pioneer Gold Mine**  
(ms.), '38-'39  
University of British Columbia, Dept. of Geology, Vancouver, B. C.
2261. Wimmmler, N. L. **Placer Mining Methods and Costs in Alaska**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2262. Wise, F. G. **The Recovery of Gold and Other Constituents from Black Sand**  
Thesis, '34  
Lib., College of Mines, University of Washington, Seattle
2263. Ziebell, H. **Applying Flotation to the Preliminary Treatment of a Washington Magnesite Ore for the Production of Magnesium Metal**  
Dept. of Min. and Met. Bull. J, '36  
State College of Washington, Pullman



## REGIONAL STUDIES AND SURVEYS

2264. Allen, A. R. **Willamette Iron Shale**  
The Mineralogist, IV, No. 6, p. 16, '36
2265. Allen, J. E. **Chromite Deposits in Oregon**  
Bull. No. 9, 71 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland
2266. Anderson, A. L. **Geology and Mineral Resources of the Eastern Cassia County, Idaho**  
Bull. No. 14, '31  
Idaho State Bureau of Mines and Geology, Boise
2267. Barry, L. D. **The Clara Vein of the Copper Mining Company, Inc. Yakima County, Washington**  
Thesis, '33  
Lib., College of Mines, University of Washington, Seattle
2268. Behrens, R. H. **The Lead-Zinc-Silver Veins of Boston Basin, Skagit County, Washington**  
Thesis, '33  
Lib., College of Mines, University of Washington, Seattle
2269. Bretland, R. B. **Little River Manganese Prospects**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2270. Buddhue, J. D. **Native Iron and Its Alloys**  
Mineralogist, IV, No. 5, 31-32, '36
2271. Callaghan, E. and Buddington, A. F. **Metalliferous Mineral Deposits of the Cascade Range in Oregon**  
U. S. Geol. Survey Bull. No. 893, 141 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
2272. Calvert, R. **Diatomaceous Earth**  
Jour. of Chemical Education, VII, No. 12, 2829-2849, '30
2273. Capps, S. R. **Mineral Investigations in the Alaska Railroad Belt, 1931**  
U. S. Geol. Survey Bull. No. 844, 119-135, '33  
U. S. Govt. Print. Off., Washington, D. C.
2274. Coats, R. R. **The Nature of the Ore Deposit of the Chelan Copper**  
Thesis, '31  
Lib., College of Mines, University of Washington, Seattle
2275. Coats, R. R. **The Ore Deposits of the Apex Gold Mine, Money Creek, King County, Washington**  
Thesis, '32  
Lib., College of Mines, University of Washington, Seattle
2276. Couch, A. H. **Silica Sands of Washington**  
Thesis, '31  
Lib., College of Mines, University of Washington, Seattle
2277. Culver, H. E. and Lupher, R. L. **The Bearing of the Post-Paleozoic Record on the Occurrence of Gas in the Rattlesnake Field, Washington**  
Northwest Science, XI, 71-74, '37
2278. Dake, H. C. **The Gem Minerals of Oregon**  
Bull. No. 7, 17 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland

2279. Daniels, J. **Coal in Washington**  
Engr. Exp. Sta. Rept. No. 3, 17 p., '34  
University of Washington, Seattle
2280. Dorisy, C. E. **Index of Mineral Occurrences in the State of Washington**  
47 p., '37  
Washington State Planning Council, Olympia
2281. Faick, J. N. **The Geology and Ore Deposits of the Gold Hill District, Latah County, Idaho**  
Master's Thesis, '37  
Lib., University of Idaho, Moscow
2282. Forbes, P. L. **Petrified Woods of Central Oregon**  
Rocks and Minerals, X, No. 1, 1-2, '35
2283. Freeman, O. W. **Some Observations on the Occurrence of Oil and Gas in Montana**  
Northwest Science, I, 39, '27
2284. French, A. J. **Columbia County, Oregon, Has Large Iron Deposits**  
Mineralogist, III, No. 7, p. 15, '35
2285. Gence, L. **The Sand and Gravel Deposits of King and Pierce Counties, Washington**  
Thesis, '34  
Lib., College of Mines, University of Washington, Seattle
2286. Gilbert, F. C. **Mineral Resources of Montana—Progress Report**  
Proc. of Pacific Northwest Regional Planning Conf., III, 97-100, '36  
Portland, Oreg.
2287. Gilluly, J. **Copper Deposits near Keating, Oregon**  
U. S. Geol. Survey Bull. No. 830-A, 1-32, '33  
U. S. Govt. Print. Off., Washington, D. C.
2288. Glover, S. L. **Nonmetallic Mineral Resources of Washington, with Statistics for 1933**  
Bull. No. 33, 135 p., '36  
Washington State Dept. of Conservation and Development, Olympia
2289. Glover, S. L. **Oil and Gas Possibilities of Western Whatcom County, Washington**  
Rept. of Investigations No. 2, 69 p., '35  
Washington State Dept. of Conservation and Development, Olympia
2290. Glover, S. L. **Preliminary Report of Petroleum and Natural Gas in Washington**  
Rept. of Investigations No. 4, 24 p., '36  
Washington State Dept. of Conservation and Development, Olympia
2291. Glover, S. L. **Summary Report of Washington Minerals, Production and Resources**  
Infor. Circ. No. 2, 10 p. (mimeo.), '35  
Washington State Dept. of Conservation and Development, Olympia
2292. Hedley, M. S. **Southern and Central Mineral Survey Districts (Nos. 3 and 4). Part D of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.

2293. Henry, C. S. B. **Gas and Oil Possibilities of Lower Willamette Valley, Oregon**  
Gas Age Record, LXXI, No. 6, 145-146, '33
2294. Hill, M. D. **The Manganese Ores of the Olympic Mountains**  
Thesis, '35  
Lib., College of Mines, University of Washington, Seattle
2295. Hougland, E. **A Report on a Geologic Reconnaissance of the St. Helens Mining District, Washington**  
Rept. of Investigations No. 3, 4 p., '35  
Washington State Dept. of Conservation and Development, Olympia
2296. Hurst, T. L. **Chromite in Washington**  
(mimeo.), '37  
Pacific Northwest Sec., Am. Ceramic Soc. and Pacific Northwest Clayworkers Assoc., Columbus, Ohio
2297. Irrgang, O. R. **Chromites in Washington**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2298. Kirkham, V. R. D. **Natural Gas in Washington, Idaho, Eastern Oregon, and Northern Utah**  
American Assoc. of Petroleum Geologists, 221-242, '35
2299. Kirkham, V. R. D. **Oil Possibilities of Southern Idaho**  
Northwest Science, I, 22-23, '27
2300. Lay, D. **North-Eastern Mineral Survey District (No. 2). Part C of the Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2301. Lazell, E. W. **Diatomite Deposits in Oregon**  
The Mineralogist, IV, No. 4, 9-10, '36
2302. Leaver, E. S. **Auriferous Black Sands of the Pacific Coast**  
U. S. Bur. of Mines Rept. of Investigations No. 3275, 51-54, '35  
Washington, D. C.
2303. Leith, C. K. **Conservation of Minerals**  
Science, n. s., LXXXII, 109-117, '35
2304. Lewellin, Ethel W. **Cinnabar in Oregon**  
Oregon Mineralogist, I, No. 7, 1-2, '33
2305. Libbey, F. W. **Progress Report on Coos Bay Coal Field**  
Bull. No. 2, 14 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland
2306. Mandy, J. T. **North-Western Mineral Survey District (No. 1). Part B of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2307. Melhase, J. **Diatomaceous Earth, Its Nature, Occurrence and Use**  
Rocks and Minerals, VIII, No. 1, '33
2308. Melhase, J. **The Occurrence of Native Iron near Klamath Falls, Oregon**  
Mineralogist, III, No. 12, 17-18, '35
2309. Melhase, J. **The Saline Lake of Eastern Oregon**  
Mineralogist, IV, No. 6, 9-10, 26-28, '36

2310. Montana State Planning Board. **Mineral Resources of Montana**  
7 p.  
Helena, Mont.
2311. Moore, B. N. **Diatomite and Pumice in Eastern Oregon**  
Am. Inst. Min. and Met. Engrs., Contrib. No. 73, 11 p., '34  
229 W. 39th St., New York City
2312. Moore, B. N. **Nonmetallic Mineral Resources of Eastern Oregon**  
U. S. Dept. of the Int., Memo. for the Press, Aug. 26, '32  
Washington, D. C.
2313. O'Grady, B. T. **Western Mineral Survey District (No. 6). Part F of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2314. Oregon State Department of Geology and Mineral Industries. **Chromite Deposits in Oregon**  
Bull. No. 9, '38  
Portland, Oreg.
2315. Pardee, J. T. **Deposits of Gold, Copper, Quicksilver, and Associated Metals in Western Oregon**  
U. S. Dept. of the Int., Memo. for the Press, P. N. 45355, 14 p.  
(mimeo.), Aug. 7, '30  
Washington, D. C.
2316. Perry, E. S. **Recent Developments in Montana Gas Fields**  
Northwest Science, VI, 41-42, '32
2317. Portland, Oregon, Chamber of Commerce. **The Mineral Resources of the Columbia Basin**  
'34-'35
2318. Reed, J. C. and Gilluly, J. **Heavy Mineral Assemblages of Some of the Plutonic Rocks of Eastern Oregon**  
American Mineralogist, XVII, No. 6, 201-220, '32
2319. Reed, J. C., Park, C. F., Jr. and Gilluly, J. **Some Mining Districts of Eastern Oregon**  
U. S. Geol. Survey Bull. No. 846-A, 1-140, '33  
Washington, D. C.
2320. Renick, B. C. **Petrology of a Portion of Malheur County, Oregon**  
Jour. of Geol., XXXVIII, No. 6, 481-520, '30
2321. Roberts, M. **Annual Report of the Division of Coal and Industrial Minerals**  
Second Biennial Rept. of Wash. State Planning Council, 29-31, '37  
Olympia, Wash.
2322. Roberts, M. **Miscellaneous Metallic Minerals in Washington**  
Mineral Resources of the State of Wash., 26-29, '35  
Secretary of State, Olympia, Wash.
2323. Rogers, A. F. **Chromite in Dunite of Siskiyou County, Washington**  
(Abstract) Geol. Soc. of Am. Bull. No. 43, p. 232, '32
2324. Ross, C. P. **Geology and Ore Deposits of the Casto Quadrangle, Idaho**  
U. S. Geol. Survey Bull. No. 854, 135 p., '34  
U. S. Govt. Print. Off., Washington, D. C.

2325. Sargent, H. **Eastern Mineral Survey District (No. 5). Part E of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2326. Schuette, C. N. **Quicksilver in Oregon**  
Bull. No. 4, 172 p., '38  
Oregon State Dept. of Geology and Mineral Industries, Portland
2327. Shenon, P. J. **Geology and Ore Deposits of the Takilma-Waldo District, Oregon, Including the Blue Creek District**  
U. S. Geol. Survey Bull. No. 864, 141-194, '33  
Washington, D. C.
2328. Shenon, P. J. **Geology of the Robertson, Humdinger, and Robert E. Gold Mines, Southwestern Oregon**  
U. S. Geol. Survey Bull. No. 830-B, 33-56, '33  
Washington, D. C.
2329. Shenon, P. J. **A Massive Sulphide Deposit of Hydrothermal Origin in Serpentine**  
Econ. Geol., XXVII, No. 7, 597-613, '32
2330. Smith, P. S. **Mineral Industry of Alaska in 1930 and Administrative Report**  
U. S. Geol. Survey Bull. No. 836, 1-115, '33  
U. S. Govt. Print. Off., Washington, D. C.
2331. Smith, P. S. **Mineral Industry of Alaska in 1931 and Administrative Report**  
U. S. Geol. Survey Bull. No. 844, 1-117, '33  
U. S. Govt. Print. Off., Washington, D. C.
2332. Smith, P. S. **Mineral Industry of Alaska in 1933**  
U. S. Geol. Survey Bull. No. 864, 1-94, '34  
U. S. Govt. Print. Off., Washington, D. C.
2333. Smith, P. S. **Mineral Industry of Alaska in 1936**  
U. S. Geol. Survey Bull. No. 897, 1-107, '38  
U. S. Govt. Print. Off., Washington, D. C.
2334. Smith, P. S. and Mertie, J. B., Jr. **Geology and Mineral Resources of Northwestern Alaska**  
U. S. Geol. Survey Bull. No. 815, 351 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
2335. Smith, W. D. **Diatomaceous Earth in Oregon**  
Econ. Geol., XXVII, No. 8, 704-715, '32; XXIX, No. 6, 604-605, '34
2336. Summers, R. E. **How Much Phosphate?**  
Power, LXXVIII, p. 452, '34
2337. Taylor, H. P. **Columbia Basin Report, Appendix P: Mineral Resources of the Pacific Northwest**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2338. Thomson, F. A. **Pacific Northwest Mineral Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 87-88, '37  
Portland, Oreg.

2339. Umpleby, J. B., Westgate, L. G., Ross, C. P. and Hewett, D. F. **Geology and Ore Deposits of the Wood River Region, Idaho, with a Description of the Minnie Moore and Near-By Mines**  
U. S. Geol. Survey Bull. No. 814, 250 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
2340. United States Department of the Interior, Geological Survey. **Copper Deposits near Keating, Oregon**  
Geol. Bull. No. 830-A, '31  
Washington, D. C.
2341. United States Department of Interior, Geological Survey. **Eska Creek Coal Deposits, Matanuska Valley, Alaska**  
Geol. Bull. No. 880-D, 185-213, '37  
U. S. Govt. Print. Off., Washington, D. C.
2342. United States Department of Interior, Geological Survey. **Geography, Geology, and Mineral Resources of Portneuf Quadrangle, Idaho**  
Geol. Bull. No. 803, 110 p., '29  
U. S. Govt. Print. Off., Washington, D. C.
2343. United States Department of Interior, Geological Survey. **Geology and Mineral Resources at Baker Quadrangle, Oregon**  
Geol. Bull. No. 879, 119 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
2344. United States Department of Interior, Geological Survey. **Geology and Mineral Resources of North-Central Chouteau, Western Hill, and Eastern Liberty Counties, Montana**  
Geol. Bull. No. 847-F., 46 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
2345. United States Department of Interior, Geological Survey. **Geology and Mineral Resources of Parts of Carbon, Big Horn, Yellowstone, and Stillwater Counties, Montana**  
Geol. Bull. No. 822-A, '30  
Washington, D. C.
2346. United States Department of Interior, Geological Survey. **Geology of the Anthracite Ridge Coal District, Alaska**  
Geol. Bull. No. 861, 57 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
2347. United States Department of Interior, Geological Survey. **A Graphic History of Metal Mining in Idaho**  
Geol. Bull. No. 821-A, '30  
Washington, D. C.
2348. United States Department of Interior, Geological Survey. **Metal-liferous Deposits of the Greater Helena Mining Region, Montana**  
Geol. Bull. No. 842, '33  
Washington, D. C.
2349. United States Department of Interior, Geological Survey. **Non-metallic Mineral Resources of Eastern Oregon**  
Geol. Bull. No. 875, '37  
Washington, D. C.
2350. United States Department of Interior, Geological Survey. **Some Lode Deposits in the Northwestern Part of the Boise, Basin, Idaho**  
Geol. Bull. No. 846-D, '34  
Washington, D. C.

2351. Walker, J. F. **The Mining Industry. Part A of Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended December 31, 1937**  
Victoria, B. C.
2352. Warren, H. V. **Distribution of Silver in Base-Metal Ores**  
Trans. of Am. Inst. of Min. and Met., CXV, 81-89, '35
2353. Warren, H. V. **A Gold Bismuth Occurrence in British Columbia**  
Econ. Geol. XXX, p. 205, '35
2354. Warren, H. V. **The Importance of Tetrahedrite in British Columbia**  
British Columbia Miner, XI, p. 26, '38
2355. Warren, H. V. **Mining Potentialities in British Columbia**  
British Columbia Miner, X, p. 36, '37
2356. Warren, H. V. **The Significance of Pyrargyrite in British Columbia**  
British Columbia Miner, XI, p. 39, '38
2357. Warren, H. V. **Silver-Tetrahedrite Relationship in the Coeur d'Alene District, Idaho**  
Econ. Geol., XXIX, No. 7, p. 691, '34
2358. Warren, H. V. and Cummings, J. M. **Relationship of Gold and the Metallic Minerals in British Columbia**  
Trans. of Canadian Inst. of Min. and Met., XL, p. 1, '37
2359. Warren, H. V. and Cummings, J. M. **Textural Relationships in British Columbia Gold Ores**  
Tech. Paper, No. 777, '37  
Am. Inst. of Min. and Met., 229 W. 39th St., New York City
2360. Warren, H. V. and Lord, C. F. **An Occurrence of Schwatzite in British Columbia**  
Econ. Geol., XXX, No. 1, p. 67, '35
2361. Warren, H. V. and Watson, K. de P. **A Pyrrhotite Ruby Silver Occurrence in British Columbia**  
Econ. Geol., XXXII, No. 6, p. 826, '37
2362. Washington State Planning Council. **Index of Mineral Occurrences in the State of Washington**  
Research Publ. No. 3, 40 p., '35  
Olympia, Wash.
2363. Wells, F. G. and Waters, A. C. **Quicksilver Deposits of Southwestern Oregon**  
U. S. Geol. Survey Bull. No. 850, 1-58, '34  
Washington, D. C.
2364. Williams, M. Y. **Mineral Resources of the Peace River Area, British Columbia**  
Rept. of Pacific Great Eastern Railway Lands Survey of Resources, 351-357, '31  
Victoria, B. C.
2365. Wilmot, R. G. **Geological Investigation of a Portion of the Oroville District**  
Thesis, '33  
Lib., College of Mines, University of Washington, Seattle

2366. Wilson, H. **Kaolin and China Clay in the Pacific Northwest**  
Engr. Exp. Sta. Bull. No. 76, 184 p., '34  
University of Washington, Seattle
2367. Wilson, H. and Pask, J. A. **Talc and Soapstone in Washington**  
Am. Inst. Min. and Met. Engr. Contrib. No. 99, 25 p., '36  
229 W. 39th St., New York City
2368. Wilson, H. and Skinner, K. G. **Occurrence, Properties, and Preparation of Limestone and Chalk for Whiting**  
U. S. Bur. of Mines Bull. No. 395, 160 p., '37  
Washington, D. C.

#### RESEARCH: TECHNOLOGICAL

2369. Ash, S. H., Yancey, H. F. and Others. **Analyses of Washington Coals**  
Tech. Paper No. 491, '31  
U. S. Bur. of Mines, Washington, D. C.
2370. Bauer, W. G. **The Use of Skagit Soapstone in Architectural Terra Cotta**  
Thesis, '35  
Lib., College of Mines, University of Washington, Seattle
2371. Bell, J. W. **Firebrick from Western Oregon Clays**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2372. Berkelhamer, L. H. **Properties and Use of Olivine from Deposits of the Pacific Northwest**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2373. Brandt, W. O. **Forsterite Refractories from Washington Materials**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2374. Butler, J. N. **Spectrographic Analysis and Some Recent Applications to the Mineral Industry**  
Infor. Circ. No. 12, 19 p. (mimeo.), '35  
Washington State Planning Council, Olympia
2375. Candee, F. W. **The Development of a Domestic Stoker to Burn Washington Coals**  
Engr. Exp. Sta. Bull. No. 56, '38  
State College of Washington, Pullman
2376. Clem, H. E. **Refractories for Use in Wagner Soda-Recovery Furnaces**  
Thesis, '31  
Lib., College of Mines, University of Washington, Seattle
2377. Cline, R. W. **Properties and Uses of Olivine from the Pacific Northwest, Part II**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2378. Cunliffe, J. A. **The Purification of Western Coalins by Pneumatic Methods**  
Thesis, '32  
Lib., College of Mines, University of Washington, Seattle



2379. Cunliffe, J. A. **Refractories for Use in Sulfate Recovery Furnaces of the Pulp and Paper Industry**  
Thesis, '31  
Lib., College of Mines, University of Washington, Seattle
2380. Daniels, J. **Coking Coals and By-Product Coking Possibilities, State of Washington**  
(ms.), '33  
Lib., College of Mines, University of Washington, Seattle
2381. Daniels, J. **Powdered Coal Tests in the State of Washington**  
The Miner, IV, No. 12, '31  
Vancouver, B. C.
2382. Deits, H. L., Jr. **Metallurgy of Hematite Ore from Peshastin Creek**  
Thesis, '37  
Lib., College of Mines, University of Washington, Seattle
2383. Durway, C. and Parkman, H. C. **The Development of a Sulphuric Acid Baking-Roasting and Leaching Process for the Extraction of Manganese from the High-Silica Ores**  
Dept. of Min. and Met. Bull. M, '36  
State College of Washington, Pullman
2384. Drucker, A. E. **Electrometallurgical Research and Its Relation to the Grand Coulee Power Development**  
Dept. of Min. and Met. Infor. Circ. No. 8, '34  
State College of Washington, Pullman
2385. Drucker, A. E. **The Properties of Ultra-Light Magnesium Structural Alloys Compared with Other Engineering Metals**  
Infor. Circ. No. 6, 6 p. (mimeo.), '34  
Washington State Planning Council, Olympia
2386. Drucker, A. E. and Floe, C. F. **Electro-Hydrometallurgical Process for Copper Flotation Concentrate (2nd Progress Report)**  
Engr. Exp. Sta. Bull. No. 38, '32  
State College of Washington, Pullman
2387. Eagle, J. R. **Proposed Method for Treating Ore from Mine of the Copper Mining Company, Inc., Yakima, Washington**  
Thesis, '38  
Lib., College of Mines, University of Washington, Seattle
2388. Floe, C. F. **Magnesium Metal from Washington Magnesite and Dolomite Deposits (1st Progress Report)**  
Dept. of Min. and Met. Bull. B, '34  
State College of Washington, Pullman
2389. Floe, C. F. and Drucker, A. E. **Electro-Hydrometallurgical Process for Copper Flotation Concentrate (1st Progress Report)**  
Engr. Exp. Sta. Bull. No. 35, '30  
State College of Washington, Pullman
2390. Gazelius, C. V. **The Use of Talc in the Manufacture of Ceramic Ware at Low Temperatures**  
Thesis, '32  
Lib., College of Mines, University of Washington, Seattle
2391. Hurst, T. L. **Refractory Properties of Chromite of the Pacific Northwest**  
Master's Thesis, '36  
University of Washington, Seattle

2392. Idaho, University of, Phosphate Committee. **The University of Idaho and the Development of Idaho Phosphates**  
Univ. of Idaho Bull. XXXIII, No. 2, 19 p., '38  
Moscow, Idaho
2393. Kardos, L. T. and Joffe, J. S. **The Preparation, Composition, and Chemical Behavior of the Complex Silicates of Magnesium, Calcium, Strontium, and Barium**  
Soil Science, XLV, 293-307, '38
2394. Kieffer, J. C. **Experimental Results and Methods of Obtaining Kaolinite from Eastern Washington Clays for the Production of Aluminum Metal**  
Dept. of Min. and Met. Bull. K, '36  
State College of Washington, Pullman
2395. Lindsay, J. D. **Producing Natural Soda Ash in Washington**  
Chem. and Met., XLV, 144, '38
2396. McGivern, J. G. and Wilkinson, C. A. **Precipitation Hardening of a Magnesium Alloy Containing Aluminum**  
Engr. Exp. Sta. Bull. No. 50, '37  
State College of Washington, Pullman
2397. Miller, L. B. and Commins, A. B. **Diatomaceous Earth, Equilibrium and Rate of Reaction in the System Hydrated Lime—Diatomaceous Silica-Water**  
Industrial and Engineering Chemistry, XXVI, No. 6, 688-693, '34
2398. Oregon State Department of Geology and Mineral Industries. **Preliminary Report on Refractory Clays of Western Oregon**  
Bull. No. 6, '38  
Portland, Oreg.
2399. Pacific Northwest Regional Planning Commission. **Letter to the Joint Congressional Committee to Investigate the Adequacy and Use of Phosphate Resources of the United States**  
20 p. (mimeo.), '38  
Portland, Oreg.
2400. Page, G. A. **Studies of Pacific Northwest Kaolins**  
Thesis, '31  
Lib., College of Mines, University of Washington, Seattle
2401. Parkman, H. C. **Sulphuric Acid Leaching of Washington Clays for the Production of Alumina and Aluminum Metal**  
Dept. of Min. and Met. Bull. E, '35  
State College of Washington, Pullman
2402. Pask, J. A. **Properties and Uses of Talc and Soapstone of the Pacific Northwest**  
Thesis, '35  
Lib., College of Mines, University of Washington, Seattle
2403. Raine, F. F. **Properties and Uses of Talc and Soapstone of the Pacific Northwest—Part II**  
Thesis, '36  
Lib., College of Mines, University of Washington, Seattle
2404. Taylor, H. P. **Phosphate Industry for Idaho**  
8 p. (mimeo.), '36  
Idaho State Planning Board, Boise

2405. Thomas, C. E. and Graf, S. H. **An Investigation of Some Oregon Sands with a Statistical Study of the Predictive Values of Tests**  
Engr. Exp. Sta. Bull. Series No. 8, 64 p., '37  
Oregon State College, Corvallis.
2406. Warren, H. V., Madsen, C. and White, W. H. **Some Studies with the Haultain Super Panner and Infra-Sizer**  
British Columbia Miner, XII, p. 33, '39
2407. Washington, State College of, Electrometallurgical Research Laboratory. **Extraction of Manganese from Olympic Peninsula Ores**  
31 p. (mimeo.), '36  
Washington State Planning Council, Olympia
2408. Wheeler, D. D. **The Bleaching of Pacific Northwest Kaolins and Their Use as Paper Fillers**  
Thesis, '30  
Lib., College of Mines, University of Washington, Seattle
2409. Wilcox, H. G. **Fireclays and Light Colored Clays of Western Oregon and the Commercial Development of a Number 1 Firebrick**  
Thesis, '35  
Lib., University of Washington, Seattle
2410. Wilson, H. and Treasher, R. C. **Preliminary Report of Some of the Refractory Clays of Western Oregon**  
Bull. No. 6, 93 p., '38  
Oregon State Dept. of Geological and Mineral Industries, Portland
2411. Wilson, G. S., Yancey, H. F. and Daniels, J. **Preliminary Tests of Thirteen Washington Coals in a Powdered Coal Boiler Plant at the University of Washington**  
Engr. Exp. Sta. Bull. No. 58, '31  
University of Washington, Seattle
2412. Yancey, H. F., Zane, R. E., Fatzinger, R. W. and Key, J. A. **Physical and Chemical Properties of Coke Made from Washington and Other Coals**  
U. S. Bur. of Mines Tech. Paper No. 597, '38  
Washington, D. C.
2413. Zvanut, F. J. **The Purification and Possible Utilization of Quartz and Muscovite Mica Washed from Pacific Northwest Kaolin**  
Ceramic Industry, XX, p. 94 and 97, '33

#### STATISTICS OF PRODUCTION

2414. Merrill, C. W. and Gaylord, H. M. **Gold, Silver, Copper, Lead, and Zinc in Oregon**  
Reprint from Minerals Yearbook, 407-420, '38  
U. S. Govt. Print. Off., Washington, D. C.
2415. Merrill, C. W. and Hughes, H. H. **Metal Mining in Oregon, 1938—Preliminary Annual Figures**  
Min. Market Repts. No. M. M. S. 693, 2 p. (mimeo.), '39  
U. S. Dept. of Interior, Bureau of Mines, Washington, D. C.
2416. Miller, T. H. **Gold, Silver, Copper, Lead, and Zinc in Montana**  
Reprint from Minerals Yearbook, 329-356, '38  
U. S. Govt. Print. Off., Washington, D. C.

2417. Miller, T. H., Luff, P. and Hughes, H. H. **Metal Mining in Idaho, 1938—Preliminary Annual Figures**  
Min. Market Repts. No. M. M. S. 686, 3 p. (mimeo.), '39  
U. S. Dept. of Interior, Bureau of Mines, Washington, D. C.
2418. Miller, T. H., Luff, P. and Hughes, H. H. **Metal Mining in Montana, 1938—Preliminary Annual Figures**  
Min. Market Repts. No. M. M. S. 687, 3 p. (mimeo.), '39  
U. S. Dept. of Interior, Bureau of Mines, Washington, D. C.
2419. Miller, T. H., Luff, P. and Hughes, H. H. **Metal Mining in Washington, 1938—Preliminary Annual Figures**  
Min. Market Repts. No. M. M. S. 695, 3 p. (mimeo.), '39  
U. S. Dept. of Interior, Bureau of Mines, Washington, D. C.
2420. United States Department of Commerce, Bureau of Census. **Census of Mines and Quarries: 1929, California, Oregon, Washington**  
Washington, D. C., '32
2421. United States Department of Commerce, Bureau of Census. **Census of Mines and Quarries: 1929, Idaho, Nevada, Utah**  
Washington, D. C., '32
2422. United States Department of Commerce, Bureau of Census. **Census of Mines and Quarries: 1929, Montana, North Dakota, South Dakota, Wyoming, Nebraska**  
Washington, D. C., '32

## V. WATER RESOURCES

The water resources of the Pacific Northwest constitute a major resource of the region and with other closely related resources are the foundation of its economic life.

The waters of the Pacific Northwest have their sources in large measure in the heavily timbered regions which constitute 50% of the nation's timber supply. The Columbia River, an international stream, and its tributaries have potential water power resources of 13,000,000 kilowatts available 90 per cent of the time. Other streams have 2,000,000, making a total of over 15,000,000 kilowatts, or 40% of the nation's total. Less than 10% of the potential power is now developed. Irrigation now includes 5,000,000 acres under constructed works and it is estimated that 6,000,000 more acres may be irrigated in the future. The Columbia River and its tributaries support a commercial catch of salmon approaching \$10,000,000 per year, at retail value. Also the Columbia River system, the Puget Sound and the mouths of many other rivers constitute a great system of inland waterways which may be greatly improved and developed. Flood control is a major problem, particularly in the Puget Sound region.

Yes, water resources and their utilization constitute the greatest asset of the Pacific Northwest. Their coordinated development with proper land use constitutes the major development opportunity of the region. This relation of power, reclamation, fisheries, economic development and planning require the reader to study also the chapters of this bibliography under these related headings.

The present trends in planning and research are toward more complete planning of the water and land resources along drainage basin lines. Comprehensive all purpose studies and developments of the rivers are required to give the most economic and socially desirable utilization of water and land in the public interest. No longer should a river be developed for power only, irrigation only or any other single purpose, but all uses should be considered in development of the best long time plan of river regulation and land use.

Plans for development of a river system should therefore take into full consideration the opportunity for improvement of flood control, irrigation, water power, navigation, public water supply, soil conservation, pollution control or abatement, recreation and wild life, including commercial fisheries. On the major rivers all of these uses will be found and their relative needs and improvement must be considered in all comprehensive drainage basin plans. Grand Coulee, Bonneville and the Willamette Valley projects are examples of comprehensive multiple purpose projects. In the case of small streams, perhaps only a few of these uses will be important.

Adequate collection and publication of basic data continually lags behind needs. Topographic maps, river, damsite and reservoir surveys, rainfall records, snow surveys, runoff records, ground water surveys, measurements of erosion and transportation of debris, are all being carried on and long have been. In comparison with the great sums appropriated for actual construction work, however, the appropriations for fundamental data are woefully meager, and result in loss of time and money in the economic design, planning and construction of all classes of river development and hydraulic work.

Perhaps one of the most important fields upon which we know least is the relationship of forest and other cover and land management to stream-flow and soil erosion. With the importance of forests and water resources

in the Pacific Northwest and the continued destruction of forests by commercial cutting and fire, one would expect a large amount of fundamental data on this subject. However, little reliable data exists, although there are many widely divergent but firm convictions in the opinions of those most intimately connected with this subject. Before we have removed too much of the forest cover, why not appropriate enough funds tying in all parties having an interest, to determine the basic facts.

The Columbia River, draining an area of 220,000 square miles in the United States and 36,000 in Canada, includes portions of seven states in its watershed. Headwater storages should be located and reserved for later development. Its most economic development will require storages in Canada and upper states for the best use of regulated streamflow farther down stream in the lower states. International and interstate problems are involved. Orderly studies should proceed toward the solution of this problem which, through its complexity and problems of diverse interest, will require a long period and constructive cooperative action to solve.

The Pacific Northwest is a geographical, economic, and social unit. Its people will benefit greatly by the proper conservation and development of its water and land resources.

SAMUEL B. MORRIS.

Dean, College of Engineering,  
Stanford University, Palo Alto, Calif.

---

## V. WATER RESOURCES

### CONSERVATION

- 2423. Allison, R. V. **The Importance of the Vegetation Factor in Water Conservation and Erosion Control**  
Am. Soil Survey Assoc. Bull. No. 16, 119-122, '35
- 2424. Bowman, W. T. **Water Ponding Reservoirs**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash., '36
- 2425. Idaho, University of, College of Agriculture. **Conserving Irrigation Water**  
Ext. Serv. Circ. No. 61, '38  
Moscow, Idaho
- 2426. Lemke, W. **Water Conservation**  
Cong. Record, 75th Cong., 1st sess., House, LXXXI, No. 166,  
12568-12570, '37  
U. S. Govt. Print. Off., Washington, D. C.
- 2427. Martin, J. A. **The Conservation, Control and Use of Water**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 17, 1050-  
1052, '35  
U. S. Govt. Print. Off., Washington, D. C.
- 2428. McKinnan, D. A. **Water Conservation and Use—Montana Public Works Program**  
PWA, '33  
Helena, Mont.

2429. Monson, O. W. **Conservation of Water by Means of Storage Reservoirs, Diversion Dams, Contour Dikes, and Ditches**  
Agr. Exp. Sta. Bull. No. 301, 48 p., '35  
Montana State College, Bozeman
2430. Monson, O. W. **Water Conservation in Eastern Montana**  
Montana Farmer No. 23, p. 3, 27, '36
2431. Oregon State Planning Board. **Basic Data Needed for Water Conservation in Oregon**  
73 p. (mimeo.), '37  
Portland, Oreg.
2432. Oregon State Planning Board. **Program for the Conservation and Development of Stock Water in Eastern Oregon**  
4 p. (mimeo.), '36  
Portland, Oreg.
2433. Oregon State Planning Board. **Water Sources and Watershed Protection Problems of Oregon Municipalities**  
26 p. (mimeo.), '37  
Portland, Oreg.
2434. Page, J. C. **Water Conservation and Control**  
Reclamation Era, XXVII, 46-50, '37  
U. S. Bureau of Reclamation, Washington, D. C.
2435. Rockie, W. A. **Water Conservation from the Standpoint of the Soil Conservation Service**  
(ms.), '36  
U. S. National Resources Committee, Washington, D. C.
2436. Shaw, F. R. **Conserving Our National Water Resources**  
Am. Water Works Assoc. Jour., XXVIII, 757-769, '36
2437. Twiss, S. N. **Some Applications of Geology to Water Conservation**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash., '36
2438. Tyler, R. G. **Storage Requirements for Northwestern Streams**  
Am. Water Works Assoc. Jour., XXV, No. 1, 94-104, '33
2439. United States Department of Interior, Bureau of Reclamation. **Conservation of Water**  
Reclamation Era, XXV, 85 p., '35  
Washington, D. C.
2440. United States National Resources Committee. **Federal Agencies Concerned with Water Use and Control**  
37 p. (mimeo.), '36  
U. S. Govt. Print. Off., Washington, D. C.

#### ECONOMICS OF WATER

2441. Carey, J. W. **1933 Annual Report Statistics of Water and Irrigation Companies**  
(mimeo.)  
Washington State Dept. of Public Service, Research and Statistics  
Section, Olympia
2442. Carey, J. W. **1934 Annual Report Statistics of Water Companies**  
(mimeo.)  
Washington State Dept. of Public Service, Research and Statistics  
Section, Olympia

2443. Clackamas County, Oregon, Planning Board. **Stream Flow Measurements**  
Oregon City, Oreg.
2444. Connaughton, C. A. **The Accumulation and Rate of Melting of Snow as Influenced by Vegetation**  
Jour. of Forestry, XXXIII, 564-569, '35
2445. Dunning, G. F. **Water Facilities Program, U. S. Department of Agriculture** (Preliminary, informal outline of background information) (mimeo.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
2446. Grant, H. H. **Water Utilities in the State of Washington, 1936** (mimeo.)  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2447. Grover, N. C. **Surface Water Supply of the United States, Pacific Slope Basins in Oregon and Lower Columbia River**  
U. S. Geol. Survey Water Supply Papers  

No. 634	1930	No. 694	1932	No. 739	1933
No. 654	1931	No. 709	1932	No. 754	1935
No. 674	1931	No. 724	1933	No. 834	1938

U. S. Govt. Print. Off., Washington, D. C.
2448. Grover, N. C. **Surface Water Supply of the United States, Pacific Slope Basins in Washington and Upper Columbia Basins**  
U. S. Geol. Survey Water Supply Papers  

No. 632	1930	No. 692	1932	No. 737	1934
No. 652	1931	No. 707	1932	No. 752	1935
No. 672	1931	No. 722	1933	No. 832	1938

U. S. Govt. Print. Off., Washington, D. C.
2449. Grover, N. C. **Surface Water Supply of the United States, Snake River Basin**  
U. S. Geol. Survey Water Supply Papers  

No. 673	1931	No. 723	1933	No. 793	1936
No. 693	1931	No. 738	1934	No. 833	1938
No. 708	1932	No. 753	1935		

U. S. Govt. Print. Off., Washington, D. C.
2450. Helland, R. O. **Water Utilization in the Basin of South Umpqua River, Oregon**  
U. S. Dept. of Int. Memo. for the Press, 1 p., Jan. 25, '39  
Washington, D. C.
2451. Henshaw, F. F. **Surface Water Supply of Southeastern Alaska, 1909-1930**  
U. S. Geol. Survey Bull. No. 836, 137-218, '33  
U. S. Govt. Print. Off., Washington, D. C.
2452. Hoyt, W. G. **Water Utilization in the Snake River Basin**  
U. S. Geol. Survey Water Supply Paper No. 657, 379 p., '35  
U. S. Govt. Print. Off., Washington, D. C.
2453. Jacobs, J. **Inventory of the Water Resources of the North Pacific Drainage Area**  
117 p., '35  
U. S. National Resources Committee, Washington, D. C.



2454. Jacobs, J. **Water Surveys and Inventories**  
(ms.), '36  
U. S. National Resources Committee, Washington, D. C.
2455. Jannsen, N. C. **Ground Water Conditions in State of Washington**  
28 p. (mimeo.), '37  
Washington State Planning Council, Olympia
2456. Johnson, A. F. **Hydrology Studies Applicable to Oregon**  
Master's Thesis, '33  
Oregon State College, Corvallis
2457. King County, Washington, Planning Commission. **Study of Water Resources of King County**  
Seattle, Wash.
2458. Nelson, J. C. **1935 Statistics of Water Companies and Irrigation Companies**  
(mimeo.)  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2459. Oregon State College, Agricultural Experiment Station. **The Ground-Water Problem in Oregon**  
Circ. No. 124, '37  
Corvallis, Oreg.
2460. Oregon, State of. **Water Resources of the State of Oregon, 1931-36**  
Bull. No. 9, 728 p., '37  
Office of State Engineer, Salem, Oreg.
2461. Oregon State Planning Board. **Protection of Municipal Water Supplies in Oregon**  
19 p. (mimeo.), '36  
Portland, Oreg.
2462. Pacific Northwest Regional Planning Commission. **Inventory of Water Resources of North Pacific Area**  
117 p. (multi.), '35  
Portland, Oreg.
2463. Pacific Northwest Regional Planning Commission. **The Pacific Northwest and Its Water Resources**  
10 p. (mimeo.), '36  
Portland, Oreg.
2464. Parker, G. L. **Water Resources—Basic Data**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 67-68, '37  
Portland, Oreg.
2465. Perry, E. S. **Ground Water of Eastern and Central Montana**  
Northwest Science, IV, 96-100, '30
2466. Phillips, K. N. **The Rivers of Oregon**  
Geol. Soc. of Oregon Country News Letter, II, No. 2, 7-15, '36
2467. Piper, A. M. **Geology and Ground Water Resources of The Dalles Region, Oregon**  
U. S. Geol. Survey Water Supply Paper No. 659, 107-189, '32  
Issued separately as Water Supply Paper 659-B, 82 p., '32  
U. S. Govt. Print. Off., Washington, D. C.

2468. Piper, A. M. **Ground Water Resources of Willamette Valley**  
(mimeo.) ( )  
U. S. Geological Survey, Washington, D. C.
2469. Robins, T. M. **Report of Divisional Committee on Water Resources**  
Appendices B, C, D, E, F  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
2470. Smith, J. W. **Josephine County, Oregon, Water Utilization Report**  
(ms.), '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Corvallis, Oreg.
2471. Stanbery, V. B. **Unpublished Hydrologic Data in Oregon**  
35 p. (ms.), '36  
Oregon State Planning Board, Portland
2472. Stearns, H. T., Crandall, L. and Steward, W. G. **Geology and Ground-  
Water Resources of the Snake River Plain in Southern Idaho**  
U. S. Geol. Survey Rept. (mimeo.), '34  
Washington, D. C.
2473. Stricklin, C. E. **Water Resources of the State of Oregon**  
Bull. No. 8, '32  
Oregon State Engineer, Salem
2474. Thompson, M. R. **Miscellaneous Stream-Flow Measurements**  
160 p. (ms.) ( )  
Washington State Planning Council, Olympia
2475. Thompson, M. R. **Water Resources in State of Washington**  
Washington State Planning Council, Olympia, '36
2476. Twiss, S. N. **Some Observations on the Pullman Artesian Basin as  
They Pertain to the Possible Water Supply in the Soil Conserva-  
tion Nursery Well**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
2477. Twiss, S. N. **The Water Resources of Condon, Oregon**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash., '36
2478. Tyler, R. G. **Water Resources of Washington**  
Engr. Exp. Sta. Rept. No. 4, 61 p., '38  
University of Washington, Seattle
2479. United States Department of the Interior, Geological Survey. **Geology  
and Groundwater Resources of the Snake River Plain in South-  
eastern Idaho**  
Water Supply Paper No. 774, 268 p., 6 plates, '38  
U. S. Govt. Print. Off., Washington, D. C.
2480. United States Department of the Interior, Geological Survey. **Index  
of River Measurement Stations as of September 30, 1933. Part 12,  
North Pacific Slope Basins**  
40 p. (mimeo.), '34  
Washington, D. C.
2481. United States Department of the Interior, Geological Survey. **Records  
of Wells on the Snake River, Plain, Southeastern Idaho**  
Water Supply Paper No. 775, 139 p., '36  
U. S. Govt. Print. Off., Washington, D. C.

2482. United States National Resources Committee. **Deficiencies in Basic Hydrologic Data**  
Washington, D. C.
2483. United States National Resources Committee. **Inventory of the Water Resources of the North Pacific Drainage Area**  
117 p. (multi.), '35  
Washington, D. C.
2484. Wade, J. A. and Brown, K. W. **Treatment of Pacific Coast Water Supplies**  
Civil Engineering, IV, No. 9, 478-481, '34
2485. Wallowa County, Oregon, Planning Commission. **Stream Flow Measurements**  
Enterprise, Oreg.
2486. Washington State Planning Council. **Investigation of Municipal and Industrial Water Supplies**  
7 p. (mimeo.), '37  
Olympia, Wash.
2487. Woolley, R. R. **The Green River and Its Utilization**  
U. S. Geol. Survey Water Supply Paper No. 618, 456 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
2488. Woolley, R. R. **The Green River and Its Utilization**  
U. S. Geol. Survey Water Paper No. 657, 379 p., '35  
U. S. Govt. Print. Off., Washington, D. C.
2489. Work, A. **Snow Surveys and Irrigation Water Forecasts for Oregon, as of January 1, March 1, April 1, 1937; February 1, March 1, April 1, 1938**  
(mimeo.) ( )  
Oregon State College, Corvallis
2490. Ziesenhenné, F. C. **Lake Survey of the Willamette National Forest**  
31 p. (mimeo.), '37  
U. S. Forest Service, Region 6, Portland, Oreg.

#### POLLUTION

2491. Gleeson, G. W. **A Sanitary Survey of the Willamette River from Sellwood Bridge to the Columbia**  
Engr. Exp. Sta. Bull. No. 6, '36  
Oregon State College, Corvallis
2492. Gleeson, G. W. and Merryfield, F. **Industrial and Domestic Wastes of the Willamette Valley**  
Engr. Exp. Sta. Bull. No. 7, '36  
Oregon State College, Corvallis
2493. Gleeson, G. W., Merryfield, F. and Howard, E. F. **The Pollutational Character of Flax Retting Wastes**  
Sewage Works Jour., '34
2494. Koon, R. E. **A Review of Past and Present Efforts to Reduce Stream Pollution in Oregon**  
12 p. (mimeo.), '36  
Oregon State Planning Board, Portland

2495. Koon, R. E., Cunningham, J. W., and Dieck, R. **Report on General Survey of the Problem of Sewage Treatment and Disposal in the Willamette River, Oregon**  
39 p., '33  
State of Oregon Reconstruction Advisory Board, Portland
2496. Merryfield, F. **History, Progress, and Problems of Stream Pollution in Oregon**  
Commonwealth Review, XIX, 80-86, '36  
University of Oregon Publications, Eugene
2497. Merryfield, F. **Industrial Wastes in the Willamette Valley**  
Civil Engineering, VI, 682-684, '36
2498. Merryfield, F. **Willamette Valley Stream Pollution Problems**  
Western Construction News, IX, 339-340, '34
2499. Oregon State Planning Board. **An Analysis of Stream Pollution Legislation**  
57 p., '36  
Portland, Oreg.
2500. Oregon State Planning Board. **Sources of Industrial Pollution in Oregon**  
20 p. (mimeo.) ( )  
Portland, Oreg.
2501. Rogers, H. S., Mockmore, C. A. and Adams, C. D. **A Sanitary Survey of the Willamette Valley**  
Engr. Exp. Sta. Bull. No. 2, '30  
Oregon State College, Corvallis
2502. Tyler, R. G. **Stream Pollution**  
Proc. of Pacific Northwest Regional Planning Conf., III, 78-79, '36  
Portland, Oreg.
2503. United States National Resources Committee, Water Resources Committee. **Report on Water Pollution**  
82 p., '35  
Washington, D. C.
2504. United States National Resources Committee, Water Resources Committee. **Second Report on Water Pollution**  
54 p., '37  
Washington, D. C.

#### REGIONAL SURVEYS

2505. Bessey, R. F. **The Pacific Northwest and Its Water Resources**  
10 p. (mimeo.), '36  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
2506. Bessey, R. F. **Water Resources**  
Pacific Northwest Regional Planning Comm. Progress Rept., I,  
68-104, Jan. '34 to Jan. '35  
Portland, Oreg.
2507. Bonner, J. P. **Hydrological Determinations on the Palouse Project**  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash., '36

2508. Bonner, J. P., McCulloch, W. W. and Melrose, J. W. **Hydrological Investigations on the South Fork of Palouse River Watershed, Pullman, Wash.**  
(ms.), '36  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
2509. Borden, W. J. **Survey of Puyallup River, Wash.**  
U. S. Army Engineers, 37 p., '31 (H. Doc. No. 154, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2510. Butler, J. S. **Report on Chehalis River, Wash.**  
U. S. Army Engineers, 36 p., '31 (H. Doc. No. 148, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2511. Butler, J. S. **Report on Puyallup River, Wash.**  
U. S. Army Engineers, 45 p., '31 (H. Doc. No. 153, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2512. Finch, H. A. **Report on Klamath River, Oregon and California**  
U. S. Army Engineers, 53 p., '34 (H. Doc. No. 181, 73d Cong., 2d sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2513. Huber, W. L. **South Pacific and Great Basin Drainage Areas Embracing Portions of California, Oregon, Nevada, Utah, and Idaho**  
50 p. (lith.), '35  
U. S. National Resources Committee, Washington, D. C.
2514. Jacobs, J. **North Pacific Drainage Area Embracing All of the State of Washington, Nearly All of Oregon and Idaho, and Portions of Montana, Wyoming, Utah, and Nevada**  
117 p. (lith.), '35  
U. S. National Resources Committee, Washington, D. C.
2515. Kuentz, O. O. **Report on the Columbia River and Minor Tributaries**  
U. S. Army Engineers, I, Pt. 1, 564 p., '33 (H. Doc. No. 103, 73d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2516. Kuentz, O. O. **Report on John Day River, Oregon**  
U. S. Army Engineers, 82 p., '33 (H. Doc. No. 84, 73d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2517. Kuentz, O. O. **Report on Preliminary Examination of Coquille River, Oregon**  
U. S. Army Engineers, 33 p., '31 (H. Doc. No. 78, 73d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2518. Kuentz, O. O. **Report on Willamette River, Oregon**  
U. S. Army Engineers, 136 p., '32 (H. Doc. No. 263, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.,
2519. Lukesh, G. R. **The Columbia River System**  
Military Engineers, XXII, No. 12, 328-335, '30

2520. Lukesh, G. R. **Report on Cowlitz River, Washington**  
U. S. Army Engineers, 70 p., '31 (H. Doc. No. 666, 71st Cong., 3d sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2521. Lukesh, G. R. **Report on Lewis River, Washington**  
U. S. Army Engineers, 57 p., '30 (H. Doc. No. 680, 71st Cong., 3d sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2522. McDonald, J. C. **Developing the Columbia River Drainage Basin**  
Civil Engineering, IV, No. 9, 443-459, '34
2523. Montana State Planning Board. **Drainage Basin Survey Reports**  
Kootenai Basin, 3 p., Clark Fork Basin, 6 p., Missouri Basin, 9 p.,  
Yellowstone Basin, 8 p., Little Missouri Basin, 4 p., '36  
Helena, Mont.
2524. Morris, S. B. **Drainage Basin Study, North Pacific Drainage, Reports of Water Consultant on Subdrainage Basins**  
Upper Columbia  
Snake River  
Middle Columbia  
Willamette-Columbia West of Cascades  
Puget Sound  
Washington Pacific  
Oregon Pacific  
130 p. (mimeo.), '36  
U. S. National Resources Committee, Washington, D. C.
2525. Oregon State Planning Board. **Final Report and Supporting Data on Great Basin**  
No. 10-A, 49 p. (ms.) ( )  
Portland, Oreg.
2526. Oregon State Planning Board. **Final Report and Supporting Data on Klamath, Lost River, and Goose Lake Drainage Basin**  
No. 11-A & B, 46 p. (ms.) ( )  
Portland, Oreg.
2527. Oregon State Planning Board. **Final Report and Supporting Data on Middle Columbia Drainage Basin**  
No. 12-M, 70 p. (ms.) ( )  
Portland, Oreg.
2528. Oregon State Planning Board. **Final Report and Supporting Data on Oregon Pacific Drainage Basin**  
No. 12-R, 61 p. (ms.) ( )  
Portland, Oreg.
2529. Oregon State Planning Board. **Final Report and Supporting Data on Snake River Drainage Basin**  
No. 12-H, 65 p. (ms.) ( )  
Portland, Oreg.
2530. Oregon State Planning Board. **Final Report and Supporting Data on Willamette and Columbia Basin West of Cascades**  
No. 12-M & N, 82 p. (ms.) ( )  
Portland, Oreg.

2531. Pacific Northwest Drainage Basin Committee. **Drainage Basin Committee Report for the Pacific Northwest Basins**  
No. 109 Columbia—General  
No. 110 Snake  
No. 111 Upper Columbia  
No. 112 Middle Columbia  
No. 113 Lower Columbia—Willamette  
No. 114 Puget Sound  
No. 115 Washington Coast  
No. 116 Oregon Coast  
73 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
2532. Pacific Northwest Regional Planning Commission. **Drainage Basin Study, North Pacific Drainage**  
123 p. (mimeo.), '36  
Portland, Oreg.
2533. Pacific Northwest Regional Planning Commission. **Drainage Basin Study, North Pacific Drainage, Supplementary Data Report**  
80 p. (mimeo.), '36  
Portland, Oreg.
2534. Pacific Northwest Regional Planning Commission. **Pacific Northwest Drainage Basin Problems and Programs (1937 revision)**  
72 p., '38  
Portland, Oreg.
2535. Robins, T. M. **Improvement of Columbia River**  
Civil Engineering, II, No. 9, 563-567, '32
2536. Robins, T. M. **Improvement of Columbia River**  
Civil Engineering, III, No. 1, 36-37, '33; also III, No. 3, 175-176, '33
2537. Roseburg, Oregon, Chamber of Commerce. **Umpqua River, Oregon, and Its Tributaries**  
42 p. (mimeo.), '38
2538. Stearns, H. T. **Geology and Water Resources of the Middle Deschutes River Basin, Oregon**  
U. S. Geol. Survey Water Supply Paper No. 637-D, 125-220, '31  
U. S. Govt. Print. Off., Washington, D. C.
2539. Stoutemyer, B. E. **Columbia Basin Report, Appendix D: Legal Status of Water Rights in the Pacific Northwest**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2540. Sturdevant, C. L. **Report on the Skagit River, Washington**  
U. S. Army Engineers, 110 p., '34 (H. Doc. No. 187, 73d Cong., 2d sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2541. Sturdevant, C. L. **Report on Snohomish River, Washington**  
U. S. Army Engineers, 83 p., '34 (H. Doc. No. 258, 73d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2542. Twiss, S. N. **Geology and Groundwater Resources of the Little Spokane Watershed—A Preliminary Report**  
(ms.), '38  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.

2543. Tyler, R. G. **Water Resources Drainage Basin Study**  
135 p. (ms.)  
Washington State Planning Council, Olympia
2544. United States Congress, Senate, Committee on Agriculture and Forestry. **Navigation and Flood Control on the Columbia River and Its Tributaries** (Hearings before a Subcommittee)  
74th Cong., 2d sess., on S. 869, S. 3330, S. 4178 and S. 4566, 251 p., May 7, 8, 9 and 13, '36  
U. S. Govt. Print. Off., Washington, D. C.
2545. United States Department of the Interior, Geological Survey. **Surface Water Supply of United States, Part 14, Pacific Slope Basins in Oregon and Lower Columbia River**  
Water Supply Paper No. 794, '35; Water Supply Paper No. 814, '36  
U. S. Govt. Print. Off., Washington, D. C.
2546. United States Department of War, Corps of Engineers. **Report on Green River, Washington**  
U. S. Army Engineers, '34 (H. Doc. No. 286, 73d Cong., 2d sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2547. United States Department of War, Corps of Engineers. **Report on the Snake River River and Tributaries**  
H. Doc. No. 190, 73d Cong., 2d sess., '34  
U. S. Govt. Print. Off., Washington, D. C.
2548. United States Department of War, Corps of Engineers. **The U. S. Engineers Report to Congress on the Stillaguamish River, Washington**  
H. Doc. No. 657, 71st Cong., 3d sess., '30  
U. S. Govt. Print. Off., Washington, D. C.
2549. United States National Resources Committee, Drainage Basin Committee. **Washington Drainage Basins West of the Cascades** (Revised Report)  
(mimeo.), '38  
Washington, D. C.
2550. Vivian, C. H. **Developing the Mighty Columbia**  
Compressed Air Magazine, XL, 4815-4821, '35
2551. Wanser, H. M. **Lewis River and Tributaries, Washington**  
(ms.) ( )  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
2552. Wyman, T., Jr. **Report on Marias River, Montana**  
U. S. Army Engineers, 91 p., '31 (H. Doc. No. 191, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.
2553. Young, G. R. **Report on the Jefferson, Madison, and Gallatin Rivers, Montana**  
U. S. Army Engineers, 161 p., '32 (H. Doc. No. 194, 72d Cong., 1st sess.)  
U. S. Govt. Print. Off., Washington, D. C.



## VI. POWER RESOURCES

Possibilities in the development of two-fifths of the nation's hydro-electric power potentially available in the Pacific Northwest have long been the subject of study. The resulting analyses have stressed the necessity for the coordinated exploitation of hydro sites in the region, as well as the desirability of the integrated utilization of the power to be released. Thus it is that research to date has been devoted primarily to these broad subjects. New factors, brought about by the passing of time, may change the emphasis.

The energy released by the waters of the Columbia at Bonneville and Grand Coulee will be available to the region in the immediate future. The establishment of the first part of the network, the description in the "Master Plan" of interconnections to be made in the future, the promulgation of a uniform rate for all parts of the network are accomplishments which have resulted from past research.

Planning for regional distribution of power and interconnection has passed from the passive to the active stage, and, consequently, unknown factors primarily relate to utilization. This is not entirely the case. There are problems dealing with interconnection which have not been studied to date in sufficient detail. This has been due, in a major measure, to the brief time which has elapsed since the establishment of a policy on rates and the location of transmission facilities on a broad base. For example, what should be the determining factors to be considered in the interconnection of the Bonneville power system with other multiple use projects involving irrigation and power? What might be the effects of a low rate in such a system upon the rate of amortization of such multiple use projects with relation to the cost per acre where irrigation is involved? Answers have been advanced, but have either ignored the interim period prior to the completion of a coordinated system or have been met without due respect to all the economic factors involved.

Other subjects worthy of immediate study include those of the effects of the uniform rate on existing power systems, private and public. For instance, what readjustments should be made in capital structures due to interconnection with Bonneville and the utilization of certain existing plants for peak load purposes so that sufficient returns may be yielded by all systems?

Although the broad outlines for the coordinated development of the Columbia River have been made, certain factors have not been studied to date. The problem of timing in the development of other dams is an important one. It relates not only to considerations of power markets but more particularly to relationships in the growth of population and demands for agricultural lands adjacent to the river. A study of this sort should be of immeasurable importance in planning for the proper expenditure of public funds in a number of related aspects; for example, land use, transportation, and community developments.

However, in the field of utilization of Columbia River power is found the most fertile opportunity for significant research. In general, the subject matter may be divided as follows:

1. Investigations of natural resources and their relative position in the needs of the region.

2. Investigations in the utilization of power in the exploitation and processing of these resources, and in the development of regional industries.
3. Investigations of the effect of industrial development on the economy and social structure of the region as in improved stability and security, in the improvement of living standards, and in the necessary expansion of required public services.

In conjunction with the above, it has been demonstrated that the economy of the Northwest is characterized by an accentuated unbalance of trade. The region ships out large quantities of raw materials and imports correspondingly large quantities of manufactured goods. Industrial expansion is needed to bring about a necessary readjustment in the regional trade balance, but it depends largely on determination of local markets for certain products, the availability of the basic resources, and the necessary skilled labor.

It is known that much of the Northwest is highly mineralized, but the extent or quality of important minerals has never been determined to any degree of completeness. Obviously, this lack of knowledge is a serious deterrent in the development of necessary industries. The fact that ores are generally of low grade demands comprehensive research on the utilization of laboratory processes for the refinement of these ores. In other words, the laboratory methods developed in the last years must be graduated to the pilot plant stage before any great amount of commercial development will take place. With the possible exception of the Scandinavian countries, no other region offers the abundance of cheap and widely distributed power which, in most instances, is one of the prime requisites in the treatment of low grade ores. The technique which is used in other parts of the nation must be re-evaluated when applied to the Northwest.

Similar research problems are applicable to the forest industries. Inasmuch as forest products have supplied the Northwest with its major wealth-producing source and that this resource base is rapidly approaching a critical stage of depletion, it is important that new methods be devised and applied in the treatment of wood products. This will build new industries, bring about more advanced manufacturing, and will maintain to some degree the economic values developed in the exploitation of the forest resource.

A parallel situation exists in the problems related to agricultural crops and their possible industrial utilization. The establishment of one of the four regional agricultural laboratories on the Pacific Coast will do much to bring about the development of new by-products from surplus crops in the Northwest. It is possible that electric power may stimulate the development of chemurgic methods, an almost virgin field of research.

IVAN BLOCH.

In charge,  
Market Development Section,  
The Bonneville Project,  
United States Department of the Interior

## VI. POWER RESOURCES

### ADMINISTRATION AND CONTROL

2554. Carey, J. W. 1933 Annual Report Statistics of Electric Public Utility Companies  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2555. Carey, J. W. 1934 Annual Report Statistics of Electric Public Utility Companies  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2556. Carpenter, H. V. Proposals for the Administration of Federal Power in the Pacific Northwest  
Electrical Engineering, Aug. '37
2557. Drumheller, Ehrlichman & White. A Statistical and Analytical Review of the Puget Sound Power and Light Company  
Seattle, Wash., '35
2558. Grant, H. H. Electric Utilities in the State of Washington, 1936  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2559. Grant, H. H. Sales of Electrical Energy by Individual Municipal and Privately Owned Utilities in the State of Washington—1937  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2560. Grant, H. H. Statistics of Electric Companies—1937  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia
2561. Gruetter, J. G. The Problem of Federal Development of Electric Utilities in the Pacific Northwest; A Comparative Study of the Hydroelectric Power Commission of Ontario  
Undergraduate Thesis, '36  
Lib., Reed College, Portland, Oreg.
2562. Nelson, J. C. 1935 Statistics of Electric Companies  
(mimeo.) ( )  
Washington State Dept. of Public Service, Research and Statistics Section, Olympia

### ECONOMICS OF POWER

2563. Benson, H. K. Power in the Chemical Industries  
Proc. of Pacific Northwest Regional Planning Conf., III, 86-91, '36  
Portland, Oreg.
2564. Bloch, I. Power and the Development of the Pacific Northwest  
Proc. of Annual Meeting of Electro-Chemical Soc., Columbus, Ohio, '39

2565. Carey, C. E. **Columbia Basin Report, Appendix G: Power**  
(a) Resources — Operating and Technical Problems, Future Requirements  
(b) Transmission Lines Conceived as Common Carriers of Electrical Energy  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2566. Carpenter, H. V. **Electrical Heating of Residences**  
(mimeo.), '38  
State College of Washington, Engineering Experiment Station, Pullman
2567. Carpenter, H. V. **Future Markets for Columbia River Power**  
Northwest Science, IX, No. 4, 8-11, '35
2568. Carpenter, H. V. **Hydroelectric Power in the Pacific Northwest**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 73-75, '37  
Portland, Oreg.
2569. Crumbaker, C. **Oregon's Interest in Bonneville Rate Policy**  
Commonwealth Review, XIX, 223-239, '37  
University of Oregon Publications, Eugene
2570. Dorisy, C. E. **Report on Use of Electric Power in Various Counties**  
23 p. (mimeo.), '34  
Washington State Planning Council, Olympia
2571. Dorisy, C. E. **Residence Electric Heating as a Potential Market for Hydro Electric Power**  
51 p. (mimeo.), '37  
Washington State Planning Council, Olympia
2572. Drucker, A. E. **Certain Possible Industries for Washington Utilizing Grand Coulee Power**  
Infor. Circ. No. 10, 10 p. (mimeo.), '35  
Washington State Planning Council, Olympia
2573. Fernquist, C. O. and Dake, H. C. **Electrical Power and Its Applications in Mineral Reduction**  
The Mineralogist, IV, No. 1, 19-20, 36, '36
2574. Grant, H. H. **Electric Power and Power Markets of Washington**  
(ms.) ( )  
Washington State Planning Council, Olympia
2575. Grant, H. H. **Synopsis of Electric Power and Power Markets of Washington**  
24 p. (mimeo.), '37  
Washington State Planning Council, Olympia
2576. Grant, H. H. **Trends in Sales of Electric Energy**  
Dept. of Public Service Research & Statistics Series Bull. No. UE 7, '36  
State Printer, Olympia, Wash.
2577. Hetherton, P. **Energy Resources, State of Washington**  
25 p. (ms.), '38  
Washington State Planning Council, Olympia
2578. Hodge, E. T. **Bonneville Power and an Iron Industry**  
Geol. Soc. of the Oregon Country, Geol. News Letter, II, No. 3, 6-11, '36

2579. Hodge, E. T. **Bonneville Sets the Stage for a Pacific Coast Iron Industry. I. The Market Possibilities**  
Iron Age, CXXXVIII, 46-47, 100-103, '36
2580. Hodge, E. T. **Bonneville Sets the Stage for a Pacific Coast Iron Industry. II. Economic Setting, Ore and Coke Resources**  
Iron Age, CXXXVIII, 30-32, 36
2581. Hodge, E. T. **Bonneville Sets the Stage for a Pacific Coast Iron Industry. III. Miscellaneous Mineral Resources and Summary of Estimated Costs**  
Iron Age, CXXXVIII, 64-66, 102-103, '36
2582. Hodge, E. T. **Market for Columbia River Hydroelectric Power Using Northwest Minerals; Section I—Northwest Magnesia Ores**  
2 vols., '38  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, North Pacific Division, Portland, Oreg.
2583. Hodge, E. T. **Market for Columbia River Hydroelectric Power Using Northwest Minerals; Section II—Northwest Silica Materials**  
2 vols., '38  
War. Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, North Pacific Division, Portland, Oreg.
2584. Hodge, E. T. **Market for Columbia River Hydroelectric Power Using Northwest Minerals; Section III—Northwest Limestones**  
2 vols., '38  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, North Pacific Division, Portland, Oreg.
2585. Hodge, E. T. **Market for Columbia River Hydroelectric Power Using Northwest Minerals; Section IV—Northwest Clays**  
4 vols., '38  
War Dept., Corps of Engineers, U. S. Army, Office of the Division Engineer, North Pacific Division, Portland, Oreg.
2586. Idaho State Planning Board. **Economic Study of Power Generation and Distribution**  
Boise, Idaho, '37
2587. Idaho State Planning Board. **Water Resources of Idaho, Vol. II: Hydroelectric Power in Idaho**  
224 p. (mimeo.), '37  
Boise, Idaho
2588. Jones, B. E., Oakey, W. and Stearns, H. T. **Water Power Resources of the Rogue River Drainage Basin, Oregon**  
U. S. Geol. Survey Water Supply Paper No. 638-B, 35-97, '32  
U. S. Govt. Print. Off., Washington, D. C.
2589. Jones, B. E. and Stearns, H. T. **Water Power Resources of the McKenzie River and Its Tributaries, Oregon**  
U. S. Geol. Survey Water Supply Paper No. 637, 91-124, '31  
U. S. Govt. Print. Off., Washington, D. C.
2590. Jones, B. E. and Stearns, H. T. **Water Power Resources of the Umpqua River and Its Tributaries, Oregon**  
U. S. Geol. Survey Water Supply Paper No. 636-F, 221-319, '30  
U. S. Govt. Print. Off., Washington, D. C.

2591. Kempernich, W. **Electric Power Rates: Portland, Tacoma and Seattle**  
Undergraduate Thesis, '30  
Lib., Reed College, Portland, Oreg.
2592. Leonard, D. B. **The Farm Market for Power**  
Proc. of Pacific Northwest Regional Planning Conf., III, 82-83, '36  
Portland, Oreg.
2593. Magnusson, C. E. **A Brief on Domestic Service Electric Power Markets in Washington**  
17 p. (mimeo.), '35  
University of Washington, Engineering Experiment Station, Seattle
2594. Magnusson, C. E. **Electric Power Markets in Washington. Part I, Electric Heating of Residences**  
Engr. Exp. Sta. Bull. No. 93, 40 p., '37  
University of Washington, Seattle
2595. Magnusson, C. E. **Electric Power Markets in Washington. Part II, Residence Service Markets and a Regional Power Grid**  
Engr. Exp. Sta. Bull. No. 99, 92 p., '38  
University of Washington, Seattle
2596. Magnusson, C. E. **Hydroelectric Power in Washington. Part IV, Regional Electric-Power Transmission. The Grid System**  
Engr. Exp. Sta. Bull. No. 90, '36  
University of Washington, Seattle
2597. Magnusson, C. E. **Hydroelectric Power in Washington. Part VI, International Boundary Waters**  
Engr. Exp. Sta. Bull. No. 96, 17 p., '37  
University of Washington, Seattle
2598. Magnusson, C. E. **The International Boundary and Hydroelectric Power Development in the Pacific Northwest**  
British Columbia Miner, X, 30-35, '35
2599. Oregon State Planning Board. **Recommended Policies for Sale of Bonneville Power**  
20 p., '36  
Portland, Oreg.
2600. Oregon State Planning Board. **A Study of the Wholesale Cost of Bonneville Power**  
22 p., '35  
Portland, Oreg.
2601. Oregon State Planning Board. **Use of Electricity in Oregon with Forecasts of Future Demands**  
49 p., '36  
Portland, Oreg.
2602. Oregon, University of, Bureau of Municipal Research and Service. **Domestic and Residential Electric Rates in the State of Oregon in Effect January 1, 1935**  
Bull. No. 16, 11 p. (mimeo.), '35  
Eugene, Oreg.
2603. Oregon, University of, Bureau of Municipal Research and Service. **Domestic and Residential Electric Rates in the State of Oregon, January 1, 1937**  
Bull. No. 28, 12 p. (mimeo.), '38  
Eugene, Oreg.

- 2604. Oregon, University of, Publications. **Conference on Distribution of Bonneville Power, University of Oregon, March 18-19, 1937**  
U. O. Common. Serv. Series, II, No. 4, 52 p., '37  
Eugene, Oreg.
- 2605. Resner, H. A. **Power in the State of Washington**  
WPA State Admin. Office, Div. of Education & Recreation, 819  
Alaska Bldg., Seattle, Wash.
- 2606. Robins, T. M. **Power Developments in the Pacific Northwest**  
Proc. of Pacific Northwest Chemurgic Conf., IV, 22-23, '37  
Washington State Planning Council, Olympia
- 2607. Ross, J. D. **Electric Power of the Future**  
(mimeo.), '37  
Bonneville Administration, Portland, Oreg.
- 2608. Ross, J. D. **Power Future of the Northwest**  
(mimeo.), '37  
Bonneville Administration, Portland, Oreg.
- 2609. Schoenfeld, W. A. **The Effect of Power, Navigation and Irrigation Development on Agriculture in the Pacific Northwest**  
Proc. of Pacific Northwest Regional Planning Conf., III, 83-84, '36  
Portland, Oreg.
- 2610. Thomson, F. A. **Power in the Mineral Industries of the Pacific Northwest**  
Proc. of Pacific Northwest Regional Planning Conf., III, 91-95, '36  
Portland, Oreg.
- 2611. United States Federal Power Commission. **Domestic and Residential Electric Rates in Effect January 1, 1935 in State of Idaho**  
Rate Series No. 2, State Rept. No. 23  
U. S. Govt. Print. Off., Washington, D. C.
- 2612. United States Federal Power Commission. **Domestic and Residential Electric Rates in Effect January 1, 1935, in State of Montana**  
Rate Series No. 2, State Rept. No. 32  
U. S. Govt. Print. Off., Washington, D. C.
- 2613. United States Federal Power Commission. **Domestic and Residential Electric Rates in Effect January 1, 1935, in State of Oregon**  
Rate Series No. 2, State Rept. No. 11  
U. S. Govt. Print. Off., Washington, D. C.
- 2614. United States Federal Power Commission. **Domestic and Residential Electric Rates in Effect January 1, 1935, in State of Washington**  
Rate Series No. 2, State Rept. No. 25  
U. S. Govt. Print. Off., Washington, D. C.
- 2615. United States Federal Power Commission. **Power Requirements in Electrochemical, Electrometallurgical, and Allied Industries**  
Washington, D. C., '38
- 2616. United States Federal Power Commission. **The Use of Electric Power in Transportation**  
Power Series No. 4, '36  
U. S. Govt. Print. Off., Washington, D. C.
- 2617. Washington State Planning Council. **Viewpoint on Disposal of Electric Energy from Federal Projects**  
4 p. (mimeo.), '37  
Olympia, Wash.

2618. Williams, C. F. **Power and Navigation Below the Snake River**  
Civil Engineering, IV, No. 9, 447-451, '34

#### PROJECTS: WATER POWER

2619. Banks, F. A. **Columbia Basin and Grand Coulee Projects**  
Civil Engineering, IV, No. 9, 456-459, '34
2620. Berkey, C. P. **Foundation Conditions for Grand Coulee and Bonneville Projects**  
Civil Engineering, V, No. 2, 67-71, '35
2621. Bjork, G. E. **Bonneville Power and Navigation Project**  
Western Construction News, IX, 181-191, '34
2622. Bonneville Commission, Oregon. **Reports on Uses of Bonneville Power, Supplementing Printed Report to 1935 Legislature**  
I, Pt. 2, 1-161; Pt. 3, 1-192, '34
2623. Bretz, J. H. **Grand Coulee**  
Northwest Science, VI, 83-84, '32
2624. Freeman, O. W. **Columbia River Dams at Bonneville and Grand Coulee**  
Jour. of Geog., XXXV, 234-243, '36
2625. Grimm, C. I. **The Problems Encountered in Locating and Constructing Bonneville Dam**  
Geol. Soc. of the Oregon Country, Geol. News Letter, I, No. 1, 3-4, '35
2626. Hutton, S. E. **The Grand Coulee of the Columbia**  
Reclamation Era, XXIX, No. 3, '39  
U. S. Dept. of Interior, Bureau of Reclamation, Washington, D. C.
2627. Lantz, M. J. **An Analysis of the Proposed Columbia River Power Development**  
Master's Thesis, '32  
Lib., Oregon State College, Corvallis
2628. Magnusson, C. E. **Economic Importance of Grand Coulee High Dam**  
7 p. (mimeo.) ( )  
Washington State Planning Council, Olympia
2629. Magnusson, C. E. **Hydroelectric Power in Washington. Part III, A Brief on Proposed Grand Coulee Dam**  
Engr. Exp. Sta. Bull. No. 78, '35  
University of Washington, Seattle
2630. Pacific Northwest Regional Planning Commission. **Memorandum Regarding Legislation for the Operation and Maintenance of the Bonneville Project**  
23 p. (mimeo.), '36  
Portland, Oreg.
2631. Riggs, H. E. **Economic Aspects of Grand Coulee**  
Electrical World, CVI, 3143-3145, '36
2632. Ross, J. D. **Bonneville and the Northwest**  
(mimeo.), '37  
Bonneville Administration, Portland, Oreg.
2633. Ross, J. D. **First Annual Report of the Bonneville Administrator (Plans and Progress of the Bonneville Project)**  
U. S. Govt. Print. Off., Washington, D. C., '38



2634. United States Department of the Interior, Bureau of Reclamation.  
**Grand Coulee Dam—Columbia Basin Project, Washington**  
Washington, D. C., '38

#### RESEARCH

2635. Dana, H. J. and Lyle, R. E. **Characteristics of Heat Storage in Domestic Electric Heating**  
Engr. Exp. Sta. Bull. No. 49, '36  
State College of Washington, Pullman
2636. Dana, H. J. and Lyle, R. E. **Comparative Heat Loss Tests on Insulated and Uninsulated Buildings in the Electrified Mason City at Grand Coulee Dam Site**  
Engr. Exp. Sta. Bull. No. 45, '35  
State College of Washington, Pullman
2637. Dana, H. J. and Lyle, R. E. **The Feasibility of Using a Heat Storage Device for Domestic Heating with Electricity**  
Engr. Exp. Sta. Bull. No. 46, '35  
State College of Washington, Pullman
2638. Martin, W. H. **Elements of Refrigeration for Small Commercial Plants**  
Engr. Exp. Sta. Circ. No. 3, '35  
Oregon State College, Corvallis
2639. Martin, W. H. **Some Engineering Aspects of Locker and Home Cold-Storage Plants**  
Engr. Exp. Sta. Circ. Series No. 4, 18 p., '38  
Oregon State College, Corvallis

## VII. FISHERIES

Fisheries research is a comparatively recent development in the Pacific Northwest. In fact, it has been only since the beginning of the present century, when a growing concern has been felt for the continuance and welfare of the important commercial and sport fisheries of the region, that scientific studies of the biological and other problems related to these fisheries have been undertaken. Even at the present time, the term "fisheries research" does not have a well-defined meaning. One common, and perhaps somewhat narrow, concept is that it refers to biological and statistical investigations of the habits, life histories, and abundance of fishes. A broader, and perhaps more generally acceptable, interpretation of the term is that it includes research into almost all of the problems confronting the agencies and organizations interested in the conservation of fish life. Therefore, under this broader definition, investigations into fish foods and feeding, lake and stream surveys, fish protection at dams and diversions, methods of artificial propagation, preserving fish and fish products, and several other forms of research are included.

Fisheries research is essentially a field of applied science with most of the work being carried on in the Pacific Northwest by the various state and federal agencies responsible for the conservation of the fisheries resources of that region, although several of the colleges and universities make significant contributions through their faculty members. Problems demanding immediate attention, which can be solved only by scientific investigation, are constantly confronting these conservation organizations, and it is toward the solution of these practical problems that nearly all fisheries research is directed. Since this is the situation prevailing, the trend of this research follows the direction indicated by the problems encountered.

These problems have been many and varied during the past several years. A few of them might be mentioned briefly to illustrate the types of scientific work now being carried on in the field of fisheries conservation. Nearly all of the situations confronting the fisheries administrators are brought about by activities of mankind adversely affecting fish populations. For example, commercial and sport fishing may deplete certain stocks; irrigation, power or flood control developments may destroy spawning areas or prevent the proper migration of anadromous species; or pollution may threaten to destroy important fish populations. In addition to these problems, there are those of procuring food for hatchery fish, combating diseases in hatcheries and providing knowledge of efficient methods for fish packers and handlers.

Studies related to depletion and circumstances arising from that condition are more numerous than any other variety of fisheries studies. Many statistical surveys have been and now are being made by the U. S. Bureau of Fisheries and several state agencies to determine the extent of depletion which has taken place in important stocks of fish in the Pacific Northwest. Research into the life histories and habits and direction and speed of migration of these species has also been undertaken in order to provide the facts necessary for proper regulations where they are needed to prevent depletion or to restore stocks where such a condition has already come about. The numerous problems arising from hatchery operations, such as diseases, proper food, time and place of liberation of the young, and suitability of water supplies, are directly concerned with depletion, since artificial propagation is employed to rehabilitate or maintain stocks of fish which are being subjected to fishing strain, either sport or commercial.

It is extremely fortunate that people have become aware during comparatively recent years of the serious damage which has been done to the fishery resources of the Northwest by power, irrigation, and flood control projects where inadequate fish protection has been provided. Considerable study is now being devoted to these problems and much actual work has been done to remedy these conditions. Progress has also been made in the investigation and abatement of stream and lake pollution.

An important development in the field of commercial fisheries has been the increasingly interstate and international character of the fisheries and the problems incidental to them. Albacore are now being taken from Washington to Southern California, pilchards are caught from San Diego to British Columbia, the fisheries of the Columbia River are definitely interstate in character, the halibut fishery reaches from Northern California to the Bering Sea, and the sockeye runs of the Fraser River are subject to both American and Canadian exploitation. As a result of these situations, several informal cooperative plans of investigation are being carried on by the various agencies involved, and international commissions have been set up for the study and regulation of the sockeye and halibut fisheries.

As was previously mentioned, this type of research is carried on predominately by conservation agencies, colleges and universities. Their work is usually limited in scope by the funds available and the time which can be devoted to the pressing problems at hand. Therefore, there are some rather fundamental problems requiring long time investigations which have not been thoroughly covered. A few examples of these are: Conditions or factors which control the success or failure of various species of trout to live in different types of waters; specific cause and treatment of many diseases of fish; and accurate knowledge of the details of the habits and life histories of some of the less important fish such as sturgeon and Columbia River smelt.

However, it should be recognized that fisheries research has made extremely rapid progress in the Pacific Northwest during the past few years, and certainly the facts discovered by means of these studies have done much to promote and make possible the conservation of the fishery resources of the region.

JOSEPH A. CRAIG.

Bureau of Fisheries,  
U. S. Department of Commerce,  
Seattle, Washington

---

## VII. FISHERIES

### BIOLOGICAL RESEARCH

2640. Chapman, W. M. **Oceanic Fishes from the Northeastern Pacific Ocean Collected by the International Fisheries Commission**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
2641. Chapman, W. M. **The Oxygen Requirements of Chinook and Blueback Salmon and Steelhead Trout**  
(ms.), '38  
Washington State Dept. of Fisheries, Seattle

2642. Dahlgren, E. H. **Further Developments in the Tagging of the Pacific Herring, *Clupea Pallasii***  
Jour. du Conseil, Conseil Permanent International Pour L'Exploration, de la Mer, XI, No. 2, 229-247, '36
2643. Davidson, F. A. **The Development of the Secondary Sexual Characters in Pink Salmon**  
Jour. of Morphology, LVII, 169-183, '34
2644. Davidson, F. A. **Graphical and Mathematical Treatments in Growth Studies**  
Contributions to Marine Biology, 246-252, '30  
Stanford University Press, Calif.
2645. Davidson, F. A. **The Homing Instinct and Age at Maturity of Pink Salmon**  
U. S. Bureau of Fisheries Bull., XLVIII, No. 15, 27-40, '34
2646. Davidson, F. A. **Migration and Homing of Pacific Salmon**  
Science, LXXXVI, 55-56, '37
2647. Davidson, F. A. **Research Projects of the United States Bureau of Fisheries in the Northwest**  
Northwest Science, IX, No. 1, 15-18, '35
2648. Davidson, F. A. **Temporary High Carbon Dioxide Content in an Alaskan Stream at Sunset**  
Ecology, XIV, 238-240, '33
2649. Davidson, F. A. and Christey, L. S. **The Migrations of Pink Salmon in Southeastern Alaska**  
Bull. No. 25, '38  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2650. Davidson, F. A. and Hutchinson, S. J. **The Geographical Distribution and Environmental Limitations of the Pacific Salmon**  
Bull. No. 26, '38  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2651. Davidson, F. A. and Shostrom, E. O. **Physical and Chemical Changes in the Pink Salmon During the Spawning Migration**  
Investigational Rept. No. 33, '36  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2652. Davidson, F. A. and Vaughan, A. E. **Cyclic Changes in Time of Southeastern Alaska Pink Salmon Runs**  
Pacific Fisherman, Feb., March, April, '39  
Seattle, Wash.
2653. Fish, F. F. **The Bacterial Diseases of Fish**  
Progressive Fish Culturist, No. 5, '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2654. Fish, F. F. **The Bureau of Fisheries' Disease Service**  
Progressive Fish Culturist, No. 8, '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2655. Fish, F. F. **Disease Prevention in the Trout Hatchery**  
Progressive Fish Culturist, '39  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2656. Fish, F. F. **Furunculosis in Wild Trout**  
Copeia, No. 2, 37-40, '37

2657. Fish, F. F. **Notes on Myxobolus Inornatus, n. sp., A Myxosporidian Parasitic in the Black Bass (*Huro Floridana*)**  
Trans. of Am. Fisheries Soc., LXVIII, '39
2658. Fish, F. F. **Observations on Henneguya Salminicola, Ward, a Myxosporidian Parasitic in the Pacific Salmon**  
Jour. of Parasitology, '39
2659. Fish, F. F. **The Protozoan Diseases of Hatchery Fish**  
Progressive Fish Culturist, No. 6, '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2660. Fish, F. F. **Simplified Methods for the Prolonged Treatment of Fish Diseases**  
Trans. of the Am. Fisheries Soc., LXVIII, '39
2661. Fish, F. F. **Ulcer Disease of Trout**  
Trans. of the Am. Fisheries Soc., LXIV, 252-258, '34
2662. Fish, F. F. **A Western Type of Bacterial Gill Disease**  
Trans. of the Am. Fisheries Soc., LXV, 85-87, '35
2663. Fraser, C. McL. **A Comparison of the Marine Fauna of the Nanaimo Region with that of the San Juan Archipelago**  
Trans., Royal Soc. Canada, XXVI, No. 3, Sec. 5, 49-70, '32
2664. Fraser, C. McL. **Hydroid Distribution in the Northeastern Pacific**  
Trans., Royal Soc. Canada, XXXII, No. 3, Sec. 5, 39-42, '38
2665. Fraser, C. McL. **Hydroid Distribution in the Vicinity of the Queen Charlotte Islands**  
Canadian Field-Naturalist, L, No. 7, 122-126, '36
2666. Fraser, C. McL. **Hydroids from the West Coast of Vancouver Island**  
Canadian Field-Naturalist, XLIX, No. 9, 143-145, '35
2667. Fraser, C. McL. **Hydroids of the Pacific Coast of Canada and the United States**  
Univ. of Toronto Press, 207 p., 44 plates, '37
2668. Fraser, C. McL. **The Razor Clam, *Siliqua Patula* (Dixon) of Graham Island, Queen Charlotte Group**  
Trans., Royal Soc. Canada, XXIV, No. 3, Sec. 5, 141-154, '30
2669. Fraser, C. McL. **The Relation of the Marine Fauna to the Physiography of the West Coast of the Queen Charlotte Islands**  
Canadian Field-Naturalist, LII, No. 6, 88-93, '38
2670. Fraser, C. McL. **Report of the Standing Committee on the Oceanography of the Pacific—British Columbia**  
Fifth Pacific Science Cong., 307-317, '33
2671. Hubbard, C. A. **Fact and Fancy About Crater Lake Fish**  
(ms.), '34  
U. S. National Park Service Library, Washington, D. C.
2672. Johnson, N. W. **Seasonal Distribution of Plankton at Friday Harbor, Washington**  
Univ. of Wash. Publ. in Oceanography, I, No. 1, 1-38, '32
2673. Kask, J. L. **Studies in Migration Fishing Mortality and Growth in Length of the Pacific Halibut from Marking Experiments**  
Ph. D. Thesis, '36  
Lib., University of Washington, Seattle

2674. Long, J. B. **Spawning and Migratory Habits of Columbia River Steel-head Trout as Determined by Scale Studies**  
Undergraduate Thesis, '36  
Lib., Reed College, Portland, Oreg.
2675. Phifer, L. D. **Phytoplankton of East Sound, Washington, February to November, 1932**  
Univ. of Wash. Publ. in Oceanography, I, No. 4, 97-110, '34
2676. Phifer, L. D. **Seasonal Distribution and Occurrence of Planktonic Diatoms at Friday Harbor, Washington**  
Univ. of Wash. Publ. in Oceanography, I, No. 2, 39-82, '33
2677. Phifer, L. D. **Vertical Distribution of Diatoms in the Strait of Juan de Fuca**  
Univ. of Wash. Publ. in Oceanography, I, No. 3, 83-96, '34
2678. Rich, W. R. **The Biology of the Columbia River Salmon**  
Northwest Science, IX, No. 1, 3-14, '35
2679. Richan, F. J. **What Becomes of Fish After They Are Planted?**  
Progressive Fish Culturist, XXIII, 26-29, '36  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2680. Rounsefell, G. A. **The Existence and Causes of Dominant Year Classes in the Alaska Herring**  
Contributions to Marine Biology, 260-270, '30  
Stanford University, Calif.
2681. Rounsefell, G. A. and Dahlgren, E. H. **Races of Herring, *Clupea Pallasii*, in Southeastern Alaska**  
U. S. Bureau of Fisheries Bull., XLVIII, 119-140, '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2682. Rounsefell, G. A. and Dahlgren, E. H. **Tagging Experiments on the Pacific Herring**  
Jour. du Conseil, Conseil Permanent International Pour L'Exploration, de La Mer, VIII, No. 3, 371-384, '33
2683. Schaefer, M. B. **Contribution to the Life History of the Surf Smelt, *Hypomesus Pretiosus*, in Puget Sound**  
Biol. Rept. No. 35B, 1-45, '36  
Washington State Dept. of Fisheries, Seattle
2684. Schaefer, M. B. **Preliminary Observations on the Reproduction of the Japanese Common Oyster, *Ostrea Gigas*, in Quilcene Bay, Washington**  
Biol. Rept. No. 36E, 1-36, '38  
Washington State Dept. of Fisheries, Seattle
2685. Schaefer, M. B. **The Present Status of the Razor Clam Stocks of the State of Washington**  
Biol. Rept., '39  
Washington State Dept. of Fisheries, Seattle
2686. Shaw, J. N., Simms, B. T. and Muth, O. H. **Some Diseases of Oregon Fish and Game**  
Agr. Exp. Sta. Bull. No. 322, '34  
Oregon State College, Corvallis
2687. Smith, R. T. **Observations on the Shrimp Fishery of Puget Sound**  
Biol. Rept. No. 36D, 1-11, '37  
Washington State Dept. of Fisheries, Seattle

2688. Thompson, T. G. and Phifer, L. D. **The Plankton and the Properties of the Surface Waters of the Puget Sound Region**  
Univ. of Wash. Publ. in Oceanography, I, No. 5, 111-134, '36
2689. Van Cleve, R. **Distribution and Early Life History of the Halibut**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
2690. Van Cleve, R. and Thompson, W. F. **Life History of the Pacific Halibut**  
Rept. of International Fisheries Comm., No. 9, 1-184, '36  
Washington, D. C.
2691. Van Cleve, R., Thompson, T. G. and McEwen, G. F. **Hydrographic Sections and Calculated Currents in the Gulf of Alaska**  
Rept. of International Fisheries Comm., No. 10, p. 32, '36  
Washington, D. C.

#### CONSERVATION AND PROPAGATION

2692. Bell, F. T. **Solving the Fishery Conservation Problem**  
American Forests, XLII, 124-125, '36
2693. Bell, M. C. and Chapman, W. M. **Studies of the Efficiency of Fish Screens in Relation to Various Species of Salmonoid Fishes**  
(ms.), '35  
Washington State Dept. of Fisheries, Seattle
2694. Clackamas County, Oregon, Planning Board. **Fish Life Conservation and Construction of Dam on Clackamas River**  
Oregon City, Oreg.
2695. Craig, J. A. **Effects of Power and Irrigation on the Migratory Fish of the Columbia River**  
Northwest Science, IX, No. 1, 19-22, '35
2696. Davidson, F. A. **Conservation of Alaska Salmon Fisheries**  
U. S. Military Engineer, March '39  
Washington, D. C.
2697. Davidson, F. A. **Why It's Important to Protect Our Salmon**  
Alaska Life Magazine, Feb. '39  
Seattle, Wash.
2698. Dimick, R. E. and Mote, D. C. **Preliminary Survey of the Food of Oregon Trout**  
Agr. Exp. Sta. Bull. No. 323, '34  
Oregon State College, Corvallis
2699. Donaldson, L. R. **The Use of Salmon By-Products as Food for Young King Salmon**  
Trans. of Am. Fisheries Soc., LXV, 165-171, '35
2700. Donaldson, L. R. and Foster, F. J. **A Summary Table of Some Experimental Tests in Feeding Young Salmon and Trout**  
Trans. of Am. Fisheries Soc., LXVII, 262-270, '37
2701. Erickson, A. and Townsend, L. D. **Progress Report of Field Investigations and Research**  
Washington State Dept. of Public Health, Seattle, '39
2702. Fish, F. F. **The Chemical Disinfection of Trout Ponds**  
Trans. of Am. Fisheries Soc., LXIII, 158-163, '33

2703. Fish, F. F. **Founders of Fish Culture—European Origins**  
Progressive Fish Culturist, No. 16, '36  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2704. Fish, F. F. **The Microscope in the Hatchery**  
Progressive Fish Culturist, No. 3, '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2705. Foster, F. J. **Methods of Feeding**  
Progressive Fish Culturist, IV, 8 ff., '35  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2706. Foster, F. J. and Donaldson, L. R. **Notes on the Use of Kelp Meat in Diets of Young Salmon**  
Progressive Fish Culturist, XXVII, 3-7, '37  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2707. Foster, F. J. and Donaldson, L. R. **Use of Oat Flour with Salmon Meal in Diet of Fingerling Salmon**  
Progressive Fish Culturist, XXXII, 1-6, '37  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2708. Foster, F. J. and Woodbury, L. **Use of Malachite Green as a Fish Fungicide and Antiseptic**  
Progressive Fish Culturist, XVIII, 7-9, '36  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2709. Freeman, M. **Consideration of Fisheries in Water Conservation and Development**  
Proc. of Pacific Northwest Regional Planning Conf., III, 79-81, '36  
Portland, Oreg.
2710. Griffin, L. E. **Certainties and Risks Affecting Fisheries Connected with Damming the Columbia River**  
Northwest Science, IX, No. 1, 25-30, '35
2711. Holmes, H. B. **Proposed Methods of Protecting Migratory Fishes at the Bonneville Dam**  
Northwest Science, IX, No. 1, p. 32, '35
2712. Josephine County, Oregon, Planning Commission. **Study of Fish Conservation and Propagation**  
Grants Pass, Oreg.
2713. Kelez, G. B. **Relation of Size of Release to Proportionate Return of Hatchery-Reared Coho (Silver) Salmon**  
Progressive Fish Culturist, No. 41, '37  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2714. O'Malley, H. **Some Problems Which Confront the Fishery Experts in the Construction of Dams in the Inland Empire**  
Northwest Science, IX, No. 1, 23-24, '35
2715. Royal, L. A., Chapman, W. M. and Bell, M. C. **Report of the Preliminary Investigations into the Possible Methods of Preserving the Columbia River Salmon and Steelhead at the Grand Coulee Dam**  
121 p., '38  
Washington State Dept. of Fisheries, Seattle
2716. Thompson, W. F. **Conservation of the Pacific Halibut, An International Experiment**  
Smithsonian Rept. for 1935, 361-382, '36  
University of Washington, Seattle



2717. United States War Department, Corps of Engineers. **Fishways at Bonneville Dam**  
Office of District Engineer, Bonneville, Oreg., '38

### ECONOMIC ASPECTS

2718. Anderson, A. W. **Profit Possibilities in Salmon Waste**  
Pacific Fisherman, XXXV, No. 1, 20-21, '37  
University of Washington, Seattle
2719. Chapman, W. M., Smith, R. T. and Ellis, C. H. **The 1935 Salmon Fishery in the State of Washington with the Daily Statistics of the Catch**  
Biol. Rept. No. 35A, 1-27, '36  
Washington State Dept. of Fisheries, Seattle
2720. Ellis, C. H., Schaefer, M. B. and Erickson, D. W. **Statistics of the 1936 Salmon Fishery in the State of Washington**  
Biol. Rept. No. 36A, 1-12, '37  
Washington State Dept. of Fisheries, Seattle
2721. Harrison, R. W. **By-Products Show Increased Value and Importance to the Fisheries**  
Fishing Gazette, LIII, No. 10, p. 10, '36  
University of Washington, Seattle
2722. Hayden, M. V. **History of the Salmon Industry in Oregon**  
Master's Thesis, '30  
Lib., University of Oregon, Eugene

### FISHING INDUSTRY

2723. Adams, J. Q. **The Pacific Coast Halibut Fishery**  
Econ. Geog., XI, 247-257, '35
2724. Alaska Planning Council. **Fisheries of Alaska**  
Juneau, Alaska, '38
2725. Alexander, G. J. **The Commercial Salmon-Fisheries of British Columbia**  
50 p., '38  
Provincial Fisheries Dept., Victoria, B. C.
2726. Allen, E. W. **North Pacific Fisheries**  
Northwest Conservationist, I, No. 4, '38
2727. Brennan, B. M. **Fishery Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 75-77, '37  
Portland, Oreg.
2728. Carrothers, W. A. **The Fishing Industry of British Columbia**  
(ms.) ( )  
Victoria, B. C.
2729. Castillo, M. M. **An Industrial Resume of the Minor Fish Industries of the Pacific Northwest**  
Master's Thesis, '36  
Lib., University of Washington, Seattle

2730. Chapman, W. M. **The Pilchard Fishery of the State of Washington in 1936 with Notes on the Food of the Silver and Chinook Salmon Off the Washington Coast**  
Biol. Rept. No. 36C, 1-30, '36  
Washington State Dept. of Fisheries, Seattle
2731. Cobb, J. N. **Pacific Salmon Fisheries**  
Doc. No. 1092, '30  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2732. Craig, J. A. and Hacker, R. L. **The History and Development of the Fisheries of the Columbia River**  
(ms.), '38  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2733. Craig, J. A., Harrison, R. W. and Foster, F. J. **Columbia Basin Report, Appendix J: Fisheries**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2734. Davidson, F. A. and Hutchinson, S. J. **The Geographic Distribution and Environmental Limitations of the Pacific Salmon**  
Bull. No. 26, '38  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2735. DeLoach, D. B. **The Salmon Canning Industry**  
Economic Studies, I, '39  
Oregon State College, Corvallis
2736. Donaldson, L. R. and Foster, F. J. **Processing of Fishery Products into Fish Food**  
Progressive Fish Culturist, XIX, 1-5, '36  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2737. Fraser, C. McL. **Commercial Clams of British Columbia**  
Repts. of Pacific Biological Sta., Nanaimo, B. C. and Fisheries Exp. Sta., Prince Rupert, B. C., No. 6, 9-12, '30
2738. Freeman, O. W. **Salmon Industry of the Pacific Coast**  
Econ. Geog., 109-129, April '35
2739. Hetherton, P. **Columbia Basin Report, Appendix K: Fisheries, Processing Industries**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2740. Ledgerwood, E. **Report on Investigation of Rogue River**  
(ms.), '36  
Oregon State Fish Commission, Portland
2741. Lynch, R. W. **Salmon Canning Industry of the Pacific Coast**  
Jour. of Geog., XXXII, No. 9, '33
2742. Murray, T. B. **Sturgeon: In the Snake River**  
Northwest Science, X, No. 1, 13-15, '36
2743. Oregon State Planning Board. **Commercial Fishing Operations on the Columbia River**  
73 p. (mimeo.), '38  
Portland, Oreg.
2744. Rounsefell, G. A. **Contribution to the Biology of the Pacific Herring, Clupea Pallasii, and the Condition of the Fishery in Alaska**  
U. S. Bureau of Fisheries Bull., XLV, 227-230, '30  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.

2745. Rounsefell, G. A. **Fluctuations in the Supply of Herring, *Clupea Pallasii*, in Southeastern Alaska**  
U. S. Bureau of Fisheries Bull., XLVIII, 15-56, '31  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2746. Rounsefell, G. A. and Dahlgren, E. H. **Fluctuations in the Supply of Herring, *Clupea Pallasii*, in Prince William Sound, Alaska**  
U. S. Bureau of Fisheries Bull., XLVII, 263-291, '32  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2747. Rounsefell, G. A. and Kelez, G. B. **The Salmon and Salmon Fisheries of Swiftsure Bank, Puget Sound and the Fraser River**  
Bull. No. 27, 693-823, '38  
U. S. Dept. of Commerce, Bureau of Fisheries, Washington, D. C.
2748. Thompson, W. F. **Effective Curtailment Imperative for Pacific Halibut Fleet**  
Pacific Fisherman, 254-255, '38
2749. United States Congress, House, Committee on Merchant Marine and Fisheries. **Alaska Salmon Fishery**  
U. S. Govt. Print. Off., Washington, D. C., '38
2750. United States Department of Commerce, Bureau of Fisheries. **Alaska Fisheries and Fur Industries**  
U. S. Govt. Print. Off., Washington, D. C., '38
2751. United States Department of Commerce, Bureau of Fisheries. **Pacific Salmon Oils**  
Investigational Rept. No. 40, '39  
U. S. Govt. Print. Off., Washington, D. C.,
2752. Washington State Planning Council. **The Fishery Resources of Washington**  
Olympia, Wash., '37

#### POLITICAL ASPECTS

2753. Bell, F. H. **Effect of Regulation upon the Halibut Fleet**  
Pacific Fisherman Statistical Yearbook, XXXV, No. 2, p. 220, 222, '37  
University of Washington, Seattle
2754. Dunlop, H. A. **The Halibut Fishery under Regulation**  
Western Fisheries, XIII, No. 3, p. 11, '37  
University of Washington, Seattle
2755. Freeman, M. **The Pending International Sockeye Salmon Treaty**  
8 p. (mimeo.), '35  
Washington State Planning Council, Olympia
2756. Gregory, H. E. and Barnes, K. **Alaska Salmon in World Politics**  
Far Eastern Survey, VII, No. 5, 47-53, '38
2757. Institute of Pacific Relations. **Alaska Salmon in World Politics**  
Far Eastern Survey, VII, '38
2758. Institute of Pacific Relations. **The Clash of Fishing Interests in the Pacific**  
Far Eastern Survey, V, '36

## VIII. HUMAN RESOURCES AND PROBLEMS

The list of titles in this section gives some indication of the nature and extent of the recent efforts made to gain a better understanding of the human resources of this Pacific Northwest region. At first glance, this list seems impressive for it covers a wide field and makes clear the fact that many students have been at work collecting materials concerning social conditions and problems. And, in fact, these studies do reveal a remarkable interest in a field that ordinarily tends to be neglected in a comparatively new region concerned primarily with the development of its material resources.

An excellent beginning has been made in population studies. Nearly half the titles deal with an analysis of the population, its growth, distribution, composition, and mobility. The problems of labor and unemployment have also attracted the attention of students, and some valuable contributions have been published in this field. A few social surveys of communities have appeared, but on the whole this type of study is notably lacking. Comparatively little emphasis has been placed on studies of poverty, crime, and social disorganization in towns and cities. Fortunately, county, state, and regional planning boards have included analyses of social conditions in some of their published surveys.

In the further development of social research in the Pacific Northwest, efforts should be made to fill in the obvious gaps in our knowledge and build up a well-balanced plan of study of the wide variety of social problems that confront the people in this region. The leaders in every city and county should have available for their guidance facts concerning unemployment, labor conditions, poverty and relief, crime, juvenile delinquency, housing conditions, public health and sanitation, commercial amusements, public recreation facilities, and the status and programs of organizations and agencies, both public and private, that deal with social conditions and problems. It is obvious that these data must be kept up-to-date if they are to be of practical use. A research program that would meet existing needs should include at least the revision at appropriate intervals of employment, relief, and crime indices for the leading population centers and a re-survey of the progress made in building up essential social organizations and institutions.

It is highly important also that adequate steps should be taken to give special attention to the study of emergent problems that for one reason or another vitally affect public welfare. One such problem is the recent migration into the Pacific Northwest of many people from other parts of the country. The valuable studies that have already been made of this migration have been handicapped by the lack of readily accessible data. It is not sufficient to know merely the number of the migrants and the places where they settle. Information should be made available concerning the composition and characteristics of this migratory population, the occupational adjustments they are able to make, and their degree of success in incorporating themselves into community life. To gain such an understanding of our recent migrants is a task that should not be neglected.

This is but one example of the important social problems that we now face in the Pacific Northwest. If social research is to keep pace with technological progress, there must be full cooperation of our various agencies for research throughout the entire region.

J. F. STEINER.

Department of Sociology,  
University of Washington,  
Seattle, Washington.

## VIII. HUMAN RESOURCES AND PROBLEMS

### FORMS OF SETTLEMENT

2759. Cuthbert, F. A. **Ribbon Developments—A Roadside Problem**  
Commonwealth Review, XIX, 214-217, '37  
University of Oregon Publications, Eugene
2760. Dickson, B. L. **The "Why" of Spokane**  
Jour. of Geog., XXX, 151 ff., '31
2761. Herst, H., Jr. **The Geographical Expansion of Portland, Oregon**  
Undergraduate Thesis, '31  
Lib., Reed College, Portland, Oreg.
2762. Howay, F. W. (ed.). **An Early Colonization Scheme in British Columbia**  
British Columbia Hist. Quart., II, 51-64, '38
2763. Howay, F. W. **Early Settlement in Burrard Inlet**  
British Columbia Hist. Quart., I, 101-114, '37
2764. Johnson, E. C. **The Subsistence Homestead Movement**  
Proc. of Pacific Northwest Regional Planning Conf., I, 74-78, '34  
Portland, Oreg.
2765. Jones, S. B. **Mining and Tourist Towns in the Canadian Rockies**  
Econ. Geog., IX, 268-278, '33
2766. Martin, R. R. **Village Changes in the Pacific Northwest**  
Social Forces, XV, 536-542, '37
2767. Portland, Oregon, Chamber of Commerce. **Report of Committee on Subsistence Homesteads Projects**  
8 p. (mimeo.), '33
2768. Sage, W. N. **Vancouver: The Rise of a Modern City**  
Dalhousie Rev., XVII, 49-54, '31
2769. United States Department of Agriculture, Farm Security Administration. **Homesteads**  
14 p. (ms.), '38  
Portland, Oreg.
2770. United States National Resources Committee. **Our Cities—Their Role in the National Economy**  
87 p., 3 pts., '37  
U. S. Govt. Print. Off., Washington, D. C.

### LABOR AND EMPLOYMENT

2771. Adamson, R. K. and West, Miriam E. **Productivity and Employment in Selected Industries—Beet Sugar**  
Rept. No. N-1, 190 p., '38  
U. S. Works Progress Administration, Washington, D. C.
2772. Albert, A. L. **Communication Engineering Careers**  
Telephony, CXIV, 13-16, '38
2773. Baker, O. E. **The Outlook for Labor and Land Use in Agriculture**  
(mimeo.), '32  
U. S. Chamber of Commerce, Washington, D. C.

2774. Benedict, M. I., Hopkins, W. S., Moment, S. and Wood, L. A. **Agricultural Labor in the Pacific Coast States**  
Rept. of Sub-Committee on Seasonal Agriculture in the West to Pacific Coast Regional Committee of Social Science Research Council  
230 Park Avenue, New York City
2775. Brown, C. **The Teamsters' Union in Seattle**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
2776. Buechel, H. T. **Labor Relations in the West Coast Lumber Industry, 1935**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
2777. Cline, M. **A Study of Criminal Syndicalism in Oregon**  
(ms.), '32  
Lib., Reed College, Portland, Oreg.
2778. Coos County, Oregon, Planning Commission. **Employment Survey in the County, Including Payroll Statistics**  
Coquille, Oreg.
2779. Douglas County, Oregon, Planning Commission. **Works Progress Administration Labor Survey in the County**  
Roseburg, Oreg.
2780. Drew, Mary S. **Part-Time Employment for Women in Seattle, 1929-1937**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
2781. Elberson, I. D. **Labor Relations in the Puget Sound Flour Milling Industry**  
Master's Thesis, '36  
Lib., University of Washington, Seattle
2782. Foisie, F. P. **Decasualizing Longshore Labor and the Seattle Experience**  
Pamphlet, '34  
Waterfront Employers Assoc., Seattle, Wash.
2783. Hillman, A. **Unemployed Citizens' League of Seattle**  
Master's Thesis, '34  
Lib., University of Washington, Seattle
2784. Hoffman, C. S. **Preliminary Information Concerning Employment of Berry Pickers in the Gresham Berry District**  
Agr. Exp. Sta. Circ. of Infor. No. 152, 10 p. (mimeo.), '36  
Oregon State College, Corvallis
2785. Hoffman, C. S. **Statistical Data Regarding Farm Labor in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 151, 9 p., '36  
Oregon State College, Corvallis
2786. Hopkins, W. S. **Seasonal Employment and Unemployment Compensation**  
Proc. of Pacific Coast Economic Assoc., 1-4, 40-42, '36
2787. Hopkins, W. S. **Seasonal Unemployment in the State of Washington**  
Publ. in the Soc. Sci., VII, No. 3, 81-161, '36  
University of Washington, Seattle

2788. Hoskins, O. **Some Aspects of Oregon Labor Organization from 1853 to 1902**  
(ms.), '35  
Lib., Reed College, Portland, Oreg.
2789. Landis, P. H. **Seasonal Agricultural Labor in the Yakima Valley**  
Monthly Labor Review, XLV, No. 2, 301-311, '37  
U. S. Dept. of Labor, Bureau of Labor Statistics, Washington, D. C.
2790. Landis, P. H. **Social Aspects of Farm Labor in the Pacific States**  
Rural Sociology, III, 421-433, '38
2791. Landis, P. H. and Brooks, M. S. **Farm Labor in the Yakima Valley, Washington**  
Agr. Exp. Sta. Bull. No. 343, 75 p., '36  
State College of Washington, Pullman
2792. Landis, P. H. and Wakefield, R. **The Annual Employment Cycle of Farm Labor Households**  
Agr. Exp. Sta. Bull. (mimeo.), Rural Sociology Series in Farm Labor, No. 2  
State College of Washington, Pullman
2793. Miller, F. G. **An Occupational Study of Graduates in Forestry from the University of Idaho**  
Jour. of Forestry, XXIX, No. 4, p. 616, '31
2794. Oregon State Board of Vocational Education. **History and Development of Organized Labor**  
Salem, Oreg.
2795. Pearce, J. K. **The Placing of Graduate and Undergraduate Forest School Students in Private Industry**  
Proc. of 16th Annual Washington State Forestry Conf., '37  
University of Washington, Seattle
2796. Potter, A. R. and Staff. **Occupational Characteristics of Unemployed Persons in Cities of 11,000 or More Population**  
Washington Emergency Relief Commission, Olympia, '35
2797. Potter, Wilma B. **Occupations in the State of Idaho**  
Master's Thesis, '33  
Lib., University of Idaho, Moscow
2798. Rademaker, J. **Employment Index for Washington**  
Master's Thesis, '33  
Lib., University of Washington, Seattle
2799. Rettie, J. C. and Sexton, V. L. **A Study of Industrial Employment in Oregon**  
96 p. (mimeo.), '38  
Oregon State Planning Board, Portland
2800. Robinson, Lucy M. C. **The Unemployables; A Study of Unemployable Cases Receiving General Public Assistance in Spokane County, Washington, May 1 to August 1, 1938**  
Olympia, Wash.
2801. Rogers, J. L. **Pacific Coast Longshoremen, A Survey of Union Activities, 1933 to 1937**  
Undergraduate Thesis, '37  
Lib., Reed College, Portland, Oreg.

2802. Rubin, S. **Survey of Youth in the Labor Market**  
(mimeo.), '39  
U. S. Works Progress Administration, Div. of Social Research,  
Seattle, Wash.
2803. Rubin, S. **Wages and Occupations of Employed Seattle Youth**  
Seattle Youth Survey (mimeo.), '39  
U. S. Works Progress Administration, Div. of Social Research,  
Seattle, Wash.
2804. Shelton, Celia D. **Progress Report Junior Employment and Counseling Service, January 18 to August 18, 1938**  
37 p. (mimeo.), '38  
Seattle Public Schools, Seattle, Wash.
2805. Smythe, L. T. **The Lumber and Sawmill Workers Union in British Columbia**  
M. A. Thesis, '37  
Lib., University of Washington, Seattle
2806. Stewart, B. **Seasonal Employment and Unemployment Compensation in Oregon**  
Reed College, Portland, Oreg., '35
2807. Tanner, Louise. **Industrial Relations in the Logging Camps of the Northwest from 1900 to 1932**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
2808. Thompson, D. L. **The Problem of Unemployment**  
24 p., '36  
Keystone Printing Company, Spokane, Wash.
2809. United States Department of Commerce. **Census of Partial Employment, Unemployment and Occupations: 1937 (Final Report)**  
135 p., '38  
Washington, D. C.
2810. United States Department of Labor, Bureau of Labor Statistics. **Handbook of Labor Statistics, 1936**  
Bull. No. 616, 1141 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
2811. United States Department of Labor, Bureau of Labor Statistics. **Occupational Changes Since 1850 as Shown by Census Reports**  
Monthly Labor Review, XXXVII, 1017-1027, '33  
Washington, D. C.
2812. Wakefield, R. **A Study of Seasonal Farm Labor in the Yakima Valley, Washington**  
Master's Thesis, '38  
State College of Washington, Pullman
2813. Washington State Department of Social Security, King County Advisory Committee. **Household Employment in Seattle**  
81 p. (mimeo.), '37  
Olympia, Wash.
2814. Washington State Department of Social Security, Whatcom County Advisory Committee. **Occupational Characteristics of Unemployed Persons in Whatcom County**  
13 p. (mimeo.), '37  
Olympia, Wash.



2815. Westine, C. G. **The Seattle Teamsters**  
Master's Thesis, '36  
Lib., University of Washington, Seattle
2816. White, H. H. **A Survey of the Demand for Agricultural Labor in Oregon**  
187 p. (mimeo.), '37  
Oregon State Planning Board, Portland

#### MIGRATION

2817. Bell, R. E. **A Survey of the Current Migration of Settlers from the Drought Areas into Idaho, Oregon, and Washington**  
(mimeo.), '36  
\*U. S. Dept. of Agriculture, Resettlement Administration, Region 11, Portland, Ore.
2818. Breithaupt, L. **Preliminary Data Concerning an Immigrant Family Survey in Oregon, January, 1930 to November, 1936**  
Agr. Exp. Sta. Circ. of Infor. No. 164, 10 p. (lith.), '37  
Oregon State College, Corvallis
2819. Breithaupt, L. R. and Hoffman, C. S. **Preliminary Information Concerning Immigration into Rural Districts in Oregon, January, 1933 to June, 1936**  
Agr. Exp. Sta. Circ. of Infor. No. 157, 8 p. (mimeo.), '36  
Oregon State College, Corvallis
2820. Duffy, W. A. **Westward Migration of Farm Families**  
(mimeo.), '36  
\*U. S. Dept. of Agriculture, Resettlement Administration, Region 11, Portland, Ore.
2821. Goodrich, C. **The Wage-Earner in the Westward Movement**  
Political Science Quarterly, LI, 61-116, '36
2822. Goodrich, C., Allen, B. W., Thornthwaite, C. W. and Others. **Migration and Economic Opportunity; The Report of the Study of Population Redistribution**  
763 p., '36  
University of Pennsylvania Press, Philadelphia
2823. Gross, J. E. **Early Emigration of the Oregon Trail**  
M. A. Thesis, '31  
Lib., University of Oregon, Eugene
2824. Hathway, M. **The Migratory Worker and Family Life; the Mode of Living and Public Provision for the Needs of the Family of the Migratory Worker in Selected Industries of the State of Washington**  
Univ. of Chicago Soc. Serv. Monographs, No. 21, 240 p., '34  
University of Chicago Press, Chicago, Ill.
2825. Haw, J. W. **Current Land Migration Problems**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 63-64, '37  
Portland, Ore.
2826. Hoffman, C. **Drought and Depression Migration into Oregon, 1930-36**  
Monthly Labor Review, '38  
U. S. Dept. of Labor, Bureau of Labor Statistics, Washington, D. C.

\* Now secured from the Farm Security Administration, Portland, Ore.

2827. Hoffman, C. S. **Mobility and Migration of Rural Relief Households in Six Oregon Counties**  
Agr. Exp. Sta. Circ. of Infor. No. 155, 8 p., '36  
Oregon State College, Corvallis
2828. Howay, F. W. **The Negro Immigration into Vancouver Island in 1858**  
British Columbia Hist. Quart., II, 101-114, '39
2829. Kraenzel, C. F. **Population Mobility in Selected Montana Farm Communities, 1925-37**  
Agr. Exp. Sta. Bull., '39  
Montana State College, Bozeman
2830. Landis, P. H. **Rural Immigrants to Washington State, 1932-36**  
Agr. Exp. Sta. Rural Soc. Series in Pop. No. 2, 21 p. (mimeo.), '36  
State College of Washington, Pullman
2831. Landis, P. H. and Reuss, C. **Interstate Movement of Washington Farm Population during 1937**  
Agr. Exp. Sta. Bull. (mimeo.), '38  
State College of Washington, Pullman
2832. Landis, P. H., Reuss, C. and Wakefield, R. **Migratory Farm Labor and the Hop Industry on the Pacific Coast**  
Agr. Exp. Sta. Bull. No. 363, 64 p., '38  
State College of Washington, Pullman
2833. Landis, P. H. and Wakefield, R. **Types of Migratory Farm Laborers and Their Movements into the Yakima Valley, Washington**  
(ms.), '38  
State College of Washington, Pullman
2834. Lane, N. **The Dust Farmer Goes West**  
Land Policy Review, May-June, I, '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.
2835. McEntire, D. **Migrants and Resettlement in the Pacific Coast States**  
Land Policy Review, 1-6, July-August, '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.
2836. Montana State College. **A Study of the Mobility of Families**  
Montana WPA, WP 1691  
Montana State College, Bozeman
2837. Moore, E. H. **Patterns of Age, Sex and Direction in Net White Mobility Streams**  
Proc. of Pacific Sociological Society, '39
2838. Mund, V. A. **Migration to the Pacific Northwest and Social Planning**  
Proc. of Pacific Coast Econ. Assoc. (mimeo.), '37
2839. Pacific Northwest Regional Planning Commission. **Problems of Migration, Land Reclamation, and Resettlement**  
10 p. (mimeo.), '37  
Portland, Oreg.
2840. Pacific Northwest Regional Planning Commission. **Recent Migration into the Pacific Northwest**  
38 p. (mimeo.), '38  
Portland, Oreg.

2841. Reuss, C. F. **The Pioneers of Lincoln County: A Study in Historical Migration**  
(ms.), '38  
State College of Washington, Pullman
2842. Selby, H. E. **Guiding New Settlers from Drought Areas**  
Land Policy Circular, 17-20, '36  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Washington, D. C.
2843. Selby, H. E. **Suggestions to Prospective Settlers in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 120 (mimeo.), '35  
Oregon State College, Corvallis
2844. Smick, A. A. **A Study of Farm Migrations in Selected Communities in the State of Washington**  
Master's Thesis, '29  
Lib., State College of Washington, Pullman
2845. Smith, C. **Aspects of Current Land Migration**  
Proc. of Pacific Northwest Regional Planning Conf., IV, p. 65, '37  
Portland, Oreg.
2846. Stanbery, V. B. **Determination of Interstate Migration from U. S. Census Data**  
(mimeo.), '39  
Oregon State Planning Board, Portland
2847. Stanbery, V. B. **Migration into Oregon 1930-37. Vol. 1. Net Migration and Population Estimates**  
96 p. (mimeo.), '38  
Oregon State Planning Board, Portland
2848. Studholme, E. **The Role of Propaganda in Early Migration to the Oregon Country**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
2849. Taylor, P. S. **Migratory Agricultural Workers on the Pacific Coast**  
American Sociological Review, '38
2850. United States Department of Agriculture, Farm Security Administration, Region 11. **Drouth Migrants and Seasonal Agricultural Workers of the Pacific Northwest**  
9 p. (mimeo.) ( )  
Portland, Oreg.
2851. \*United States Department of Agriculture, Resettlement Administration, Region 11. **Suggestions to Prospective Settlers in Idaho, Washington and Oregon**  
(mimeo.), '36  
Portland, Oreg.
2852. United States Department of Labor. **Migration of Workers (Two Volumes)** Bibliography in Vol. II  
75th Cong., 1st sess., '38 (Pursuant to S. Res. 298)  
U. S. Govt. Print. Off., Washington, D. C.
2853. United States Federal Emergency Relief Administration, Division of Research, Statistics, and Finance. **Occupational Distribution of Transient Unemployed, February, 1935**  
Bull. (Transients) No. 6, 13 p., '35  
U. S. Works Progress Administration, Washington, D. C.

\* Now secured from Farm Security Administration, Region 11, Portland, Oreg.

2854. United States Works Progress Administration, Division of Social Research. **Migrant Families (I) Composition, Size, and Employability of Economic Heads**  
Bull. (Transients) No. 10, 13 p., '36  
Washington, D. C.
2855. United States Works Progress Administration, Division of Social Research. **Migrant Families (II) Age, Sex, Color, Nativity, and Marital Condition**  
Bull. (Transients) No. 11, 10 p., '36  
Washington, D. C.
2856. Washington State Department of Public Welfare. **Study of 156 Federal Transients Ages 12-28 for Whom Return Transportation Was Paid**  
Monograph No. 8, 13 p., '35  
Olympia, Wash.
2857. Washington State Department of Social Security, Cowlitz County Advisory Committee. **Causes of Transiency and Occupational Characteristics; A Transient Study, January 1, 1937 to December 31, 1937**  
22 p. (mimeo.) ( )  
Olympia, Wash.
2858. Yoder, F. R. **Farm Migration and Flow of Farm Wealth**  
Master's Thesis, '38  
Lib., State College of Washington, Pullman
2859. Yoder, F. R. and Smick, A. A. **Migration of Farm Population and Flow of Farm Wealth**  
Agr. Exp. Sta. Bull. No. 315, 24 p., '35  
State College of Washington, Pullman

#### **POPULATION: CHARACTERISTICS AND DISTRIBUTION OF**

2860. Bridger, C. A. **A Study of the Population of the State of Idaho**  
46 p. (mimeo.), '36  
Idaho State Planning Board, Boise
2861. Burrier, A. S. **A Revised Report on Problem and Resettlement Areas in Oregon**  
98 p. (ms.), '35  
Oregon State Planning Board, Portland
2862. Clements, G. P. **Hasten Slowly with Land Settlement**  
Pacific Rural Press, CXXII, p. 31, '31
2863. Cressman, L. S. and Yturri, A. **The Basques in Oregon**  
The Commonwealth Review, XX, '38  
University of Oregon, Eugene
2864. Dillard, W. B. **Vital Statistics, Lane County**  
WPA—O. P. 465-94-3-3, W. P. 1543  
Court House, Eugene, Oreg.
2865. Hill, D. G. **The Negro in Oregon**  
M. A. Thesis, '32  
Lib., University of Oregon, Eugene
2866. Jackson, J. **Negroes in Seattle**  
CWA 17-1005, 101 p. (ms.) ( )  
Seattle Urban League, Seattle, Wash.

2867. Joy, B. **Population Studies in Three American Counties**  
Econ. Geog., XV, 11-26, '39
2868. Lake County, Oregon, Planning Commission. **Fort Rock Resettlement Project Data**  
Lakeview, Oreg.
2869. Landis, P. H. **Selected Population Problems of the Western States in Relation to Agricultural Adjustment**  
Proc. of Western Farm Economics Assoc., 27-41, '36
2870. Lee, B. Y. **Perpetuation of the Primary Group Patterns among the Chinese in Portland, Oregon**  
Master's Thesis, '38  
Lib., University of Oregon, Eugene
2871. Moore, F. E., Jr. **Analysis of Population of Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
2872. Renne, R. R. and Kraenzel, C. F. **Readjusting Montana's Agriculture: III. Population Resources and Prospects**  
Agr. Exp. Sta. Bull. No. 309, 19 p., '36  
Montana State College, Bozeman
2873. Sanford, G. O. **Settlement and Development Problems, Sun River Project, Montana**  
New Reclamation Era, XIX, 146-150, '28  
U. S. Dept. of Interior, Bureau of Reclamation, Washington, D. C.
2874. Stewart, B. **Columbia Basin Report, Appendix V: Population**  
Pacific Northwest Regional Planning Commission, Portland, Oreg., '35
2875. Tjerandsen, C. **Current and Recent Rural Occupancy in Idaho**  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Moscow, Idaho, '36
2876. Tootell, R. B. **Land Settlement Mistakes and New Land Laws**  
Ext. Serv. Bull. No. 136, 6-9, '33  
Montana State College, Bozeman
2877. United States Department of Agriculture, Agricultural Adjustment Administration, Division of Program Planning. **Population Distribution Mapped in Washington Land Classification**  
Land Policy Review, I, No. 1, p. 6, '35  
Washington, D. C.
2878. United States Department of Agriculture, Bureau of Agricultural Economics. **Farm Population Estimates, January 1, 1936**  
(mimeo.), '36  
Washington, D. C.
2879. \*United States Department of Agriculture, Resettlement Administration, Region 11. **The Resettlement Administration Program in Washington, Oregon and Idaho**  
I (mimeo.), '36  
Portland, Oreg.
2880. United States Department of Commerce. **15th Census of United States, 1930: Population Bulletin, 1st Series, Oregon, Number and Distribution of Inhabitants**  
Census Bureau, 24 p., '30  
U. S. Govt. Print. Off., Washington, D. C.

\* Now secured from the Farm Security Administration, Portland, Oreg.

2881. United States Department of Commerce. **15th Census of United States, 1930: Population Bulletin, Families, Oregon**  
Census Bureau, 23 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
2882. United States Department of Commerce. **15th Census of United States, 1930: Population Bulletin, 1st Series, Washington, Number and Distribution of Inhabitants**  
Census Bureau, 26 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
2883. United States Department of Commerce. **15th Census of United States, 1930: Population Bulletin, 2d Series, Washington, Composition and Characteristics of Population**  
Census Bureau, 52 p., '31  
U. S. Govt. Print. Off., Washington, D. C.
2884. United States Department of Commerce. **15th Census of United States, 1930: Population Bulletin, Families, Washington**  
Census Bureau, 27 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
2885. United States Department of Commerce. **Population Bulletin, 1st Series, Alaska, Number and Distribution of Inhabitants**  
Census Bureau, 11 p., '30  
U. S. Govt. Print. Off., Washington, D. C.
2886. United States National Resources Committee. **Population Problems**  
28 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
2887. Upchurch, O. C. **The Swinomish People and Their State**  
Pacific Northwest Quarterly, 283-330, Spring, '37
2888. Washington State Planning Council. **Problem and Resettlement Areas**  
101 p. (ms.), '35  
Olympia, Wash.

#### POPULATION TRENDS

2889. Eke, P. A. **Population Trends and Regional Land Program**  
7 p. (mimeo.), '37  
Idaho State Planning Board, Boise
2890. Hetherton, P. **Population Growth 1930-40, State of Washington**  
4 p. (ms.), '38  
Washington State Planning Council, Olympia
2891. Landis, P. H. **Rural Population Trends in Washington**  
Agr. Exp. Sta. Bull. No. 333; Rural Soc. Series in Population No. 1,  
64 p., '36  
State College of Washington, Pullman
2892. Landis, P. H. and Reuss, C. F. **Washington Farm Population Increases in 1936**  
3 p. (mimeo.), '38  
State College of Washington, Agricultural Experiment Station, Pullman
2893. Moore, E. H. **Isolating the Mobility Factor in Population Change**  
Sociology and Social Research, '39

2894. Renne, R. R. **What is Happening to Montana's Population?**  
Mimeo. Circ. No. 12, 13 p., '39  
Montana State College, Agricultural Experiment Station, Bozeman
2895. Seeman, A. L. **Population Study of the Columbia Basin: Trends and Forecast**  
73d Cong., 1st sess., H. Doc. No. 103, II, 657-667, '34  
U. S. Govt. Print. Off., Washington, D. C.
2896. Spenker, E. C. **Eighty Years of Population Changes in the State of Oregon**  
M. A. Thesis, '33  
Lib., University of Oregon, Eugene
2897. Stewart, B. **Population Trends in the Pacific Northwest**  
Proc. of Pacific Northwest Regional Planning Conf., III, 72-73, '36  
Portland, Oreg.
2898. Thompson, W. S. and Whelpton, P. K. **Estimates of Future Population by States**  
U. S. National Resources Committee, Washington, D. C., '34
2899. Thompson, W. S. and Whelpton, P. K. **Population Trends in the United States**  
U. S. National Resources Committee, Washington, D. C., '33

#### SOCIAL CONDITIONS

2900. Chindgren, Ruth. **A Study of Housing Needs of Renting Families and Available Rental Facilities in Ontario, Oregon**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis
2901. Flora, K. W. **Incomes, Occupations and Expenditures of Families of the Grays Harbor, Washington, Community**  
Master's Thesis, '36  
Lib., University of Washington, Seattle
2902. Hayner, N. S. and Reynolds, C. N. **Chinese Family Life in America**  
Am. Sociological Review, II, No. 5, '37
2903. Jackson, J. S. **Seattle—The Negro Follows the Pioneer**  
Opportunity, XIII, No. 8, 241 p., '35  
Seattle Urban League, Seattle, Wash.
2904. LaViolette, F. **Types of Adjustment of the American-Born Japanese**  
Ph. D. Thesis, '39  
Lib., University of Chicago, Chicago, Ill.
2905. Mikkelson, A. C. **A Study of Housing Requirements for Fifty Selected Families in Spokane, Washington**  
(ms.), '37  
Lib., Oregon State College, Corvallis
2906. Miyamoto, S. F. **Social Solidarity among the Japanese in Seattle**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
2907. Portland, Oregon, Chamber of Commerce. **Trends in Wages, Payrolls and Days Worked in Oregon**  
'35-'36

2908. Potter, A. R. **The Homeless Men in Seattle**  
(ms.) ( )  
Seattle Community Fund, Seattle, Wash.
2909. Rademaker, J. A. **Japanese Americans**  
From Brown and Roucek, *Our Racial and National Minorities*, 472-493, '37  
Prentice Hall, New York City
2910. Rademaker, J. A. **The Japanese in the Social Organization of the Puget Sound Region**  
*Am. Jour. of Sociology*, XL, No. 3, '34
2911. Rondeau, Wilma M. **Planning the Family Dwelling for a Willamette Valley Village**  
Master's Thesis, '38  
Lib., Oregon State College, Corvallis
2912. United States Department of Agriculture, Bureau of Home Economics. **Rural Housing Survey (Idaho)**  
C. W. A. Proj., '34  
Washington, D. C.
2913. United States Department of Agriculture, Bureau of Home Economics. **Rural Housing Survey (Montana)**  
C. W. A. Proj., '34  
Washington, D. C.
2914. United States Department of Agriculture, Bureau of Home Economics. **Rural Housing Survey (Oregon)**  
C. W. A. Proj., '34  
Washington, D. C.
2915. United States Department of Agriculture, Bureau of Home Economics. **Rural Housing Survey (Washington)**  
C. W. A. Proj., '34  
Washington, D. C.
2916. United States National Resources Committee. **Indian Land Tenure, Economic Status, and Population Trends**  
73 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
2917. Washington State Department of Social Security, King County Advisory Committee. **Survey of the Interbay Dump Settlement, Seattle, Washington**  
xvii, 33 p. (mimeo.), '37  
Olympia, Wash.

#### **SURVEYS: SOCIAL**

2918. Beamish, E. L. **The Civilian Conservation Corps Program and Its Effect on 100 Seattle Boys**  
Master's Thesis, '38  
Lib., University of Washington, Seattle



2919. Benson, Lucille B. **Community Surveys of Washington Counties**  
 (1) Primary data regarding community, social organizations; (2)  
 secondary data regarding history, climate, geography, natural re-  
 sources, population trends and composition, public assistance  
 trends, and public assistance agencies.
- |          |              |              |             |
|----------|--------------|--------------|-------------|
| Adams    | Franklin     | Lewis        | Snohomish   |
| Asotin   | Garfield     | Lincoln      | Spokane     |
| Benton   | Grant        | Mason        | Stevens     |
| Chelan   | Grays Harbor | Okanogan     | Thurston    |
| Clallam  | Island       | Pacific      | Wahkiakum   |
| Clark    | Jefferson    | Pend Oreille | Walla Walla |
| Columbia | King         | Pierce       | Whatcom     |
| Cowlitz  | Kitsap       | San Juan     | Whitman     |
| Douglas  | Kittitas     | Skagit       | Yakima      |
| Ferry    | Klickitat    | Skamania     |             |
- Washington State Dept. of Social Security, Olympia, '38
2920. Bogardus, E. S. **Introduction to Social Research**  
 School of Research Series, No. 14, 237 p., '36  
 University of Southern California, Los Angeles
2921. Hartson, Margaret. **Seattle High School Girls in Wage Homes**  
 Master's Thesis, '37  
 Lib., University of Washington, Seattle
2922. Hayner, N. S. **Delinquency Areas in the Puget Sound Region**  
 Am. Jour. of Sociology, XXXIX, No. 3, '33
2923. Hayner, N. S. **Juvenile Delinquency in the Leading Cities of the Pacific Northwest**  
 (ms.) ( )  
 University of Washington, Graduate School of Social Work, Seattle
2924. Hoffman, C. S. and Breithaupt, L. **Age, Sex, Residence and Occupation of Rural Relief Population in Six Counties in Oregon**  
 Agr. Exp. Sta. Circ. of Infor. No. 156, 7 p. (mimeo.), '36  
 Oregon State College, Corvallis
2925. Jackson, V. D. **Social Conflict in Rural Communities of Oregon**  
 Master's Thesis, '32  
 Lib., Oregon State College, Corvallis
2926. Landis, P. H. **Rural Sociology**  
 State College of Washington, Pullman, '38
2927. Mains, G. B. **Report of the Sawtooth Primitive Area**  
 23 p. (mimeo.), '36  
 Idaho State Planning Board, Boise
2928. Miller, J. D. **The Social Development of Vancouver, Washington**  
 Master's Thesis, '37  
 State College of Washington, Pullman
2929. Neubauer, A. R. **A Study of Youth Organizations in Portland, Oregon**  
 (ms.), '38  
 Lib., Reed College, Portland, Oreg.
2930. Olson, C. J. **Primitive Areas**  
 Rept. of Statewide (Idaho) Recreation Conf., 19-23, '36

2931. **Parsons, P. A. A Study of Natural Communities in Three Oregon Counties**  
56 p. (mimeo.), '37  
Oregon State Planning Board, Portland
2932. **Potter, A. R. and Hardin, Gwen. Survey of the Blind in the State of Washington**  
Publ. No. 1, 26 p. (mimeo.), '37  
Washington State Dept. of Social Security, Div. of the Blind,  
Olympia
2933. **Reyes, J. F. Filipino Students in the United States; A Survey of Conditions in the States of Oregon, California, Washington, Idaho, Montana and Wyoming**  
(ms.), '30  
Lib., Reed College, Portland, Oreg.
2934. **Roy, D. F. Hooverville, a Study of a Community of Homeless Men in Seattle**  
Lib., University of Washington, Seattle, '35
2935. **United States Department of Agriculture, Forest Service. Eagle Cap Primitive Area. Wallowa and Whitman National Forests, Oregon Recreation Guide No. 25, '38**  
Washington, D. C.
2936. **Washington State Planning Council, Technical Advisory Committee on Forestry. Report of Sub-Committee on Community, Social and Industrial Relationships**  
2 p. (mimeo.) ( )  
Olympia, Wash.
2937. **Yeiter, M. S. We Discover Contentment (A Description of a Mountain Homestead Venture in Idaho)**  
American Magazine, CXV, No. 4, 66-67, 90, '33
2938. **Young, C. H., Reed, H. R. Y. and Carrothers, W. A. The Japanese Canadians**  
Institute of Pacific Relations, New York City, '38

#### WELFARE AND WELFARE ORGANIZATIONS

2939. **American Public Welfare Association. Survey of Public Welfare in Oregon. Report Submitted to Governor's Interim Commission on Public Health and Welfare**  
CWA 35-26-X295, 51 p., tables (mimeo.) ( )  
Chicago, Ill.
2940. **Buck, M. E. and Research Staff. Public Welfare in Washington**  
Research Publ. No. 1, 138 p., '34  
Washington State Planning Council, Olympia
2941. **Cadbury, Olive C. Social Work in Seattle: An Inventory and Appraisal**  
Seattle Community Fund, Seattle, Wash., '35
2942. **Carstens, C. C. and Mason, Florence M. Child Care Study: Brief Study of the Program for Children's Work in Seattle and King County, Washington, and Its Evaluation, Together with Recommendations for a Future Program**  
(mimeo.), '37  
Child Welfare League of America, Inc., New York City

2943. Clackamas County, Oregon, Planning Board. **Study of Economic Dependency of Relief Families in Clackamas County**  
Oregon City, Ore.
2944. Clackamas County, Oregon, Planning Board. **Survey of County Unemployment and Relief Problem**  
Oregon City, Ore.
2945. Douglas County, Oregon, Planning Commission. **Rural Relief Survey**  
Roseburg, Ore.
2946. Douglas County, Oregon, Planning Commission. **Statistical Survey of Pension Recipients and Properties Received by the County as Reimbursement**  
Roseburg, Ore.
2947. Gallagher, C. **Some Factors in Economic Dependency, a Study of 209 Men on the Relief Rolls of the Multnomah County Relief Committee**  
(ms.), '37  
Lib., Reed College, Portland, Ore.
2948. Graham, T. E. **Administration of Unemployment Relief in Oregon, 1930-1936**  
Undergraduate Thesis, '36  
Lib., Reed College, Portland, Ore.
2949. Hathway, M. and Rademaker, J. A. **Public Relief in Washington, 1853-1933**  
Emergency Relief Publ. No. 1, '34  
Washington State Emergency Relief Administration, Olympia
2950. Hays, J. E. **Old Age Assistance in Multnomah County with Special Reference to the Economic Status of Recipients**  
(ms.), '38  
Lib., Reed College, Portland, Ore.
2951. Herring, C. W. **A Study of Child Guidance Services in the Child-Caring Agencies of Portland**  
(ms.), '38  
Lib., Reed College, Portland, Ore.
2952. Hoffman, C. S. **Summary and Analysis of Applicants for Rural Rehabilitation in Fourteen Counties in Oregon**  
Agr. Exp. Sta. Circ. of Infor. No. 154, 12 p. (mimeo.), '36  
Oregon State College, Corvallis
2953. Johnson, Arlien. **Social Work and the Social Insurances**  
Compass, XIX, No. 3, 6-9, '37  
American Association of Social Workers, New York City
2954. Kempf, G. A. **Mental Health in Washington: Facilities and Needs (1934)**  
Washington Society for Mental Hygiene, Seattle, '37
2955. Kennedy, M. **Montana's Plan for Rural Rehabilitation**  
Montana Farmer, XXII, No. 5, 7-8, '34
2956. Kraenzel, C. F. and McIntosh, R. B. **The Relief Problem in Montana—A Study of the Change in the Character of the Relief Population**  
Agr. Exp. Sta. Bull. No. 343, '37  
Montana State College, Bozeman

2957. Landis, P. H. **Farmers and Villagers on Relief, Washington State, June, 1935**  
Rural Soc. Res. Lab. Bull. (mimeo.), Rural Relief Series, No. 2, 18 p., '36  
State College of Washington, Pullman
2958. Landis, P. H. **Relief Data as Criteria of Submarginality**  
Agr. Exp. Sta. Scientific Paper No. 362, '36  
State College of Washington, Pullman
2959. Landis, P. H. and Forschmiedt, R. **Causes and Consequences: A Study of Rural Relief in Relation to County Backgrounds**  
Rural Soc. Res. Lab. Bull. (mimeo.), Rural Relief Series No. 1, 17 p., '36  
State College of Washington, Pullman
2960. Landis, P. H., Pritchard, Mae and Brooks, M. **Rural Emergency in Washington with Attention to Characteristics of Rural Relief Households**  
Agr. Exp. Sta. Bull. No. 334, 39 p., '36  
State College of Washington, Pullman
2961. Larson, O. F. **Rural Relief and Agricultural Adjustment**  
Proc. of Western Farm Economics Assoc., 50-63, '36
2962. Learned, F. M. **The Oregon System of Rehabilitation**  
Master's Thesis, '38  
Lib., University of Oregon, Eugene
2963. Logan, G. **A Sociological Study of the Transient Boy**  
M. A. Thesis, '37  
Lib., State College of Washington, Pullman
2964. Mittleman, E. B. **Report and Recommendations of the Unemployment Insurance Commission of Oregon**  
Salem, Oreg., '35
2965. Oregon State College, Agricultural Experiment Station. **Summary and Analysis of Applicants for Rural Rehabilitation in Fourteen Counties**  
Circ. of Infor. No. 154, '36  
Corvallis, Oreg.
2966. Oregon State Planning Board. **Memorandum on the Trend of Population and Expenditures of State Operated and State Aided Welfare Institutions in Oregon, 1912-1936**  
10 p. (mimeo.), '36  
Portland, Oreg.
2967. Oregon State Planning Board. **A Study of Recording Methods in Administering Public Welfare**  
47 p. (mimeo.), '36  
Portland, Oreg.
2968. Oregon, University of, Bureau of Municipal Research and Service. **Operation of the Oregon Old-Age Pension Act, 1934**  
Commonwealth Service Series, I, No. 3, 20 p., '35  
Eugene, Oreg.
2969. Piercey, C. C. **The Relief Experience of 406 Families with Respect to Home Ownership, Home Buying, Rent Paid, Mobility and Housing Standards**  
Master's Thesis, '38  
Lib., University of Washington, Seattle

2970. Portland, Oregon, Chamber of Commerce. **Relief Expenditures, Multnomah County '37-'38**
2971. Portland, Oregon, Chamber of Commerce. **Social Security Legislation '36-'37**
2972. Potter, A. R. **Aid to Dependent Children in Their Own Homes—A Study of the Causes of Dependency**  
Monograph No. 26, '37  
Washington State Dept. of Social Security, Olympia
2973. Potter, A. R. **Civilian Conservation Corps Junior Enrollees April, 1933 to July, 1935**  
Monograph No. 6, 14 p. (mimeo.), '35  
Washington State Dept. of Social Security, Olympia
2974. Potter, A. R. **Cost of Old Age Pensions in the State of Washington**  
Monograph No. 2, 14 p. (mimeo.), '34  
Washington State Dept. of Social Security, Olympia
2975. Resner, H. A. **Social Security—What and Why. A Survey of Federal and Washington State Legislation**  
U. S. Works Progress Administration, Div. of Education and Recreation, Seattle, Wash., '38
2976. Rosenberg, Carolyn B. **Emergency Relief in Skagit County, Washington, 1931-1934**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
2977. Smith, Marjorie J. **Care of Insane in Washington**  
(ms.), '38  
University of Chicago, Chicago, Ill.
2978. Stewart, B. **Seasonal Employment and Unemployment Compensation in Oregon**  
Lib., Reed College, Portland, Oreg., '37
2979. Tarlow, Pauline. **A Survey of the Present Status of Unemployment Relief in Oregon**  
Undergraduate Thesis, '36  
Lib., Reed College, Portland, Oreg.
2980. Topping, C. W. and Harvey, Isabel. **Brief to the Hearings Committee on Health Insurance, British Columbia**  
(ms.) ( )  
Victoria, B. C.
2981. United States Department of Labor, Children's Bureau. **Social Statistics in Child Welfare and Related Fields (Temporary Shelter for Homeless and Transient Persons)**  
U. S. Govt. Print. Off., Washington, D. C., '32
2982. United States Federal Emergency Relief Administration. **Unemployment Relief Census, October, 1933**  
218 p., '34  
U. S. Govt. Print. Off., Washington, D. C.
2983. United States Works Progress Administration. **Comparative Study of Rural Relief and Non-Relief Households**  
Research Monograph II, 141 p. (multi.), '35  
Washington, D. C.

2984. United States Works Progress Administration. **Current Statistics of Relief in Rural and Town Areas**  
I, No. 1 (multi.), '36  
Washington, D. C.
2985. Wagner, F. W. **Savings and Savings Institutions with Special Reference to the State of Washington**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
2986. Washington State Conference of Social Work. **Directory of Social and Health Agencies in the State of Washington, 1936**  
Washington State Dept. of Public Welfare, Olympia
2987. Washington State Department of Social Security. **Current Developments in the Field of Social Security in the State of Washington**  
(Papers presented at the Annual Institute of Government, University of Washington, July, 1937)  
Monograph No. 25, 17 p. (mimeo.), '37  
Olympia, Wash.
2988. Washington State Department of Social Security. **Recent Developments in the Field of Public Welfare in the State of Washington**  
Monograph No. 15, 21 p. (mimeo.), '36  
Olympia, Wash.
2989. Washington State Department of Social Security, Clark County Advisory Committee. **Juvenile Delinquency in Clark County, September, 1934 to September, 1938 (Partial Report)**  
11 p. (mimeo.), '38  
Olympia, Wash.
2990. Washington State Department of Social Security, King County Advisory Committee. **Confidential Report on Beacon Light Mission, Seattle, Washington, September, 1937**  
16 p. (mimeo.), '37  
Olympia, Wash.
2991. Washington State Department of Social Security, King County Advisory Committee. **Public Assistance Intake**  
17 p. (mimeo.), '37  
Olympia, Wash.
2992. Washington State Department of Social Security, King County Advisory Committee. **Single Homeless Men on Relief, King County, Washington**  
79 p. (mimeo.), '37  
Olympia, Wash.
2993. Washington State Department of Social Security, Kitsap County Advisory Committee. **Juvenile Delinquency in Kitsap County**  
75 p. (mimeo.), '38  
Olympia, Wash.
2994. Washington State Planning Council. **The Organization of Public Health Councils**  
16 p., '35  
Olympia, Wash.
2995. Washington State Planning Council. **Report on Public Health Standardization**  
8 p. (mimeo.), '34  
Olympia, Wash.

2996. Weeks, H. A. and Smith, M. G. **Delinquency Areas in Spokane, Washington**  
Research Studies, VII, No. 3, 107-120, '38  
State College of Washington, Pullman
2997. Williams, C. E. **Opinions of Social Work of 100 Seattle Clubwomen, 1938**  
Master's Thesis, '38  
Lib., University of Washington, Seattle

## IX. COMMERCE AND INDUSTRY

The well finished research in this field is almost invariably confined to specialized subjects: agricultural commodities, forest products, certain minerals, fishery products, utilization of electrical energy, etc. In these restricted studies some very excellent work has been done. Because of their degree of specialization, however, it was thought advisable in this bibliography to classify most of these materials under the category of resource utilization. Attention is called to the industry sub-head under each of the following: Agriculture, Forests, Minerals, Power, Fisheries, Planning.

The titles listed in this section include a few studies which attempt to deal with commerce and industry from a fairly broad point of view. It is highly probable that a number of important studies have been missed. At the present time no one institution or governmental research agency has full knowledge of all the work that has been done or is in progress.

If there is any definite trend of research in this field, it is not easily discovered. The familiar promotional motif runs through much of it. There are, however, some other emphases which are new. Several attempts have been made to put together a general inventory of all industrial activity within a given State. This might be interpreted as the rudimentary beginnings of an effort to discover the pattern of industry and commerce.

Another new note which has promise of greater development is to be seen in the studies of the trade position of the region—its economic connections with other regions. The most adequate work done thus far is that of the Province of British Columbia, Bureau of Economics and Statistics, Department of Trade and Industry. It would be exceedingly valuable if some similar continuing study could be inaugurated in the Pacific Northwest. If such were undertaken, however, more attention should be given to interpretation than has yet been attempted in the British Columbia studies.

Instead of trying to point out the gaps in existing research, it is, in this case, easier to outline in brief the elements that an adequate regional study of industry and commerce should contain. Among these would be an appraisal of the resources available, an analysis of the trends of historical development, a study of the present and prospective distribution of population, a survey of the principal markets both domestic and foreign, and finally, an appraisal of the present industrial pattern with special reference to its stability, its deficiencies, and its possibilities for further expansion.

In addition to the studies of industry itself should go a companion survey of the services available to industry. Among these, the most important is transportation, including railroads, waterways, highways, airways, ports, and terminals. The analysis should not be confined to a mere inventory of facilities; it should extend to an examination of the interrelationships which exist between the various means of transport. A well-designed coordination of all facilities is one of the first essentials in restoring transportation to a healthy economic condition. Here, however, a broad national policy is greatly needed.

Other services vitally related to commerce and industry are electricity supply, communications, etc. Financial and banking services are also important and often influence development to a greater degree than any other one factor.

Beyond the general industrial survey outlined above, there is need for a number of rather specialized investigations. The first of these is a study of the economic relationships which exist between the various regions of the United States. Preliminary attempts have been made to analyze the



**balance of trade** between the Pacific Northwest and other regions. The results thus far developed do not disclose the whole picture, but they do show that the region is highly dependent upon two basic industries—agriculture and forest industries. Neither the agricultural lands nor the forests are, at present, being managed on a sustained yield basis. What the final result of this process of liquidation may be no one can fully see, but it is safe to predict that the results will be not altogether happy.

As yet, no adequate study has been made to determine the most desirable balance between agriculture and industry. The waste of productive resources, both natural and human, that seems to be inherent in our present economic structure is appalling. It threatens the very foundations of our political and social life. We must find some way to bring about greater stability of employment, and to rehabilitate certain large areas that have been depleted of their original resources.

It is reasonable to suppose that some decentralization of industry throughout various regions might have some effect in improving the national economic stability. Regional competitive advantages and regional specialization in industrial skill cannot account for all of the concentration in our present industrial pattern. Monopolistic tendencies and price rigidities are factors that need accurate and realistic appraisal. Regional studies gearing into the current investigations of the Temporary National Economic (Monopoly) Committee should be inaugurated to throw light on these problems.

Another area in which there is a woeful lack of knowledge is that of foreign trade. Despite a high degree of dependency upon foreign markets as an outlet for forest products, wheat and fruit, the Pacific Northwest has generally gone along with the national policy of tariff protection. There are almost no studies of a truly comprehensive nature covering Pacific Northwest foreign trade. This deficiency accounts, in part, for some of the vagaries of our foreign trade policy. The tendency to consider each industry in isolation naturally leads to higher and higher protection. In trying to foster some of our small industries behind tariff walls, we have induced retaliation on the part of our foreign customers and thereby brought injury upon other industries more important in the economy of the region. The situation is not unlike:

"That grey dim battle of the west,  
Where friend and foe were shadows in the mist,  
And friend slew friend not knowing whom he slew."

The possibilities of regaining economic sanity in international trade are decidedly not encouraging at the moment, but sooner or later we must review the effort to restore international trade.

The various studies suggested above require close collaboration between many governmental and private agencies. A large part of the work would necessarily be dependent upon national studies which should have regional counterparts.

JAMES C. RETTIE.

Associate Consultant,  
Pacific Northwest Regional Planning Commission,  
Portland, Oregon.

## **IX. COMMERCE AND INDUSTRY**

### **HARBORS AND HARBOR IMPROVEMENT**

- 2998. **Butler, J. S. Improvement of Anacortes Harbor, Washington**  
U. S. Army Engrs. Annual Rept. of 1932-1919, pt. 1  
Washington, D. C.
- 2999. **Butler, J. S. Improvement of Grays Harbor, Inner Portion, and Chehalis River, Washington**  
U. S. Army Engrs. Annual Rept. of 1932-1910, pt. 1  
Washington, D. C.
- 3000. **Butler, J. S. Improvement of Port Gamble Harbor, Washington**  
U. S. Army Engrs. Annual Rept. of 1932-1919, pt. 1  
Washington, D. C.
- 3001. **Butler, J. S. Improvement of Port Orchard Bay, Washington**  
U. S. Army Engrs. Annual Rept. of 1928-1925, pt. 1  
Washington, D. C.
- 3002. **Kuentz, O. O. and Lukesh, G. R. Improvement of Coos Bay, Oregon**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3003. **Kuentz, O. O. and Lukesh, G. R. Improvement of Nehalem Bay, Oregon**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3004. **Kuentz, O. O. and Lukesh, G. R. Improvement of Tillamook Bay and Bar, Oregon**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3005. **Kuentz, O. O. and Lukesh, G. R. Improvement of Yaquina Bay and Harbor, Oregon**  
U. S. Army Engrs. Annual Rept. of 1933-1919, pt. 1  
Washington, D. C.
- 3006. **Markham, E. M. Report of the Chief of Engineers, U. S. Army. Part I, Rivers and Harbors**  
U. S. Army Engrs., 1805 p., '35  
Washington, D. C.
- 3007. **Sturdevant, C. L. Improvement of Everett Harbor and Snohomish River, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3008. **Sturdevant, C. L. Improvement of Grays Harbor and Bar Entrance, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3009. **Sturdevant, C. L. Improvement of Olympia Harbor, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.
- 3010. **Sturdevant, C. L. Improvement of Puget Sound and Its Tributary Waters, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.

3011. Sturdevant, C. L. **Improvement of Seattle Harbor, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1919, pt. 1  
Washington, D. C.
3012. Sturdevant, C. L. **Improvement of Tacoma Harbor, Washington**  
U. S. Army Engrs. Annual Rept. of 1933-1910, pt. 1  
Washington, D. C.

### INDUSTRIALIZATION

3013. British Columbia, Economic Council of, Research Department. **Statistics of Industry in British Columbia, 1871-1934**  
314 p. (mimeo.), '35  
Victoria, B. C.
3014. Burrell, O. K. **An Industrial Audit of Oregon**  
Bus. Adm. Series, I, No. 6, 67 p., '30; Studies in Bus. No. 6  
University of Oregon Publications, Eugene
3015. Day & Zimmerman, Inc. **Survey of the Industrial Activities and Resources and of the Proposed Establishment of an Industrial District in Portland, Oregon**  
Portland Chamber of Commerce Rept. No. 2814, 268 p. (mimeo.), '30  
Portland, Oreg.
3016. Dorisy, C. E. **Relative Importance of Various Manufactures of State**  
10 p. (mimeo.), '34  
Washington State Planning Council, Olympia
3017. Frisch, L. V. **An Industrial Survey of the State of Idaho**  
Master's Thesis, '36  
Lib., University of Idaho, Moscow
3018. Hetherton, P. **Columbia Basin Report, Appendix R: Industry and Manufacturing**  
9 p. (mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
3019. Jacobs, J. **Columbia Basin Report, Appendix U: Public Works**  
(mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
3020. King County, Washington, Planning Commission. **Tabulation of Industries of King County**  
Seattle, Wash., '38
3021. Kizer, B. H. **The Pacific Northwest, A Source of Raw Materials for the Nation's Industries**  
9 p. (mimeo.) ( )  
Washington State Planning Council, Olympia
3022. Malone, G. W. (ed.). **Industrial Survey of the Eleven Western States**  
Industrial West, Inc., San Francisco, Calif., '39
3023. Merryfield, F. **Industrial Wastes in the Willamette Valley**  
Civil Engineering, VI, 682-684, '36
3024. Moment, S. **Some Research Problems on the Industrialization of the West**  
Proc. of Pacific Coast Econ. Assoc., '39

3025. Montana State University. **Montana's Production: A Statistical Summary of the State's Industry, 1930-1938**  
31 p., '38  
Missoula, Mont.
3026. Oregon State Planning Board. **Location and Growth of Oregon's Basic Manufacturing Industries**  
92 p. (mimeo.), '38  
Portland, Oreg.
3027. Pacific Northwest Planning Commission. **Columbia Basin Report, Appendix E: Deep Sea Harbors and Inland Waterways—Developments in the Pacific Northwest**  
Portland, Oreg., '35
3028. Portland, Oregon, Chamber of Commerce. **Basic Industries of the West (Oregon Data)**  
'36-'37
3029. Portland, Oregon, Chamber of Commerce. **Business and Industrial Expansion in Portland Industrial District**  
'37-'38
3030. Portland, Oregon, Chamber of Commerce. **Location and Growth of Basic Manufacturing Industries of Oregon**  
'37-'38
3031. Portland, Oregon, Realty Board. **Report of Research Committee to Analyze Industrial Property in Portland**  
(mimeo.), '36
3032. Seattle First National Bank. **Northwest Industries**  
Seattle, Wash., '38
3033. Seeman, A. L. **Industries of the Columbia Basin**  
Cong. Record, 73d Cong., 1st sess., H. Doc. No. 103, II, 670-686, '34  
U. S. Govt. Print. Off., Washington, D. C.
3034. Summers, R. E. and Keevil, C. S. **Silicon: A Major Constituent of Boiler Scales in Western Oregon**  
Proc. of Am. Soc. of Mechanical Engrs., '33
3035. United States Department of Commerce, Bureau of the Census. **Biennial Census of Manufactures: By Geographic Divisions and States, 1933, 1935**  
Washington, D. C., '36, '38
3036. United States Department of Commerce, Bureau of the Census. **Biennial Census of Manufactures: By States and Industries, 1931**  
Washington, D. C., '35
3037. United States Department of Commerce, Bureau of the Census. **Census of Business, 1935: Reports by States—Construction Industry**  
Washington, D. C., '37
3038. United States Department of Commerce, Bureau of the Census. **Construction Industry—Idaho**  
15th Census of United States, 1930  
Washington, D. C., '32
3039. United States Department of Commerce, Bureau of the Census. **Construction Industry—Montana**  
15th Census of United States, 1930  
Washington, D. C., '32

3040. United States Department of Commerce, Bureau of the Census. **Construction Industry—Oregon**  
15th Census of United States, 1930  
Washington, D. C., '32
3041. United States Department of Commerce, Bureau of the Census. **Construction Industry—Reports by States**  
15th Census of United States, 1930  
Washington, D. C., '33
3042. United States Department of Commerce, Bureau of the Census. **Construction Industry—Washington**  
15th Census of United States, 1930  
Washington, D. C., '32
3043. United States Department of Commerce, Bureau of the Census. **Manufactures: 1929—Idaho**  
15th Census of United States, 1930  
Washington, D. C., '32
3044. United States Department of Commerce, Bureau of the Census. **Manufactures: 1929—Montana**  
15th Census of United States, 1930  
Washington, D. C., '32
3045. United States Department of Commerce, Bureau of the Census. **Manufactures: 1929—Oregon**  
15th Census of United States, 1930  
Washington, D. C., '32
3046. United States Department of Commerce, Bureau of the Census. **Manufactures: 1929—Washington**  
15th Census of United States, 1930  
Washington, D. C., '33
3047. United States Department of Labor, Bureau of Labor Statistics. **Building Construction in Principal Cities of the United States, 1931-35**  
Handbook of Labor Stat. Bull. No. 616, 207-215, '36  
Washington, D. C.
3048. Washington State Planning Council. **Changed Status of Industries in Washington—1931 and 1933 Compared with 1929**  
5 p. (mimeo), '35  
Olympia, Wash.

#### MARKETS AND MARKETING

3049. Bates, E. **Commercial Survey of the Pacific Northwest**  
Domestic Commerce Series No. 51, '32  
U. S. Dept. of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.
3050. Beattie, R. N. **Banking in Colonial British Columbia**  
B. A. Graduating Essay, '39  
Lib., University of British Columbia, Vancouver
3051. British Columbia, Bureau of Economics and Statistics, Department of Trade and Industry. **The Trade of British Columbia with Other Canadian Provinces and with Foreign Countries, Calendar Year 1937**  
(rev.) '39  
Victoria, B. C.

3052. British Columbia, Economic Council of, Research Department. **The Barter Terms of Trade between British Columbia and Eastern Canada, 1926-34**  
38 p. (mimeo.), '35  
Victoria, B. C.
3053. British Columbia, Economic Council of, Rerearch Department. **The Trade of British Columbia with Other Canadian Provinces and with Foreign Countries, Calendar Years 1934, 1935, 1936, 1937**  
(mimeo.), '38  
Victoria, B. C.
3054. Byam, F. M. **The Portland Region—A Market Study**  
17 p., '36  
Portland Chamber of Commerce, Research Dept., Portland, Oreg.
3055. Carrothers, W. A. **The Social Utility of Studies of Trade between Areas within a Nation**  
Proc. of Pacific Northwest Regional Planning Conf., III, 117-120, '36  
Portland, Oreg.
3056. Chambers, H. M. **The Development of Trade through the Panama Canal**  
Master's Thesis, '31  
Lib., State College of Washington, Pullman
3057. Cobb, Zona. **The Maritime Fur Trade on the Northwest Pacific Coast as a Factor in the American Trade with China, 1787 to 1820**  
(ms.), '34  
Lib., Reed College, Portland, Oreg.
3058. Cowan, I. M. **The Fur Trade and the Fur Cycle, 1825-1857**  
British Columbia Hist. Quart., II, 19-30, '38
3059. Drucker, A. E. **Marketing of Aluminum from Northwest Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 97-99, '37  
Portland, Oreg.
3060. Earll, V. **A Statistical Analysis of Portland's Business Conditions**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
3061. Edminster, L. R. **Trade Agreements—The Pacific Northwest, and the Oregon Wool Grower**  
(mimeo.), '39  
U. S. Dept. of State, Division of Trade Agreements, Washington, D. C.
3062. Edminster, L. R. **Trade Agreements—The Pacific Northwest, and the Washington Wool Grower**  
(mimeo.), '39  
U. S. Dept. of State, Division of Trade Agreements, Washington, D. C.
3063. Fowler, W. A. **Portland's Share in Export Traffic from North Central United States to Trans-Pacific Markets**  
Bus. Adm. Series, I, No. 7, 45 p., '30; Studies in Bus. No. 7  
University of Oregon Publications, Eugene
3064. Goodfellow, J. C. **Fur and Gold in Similkameen**  
British Columbia Hist. Quart., II, 67-88, '38

3065. Gould, J. E. **Tonnage Trends through the Port of Seattle**  
Rept. to Port of Seattle Commission, Seattle, Wash.
3066. Hawkins, H. C. **Survey of Foreign Trade Activities of Oregon Manufacturers**  
Bus. Adm. Series, II, No. 4, 55 p., '31; Studies in Bus. No. 11  
University of Oregon Publications, Eugene
3067. Johnson, F. H. **Fur Trading Days at Kamloops**  
British Columbia Hist. Quart., I, 171-185, '37
3066. Kerr, W. J. **Oregon's Problem in Marketing Agricultural and Industrial Products**  
75 p., '38  
Oregon State Board of Higher Education, Salem
3069. Knoll, P. X. **A Study of Warehousing Practices in Oregon**  
Master's Thesis, '30  
Lib., Oregon State College, Corvallis
3070. Kobe, K. A. **Marketing of Magnesium from Northwest Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 99-103, '37  
Portland, Ore.
3071. Little, M. E. **Early Days of the Maritime Fur Trade**  
M. A. Thesis, '34  
Lib., University of British Columbia, Vancouver
3072. Lomax, A. L. **The Facilities, Commerce and Resources of Oregon's Coast Ports**  
Bus. Adm. Series, II, No. 7, 54 p., '32; Studies in Bus. No. 14  
University of Oregon Publications, Eugene
3073. Lomax, A. L. and Van Guilder, T. N. **Marketing and Manufacturing Factors in Oregon's Flax Industry**  
Bus. Adm. Series, II, No. 1, 44 p., '30; Studies in Bus. No. 8  
University of Oregon Publications, Eugene
3074. Lomax, A. L. and Van Guilder, T. N. **Oregon's Exportable Surplus**  
Bus. Adm. Series, I, No. 5, 23 p., '30; Studies in Bus. No. 5  
University of Oregon Publications, Eugene
3075. Makey, Edith L. **An Analysis of the Fluctuations of Buying Power in the Spokane Area**  
Master's Thesis, '31  
Lib., State College of Washington, Pullman
3076. Maxwell, J. E. and Rettie, J. C. **Price Trends of Oregon Products Compared with Price Trends of Commodities Purchased from outside the State, 1919-1935**  
Reprint from Commonwealth Review, XVIII, No. 1, 172-183, '36  
University of Oregon Publications, Eugene
3077. Mears, E. G. **Maritime Trade of Western United States**  
Stanford University Press, Calif., '35
3078. Mears, E. G. **Pacific Coast Trade and the Orient**  
Proc. of Pacific Coast Economic Assoc., '38
3079. Merriam, W. B. **Some Recent Trends in Alaskan Commerce**  
Econ. Geog., XIV, 413-418, '38

3080. Oregon, University of. **Columbia River Valley Traffic Survey**  
Bus. Adm. Series, II, No. 3, 16 p.; Studies in Bus. No. 10, '31  
University of Oregon Publications, Eugene
3081. Oregon, University of. **Pacific Northwest Commerce and Industry**  
Univ. of Oreg. Publs., Dec., '35, 6 p.; Jan., '36, 6 p.; Feb., '36, 6 p.;  
March, '36, 6 p.; May, '36, 6 p.  
Eugene, Oreg.
3082. Overholser, E. L. **A Study of the Shipment of Fresh Fruits and Vegetables to the Far East**  
Agr. Exp. Sta. Bull. No. 497, 1-78, '30  
University of California, Berkeley
3083. Pacific Northwest Regional Planning Commission. **The Balance of Trade of the Pacific Northwest (Preliminary Edition)**  
25 p. (mimeo.), '37  
Portland, Oreg.
3084. Portland, Oregon, Chamber of Commerce. **"Area Dominated by Portland" Report**  
'36-'37
3085. Portland, Oregon, Chamber of Commerce. **Canada and Western Trade Areas as Consuming Markets**  
'35-'36
3086. Portland, Oregon, Chamber of Commerce. **Economic and Distributive Survey of Western United States Trade (1937-1938)**
3087. Portland, Oregon, Chamber of Commerce. **The Economic Dependence of the People of Oregon**  
(mimeo.), '36
3088. Portland, Oregon, Chamber of Commerce. **Economic Survey of Portland Trade Area**  
'35-'36
3089. Portland, Oregon, Chamber of Commerce. **Flour and Grain Exports, Seattle-Portland, 1924-1935**  
'35-'36
3090. Portland, Oregon, Chamber of Commerce. **Selling the Portland Market to Eastern Manufacturers**  
'36-'37
3091. Portland, Oregon, Chamber of Commerce. **Tin Plate Consumption in Pacific States**  
'36-'37
3092. Portland, Oregon, Chamber of Commerce. **The Western United States Trade Area—An Economic and Distributive Survey**  
50 p. (mimeo.), '36
3093. Preston, H. H. **The Closed Bank Situation with Special Reference to Washington**  
Proc. of Pacific Coast Economic Assoc., 38-43, '33
3094. Stephens, L. **The Grain Trade of the Port of Vancouver, British Columbia**  
Econ. Geog., XII, 185-196, '36



3095. Taylor, H. P. **Marketing of Northwest Phosphate Resources**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 104-107, '37  
Portland, Oreg.
3096. United States Department of Commerce. **Salmon (Tariff)**  
Tariff Infor. Survey, G-18, 94 p., '29  
U. S. Govt. Print. Off., Washington, D. C.
3097. United States Department of Commerce, Bureau of the Census.  
**Retail Distribution—Idaho**  
Washington, D. C., '32
3098. United States Department of Commerce, Bureau of the Census.  
**Retail Distribution—Montana**  
Washington, D. C., '33
3099. United States Department of Commerce, Bureau of the Census.  
**Retail Distribution—Oregon**  
Washington, D. C., '32
3100. United States Department of Commerce, Bureau of the Census.  
**Retail Distribution—Washington**  
Washington, D. C., '33
3101. United States Department of Commerce, Bureau of the Census.  
**Wholesale Distribution—Idaho**  
Washington, D. C., '32
3102. United States Department of Commerce, Bureau of the Census.  
**Wholesale Distribution—Montana**  
Washington, D. C., '32
3103. United States Department of Commerce, Bureau of the Census.  
**Wholesale Distribution—Oregon**  
Washington, D. C., '32
3104. United States Department of Commerce, Bureau of the Census.  
**Wholesale Distribution—Washington**  
Washington, D. C., '32
3105. United States Department of State, Division of Trade Agreements.  
**Analysis of Trade with Canada During the First Year of Agreement with That Country**  
(mimeo.) ( )  
Washington, D. C.
3106. United States Department of State, Division of Trade Agreements.  
**The Cattle Industry and the Trade with Canada**  
(mimeo.) ( )  
Washington, D. C.
3107. United States Department of State, Division of Trade Agreements.  
**Oregon and the Trade Agreements Program**  
(mimeo.), '38  
Washington, D. C.
3108. United States Department of State, Division of Trade Agreements.  
**Washington and the Trade Agreements Program**  
(mimeo.), '38  
Washington, D. C.

3109. United States Tariff Commission. **Changes in Import Duties Since the Passage of the Tariff Act of 1930**  
Misc. Series, '39  
U. S. Govt. Print. Off., Washington, D. C.
3110. Washington State Planning Council. **Balance Sheets of the State of Washington**  
78 p., '35  
Olympia, Wash.

#### PORT DEVELOPMENT

3111. Adams, J. Q. **Prince Rupert, British Columbia**  
Econ. Geog., XIV, 167-183, '38
3112. Foscue, E. J. **The Development and Decline of Skagway, Alaska**  
Econ. Geog., X, 419-428, '34
3113. Maxwell, J. E. **The Port of Portland: A Descriptive Study**  
Undergraduate Thesis, '35  
Lib., Reed College, Portland, Oreg.
3114. Renner, G. T. **Cities of the Puget Basin**  
Econ. Geog., XI, 280-283, '35
3115. Seeman, A. L. **Commercial Seattle**  
Yearbook of Assoc. of Pacific Coast Geographers, II, '36  
University of Washington, Seattle
3116. Seeman, A. L. **Seattle as a Port City**  
Econ. Geog., XI, 20-32, '35
3117. Stephens, L. **Rise of the Port of Vancouver, British Columbia**  
Econ. Geog., XII, 61-70, '36
3118. United States Department of War, Corps of Engineers. **Ports of Olympia and Port Angeles, Washington**  
Engineer Dept., U. S. Army, Port Series 23, 125 p., '32  
U. S. Govt. Print. Off., Washington, D. C.
3119. United States Department of War, Corps of Engineers. **Ports of Portland and Astoria, Oregon, and Longview and Vancouver, Washington**  
Engineer Dept., U. S. Army, Port Series 11; Pt. 1, Portland, 162 p., '31; Pt. 2, Astoria, Longview and Vancouver, 166 p., '31  
U. S. Govt. Print. Off., Washington, D. C.
3120. United States Department of War, Corps of Engineers. **Ports of Seattle, Tacoma, Bellingham, Everett, and Grays Harbor, Washington**  
Engineer Dept., U. S. Army Port Series 7; Pt. 1, Seattle, 242 p.; Pt. 2, Tacoma, 144 p.; Pt. 3, Everett, Bellingham, and Grays Harbor, 214 p.; '31  
U. S. Govt. Print. Off., Washington, D. C.
3121. United States Department of War, Corps of Engineers. **Port of Seattle, Washington (rev.)**  
Port Series 7, 297 p., tables, charts, '38  
U. S. Govt. Print. Off., Washington, D. C.
3122. United States Department of War, Corps of Engineers. **Port of Tacoma, Washington (rev.)**  
Port Series 27, 196 p., '38  
U. S. Govt. Print. Off., Washington, D. C.

**TRANSPORTATION**

3123. Alaska Planning Council. **Transportation and Communication**  
Juneau, Alaska, '38
3124. Beakey, J., Van Scoy, P. and Myers, F. J. **Motor Vehicle Allocation and Road Use Surveys of the State-Wide Highway Planning Survey**  
Tech. Rept. No. 38-3, 186 p., '38  
Oregon State Highway Commission, Salem
3125. Brown, F. R. **Columbia Basin Study, Appendix S: Transportation**  
59 p. (mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland
3126. Brown, F. R. **Modern Planning for Water Transportation**  
Proc. of Pacific Northwest Regional Planning Conf., III, 113-115, '36  
Portland, Oreg.
3127. Campbell, W. A. **Tramp Shipping with Special Reference to the Pacific Northwest**  
(ms.), '37  
Lib., Reed College, Portland, Oreg.
3128. Clatsop County, Oregon, Planning Commission. **Harshberger Roads**  
Astoria, Oreg.
3129. Crawford, J. **Early Navigation on the Columbia River**  
(ms.), '35  
Lib., Reed College, Portland, Oreg.
3130. Crumbaker, C. **Government as a Factor in Further Transport Development**  
Proc. of Pacific Coast Economic Assoc., 46-50, '37
3131. Dench, T. W. **Freight Rates and Freight Tariffs with Special Reference to Lumber**  
Undergraduate Thesis, '37  
Lib., Reed College, Portland, Oreg.
3132. Ferguson, H. **The Development of Communications in Colonial British Columbia**  
M. A. Thesis, '39  
Lib., University of British Columbia, Vancouver
3133. Fowler, F. T. **City Traffic Survey**  
WPA—O.P. 665-94-3-8, W. P. 2248  
City Hall, Portland, Oreg.
3134. Glazebrook, G. P. de T. **A History of Transportation in Canada**  
(Prepared for the Carnegie Endowment for International Peace, Division of Economics and History)  
Yale Univ. Press, XXVIII, p. 475, '37-'38  
New Haven, Conn.
3135. Grant, H. H. **Analysis of Motor Carrier Fees Charged by the Several States for Regulatory Purposes**  
(mimeo.), '37  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3136. Grant, H. H. **Certified Boat Companies, State of Washington**  
(mimeo.), '36  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia

3137. Grant, H. H. **Statistics of Motor Freight Carriers, State of Washington, 1935-1936**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3138. Grant, H. H. **Statistics of Passenger Auto Transportation Companies, 1935**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3139. Grant, H. H. **Statistics of Passenger Auto Transportation Companies, State of Washington, 1936**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3140. Grant, H. H. **Statistics of Steam and Electric Railways, State of Washington, 1936**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3141. Hall, J. K. **Transportation and Public Utility Research with Reference to the Pacific Coast**  
Proc. of Pacific Coast Economic Assoc., 57-61, '37
3142. Hedges, J. B. **Henry Villard and the Railways of the Northwest**  
224 p., '30  
Yale University Press, New Haven, Conn.
3143. Howay, F. W. **Early Shipping in Burrard Inlet, 1863-1870**  
British Columbia Hist. Quart., I, 3-20, '37
3144. Johnson, A. J. **The Canadian Pacific Railway and British Columbia**  
M. A. Thesis, '36  
Lib., University of British Columbia, Vancouver
3145. Krieger, S. **Certificated Boat Companies, State of Washington, 1934-1935**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3146. Krieger, S. **Statistics of Steam and Electric Railways, State of Washington, 1935**  
(mimeo.)  
Washington State Dept. of Public Service, Section of Research and Statistics, Olympia
3147. Lamb, W. K. **The Pioneer Days of the Trans-Pacific Service**  
British Columbia Hist. Quart., I, 143-164, '37
3148. Lombard, F. L. **The Seasonal Load Factor in Railway Transportation**  
M. A. Thesis, '31  
Lib., University of Oregon, Eugene
3149. Lower, J. A. **The Grand Trunk Pacific Railway and British Columbia**  
M. A. Thesis, '39  
Lib., University of British Columbia, Vancouver

3150. Morrison, H. **Coordination of Freight Transportation Facilities on the North Pacific Coast**  
Undergraduate Thesis, '34  
Lib., Reed College, Portland, Oreg.
3151. National Safety Council. **Improving Street Traffic—Vancouver, B. C.**  
57 p., '38  
Chicago, Ill.
3152. Pierce, Barbara L. **Economic and Geographical Determinants of Railroad Routes in the Pacific Northwest**  
Undergraduate Thesis, '37  
Lib., Reed College, Portland, Oreg.
3153. Roberts, J. **The Origins of the Manaimo and Esquimalt Railway**  
M. A. Thesis, '37  
Lib., University of British Columbia, Vancouver
3154. Smith, Margaret. **Vancouver Traffic Survey**  
(ms.) ( )  
City Hall, Vancouver, B. C.
3155. United States War Department, Corps of Engineers, Office of District Engineer. **Improvement of Columbia River at Bonneville, Oregon**  
Portland, Oreg., '38
3156. Washington State Planning Council. **The Cascade Low Level Tunnel**  
86 p. (mimeo.), '36  
Olympia, Wash.
3157. Ziebarth, C. F. **The Place of the Motor Bus and Motor Truck in an Economic System of Transportation for the United States**  
Master's Thesis, '33  
Lib., State College of Washington, Pullman

## X. GOVERNMENT

Research trends in Government in the Pacific Northwest since 1930 reflect the growth of leagues and associations of cities, university research and service bureaus, official planning agencies, and emphasis on public administration in the teaching of political science.

The volume and scope of research has increased remarkably since 1930. The agencies mentioned above have been established, with few exceptions, during this period and are devoting much of their effort to research as a regular activity, while prior to this time it was largely the work of individual scholars. Two main types of research are being emphasized. The detailed analysis of all governmental functions within a single jurisdiction is illustrated by McKinley's surveys of Oregon City, Hood River, and Marshfield. The other type is represented by studies involving an analysis of a function of local government on a statewide basis as exemplified by investigations of sewage disposal, water services, business licensing, police administration and pension schemes.

Greater emphasis has been placed on problems of finance, particularly property taxation and assessment, a trend which is likely to continue. Much more attention could be given to financial management and management problems.

Much of the completed and current research consists of gathering and tabulating comparable data for many units of government. Agencies engaged in consulting with public officials are doing most of this work in order to base consulting on a sound background of fact.

From an institutional standpoint, research in state government has been increasing, and the problems of county, city, and school district governments have received a great amount of attention by researchers.

In many instances, the form of presentation and methods of distributing research have taken on new characteristics. Agencies in the consulting field have made distinct efforts to present the results of research in concise, understandable form and to distribute this widely among interested public officials and citizens. Material that would fill a large volume has been condensed in brief tabular or manual form. This does not take the place of, but rather supplements, the exhaustive and the academic presentation with relatively small distribution.

Research in public administration has evidenced some tendency and contains much promise of becoming better coordinated, not only as between agencies of the area engaged in governmental research, but also with research in other fields listed in this general bibliography. A national emphasis on coordination, the broad outlook of official planning bodies and the objectives of the Northwest Regional Council herald this trend. Western City Magazine, under joint sponsorship of the California, Oregon, and Washington leagues of cities, has become an important medium in the interchange of municipal research and experiences on a broad regional basis. Close cooperation between local government officials and college and university research bureaus are a definite characteristic of this period. "The Use of Patrol Cars in the Police Work of Small Cities of Oregon and Washington" was a joint project of Oregon and Washington agencies.

While principally concerned with public administration, it is not the intent of this discussion to minimize developments and fruitful possibilities of research in the international fields, political theory, law, and politics in the Pacific Northwest. In many instances, these fields tie closely with

research in public administration, as illustrated by "A Manual on Citizenship for Registrars of Voters," published by the University of Washington Bureau of Governmental Research. Some splendid contributions have been made in the field of politics, such as Claudius O. Johnson's case study of "Borah of Idaho." There is evidence of a revival of the earlier efforts of William Ogburn and Stuart Rice to analyze direct legislation in the Pacific Northwest by statistical techniques.

Regarding future research, one would do well to consult the following citations. "Research in Public Administration," prepared by Joseph P. Harris for American University in 1938, consists of a memorandum of research subjects for theses and contains many suggestions that can be applied directly to the Pacific Northwest. Interest in the merit system has been revived in the region and much spade work needs to be done in appraising existing practices and pointing the way for improvement. Except for one or two governmental units, reliable information is not available. "Notes on Research in Public Personnel Management," prepared by Leonard D. White in February of this year for the Social Science Research Council Committee on Public Administration, is particularly valuable for suggestions of subjects and methods of approach. The Governmental Research Association of Chicago is now in the process of preparing a list of cooperative research projects. Preliminary releases indicate an emphasis on **appraisal of administrative practices** of state and local governments on a case study basis in budgeting, inter-governmental relations, property tax administration, accounting, purchasing, planning and zoning, and capital improvement programming. City-state relationships and financing of relief and municipal government are prominently mentioned.

Needed research contributions can be made in public administration in the Pacific Northwest by an approach from the standpoint of administrative problems, processes, and personalities, as distinct from purely an institutional approach, although the two may dovetail. Keeping abreast of developments is in itself a necessary job. Anticipating problems is perhaps the most important consideration. There are distinct gaps in our regional literature on available bibliography, public relations and reporting, control of administration, application of units of measurement and appraisal on management techniques, inter-governmental relations, regional government and administration, administrative law and tribunals. Particularly acute are problems of state-local governmental relationships, although local-federal and state-federal interrelations offer fruitful research possibilities. Our financial problem is not merely one of financing relief or any particular institution of government but of financing government as a whole, and there is urgent need for coordinated contributions that will assist in making the total picture available. Regional government and regional problems of health, public safety, welfare, communication, resource development could well be approached from the standpoint of administration. There have been numerous experiments since 1930 in this region of cooperation between units of government on the same level. *Ad hoc* units, such as irrigation and port districts, have received little attention by researchers.

Although this bibliography does not include all research that has been done since 1930, it does help to fill an important bibliographical gap.

RUSSELL BARTHELL.

Assistant Director,  
Bureau of Municipal Research and Service, Portland Office,  
University of Oregon.

## X. GOVERNMENT

### A. POLITICS

#### POLITICAL PARTIES AND ELECTORATE

- 3158. Johnson, C. O. **Borah of Idaho**  
511 p., '36  
Longman Green, New York City
- 3159. Miller, H. H. **Democracy in Idaho; A Study of State Governmental Problems**  
The Caxton Printers, Caldwell, Idaho, '35
- 3160. Ostomel, M. J. **A History of the Direct Primary in Oregon**  
(ms.), '32  
Lib., Reed College, Portland, Oreg.
- 3161. Schmid, C. **Study of Political Behavior; Elections in Seattle, Washington**  
(ms.) ( )  
University of Washington, Graduate School of Social Work, Seattle
- 3162. Schumacher, W. **The Ballot's Burden—An Analysis of the 1932 Election in Oregon**  
Commonwealth Review, XV, 96-107, '33  
University of Oregon, Eugene
- 3163. Schumacher, W. **Oregonians as Voters**  
Commonwealth Review, XIV, 63-71, '32  
University of Oregon, Eugene
- 3164. Schumacher, W. **Thirty Years of the People's Rule in Oregon: An Analysis**  
American Political Science Quart., XLVII, No. 2, 242-258, '32
- 3165. Woodell, M. E. **Grange Influence on Direct Legislation in Oregon, 1902-1934**  
(ms.), '36  
Lib., University of Oregon, Eugene

#### LEGISLATION

- 3166. Claire, G. S. **Municipal Franchises in Oregon. A Survey of Public Utility Franchises Granted by Cities and Towns of Oregon**  
Commonwealth Service Series, I, No. 1, 32 p., '34  
University of Oregon Publications, Eugene
- 3167. Hall, W. O. **Codification of City Ordinances**  
WPA—O.P. 465-94-3-34, W.P. 1663  
Failing School, Portland, Oreg.
- 3168. Oregon, University of, Bureau of Municipal Research and Service. **A Manual of Procedure for the Compilation of the Ordinances of Small Oregon Cities**  
Legal Bull. No. 3, 16 p. (mimeo.), '37  
Eugene, Oreg.
- 3169. Oregon, University of, Bureau of Municipal Research and Service. **Municipal Regulation of Games of Skill in Oregon**  
Bull. No. 19, 6 p. (mimeo.), '36  
Eugene, Oreg.



3170. Oregon, University of, Bureau of Municipal Research and Service, Portland Office. **Regulation of All-Night Parking on City Streets**  
Portland, Oreg., '39
3171. Robinson, W. J. Jr. **The Bicameral Legislature of the State of Washington**  
Honors Thesis, '32  
Lib., State College of Washington, Pullman
3172. Russell, M. H. **The Bicameral Principle in the Oregon State Legislature**  
(ms.), '33  
Lib., Reed College, Portland, Oreg.
3173. United States Department of Labor. **Oregon Legislation for Women in Industry**  
Women's Bureau Bull. No. 90, 40 p., '31  
U. S. Govt. Print. Off., Washington, D. C.

## B. ADMINISTRATION

### ADMINISTRATIVE SURVEYS

3174. Kehrli, H. **Survey of County Governments**  
WPA—O.P. 465-94-3-43, W.P. 1785  
University of Oregon, Eugene
3175. McKinley, C., Rettie, J. C. and Gass, O. **Suggestions Concerning Government and Administration in the Territory of Alaska**  
(mimeo.), '37  
U. S. National Resources Committee, Washington, D. C.  
(Confidential—not for public inspection)
3176. McKinley, C. **Survey of the City Government of Hood River**  
(ms.), '34  
University of Oregon, Bureau of Municipal Research, Eugene
3177. McKinley, C. **A Survey of the City Government of Medford**  
(ms.), '34  
University of Oregon, Bureau of Municipal Research, Eugene
3178. McKinley, C. **Survey of the Government of Oregon City**  
(ms.), '34  
University of Oregon, Bureau of Municipal Research, Eugene
3179. Renne, R. R. **Montana County Organization, Service and Costs**  
Agr. Exp. Sta. Bull. No. 298, 110 p., '35  
Montana State College, Bozeman
3180. Wyatt, H. A. **A Survey of the City Government of Hillsboro, Oregon**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.

### ADMINISTRATIVE AREAS

3181. Alaska Planning Council. **Graphical Survey of Territorial Administration and Basic Industries**  
Juneau, Alaska, '39
3182. Barthell, R. W. **Annexation and Consolidation of Local Government Units in the State of Washington**  
Master's Thesis, '31  
Lib., University of Washington, Seattle

3183. DeVries, W. **Tax Relief through Reorganization of Local Government**  
Forest Research Notes, No. 23, p. 13, '37  
Pacific Northwest Forest Experiment Station, Portland, Oreg.
3184. Kehrli, H. **A Survey of Factors Bearing on the Consolidation of Cities in the Coos Bay Area**  
48 p., '35  
Oregon State Planning Board, Portland
3185. McKinley, C. **County and Township Government in Oregon**  
National Municipal Review, XXIV, 351-353, '35
3186. McKinley, C. **County as the Unit of School Administration; To Consolidate Welfare Activities**  
National Municipal Review, XXIV, 123-124, '35
3187. McKinley, C. **Oregon; County Consolidation**  
National Municipal Review, XXIII, 392-393, '34
3188. Menefee, S. C. **A Plan for Regional Administrative Districts in the State of Washington**  
Univ. of Wash. Publ. in Social Sciences, VIII, No. 2, 29-80, '35  
Seattle, Wash.
3189. Smith, W. D. and Lomax, A. L. **Realignment of Oregon Counties**  
Commonwealth Review, XV, 130-143, '34  
University of Oregon, Eugene

#### ADMINISTRATIVE ORGANIZATION

3190. Angell, H. D. **A Cabinet Form of Government is Proposed for Oregon**  
Old Oregon, '30
3191. Association of Washington Cities. **The Governmental Organization in Utilities and Services of Washington Municipalities**  
Rept. No. 16, '35  
University of Washington, Seattle
3192. Barnett, J. D. (with Dubach, U. G., Hewitt, R. R., Lockenour, R. M., Magruder, F. A., Riddlesbarger, W. P. and Schumacher, W.) **Outline of the Government of Oregon: Summary of the Constitution and Statutes**  
143 p. (mimeo.), 10th ed., '38  
Oregon State College, Corvallis
3193. Isseks, M. S. **History of State Administrative Organization in Oregon, 1843-1937**  
University of Oregon Press, Eugene, '39
3194. Kehrli, H. **Study of State Governmental Structure**  
WPA—O.P. 465-94-3-118, W.P. 2205  
University of Oregon, Eugene
3195. Lowden, F. O. **The Reform of State Administration**  
Commonwealth Review, XII, 171-177, '30  
University of Oregon, Eugene

3196. McCombs, C. E. **Memorandum on the Report of the Interim Commission on Governmental and Administrative Reorganization and the Governmental Research Committee of the Oregon State Planning Board**  
7 p. (mimeo.), '37  
Portland, Oreg.
3197. McKinley, C. **Social Security, Organization and Administration**  
Proc. of Pacific Northwest Regional Planning Conf., III, 125-130, '36  
Portland, Oreg.
3198. Oregon State Legislature. **Report of the Joint Commission on Administrative Reorganization, Thirty-Fifth Legislative Assembly of the State of Oregon, Part I**  
Salem, Oreg., '30
3199. Oregon State Planning Board. **State Governmental and Administrative Reorganization in Oregon: A Joint Report**  
51 p. (mimeo.), '37  
Portland, Oreg.
3200. Oregon, University of, Bureau of Municipal Research and Service and Donald, J. T. **Charter for the City of Huntington, Oregon**  
7 p. (mimeo.), '34  
Eugene, Oreg.
3201. Oregon, University of, Bureau of Municipal Research and Service and Wade, C. R. **Proposed Charter for the City of Bandon, Oregon**  
15 p. (mimeo.), '37  
Eugene, Oreg.
3202. Renne, R. R. **County Office Consolidations in Montana**  
National Municipal Review, XXVIII, 143-148, '39
3203. Sage, W. N. **From Colony to Province (The Introduction of Responsible Government in British Columbia)**  
British Columbia Hist. Quart., II, 1-14, '39
3204. Washington State Planning Council. **Report of Advisory Committee on Governmental Organization and Finance**  
7 p. (mimeo.), '35  
Olympia, Wash.

#### PERSONNEL

3205. Baldock, R. H. and McCullough, C. B. **The Merit System for Engineering Personnel**  
Tech. Bull. No. 9, '38  
Oregon State Highway Commission, Salem
3206. Blinn, H. E. **Washington State's Proposed Civil Service Law**  
National Municipal Review, Jan. '37
3207. Kehrli, H. **Portland Pension Problems, 1934**  
(mimeo.), '34  
University of Oregon, Eugene
3208. Keller, H. **Personnel Administration in the City Government of Portland**  
Undergraduate Thesis, '37  
Lib., Reed College, Portland, Oreg.

3209. Oregon, University of, Bureau of Municipal Research and Service. **Compensation of Municipal Employes in Twenty-One Oregon Cities** Spec. Bull., 15 p. (mimeo.), '37 Eugene, Oreg.
3210. Oregon, University of, Bureau of Municipal Research and Service, Portland Office. **Portland Pension Problems**  
Supplement A: Reserves Necessary for Present Beneficiaries of the Policemen's Relief and Pension Fund, 1938  
Supplement B: Reserve Estimates and Age Data for Present Pensioners as of 1938  
Supplement C: Selected Pension Cases, 1938  
Portland, Oreg., '38
3211. Oregon, University of, Bureau of Municipal Research and Service, Portland Office. **Portland Police Pensions: Estimated Members on Retired List, 1938-1961**  
Portland, Oreg., '38
3212. Oregon, University of, Bureau of Municipal Research and Service. **Report of Oregon Regional Police Training Program, 1937**  
Eugene, Oreg.
3213. Oregon, University of, Bureau of Municipal Research and Service. **Salary Rates of Officials in 101 Oregon Cities**  
Bull. No. 21, 6 p. (mimeo.), '36  
Eugene, Oreg.
3214. Portland, Oregon, Civil Service Board. **Classification Plan**  
Portland, Oreg., '38
3215. Public Administration Service. **Class Specifications of the City of Seattle, 1938**  
359 p. (mimeo.), '38  
Civil Service Commission, Seattle, Wash.
3216. Read, D. **Public Personnel Classification with Special Reference to the 1938 Classification Survey of the Portland Civil Service** (ms.), '38  
Lib., Reed College, Portland, Oreg.
3217. Washington, University of, Bureau of Governmental Research. **Civil Service Manual for Washington Municipalities—Police and Fire Departments**  
Rept. No. 22, '37  
Seattle, Wash.
3218. Washington, University of, Bureau of Governmental Research. **Salaries of Municipal Officials in Washington, 1934 (Annual)** (mimeo.), '34  
Seattle, Wash.
3219. Wellman, W. M. **The Civil Service System of Seattle, Washington**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman

#### FINANCE: FISCAL MANAGEMENT

3220. Association of Washington Cities. **Municipal Accounting**  
Rept. No. 20, '37  
University of Washington, Seattle

3221. Damschen, A. **Management of Tax Reverted Lands in Oregon**  
95 p. (mimeo.), '38  
Oregon State Planning Board, Portland
3222. Hall, J. K. **Coordination and Integration of Federal, State, and Local Tax Systems**  
Washington Law Review, 22-44, '35
3223. Mudd, C. B. **Inventory of State Property**  
WPA—O.P. 665-94-3-11, W.P.  
State Capitol, Salem, Oreg.
3224. Oregon, University of, Bureau of Municipal Research and Service. **Acceptance of Bonds and Interest Coupons by Cities and Towns in Payment of Special Assessments and for Land**  
Bull. No. 1, '34  
Eugene, Oreg.
3225. Oregon, University of, Bureau of Municipal Research and Service. **Auditing Policies and Practices of Oregon Cities and Towns**  
Bull. No. 17, 6 p. (mimeo.), '36  
Eugene, Oreg.
3226. Oregon, University of, Bureau of Municipal Research and Service. **Budgeting for Small Oregon Cities**  
Bull. No. 6, 4 p. (mimeo.), '34  
Eugene, Oreg.
3227. Oregon, University of, Bureau of Municipal Research and Service. **The Custody, Deposit, and Investment of Public Funds**  
Finance Bull. No. 1, 12 p. (mimeo.), '38  
Eugene, Oreg.
3228. Rhinesmith, O. L. **Equalization of the Tax Burden for Support of Elementary Education in Oregon**  
M. A. Thesis, '33  
Lib., University of Oregon, Eugene
3229. Warren, W. C. **A Study of the Evolution of Oregon's Present State Tax System**  
M. A. Thesis, '34  
Lib., University of Oregon, Eugene
3230. Washington State Planning Council. **Analysis of State Budget, 1937-1939**  
1 p. (printed)  
Olympia, Wash.
3231. Washington State Planning Council. **Balance Sheets of the State of Washington**  
Research Publ. No. 2, 78 p., '35  
Olympia, Wash.

#### FINANCE: FINANCIAL SURVEYS AND STATISTICS

3232. Austin, W. L. **Financial Statistics of the State Government of Oregon for 1937**  
4 p., '39 (Press release)  
U. S. Dept. of Commerce, Bureau of the Census, Washington, D. C.

3233. Chatters, C. H. **Local Government Finance and Democracy**  
Washington Municipal Bull., Rept. No. 25, 5 p., '38  
University of Washington, Association of Washington Cities,  
Seattle
3234. Gilbert, J. H. **Probable Trends in Municipal Finance**  
Western City, XI, 10-12, '35
3235. Harris, J. P. **County Finances in the State of Washington**  
University of Washington Press, Seattle, '35
3236. Idaho State Planning Board. **A Study of Local Taxing Units in  
Idaho (By Counties)**  
WPA Project 665-92-3-8, '38  
Boise, Idaho
3237. League of Oregon Cities. **Financial Statistics, City of Bandon, Oregon**  
9 p. (mimeo.), '36  
University of Oregon, Eugene
3238. McKinley, C., Ham, C. and Cannon, A. **Survey of the Financial Situ-  
ation of the City of Enterprise, Oregon**  
115 p. (mimeo.), '34  
Bureau of Municipal Research, University of Oregon, Eugene
3239. Oregon, University of, Bureau of Municipal Research and Service.  
**A Comparative Study of Selected Physical, Financial, and Relief  
Characteristics of Oregon Counties**  
88 p. (mimeo.), '34  
Eugene, Oreg.
3240. Oregon, University of, Bureau of Municipal Research and Service.  
**Receipts and Expenditures of Oregon Counties, 1928-1937; with  
Special Reference to the Cost of Public Welfare and Its Relation  
to County Finances**  
Eugene, Oreg.
3241. Washington State Tax Commission. **Financial Statistics of State and  
Local Governments**  
27 p. (mimeo.), '38  
Washington State Planning Council, Olympia
3242. Washington State Tax Commission, Research Division. **Fiscal Survey  
of Washington—1930-1935 Inclusive**  
Olympia, Wash.

#### FINANCE: INCOME

##### (A) REVENUE SYSTEMS

3243. Eke, P. A. and Benson, E. T. **The Sources and Uses of State and  
County Revenue in Idaho**  
Agr. Exp. Sta. Mimeo. No. 1, '36  
University of Idaho, Moscow
3244. Gilbert, J. H. **Report of Committee on Public Finance and Taxation,  
Division of Public Welfare, Oregon State Planning Board**  
Oregon State Planning Board, Portland
3245. Oregon State Tax Commission. **Reports on Forest Taxation, Home-  
stead Exemption, Irreducible School Fund, and Motor Vehicle  
Taxation**  
Salem, Oreg.

3246. Portland, Oregon, Chamber of Commerce. **Oregon-Washington-California Tax Analysis**  
'35-'36
3247. Portland, Oregon, Chamber of Commerce. **Oregon-Washington-California Tax Analysis**  
'36-'37
3248. Portland, Oregon, Chamber of Commerce. **Taxation—A Total of 8 Statewide Surveys**  
'34-'35
3249. Rettie, J. C. and Pegues, J. E. **Preliminary Survey of Taxation in Alaska**  
Alaska Planning Council, Juneau, '38
3250. Rude, C. H. **A Balanced Tax Program for Oregon**  
Master's Thesis, '35  
University of Oregon, Eugene
3251. Washington State Planning Council. **Report of Committee on Tax Research**  
12 p. (mimeo.), '34  
Olympia, Wash.
3252. Washington State Tax Commission. **Sixth Biennial Report of the Tax Commission of the State of Washington for the Period Ending September 30, 1936**  
State Printing Plant, Olympia, Wash., '37

#### FINANCE: INCOME

##### (B) PROPERTY TAXATION AND ASSESSMENT

3253. Association of Washington Cities. **Property Valuations and Taxes Levied in Washington Cities and Towns, 1930 and 1938**  
Rept. No. 26, 6 p. (mimeo.), '38  
Seattle, Wash.
3254. Clatsop County, Oregon, Planning Commission. **Delinquent Tax Summary for State Tax Commission**  
Astoria, Oreg.
3255. Dreesen, W. H. **Trends of Tax Levies in Oregon with Emphasis upon Rural and City Real Properties**  
Agr. Exp. Sta. Bull. No. 257, 46 p., '29  
Oregon State College, Corvallis
3256. Freeman, H. D. **Tax Delinquency, Portland**  
WPA—O.P. 465-94-3-57, W.P. 1734  
City Planning Commission, Portland, Oreg.
3257. Gaiser, P. F. **The Taxation of Public Utilities for School Support in Washington**  
Ph. D. Thesis, '33  
Lib., University of Washington, Seattle
3258. Gilbert, J. H. **Report of Committee on Assessment and Taxation of Municipal Utilities—Under Authority of House Joint Resolution No. 24, 36th Legislative Assembly, 1931**  
(ms.), '33  
Salem, Oreg.

3259. Goldschmidt, M. **Special Assessments for Local Improvements in the City of Portland**  
Undergraduate Thesis, '30  
Lib., Reed College, Portland, Oreg.
3260. Hall, W. O. **Memorandum on Financing Local Improvements in Oregon**  
34 p. (mimeo.), '36  
University of Oregon, Bureau of Municipal Research and Service, Eugene
3261. Idaho State Planning Board. **The Property Tax in Idaho**  
(ms.), 26 p., '38  
Boise, Idaho
3262. Kehrli, H. **Study of Assessed Property, Relative to Property Tax**  
WPA—O.P. 665-94-3-4, W.P. 2284  
University of Oregon, Bureau of Municipal Research, Eugene
3263. Oregon, University of, Bureau of Municipal Research and Service. **Assessed Valuations, Property Tax Levies and Yields—Cities and Towns of Oregon**  
Bull. No. 3, 6 p. (mimeo.), '34  
Eugene, Oreg.
3264. Oregon, University of, Bureau of Municipal Research and Service. **City Assessed Valuations and Tax Levies, 1935**  
Bull. No. 10, 9 p. (mimeo.), '35  
Eugene, Oreg.
3265. Oregon, University of, Bureau of Municipal Research and Service. **City Assessed Valuations and Tax Levies, 1937**  
Bull. No. 22, 10 p. (mimeo.), '37  
Eugene, Oreg.
3266. Oregon, University of, Bureau of Municipal Research and Service. **City Assessed Valuations and Tax Levies, 1938**  
Bull. No. 27, 10 p. (mimeo.), '38  
Eugene, Oreg.
3267. Oregon, University of, Bureau of Municipal Research and Service. **City Assessed Valuations and Tax Levies, 1939**  
Bull. No. 30 (mimeo.), '39  
Eugene, Oreg.
3268. Oregon, University of, Bureau of Municipal Research and Service. **Comparative Tax Rates of Oregon Cities**  
Bull. No. 18, 18 p. (mimeo.), '36  
Eugene, Oreg.
3269. Oregon, University of, Bureau of Municipal Research and Service. **State of Oregon—Annual Property Tax Levies, 1922 to 1938 (all units)**  
Bull. No. 29, '38  
Eugene, Oreg.
3270. Oregon, University of, Bureau of Municipal Research and Service. **State of Oregon—Assessed Valuations and 1934 Tax Levies (State, County, City), Segregated as to Operating Expenses and Debt Service**  
Bull. No. 7, 4 p. (mimeo.), '34  
Eugene, Oreg.



3271. Oregon, University of, Bureau of Municipal Research and Service. **Total Property Tax Levies for All Units of Government (In Cities and Towns of Oregon)**  
Bull. No. 4, '34  
Eugene, Oreg.
3272. Oregon, University of, Bureau of Municipal Research and Service. **Total Property Tax Rates Levied in Incorporated Cities of Oregon, 1935**  
Bull. No. 13, 10 p. (mimeo.), '35  
Eugene, Oreg.
3273. Oregon, University of, Bureau of Municipal Research and Service. **Trend of Assessed Value of Taxable Property in Oregon by Classes of Property, 1910-1937**  
37 p. tables, charts, '38  
Eugene, Oreg.
3274. Oregon, University of, Bureau of Municipal Research and Service, and League of Oregon Cities. **Memorandum on Assessed Value and Tax Delinquency of Real Property Situated within the City Limits of Bandon, Oregon**  
122 p. (mimeo.), '36  
Eugene, Oreg.
3275. Portland City Planning Commission. **Land Use Inventory and Property in Public Ownership**  
WPA Project No. 667, 10 p., 9 plates, 6 tables, '36  
Portland, Oreg.
3276. Portland City Planning Commission. **Land Use and Tax Delinquency Survey of Portland, Oregon**  
Portland, Oreg., '38

#### FINANCE: INCOME

##### (C) PROPERTY TAX LIMITATION

3277. Gilbert, J. H. **Exhaustive Study of Tax Limitation Measures in the Various States Where They Are in Effect, during Summers of 1934 and 1936, with Reference to Application of Pending Tax Limitation Measures in Oregon in Those Years**  
Oregon State Planning Board, Portland
3278. Kehrli, H. **Study of Property Tax Exemption**  
WPA—O.P. 465-94-3-77, W.P. 1799  
University of Oregon, Bureau of Municipal Research, Eugene
3279. Oregon, University of, Bureau of Municipal Research and Service. **An Analysis of Tax Levy Limitations Imposed upon the Cities and Counties of Oregon by Proposed Constitutional Amendment, Article XI-B**  
Bull. No. 20, 9 p. (mimeo.), '36  
Eugene, Oreg.
3280. Portland, Oregon, Chamber of Commerce. **Effect of Government Acquisition of Land upon Tax Base of Oregon Counties**  
'37-'38

#### FINANCE: INCOME

##### (D) INCOME, INHERITANCE AND OTHER TAXES

3281. Barthell, R. W. **Additional Sources of Municipal Income**  
Western City Magazine, XI, No. 3, p. 26, 35, '35

3282. Gilbert, J. H. **Revenue from and Taxation of Alcoholic Beverages**  
Commonwealth Review, XX, 620-632, '38  
University of Oregon Publications, Eugene
3283. Harsch, A. **State Income Taxation as Affected by Property Tax Limitations**  
Washington Law Review, XCIII, '31
3284. Hyde, W. C. **Memorandum on the Distribution of the Gasoline Tax**  
(mimeo.), '38  
University of Oregon, Bureau of Municipal Research and Service, Eugene
3285. McCullough, C. G., Beakey, J. and Van Scoy, P. **An Analysis of the Highway Tax Structure in Oregon**  
Tech. Bull. No. 10, '38  
Oregon State Highway Commission, Salem
3286. Oregon, University of, Bureau of Municipal Research and Service. **Highway Revenues and City Streets**  
43 p. (mimeo.) ( )  
Eugene, Oreg.
3287. Oregon, University of, Bureau of Municipal Research and Service. **License and Occupational Taxes in Twenty-Eight Oregon Cities**  
Bull. No. 26, 17 p. (mimeo.), '37  
Eugene, Oreg.
3288. Warren, W. **A Brief History of Oregon's Income Tax**  
Oregon Historical Quarterly, XXXVIII, 193-205, '37
3289. Washington State Tax Commission, Research Division. **Study of Descendants' Estates in Seven Selected Counties**  
Olympia, Wash.
3290. Washington, University of, Bureau of Governmental Research. **Municipal License Fees in Washington**  
Rept. No. 24-B, 13 p. (mimeo.), '38  
Seattle, Wash.
3291. Washington, University of, Bureau of Governmental Research. **Selected Municipal Occupation Taxes**  
Rept. No. 24-B, 13 p. (mimeo.), '38  
Seattle, Wash.

#### FINANCE: INCOME

##### (E) SERVICE CHARGES

3292. Crumbaker, C. **Shall Oregon Tax Its Municipally-Owned Utilities?**  
Commonwealth Review, XIV, 241-249, '33  
University of Oregon, Eugene
3293. Kehrli, H. **Rates and Related Facts Regarding Water Systems in Oregon Cities**  
University of Oregon, Bureau of Municipal Research and Service, Eugene
3294. Oregon, University of, Bureau of Municipal Research and Service. **Domestic and Residential Electric Rates in the State of Oregon, January 1, 1935**  
Bull. No. 16, 11 p. (mimeo.), '35  
Eugene, Oreg.

3295. Oregon, University of, Bureau of Municipal Research and Service.  
**Domestic and Residential Electric Rates in the State of Oregon**  
Bull. No. 28, 12 p. (mimeo.), '38  
Eugene, Oreg.
3296. Oregon, University of, Bureau of Municipal Research and Service.  
**Rental Charges for Sewerage Service**  
Bull. No. 2, '34  
Eugene, Oreg.
3297. Washington, University of, Bureau of Governmental Research.  
**Water Rates Charged in Seventeen Northwest Cities**  
Rept. No. 10 (mimeo.), '34  
Seattle, Wash.

#### FINANCE: COSTS AND EXPENDITURES

3298. Bischoff, J. S. and Turnbull, D. S. **Report on the Cost of the Administration of Criminal Justice in Portland, Oregon**  
(ms.), '31  
Lib., Reed College, Portland, Oreg.
3299. Dreesen, W. H. **Public Expenditures in Oregon by Spending Units and Major Functions as Measured by Tax Levies Imposed upon General Property**  
Agr. Exp. Sta. Bull. No. 346, 142 p., '36  
Oregon State College, Corvallis
3300. Oregon, University of, Bureau of Municipal Research and Service.  
**Original Cost, Residual Value, and Annual Depreciation of the Streets of Oregon Cities**  
(mimeo.) ( )  
Eugene, Oreg.
3301. United States National Emergency Council. **County Reports of Federal Expenditures—1933-1938**  
Washington, D. C., '38
3302. United States National Emergency Council. **Detailed State Report of Federal Expenditures—1933-1938** (Available for each state)  
8 p., '38  
Washington, D. C.

#### FINANCE: DEBT

3303. Oregon, University of, Bureau of Municipal Research and Service.  
**Interest Rates on Bonded Indebtedness of Oregon Cities, 1934**  
Bull. No. 15, '35  
Eugene, Oreg.
3304. Oregon, University of, Bureau of Municipal Research and Service.  
**Maturity Dates—Bancroft Bonds Outstanding at July 1, 1934**  
Bull. No. 11, 4 p. (mimeo.), '35  
Eugene, Oreg.
3305. Oregon, University of, Bureau of Municipal Research and Service.  
**The Purposes of Bond Issues of Oregon Cities Outstanding at July 1, 1934**  
Bull. No. 12, 10 p. (mimeo.), '35  
Eugene, Oreg.

3306. Oregon, University of, Bureau of Municipal Research and Service.  
**The Warrant Indebtedness of Oregon Cities**  
Bull. No. 24, 5 p. (mimeo.), '37  
Eugene, Oreg.

#### ADMINISTRATIVE LAW

3307. Cohen, E. **The Municipal Court in Portland**  
(ms.), '34  
Lib., Reed College, Portland, Oreg.
3308. Hall, J. K. **Washington's Public Ownership District Power Law**  
National Municipal Review, 342-348, '31
3309. Johnsrud, R. R. **A Study of Administrative Adjudication in Its Application to the Office of Public Utilities Commissioner of Oregon**  
(ms.), '34  
Lib., Reed College, Portland, Oreg.
3310. Kehrli, H. **Study of Administrative and Municipal Law**  
WPA—O.P. 465-94-3-53, W.P. 1826  
University of Oregon, Bureau of Municipal Research, Eugene

#### ADMINISTRATIVE ACTIVITIES AND SERVICES

3311. Alaska Planning Council. **Public Works**  
Juneau, Alaska, '38
3312. Association of Washington Cities. **Washington Cities and Liquor Control**  
Infor. Bull. No. 3  
University of Washington, Seattle
3313. Chen Wei K'un, Ruth. **Multnomah County Library System from the Social Point of View**  
(ms.), '30  
Lib., Reed College, Portland, Oreg.
3314. Erickson, C. E. **The Problem of Parole, Part I**  
Research Studies, IV, No. 2, '36  
State College of Washington, Pullman
3315. Graham, T. E. **Administration of Parole Services of Oregon State Institutions**  
74 p. (mimeo.), '38  
Oregon State Planning Board, Portland
3316. Graham, T. E. **State Custody of Juvenile Delinquents in Oregon**  
92 p. (mimeo.), '38  
Oregon State Planning Board, Portland
3317. Haley, D. O. **Some Problems of Penal Administration with Reference to the State of Oregon**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
3318. Hall, J. K. **Developments in the Control of Public Utilities in Washington**  
Jour. of Land and Public Utility Economics, 378-395, '32
3319. Kehrli, H. **Public Welfare and County Finances in Oregon, 1928-1937**  
Commonwealth Review, XXI, No. 1, 1-7, '39  
University of Oregon, Eugene

3320. **Lei, C. L. Accounting Aspects of the Regulation and Supervision of Building and Loan Associations in Washington**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3321. **Oregon State Planning Board. Duties and Functions of a State Department of Geology and Mineral Industries**  
40 p. (mimeo.), '36  
Portland, Oreg.
3322. **Oregon State Planning Board. A Survey of Public Library Service in Oregon**  
148 p., '38  
Portland, Oreg.
3323. **Oregon, University of, Bureau of Municipal Research and Service. Abatement of Building Nuisances, with Model Ordinance**  
Legal Bull. No. 1, 5 p. (mimeo.), '36  
Eugene, Oreg.
3324. **Oregon, University of, Bureau of Municipal Research and Service. Bicycle Control in Oregon Cities**  
Bull. No. 23, 14 p. (mimeo.), '37  
Eugene, Oreg.
3325. **Oregon, University of, Bureau of Municipal Research and Service. The Fire Experiences and Fire Protection Rating of Oregon Cities**  
Bull. No. 25, 18 p. (mimeo.), '37  
Eugene, Oreg.
3326. **Oregon, University of, Bureau of Municipal Research and Service. Fire Insurance Ratings of Oregon Municipalities with Reference to Their Fire Defenses and Physical Condition**  
Bull. No. 8, 6 p. (mimeo.), '34  
Eugene, Oreg.
3327. **Oregon, University of, Bureau of Municipal Research and Service. The Operation of a City-Owned Machine Shop by the Small City**  
Bull. No. 14, 6 p. (mimeo.), '35  
Eugene, Oreg.
3328. **Oregon, University of, Bureau of Municipal Research and Service, Portland Office. Night Tennis**  
Portland, Oreg., '39
3329. **Oregon, University of, Bureau of Municipal Research and Service. The Use of Patrol Cars in the Police Work of Small Cities of Oregon and Washington**  
Bull. No. 9, 8 p. (mimeo.), '35  
Eugene, Oreg.
3330. **Oregon, University of, Bureau of Municipal Research and Service and League of Oregon Cities. Restriction of Peddling as a Nuisance**  
Legal Bull. No. 2, 5 p. (mimeo.), '37  
Eugene, Oreg.
3331. **Parsons, P. A. and Jameson, S. H. A Survey of Penal and Reformatory Methods in Oregon**  
96 p. (mimeo.), '36  
Oregon State Planning Board, Portland
3332. **Portland Police Survey Commission. Survey of the Portland Police Bureau**  
Portland, Oreg., '34

3333. Stern, S. **An Analysis of the Apprehension, Detention and Disposition of Juvenile Delinquents in Multnomah County, during the Year 1937**  
(ms.), '38  
Lib., Reed College, Portland, Oreg.
3334. Strother, June V. **The Development and Adequacy of the Library as an Institution in the State of Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3335. Topping, C. W. **The Report of the Royal Commission on the Penal System of Canada**  
Canadian Jour. of Economics and Political Science, Nov. '38
3336. Topping, C. W. **Survey of Provincial Prison Farm, British Columbia (Men's Division and Women's Division)**  
(ms.), '35  
Parliament Buildings, Victoria, B. C.
3337. Topping, C. W. and Pepler, E. **Departmental Commission Report, Provincial Industrial School for Boys, British Columbia**  
(mimeo.), '33  
Parliament Buildings, Victoria, B. C.
3338. Town, R. E. **Street Lighting in the State of Washington**  
Rept. No. 12 (mimeo.), '34  
University of Washington, Bureau of Governmental Research, Seattle
3339. United States Works Progress Administration in Oregon. **Fire Prevention in Portland**  
48 p. (mimeo.), chart  
Salem, Oreg.
3340. Washington, University of, Bureau of Governmental Research. **A Manual on Citizenship for Registrars of Voters**  
Seattle, Wash., '36
3341. Washington, University of, Bureau of Governmental Research. **A Registration Manual**  
Rept. No. 15, 5 p. (mimeo.), '35  
Seattle, Wash.

## XI. EDUCATION

Research in education has made considerable progress in recent years. The general public has shown more interest in school administration than in any other phase of education, an interest which has been reflected in much of the educational research undertaken since 1930. School finance has been the center of this interest and from it most of the administrative researches have developed. Other fields which command much public attention are curriculum problems, guidance and counseling, special types of instruction adapted to the needs of the mentally or physically handicapped, vocational education, and pupil progress.

The development of effective remedial methods adapted to the needs of maladjusted pupils presents one of the most pressing research problems. Much experimentation is, therefore, being carried on to devise methods for meeting this problem.

The practical application of research in many cases lags behind the findings. Thus, research indicates that the immediate reorganization of school districts should be effected. Such a reorganization would involve the closing of a large number of one-room schools and also some of larger size, an action which parents in many of the communities affected oppose. This situation does not destroy the value of research even though action is delayed.

Research in guidance and counseling faces similar difficulties because many school districts are unable to employ a sufficient number of teachers or sufficiently well trained teachers to carry on this work effectively. Perhaps too little research is devoted to the problem of how to adjust the educational curricula to meet the changing conditions of modern life, i. e., what type of curriculum would best prepare a student for industry without being purely vocational in content? Little has been done to analyze vocational trends and opportunities or to discover ways of adapting curricula to meet these changes. Effective counseling demands such information.

Particularly needed at this time are studies of the use that is made or that can be made of regional materials, products of the various research agencies in the Northwest. Such materials have not been readily available for classroom use. Many schools are now experimenting in this field. The results should be evaluated carefully and constructive recommendations made for a wider use of those that are effective classroom tools.

The recent developments in specialized teaching techniques for mentally or physically handicapped pupils should be studied to determine their real worth, to indicate what, if any, modifications are necessary.

Up to the present time nearly all reports of curriculum changes have been descriptive and explanatory rather than evaluative. During a period of transition such as the present, much experimentation may be justified. Certainly, the present is too early for the rigid formulation of the curriculum. Progress is likely to depend, however, on exact evaluation through research and not entirely upon the mere exchange of opinions. Indeed, a similar comment might be made of all research. School administrators, teachers, and the general public should be aware of research in fields other than their own. To the extent that such research is authentic they should cooperate to put into effect the recommendations to which these studies have led.

WILLIS L. UHL.

Dean, College of Education,  
University of Washington,  
Seattle, Washington

## XI. EDUCATION

### ADMINISTRATION OF PUBLIC SCHOOLS

3342. Anderson, Eva G. **Financial Support for Washington's Public Schools**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3343. Anderson, H. A. R. **Supervision of Rural Schools in British Columbia—A Review of the Present System and a Plan of Reorganization**  
Master's Thesis, '31  
Lib., University of Washington, Seattle
3344. Arlander, Ruth A. **The Rise of High Schools in the State of Washington**  
Master's Thesis, '37  
Lib., University of Washington, Seattle
3345. Bolton, F. E. and Bibb, T. W. **A History of Education in Washington**  
(ms.) ( )  
University of Washington, Seattle
3346. Breckner, E. L. **History of Financial Support of the Common School System**  
(in process), '39  
Washington State Planning Council, Olympia
3347. Breckner, E. L. **Survey of the Common School System in Washington; Appendix C-1: Evolution and Present Problems of the Common School District System**  
(in process), '39  
Washington State Planning Council, Olympia
3348. Breckner, E. L. **Survey of the Common School System in Washington; Appendix D: Analysis of the Expenditures for Common Schools**  
47 p. (mimeo.) ( )  
Washington State Planning Council, Olympia
3349. Broetje, A. F. **A Follow-Up Survey of Seattle High School Graduates of 1927 and 1929**  
Master's Thesis, '37  
Lib., University of Washington, Seattle
3350. Chism, L. L. **The Economic Ability of the States to Finance Public Schools**  
Columbia University, Teachers College, Bureau of Publications, New York City, '35
3351. Cook, E. H. **The Physical Conditions and Certain Financial Data of the Schools of Clark County, Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3352. Coos County, Oregon, Planning Commission. **Rural School Survey**  
Coquille, Oreg.
3353. Crook, C. A. **A Study of Indian Education in Washington**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3354. Derr, A. M. **Some Political and Economic Factors in Education**  
M. A. Thesis, '34  
Lib., University of Idaho, Moscow



3355. Douglas County, Oregon, Planning Commission. **Statistical School Survey**  
Roseburg, Oreg.
3356. Dreeson, W. H. **Incidence of Public School Taxation in Oregon with Special Reference to the Elementary and County School Fund Laws**  
Agr. Exp. Sta. Bull. No. 306, 110 p., '32  
Oregon State College, Corvallis
3357. Gaiser, L. W. **School Consolidation in Spokane County, Washington**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3358. Gaiser, P. F. **The Taxation of Public Utilities for School Support in Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3359. Hodge, W. C. **An Administrative Analysis of the Village School**  
Master's Thesis, '30  
Lib., State College of Washington, Pullman
3360. Idaho State Department of Education. **State School Survey in Idaho —Ada County**  
WPA 465-92-3-31, '38  
Boise, Idaho
3361. Idaho State Department of Education. **State School Survey in Idaho —Clark County**  
WPA 465-92-3-31, '38  
Boise, Idaho
3362. Idaho State Department of Education. **State School Survey in Idaho —Jerome County**  
WPA 465-92-3-31, '38  
Boise, Idaho
3363. Idaho State Department of Education. **State School Survey in Idaho —Latah County**  
WPA 465-92-3-31, '38  
Boise, Idaho
3364. Idaho State Department of Education. **State Study of Schools in Idaho**  
WPA 465-92-3-31, '38  
Boise, Idaho
3365. Johnson, L. G. **A Treatise on Rural School Consolidation**  
M. A. Thesis, '32  
Lib., University of Idaho, Moscow
3366. Jones, R. **The Administration of the Public Schools in the Portland Metropolitan Area**  
(ms.), '35  
Lib., Reed College, Portland, Oreg.
3367. King County, Washington, Planning Commission. **Study of King County Population Density, Location of Children of School Age, School Bus Routes and District Maps with Graphical Presentation for Ten-Year Period of School Enrollment, Assessed Valuations, Bonded Indebtedness, and School Levies**  
Seattle, Wash.

3368. King, H. B. **The Financing of Education in British Columbia**  
Ph. D. Thesis, '36  
Lib., University of Washington, Seattle
3369. Lash, F. M. **An Historical and Functional Study of Public Education in Seattle, Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3370. MacLaurin, D. L. **Education before the Gold Rush**  
British Columbia Hist. Quart., II, 247-263, '38
3371. MacLaurin, D. L. **The History of Education in the Crown Colonies of Vancouver Island and British Columbia and in the Province of British Columbia**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3372. Madsen, I. N. **A Study of Teachers' Salaries in Idaho During the Depression Years**  
(ms.) ( )  
Lewiston State Normal School, Lewiston, Idaho
3373. Madsen, I. N. **Teachers' Salaries in Idaho During 1936-1937**  
Lewiston State Normal School, Lewiston, Idaho
3374. Mahrt, D. **The County as a Source of School Support in the United States with Specific Reference to Washington**  
Master's Thesis, '34-'35  
Lib., State College of Washington, Pullman
3375. Marsden, T. E. **A Survey of High School Education in School District North of Seattle**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
3376. McDonald, V. C. **A Survey of School Bus Insurance in the State of Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3377. McNeil, W. **A Health Survey of Rural School Children of the South Half of Pend Oreille County**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3378. Moe, M. P. **Efforts to Remove the Inequalities of Counties in Ability to Support Education**  
Montana Education, XV, 94-99, '38
3379. Moe, M. P. **Inequalities in the Ability of Counties in Montana to Support Education**  
Montana Education, XV, 91-94, '38
3380. Moe, M. P. **Inequalities in the Ability of School Districts in Montana to Support Education**  
Montana Education, XV, 13-90, '38
3381. Muncaster, T. H. **Proposed Reorganization of the School Districts of Skagit County, Washington**  
Master's Thesis, '35  
Lib., State College of Washington, Pullman

3382. Olsen, H. P. **High School Subject Costs in Spokane County, Washington**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3383. Onthank, K. W. **N. Y. A. Students in the College Personnel Program**  
Fourteenth Rept. of Am. College Personnel Assoc., 34-39, '37
3384. Onthank, K. W. **Expanding Educational Opportunity**  
Eighth Ann. Rept. Oreg. High School Principal's Conf., p. 27, '36
3385. Ray, A. L. **A Study of Transportation in the Schools of the State of Washington**  
Master's Thesis, '30  
Lib., State College of Washington, Pullman
3386. Redford, W. **An Analysis of the Administration Duties of School Superintendents in Oregon and Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3387. Renne, R. R. **Financing Montana Schools**  
Agr. Exp. Sta. Bull. No. 307, 16 p., '35  
Montana State College, Bozeman
3388. Renne, R. R. **Organization and Costs of Montana Schools**  
Agr. Exp. Sta. Bull. No. 325, 104 p., '36  
Montana State College, Bozeman
3389. Russell, T. **A Proposed Plan for the Consolidation of the Schools of Lane County, Oregon**  
M. A. Thesis, '38  
Lib., University of Oregon, Eugene
3390. Ryan, W. C. **Administrative Reorganization in Spokane County, Washington**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3391. Schlauch, G. H. **A Study of Public Junior Colleges in Washington**  
Ph. D. Thesis, '37  
Lib., University of Washington, Seattle
3392. Sessions, E. B. **Administration and Supervision in Idaho High Schools**  
M. A. Thesis, '35  
Lib., University of Idaho, Moscow
3393. Soules, Jean and Stone, C. W. **Survey of Education, Spokane County, Washington**  
138 p. (ms.), '36  
Kinman Business University, Spokane, Wash.
3394. Treadwell, E. A. **Proposed Consolidations in Yakima County, Washington**  
Master's Thesis, '33  
Lib., State College of Washington, Pullman
3395. Waddoups, R. O. **The Cost of the Complete Application of the Educational Equalization Features of the Idaho School Revenue Laws**  
Master's Thesis, '37  
Lib., University of Utah, Salt Lake City

3396. Wakefield, R. R. **An Analysis of the Physical and Certain Financial Facts of the School Districts Maintaining a Standard High School in Marion County, Oregon**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3397. Washington Education Association, Research Committee. **The Subject Progress of Pupils in Different Types of Schools**  
Washington Education Jour., April '30
3398. Washington State Libraries Association, Executive Committee. **Survey of the Common School System in Washington, Appendix E: A Program for Library Service in Washington**  
20 p. (mimeo.), '38  
Washington State Planning Council, Olympia
3399. Washington State Planning Council. **Organization, Administration, and Financial Support of Common Schools, State of Washington**  
Educational Survey Interim Rept. No. 1, '38  
Olympia, Wash.
3400. Washington State Planning Council. **Statistical Abstract, Appendix A (Data pertaining to common schools)**  
186 p. (mimeo.), '38  
Olympia, Wash.
3401. Washington State Planning Council. **A Survey of the Common School System of Washington**  
128 p., '38  
Olympia, Wash.
3402. Wentworth, E. F. **The Administration of Education with Reference to the Situation in Oregon**  
(ms.), '34  
Lib., Reed College, Portland, Oreg.
3403. Wicks, O. C. **A Study of Some Factors Affecting Enrollment in the Industrial Arts Courses of the Seattle High Schools**  
Master's Thesis, '37  
Lib., University of Washington, Seattle
3404. Willard, C. E. **An Analysis of Instructional Costs in 82 Oregon High Schools**  
Master's Thesis, '37  
Lib., University of Washington, Seattle

#### SCHOOL CURRICULA

3405. Avery, W. **The Social Studies in Secondary Schools. A Study of the Present Curriculum**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3406. Blankenhorn, J. W. **A Survey of Commercial Education in Longview, Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3407. Blankenship, A. H. **A Survey of Oregon High School Graduates to Determine Some Recommendations for the State Course of Study for Commercial Work**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle

3408. Bossing, N. L. **Basic Principles Underlying Curriculum Improvement**  
Handbook on Curriculum Study, Oreg. State Teacher's Assoc.  
Bull. I, 73-95, '37
3409. Burrus, D. L. **A Study of the Contract Method of Teaching Geography**  
(ms.) ( )  
State College of Washington, School of Education, Pullman
3410. Corcoran, Ann. **A Survey of Commercial Education in the State of Washington**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
3411. DeGabrielle, E. M. **A Study in the Development of Certain Fundamental Subjects from Junior High School through Senior High School**  
M. A. Thesis, '37  
Lib., University of Washington, Seattle
3412. Denman, G. E. **Revision of the Curriculum in Vocational Education for Junior and Senior High Schools of Idaho**  
M. A. Thesis, '33  
Lib., University of Idaho, Moscow
3413. Doane, E. M. **A Course of Study in Social and Economic Problems**  
M. A. Thesis, '33  
Lib., University of Idaho, Moscow
3414. Draper, E. M. **Determination of Criteria for a Course of Study**  
(ms.) ( )  
University of Washington, College of Education, Seattle
3415. Garver, R. F. **Origin and Development of Commercial Curriculum in Idaho High Schools**  
M. A. Thesis, '32  
Lib., University of Idaho, Moscow
3416. Griffith, G. E. **Conservation in Education**  
Washington Curriculum Jour., III, 15-21, '38
3417. Harlan, C. L. **Agencies for Character Education in the Higher Educational Institutions of the Northwest**  
(ms.) ( )  
Lewiston State Normal School, Lewiston, Idaho
3418. Howard, C. A. **Course of Study, State of Oregon, Elementary Schools: Geography**  
State Printing Dept., Salem, Oreg., '31
3419. Idaho State Department of Education. **Elementary Curriculum—Idaho Forests**  
(mimeo.) ( )  
Boise, Idaho
3420. Idaho State Department of Education. **Elementary Curriculum—Irrigation in Idaho**  
(mimeo.) ( )  
Boise, Idaho
3421. Idaho State Department of Education. **Elementary Curriculum—Social Studies and Natural Science**  
(mimeo.), '38  
Boise, Idaho

3422. Leighton, R. W. **Selecting Materials for Social Science Courses (continuing)**  
University of Oregon, Eugene
3423. Macomber, F. G. **Curriculum Trends and Their Implications for Secondary Education in Oregon**  
Commonwealth Review, XX, 466-474, '38  
University of Oregon Publications, Eugene
3424. Monk, R. M. **Program of Specific Livestock Sanitation and First-Aid in Teaching Vocational Agriculture in Idaho**  
Master's Thesis, '35  
Lib., University of Idaho, Moscow
3425. Montgomery, E. B. **Correlation of Psychology, Sociology, and Education in the Study of the Problem Child**  
Commonwealth Review, XX, 479-481, '38  
University of Oregon Publications, Eugene
3426. Mortenson, R. V. **The Development of the Study of History in the School Curriculum in Idaho**  
M. A. Thesis, '32  
Lib., University of Idaho, Moscow
3427. Myron, E. F. **A Survey of Local Industrial Arts Units in a Representative Number of Schools in Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3428. Northwest Conservationist. **Conservation in the Curriculum**  
Northwest Conservationist, II, No. 1, '39
3429. Oregon State Department of Education. **Course of Study: Elementary Schools, Agriculture, etc.**  
State Printing Dept., Salem, Oreg., '33-'39
3430. Oregon State Department of Education. **Course of Study: Elementary Schools, History, Civics**  
State Printing Dept., Salem, Oreg., '31
3431. Robinson, D. **An Investigation of Social Science Teaching in the High Schools of the State of Washington**  
Master's Thesis  
Lib., University of Washington, Seattle
3432. Sannerud, A. G. **An Integrated Course of Study in the Social Sciences for the Junior and Senior Years**  
M. A. Thesis, '37  
Lib., University of Washington, Seattle
3433. Schaller, G. S. **Industrial Arts—A Vital Element in the Curricula**  
Univ. of Wash. Coll. of Ed. Record, III, No. 1, 7-11, '36  
Seattle, Wash.
3434. Studebaker, J. W. **Conservation Education**  
Northwest Conservationist, I, No. 4, '38
3435. Thompson, H. A. **The Status of Remedial and Corrective Reading in the High Schools of the State of Montana**  
M. A. Thesis, '38  
Lib., University of Washington, Seattle

3436. **Tomes, Cornelia A. The Education of Handicapped Children in Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3437. **Upshall, C. C. A Study of the Assignments Made by Instructors in Social Science, Science, English, and Educational Measurements during the Fall Quarter of 1932-33**  
22 p. (ms.), ( )  
Western Washington College of Education, Bellingham, Wash.
3438. **Warren, R. R. An Attempt to Teach Character Education in the Puyallup Junior-Senior High School**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3439. **West, Phebe. An Educational Program for an Aleut Village**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3440. **Wicks, O. C. A Study of Some Factors Affecting Enrollment in the Industrial Arts Courses of the Seattle High Schools**  
M. A. Thesis, '37  
Lib., University of Washington, Seattle
3441. **Wilson, F. G. The Social Sciences as School Subjects**  
Pacific Northwest Quart., XXVII, 185-186, '36  
University of Washington, Seattle

#### TECHNIQUES OF EDUCATION

3442. **Corcoran, Anne M. A Survey of Current Practice with Reference to Commercial Work in Washington High Schools**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
3443. **Hawk, R. F. and Upshall, C. C. Experimental Guidance Studies—Reading**  
(ms.), '38  
Washington State Planning Council, Olympia
3444. **Malony, Bernice D. The Effect of the Motion Pictures on Progressive Education**  
Prof. Paper, '37  
Lib., University of Idaho, Moscow
3445. **Upshall, C. C. An Analysis of the Errors Made in Scoring the "Kuhlman-Anderson Intelligence Tests" for the First Grade in the Bellingham City Schools, Fall, 1934**  
(ms.), '35  
Western Washington College of Education, Bellingham
3446. **Upshall, C. C. An Analysis of the Results of the Achievement Tests Given to the Pupils in the Training School, State Normal School at Bellingham, Washington, during October 1934**  
(ms.), '35  
Western Washington College of Education, Bellingham

3447. Upshall, C. C. **An Analysis of the Results of the Arithmetic Computation and Arithmetic Reasoning Sections of the "New Stanford Achievement Test" Obtained from Children in Grades Four to Eight Inclusive in the Training School**  
(ms.), '35  
Western Washington College of Education, Bellingham
3448. Upshall, C. C. **A Report of the Tests Given to the First, Second, Fourth and Seventh Grades of the Bellingham City Schools during September and October, 1934**  
(ms.), '35  
Western Washington College of Education, Bellingham
3449. Upshall, C. C. **Spread in Pupil Ability on the "New Stanford Achievement Test," Fourth Grade, Bellingham City Schools, Fall, 1934**  
(ms.), '35  
Western Washington College of Education, Bellingham
3450. Upshall, C. C. **Stability and Values of a Rating Scale as an Aid to Improving Instruction**  
(ms.) ( )  
Western Washington College of Education, Bellingham

#### VOCATIONAL GUIDANCE AND TRAINING

3451. Adams, O. D. **Foreman Training Conference, Portland, Oregon, September 29-November 17, 1937**  
35 p. (mimeo.), '37  
Oregon State Board for Vocational Education, Salem
3452. Adams, O. D. **Leader Training Conference for Foremen, January, February, March, April, 1938, Portland, Oregon**  
41 p. (mimeo.), '38  
Oregon State Board for Vocational Education, Salem
3453. Adams, O. D. **Training Conference for Store Managers**  
31 p. (mimeo.), '38  
Oregon State Board for Vocational Education, Salem
3454. Adams, O. D. **Training Conference for Women Supervisors, Personnel Directors and Section Heads, Portland, Oregon, March-May, 1938**  
28 p. (mimeo.), '38  
Oregon State Board for Vocational Education, Salem
3455. Adams, O. D. **Vocational Training for Municipal Employees**  
Commonwealth Review, XIX, p. 72, '36  
University of Oregon, Eugene
3456. Anderson, V. V. **Case Studies of Guidance Programs in Representative High Schools of the State of Washington**  
M. A. Thesis, '38  
Lib., University of Washington, Seattle
3457. Arnold, J. B. **Unemployed Youth and High School Curriculum**  
Master's Thesis, '37  
Lib., State College of Washington, Pullman
3458. Dent, D. E. **A Follow-Up Survey of Graduates of Gresham Union High School of Gresham, Oregon, 1927-1934**  
Master's Thesis  
Lib., University of Oregon, Eugene



3459. Dickson, L. M. **A Study of the Philosophy and Organization of Guidance in Ten Elementary Schools of Seattle, Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3460. Dixon, H. H. **The Present Status of the Oregon Child Guidance Extension Program**  
Commonwealth Review, XXI, No. 1, 13-23, '39  
University of Oregon Publications, Eugene
3461. Fleming, S. E. **Survey of the Common School System in Washington Appendix G: The Edison Vocational School**  
17 p. (mimeo.), '38  
Washington State Planning Council, Olympia
3462. Flottman, E. A. **The Prediction of High School Success from Achievement Tests — Flathead County High School, Kalispell, Montana**  
M. A. Thesis, '38  
Lib., University of Washington, Seattle
3463. Hood, Winona L. **The Development and Present Status of Vocational Guidance in the High Schools of Oregon**  
Master's Thesis, '32  
Lib., Oregon State College, Corvallis
3464. Hubert, E. E. **The Profession of Forestry**  
Univ. of Idaho Bull., XXX, No. 16, 1-19, '35  
Moscow, Idaho
3465. Ingle, W. F. **A Follow-Up Survey of the Olympia High School Graduates of 1928 and 1932**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3466. Johnson, Arlien. **Professional Education for Social Work in the New Order**  
Jour. of Educational Sociology, IX, 259-271, '36
3467. Leighton, R. W. **A Study of the Economic Status of University of Oregon Graduates (1928-1936)**  
University of Oregon, Eugene
3468. Martin, M. L. **A Study of the School and the Post-School Progress of High School Graduates in Yakima County, Washington**  
Master's Thesis, '33  
Lib., State College of Washington, Pullman
3469. Oregon State Board for Vocational Education. **Industrial Education and Changing Conditions—Oregon State College**  
Salem, Oreg., '38
3470. Oregon State Board for Vocational Education. **The Oregon Plan of Apprenticeship**  
Salem, Oreg.
3471. Oregon State Board for Vocational Education. **Training for the Police Service**  
Salem, Oreg.
3472. Oregon State Board for Vocational Education. **Vocational Education**  
Salem, Oreg.

3473. **Sandwick, Galena O. Guiding Women in the Choice of Vocational Opportunities**  
Master's Thesis, '32  
Lib., Oregon State College, Corvallis
3474. **Scheitlin, Frieda M. A Study of the Guidance Program in the Puyallup Junior-Senior High School**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3475. **Shepherd, M. A. A Guidance Program and a Plan for the Execution Thereof**  
M. A. Thesis, '38  
Lib., University of Idaho, Moscow
3476. **Showalter, N. D. Education and Training for Public Service Needs**  
Proc. of Pacific Northwest Regional Planning Conf., III, 123-124, '36  
Portland, Oreg.
3477. **Sommer, J. D. The Status of Courses in Occupational Information in High Schools (Including Oregon)**  
Master's Thesis, '37  
Lib., University of Colorado, Boulder
3478. **Sorick, H. W. A Survey of Educational Guidance in the Secondary Schools of Oregon**  
Ph. D. Thesis, '38  
Lib., University of Washington, Seattle
3479. **Spence, Wilma M. A Survey of Guidance in the Secondary Schools of Oregon: A Suggested Course**  
Master's Thesis, '37  
Lib., Oregon State College, Corvallis
3480. **Thoman, I. C. Guidance Practices in the Four-Year and Senior High Schools of the State of Washington**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3481. **Upshall, C. C. A Follow-Up Study of the Graduates of the Junior High School Curriculum between 1930-34 Inclusive**  
(ms.) ( )  
Western Washington College of Education, Bellingham
3482. **Washington State Department of Social Security, Division of the Blind. Vocational Aid and Training**  
Publ. No. 3, 28 p. (mimeo.), '38  
Olympia, Wash.
3483. **Weaver, J. E. Educational and Psychological Factors Influencing the Choice of Career**  
Ph. D. Thesis, '35  
Lib., University of Washington, Seattle
3484. **Wilson, Jessie A. Study of Students' Attitude Toward the Value of a Course in Occupations in the Junior High School Curriculum**  
Master's Thesis, '38  
Lib., University of Washington, Seattle
3485. **Wilson, S. A. Social and Economic Sciences in the Education of a Forester**  
Northwest Science, XII, No. 2, 33-40, '38

## XII. PLANNING

In a group of laymen it is usually necessary to explain the meaning of the word "planning." This is unfortunate, not only because it introduces an initial handicap, but also because one technician may have a different viewpoint from that of another and therefore give a different definition. All of which leads to confusion. Again many of us connect planning with dictatorship and regimentation. We have heard of the first five year plan, of the second, and of the third five year plan. We feel something sinister—a weight bearing down upon us. A foreign delegate to the National Planning Conference, held last year in Minneapolis, who registered as "director of planning," commented on this confusion, saying that the word "research" in many cases is better than "planning." Yet that is only one phase of planning as its meaning is accepted by the professionals. Research is the initial step, the determination of facts. The plan, based upon the facts, is the second step. And the third and very essential step is action, for without action, through education, all of our plans are useless.

For clarification, planning is here defined as **the conscious effort on the part of the people, based on full knowledge, so to use their resources that present and coming generations may benefit to the fullest possible extent.** It is strictly a democratic process in which action is initiated through the elected representatives of the people at the various levels of government.

It will be noticed that the subjects in this section deal exclusively with physical resources. Education is the one exception. To many of us in the planning movement, this is a proper approach. Certainly we should know the facts about our land upon which grow our forests and our crops; about water which supplies our cities, our farms, sustains our fisheries, irrigates our arid lands, bears our water commerce, and provides us with hydro-electric energy; our minerals upon which so much of our economy is based; our recreational facilities; and our commerce and industry. Upon all of these resources rests our civilization, our social and economic well-being. Nor is it a difficult matter to demonstrate to the doubters the urgent necessity to conserve these resources. No thinking person can long deny that the conservation or the wise use of a resource should not be left to the uncoordinated efforts of individuals. The evidences against continuing such practices are too convincing even to the casual observers in any part of the region.

Planning then may well begin with our physical resources, from a known base, where methods and procedures may be easily demonstrated to the people, advancing thereafter, with accumulated experience, to the more complicated fields of social and economic planning.

While much has been done in research and planning for the better use of our physical resources, much yet remains to be done. Much basic information is still required on the quality of our soils, the location of our agricultural land, the periods of maximum and minimum flow and the amount of runoff of our streams, the extent, kind, and location of our mineral resources, and the variety of our recreational resources. Both industry and commerce occupy important positions in our economy. To what extent may these be expanded based upon our natural resources and particularly on hydroelectric power? To what extent must greater reliance be placed upon local and domestic markets in the face of increasing nationalism and declining foreign exports?

A better understanding is required of the place of the city in the region and of the region in the national picture. Very largely our cities have

grown in a haphazard manner with little reference to the actual needs of the territory which they are supposed to serve.

And finally and appropriately, the use of the zoning power requires further clarification. In too many quarters it is regarded as an end in itself rather than as a means to a desirable end. Its proper use comes only when our researches and plans have advanced to the point where we are able to see trends. Zoning gives direction to our plans. Zoning, properly applied, sees to it that our plans are executed. Until we have a clearer picture of our sub-regions and regions, until we have acquired further knowledge of the type of economy to which our Northwest Territory is best adapted, zoning can only be used as a stopgap both for urban and rural lands.

Gradually we are accumulating facts and experience. The extent of our researches is indicated by this selected bibliography. Let us apply our knowledge as we proceed, making of planning a dynamic instrument.

P. HETHERTON.

Consultant, National Resources Committee,  
Washington State Planning Council,  
Olympia

## XII. PLANNING

### AVIATION

3486. Northwest Aviation Planning Council. **Fifth Session Northwest Aviation Planning Council Held at Medford, Oregon, September 16, 17, 1938**  
66 p., '38  
Shindell Reporting-Publishing Service, Seattle, Wash.

### CITY

3487. Association of Washington Cities. **Manual on City Planning in Washington**  
Rept. No. 17, '36  
University of Washington, Seattle
3488. Aumack, H. F. **Zoning: A Phase of City Planning**  
Northwest Science, III, 36-39, '29
3489. Bartholomew & Associates. **Report on Proposed System of Major Streets and Development of Waterfront**  
461 p., '32  
Portland, Oreg.
3490. British Columbia Legislative Assembly. **An Act Respecting Town Planning**  
Victoria, B. C., '36
3491. Butler, A. D. **Science and Application of City Planning**  
Northwest Science, II, 24-27, '28
3492. Freeman, H. D. **Plan for a New Bandon**  
58 p. (mimeo.), '37  
Oregon State Planning Board, Portland

3493. Freeman, H. D. **Report on Replanning of the Business District of Canyon City, Oregon**  
4 p. (mimeo.), '37  
Oregon State Planning Board, Portland
3494. McClure, C. A. **History of City Planning in the Pacific Northwest**  
75 p., '36  
Pacific Northwest Regional Planning Commission, Portland, Oreg.
3495. Nollie, K. J. **A Municipal and Regional Plan: Studies of the Planning Problems Involved in Modern Municipal and Regional Planning**  
Master's Thesis, '37  
Lib., University of Idaho, Moscow
3496. Parsons, P. A. **Human Aspects of Municipal Planning**  
Commonwealth Review, XVI, 170-175, '34  
University of Oregon, Eugene
3497. Scovell, H. B., Sampson, H. C. and Ehrenberg, C. H. **Land Use Zoning Survey—The City of Seattle**  
WPA Project Nos. 667, 4110, 5638, 65 p., '38  
Seattle, Wash.
3498. Town Planning Commission. **A Plan for the City of Vancouver, British Columbia**  
288 p., '29  
Vancouver, B. C.
3499. United States National Resources Committee. **Status of City and County Planning in the United States**  
Circ. No. 10, 61 p., '37  
Washington, D. C.
3500. Vancouver City Council. **Zoning By-Law No. 2516—City of Vancouver, British Columbia**  
29 p., '38
3501. Vogel, J. H. **Model Regulations Governing Plats, Replats, Subdivisions or Dedications Outside the Limits of Any Incorporated City or Town in the County**  
King County Planning Commission, Seattle, Wash.
3502. Vogel, J. H. **Outline of First Steps of Procedure of Planning Commission for a Small Town of Less Than 2500 Inhabitants**  
King County Planning Commission, Seattle, Wash.
3503. Vogel, J. H. **Zoning Regulations for Metropolitan Areas and Rural Districts**  
King County Planning Commission, Seattle, Wash.
3504. Vogel, J. H. and Chase, E. F. **Report on Land-Use Zoning Survey—The City of Seattle**  
WPA Project No. 5638  
King County Planning Commission, Seattle, Wash.
3505. Washington State Planning Council. **Model Municipal Zoning**  
18 p. (mimeo.) ( )  
Olympia, Wash.
3506. Washington State Planning Council. **Model Ordinance Creating a City or Town Planning Commission**  
2 p. (mimeo.) ( )  
Olympia, Wash.

3507. Washington, University of, Bureau of Governmental Research. **Manual on City Planning in Washington**  
Rept. No. 17, 8 p. (mimeo.), '36  
Seattle, Wash.

### COUNTY

3508. Clackamas County, Oregon, Planning Board. **Accomplishments of the Clackamas County Planning Board: A Demonstration of County Planning**  
16 p. (mimeo.), '36  
Oregon City, Ore.
3509. Fields, D. M. **County Planning with Special Reference to Clackamas County, Oregon**  
(ms.), '37  
Lib., Reed College, Portland, Ore.
3510. Hetherton, P. **County and City Planning in Washington**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 30-32, '37  
Portland, Ore.
3511. Hughes, W. P. **District, County and City Planning in Central Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 36-37, '37  
Portland, Ore.
3512. King County, Washington, Planning Commission. **Report of the King County Planning Commission, July 1935 to July 1938, to Board of County Commissioners**  
57 p. (mimeo.), '38  
Seattle, Wash.
3513. Lake County, Oregon, Planning Commission. **County Owned Lands Set Aside for Public Purposes**  
Lakeview, Ore.
3514. McClure, C. A. **County Planning Commissions, Their Organization and Activities**  
10 p. (mimeo.), '35  
Pacific Northwest Regional Planning Commission, Portland, Ore.
3515. McClure, C. A. **First Steps in County Planning**  
6 p. (mimeo.) ( )  
Pacific Northwest Regional Planning Commission, Portland, Ore.
3516. McClure, C. A., Stanbery, V. B. and Bessey, R. F. **County Planning**  
Commonwealth Review, XVI, 166-169, '34  
University of Oregon, Eugene
3517. Oregon State Planning Board. **County Planning in Oregon, 1935-1936 (Section on Recreation Study)**  
60 p. (mimeo.), '36  
Portland, Ore.
3518. Oregon State Planning Board. **Further Suggestions to County Planning Commissions for Studies of County Problems, Assembly of Data and Preparation of Maps**  
12 p. (mimeo.), '36  
Portland, Ore.
3519. Parsons, P. A. **County and Community Planning in Oregon**  
American Planning and Civic Annual, 337-345, '37

3520. Stanbery, V. B. **Aims and Scope Suggested for County Planning Commissions in Oregon**  
2 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3521. Stanbery, V. B. **County Planning in Oregon**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 32-33, '37  
Portland, Oreg.
3522. Stanbery, V. B. **Draft and Explanation of Proposed County Planning Commission Enabling Act**  
8 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3523. Stanbery, V. B. **Suggestions to County Planning Commissions**  
7 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3524. Stoll, L. C. **County Planning; Completed and Proposed Program**  
11 p. (mimeo.), '37  
Clackamas County Planning Board, Oregon City, Oreg.
3525. Stoll, L. C. and Stanbery, V. B. **Distinctive Features of Planning Procedure in Clackamas County, Oregon**  
Joint Conf. on Planning, Planning for City, State, Region and Nation, 59-65, '36  
Oregon City, Oreg.
3526. Tyler, R. G. and Vogel, J. H. **Report of the King County Planning Commission, 1935-1938**  
Seattle, Wash.
3527. United States Works Progress Administration, City of Seattle, and Others. **Summary of County Zoning Regulations and Brief of Court**  
WPA Project No. 667-4110-5638, (ms.), '38  
King County Planning Commission, Seattle, Wash.
3528. Vogel, J. H. **Description of Method to be Followed Putting into Effect County Zoning Regulations**  
King County Planning Commission, Seattle, Wash.
3529. Vogel, J. H. **Organization of County Planning Commissions**  
King County Planning Commission, Seattle, Wash.
3530. Vogel, J. H. **Relationships of the County Planning Agencies**  
King County Planning Commission, Seattle, Wash.
3531. Washington State Planning Council. **Model Resolution Creating a County Planning Commission**  
2 p. (mimeo.), '35  
Olympia, Wash.
3532. Washington State Planning Council. **Some Notes and Suggestions on County Planning Procedure**  
8 p. (mimeo.) ( )  
Olympia, Wash.
3533. Weisel, G. F. **District and County Planning in Montana**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 33-35, '37  
Portland, Oreg.

3534. Wood, J. D. **District and County Planning in Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 35-36, '37  
Portland, Oreg.
3535. Wood, J. D. **District and County Planning Problems in Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., III, 136-137,  
'36  
Portland, Oreg.

#### EDUCATION

3536. Alaska Planning Council. **Education. Report of Advisory Council**  
Juneau, Alaska, '38
3537. Educational Policies Commission. **Activities of State Planning Boards  
Relating to Public Education**  
(mimeo.), '36  
National Education Assoc., Washington, D. C.
3538. Washington State Planning Council. **Planning for Public Education  
—Preliminary Report, Parts I and II**  
33 p. (ms.), '34  
Olympia, Wash.

#### HIGHWAYS AND TRANSPORTATION FACILITIES

3539. Beakey, J. and McCullough, C. B. **The Economics of Highway Plan-  
ning**  
Tech. Bull. No. 7, '38  
Oregon State Highway Commission, Salem
3540. Hewes, L. I. **Planning Principles and the Transportation System**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 77-83, '37  
Portland, Oreg.
3541. Lynch, W. H. **Regional Highway Planning**  
Proc. of Pacific Northwest Regional Planning Conf., III, 108-113,  
'36  
Portland, Oreg.
3542. Yeon, J. **Freeways for Oregon**  
14 p. (mimeo.), '38  
Oregon State Planning Board, Portland

#### RECREATION

3543. Alaska Planning Council. **Recreation and Tourist Industry**  
Preliminary Rept. of Advisory Committee, '38  
Juneau, Alaska
3544. Columbia Gorge Interstate Committee. **Ways and Means for Effec-  
tive Cooperation of Washington and Oregon in Protecting and  
Developing the Scenic and Recreational Values of the Columbia  
Gorge**  
Pacific Northwest Regional Planning Commission, Portland, Oreg.,  
'38
3545. Oregon State Planning Board. **Procedure Suggested for County Plan-  
ning Commissions in Preparing a Recreational Inventory**  
IV, 5 p. (mimeo.), '36  
Portland, Oreg.



3546. Portland City Planning Commission. **Public Recreational Areas: A Survey and Plans**  
26 p., 24 plates, '36  
Portland, Oreg.

**REGIONAL: PACIFIC NORTHWEST**

3547. Alaska Planning Council. **First Biennial Report of the Alaska Planning Council of the Territory of Alaska**  
Juneau, Alaska, '37-'38
3548. Alaska Planning Council. **Notes and Resolutions Relating to Alaska Resources Committee Report**  
Juneau, Alaska, '38
3549. Bessey, R. F. **The Economic Assets, Possibilities and Problems of the Pacific Northwest**  
12 p. (mimeo.), '36  
Portland, Oreg.
3550. Bessey, R. F. **The Pacific Northwest**  
Proc. of National Planning Conf., 153-163, '37  
Pacific Northwest Regional Planning Comm., Portland, Oreg.
3551. Bessey, R. F. **Pacific Northwest Regional Planning Problems, Progress and Programs**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 9-17, '37  
Portland, Oreg.
3552. Bessey, R. F. **The Regional Plan**  
Proc. of Pacific Northwest Regional Planning Conf., II, 21-23, '34  
Portland, Oreg.
3553. Dana, M. N. **Regional Planning and Regional Opportunity**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 40-42, '37  
Portland, Oreg.
3554. Davidson, D. **The Political Economy of Regionalism**  
American Review, VI, No. 4, 410-434, '34
3555. Hetherton, P. **The Pacific Northwest Regional Planning Commission**  
Plan Age, II, No. 6, 2-5, '36
3556. Martin, R. R. **Integration in the Inland Empire Region of the Pacific Northwest**  
Social Forces, XVII, 29-40, '38
3557. McKinley, C. **Plans for Regional Organization**  
Regional Planning—Part I, Pacific Northwest, Sec. of Staff Rept., 133-192, '36  
U. S. Govt. Print. Off., Washington, D. C.
3558. McKinley, C. and Stewart, W. B. **Definition and Regionality of the Pacific Northwest**  
Regional Planning—Part I, Pacific Northwest, Sec. of Staff Rept., 96-131, '36  
U. S. Govt. Print. Off., Washington, D. C.
3559. Miller, F. G. **Research Needs of the Immediate Future in the Inland Empire**  
Northwest Science, VIII, 9-16, '34

3560. Mumford, L. **Regional Planning in the Pacific Northwest**  
Northwest Regional Council, Portland, Oreg., '38
3561. Pacific Northwest Regional Planning Commission. **Columbia Basin Report**  
41 p. (mimeo.), '36  
U. S. National Resources Committee, Washington, D. C.
3562. Pacific Northwest Regional Planning Commission. **Columbia Basin Report—Appendices to Regional Planning, Part I**  
565 p. (mimeo.), '36  
Portland, Oreg.
3563. Pacific Northwest Regional Planning Commission. **Consultant's Report on Regional Planning in the Pacific Northwest, January 1934-January 1935**  
219 p. (mimeo.), '35  
Portland, Oreg.
3564. Pacific Northwest Regional Planning Commission. **Proceedings of First Pacific Northwest Regional Planning Conference**  
131 p., '34  
Portland, Oreg.
3565. Pacific Northwest Regional Planning Commission. **Proceedings of Second Pacific Northwest Planning Conference**  
209 p., '34  
Portland, Oreg.
3566. Pacific Northwest Regional Planning Commission. **Proceedings of Third Pacific Northwest Regional Planning Conference**  
137 p., '36  
Portland, Oreg.
3567. Pacific Northwest Regional Planning Commission. **Proceedings of Fourth Pacific Northwest Regional Planning Conference**  
128 p., '37  
Portland, Oreg.
3568. Roterus, V. **The Columbia Basin Project: What It Is**  
Jour. of Geography, XXXIII, 314 ff., '34
3569. Stanbery, V. B. **An Approach to Regional Planning**  
17 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3570. United States National Resources Committee. **Regional Planning: Part I, Pacific Northwest**  
Section IV, 135-192, '36  
U. S. Govt. Print. Off., Washington, D. C.
3571. United States National Resources Committee. **Regional Planning: Part VII, Alaska, Its Resources and Development**  
213 p., '37  
U. S. Govt. Print. Off., Washington, D. C.

#### RESOURCE-USE: FISHERIES

3572. Washington State Planning Council. **Report of Fisheries Committee**  
69 p. (mimeo.), '34  
Olympia, Wash.

**RESOURCE-USE: FORESTS**

3573. Idaho State Planning Board. **Preliminary Report on Idaho State Forest Lands in Regard to the Acquisition of Suitable Forest Lands under Terms of the Fulmer Act**  
41 p. (mimeo.), '36  
Boise, Idaho
3574. Jeffers, D. S. **Frontiers and Forest Land Policies**  
Idaho Forester, '36  
University of Idaho, Moscow
3575. Jewett, G. F. **An American Plan for Forestry, with Discussion**  
Jour. of Forestry, XXXII, 308-314, '34
3576. Kneipp, L. F. **Public Forests in the National Land Plan**  
American Forests, XL, No. 4, 147-150, 187, 188, '34
3577. Morrell, F. W. **Federal, State and Private Cooperation in a Forestry Program**  
Jour. of Forestry, XXXIV, 130-135, '36
3578. Olsen, C. J. **National Forest Recreational Problems in a Regional Land Program**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 58-60, '37  
Portland, Oreg.
3579. Parsons, C. V. **Forestry Program**  
Cong. Record, 74th Cong., 1st sess., House, LXXIX, No. 123, 9775-9777, '35  
U. S. Govt. Print. Off., Washington, D. C.
3580. Portland, Oregon, Chamber of Commerce. **Statement of Forest Policy and Program, Portland Chamber of Commerce**  
'37-'38
3581. Rettie, J. C. and Sexton, V. L. **A Study of a Proposed Plan for a Deferred Tax Yield on Timber Property**  
49 p. (mimeo.), '36  
Oregon State Planning Board, Portland
3582. Spaulding, T. C. **Forests and Their Future in the Northwest**  
Northwest Conservationist, I, No. 4, '38
3583. Twerdal, M. P. **A Development Plan of the Lee Forest**  
Master's Thesis, '36  
Lib., University of Washington, Seattle
3584. United States Department of Agriculture. **A National Plan for American Forestry**  
(2 Vol.)  
73d Cong., 1st sess., S. Doc. No. 12, '33  
U. S. Govt. Print. Off., Washington, D. C.
3585. United States Department of Agriculture, Forest Service. **Setting up the Program for the State and Private Forestry**  
(ms.), '37  
U. S. Dept. of Agriculture, Soil Conservation Service Library, Spokane, Wash.
3586. Washington State Planning Council. **A Master Plan for Forestry in Washington**  
54 p. (mimeo.), '36  
Olympia, Wash.

3587. Washington State Planning Council. **The Proposed Mount Olympus National Park; A Land Use Study of Public Lands on the Olympic Peninsula**  
17 p. (mimeo.), '36  
Olympia, Wash.
3588. Washington State Planning Council. **Suggestions for Forest Protection Section on Forest Fires**  
8 p. (mimeo.) ( )  
Olympia, Wash.
3589. Washington State Planning Council, Technical Advisory Committee on Forestry. **Protection Against Forest Insects in Washington and Suggestions for Forest Protection Section on Forest Fires**  
8 p. (mimeo.) ( )  
Olympia, Wash.
3590. Washington State Planning Council, Technical Advisory Committee on Forestry. **Report of Sub-Committee on State Forest Policy**  
3 p. (mimeo.) ( )  
Olympia, Wash.
3591. Western Pine Association. **Western Pine Forestry Program—A plan to Maintain Production Balance and Develop Stable Industry**  
West Coast Lumberman, LXII, '35
3592. Wilson, S. A. **Permanency in Oregon's Forest Industries**  
Master's Thesis, '30  
Oregon State College, Corvallis
3593. Woods, J. B. **The Place of Forestry in Washington Land Use; Suggestions for Forest Use Planning**  
6 p. (mimeo.), '36  
Washington State Planning Council, Olympia

#### RESOURCE-USE: HUMAN AND SOCIAL

3594. Alaska Planning Council. **Public Welfare**  
Juneau, Alaska, '38
3595. McKinley, C. **Human Resources and Social Planning**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 107-112, '37  
Portland, Oreg.

#### RESOURCE-USE: INDUSTRIAL

3596. Barnard, H. E. **The Aims and Objects of Chemurgy**  
Proc. of Pacific Northwest Chemurgic Conf., 24-26, '37  
Washington State Planning Council, Olympia
3597. Eastman, A. V. **The Terminal Plan: An Improved System of Urban Transportation**  
Rept. No. 5, '38  
University of Washington, Engineering Experiment Station, Seattle
3598. Hutchinson, E. N. **Pacific Northwest Chemurgic Conference with Washington State Planning Council, Spokane, Washington (To Advance the Industrial Uses of Crops of the Pacific Northwest's Farms and Forests Through Applied Science)**  
134 p., '37  
Washington State Planning Council, Olympia

3599. Portland, Oregon, Chamber of Commerce. **Heavy Metal Industry—Portland as Plant Location**  
'37-'38
3600. Portland, Oregon, Chamber of Commerce. **Linen Manufacture—Portland as Plant Location**  
'37-'38
3601. Portland, Oregon, Chamber of Commerce. **Portland as Plant Location for Silk Manufactures**  
'36-'37
3602. Portland, Oregon, Chamber of Commerce. **Rayon Report—Portland as Plant Location**  
'37-'38
3603. Portland, Oregon, Chamber of Commerce. **Venetian Blind Manufacture—Portland as Plant Location**  
'37-'38
3604. Washington State Planning Council. **Preliminary Report on New Industries, by Committee on New Industries**  
40 p. (mimeo.), '35  
Olympia, Wash.
3605. Widtsoe, J. A. **The Need of Chemurgy in the West**  
Proc. of Pacific Northwest Chemurgic Conf., 55-58, '37  
Washington State Planning Council, Olympia

#### RESOURCE-USE: LAND-USE

3606. Alaska Planning Council. **Land Use. Committee Report**  
Juneau, Alaska, '38
3607. Alaska Planning Council. **Land Use. Laws and Regulations**  
Juneau, Alaska, '38
3608. Alsberg, C. L. **Problems and Methods Involved in Coordinating Research and Administrative Activity in Land-Use Planning**  
Proc. of Western Farm Economics Assoc., VII, 75-80, '34
3609. Benedict, M. R. **Types of Research Needed as a Basis for Land-Use Planning**  
Proc. of Western Farm Economics Assoc., VII, 60-66, '34
3610. Ely, R. T. **Land Planning and Education**  
Jour. of Educational Sociology, IV, 10-13, '30
3611. Farrell, F. D. **Developing a Satisfactory Land Utilization Policy**  
Ext. Serv. Review, '33  
Washington, D. C.
3612. Ferguson, J. W. **Land Use and Forest Protection in Southwestern Oregon**  
Jour. of Forestry, XXXV, No. 6, '37
3613. Flood, F. A. **What About Those Idle Acres?**  
Montana Farmer, XXI, p. 5, '33
3614. Hall, O. J. **Bases for Land Utilization Programs**  
Southwestern Social Science Quart., XVI, No. 3, 60-67, '35

3615. Harold, H. H. **Regional Land Planning** (Washington, Oregon, and Idaho) (ms.), '35  
Lib., U. S. National Resources Committee, Washington, D. C.
3616. Hudson, G. D. **A Quantitative Approach to Land-Use Problems**  
Annals of Assoc. of Am. Geog., XXV, 44-45, '35
3617. Huppuch, M. C. **Notes on Rural Land-Use Adjustment Through a Federal Land Program**  
Jour. of Forestry, XXXIII, 723-725, '35
3618. Jeffers, D. S. **Benefits for Forestry of Controlled Uses of Rural Lands**  
Ames Forester, '36  
Ames, Iowa
3619. Joerg, W. L. G. **Geography and National Land Planning**  
Geographical Review, XXV, 177-208, '35
3620. Selby, H. E. **Resettlement Administration Proposes Regional Land-Use Research Program**  
Planning News, III, 12-13, '35
3621. United States Department of Agriculture, Agricultural Adjustment Administration, Division of Program Planning, Land Policy Section. **New Settlers Migrating to Pacific Northwest**  
Land Policy Review, I, No. 4, 1-4, '35  
Washington, D. C.
3622. United States Department of Agriculture, Bureau of Agricultural Economics. **County Recommendations and Area Reports, 1938-39, Idaho**  
County Land-Use Program  
Bingham                      Fremont                      Madison  
Bonneville                  Jefferson                      Teton  
(mimeo.), '39  
Washington, D. C.
3623. Washington State Planning Council. **Report on Land Policy**  
7 p. (mimeo.), '34  
Olympia, Wash.

#### RESOURCE-USE: MINERALS

3624. Daniels, J. **Investigations Recommended to State Planning Council for Development and Utilization of Coal Resources**  
3 p. (mimeo.), '34  
Washington State Planning Council, Olympia
3625. Washington State Planning Council. **Planning for Washington. Mineral Resources**  
3 p. (mimeo.), '37  
Olympia, Wash.

#### RESOURCE-USE: POWER

3626. Idaho State Planning Board. **Power Conference**  
25 p. (mimeo.), '38  
Boise, Idaho
3627. Idaho State Planning Board and State Water Conservation Board. **Bonneville Power**  
Boise, Idaho, '38

3628. Oregon State Planning Board. **An Investigation of Data Pertaining to Possible Uses for Bonneville Power**  
26 p. (mimeo.), '36  
Portland, Oreg.
3629. Pacific Northwest Regional Planning Commission. **Proceedings of the Water Resources and Power Division, Pacific Northwest Regional Planning Conference, December 12-13, 1934**  
84 p., '34  
Portland, Oreg.
3630. Washington State Planning Council. **A Statement of the Viewpoint of the Washington State Planning Council on the Disposal of Electric Energy from Federal Projects**  
4 p. (mimeo.), '37  
Olympia, Wash.

#### RESOURCE-USE: WATER

3631. Montana State Planning Board. **Conservation and Future Development of Water Resources in the State of Montana**  
Helena, Mont., '35
3632. Morris, S. B. **Problems, Present Status and Objectives of a Regional Water Utilization Program**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 65-67, '37  
Portland, Oreg.
3633. Pacific Northwest Regional Planning Commission. **Pacific Northwest Water Resources and Their Future Development**  
38 p., '36  
Portland, Oreg.
3634. Pacific Northwest Regional Planning Commission. **Report of the Committee on Water Resources to the Second Pacific Northwest Regional Planning Conference**  
428 p. (mimeo.), '34  
Portland, Oreg.
3635. Stanbery, V. B. **Data Concerning Present Conditions and Outlining Plans for Conservation and Future Development of Water Resources in the State of Oregon**  
178 p. (ms.), '35  
Oregon State Planning Board, Portland

#### STATE

3636. Bauer, H. A. **A Second Report on the Willamette Valley Project Outlining a Regional Plan for Development of the Willamette Drainage Basin**  
161 p., '37  
Oregon State Planning Board, Portland
3637. Bean, O. R. **Planning in Oregon**  
Proc. of Pacific Northwest Regional Planning Conf., III, 23-25, '36  
Portland, Oreg.
3638. Blackmore, J. **Planning and Zoning in the State of Washington**  
Jour. of Land Public Utility Economics, XII, No. 2, 205-206, '36
3639. DeBoer, S. R. **State Planning Aims and Policies**  
Planning News, Pacific Northwest Regional Planning Commission, V (V-VI), 1-2, '36

3640. Fabrick, D. P. **Planning in Montana**  
Proc. of Pacific Northwest Regional Planning Conf., III, 20-23, '36  
Portland, Oreg.
3641. Hetherton, P. **Activities of the Washington State Planning Council**  
Planning News, Pacific Northwest Regional Planning Commission,  
I, 14-16, '34  
Portland, Oreg.
3642. Hetherton, P. **The Approach to Planning and Methods Adopted by  
the Washington State Planning Council**  
Proc. of Pacific Northwest Regional Planning Conf., III, 131-132,  
'36  
Portland, Oreg.
3643. Hetherton, P. **State Planning in Washington**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 23-24, '37  
Portland, Oreg.
3644. Idaho State Planning Board. **Biennial Report, I, 1934-1936**  
136 p., '37  
Boise, Idaho
3645. Idaho State Planning Board. **Synopsis of the Major Investigations  
and Studies Made and Being Made by the Idaho State Planning  
Board**  
7 p. (multi.), '36  
Boise, Idaho
3646. Kizer, B. H. **The Beginnings of Planning in the State of Washington**  
Plan Age, II, No. 6, 9-12, '36
3647. Kizer, B. H. **Planning in Washington, 1936**  
Proc. of Pacific Northwest Regional Planning Conf., III, 25-27, '36  
Portland, Oreg.
3648. Menefee, S. **A plan for Regional Administrative Districts for the  
State of Washington; an Ecological Study**  
Master's Thesis, '35  
Lib., University of Washington, Seattle
3649. Montana State Planning Board. **Montana Progress Report . . . to the  
National Resources Committee**  
XXI, No. 4, 5 p. (mimeo.), '36  
Helena, Mont.
3650. Montana State Planning Board. **Progress Report**  
37 p. (mimeo.), '35  
Helena, Mont.
3651. Montana State Planning Board. **Recommendations to President's  
Drought Committee**  
6 p. (mimeo.), '36  
Helena, Mont.
3652. Montana State Planning Board. **Staff Report Period Ending De-  
cember 31, 1936**  
87 p., '37  
Helena, Mont.
3653. Montana State Planning Board. **Status of Planning in Montana**  
6 p. (mimeo.), '35  
Helena, Mont.



3654. Oregon State Planning Board. **Consultant's Report to National Resources Board on Progress, May 1934 to May 1935**  
4 p. (mimeo.), '35  
Portland, Oreg.
3655. Oregon State Planning Board. **Consultant's Report of Progress and Accomplishments from December 15, 1935 to June 15, 1936**  
79 p. (mimeo.), '36  
Portland, Oreg.
3656. Oregon State Planning Board. **First Biennial Report, 1935-1936**  
108 p. (mimeo.), '36  
Portland, Oreg.
3657. Oregon State Planning Board. **Meeting of Public Lands Committee with Representatives of Agencies with O & C Land Problem**  
38 p. (mimeo.), '36  
Portland, Oreg.
3658. Oregon State Planning Board. **Oregon Looks Ahead**  
93 p., '38  
Portland, Oreg.
3659. Oregon State Planning Board. **Proceedings and Addresses of the Oregon State Planning Board, March 25-26, 1935**  
Commonwealth Service Series, II, No. 1, 87 p., '35  
University of Oregon Publications, Eugene
3660. Oregon State Planning Board. **Willamette Valley Project**  
127 p. (mimeo.), '35  
Portland, Oreg.
3661. Parsons, P. A. **State Planning in Oregon**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 25-26, '37  
Portland, Oreg.
3662. Pope, J. D. **State Planning in Montana**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 21-22, '37  
Portland, Oreg.
3663. Simons, W. **The Notable Relationship of the State Planning Board to the Nation and State**  
13 p. (mimeo.), '37  
Idaho State Planning Board, Boise
3664. Simons, W. **Planning in Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., III, 17-20, '36  
Portland, Oreg.
3665. Stanbery, V. B. **Accomplishments, Progress, and Proposed Future Program**  
24 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3666. Stanbery, V. B. **The Dilemma of State Planning**  
2 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3667. Stanbery, V. B. **The Field of State Planning**  
11 p. (mimeo.), '36  
Oregon State Planning Board, Portland

3668. Stanbery, V. B. **Fundamental Considerations in State Planning**  
Commonwealth Review, XVIII, 203-207, '36  
University of Oregon, Eugene
3669. Stanbery, V. B. **Objectives and Activities of the Oregon State Planning Board**  
Proc. of Pacific Northwest Regional Planning Conf., III, 133-134, '36  
Portland, Oreg.
3670. Stanbery, V. B. **Planning in Oregon**  
Plan Age, No. 6, 13-16, '36
3671. Stanbery, V. B. **State Planning in Oregon**  
Commonwealth Review, XVI, 161-165, '34  
University of Oregon, Eugene
3672. Stanbery, V. B. **The Willamette Valley Project; Report . . . on the Development of the Willamette River Watershed**  
128 p. (mimeo.), '35  
Oregon State Planning Board, Portland
3673. Tiffany, R. K. **State and County Planning**  
10 p. (mimeo.), '36  
Washington State Planning Council, Olympia
3674. Tiffany, R. K. **Whither Washington?**  
5 p. (mimeo.), '36  
Washington State Planning Council, Olympia
3675. United States National Resources Committee. **The States and Planning**  
30 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
3676. United States National Resources Committee. **State Planning, Programs and Accomplishments**  
128 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
3677. United States National Resources Committee. **State Planning—A Review of Activities and Progress**  
U. S. Govt. Print. Off., Washington, D. C., '35
3678. Washington State Planning Council. **First Biennial Report, from February 23, 1934 to September 30, 1934**  
78 p., '34  
Olympia, Wash.
3679. Washington State Planning Council. **Progress Report to National Resources Committee**  
50 p., '35  
Olympia, Wash.
3680. Washington State Planning Council. **Progress Report to National Resources Committee**  
36 p., '35-'36  
Olympia, Wash.
3681. Washington State Planning Council. **Proposed Projects for Washington State Planning Council**  
41 p. (mimeo.), '34  
Olympia, Wash.

- 3682. Washington State Planning Council. **Second Biennial Report of the Washington State Planning Council from October 1, 1934 to September 30, 1936**  
70 p., '37  
State Printing Plant, Olympia, Wash.
- 3683. Wood, J. D. **Objectives, Methods and Problems of State Planning**  
Proc. of Pacific Northwest Regional Planning Conf., III, 134-136, '36  
Portland, Oreg.
- 3684. Wood, J. D. **State Planning in Idaho**  
Proc. of Pacific Northwest Regional Planning Conf., IV, 26-27, '37  
Portland, Oreg.

### XIII. MAPS AND DIAGRAMS

Progress is being made in mapping the Pacific Northwest and in the past several years many maps of various sorts have been issued. However, much remains to be done, especially in regard to detailed topographic mapping by the United States Geological Survey which in such a large area necessarily requires much time and money.

Last year a grant of about \$80,000 in PWA funds was allocated to Oregon for topographic mapping. Most of these funds are being used for aerial topographic mapping of the coastal area from about the latitude of Eugene to the mouth of the Columbia River. A geological map of the northern two-thirds of the Sumpter quadrangle will be issued shortly by the Oregon Department of Geology and Mineral Industries. Some topographic mapping is in progress in Idaho, Montana, and Washington, and several detailed geologic and mining studies are in progress in the four northwest states.

Among the most important maps of the Pacific Northwest are those published in colors by the Pacific Northwest Forest and Range Experiment Station at Portland on the Forest Cover of Washington and Oregon each in 4 sections, 36" x 60", on the scale of 1:250,000. Similar maps for Idaho are in preparation. Detailed county Forest Cover maps on the scale of 1:63360 prepared for hand coloring are available for many counties. In gathering the data for these forest cover maps, the Forest Service secured and sifted an enormous mass of information and nothing approaching their accuracy has hitherto been available.

It would be highly desirable for similar scale maps to be prepared on the soils of the Northwest as has been done for the forests. Many of the existing soil surveys were made on a different system of classification than is now used. Also there are large areas where soils have never been carefully studied or classified. Yet in any planning for the proper utilization of Northwest land an accurate and detailed soil map is a primary requisite.

More has been done with maps that show the present use of land for agriculture than on soil classification. The colored (48" x 30") map of Natural Land-Use Areas of the United States and the "Types of Farming Areas in the United States" (1930), both issued by the U. S. Department of Agriculture in 1933, might well be elaborated for use in the Northwest. The same is true of the climatic charts and other maps in the Atlas of American Agriculture. For the State of Washington, the Extension Service of the Washington State College at Pullman has issued two excellent maps on agriculture, "Major Land Uses, Washington" (45" x 30") in 1933 and "Predominate Types of Farming" (24" x 16") in 1934. Similar maps on the entire Northwest would be highly useful.

The Soil Conservation Service has prepared and has under preparation numerous generalized reconnaissance erosion survey maps on the Northwest and special areas therein.<sup>1</sup> Aerial photographs have been taken for the Soil Conservation Service on the Spokane Indian Reservation, Colville Indian Reservation, and the Fort Hall Indian Reservation, and the projects at Moscow and Emmett, Idaho; Dayton and Ellensburg, Washington; and Athena, Condon, and Newberg, Oregon. Some of the reports of the Bureau of Agricultural Economics and of the U. S. Department of Agriculture itself contain maps of use to students of the Northwest.

A very useful geological map of Washington was issued by the Department of Conservation and Development, Olympia, in 1936. The State of

<sup>1</sup> A bibliography of the maps is being prepared by the Soil Conservation Service, Spokane, Washington. (Ed.)

Montana has published a geological map of that state. The completion of a detailed geological map for the entire Northwest would be a very worthwhile project since the only such maps now available are the U. S. Geological Survey maps of North America and of the United States which are generalized and omit much detail.

One of the most pressing needs for research on the Northwest is the preparation of a base map on the area. Individual state maps have been issued by the U. S. Geological Survey, the General Land Office and other agencies, but an accurate, large-sized base map of the entire area is not available. However, W. A. King and E. D. Fullenwider have issued two small student maps (8 $\frac{1}{4}$ " x 16 $\frac{3}{4}$ ", 16" x 34") which can be used for some purposes. A very fine map of Alaska (77" x 58") has been made by the U. S. Geological Survey. A smaller map of Alaska (34" x 49") is issued by the General Land Office.

The Pacific Northwest Regional Planning Commission has prepared the most complete series of maps available on the Northwest covering distribution of crops, animal industries, climate, power, forests, irrigation, minerals, fish, labor migrations, and many other subjects. Most of these maps are 18" x 10". Other maps are planned and will be issued from time to time to join the several score maps already prepared by the Commission. The individual state planning commissions in their reports include various maps. Certain county planning boards have issued maps, including the following counties in Oregon: Clackamas, Clatsop, Crook, Curry, Deschutes, Douglas, Jackson, and Josephine.

The United States National Resources Committee has in preparation as a part of its regional map series, maps on relief, growing season, precipitation, types of land ownership, land use problems, potential land reclamation and non-agricultural lands in the Northwest which will supplement and add to the value of maps already available.

OTIS W. FREEMAN.

Dept. of Geography,  
Eastern Washington College of Education,  
Cheney, Washington

### XIII. MAPS AND DIAGRAMS

#### ALASKA

- 3685. United States Department of the Interior, General Land Office.  
**Map of Alaska** (Scale, 1"=39.5 m., 33.7" x 49")  
U. S. Govt. Print. Off., Washington, D. C., '35
- 3686. United States Department of Interior, Geological Survey. **Alaska**  
(77" x 58")  
U. S. Govt. Print. Off., Washington, D. C.

#### IDAHO

- 3687. Berg, P. and Werner, E. L. **Coeur d'Alene River and Tributaries: A Map**  
U. S. Geological Survey, Washington, D. C.
- 3688. Pacific Northwest Regional Planning Commission. **Sub-State Regions and Proposed Planning Districts—Idaho (7" x 10")**  
Source: Idaho State Planning Board  
Portland, Oreg., '35

3689. United States Department of Agriculture, Bureau of Agricultural Economics. **Area Classification Maps—Idaho Counties**  
 Benewah           Cassia           Jerome           Minidoka  
 Bingham          Fremont       Kootenai       Payette  
 Bonneville       Gem           Latah          Teton  
 Boundary       Jefferson     Madison       Washington  
 Scale, 1"=1 mile  
 Moscow, Idaho
3690. United States Department of Agriculture, Soil Conservation Service, Region 11. **Generalized Reconnaissance Erosion Survey Maps with Legend and Control Measures for Seventeen Idaho Agricultural Counties**  
 Spokane, Wash., '36
3691. United States Department of the Interior, General Land Office. **Map of Idaho** (Scale, 12 m. = 1", 42.6" x 28.7")  
 U. S. Govt. Print. Off., Washington, D. C., '32
3692. United States Department of the Interior, Geological Survey. **Idaho (Relief Map)** (Scale, 1:760,320; 28" x 42")  
 The Caxton Printers, Caldwell, Idaho
3693. United States Department of the Interior, Geological Survey. **Idaho (State)** (Scale, 1:500,000 or 8 m. to 1"; 44" x 64")  
 U. S. Govt. Print. Off., Washington, D. C.
3694. United States Department of the Interior, Geological Survey. **Snake River (lower), Idaho-Oregon** (Plan and profile of Snake River from Lewiston, Idaho, to Huntington, Oregon) (Scale, 1:31,680 or ½ m. to 1"; 20" x 19")  
 U. S. Govt. Print. Off., Washington, D. C.
3695. United States Department of the Interior, Geological Survey. **Snake River (upper), Idaho-Wyoming** (Plan and profile of Snake River from Pine Creek, Idaho, to Horse Creek, Wyoming) (Scale, 1:31,680 or ½ m. to 1"; 20" x 19")  
 U. S. Govt. Print. Off., Washington, D. C.

#### MONTANA

3696. Montana State College. **Preparation of Soil Classification Plat Sheets**  
 Montana WPA, WP 639  
 Bozeman, Mont.

#### OREGON

3697. Clackamas County Planning Board. **Land Ownership Map**  
 Oregon City, Ore.
3698. Clackamas County Planning Board. **Land Use Map and Basic Data**  
 Oregon City, Ore.
3699. Clackamas County Planning Board. **Map of Existing and Proposed Power Lines**  
 Oregon City, Ore.
3700. Clackamas County Planning Board. **Map of Forest Areas**  
 Oregon City, Ore.
3701. Clackamas County Planning Board. **Map of Population Areas**  
 Oregon City, Ore.

3702. Clackamas County Planning Board. **Map of Transportation Facilities**  
Oregon City, Oreg.
3703. Clackamas County Planning Board. **Maps and Surveys of Possible  
Drainage and Irrigation Districts**  
Oregon City, Oreg.
3704. Clackamas County Planning Board. **Tax Delinquency Map**  
Oregon City, Oreg.
3705. Clatsop County Planning Commission. **Base Map of County**  
(Scale,  $\frac{1}{2}$ " to 1 m.)  
Astoria, Oreg.
3706. Clatsop County Planning Commission. **Base Map of County**  
(Scale,  $1\frac{1}{4}$ " to 1 m.)  
Astoria, Oreg.
3707. Clatsop County Planning Commission. **Fire-Zone Map, City of As-  
toria, Showing All County Owned Property within Fire Limits,  
and Whether Occupied or Vacant**  
Astoria, Oreg.
3708. Clatsop County Planning Commission. **Land Ownership Map**  
Astoria, Oreg.
3709. Clatsop County Planning Commission. **Land Ownership Map** (col-  
ored symbols)  
Astoria, Oreg.
3710. Clatsop County Planning Commission. **Land Ownership Plats and  
Record**  
Astoria, Oreg.
3711. Clatsop County Planning Commission. **Land Ownership Plat Atlas**  
(small scale for field use)  
Astoria, Oreg.
3712. Clatsop County Planning Commission. **Recreation Map** (special)  
Astoria, Oreg.
3713. Clatsop County Planning Commission. **Reforestation Map**  
Astoria, Oreg.
3714. Clatsop County Planning Commission. **Tax District Map**  
Astoria, Oreg.
3715. Coos County Planning Commission. **Base Map**  
Coquille, Oreg.
3716. Crook County Planning Commission. **Base Map**  
Prineville, Oreg.
3717. Crook County Planning Commission. **Land Ownership Map**  
Prineville, Oreg.
3718. Crook County Planning Commission. **Range Water Location Map and  
Survey**  
Prineville, Oreg.
3719. Crook County Planning Commission. **Special Mineral Map**  
Prineville, Oreg.
3720. Crook County Planning Commission. **Tax Delinquency Map**  
Prineville, Oreg.

- 3721. Curry County Planning Commission. **Assessed Valuation Map**  
Gold Beach, Oreg.
- 3722. Curry County Planning Commission. **Land Ownership Map**  
Gold Beach, Oreg.
- 3723. Deschutes County Planning Commission. **Assessed Valuation Map**  
Bend, Oreg.
- 3724. Deschutes County Planning Commission. **Base Map**  
Bend, Oreg.
- 3725. Deschutes County Planning Commission. **Land Ownership Map**  
Bend, Oreg.
- 3726. Deschutes County Planning Commission. **Land Ownership Maps of  
Cities of Bend and Redmond**  
Bend, Oreg.
- 3727. Deschutes County Planning Commission. **Tax Delinquency Map**  
Bend, Oreg.
- 3728. Douglas County Planning Commission. **Base Map**  
Roseburg, Oreg.
- 3729. Douglas County Planning Commission. **Land Ownership Map and  
Record**  
Roseburg, Oreg.
- 3730. Douglas County Planning Commission. **School District Map**  
Roseburg, Oreg.
- 3731. Hodge, E. T. **Geological Map of North Central Oregon**  
Univ. of Oreg. Publ., Geology Series, I, No. 5, 7 p., '32  
University of Oregon, Eugene
- 3732. Jackson County Planning Commission. **Base Map**  
Medford, Oreg.
- 3733. Jackson County Planning Commission. **Land Ownership Map and  
Record**  
Medford, Oreg.
- 3734. Jackson County Planning Commission. **Tax Delinquency Map**  
Medford, Oreg.
- 3735. Josephine County Planning Commission. **Base Map**  
Grants Pass, Oreg.
- 3736. Josephine County Planning Commission. **Land Ownership Map (in  
colors)**  
Grants Pass, Oreg.
- 3737. Josephine County Planning Commission. **Mineral Map Showing Lo-  
cation of Principal Mining Operations in the County**  
Grants Pass, Oreg.
- 3738. Josephine County Planning Commission. **Special Recreation Map**  
Grants Pass, Oreg.
- 3739. Lake County Planning Commission. **Water Resources Map**  
Lakeview, Oreg.
- 3740. Pacific Northwest Forest and Range Experiment Station. **Forest  
Type Map, State of Oregon**  
Portland, Oreg., '36-'38



3741. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Alfalfa Hay Land in Oregon—1929** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3742. Pacific Northwest Regional Planning Commission. **Geographical Distribution of All Hay Land in Oregon—1929** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3743. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Apple Production in Oregon—1929** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3744. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Dairy Production in Oregon—1930** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3745. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Hog Production in Oregon—1930** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3746. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Pear Production in Oregon—1929** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3747. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Prune Production in Oregon—1929** (6" x 4")  
Source: Oregon State College  
Portland, Oreg., '35
3748. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Wheatland in Oregon—1929** (6" x 4")  
Source: Oregon State College and State College of Washington  
Portland, Oreg., '35
3749. Scudder, H. D. and Hurd, E. B. **Graphic Summary of Agriculture and Land Use in Oregon**  
Agr. Exp. Sta. Circ. No. 114, 39 p., '35  
Oregon State College, Corvallis
3750. Tillamook County Planning Commission. **Maps and Inventory of County Owned Beach Property**  
Tillamook, Oreg.
3751. United States Department of Agriculture, Bureau of Agricultural Economics. **Area Classification Maps—Oregon Counties**  
Columbia Yamhill  
Clackamas Marion  
Washington Linn  
Scale, 1" = 1 mile  
Corvallis, Oreg.
3752. United States Department of Agriculture, Bureau of Agricultural Economics. **Field Type of Ownership Maps—Oregon Counties**  
Columbia Yamhill  
Clackamas Marion  
Washington Linn  
Scale, 1" = 1 mile  
Corvallis, Oreg.

3753. United States Department of Agriculture, Bureau of Public Roads. **Oregon, Transportation Map, Highways, Railroads, Canals, Air Lanes, and Dredged Channels; Highways Corrected to Nov. 1, 1935** (Scale, 1:250,000, approximately 1" = 4 m.)  
12 sheets, '36  
U. S. Govt. Print. Off., Washington, D. C.
3754. United States Department of Agriculture, Forest Service. **Forest Cover of Oregon** (4 Sections, 36" x 60", 1:250,000) (Colored) '38; similar maps for Washington  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
3755. United States Department of Agriculture, Soil Conservation Service, Region 11. **Generalized Reconnaissance Erosion Survey Maps with Legend and Control Measures for Nine Oregon Counties** (ms.) ( )  
Spokane, Wash.
3756. United States Department of the Interior, General Land Office. **Map of State of Oregon** (Scale, 12 m. = 1"; 28.7" x 36")  
U. S. Govt. Print. Off., Washington, D. C., '32
3757. United States Department of the Interior, Geological Survey. **Cow Creek, Oregon** (Tributary of South Umpqua River) (2000' = 1")  
Includes large scale surveys of two dam sites  
Washington, D. C., '39
3758. United States Department of the Interior, Geological Survey. **Grande Ronde River, Oregon-Washington** (Plan and profile of Grande Ronde River and Tributaries and miscellaneous dam sites) (Scale, 1:31,680 or 1" to ½ m.)  
U. S. Govt. Print. Off., Washington, D. C.
3759. United States Department of the Interior, Geological Survey. **Map of Nehalem River** (Scale, 1:31,680 — 1" = ½ m.)  
7 sheets  
Washington, D. C.
3760. United States Department of the Interior, Geological Survey. **Map of South Umpqua River, Oregon**  
3 sheets, '38  
Washington, D. C.
3761. United States Department of the Interior, Geological Survey. **Mount Hood and Vicinity, Oregon-Washington** (Scale, 1:125,000 or 2 m. to 1"; 16½" x 20")  
U. S. Govt. Print. Off., Washington, D. C.
3762. Wallowa County Planning Commission. **Base Map**  
Enterprise, Oreg.
3763. Wallowa County Planning Commission. **Land Ownership Map and Record**  
Enterprise, Oreg.

#### PACIFIC NORTHWEST

3764. Elliott, T. H. **Columbia Gorge Mapping**  
WPA—O.P. 465-94-3-16, W.P. 1545  
Pacific Northwest Regional Planning Commission, Portland, Oreg.

3765. Kensit, E. M. **Columbia Basin Project Map**  
Engineering, CXXXVIII, 376-377, '34
3766. King, W. A. and Fullenwider, E. D. **Students' Regional Work Map of the Pacific Northwest** (8¼" x 16¾", 16" x 34")  
Southwestern Publishing Co., Cincinnati, Ohio
3767. McFadden, C. **Maps of the Pacific Area (Annotated List)**  
Institute of Pacific Relations, New York City, '39
3768. Pacific Northwest Regional Planning Commission. **Approximate Distribution of Lumber from Region—1933** (18" x 10")  
Source: U. S. Forest Service  
Portland, Oreg., '35
3769. Pacific Northwest Regional Planning Commission. **Area Served by Mail Order Branch Houses in Pacific Northwest** (18" x 10")  
Source: Mail Order Houses  
Portland, Oreg., '35
3770. Pacific Northwest Regional Planning Commission. **Areas Served by Public Utilities Operating Principal Electric Companies** (18" x 10")  
Sources: Utilities, Public and Private; War Dept., Corps of Engineers; Interior Dept., U. S. Geological Survey  
Portland, Oreg., '35
3771. Pacific Northwest Regional Planning Commission. **Average Annual Precipitation and Leading Farm Products** (18" x 10")  
Sources: Erosion Control Experiment Station, U. S. Weather Bureau, Agricultural Experiment Stations  
Portland, Oreg., '35
3772. Pacific Northwest Regional Planning Commission. **Average Frost Free Growing Season** (18" x 10")  
Source: Federal Land Bank  
Portland, Oreg., '35
3773. Pacific Northwest Regional Planning Commission. **Batholithic and Other Igneous Occurrences** (18" x 10")  
Source: Interior Dept., U. S. Geological Survey Bull. No. 842  
Portland, Oreg., '35
3774. Pacific Northwest Regional Planning Commission. **Children under 5 Per Thousand Women 20-44 Years of Age** (18" x 10")  
Source: U. S. Census, 1930  
Portland, Oreg., '35
3775. Pacific Northwest Regional Planning Commission. **Circulation of Daily Newspapers from Selected Cities, 1935** (18" x 10")  
Source: Audit Bureau of Circulations  
Portland, Oreg., '35
3776. Pacific Northwest Regional Planning Commission. **Country Bank Correspondent Relationships with Points inside the Pacific Northwest** (18" x 10")  
Source: Bankers Directory, 1935  
Portland, Oreg., '35
3777. Pacific Northwest Regional Planning Commission. **Country Bank Correspondent Relationships with Points outside the Pacific Northwest** (18" x 10")  
Source: Bankers Directory, 1935  
Portland, Oreg., '35
3778. Pacific Northwest Regional Planning Commission. **Distance Zones Parallel to Columbia, Snake and Willamette Rivers** (18" x 10")  
Portland, Oreg., '35

3779. Pacific Northwest Regional Planning Commission. **Distribution of Population** (18" x 10")  
Source: U. S. Census, 1930  
Portland, Oreg., '34
3780. Pacific Northwest Regional Planning Commission. **Electric Power Production, 1930. K. W. H. and K. W. Peak Load Interchanged through Company Interconnection** (18" x 10")  
Source: Public and Private Utilities  
Portland, Oreg., '35
3781. Pacific Northwest Regional Planning Commission. **Existing Power Plants and Transmission Systems** (18" x 10")  
Sources: Utilities, Public and Private; War Dept., Corps of Engineers; Interior Dept., U. S. Geological Survey  
Portland, Oreg., '35
3782. Pacific Northwest Regional Planning Commission. **Export of Apples and Pears, 1934** (18" x 10")  
Sources: Commission of Public Docks, Port Wardens Reports  
Portland, Oreg., '35
3783. Pacific Northwest Regional Planning Commission. **Fishery Resources of the Pacific Northwest** (18" x 10")  
Sources: Pacific Fisherman, International Fisheries Commission, Bull. No. 8, '35  
Portland, Oreg.
3784. Pacific Northwest Regional Planning Commission. **Flow Map of Telephone Messages between Selected Toll Centers** (18" x 10")  
Portland, Oreg., '35
3785. Pacific Northwest Regional Planning Commission. **Forest Regions of the Northwest** (18" x 10")  
Source: U. S. Forest Service  
Portland, Oreg., '35
3786. Pacific Northwest Regional Planning Commission. **Geography of Lumber Production and Log Supply** (18" x 10")  
Source: U. S. Forest Service  
Portland, Oreg., '35
3787. Pacific Northwest Regional Planning Commission. **Irrigation Map** (18" x 10")  
Source: State Engineers  
Portland, Oreg., '35
3788. Pacific Northwest Regional Planning Commission. **Location of Mineral Deposits** (18" x 10")  
Sources: U. S. Geological Survey, State Bureaus of Mines, State Colleges and Universities, Misc. Publs.  
Portland, Oreg., '35
3789. Pacific Northwest Regional Planning Commission. **Location of Mineral Deposits—Gold** (18" x 10")  
Sources: U. S. Geological Survey, State Bureaus of Mines, State Colleges and Universities, Misc. Publs.  
Portland, Oreg., '35
3790. Pacific Northwest Regional Planning Commission. **Location of Mineral Deposits—Lead, Silver, Zinc** (18" x 10")  
Sources: U. S. Geological Survey, State Bureaus of Mines, State Colleges and Universities, Misc. Publs.  
Portland, Oreg., '35

3791. Pacific Northwest Regional Planning Commission. **Location of Strategic Minerals** (18" x 10")  
Sources: U. S. Geological Survey, State Bureaus of Mines, State Colleges and Universities, Misc. Publs.  
Portland, Oreg., '35
3792. Pacific Northwest Regional Planning Commission. **Motor Vehicle Traffic and Population Density—1930** (18" x 10")  
Sources: U. S. Bureau of Public Roads and Highway Commissions of Idaho, Mont., Oreg. and Wash.  
Portland, Oreg., '35
3793. Pacific Northwest Regional Planning Commission. **Natural Gas Pipe Lines** (18" x 10")  
Source: Mont. State Dept. of Agr., Labor and Industry  
Portland, Oreg., '35
3794. Pacific Northwest Regional Planning Commission. **Normal Movement of Wheat and Flour from Region, 1929** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3795. Pacific Northwest Regional Planning Commission. **Outline Map of Pacific Northwest—County Boundaries** (18" x 10")  
Portland, Oreg., '38
3796. Pacific Northwest Regional Planning Commission. **Outline Map of Pacific Northwest—Drainage and County Boundaries** (80" x 40")  
Portland, Oreg., '38
3797. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration to 1870** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3798. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1870-1880** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3799. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1880-1890** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3800. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1890-1900** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3801. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1900-1910** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3802. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1910-1920** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35

3803. Pacific Northwest Regional Planning Commission. **Pacific Northwest Migration, 1920-1930** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3804. Pacific Northwest Regional Planning Commission. **Percentage Change in Population, 1920-30, by Counties** (18" x 10")  
Source: U. S. Census, 1930  
Portland, Oreg., '35
3805. Pacific Northwest Regional Planning Commission. **Per Cent Rural Farm Population—1930** (18" x 10")  
Source: U. S. Census  
Portland, Oreg., '35
3806. Pacific Northwest Regional Planning Commission. **Potential Water Power Capacity at Certain Principal Sites and Drainage Areas** (18" x 10")  
Source: U. S. Geological Survey  
Portland, Oreg., '35
3807. Pacific Northwest Regional Planning Commission. **Principal Placer-Mining Regions** (18" x 10")  
Source: Ore Deposits of the Western States, Lindgren  
Portland, Oreg., '35
3808. Pacific Northwest Regional Planning Commission. **Producing and Potential Areas of Coal, Oil and Gas** (18" x 10")  
Source: Federal Power Commission  
Portland, Oreg., '35
3809. Pacific Northwest Regional Planning Commission. **Proposed Development of the Columbia River System for Navigation, Irrigation and Power** (18" x 10")  
Source: 73rd Cong., Report of Corps of Engineers, War Dept., H. Doc. No. 103  
Portland, Oreg., '35
3810. Pacific Northwest Regional Planning Commission. **Proposed Super-Power System Showing Existing, Initial and Future Developments** (18" x 10")  
Sources of Existing Development: Utilities, Public and Private; Interior Dept., U. S. Geological Survey; War Dept., Corps of Engineers  
Portland, Oreg., '35
3811. Pacific Northwest Regional Planning Commission. **Recreational Map of the States of Washington, Oregon, Idaho and Montana** (18" x 10")  
Portland, Oreg., '34
3812. Pacific Northwest Regional Planning Commission. **Relief Map of Pacific Northwest Region** (18" x 10")  
Source: U. S. Geological Survey  
Portland, Oreg., '35
3813. Pacific Northwest Regional Planning Commission. **State Recreational Areas** (18" x 10")  
Sources: State Records, Dept. of Interior, Natl. Park Service  
Portland, Oreg., '35

3814. Pacific Northwest Regional Planning Commission. **Transportation Facilities—Airways, Airports and Landing Fields** (18" x 10")  
Sources: U. S. Dept. of Commerce, U. S. Post Office Dept., State Emergency Relief Administrations, State Depts. of Aeronautics  
Portland, Oreg., '35
3815. Pacific Northwest Regional Planning Commission. **Transportation Facilities—Existing Waterways** (18" x 10")  
Source: U. S. War. Dept., Corps of Engineers  
Portland, Oreg., '35
3816. Pacific Northwest Regional Planning Commission. **Transportation Facilities—Federal and State Highways** (18" x 10")  
Sources: U. S. Bureau of Public Roads, State Highway Depts.  
Portland, Oreg., '35
3817. Pacific Northwest Regional Planning Commission. **Transportation Facilities—Railroads** (18" x 10")  
Sources: Railroad Companies, State Commercial Maps  
Portland, Oreg., '35
3818. Pacific Northwest Regional Planning Commission. **Transportation Facilities—Waterway Projects** (18" x 10")  
Source: U. S. War Dept., Corps of Engineers  
Portland, Oreg., '35
3819. Pacific Northwest Regional Planning Commission. **Transcontinental Rail Lines Traversing the Region** (18" x 10")  
Source: Railroad Companies  
Portland, Oreg., '35
3820. Pacific Northwest Regional Planning Commission. **Water Storage Map** (18" x 10")  
Source: State Engineers  
Portland, Oreg., '35
3821. United States Department of Agriculture, Forest Service. **Detailed County Forest Cover Maps** (1:63,360, prepared for coloring by hand)  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
3822. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Forest Cover Type Maps, Two-Inch-to-Mile Township Plats, and One-Inch-to-Mile Unit (40 Townships) Maps for Northeastern Washington and Northern Idaho, from Inventory Phase of the Forest Survey**  
Missoula, Mont.
3823. United States Department of Agriculture, Soil Conservation Service, Region 11. **Aerial Photographs for: Spokane Indian Reservation, Fort Hall Indian Reservation, and Colville Indian Reservation**

SCS Project Wash-1	Moscow, Idaho
SCS Project Idaho-2	Emmett, Idaho
SCS Project Wash-2	Dayton, Wash.
SCS Project Wash-3	Ellensburg, Wash.
SCS Project Oreg-1	Athena, Oreg.
SCS Project Oreg-2	Condon, Oreg.
SCS Project Oreg-3	Newberg, Oreg.

(Aerials for the complete area inside the boundaries of each project)  
Spokane, Wash.

3824. United States Department of Agriculture, Soil Conservation Service, Region 11. **Generalized Reconnaissance Erosion Survey Maps with Legend and Control Measures for Thirteen Eastern Washington Agricultural Counties**  
Spokane, Wash., '36
3825. Wagner, H. R. **Cartography of the Northwest Coast of America to the Year 1800**  
2 vols., '37  
University of California Press, Berkeley

#### UNITED STATES

3826. Baker, O. E. **A Graphic Summary of the Number, Size, and Type of Farm, and Value of Products**  
U. S. Dept. of Agr. Misc. Publ. No. 266, 76 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
3827. Baker, O. E. and Genung, A. B. **A Graphic Summary of Farm Crops**  
U. S. Dept. of Agr. Misc. Publ. No. 267, 129 p., '38  
U. S. Govt. Print. Off., Washington, D. C.
3828. Barnes, C. P. and Marschner, F. J. **Natural Land-Use Areas of the United States (colored) (48" x 30")**  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C., '33
3829. Folsom, J. C. and Baker, O. E. **A Graphic Summary of Farm Labor and Population**  
U. S. Dept. of Agr. Misc. Publ. No. 265, '37  
U. S. Govt. Print. Off., Washington, D. C.
3830. Jackson, D. **A Graphic Summary of Farm Taxation**  
U. S. Dept. of Agr. Misc. Publ. No. 262, 17 p., '37  
U. S. Govt. Print. Off., Washington, D. C.
3831. Turner, H. A. **A Graphic Summary of Farm Tenure**  
U. S. Dept. of Agr. Misc. Publ. No. 261, 52 p., '36  
U. S. Govt. Print. Off., Washington, D. C.
3832. United States Department of Agriculture. **Atlas of American Agriculture**  
U. S. Govt. Print. Off., Washington, D. C., '36
3833. United States Department of Agriculture. **Value of Farm Lands and Buildings Per Acre, United States (38" x 24")**  
Sources: U. S. Census, 1930, Bur. of Agr. Econ., Natl. Resources Board, Farm Credit Admin.  
Washington, D. C., '35
3834. United States Department of Agriculture, Bureau of Agricultural Economics. **A Graphic Summary of Physical Features and Land Utilization in the United States**  
Misc. Publ. No. 260, '37  
Washington, D. C.
3835. United States Department of Agriculture, Bureau of Agricultural Economics. **Types of Farming Areas in the United States—1930**  
U. S. Govt. Print. Off., Washington, D. C., '33
3836. United States Department of Agriculture, Office of Land Use Coordination. **Extent of Aerial Photography (18" x 12")**  
Washington, D. C., '38



3837. Wall, N. J. and Engquist, E. J., Jr. **A Graphic Summary of Agricultural Credit**  
U. S. Dept. of Agr. Misc. Publ. No. 268, 48 p., '38  
U. S. Govt. Print. Off., Washington, D. C.

WASHINGTON

3838. Heisig, C. P. **A Graphic Presentation of Changes in the Agriculture of Washington from 1930 to 1935**  
Agr. Exp. Sta. Bull. No. 341, 47 p., '36  
State College of Washington, Pullman
3839. Johnson, A. and Warren, W. **Similkameen River: A Map**  
U. S. Geological Survey, Washington, D. C.
3840. King County Planning Commission. **Area District Map Showing Zoning Progress (1"=2½ miles)**  
Seattle, Wash.
3841. King County Planning Commission. **Cedar River, Green River, Sammamish River, Snoqualmie and Skykomish Rivers Drainage Areas —Showing Publicly Owned Lands (1"=2 miles)**  
Seattle, Wash.
3842. King County Planning Commission. **County Map Showing Numbered Highways, etc. (1"=2 miles)**  
Seattle, Wash.
3843. King County Planning Commission. **Detailed Soil Survey Maps of King County (1"=400')**  
Seattle, Wash.
3844. King County Planning Commission. **District Zoning Map, Sectional Area No. 1 (1"=400')**  
Seattle, Wash.
3845. King County Planning Commission. **District Zoning Map, Sectional Area No. 2 (1"=400')**  
Seattle, Wash.
3846. King County Planning Commission. **District Zoning Map, Sectional Area No. 3 (1"=400')**  
Seattle, Wash.
3847. King County Planning Commission. **District Zoning Map, Sectional Area No. 4 (1"=400')**  
Seattle, Wash.
3848. King County Planning Commission. **District Zoning Map, Sectional Area No. 22 (1"=400')**  
Seattle, Wash.
3849. King County Planning Commission. **District Zoning Map, Sectional Area No. 23 (1"=400')**  
Seattle, Wash.
3850. King County Planning Commission. **Drainage District (1"=2 miles)**  
Seattle, Wash.
3851. King County Planning Commission. **Flood Control Areas, Cities and Towns with Water Supplies (Wells), Cities and Towns Having Sewage Treatment (1"=2 miles)**  
Seattle, Wash.

3852. King County Planning Commission. **Forest Cover, King County** (1"=2 miles)  
Seattle, Wash.
3853. King County Planning Commission. **Jurisdictional Areas of Approximately 150 Community Clubs** (1"=2 miles)  
Seattle, Wash.
3854. King County Planning Commission. **Land Use Maps, Ten Townships of King County** (1"=400')  
Seattle, Wash.
3855. King County Planning Commission. **Locations of Family Homes in King County** (1"=1 mile)  
Seattle, Wash.
3856. King County Planning Commission. **1936 Aerial Photographs of King County** (1"=800')  
Seattle, Wash.
3857. King County Planning Commission. **Power Line Locations in King County** (1"=1 mile)  
Seattle, Wash.
3858. King County Planning Commission. **Precipitation and Rainfall Graphs, Puget Sound to Summit, King County** (1"=2 miles)  
Seattle, Wash.
3859. King County Planning Commission. **Recreational Centers** (1"=2 miles)  
Seattle, Wash.
3860. King County Planning Commission. **Relief Map of King County** (1"=about 3 miles)  
Seattle, Wash.
3861. King County Planning Commission. **Relief Map Showing Scenic Highways** (1"=3 miles)  
Seattle, Wash.
3862. King County Planning Commission. **School Districts of King County** (1"=2 miles)  
Seattle, Wash.
3863. King County Planning Commission. **Seasonal Distribution of Precipitation** (1"=4 miles)  
Seattle, Wash.
3864. King County Planning Commission. **Section Maps of King County with Contours** (1"=200')  
Seattle, Wash.
3865. King County Planning Commission. **Tax Acquired Forestry Land** (1"=2½ miles)  
Seattle, Wash.
3866. King County Planning Commission. **Tax Acquired Property Owned by the County in 1938** (1"=1 mile)  
Seattle, Wash.
3867. King County Planning Commission. **Water Districts and Agricultural Drainage Districts on One Map** (1"=2½ miles)  
Seattle, Wash.

3868. King County Planning Commission. **Watershed Areas for City Supplies (1"=2 miles)**  
Seattle, Wash.
3869. Pacific Northwest Forest and Range Experiment Station. **Forest Type Map, State of Washington**  
Portland, Oreg., '36-'37
3870. Pacific Northwest Regional Planning Commission. **Approximate Number and Locations of Fruit Farms in Washington—1929 (6" x 4")**  
Source: State College of Washington  
Portland, Oreg., '35
3871. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Alfalfa Hay Land in Washington—1929 (6" x 4")**  
Source: State College of Washington  
Portland, Oreg., '35
3872. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Apple Production in Washington—1929 (6" x 4")**  
Source: State College of Washington  
Portland, Oreg., '35
3873. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Dairy Production in Washington—1930 (6" x 4")**  
Source: State College of Washington  
Portland, Oreg., '35
3874. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Hog Production in Washington—1930 (6" x 4")**  
Source: State College of Washington  
Portland, Oreg., '35
3875. Pacific Northwest Regional Planning Commission. **Geographical Distribution of Wheatland in Washington—1929 (6" x 4")**  
Sources: Oregon State College and State College of Washington  
Portland, Oreg., '35
3876. Schafer, M. R. **City of Tacoma, Base Map (54" x 80")**, '37  
Shows industrial, railroad, business and residence property and in addition vacant property, churches, parks, schools, playgrounds and bus routes.  
College of Puget Sound, Tacoma
3877. Schafer, M. R. **Rate Maps of Tacoma's 130 Census Enumeration Districts (28" x 36")**  
Show rate of mobility, incidence of delinquency, rate of distribution of delinquency, church membership, relief, education, income groups, recreational interests, suicides, divorce, insanity.  
College of Puget Sound, Tacoma
3878. United States Department of Agriculture, Bureau of Agricultural Economics, Division of State and Local Planning. **Field Tax Delinquency Maps—Washington Counties (Scale, 1"=1 mile)**

Adams	Jefferson	Skagit	Whatcom
Benton	Klickitat	Snohomish	Whitman
Chelan	Lewis	Spokane	Yakima
Clallam	Pacific	Thurston	
Cowlitz	Pierce	Wahkiakum	
Island	San Juan	Walla Walla	

  
Pullman, Wash.

3879. United States Department of Agriculture, Bureau of Agricultural Economics, Division of State and Local Planning. **Field Type of Ownership Maps—Washington Counties** (Scale, 1"=1 mile)

Adams	Cowlitz	Jefferson	Pierce	Thurston
Benton	Douglas	Klickitat	San Juan	Wahkiakum
Chelan	Franklin	Lewis	Skagit	Walla Walla
Clallam	Garfield	Lincoln	Spokane	Whatcom
Clark	Island	Pacific	Stevens	Yakima

Pullman, Wash., '38

3880. United States Department of Agriculture, Bureau of Agricultural Economics and Washington Extension Service, Community Agricultural Planning Committees. **Area Classification Maps by Counties, Washington**

Asotin	Grays Harbor	San Juan
Clark	King	Spokane
Columbia	Mason	Stevens
Franklin	Pend Oreille	Thurston

Maps made in six colors denoting recommended land use  
Pullman, Wash.

3881. United States Department of Agriculture, Forest Service. **Forest Cover of Washington** (4 Sections, 36" x 60", 1:250,000) (Colored)  
Similar maps for Oregon  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg., '38

3882. United States Department of the Interior, Geological Survey. **Chewack Creek, Washington** (Plan and profile of Chewack Creek from mouth to mile 31) (Scale, 1:31,680 or 1"=1½ m.)  
Washington, D. C.

3883. United States Department of the Interior, Geological Survey. **Land Classification Maps** (Snohomish and Tacoma maps showing forest conditions)  
Washington, D. C.

3884. United States Department of the Interior, Geological Survey. **Map of Lewis River** (Scale, 1:31,680 or 1"=1½ m.) (10 sheets)  
Washington, D. C.

3885. United States Department of the Interior, Geological Survey. **Mount Baker District, Washington** (9½" x 12"; scale, 1:250,000 or 4 m. to 1")  
Washington, D. C.

3886. United States Department of the Interior, Geological Survey. **Mount Rainier National Park, Washington** (22" x 23"; scale, 1:62,500 or 1 m. to 1")  
Washington, D. C.

3887. United States Department of the Interior, Geological Survey. **Nooksack River, Washington** (Plan and profile of Nooksack River and tributaries, from Maple Falls to Ruth Creek; Middle Fork above Heislars Creek; South Fork, Saxon Bridge to Wanlick Creek; Jones Creek, and miscellaneous dam sites) (22" x 28"; scale, 1:31,680 or 1" to ½ m.)  
Washington, D. C.

3888. United States Department of the Interior, Geological Survey. **Queets River, Washington** (Plan and profile of Queets River and tributaries and miscellaneous dam sites) (28" x 28"; scale, 1:31,680 or 1" to 1/2 m.)  
Washington, D. C.
3889. Washington, State College of, Agricultural Experiment Station. **Predominate Types of Farming in Washington** (24" x 16")  
Pullman, Wash., '34
3890. Washington, State College of, Agricultural Experiment Station, Department of Farm Management and Agricultural Economics. **Major Land Uses—Washington**  
282 W272, '33  
Pullman, Wash.
3891. Washington State Dept. of Conservation and Development. **Geology of Washington**  
Olympia, Wash., '36

## **XIV. BIBLIOGRAPHIES**

### **GENERAL CONCEPTS OF THE NORTHWEST: GEOLOGY**

- 3892. Economic Geology Publishing Company. **Annotated Bibliography of Economic Geology, 1928-date**  
University of Illinois, Urbana
- 3893. Kirkham, V. R. D. **Bibliography of Chief Publications on the Geology and Geography of the Inland Empire**  
Northwest Science, I, 33-38, '27
- 3894. National Research Council, Committee on State Geological Surveys. **Summary Information on the State Geology Surveys and the United States Geological Survey**  
Washington, D. C., '32
- 3895. Oregon State Planning Board. **Bibliography of the Geology and Mineral Resources of Oregon with Digests and Index to July 1, 1936**  
224 p., '36  
Portland, Oreg.

### **GENERAL CONCEPTS OF THE NORTHWEST: WILDLIFE**

- 3896. United States Department of Agriculture, Extension Service. **Conservation of Wildlife: Selected List of References, 1936**  
9 p. (mimeo.), '36  
Washington, D. C.
- 3897. United States Department of Agriculture, Extension Service. **A Selected List of References on Conservation of Wildlife**  
Washington, D. C., '38

### **LAND UTILIZATION: AGRICULTURAL ECONOMICS**

- 3898. Lacy, Mary G. **List of Periodicals Containing Prices and Other Statistical and Economic Information on Fruits, Vegetables and Nuts**  
238+4 p., '35  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Washington, D. C.
- 3899. United States Department of Agriculture, Bureau of Agricultural Economics. **Agricultural Economics (A Selected List of References)**  
Agr. Econ. Bibliog. No. 1, 26 p., '38  
Washington, D. C.
- 3900. United States Department of Agriculture, Bureau of Agricultural Economics. **Agricultural Labor in the United States, 1936-37 (A Selected List of References)**  
Agr. Econ. Bibliog. No. 72, 205 p., '38  
Washington, D. C.
- 3901. United States Department of Agriculture, Bureau of Agricultural Economics. **The American Farm Problem**  
Agr. Econ. Bibliog. No. 52, 13 p., '34  
Washington, D. C.

3902. United States Department of Agriculture, Bureau of Agricultural Economics. **Agricultural Relief—A Selected and Annotated Bibliography**  
Agr. Econ. Bibliog. No. 50, 382 p., '33  
Washington, D. C.
3903. United States Department of Agriculture, Bureau of Agricultural Economics. **Bibliography on the Marketing of Agricultural Products**  
Misc. Publ. No. 150, '32  
Washington, D. C.
3904. United States Department of Agriculture, Bureau of Agricultural Economics. **Large Scale and Corporation Farming (A Selected List of References)**  
Agr. Econ. Bibliog. No. 69, 121 p., '37  
Washington, D. C.
3905. United States Department of Agriculture, Bureau of Agricultural Economics. **Price Studies of the U. S. Department of Agriculture Showing Demand-Price, Supply-Price, and Price-Production Relationships**  
Agr. Econ. Bibliog. No. 58, 38 p., '35  
Washington, D. C.

#### LAND UTILIZATION: IRRIGATION

3906. United States Department of Agriculture, Bureau of Agricultural Engineering. **Irrigation—A Selected Bibliography**  
631 p., '38  
Washington, D. C.

#### LAND UTILIZATION: LAND USE

3907. Bercaw, Louise O. **Bibliography on Land Settlement with Particular Reference to Small Holdings and Subsistence Homesteads**  
U. S. Dept. of Agr. Misc. Publ. No. 172, 492 p., '34  
Washington, D. C.
3908. Bercaw, Louise O. **Land Utilization and Land Policies in the United States: A Preliminary List of References**  
34 p. (mimeo.), '36  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Washington, D. C.
3909. Bercaw, Louise O. and Hannay, Annie M. **Bibliography on Land Utilization, 1918-36**  
U. S. Dept. of Agr. Misc. Publ. No. 284, 1508 p., '38  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics,  
Washington, D. C.
3910. California, University of, College of Agriculture, Giannini Foundation of Agricultural Economics. **Some References on Marginal and Submarginal Lands**  
2 p., '32  
Berkeley, Calif.
3911. Culver, Dorothy C. **Bibliography on Recreational Use of Watersheds**  
University of California, Bureau of Public Administration, Berkeley, '34

3912. Culver, Dorothy C. **Land Utilization: A Bibliography**  
222 p. (mimeo.), '35  
University of California, Bureau of Public Administration, Berkeley
3913. Pieters, A. J. **A Digest of Pasture Research Literature in the Continental United States and Canada, 1885 to 1935**  
130 p., '36 (Corrections and Additions, 12 p., '37)  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Washington, D. C.
3914. Renner, F. G. **A Selected Bibliography on Management of Western Ranges, Livestock and Wildlife**  
U. S. Dept. of Agr. Misc. Publ. No. 281, '38  
Washington, D. C.

#### LAND UTILIZATION: SOIL EROSION AND CONSERVATION

3915. American Soil Survey Association, Organic and Forest Soils Committee. **Bibliography of Organic and Forest Soils, 1926 to 1934**  
37 p., '34  
U. S. Forest Service, Central States Forest Experiment Station, Columbus, Ohio
3916. Benton, Mildred C. **Brief List of References on the Fixation of Sand Dunes**  
(ms.) ( )  
Lib., U. S. Dept. of Agriculture, Soil Conservation Service, Region 11, Spokane, Wash.
3917. United States Department of Agriculture, Bureau of Agricultural Engineering. **Soil Erosion and Its Prevention (A Partial List of References)**  
33 p., '31  
Washington, D. C.
3918. United States Department of Agriculture, Soil Conservation Service. **Bibliography on Soil Erosion and Soil and Water Conservation**  
U. S. Dept. of Agr. Misc. Publ. No. 312, 651 p., '38  
Washington, D. C.
3919. United States Department of Agriculture, Soil Conservation Service. **Classified List of Publications**  
6 leaves, '36  
Washington, D. C.
3920. United States Department of Agriculture, Soil Conservation Service. **Publications on Soil Conservation and Related Subjects**  
9 p., '38  
Washington, D. C.
3921. United States Department of Agriculture, Soil Conservation Service. **Soil Conservation Literature, Selected Current References**  
Bi-monthly, 1937-date  
Washington, D. C.
3922. United States Department of Agriculture, Soil Conservation Service. **Soil Erosion Bibliography**  
179 p., '36  
Washington, D. C.



3923. Williams, G. R. **Selected Bibliography on Erosion and Silt Movement**  
U. S. Dept. of Int., Geol. Survey, Water Supply Paper No. 797, '37  
U. S. Govt. Print. Off., Washington, D. C.

#### FOREST RESOURCES AND UTILIZATION

3924. Meyer, W. H. and Stone, E. M. (comp.) **Bibliography on Sitka Spruce (Picea Sitchensis)**  
(mimeo.), '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
3925. Meyer, W. H. and Stone, E. M. (comp.) **Bibliography on Western Hemlock (Tsuga Heterophylla)**  
(mimeo.), '33  
Pacific Northwest Forest and Range Experiment Station, Portland, Oreg.
3926. Mitchell, W. **An Annotated Bibliography: Selective Logging in the United States**  
(mimeo.), '35  
U. S. Forest Service, Division of Silvics, Washington, D. C.
3927. Pacific Northwest Forest and Range Experiment Station. **Publications of Members of the Pacific Northwest Forest and Range Experiment Station and the Forest Insect Laboratory, 1924-1938**  
38 p. (mimeo.), '38  
Portland, Oreg.
3928. Pacific Northwest Forest and Range Experiment Station. **A Partial List of References, Bearing upon Selective Timber Management with Special Reference to the Pacific Northwest**  
Portland, Oreg., '35
3929. United States Department of Agriculture, Forest Service. **Administration of Research—A Selective Bibliography**  
U. S. Forest Service Library, Washington, D. C., '38
3930. United States Department of Agriculture, Forest Service. **Current Literature; Books and Periodicals Indexed in the U. S. Forest Service**  
(mimeo.), '34-date  
U. S. Forest Service Library, Washington, D. C.
3931. United States Department of Agriculture, Forest Service. **Effects of Fire on Forests—A Bibliography**  
130 p. (mimeo.), '38  
U. S. Forest Service Library, Washington, D. C.
3932. United States Department of Agriculture, Forest Service. **Forest Recreation: A Bibliography**  
129 p. (mimeo.), '38  
U. S. Forest Service Library, Washington, D. C.

#### MINERAL RESOURCES

3933. American Petroleum Institute. **Selected Bibliography of the Current Literature of Petroleum**  
New York City, '35
3934. Fleming, R. C. **Source Book of the American Institute of Mining and Metallurgical Engineers**  
New York City, '33

3935. Washington State Department of Conservation and Development. **Bibliography and Index of Mineral Deposits of Washington**  
Bull. No. 35, '38  
Olympia, Wash.
3936. Washington, University of, College of Mines. **Cooperative Publications of the Northwest Experiment Station, U. S. Bureau of Mines, and the College of Mines, University of Washington, 1916-1939**  
9 p.  
Seattle, Wash.

#### WATER RESOURCES AND POWER

3937. Clark, A. W. **Dams: A Bibliography of Publications Appearing from 1924-1936 (Supplement 1936-1938)**  
Engineering School, Fort Belvoir, Va.
3938. Magnusson, C. E. **Hydroelectric Power in Washington. Part III. A Bibliography of Technical Papers, 1878-1925**  
Engr. Exp. Sta. Bull. No. 36, 143 p., '36  
University of Washington, Seattle
3939. Magnusson, C. E. **Hydroelectric Power in Washington. Part V. A Bibliography of Technical Papers, 1926-1936**  
Engr. Exp. Sta. Bull. No. 95, 204 p., '37  
University of Washington, Seattle
3940. Pacific Northwest Regional Planning Commission. **Pacific Northwest Water Resources Bibliography**  
45 p. (ms.), '36  
Portland, Oreg.
3941. Thompson, M. R. **Water Resources: Bibliography of Publications**  
62 p. (mimeo.), '36  
Washington State Planning Council, Olympia
3942. Thompson, M. R. **Water Resources: Bibliography of Publications**  
409 p. (ms.) ( )  
Washington State Planning Council, Olympia

#### HUMAN RESOURCES AND PROBLEMS

3943. Heller Committee for Research in Social Economics. **Cost of Living Studies**  
University of California, Berkeley
3944. Landis, B. Y. **Guide to the Literature of Rural Life**  
Federal Council, the Church of Christ in America, Inc., New York City, '35
3945. National Education Association, Research Division. **Preliminary Bibliography on Youth**  
Washington, D. C., '35
3946. National Industrial Conference Board. **Cost of Living in the United States in 1932**  
New York City
3947. Russell Sage Foundation, Library. **Family Budgets and Costs and Standards of Living**  
New York City, '33
3948. United States Department of Agriculture, Bureau of Agricultural Economics. **Rural Standards of Living. A Selected Bibliography**  
Misc. Publ. No. 116, '31  
U. S. Govt. Print. Off., Washington, D. C.

3949. United States Department of the Interior, Office of Education. **Bibliography of Research Studies in Education, 1936-1937 (Eleventh Annual Issue)**  
Bull. No. 5, '38  
U. S. Govt. Print. Off., Washington, D. C.
3950. United States Department of Interior, Office of Education. **Guidance Bibliography**  
Bull. No. 37, '37  
U. S. Govt. Print. Off., Washington, D. C.

#### COMMERCE AND INDUSTRY

3951. Higgs, H. (ed.) **Bibliography of Economics, Vol. I**  
Macmillan, New York City, '35
3952. Special Libraries Association. **Guides to Business Facts and Figures**  
The Association, New York City, '33

#### GOVERNMENT

3953. Burchfield, L. **Students' Guide to Materials in Political Science**  
Henry Holt, New York City, '35
3954. Childs, H. L. **Reference Guide to the Study of Public Opinion**  
Princeton University, N. J., '34
3955. Greer, S. **Bibliography of Civil Service and Personnel Administration**  
McGraw-Hill, New York City
3956. Hellman, F. S. (comp.) **List of Recent References on the Reorganization of the Executive Departments**  
U. S. Library of Congress, Washington, D. C., '36
3957. Institute for Government Research. **Service Monographs of the United States Government, 1918-date**  
Washington, D. C.
3958. Institute of Public Administration. **Bibliography of Public Administration**  
New York City, '33
3959. Rubey, J. T. and Heers, W. H. **A Suggestive List of References on Federal Regulation of the Petroleum Industry Since August 19, 1933, with Special Reference to the Petroleum Administration**  
Bibliographical List No. 3, 39 p., '35  
U. S. Geological Survey Library, Washington, D. C.
3960. United States Department of Commerce, Bureau of the Census. **Financial Statistics of State and Local Governments**  
Washington, D. C.

#### PLANNING

3961. League for Industrial Democracy. **Significant Books on Social Reconstruction**  
The League, New York City, '33
3962. McNamara, Katherine. **Bibliography of Planning, 1928-1935; A Supplement to Manual of Planning Information, 1928**  
Harvard City Planning Studies, X, 232 p., '36  
Harvard University Press, Cambridge, Mass.

3963. Miller, G. J. (ed.). **Planning and Conservation; Bibliography**  
Jour. of Geography, XXXV, 157-160, '35; XXXVI, 118-120, '37
3964. National Association of Housing Officials. **Recent Books and Reports  
on Housing, Zoning and Town Planning, 1929-30**  
Publ. No. 59, 62 p.  
1313 East 60th St., Chicago, Ill.
3965. New York City Welfare Council. **Bibliography with Notes on Social  
Work Finance and Publicity**  
The Council, '30
3966. Oregon State Planning Board. **Selected Bibliography, May, 1937**  
6 p. (mimeo.), '37  
Portland, Oreg.
3967. Rubey, J. T. (comp.). **Suggested List of References on the Federal  
Emergency Administration of Public Works and Its Work Includ-  
ing References Pertaining to Public Works Housing Division**  
U. S. Geological Survey, Washington, D. C., '35
3968. United States Chamber of Commerce, Civic Development Department.  
**Bibliography on Building, Housing, Construction**  
Washington, D. C.

## **PART II.**

**RESEARCH IN PROGRESS**

## **PART II.**

### **RESEARCH IN PROGRESS**

#### **I. GENERAL CONCEPTS OF THE NORTHWEST**

##### **ARCHAEOLOGY**

3969. Cressman, L. S. **Early Man and Culture in the Northern Basin Region of Southcentral Oregon**  
(1939) Prof.  
University of Oregon, Eugene
3970. Krieger, A. D. **Culture Provinces of Oregon**  
A comparative survey of aboriginal cultures in more or less natural habitat areas within the state and the adjustments of these cultural groups to the habitat areas.  
(1939) Prof.  
University of Oregon, Eugene
3971. Krieger, A. D. **Humboldt Cave, Nevada, and the Aboriginal History of the Western Great Basin**  
Sketch of native cultures of Great Basin tribes as shown by excavations in caves such as Humboldt and Lovelock. Check-list of culture elements present in tribes of Great Basin, now and formerly.  
(1939) Prof.  
University of Oregon, Eugene

##### **CLIMATE**

3972. Botsford, J. L. **Mathematical Explanation of Variable Weather in Middle Latitudes**  
Discussion of the problem from standpoint of mathematical deduction rather than empirical investigation.  
( ) Prof.  
Eastern Washington College of Education, Cheney
3973. Church, P. E. **The Effect of Mountains on the Climate of the Northwest**  
( ) Prof.  
University of Washington, Seattle
3974. Church, P. E. and Briggs, W. P. **An Example of Ground Fog Caused Partially by Decrease of Pressure**  
( ) Prof.  
University of Washington, Dept. of Geography, Seattle

3975. Church, P. E. and Briggs, W. P. **Ice Formation on Aircraft along the Northwest Coast**

( ) Prof.

University of Washington, Dept. of Geography, Seattle

3976. Fisher, L. C. **Climate of the State of Washington**

All phases of climate. More intensive observations are contemplated.

( ) Prof., Gen. Pub.

U. S. Weather Bureau, Seattle, Wash.

3977. Melin, J. B. **Climatic Records in the Forested Regions of Washington in Connection with Weather Predictions to Aid in the Prevention and Suppression of Forest Fires**

The relation of relative humidity, precipitation and the lack thereof, wind direction and velocity, lightning storms and temperature to the incidence of forest fires. The study of weather changes with a view to perfecting forecasting methods.

( ) Gen. Pub., Prof.

U. S. Weather Bureau, Seattle, Wash.

3978. Montana Experiment Station, North Montana Branch. **Weather, Soil Moisture, and Crop Yield Relationships**

Correlation studies, involving seasonal weather variables, soil moisture, and crop yields.

( ) Prof.

Havre, Mont.

3979. United States Weather Bureau. **Climatological Data and Fire Weather Data**

Temperatures, precipitation including snowfall, prevailing wind direction and velocities, state of the weather prevailing, relative humidity, evaporation, times of occurrence of killing frosts and growing season, thunderstorms, and other phases of weather of a miscellaneous nature and their relation to fire hazard conditions.

(Continuing) Prof., Gen. Pub.

Washington, D. C.

3980. United States Weather Bureau. **Climatological Data for the State of Washington**

Temperatures, precipitation including snowfall, prevailing wind direction and velocities, state of the weather prevailing, relative humidity, evaporation, times of occurrence of killing frosts and growing season, thunderstorms, and other phases of weather of a miscellaneous nature.

(Continuing) Prof., Gen. Pub.

Washington, D. C.

**GEOLOGY**

3981. Beck, G. F. **Geology and Paleontology at the Columbia Basin**  
The cenozoic history of the Columbia Basin as revealed in the great lava series and the associated sedimentary beds.  
( ) Prof.  
Central Washington College, Ellensburg
3982. Coombs, H. A. **The Geology of Mt. Baker and Mt. Rainier in Washington**  
( ) Prof.  
University of Washington, Seattle
3983. Fahrenwald, A. W. and Scheid, V. E. **Geologic Study of the Beryl-Mica Deposit near Troy, Idaho**  
An attempt to indicate the economic importance of the deposit with respect to its extent and the beryllium metal content.  
(1940) Prof.  
University of Idaho, Bureau of Mines and Geology, Moscow
3984. Hodge, E. T. **Geology of North Central Oregon**  
( ) Prof.  
Oregon State College, Corvallis
3985. Mackin, J. H. **Study of the Drift Borders of the Puget Lobe**  
( ) Prof.  
University of Washington, Dept. of Geology, Seattle
3986. Mackin, J. H. **Study of the Geomorphology of the Cascade Mountains**  
( ) Prof.  
University of Washington, Seattle
3987. Sloss, L. L. **Stratigraphy of the Mississippian Madison Group in the North Rocky Mountain Oil Fields**  
A study of the Madison group which comprises about 1500 feet of the Mississippian limestones which are important petroleum producers in Montana, Wyoming, Alberta, and the Dakotas.  
(1940) Prof.  
Montana School of Mines, Butte
3988. Smith, Helen V. **The Fossil Flora from Thorn Creek, Idaho**  
A study of a newly discovered fossil bed comprising about 40-50 species of trees, the identification of each species, their probable relationship with other fossil and living floras, and the probable physical conditions under which they lived.  
(1939) Prof.  
University of Michigan, Ann Arbor



**3989. Smith, W. D. *Geology and Mineral Resources of the Northern Part of the Wallowa Mountains***

A systematic survey of the geology of the region and of its mineral resources.

(1940) Prof., Gen. Pub.

Oregon State Dept. of Geology and Mineral Industries, Portland

**3990. Smith, W. D. and Greenup, W. *The Lakes of Oregon***

A geologic survey with an economic appraisal.

(1939) Prof., Gen. Pub.

University of Oregon, Eugene

**3991. Thay, T. P. *Geology of Salem Hills and North Santiam Basin***

Bull. No. 16. The map and text provides a cross-section of the western slope of the Cascade Mountains, and will enable other investigators to correlate these data northward and southward.

(1939) Prof.

Oregon State Dept. of Geology and Mineral Industries, Portland

**3992. Weaver, C. E. *Geology of the Coast Ranges from the Sacramento Valley to the Ocean North of San Francisco Bay***

( ) Prof.

University of Washington, Seattle

**3993. Weaver, C. E. *Paleontology of the Tertiary Formations in Oregon and Washington***

( ) Prof.

University of Washington, Seattle

### HISTORY

**3994. Akerman, C. and Johansen, Dorothy. *A Yankee in Oregon: Simeon Reed Helps Build a New Empire***

The economic development of the Pacific Northwest, 1852-1894, as illustrated by activities of Simeon Reed.

(1940) Prof., Gen. Pub.

Reed College, Portland, Oreg.

**3995. Beal, S. M. *The History of Southeastern Idaho***

This monograph covers the period of: (1) Exploration, 1804-1812; (2) Fur Trade, 1819-1860; (3) Colonization and Development, 1860-present. It is an intimate account of the occupation and activities of the people in 18 southeastern Idaho counties. The Mormon movement in Idaho is particularly stressed.

(1940) Gen. Pub.

Ricks College, Rexburg, Idaho

3996. Bomber, E. **History of Oregon City from 1829-1850**

The development of Oregon City as the early capital of the Oregon territory and the evolution of the provisional government with an analysis of the geographical setting.

(1939) Prof.

Reed College, Portland, Oreg.

3997. Deutsch, H. J. **Economic History of the Indian of the Pacific Northwest**

( ) Prof., Gen. Pub.

State College of Washington, Pullman

3998. Murray, K. A. **History of Northern Stevens County**

The history of northern Stevens County centers around mining, the decline of which has created numerous "ghost towns." An attempt will be made to estimate the probable effect of the Grand Coulee project upon the area.

( ) Prof.

Whitworth College, Spokane, Wash.

3999. Sweeney, M. **Oregon City from 1848-1890**

The history of Oregon City through the period of the California gold rush, the steamboat era in the Pacific Northwest, and the coming of the railroads.

(1939) Prof.

Reed College, Portland, Oreg.

#### **RECLAMATION**

4000. United States Department of Agriculture, Soil Conservation Service,

Regional Section of Woodland Management, Pacific Northwest Region. An investigation of the effectiveness of woody plants in the reclamation of coastal dune areas is underway at Warrenton, Oreg. An area has been set aside for the testing of various species and combinations of woody species and other plants.

(Continuing) Prof.

Spokane, Wash.

#### **RECREATION**

4001. Greider, C. E. **Park, Parkway and Recreational Area Study**

Recommendations for coordinated state recreational development plan, including legislation, state organization, potential areas.

( ) Gen. Pub.

U. S. Dept. of the Interior, National Park Service, Recreation Study, Washington, D. C.

4002. Oregon State Planning Board. **A Study of Parks, Parkways and Recreational Areas of Oregon. Vol I. Present Development**  
( ) Prof., Gen. Pub.  
Portland, Oreg.

#### REGIONAL SURVEYS

4003. Deutsch, H. J. **Capitalism in the Pacific Northwest**  
A study of the relative importance of pioneer activity and capitalist promotion in the development of the region. Covers the period 1805-1828 and analyzes the organization, methods, and results of the activities of the various fur companies.  
(1939) Prof.  
State College of Washington, Pullman
4004. Merriam, W. B. **Geography of the Rogue River Valley**  
Description and interpretation of the natural environment and resources of this region and their relation to the economic evolution of the region.  
(1939) Prof.  
Eastern Washington College of Education, Cheney
4005. Smith, W. D. **Geography of the Pacific Basin**  
Geographical survey of the Pacific Basin from a physical, economic and cultural point of view.  
( ) Prof., Gen. Pub.  
University of Oregon, Eugene
4006. Smith, W. D. **Physical and Economic Geography of Oregon**  
A systematic study of the economic geography of Oregon based upon a careful analysis of the physical environment and of its relation to economic development.  
(1939) Gen. Pub.  
University of Oregon, Eugene

#### VEGETATION: NATURAL

4007. Allen, V. H. **A Manual of the Conifers and Monocolyledonae of Idaho**  
1. Collecting and identifying the Genus *Trifolium* in Idaho.  
2. Collecting and identifying the grasses in the West.  
3. Collection of material for a check list of seed plants in Idaho  
( ) Prof.  
University of Idaho, Moscow

4008. Sharsmith, C. W. **Botanical Survey of the State of Washington**  
A field survey with the idea of finding, identifying and listing new botanical material in the state.  
( ) Prof., Gen. Pub.  
State College of Washington, Pullman
4009. Vandecaveye, S. C. **Effect of Type and Composition of Vegetative Cover on Humus Formation**  
( ) Prof.  
State College of Washington, Pullman

### **WILDLIFE**

4010. Dixon, J. S., Frost, W. T. and Park Naturalist Staff at Crater Lake. **Birds and Mammals of Crater Lake National Park, Oregon**  
A study of the life histories, food habits, distribution and field characteristics of the birds and mammals of Crater Lake. To be published by Government Printing Office as Fauna Series No. 5 of the National Park Service.  
(1941) Gen. Pub.  
U. S. Dept. of the Interior, National Park Service, Crater Lake, Oreg.
4011. Ellis, F. G. and Hatch, A. B. **The Winter Deer Range Problem in Idaho**  
To determine the carrying capacity of Idaho for deer by means of winter range studies designed to show: (1) extent of winter range, (2) degree now utilized, (3) carrying capacity, (4) management measures needed to maintain ranges in full use.  
(1939) Gen. Pub.  
University of Idaho, School of Forestry, Moscow
4012. Robinette, L., Hatch, A. B. and Young, V. A. **Selway Elk Problem**  
The life history and seasonal management of the Selway elk herd, the carrying capacity of range, and the necessary regulation of hunting to permit a more even distribution of game.  
(1939) Prof., Gen. Pub.  
University of Idaho, School of Forestry, Moscow

## **II. AGRICULTURE**

### **GENERAL AGRICULTURE**

4013. Hollands, H. F. and Hurd, E. B. **Farm Types and Readjustments in Farming in the Principal Irrigated Areas in Washington**

A critical examination of the existing patterns of production and systems of farming in the irrigated areas of Yakima and Benton counties to determine a general program of improvement for the area.

( ) Prof.

State College of Washington, Division of Farm Management and Agricultural Economics, and the U.S. Dept. of Agriculture, Bureau of Agricultural Economics, Pullman, Wash.

4014. Orr, A. E. **Farming Systems in Eastern Whitman County**

A farm survey in the soil conservation demonstration project in eastern Whitman County. The data have been analyzed by type of farm and tenure of operator to determine the adjustments in land use, type and numbers of livestock, income and expenses, and other factors over a three-year period.

( ) Prof.

State College of Washington, Agricultural Experiment Station coop. with the Soil Conservation Service, Pullman, Wash.

### **AGRICULTURAL ECONOMICS**

4015. Dummeier, E. F. **Consumer Cooperative Buying in Washington**

The present status of cooperative purchasing in Washington compared with similar movements elsewhere, to appraise the economic effects and significance of the movement, and to draw conclusions as to its advantages.

( ) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station, Pullman

4016. Eckert, P. S. and Slagsvold, P. L. **Economics of Livestock Marketing**

To examine and analyze the cattle exports of the state; determine the relationship between number of beef cattle on farms and the number of cattle exported; to determine the sources and destinations of Montana's cattle exports, the influence of transportation facilities on market destinations and the seasonal movement of Montana cattle exports; and the importance of Montana cattle shipments in the receipts at central markets.

(1939) Prof.

Montana State College, Bozeman

4017. Farm Credit Administration of Spokane. **Factors Affecting Loan Experience on Range Livestock Loans**  
The experience of 498 loans made by the Federal Land Bank on range livestock properties, 1917-1932.  
( ) Prof.  
Spokane, Wash.
4018. Farm Credit Administration of Spokane and Farm Management Department, Oregon State College. **Study of Land Valuation and Debt-Carrying Capacity in Relation to Loan Experience in Willamette Valley**  
1. Analysis of 3,000 loans of Federal Land Bank in Willamette Valley, 1917-32, and 3,000 loans, 1933-38. 2. Survey and analysis of 400 farm organization and farm management records in Willamette Valley. 3. A farm classification of Benton County and an analysis in relation to loan experience.  
(1939) Prof.  
Spokane, Wash.
4019. Hansen, C. J. **Marketing Northwest Fresh Prunes, 1938-1939 Season**  
Shipment and price data.  
(1939) Prof., Gen. Pub.  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Portland, Oreg.
4020. Hansen, C. J. **Marketing Northwest Onions, 1938-39 Season**  
Shipment and price data.  
(1939) Prof., Gen. Pub.  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Portland, Oreg.
4021. Hansen, C. J. **Marketing Northwest Potatoes, 1938-39 Season**  
Shipment and price data.  
(1939) Prof., Gen. Pub.  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Portland, Oreg.
4022. Hollands, H. F. **Prices of Washington Agricultural Products**  
Statistical records of past and current prices of important Washington agricultural products to provide a source of data for price analysis research.  
( ) Prof.  
State College of Washington, Agricultural Extension Service, and Agricultural Experiment Station, Pullman
4023. Orr, A. E. **Farm Tenure in Washington**  
( ) Prof., Gen. Pub.  
State College of Washington, Pullman

4024. Orr, A. E. **A Three-Year Farm Management Study of Farms in the Soil Conservation Demonstration Project, Region 11**  
( ) Prof.  
State College of Washington, Pullman
4025. Overholser, E. L. and Overley, F. L. **Fruit Handling in Storage**  
( ) Prof.  
State College of Washington, Pullman
4026. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Land Ownership, Tenancy, Mortgage and Debt in Relation to Settlement Opportunity**  
(1939) Gen. Pub., Prof.  
Portland, Oreg.
4027. Pubols, B. H. and Dummeier, E. F. **The Farm Debt Problem in Washington**  
A study of "Farm Mortgages and Land Transfers" in Washington based on records in 15 counties representing important type-of-farming areas of the state.  
( ) Prof.  
State College of Washington, Agricultural Experiment Station, Pullman
4028. Rademaker, J. **Japanese Land Holding for Agricultural Purposes in the State of Washington**  
Ph. D. Thesis, ( ) Gen. Pub., Prof.  
University of Washington, Graduate School of Social Work, Seattle
4029. Renne, R. R. **Coordination of Statistical Data**  
To compile, transcribe, compute and summarize existing data on land ownership, soil types, school population and mobility, types of farming, farm practices, farm income, tax delinquency, farm mortgages, foreclosures, bankruptcies, and related data, and to tabulate these data in such form as to show the relationship among the various factors.  
(1939) Prof., Gen. Pub.  
Montana State College, Bozeman
4030. Renne, R. R. **A Study of the Tenure Status and Farm Practices**  
To transcribe, tabulate and summarize existing data on tenure status and farm practices for farms and ranches in Montana to furnish basic data useful in developing a sound agricultural and conservation program.  
(1939) Prof., Gen. Pub.  
Montana State College, Bozeman

4031. Schafer, E. G. **Competition between Forage and Grain Crops**

( ) Prof.

State College of Washington, Pullman

### CROPS

4032. Barbee, O. E. and Vogel, O. A. **A Study of Characteristics of Crop Varieties in Relation to Adaptation**

Winter and spring wheat varieties were grown in Whitman, Walla Walla, Garfield, and Adams counties to check adaptability. Other trials with varieties of local interest, new strains, and checks of winter wheat, spring wheat, oats, and barley were made in Klickitat, Columbia, Pend Oreille, Grant, and Stevens counties. Oat trials of 25 varieties were made in 5 localities from Lynden to Vancouver. Comparative records have been assembled.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station and U. S. Dept. of Agriculture, Bureau of Plant Industry, Pullman, Wash.

4033. Burk, E. F. and Clore, W. J. **Fertilizer Requirements of Major Truck Crops**

The response of the more important truck crops to the application of fertilizers based on 18 different treatments at Walla Walla.

( ) Prof.

State College of Washington, Division of Horticulture and Irrigation, Branch Experiment Station, Pullman

4034. Dizmang, O. K. **The Future of Wheat Production in the Inland Empire**

An analysis of the part played by wheat in the economy of the region and of the problems that occur.

( ) Prof.

Whitworth College, Spokane, Wash.

4035. Ellison, J. W. **A History of the Northwest Fruit Industry**

The investigation covers the rise and development of the fruit industry including problems of marketing.

( ) Prof.

Oregon State College, Corvallis

4036. Harris, G. H. **Variation in Chemical Composition of Horticultural Crops as Effected by Climate and Soil Conditions**

The objectives are: 1. To protect human health by enhancing the nutritive value of fruits and vegetables appearing on the markets; 2. To enhance farmers' returns by production of better and more salable products—possibly restrict certain crops to especially suited areas; 3. Contribution to the science of plant physiology.

(Continuing) Prof., Gen. Pub.

University of British Columbia, Vancouver



**4037. Harris, G. H. Causes of Raspberry Decline**

The Cuthbert raspberry has declined to such an extent in British Columbia these last few years that many growers are giving up raspberry growing in despair. The objectives are: 1. To determine causes of failure and of the Cuthbert raspberry industry remedy of the same; 2. To find a new raspberry to replace the Cuthbert; 3. To work out a better method of cultural management of raspberries.

(1941) Prof., Gen. Pub.

University of British Columbia, Vancouver

**4038. Larson, C. A. Crop Rotations**

The effects of alfalfa, sweet clover, manure and crop sequences in the rotation. Crops and varieties grown in the rotations this year (1938) include sugar beet—U. S. A600, spring wheat—Jenkin, potatoes—Netted Gem, corn—Iowa 939, alfalfa—South Dakota No. 12, and sweet clover—Yellow Madrid.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman, coop. with U. S. Dept. of Agriculture, Division of Western Irrigation Agriculture

**4039. Montana State College, Agricultural Experiment Station, North Montana Branch. Cereal Investigations**

These experiments involve variety tests, nursery trials, time of seeding, production of pure seed of standard small grain varieties and other related work.

(Continuing) Prof.

Havre, Mont.

**4040. Montana State College, Agricultural Experiment Station, North Montana Branch. Forage Crop Investigations**

The production of various annual and perennial forages, including alfalfa and other legumes, grasses, grain hays, corn and miscellaneous roughages, and the effect of different planting methods, timeliness of operation, and tillage upon establishing stands and yield.

(Continuing) Prof.

Havre, Mont.

**4041. Montana State College, Agricultural Experiment Station, North Montana Branch coop. with the U. S. Department of Agriculture. Dry Land Crop Rotations and Tillage Methods**

Various rotation systems involving locally and regionally important commercial cereals and grasses, the effect of crop sequence, method of seed bed preparation and timeliness of operations upon yield and quality.

(Continuing) Prof.

Havre, Mont.

4042. Oregon State College, Agricultural Experiment Station. **Development of the Oregon Small Seed Industry**

Seed production fits well into the State's marketing needs as it provides a product of high value capable of being shipped long distances. Particular attention is being given to forage crops.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4043. Oregon State College, Agricultural Experiment Station. **Plant Breeding**

The breeding, testing, development and introduction of superior strains of beet, barley, corn, wheat adapted specifically to Oregonian conditions.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4044. Oregon State College, Agricultural Experiment Station, Division of Agronomy. **Hop Culture and Handling**

The investigations are concerned with the development of improved cultural, drying, grading, and marketing practices.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4045. Oregon State College, Agricultural Experiment Station, Horticultural Division. **The Nursery Industry**

The commercial production of nursery stock is a major industry in Oregon which fits the need of this state for specialty crops of comparatively high value which can be shipped long distances. Investigation includes: (1) disease and pest control; (2) nursery practices; (3) preservation of stock in shipment; (4) storage studies.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4046. Orr, A. E. **Crop Harvesting Dates in Washington**

( ) Prof.

State College of Washington, Pullman

4047. Pickett, F. L. **The Ability of Certain Plant Forms to Maintain Their Viability through More or Less Extended Periods of Extreme Desiccation**

The reaction of protoplasm to desiccation and its changes through long periods under such conditions. This investigation has covered and would continue to cover certain types of plant seeds and other plant parts and a critical examination of results.

( ) Prof.

State College of Washington, Pullman

4048. Pubols, B. H., Orr, A. E., Heisig, C. P., Schafer, E. G., Wanser, H. M. and Deardorff, C. E. **Farming Systems and Practices and Their Relationship to Soil Conservation and Farm Income in the Wheat Region of Washington**  
(1939) Prof.  
State College of Washington, Pullman
4049. Schafer, E. G. **Adaptability, Culture, and Improvement of Forage Grasses**  
( ) Prof.  
State College of Washington, Pullman
4050. Schafer, E. G. **Crested Wheatgrass: Culture, Adaptation, and Characteristics**  
( ) Prof.  
State College of Washington, Pullman
4051. Schafer, E. G. **Crop Rotations in Washington**  
( ) Prof.  
State College of Washington, Pullman
4052. Williams, R. M. **Dry Land Rotation and Tillage Methods**  
Dry land investigations to determine the effectiveness of each of the many different methods of tillage, value of crop rotation or crop sequence, suitability in the conservation and utilization of available moisture and various new crops to be tested for their adaptability to the area.  
( ) Prof.  
Montana State College, Agricultural Experiment Station, Judith Basin Branch Station, Moccasin, coop. with U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Dry Land Agriculture, Washington, D. C.
4053. Williams, R. M. **Forage Crops**  
A study of all plants used as forage whether for hay or pasture.  
(Continuing) Gen. Pub.  
Montana State College, Agricultural Experiment Station, Judith Basin Branch Station, Moccasin, coop. with U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Dry Land Agriculture, Washington, D. C.

#### DAIRYING AND LIVESTOCK

4054. Eagles, B. A. **Surface Taint Butter**  
A study of the factors responsible for the development of surface taint in butter, with the ultimate object of determining ways and means for the prevention of its occurrence.  
( ) Prof.  
University of British Columbia, Vancouver

4055. **Eagles, B. A. Studies on Activators Required by Cheese Starters**  
A study of the nutritive requirements of the Lactic Acid Bacteria found in commercial cheese starters. The possible application to industry is concerned with the improvement of methods in the technique of carrying starters.  
( ) Prof.  
University of British Columbia, Vancouver
4056. **McCall, R. and Hackedorn, H. Cereal and Legume Hays for Fattening Cattle**  
(Continuing) Prof., Gen. Pub.  
State College of Washington, Agricultural Experiment Station, Pullman
4057. **Montana State College, Agricultural Experiment Station, North Montana Branch. Beef Cattle Investigations**  
Winter feeding trials with grade Herefords, comparing the efficiency of different locally grown roughages. Herd improvement through the use of different types of sires, and the performance record of heifer calves, yearlings, and two year olds.  
(Continuing) Prof.  
Havre, Mont.
4058. **Oregon State College, Agricultural Experiment Station, Division of Animal Husbandry. Dairy Cattle Nutrition**  
A study concerned with the breeding and maintenance of high grade dairy cattle.  
(Continuing) Prof., Gen. Pub.  
Corvallis, Oreg.
4059. **Oregon State College, Agricultural Experiment Station, Division of Animal Husbandry. Fur Farming in Oregon**  
Problems concerning nutrition, breeding, disease, and parasite control and other economic problems vital to the industry.  
(Continuing) Prof., Gen. Pub.  
Corvallis, Oreg.
4060. **Williams, R. M. Animal Husbandry Investigations**  
Studies concerned with the management of livestock.  
(Continuing) Gen. Pub.  
Montana State College, Agricultural Experiment Station, Judith Basin Branch Station, Moccasin, coop. with U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Dry Land Agriculture, Washington, D. C.

**FLOOD CONTROL**

4061. United States Department of Agriculture, Forest Service, Flood Control Coordinating Committee No. 17B. **Flood Control Preliminary Examination and Report**

To determine the existence of flood problems and the need for detailed surveys of measures required for flood control, run-off retardation and erosion prevention purposes on the watersheds of the upper Snake River system.

(1939) (Confidential)

Intermountain Forest and Range Experiment Station, Ogden, Utah

4062. United States Department of Agriculture, Forest Service, Flood Control Coordinating Committee No. 17B. **Flood Control Survey, Boise River, Idaho**

To determine the kind, cost and benefits of measures needed to be applied for flood control, water flow retardation and soil erosion prevention purposes on the Boise River watershed.

(1940) (Confidential)

Intermountain Forest and Range Experiment Station, Ogden, Utah

**FOOD RESEARCH**

4063. Boggs, Mildred M. **Cooking Methods in Relation to Quality of Peas Preserved by the Frozen-Pack Process**

The relation of different methods of cooking to the quality of typical commercial samples with recommendations as to methods most suitable for typical products of the state.

(1939) Prof.

State College of Washington, Agricultural Experiment Station, Home Economics Division, Pullman

4064. Boggs, Mildred M. **Factors Influencing the Color of Frozen Peas When Held on a Steam Table**

The relation of color to different methods and periods of holding frozen peas after cooking.

(1939) Prof.

State College of Washington, Agricultural Experiment Station, Home Economics Division, Pullman

4065. Boggs, Mildred M. **Factors Influencing the Texture of Peas Preserved by the Frozen-Pack Process**

An examination of the various conditions which affect the texture of different varieties of peas when preserved by the frozen-pack process.

(1939) Prof.

State College of Washington, Agricultural Experiment Station, Home Economics Division, Pullman

4066. Fincke, Margaret L. **A Study of the Vitamin B Content of Frozen Peas**

This is cooperative with Washington State College; they study vitamins A and C values on duplicate samples of the same peas. (1) Study of peas frozen after blanching at different times and at different temperatures. (2) Comparison of vitamin B values of peas of different varieties all grown in the same soil. (3) Comparison of fresh peas and the same kind after frozen storage for several months. (4) Comparison of dry packed and brine packed peas. (5) Comparison of peas of same varieties grown under different conditions of climate and soil. (6) Comparison of under-mature, mature and overmature peas.

(1940) Prof.

Oregon State College, School of Home Economics, Corvallis

4067. Todhunter, E. N. **Vitamin C Content of Frozen Fruits and Vegetables**

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4068. Todhunter, E. N. **The Vitamin Values of Fruits and Vegetables Preserved by the Frozen-Pack Method**

The vitamin A and C values of frozen red raspberries and green peas and the factors which may influence this vitamin content such as variety, fertilizers, stage of maturity, season, method of freezing, time and temperature of thawing, and cooking methods.

(1940) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4069. Todhunter, E. N. **The Vitamin Values of Washington Grown Tree Fruits**

Factors influencing the vitamin content of apples and pears such as: storage period and temperature of storage, leaf to fruit ratio, amount and kind of soil fertilizer, quantity of irrigation water used during the fruit growing season.

(1940) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

#### INDUSTRIES BASED ON AGRICULTURE

4070. Bendixen, H. A. **Development of Special Varieties of Cheese Suitable to Washington Conditions**

( ) Prof.

State College of Washington, Pullman

4071. Boggs, Mildred M., Schwartz, C. D., Campbell, H. and Drehl, H. C. **Varietal Study of Vegetables Preserved by the Frozen-Pack Process**

An evaluation of the quality of different varieties of peas, corn, snap and lima beans preserved by the Frozen Pack Laboratory of Seattle.

(1939) Prof.

State College of Washington, Agricultural Experiment Station, Home Economics Division, Pullman

4072. Neubert, A. M., Berry, J. A. and Clore, W. J. **Processing of Fruits and Vegetables**

This cooperative project has for its objectives (1) the accumulation of information regarding the adaptability of fruit and vegetable varieties and selections grown on irrigated land in eastern Washington with regard to their suitability for canning, freezing preparation and juice manufacture, and (2) the development of the suitable processing technology by which properly selected fruit and vegetable crops for these sections can be prepared for market.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman, coop. with U. S. Dept. of Agriculture

4073. Parker, E. B. **Manufacture of Wheat Straw into Briquettes for Farm Fuel**

( ) Prof.

State College of Washington, Pullman

4074. Thornton, G. E. **Fabrication of Agricultural Machinery and Other Special Machinery in the Northwest**

( ) Prof.

State College of Washington, Pullman

4075. United States Work Progress Administration. **Chemical Technological and Bacteriological Research to Obtain Data Relative to the Freezing Preservation of Fruits and Vegetables, Seattle**

WPA—365-93-3-6. ( ) Prof.

Portland, Oreg.

#### IRRIGATION AND IRRIGATION METHODS

4076. Aldrich, W. W., Lewis, M. R. and Work, R. A. **Anjour Pear Responses to Irrigation in a Clay Adobe Soil**

(1939) Prof.

Oregon State College, Corvallis

4077. Monson, O. W. **Homemade Water Lifting Devices**

The design and construction of a homemade irrigation pump based on the centrifugal principle, which can be constructed in the farm shop, will have a large capacity and be adapted to irrigation needs under average conditions up to 20 feet lifts.

(1939) Gen. Pub.

Montana State College, Agricultural Experiment Station, Bozeman

4078. Monson, O. W. **Methods of Irrigation**

A comparison of various methods of applying water to field and garden crops.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4079. Overholser, E. L. and Overley, F. L. **Orchard Irrigation**

( ) Prof., Gen. Pub.

State College of Washington, Pullman

**LAND CLASSIFICATION**4080. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Technique of Land Classification**

(1939) Gen. Pub., Prof.

Portland, Oreg.

**LAND RECLAMATION**4081. Larson, C. A. **Reclamation of Saline Soils**

A cooperative project with the Sunnyside Valley Irrigation District on a saline tract of land near Outlook, Wash. Experiments were concerned with sugar beets, barley, and sweet clover, employing various techniques and the results tabulated.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman, coop. with U. S. Dept. of Agriculture, Division of Western Irrigation.

4082. Oregon State College, Agricultural Experiment Station. **Utilization of Logged-Off Lands**

Logging operations have left Western Oregon with approximately 3,000,000 acres of logged-off land. The production of forage crops for livestock grazing appears to be the best means of obtaining an immediate return and of putting them to effective use. Investigations include: (1) experimental seeding with sod forming grasses; (2) grazing experiments.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.



4083. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Land Reclamation by Clearing**  
(1939) Gen. Pub., Prof.  
Portland, Oreg.
4084. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Land Reclamation through Water Use and Control**  
(1939) Gen. Pub., Prof.  
Portland, Oreg.

### LAND UTILIZATION

4085. Saunderson, M. H. **Analysis of Types of Farming**  
To transcribe, assemble, code, tabulate and summarize existing information covering the assembly and analysis of basic data on individual farms and ranches in order that the major type of farming communities may be determined and recommendations made for the guidance of the various state and Federal agencies in their land programs.  
(1939) Prof.  
Montana State College, Bozeman
4086. Tjerandsen, C. **A Land Use Classification of Kootenai County, Idaho**  
A reconnaissance land classification to determine the limitations of present land-use and the lines along which future development should be directed to meet local problems more successfully.  
( ) Prof., Gen. Pub.  
U. S. Dept. of Agriculture, Bureau of Agricultural Economics, Moscow, Idaho
4087. United States Department of Agriculture, Bureau of Agricultural Economics, Office of Oregon State Land Planning Specialist. **Land Use Studies of Oregon Counties**
- |           |         |            |
|-----------|---------|------------|
| Benton    | Douglas | Linn       |
| Clackamas | Lane    | Washington |
| Clatsop   | Marion  | Yamhill    |
| Columbia  | Polk    |            |
- Land use study of the basic physical and economic factors affecting the lands of the county and the classification of those lands into their best long-time use.  
( ) Coll., Prof., Gen. Pub.  
Corvallis, Oreg.
4088. United States Works Progress Administration. **Land Use Survey, County-Wide, Bellingham, Wash.**  
WPA—465-93-3-167 ( ) Prof., Gen. Pub.  
Portland, Oreg.

4089. United States Works Progress Administration. **Land Use Survey, King County, Wash.**  
WPA—665-93-3-75 (      ) Prof., Gen. Pub.  
Portland, Oreg.
4090. United States Works Progress Administration. **Land Use Survey, Lewis County, Wash.**  
WPA—465-93-3-65 (      ) Prof., Gen. Pub.  
Portland, Oreg.

#### PESTS AND DISEASES

4091. Bamberg, R. H. **Cereal Crops and Diseases**  
The determination of improved methods of cultivating corn, wheat, oats, barley, sorghum, rye and seed flax to insure maximum production and effective disease control.  
(Continuing) Prof., Gen. Pub.  
Montana State College, Agricultural Experiment Station, Bozeman, coop. with U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Washington, D. C.
4092. Biely, J. **Fowl Paralysis Research**  
This research is concerned with a study of the nature of fowl paralysis, its mode of transmission and control. Our studies show that the disease may manifest itself in the form of paralysis, lymphomatosis, tumors and blindness. All these conditions have been diagnosed in the experimental flock under observation during the past year.  
(1942) Prof., Gen. Pub.  
University of British Columbia, Vancouver
4093. Campbell, L. **The Etiology and Prevention or Control of the Black Root Disease of Sugar Beets**  
A study of the prevalence and geographic range of failures or reduced yields with reference to soil conditions, cultural and rotation practices, the symptoms and effects of the disease at various stages, and suggestions for prevention or control.  
(      ) Prof.  
State College of Washington, Agricultural Experiment Station, Pullman
4094. Fischer, G. W. **The Nature, Distribution and Economic Importance of Various Diseases in the U. S.**  
The nature, distribution and economic importance of such grass diseases as rusts, ergot, leaf spots, foot rots, and smuts in the United States.  
(      ) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4095. Fischer, G. W. **Studies of the Common Stem Smut of Various Grasses Caused by Ustilago Hypodytes**

The life history, manner of infection and host specialization of the common stem smut of various grasses caused by *Ustilago hypodytes*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4096. Fischer, G. W. **Studies of the Control of Smuts of Forage Grasses by Seed Treatment**

The efficacy of various fungicides in the control of seed-carried smuts of forage grasses and the proper technique or methods of application.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4097. Fischer, G. W. **Studies of the Common Stripe Smut of Various Grasses Caused by Ustilago Striaeformis**

The general biology, life history and host specialization of the common stripe smut of various grasses caused by *Ustilago striaeformis*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4098. Fischer, G. W. **Studies of the Covered Smut (*Ustilago Hordei*) of Barley on Various Forage Grasses**

The susceptibility of forage grasses to the covered smut of barley, the virulence of various physiologic races of the causal organism on forage grasses, and the ability of the fungus to persist from year to year in perennial hosts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4099. Fischer, G. W. **Studies of the Head Smut of Various Grasses Caused by Ustilago Bullata**

The general biology, life history and host specialization of the head smut of various grasses caused by *Ustilago bullata*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4100. Fischer, G. W. **Studies of the Loose Smut of Tall Oat Grass Caused by *Ustilago Perennans***

The general biology, life history and host specialization of the loose smut of tall oat grass caused by *Ustilago perennans*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4101. Fischer, G. W. **Studies of Wheat Bunt Caused by *Tilletia Levis* and *T. Tritici* on Various Forage Grasses**

The incidence of occurrence of *Tilletia levis* and *T. tritici* on species of *Agropyron* and other forage grasses, the comparative virulence of various physiologic races of bunt on species of *Agropyron*, and the ability of the mycelium of the two fungi to persist from year to year in their perennial grass hosts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4102. Fischer, G. W. **Varietal Resistance and Susceptibility of Species, Selections and Collections of Forage Grasses to Various Smuts**

The susceptibility and resistance of (1) various grass species in different genera to the common head smut caused by *Ustilago bullata* (2) slender and crested wheat grass to wheat bunt caused by *Tilletia levis* and *T. tritici* (3) slender and crested wheat grass to stripe smut caused by *Ustilago striaeformis*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4103. Heald, F. D. **The Etiology and Prevention of Apple Rots**

The comparative prevalence of different rot-producing fungi, the resulting losses based on reports from car shipments to Eastern markets, and methods of prevention.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4104. Heald, F. D. and English, H. **The Etiology and Prevention of Pear Rots**

A detailed etiological study of the more important types including: (1) avenues of entrance; (2) time of infection; (3) relation to harvesting or packing practices; (4) effect of different types of storage and storage temperatures; (5) longevity of the spores of the causal fungi; (6) the thermal death point of spores; and (7) the death point of spores when subjected to fungicides or chemical cleaners, with suggestions for prevention or control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4105. Heald, F. D., Jones, L. K. and Huber, G. A. **Plant Disease Survey of Washington**

A study of the plant diseases prevalent in the State of Washington, the amount of loss they cause, the relation of climatic factors to the various diseases, the etiology of those imperfectly known, the life history of new or imperfectly known parasitic fungi, and the efficiency of control measures.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4106. Heald, F. D. and Wellman, R. **The Etiology and Prevention of Alfalfa Failures**

A study of the prevalence and geographic range of crop failures, the types of injury, detailed etiological studies of the more important causes of failures, and suggestions for prevention or control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4107. Holton, C. S. **Hybridization and Genetic Relationships in *Tilletia Tritici* and *T. Levis*, the Fungi Causing Bunt of Wheat**

The probable role of hybridization between species and races in the production of new species and races of the bunt fungi and their genetic relationships.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

4108. Holton, C. S. **Physiologic Specialization in *Tilletia Tritici* and *T. Levis*, the Fungi Which Cause Stinking Smut of Wheat**

A standard system of race identification for the purpose of identifying new races and determining their distribution.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

4109. Holton, C. S. **Physiologic Specialization, Varietal Resistance, and Genetic Relationships in the Oat Smut Fungi, *Ustilago Avenae* and *U. Levis***

The identification of the physiologic races of the oat smut fungi for use in determining the resistance of varieties, hybrids, and selections of oats to this disease.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

**4110. Holton, C. S. Varietal Resistance to Bunt**

The reaction of varieties, hybrids, and selections of wheat to physiologic races of *Tilletia tritici* and *T. levis* under different and similar environmental conditions.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

**4111. Jones, L. K. Downy Mildew and Powdery Mildew of Peas**

A study of the causal organism, mode of infection, period of incubation, the relations of temperature and humidity to disease development, and the modes of transmission with suggestions as to its control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

**4112. Jones, L. K. Etiology and Control of Diseases of Glasshouse Plants**

The distribution, economic importance, symptomology and host relations of the diseases of glasshouse crops in the state, an analysis of the conditions contributing to their development and spread, and suggestions for their control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

**4113. Jones, L. K. Virous Diseases of Brambles**

A survey of the bramble-growing districts of Washington to determine the prevalence and economic importance of the various types of virous troubles, the media of transmission, and effective means for control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

**4114. Jones, L. K. Virous Diseases of Potato and Other Solanaceous Plants**

Types of viroses of potato and related plants which exist in the State of Washington with data on rate of spread, host range, economic effects, and methods of control.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4115. Jones, L. K. and Johnson, F. **Mosaic and Other Virous Diseases of Peas**

A study of their distribution and economic importance, the nature of the viruses, the mode of transmission, and of desirable control practices.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4116. McCulloch, E. C. **Factors Responsible for the Development and Spread of Mastitis in Dairy Herds**

A study of the disease and of methods for control.

(Continuing) Prof., Gen. Pub.

State College of Washington, Division of Veterinary Science, Pullman

4117. McCulloch, E. C. **Lamb Dysentery**

The occurrence of lamb dysentery in Central Washington and of contributing causes.

(Continuing) Prof., Gen. Pub.

State College of Washington, Division of Veterinary Science, Pullman

4118. Mills, H. B. and Pletsch, D. J. **Abandoned Land and Harmful Insect Population**

Effect of land abandonment on populations of harmful insects. Effect of cultural methods on insect populations in cultivated areas.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4119. Oregon State College, Agricultural Experiment Station, Division of Animal Husbandry. **Livestock Diseases—Sheep**

The range sheep and cattle industry of Oregon constitutes one of the most important branches of the state's agriculture, utilizing approximately three-fourths of the area of the state—land is unsuited to other types of agriculture. Investigations include: (1) lung diseases (2) stiff lambs (3) lamb dysentery (4) pregnancy disease (5) "sudden death" disease (6) black disease.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4120. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Flax Pest**

Western Oregon produces from 80% to 90% of the total United States crop. Unless practical measures can be worked out to control insect pests which threaten this crop, present production of fibre flax will not only be eliminated but future expansion will be abandoned. Investigations include: (1) flax worm (*Cnephasia longana* Haworth) (2) preventative cultural practices (3) control measures.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4121. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Hop Pests**

Oregon is the nation's leading hop producing center. Serious losses accrue from the effect of insects and disease. Investigations are chiefly concerned with red spider mite, hop aphid, leaf beetle, flea beetle, web worm, hop butterfly, wire worm, and thrips.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4122. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Onion Pests and Diseases**

The commercial onion industry has suffered heavy losses from pests and diseases in recent years. The onion maggot, cut-worms, wire worms, and mildew are the principal hazards. Remedial treatments are being investigated.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4123. Pepper, J. H. **The Effect of Insecticides on Insects**

Quantitative studies in the effects of new insecticides and of improved techniques in their use.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4124. Pepper, J. H. **The Sugar Beet Webworm**

Investigation of the biology and control of the sugar beet webworm.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4125. Pletsch, D. J. **Bean Mosaic Investigations**

Insects affected in transmission of the bean mosaic disease and factors governing its transmission.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman



4126. Schafer, E. G. **Weed Control and Eradication**

( ) Prof.

State College of Washington, Pullman

**POULTRY**4127. Carver, J. S. **The Supplementary Value of Yeast in the Laying Ration**

To determine the effect on egg production, mortality, and cost of feed per dozen eggs by supplementing the W. S. C. commercial laying mash fermented with 1% commercial yeast.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

4128. Carver, J. S. and Heiman, V. **The Protein Requirements of Chicks**

To determine the protein requirements of growing chicks brooded and reared under commercial conditions and the effect of varying quantities of protein on their subsequent egg production, egg quality, and mortality.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

4129. Carver, J. S. and Heiman, V. **The Utilization of Fish By-Products for Poultry**

Studies are in progress with the U. S. Bureau of Fisheries on methods of preparing salmon fish meals to prevent deterioration and to improve the vitamin and protein feeding values of these feeds.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

4130. Carver, J. S. and Wilhelm, L. A. **The Physiological Response of Turkeys to Mash and Pellet Feeds**

Turkeys reared to 24 weeks of age on W. S. C. turkey starting ration and the W. S. C. developing ration testing 23.3% and 20.5% protein, respectively, supplemented with alternate alfalfa range to determine the difference between mash and grain, mash and pellets, and grain feeding.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

4110. Holton, C. S. **Varietal Resistance to Bunt**

The reaction of varieties, hybrids, and selections of wheat to physiologic races of *Tilletia tritici* and *T. levis* under different and similar environmental conditions.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

4111. Jones, L. K. **Downy Mildew and Powdery Mildew of Peas**

A study of the causal organism, mode of infection, period of incubation, the relations of temperature and humidity to disease development, and the modes of transmission with suggestions as to its control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4112. Jones, L. K. **Etiology and Control of Diseases of Glasshouse Plants**

The distribution, economic importance, symptomology and host relations of the diseases of glasshouse crops in the state, an analysis of the conditions contributing to their development and spread, and suggestions for their control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4113. Jones, L. K. **Virous Diseases of Brambles**

A survey of the bramble-growing districts of Washington to determine the prevalence and economic importance of the various types of virous troubles, the media of transmission, and effective means for control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4114. Jones, L. K. **Virous Diseases of Potato and Other Solanaceous Plants**

Types of viroses of potato and related plants which exist in the State of Washington with data on rate of spread, host range, economic effects, and methods of control.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4115. Jones, L. K. and Johnson, F. **Mosaic and Other Virous Diseases of Peas**

A study of their distribution and economic importance, the nature of the viruses, the mode of transmission, and of desirable control practices.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4116. McCulloch, E. C. **Factors Responsible for the Development and Spread of Mastitis in Dairy Herds**

A study of the disease and of methods for control.

(Continuing) Prof., Gen. Pub.

State College of Washington, Division of Veterinary Science, Pullman

4117. McCulloch, E. C. **Lamb Dysentery**

The occurrence of lamb dysentery in Central Washington and of contributing causes.

(Continuing) Prof., Gen. Pub.

State College of Washington, Division of Veterinary Science, Pullman

4118. Mills, H. B. and Pletsch, D. J. **Abandoned Land and Harmful Insect Population**

Effect of land abandonment on populations of harmful insects. Effect of cultural methods on insect populations in cultivated areas.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4119. Oregon State College, Agricultural Experiment Station, Division of Animal Husbandry. **Livestock Diseases—Sheep**

The range sheep and cattle industry of Oregon constitutes one of the most important branches of the state's agriculture, utilizing approximately three-fourths of the area of the state—land is unsuited to other types of agriculture. Investigations include: (1) lung diseases (2) stiff lambs (3) lamb dysentery (4) pregnancy disease (5) "sudden death" disease (6) black disease.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4120. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Flax Pest**

Western Oregon produces from 80% to 90% of the total United States crop. Unless practical measures can be worked out to control insect pests which threaten this crop, present production of fibre flax will not only be eliminated but future expansion will be abandoned. Investigations include: (1) flax worm (*Cnephasia longana* Haworth) (2) preventative cultural practices (3) control measures.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4121. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Hop Pests**

Oregon is the nation's leading hop producing center. Serious losses accrue from the effect of insects and disease. Investigations are chiefly concerned with red spider mite, hop aphid, leaf beetle, flea beetle, web worm, hop butterfly, wire worm, and thrips.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4122. Oregon State College, Agricultural Experiment Station, Division of Plant Pathology. **Onion Pests and Diseases**

The commercial onion industry has suffered heavy losses from pests and diseases in recent years. The onion maggot, cut-worms, wire worms, and mildew are the principal hazards. Remedial treatments are being investigated.

(Continuing) Prof., Gen. Pub.

Corvallis, Oreg.

4123. Pepper, J. H. **The Effect of Insecticides on Insects**

Quantitative studies in the effects of new insecticides and of improved techniques in their use.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4124. Pepper, J. H. **The Sugar Beet Webworm**

Investigation of the biology and control of the sugar beet webworm.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4125. Pletsch, D. J. **Bean Mosaic Investigations**

Insects affected in transmission of the bean mosaic disease and factors governing its transmission.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

**4126. Schafer, E. G. Weed Control and Eradication**

( ) Prof.

State College of Washington, Pullman

**POULTRY****4127. Carver, J. S. The Supplementary Value of Yeast in the Laying Ration**

To determine the effect on egg production, mortality, and cost of feed per dozen eggs by supplementing the W. S. C. commercial laying mash fermented with 1% commercial yeast.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

**4128. Carver, J. S. and Heiman, V. The Protein Requirements of Chicks**

To determine the protein requirements of growing chicks brooded and reared under commercial conditions and the effect of varying quantities of protein on their subsequent egg production, egg quality, and mortality.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

**4129. Carver, J. S. and Heiman, V. The Utilization of Fish By-Products for Poultry**

Studies are in progress with the U. S. Bureau of Fisheries on methods of preparing salmon fish meals to prevent deterioration and to improve the vitamin and protein feeding values of these feeds.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

**4130. Carver, J. S. and Wilhelm, L. A. The Physiological Response of Turkeys to Mash and Pellet Feeds**

Turkeys reared to 24 weeks of age on W. S. C. turkey starting ration and the W. S. C. developing ration testing 23.3% and 20.5% protein, respectively, supplemented with alternate alfalfa range to determine the difference between mash and grain, mash and pellets, and grain feeding.

(Continuing) Prof., Gen. Pub.

State College of Washington, Agricultural Experiment Station,  
Division of Poultry Husbandry, Pullman

4089. United States Works Progress Administration. **Land Use Survey, King County, Wash.**  
WPA—665-93-3-75 (      ) Prof., Gen. Pub.  
Portland, Oreg.
4090. United States Works Progress Administration. **Land Use Survey, Lewis County, Wash.**  
WPA—465-93-3-65 (      ) Prof., Gen. Pub.  
Portland, Oreg.

### PESTS AND DISEASES

4091. Bamberg, R. H. **Cereal Crops and Diseases**  
The determination of improved methods of cultivating corn, wheat, oats, barley, sorghum, rye and seed flax to insure maximum production and effective disease control.  
(Continuing) Prof., Gen. Pub.  
Montana State College, Agricultural Experiment Station, Bozeman, coop. with U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Washington, D. C.
4092. Biely, J. **Fowl Paralysis Research**  
This research is concerned with a study of the nature of fowl paralysis, its mode of transmission and control. Our studies show that the disease may manifest itself in the form of paralysis, lymphomatosis, tumors and blindness. All these conditions have been diagnosed in the experimental flock under observation during the past year.  
(1942) Prof., Gen. Pub.  
University of British Columbia, Vancouver
4093. Campbell, L. **The Etiology and Prevention or Control of the Black Root Disease of Sugar Beets**  
A study of the prevalence and geographic range of failures or reduced yields with reference to soil conditions, cultural and rotation practices, the symptoms and effects of the disease at various stages, and suggestions for prevention or control.  
(      ) Prof.  
State College of Washington, Agricultural Experiment Station, Pullman
4094. Fischer, G. W. **The Nature, Distribution and Economic Importance of Various Diseases in the U. S.**  
The nature, distribution and economic importance of such grass diseases as rusts, ergot, leaf spots, foot rots, and smuts in the United States.  
(      ) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4095. Fischer, G. W. **Studies of the Common Stem Smut of Various Grasses Caused by Ustilago Hypodytes**

The life history, manner of infection and host specialization of the common stem smut of various grasses caused by *Ustilago hypodytes*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4096. Fischer, G. W. **Studies of the Control of Smuts of Forage Grasses by Seed Treatment**

The efficacy of various fungicides in the control of seed-carried smuts of forage grasses and the proper technique or methods of application.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4097. Fischer, G. W. **Studies of the Common Stripe Smut of Various Grasses Caused by Ustilago Striaeformis**

The general biology, life history and host specialization of the common stripe smut of various grasses caused by *Ustilago striaeformis*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4098. Fischer, G. W. **Studies of the Covered Smut (*Ustilago Hordei*) of Barley on Various Forage Grasses**

The susceptibility of forage grasses to the covered smut of barley, the virulence of various physiologic races of the causal organism on forage grasses, and the ability of the fungus to persist from year to year in perennial hosts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4099. Fischer, G. W. **Studies of the Head Smut of Various Grasses Caused by Ustilago Bullata**

The general biology, life history and host specialization of the head smut of various grasses caused by *Ustilago bullata*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4100. Fischer, G. W. **Studies of the Loose Smut of Tall Oat Grass Caused by *Ustilago Perennans***

The general biology, life history and host specialization of the loose smut of tall oat grass caused by *Ustilago perennans*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4101. Fischer, G. W. **Studies of Wheat Bunt Caused by *Tilletia levis* and *T. tritici* on Various Forage Grasses**

The incidence of occurrence of *Tilletia levis* and *T. tritici* on species of *Agropyron* and other forage grasses, the comparative virulence of various physiologic races of bunt on species of *Agropyron*, and the ability of the mycelium of the two fungi to persist from year to year in their perennial grass hosts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4102. Fischer, G. W. **Varietal Resistance and Susceptibility of Species, Selections and Collections of Forage Grasses to Various Smuts**

The susceptibility and resistance of (1) various grass species in different genera to the common head smut caused by *Ustilago bullata* (2) slender and crested wheat grass to wheat bunt caused by *Tilletia levis* and *T. tritici* (3) slender and crested wheat grass to stripe smut caused by *Ustilago striaeformis*.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Forage Crops and Diseases, Pullman, Wash.

4103. Heald, F. D. **The Etiology and Prevention of Apple Rots**

The comparative prevalence of different rot-producing fungi, the resulting losses based on reports from car shipments to Eastern markets, and methods of prevention.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4104. Heald, F. D. and English, H. **The Etiology and Prevention of Pear Rots**

A detailed etiological study of the more important types including: (1) avenues of entrance; (2) time of infection; (3) relation to harvesting or packing practices; (4) effect of different types of storage and storage temperatures; (5) longevity of the spores of the causal fungi; (6) the thermal death point of spores; and (7) the death point of spores when subjected to fungicides or chemical cleaners, with suggestions for prevention or control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman



4105. Heald, F. D., Jones, L. K. and Huber, G. A. **Plant Disease Survey of Washington**

A study of the plant diseases prevalent in the State of Washington, the amount of loss they cause, the relation of climatic factors to the various diseases, the etiology of those imperfectly known, the life history of new or imperfectly known parasitic fungi, and the efficiency of control measures.

(Continuing) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4106. Heald, F. D. and Wellman, R. **The Etiology and Prevention of Alfalfa Failures**

A study of the prevalence and geographic range of crop failures, the types of injury, detailed etiological studies of the more important causes of failures, and suggestions for prevention or control.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman

4107. Holton, C. S. **Hybridization and Genetic Relationships in *Tilletia Tritici* and *T. Levis*, the Fungi Causing Bunt of Wheat**

The probable role of hybridization between species and races in the production of new species and races of the bunt fungi and their genetic relationships.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

4108. Holton, C. S. **Physiologic Specialization in *Tilletia Tritici* and *T. Levis*, the Fungi Which Cause Stinking Smut of Wheat**

A standard system of race identification for the purpose of identifying new races and determining their distribution.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

4109. Holton, C. S. **Physiologic Specialization, Varietal Resistance, and Genetic Relationships in the Oat Smut Fungi, *Ustilago Avenae* and *U. Levis***

The identification of the physiologic races of the oat smut fungi for use in determining the resistance of varieties, hybrids, and selections of oats to this disease.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Division of Cereal Crops and Diseases, Pullman, Wash.

## LUMBER INDUSTRIES

4229. Anderson, I. V. and Rapraeger, E. F. **Timber Harvesting and Conversion Practices—Utilization Practices in the Sawmill and in the Woods**

To obtain, and disseminate by publication, information on (1) over-run data and efficiency comparisons of logging and milling equipment; (2) volume and value losses caused by various manufacturing methods, fire, insects, and other agents.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

4230. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Logging Waste**

This project has been initiated to study the following factors affecting the utilization of British Columbia hardwoods: (a) methods of logging and manufacture at sawmill and possibilities of improvement; (b) markets, local and export; effect of increased demand on accessible supplies; (c) uses and handling methods in local furniture factories; (d) seasoning and storage methods; (e) values—log and lumber.

( ) Prof.

Vancouver, B. C.

4231. Kearns, R. S. **The Physical and Economic Aspects of Xmas Tree Production in the Douglas Fir Region**

On selected areas of physical variance, plantings have been and will continue to be made for the purpose of experimental Christmas tree production. Silvicultural technique in managing the plantation will vary. Trees will be marketed in Southern California by cooperators. Cost and return records will be maintained separately for each plantation and each silvicultural system.

(1948) Prof.

Oregon State College, School of Forestry, Corvallis

4232. Lodewick, J. E. **Sawmill Production Studies**

An investigation to develop universal quality grades for logs, provide lumber recovery data for logs of these grades, ascertain costs and returns for logs of various sizes and grades under different milling procedures, to determine the most efficient equipment for logs of various sizes, and to establish limits of economic utilization of both sound and defective logs. Designed primarily to be used by operators of both public and private timber in appraisals, timber selection and the analysis of sustained yield operations. On the way to completion for ponderosa pine, and to be extended to Douglas fir and other commercial Pacific Northwest species.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

## MANAGEMENT

4233. Brandstrom, A. J. F. **Selective Timber Management**

Basic studies in both the Douglas fir and ponderosa pine regions of costs and returns from conversion of trees of different sizes and qualities, of their volume and value growth and of their relative occurrence in any given stand, followed by a financial analysis of the effect of different degrees of volume and value removal (selective cutting) on present and future income from the forest. From these data, as developed through specific case studies of representative operations and forest areas, are being developed methods of cutting that are economically sound and technically desirable from a forest land use standpoint.

(Continuing) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4234. Briegleb, P. A. **Rate of Growth and Yield of the Several Forest Types of Oregon and Washington**

By means of periodically measured permanent sample plots and temporary plots, growth and yield information is being gathered and normal yield tables prepared for all the important forest types of Oregon and Washington. Current studies are directed chiefly to selectively-cut, old-growth stands, work having been concluded on even-aged Douglas fir, ponderosa pine, and spruce-hemlock.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4235. Briegleb, P. A. **Studies of the Growth Cycles of Ponderosa Pine Trees**

In order to understand and allow for the cyclic growth of ponderosa pine forests and its possible relation with climatic cycles, analysis of increment cores from systematically selected trees in various parts of eastern Oregon and Washington is being made. Four hundred such cores have already been measured.

(1941) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4236. Davis, K. P. **Mensuration: Stand Studies of the Ponderosa Pine Type**

Determination of composition, growth, yield, and mortality of stands of the ponderosa pine type of northern Idaho, northeastern Washington and western Montana.

( ) Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4237. Davis, K. P. **Mensuration: Stand Studies of the Western White Pine Type**

To determine composition, growth, yield, and mortality of stands of the western white pine type of northern Idaho.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4238. DeVries, W. **Adaptation of Local Government to Land Use, Particularly Forest, in Washington and Oregon**

A study of local government structures, functions, receipts and expenditures and of the possible effect in selected forest counties of changes in local government organization designed to promote efficiency, to stabilize property taxes on timber and forest land, to overcome instability in tax base due to cutting of timber and forfeiture or public acquisition of forest land, and in general to strengthen local government and adapt it to the needs of the community.

(1940) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4239. Gore, R. **The Bearing of Oregon's Taxes on Forests upon the Future of Timber Production on Privately Owned Lands**

The development and application of the economic principles involved in the management of Oregon forests in so far as they can be determined from available data.

(1939) Prof.

Reed College, Portland, Oreg.

4240. Meyer, W. H. and Campana, D. **Diameter Growth Rates in Uneven-Aged Stands of Ponderosa Pine**

Thousands of increment borings have been taken in ponderosa pine of many age and diameter classes in southern Washington and are now being coordinated into a series of diameter growth tables, applicable to this region and other regions of similar site conditions.

(1940) Prof.

University of Washington, College of Forestry, Seattle

4241. Wellner, C. A. **Mensuration: Stand Studies of the Western Larch—Douglas Fir Type**

To determine composition, growth, yield, and mortality of stands of the western larch—Douglas fir type of northwestern Montana.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4242. Zumwalt, E. V. **Diameter Growth of Ponderosa Pine**

To determine the average diameter growth by ten and twenty year periods of even-aged stands of ponderosa pine. To determine the influence that site index, average age, and average diameter of the stand have on ten and twenty year diameter growth by methods of curvilinear, multiple correlation.

(1939) Prof.

University of Washington, College of Forestry, Seattle

**PROTECTION: ENTOMOLOGY****4243. Furniss, R. L. Control of Ambrosia Beetles in Logging Operations**

A study of the habits of the several species of ambrosia beetles attacking conifers in the Pacific Northwest for the purpose of developing methods of control in logging operations.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4244. Furniss, R. L. Deterioration of Fire-Killed Douglas Fir**

The causes for and the rate of deterioration of fire-killed Douglas fir with particular reference to the Tillamook burn.

(1943) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4245. Furniss, R. L. Insects Affecting Poplar and Willow in the Pacific Northwest**

A study of such shade tree insects as are of importance in the Pacific Northwest, particularly the satin moth and mottled willow borer, and advice to owners of shade trees concerning control measures.

( ) Gen. Pub.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4246. Furniss, R. L. Insects Affecting Trees in the Douglas Fir Region**

To determine the entomological problems in the Douglas fir region, particularly as they apply to the principal timber-producing trees—Douglas fir, western hemlock, and Sitka spruce; to study the bionomics of the important insect pests; to record the amount and nature of the damage; and to develop methods of control.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4247. Keen, F. P. The Causes of Western Pine Beetle Epidemics**

To determine the underlying causes of outbreaks of the western pine beetle in ponderosa pine forests of the Pacific Northwest; to see if these outbreaks are related to climatic variations or if outbreaks are influenced by environmental, silvicultural, or other conditions in the forests and can be controlled through modification of certain facts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4211. Cowlin, R. W. and Moravets, F. L. **Survey of Forest Depletion in Oregon and Washington**

As a part of the nation-wide forest survey to determine the rate of forest depletion through cutting and through loss from fire, insects, disease, and other causes. Results published in statistical form.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4212. Cowlin, R. W., Moravets, F. L. and Briegleb, P. A. **Analysis of the Forest Situation in Oregon and Washington**

To analyze the results of the forest inventory, forest depletion and forest growth studies and to correlate them with other economic data in order to make available basic facts and guiding principles for use in formulating plans and programs for orderly, sound management and use of the forests of Oregon and Washington. Published in form of comprehensive reports.

(Continuing) (1940) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4213. Cowlin, R. W., Moravets, F. L. and Buell, E. D. **Forest Inventory of Oregon and Washington**

As a part of the nation-wide forest survey to make and maintain an inventory of the forest resources in terms of area occupied by forest-cover types and of timber volumes, by species, in board feet and cubic feet, and a study of conditions on cut-over and burned-over forest lands. Results published in form of type maps, statistics, and brief analytical and descriptive texts.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4214. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Shipment of Lumber: Factors Affecting Quality and Moisture Content**

The change in moisture content of kiln-dried lumber when shipped by rail; the change in moisture content of seasoned lumber when shipped by boat from British Columbia under various stowage conditions to the main lumber importing ports of the world, and of the effect of exposure to different weather conditions on lumber (both green and seasoned) while awaiting shipment; of the deterioration in quality that sometimes occurs during the shipment of lumber by boat and the possible means of improving lumber assembly and stowage methods to reduce such deterioration.

( ) Prof.

Vancouver, B. C.

**4215. Johnson, H. M. Forest Products Statistics**

The collection, compilation and interpretation of forest products production, distribution and price statistics. Includes logs, lumber, shingle, lath and minor products such as wood burls, cascara bark, Christmas trees, essential oils, etc. A recurrent project carried out partly in cooperation with the Bureau of the Census.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

**4216. Kearns, R. S. Producing, Marketing and Consuming Wood for Fuel in Corvallis, Oregon**

An analysis of production and marketing methods and costs, and an analysis of the amount, kinds, and efficiency of fuel wood consumed in the city of Corvallis, Oregon.

(1939) Prof., Gen. Pub.

Oregon State College, School of Forestry, Corvallis

**4217. Meyer, W. H. Financial Aspects of Selection Logging in Ponderosa Pine**

Cost studies of many phases of the logging operations in Klickitat County, Wash., are being made with the purpose of arriving at estimates of stumpage price differentials, valuable in determining the financial effects of selection logging.

(Continuing) Prof.

University of Washington, College of Forestry, Seattle

**4218. Neff, P. and Anderson, I. V. Forest Products Statistics—Statistics on the Cost of Producing Logs and Lumber**

To obtain accurate and detailed logging and manufacturing costs from the larger lumber companies in northern Idaho, eastern Washington, and western Montana by personal contact. Information is used in connection with lumber selling values for the appraisal for sale of Forest Service timber.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Products, Missoula, Mont.

**4219. Pearce, J. K. Economic Limitations of Railroad and Motor Truck Log Transportation in the Douglas Fir Region**

Determination of the marginal point between railroad and motor truck major log transportation in the Douglas fir region as to length of haul, difference in elevation, density of stand, and total volume of tract to be logged for most economical operation.

( ) Prof.

University of Washington, College of Forestry, Seattle

4220. Rapraeger, E. F. and Bouchard, M. E. **Forest Products Statistics—Statistics on the Selling Value of Lumber and Other Timber Products**

To collect and present in usable form lumber and timber products price statistics for northern Idaho, eastern Washington, and Montana in sufficient volume to indicate periodic trends in selling price of lumber (wholesale and retail), stumpage, logs, cedar products, and ties.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

4221. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Forest Survey Staff. **National Forest Survey—for the Northern Rocky Mountain Region** (Northeastern Washington, Northern Idaho, and Montana)

The Forest Survey is divided into five broad phases: (1) Inventory Phase—an actual inventory of our present forest resources by forest type, timber species, age class, size, and accessibility by ownership; (2) Depletion Phase—determination of the rate of use of our forest resources by cutting and loss from fires, wind, insects, and disease; (3) Growth Phase—a determination of the rate of growth in both old and young stands and of probable future timber yields; (4) Requirements Phase—determination of present requirements for forest products and probable trends in their use; (5) Economic Analysis—an economic analysis of Forest Survey data in report form.

(1943) Prof., Gen. Pub.

Missoula, Mont.

4222. Whitney, C. N. and Bouchard, M. E. **Forest Products Statistics—Statistics on the Production of Lumber and Other Timber Products**

To obtain accurate data on the production of lumber and other timber products in the states of Montana, Idaho, and northeastern Washington in cooperating with the U. S. Bureau of the Census.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

4223. Wilson, S. A. **The Effects, Causes, and Possible Cures of Unstable Forest Land Ownership in Western Oregon and Western Washington**

A study of trends in tax delinquency and forfeiture, how tax-forfeited lands may best be handled and what can be done to stem the flow of tax delinquency and forfeiture.

(1940) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.



4224. Wohletz, E. **A Survey of the Cost of Lumber Distribution in the United States**

A compilation of all data, now scattered in many published and unpublished forms, relating to the problem.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

### LOGGING

4225. Brandstrom, A. J. F. **Logging and Log Transportation Methods and Their Adaptation or Development to Promote Better Forestry Practice**

Time and cost studies of various phases of logging and log transportation to determine the relative efficiency of various types of equipment and methods, and to furnish factual data to aid or guide the development of logging machinery and methods that would contribute toward better forest management, specifically toward reduction of timber breakage, and of damage to residual stands, reproduction, or the land, and toward greater flexibility and selectivity in logging.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4226. Davies, W. A. **Tensions and Deflections in Logging Skylines**

Development of graphical and tabular methods for accurately determining maximum tensions and consequent factors of safety with convenience and rapidity for all deflections, slopes and loadings, and spans, for the various sizes of skylines commonly used in the Douglas fir region.

(1939) Prof.

University of Washington, College of Forestry, Seattle

4227. Hallin, V. **Selection Cuttings in Ponderosa Pine**

A study of the economics of selection logging in pine and the associated silvicultural and management problems in Klickitat County, Wash.

(1940) Prof.

University of Washington, College of Forestry, Seattle

4228. Maki, T. E. and Mowat, E. L. **Methods of Cutting Ponderosa Pine, Central Idaho**

Purpose is to determine the best methods of cutting ponderosa pine stands from the standpoint of maximum sustained production of desired timber products and the conservation of watershed value. Study involves the measurement of growth and mortality of reserve trees and progress of regeneration on old cutting areas and on permanent sample plots representing tests of various cutting methods.

(Continuing) Prof.

Intermountain Forest and Range Experiment Station, Ogden, Utah

4211. Cowlin, R. W. and Moravets, F. L. **Survey of Forest Depletion in Oregon and Washington**

As a part of the nation-wide forest survey to determine the rate of forest depletion through cutting and through loss from fire, insects, disease, and other causes. Results published in statistical form.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4212. Cowlin, R. W., Moravets, F. L. and Briegleb, P. A. **Analysis of the Forest Situation in Oregon and Washington**

To analyze the results of the forest inventory, forest depletion and forest growth studies and to correlate them with other economic data in order to make available basic facts and guiding principles for use in formulating plans and programs for orderly, sound management and use of the forests of Oregon and Washington. Published in form of comprehensive reports.

(Continuing) (1940) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4213. Cowlin, R. W., Moravets, F. L. and Buell, E. D. **Forest Inventory of Oregon and Washington**

As a part of the nation-wide forest survey to make and maintain an inventory of the forest resources in terms of area occupied by forest-cover types and of timber volumes, by species, in board feet and cubic feet, and a study of conditions on cut-over and burned-over forest lands. Results published in form of type maps, statistics, and brief analytical and descriptive texts.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4214. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Shipment of Lumber: Factors Affecting Quality and Moisture Content**

The change in moisture content of kiln-dried lumber when shipped by rail; the change in moisture content of seasoned lumber when shipped by boat from British Columbia under various stowage conditions to the main lumber importing ports of the world, and of the effect of exposure to different weather conditions on lumber (both green and seasoned) while awaiting shipment; of the deterioration in quality that sometimes occurs during the shipment of lumber by boat and the possible means of improving lumber assembly and stowage methods to reduce such deterioration.

( ) Prof.

Vancouver, B. C.

**4215. Johnson, H. M. Forest Products Statistics**

The collection, compilation and interpretation of forest products production, distribution and price statistics. Includes logs, lumber, shingle, lath and minor products such as wood burls, cascara bark, Christmas trees, essential oils, etc. A recurrent project carried out partly in cooperation with the Bureau of the Census.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

**4216. Kearns, R. S. Producing, Marketing and Consuming Wood for Fuel in Corvallis, Oregon**

An analysis of production and marketing methods and costs, and an analysis of the amount, kinds, and efficiency of fuel wood consumed in the city of Corvallis, Oregon.

(1939) Prof., Gen. Pub.

Oregon State College, School of Forestry, Corvallis

**4217. Meyer, W. H. Financial Aspects of Selection Logging in Ponderosa Pine**

Cost studies of many phases of the logging operations in Klickitat County, Wash., are being made with the purpose of arriving at estimates of stumpage price differentials, valuable in determining the financial effects of selection logging.

(Continuing) Prof.

University of Washington, College of Forestry, Seattle

**4218. Neff, P. and Anderson, I. V. Forest Products Statistics—Statistics on the Cost of Producing Logs and Lumber**

To obtain accurate and detailed logging and manufacturing costs from the larger lumber companies in northern Idaho, eastern Washington, and western Montana by personal contact. Information is used in connection with lumber selling values for the appraisal for sale of Forest Service timber.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Products, Missoula, Mont.

**4219. Pearce, J. K. Economic Limitations of Railroad and Motor Truck Log Transportation in the Douglas Fir Region**

Determination of the marginal point between railroad and motor truck major log transportation in the Douglas fir region as to length of haul, difference in elevation, density of stand, and total volume of tract to be logged for most economical operation.

( ) Prof.

University of Washington, College of Forestry, Seattle

4220. Rapraeger, E. F. and Bouchard, M. E. **Forest Products Statistics—Statistics on the Selling Value of Lumber and Other Timber Products**

To collect and present in usable form lumber and timber products price statistics for northern Idaho, eastern Washington, and Montana in sufficient volume to indicate periodic trends in selling price of lumber (wholesale and retail), stumpage, logs, cedar products, and ties.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Products, Missoula, Mont.

4221. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Forest Survey Staff. **National Forest Survey—for the Northern Rocky Mountain Region** (Northeastern Washington, Northern Idaho, and Montana)

The Forest Survey is divided into five broad phases: (1) Inventory Phase—an actual inventory of our present forest resources by forest type, timber species, age class, size, and accessibility by ownership; (2) Depletion Phase—determination of the rate of use of our forest resources by cutting and loss from fires, wind, insects, and disease; (3) Growth Phase—a determination of the rate of growth in both old and young stands and of probable future timber yields; (4) Requirements Phase—determination of present requirements for forest products and probable trends in their use; (5) Economic Analysis—an economic analysis of Forest Survey data in report form.

(1943) Prof., Gen. Pub.

Missoula, Mont.

4222. Whitney, C. N. and Bouchard, M. E. **Forest Products Statistics—Statistics on the Production of Lumber and Other Timber Products**

To obtain accurate data on the production of lumber and other timber products in the states of Montana, Idaho, and northeastern Washington in cooperating with the U. S. Bureau of the Census.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Products, Missoula, Mont.

4223. Wilson, S. A. **The Effects, Causes, and Possible Cures of Unstable Forest Land Ownership in Western Oregon and Western Washington**

A study of trends in tax delinquency and forfeiture, how tax-forfeited lands may best be handled and what can be done to stem the flow of tax delinquency and forfeiture.

(1940) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

**4224. Wohletz, E. A Survey of the Cost of Lumber Distribution in the United States**

A compilation of all data, now scattered in many published and unpublished forms, relating to the problem.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

### LOGGING

**4225. Brandstrom, A. J. F. Logging and Log Transportation Methods and Their Adaptation or Development to Promote Better Forestry Practice**

Time and cost studies of various phases of logging and log transportation to determine the relative efficiency of various types of equipment and methods, and to furnish factual data to aid or guide the development of logging machinery and methods that would contribute toward better forest management, specifically toward reduction of timber breakage, and of damage to residual stands, reproduction, or the land, and toward greater flexibility and selectivity in logging.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

**4226. Davies, W. A. Tensions and Deflections in Logging Skylines**

Development of graphical and tabular methods for accurately determining maximum tensions and consequent factors of safety with convenience and rapidity for all deflections, slopes and loadings, and spans, for the various sizes of skylines commonly used in the Douglas fir region.

(1939) Prof.

University of Washington, College of Forestry, Seattle

**4227. Hallin, V. Selection Cuttings in Ponderosa Pine**

A study of the economics of selection logging in pine and the associated silvicultural and management problems in Klickitat County, Wash.

(1940) Prof.

University of Washington, College of Forestry, Seattle

**4228. Maki, T. E. and Mowat, E. L. Methods of Cutting Ponderosa Pine, Central Idaho**

Purpose is to determine the best methods of cutting ponderosa pine stands from the standpoint of maximum sustained production of desired timber products and the conservation of watershed value. Study involves the measurement of growth and mortality of reserve trees and progress of regeneration on old cutting areas and on permanent sample plots representing tests of various cutting methods.

(Continuing) Prof.

Intermountain Forest and Range Experiment Station, Ogden, Utah

## LUMBER INDUSTRIES

4229. Anderson, I. V. and Rapraeger, E. F. **Timber Harvesting and Conversion Practices—Utilization Practices in the Sawmill and in the Woods**

To obtain, and disseminate by publication, information on (1) over-run data and efficiency comparisons of logging and milling equipment; (2) volume and value losses caused by various manufacturing methods, fire, insects, and other agents.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

4230. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Logging Waste**

This project has been initiated to study the following factors affecting the utilization of British Columbia hardwoods: (a) methods of logging and manufacture at sawmill and possibilities of improvement; (b) markets, local and export; effect of increased demand on accessible supplies; (c) uses and handling methods in local furniture factories; (d) seasoning and storage methods; (e) values—log and lumber.

( ) Prof.

Vancouver, B. C.

4231. Kearns, R. S. **The Physical and Economic Aspects of Xmas Tree Production in the Douglas Fir Region**

On selected areas of physical variance, plantings have been and will continue to be made for the purpose of experimental Christmas tree production. Silvicultural technique in managing the plantation will vary. Trees will be marketed in Southern California by cooperators. Cost and return records will be maintained separately for each plantation and each silvicultural system.

(1948) Prof.

Oregon State College, School of Forestry, Corvallis

4232. Lodewick, J. E. **Sawmill Production Studies**

An investigation to develop universal quality grades for logs, provide lumber recovery data for logs of these grades, ascertain costs and returns for logs of various sizes and grades under different milling procedures, to determine the most efficient equipment for logs of various sizes, and to establish limits of economic utilization of both sound and defective logs. Designed primarily to be used by operators of both public and private timber in appraisals, timber selection and the analysis of sustained yield operations. On the way to completion for ponderosa pine, and to be extended to Douglas fir and other commercial Pacific Northwest species.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

## MANAGEMENT

4233. Brandstrom, A. J. F. **Selective Timber Management**

Basic studies in both the Douglas fir and ponderosa pine regions of costs and returns from conversion of trees of different sizes and qualities, of their volume and value growth and of their relative occurrence in any given stand, followed by a financial analysis of the effect of different degrees of volume and value removal (selective cutting) on present and future income from the forest. From these data, as developed through specific case studies of representative operations and forest areas, are being developed methods of cutting that are economically sound and technically desirable from a forest land use standpoint.

(Continuing) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4234. Briegleb, P. A. **Rate of Growth and Yield of the Several Forest Types of Oregon and Washington**

By means of periodically measured permanent sample plots and temporary plots, growth and yield information is being gathered and normal yield tables prepared for all the important forest types of Oregon and Washington. Current studies are directed chiefly to selectively-cut, old-growth stands, work having been concluded on even-aged Douglas fir, ponderosa pine, and spruce-hemlock.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4235. Briegleb, P. A. **Studies of the Growth Cycles of Ponderosa Pine Trees**

In order to understand and allow for the cyclic growth of ponderosa pine forests and its possible relation with climatic cycles, analysis of increment cores from systematically selected trees in various parts of eastern Oregon and Washington is being made. Four hundred such cores have already been measured.

(1941) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4236. Davis, K. P. **Mensuration: Stand Studies of the Ponderosa Pine Type**

Determination of composition, growth, yield, and mortality of stands of the ponderosa pine type of northern Idaho, northeastern Washington and western Montana.

( ) Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4237. Davis, K. P. **Mensuration: Stand Studies of the Western White Pine Type**

To determine composition, growth, yield, and mortality of stands of the western white pine type of northern Idaho.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4238. DeVries, W. **Adaptation of Local Government to Land Use, Particularly Forest, in Washington and Oregon**

A study of local government structures, functions, receipts and expenditures and of the possible effect in selected forest counties of changes in local government organization designed to promote efficiency, to stabilize property taxes on timber and forest land, to overcome instability in tax base due to cutting of timber and forfeiture or public acquisition of forest land, and in general to strengthen local government and adapt it to the needs of the community.

(1940) Prof., Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4239. Gore, R. **The Bearing of Oregon's Taxes on Forests upon the Future of Timber Production on Privately Owned Lands**

The development and application of the economic principles involved in the management of Oregon forests in so far as they can be determined from available data.

(1939) Prof.

Reed College, Portland, Oreg.

4240. Meyer, W. H. and Campana, D. **Diameter Growth Rates in Uneven-Aged Stands of Ponderosa Pine**

Thousands of increment borings have been taken in ponderosa pine of many age and diameter classes in southern Washington and are now being coordinated into a series of diameter growth tables, applicable to this region and other regions of similar site conditions.

(1940) Prof.

University of Washington, College of Forestry, Seattle

4241. Wellner, C. A. **Mensuration: Stand Studies of the Western Larch—Douglas Fir Type**

To determine composition, growth, yield, and mortality of stands of the western larch—Douglas fir type of northwestern Montana.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4242. Zumwalt, E. V. **Diameter Growth of Ponderosa Pine**

To determine the average diameter growth by ten and twenty year periods of even-aged stands of ponderosa pine. To determine the influence that site index, average age, and average diameter of the stand have on ten and twenty year diameter growth by methods of curvilinear, multiple correlation.

(1939) Prof.

University of Washington, College of Forestry, Seattle



**PROTECTION: ENTOMOLOGY****4243. Furniss, R. L. Control of Ambrosia Beetles in Logging Operations**

A study of the habits of the several species of ambrosia beetles attacking conifers in the Pacific Northwest for the purpose of developing methods of control in logging operations.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4244. Furniss, R. L. Deterioration of Fire-Killed Douglas Fir**

The causes for and the rate of deterioration of fire-killed Douglas fir with particular reference to the Tillamook burn.

(1943) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4245. Furniss, R. L. Insects Affecting Poplar and Willow in the Pacific Northwest**

A study of such shade tree insects as are of importance in the Pacific Northwest, particularly the satin moth and mottled willow borer, and advice to owners of shade trees concerning control measures.

( ) Gen. Pub.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4246. Furniss, R. L. Insects Affecting Trees in the Douglas Fir Region**

To determine the entomological problems in the Douglas fir region, particularly as they apply to the principal timber-producing trees—Douglas fir, western hemlock, and Sitka spruce; to study the bionomics of the important insect pests; to record the amount and nature of the damage; and to develop methods of control.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

**4247. Keen, F. P. The Causes of Western Pine Beetle Epidemics**

To determine the underlying causes of outbreaks of the western pine beetle in ponderosa pine forests of the Pacific Northwest; to see if these outbreaks are related to climatic variations or if outbreaks are influenced by environmental, silvicultural, or other conditions in the forests and can be controlled through modification of certain facts.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4248. Keen, F. P. **The Causes of Western Pine Beetle Epidemics—Climatic Relationship with Tree Rings**

To determine the influence of rainfall upon the growth of ponderosa pine in the semi-arid regions of the Pacific Northwest and its indirect effect on western pine beetle outbreaks. The incidence of bark beetle epidemics appears to be definitely associated with drought periods.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4249. Keen, F. P. **Indirect Control of Western Pine Beetle Populations—Influence of Selective Cutting to Subsequent Insect Damage**

A study to determine the best method of selectively cutting ponderosa pine timber in order to avoid subsequent heavy damage from bark beetles.

(1942) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4250. Keen, F. P. **Indirect Control of Western Pine Beetle Population through Area Selection**

To determine the environmental factors which contribute to bark beetle activity so as to evaluate the potential bark beetle hazards on different forest areas. This work will include the analysis of environmental and silvicultural conditions on 288 sample plots covering 88,780 acres, and correlations of loss from bark beetles with such environmental and silvicultural factors.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4251. Keen, F. P. **Indirect Control of Western Pine Beetle Populations through Tree Selection**

A study to determine the type of tree most susceptible to western pine beetle attack as an aid to beetle control through forest management. This includes a study of ponderosa pine forests both before and after cutting, and the relative risk which various types of trees offer to beetle attack.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4252. Keen, F. P. and Whiteside, J. M. **Natural Control of Western Pine Beetle Populations through Low Temperature**

To determine the influence of low winter temperatures on the populations of the western pine beetle under field conditions, and the importance of this factor in the natural control of epidemics.

(1940) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

4253. United States Department of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Forest Insect Laboratory. **Regional Bark Beetle Survey of the Ponderosa Pine Forests of the Pacific Northwest**

To determine, by intensive annual surveys on permanent sample plots (supplemented by extensive surveys over the region as a whole), the status of the western pine beetle infestations on both privately and federally owned ponderosa pine lands of Oregon and Washington, as a basis for control plans; and to determine the trend of bark beetle epidemics, host tree selection, tree susceptibility, and zones of high insect hazard.

(Continuing) Prof.

Portland, Oreg.

4254. Whiteside, J. M. **Direct Control of Western Pine Beetle Populations —Mechanical Control by Felling and Burning**

To determine the effectiveness of the present method of controlling bark beetles by felling and burning infested trees or bark, the duration of the benefits from such practices, and the feasibility and effectiveness of bark beetle control by other means.

( ) Prof.

U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Forest Insect Investigations, Portland, Oreg.

#### PROTECTION: FIRE

4255. Childs, T. W. and Bedwell, J. L. **Decay of Inflammable Debris on Blowdown Areas**

Relation of decay to reduction of fire hazard.

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4256. Childs, T. W. and Englerth, G. H. **Decay of Slash in Ponderosa Pine Types**

Relation of decay to reduction of fire hazard.

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4257. Englerth, G. H. and Childs, T. W. coop. with Pacific Northwest Forest and Range Experiment Station. **Decay of Slash on Selectively Logged Areas in the Douglas Fir Region**

Relation of decay to reduction of fire hazard.

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4258. Gisborne, H. T. **Factors of Forest Fire Danger**

Determination of what factors to measure, how to measure, where to measure, when to measure, and how to integrate these several measurements into a numerical scale of forest fire danger which may be used to determine the size of fire control organization justified at any place and time.

(1950) Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

4259. Gisborne, H. T. **Fire Control Planning**

This project covers the whole broad field of economics and techniques of fire control. Preliminary studies on many aspects have been made and the present investigation is designed to develop these further.

( ) Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

4260. Hayes, C. L. **Fire Danger Factors by Altitude, Aspects, and Time of Day**

Limited at present to measurements of precipitation, temperature, humidity, wind velocity, wood moisture and duff moisture at three pairs of stations at 2700, 3800 and 5500 feet elevations on the Priest River Experimental Forest.

( ) Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

4261. Matthews, D. N. and Morris, W. G. **Development of Efficient Organization for Protection of Forests Against Fires**

Objectives and topics of study are: To improve present techniques of measuring forest fire danger as it is affected by winds, dry atmosphere, kind of forest fuels, etc. To determine the organization that is necessary during different degrees of danger. To study methods of distributing lookouts in mountainous areas so that the greatest area will be visible at the least cost. To study the behavior of forest fires and determine the effect of the different factors influencing their behavior. To make efficiency studies of fire suppression methods, organization, and manpower.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4262. Matthews, D. N. and Morris, W. G. **Effects of Fire and Its Legitimate Use**

Objectives are to determine the kinds of fire damage and the effects of fire upon the forest and to determine the effective usefulness of fire in removing dangerous accumulations of fuel. A large number of tracts on clear-cut Douglas fir cut-over lands, some of which have been burned and some unburned, have been

studied since 1927 and results are being published. Further studies are being made on partially-cut areas.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

#### PROTECTION: PATHOLOGY

4263. Bedwell, J. L., assisted by T. W. Childs, coop. with Region 6, Forest Service. **Research on Forest Nursery Diseases**

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4264. Bedwell, J. L., assisted by G. H. Englerth. **Endothia Parasitica and Other Diseases of Castanea and Castanopsis**

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4265. Bedwell, J. L., assisted by T. S. Buchanan, T. W. Childs, G. H. Englerth, and J. W. Kimmey. **Introduced Diseases of Forest Trees**

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4266. Bedwell, J. L., assisted by T. S. Buchanan, T. W. Childs, G. H. Englerth, J. W. Kimmey, and E. H. Tryon. **Miscellaneous Native Diseases of Forest Trees**

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4267. Bedwell, J. L., assisted by T. S. Buchanan, T. W. Childs, G. H. Englerth, J. W. Kimmey, and E. H. Tryon. **Research on Native and Introduced Diseases of Shade and Ornamental Trees and Shrubs**

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4268. Buchanan, T. S., assisted by J. W. Kimmey, G. H. Englerth, T. W. Childs, and E. H. Tryon. **Relative Susceptibility of Various Native and Exotic Species of Five-Needled Pines to White Pine Blister Rust**

(1945) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4269. Buchanan, T. S. and Kimmey, J. W., assisted by J. L. Bedwell, T. W. Childs, G. H. Englerth, and E. H. Tryon. **Epidemiology of White Pine Blister Rust**  
Nature and progress of the disease under the new host and environmental conditions in the West.  
(1945) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4270. Childs, T. W. coop. with Pacific Northwest Forest and Range Experiment Station. **Decay of Young Douglas Fir**  
Relationship between various methods of pruning and incidence of decay. Entrance of decay through cankers and scars.  
(1960) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4271. Childs, T. W. and Englerth, G. H. coop. with Pacific Northwest Forest and Range Experiment Station. **Pathological Effects of Selective Logging**  
Effects of different intensities of selective logging, in the various forest types of Oregon and Washington, on the susceptibility of the residual stand to diseases and decays.  
(1960) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4272. Childs, T. W., assisted by J. L. Bedwell. **Needle-Cast Diseases of Western Conifers**  
*Adelopus gaumanni* (a serious disease of Douglas fir in Europe, and believed to be a native of the Northwest); *Rhabdocline pseudotsugae* and a newly discovered, somewhat similar fungus on Douglas fir; *Lophodermium pinastri*; *Hypodermella laricis*; and other needle-cast fungi of apparently minor importance.  
(Continuing) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4273. Childs, T. W., assisted by J. L. Bedwell and T. S. Buchanan. **Canker Diseases of Douglas Fir**  
(Continuing) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4274. Childs, T. W., assisted by J. L. Bedwell, T. S. Buchanan, G. H. Englerth, J. W. Kimmey, and E. H. Tryon. **Physiological Diseases of Forest Trees**  
Diseases resulting from adverse climatic and other site factors.  
(Continuing) Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4275. Ehrlich, J. **Determination of Rate of Development of Symptomatology and Thus of Canker Age in Western White Pine in Northern Idaho**

Methods for determining the age of cankers and thus the date of inoculation would facilitate epidemiological studies, and the effectiveness of ribes eradication campaigns.

(1950) Prof.

University of Idaho, School of Forestry, Moscow

4276. Ehrlich, J. **Pathological Reconnaissance of Idaho Forests**

Field surveys, collection and identification of pathological specimens, for recognition of new or important diseases, for enhancement of the University Forest Pathology Herbarium, and for the ultimate preparation of a pathological check list.

(Continuing) Prof.

University of Idaho, School of Forestry, Moscow

4277. Ehrlich, J. and Benson, V. L. **Preliminary Study of Root Diseases in Western White Pine** (in coop. with Northern Rocky Mountain Forest and Range Exp. Sta.)

A reconnaissance of the symptomatology of the diseases involved and of conditions favorable to infection to provide information which would permit early recognition of infection and prompt salvage treatment.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

4278. Ehrlich, J. and Sellers, V. D. **Etiology of Brown Cubical Heart Rot in Western Red Cedar in Northern Idaho**

Through isolation and pure culture of fungi from infected wood, identification of the fungi either by development of fruiting bodies in culture or by comparison with known cultures isolated from fruiting bodies, and by the establishment of pathogenicity by artificial inoculation of test blocks and trees, a knowledge prerequisite to subsequent study of damage and means for its prevention will be made available.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

4279. Ehrlich, J. and Slipp, A. W. **Determination of Minimum Time and Optimum, Minimum, and Maximum Temperatures for Successful Inoculation of Western White Pine with Sporidia of Cronartium Ribicola**

An aid in predicting the likelihood of natural pine infection during various types of weather and in the interpretation of epidemiological data in the light of weather records.

(1939) Prof.

University of Idaho, School of Forestry, Moscow

4280. Ehrlich, J. and Snyder, F. W. **Determination of the Mechanism of Swelling of Bark of Western White Pine and Northern White Pine Infected by Cronartium Ribicola**

Enlargement of bark or other plant tissues is commonly the result of hypertrophy (cell enlargement) or hyperplasia (cell multiplication); but in blister rust that enlargement is due solely to forcible separation of the bark cells by intercellular hyphae.

(1939) Prof.

University of Idaho, School of Forestry, Moscow

4281. Englerth, G. H., assisted by T. S. Buchanan, T. W. Childs, J. W. Kimmey and E. H. Tryon. **Decay of Living Western Hemlock in Western Oregon and Washington**

To determine (1) the most reliable external indicators of decay, (2) the rate of increase of decay on the various sites in different forest types, and (3) the corresponding pathological rotations.

(1945) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4282. Kimmey, J. W. and Buchanan, T. S., assisted by J. L. Bedwell, G. H. Englerth, T. W. Childs, and E. H. Tryon. **Distance of Spread of White Pine Blister Rust from Common Northwestern Ribes to Western White Pine, Sugar Pine, and Whitebark Pine under Natural Conditions**

(1950) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

### SILVICULTURE

4283. Briegleb, P. A. and others. **Thinning, Pruning, and Other Stand Improvement Practices in the Fir and Pine Regions**

A series of long-time experiments have been established to determine the best methods of making thinnings, prunings, and other forms of improvement cuttings in immature stands of Oregon and Washington. Fifty-one plots are now under observation ranging in age from 10 to 97 years and in size from  $\frac{1}{2}$  to 40 acres. In addition, there are 29 plots in decadent old-growth stands designed to test new techniques of stand improvement.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4284. Davis, K. P. **Stand Improvement Measures for the Ponderosa Pine Type**

To develop cultural measures which will improve the quality and growth of immature stands.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.



4285. Davis, K. P. **Stand Improvement Measures for the Western White Pine Type**

To develop cultural measures which will improve the quality and growth of immature stands.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station, Division of Silviculture, Missoula, Mont.

4286. Kummel, J. F., Will, W. F. and others. **The Technique of Artificial Reforestation Including Tests of Species and Regional Races**

Experimentation on almost every phase of nursery practice, direct seeding, and planting of forest trees, particularly Douglas fir, has been under way for 30 years and is still being continued with this and other species. An arboretum of over 125 species of conifers has been maintained. Genetic tests of 10 regional races of ponderosa pine and of 125 selected Douglas fir parents are maintained at several stations.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4287. Maki, T. E. **Improvement of Timber Stands in the Ponderosa Pine Type of Central Idaho**

This study involves a test of various methods of stand improvement which might be both economically and silviculturally feasible in ponderosa pine stands. The limits of profitable pruning and thinning practices will be determined, and an attempt will be made to correlate sanitation cuttings with community fuel needs.

(Continuing) Prof., Gen. Pub.

Intermountain Forest and Range Experiment Station, Ogden, Utah

4288. Maki, T. E. and Mowat, E. L. **Methods of Field Planting and Seeding of Ponderosa Pine**

This study endeavors to determine the factors of site of type and treatment of planting stock, and the methods of seeding and planting which will insure satisfactory restocking of burned over or otherwise denuded timberlands in the Intermountain country, particularly in the extensive ponderosa pine type of central Idaho.

(Continuing) Prof., Gen. Pub.

Intermountain Forest and Range Experiment Station, Ogden, Utah

4289. Miller, C. I. **Direct Seeding in the Northern Rocky Mountains**

The best technique for obtaining artificial reproduction in the forested area of the Northern Rocky Mountains by direct seeding of native species.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

4290. Mowat, E. L. **Natural Regeneration of Ponderosa Pine in Central Idaho**

Comprehensive study of physical and biotic factors involved in natural regeneration of ponderosa pine, including the phases of seed production and distribution, germination, and survival and growth of seedlings. Final purpose to obtain more prompt and adequate natural reproduction by silvicultural and logging practices.

(1940) Prof.

Intermountain Forest and Range Experiment Station, Ogden, Utah

4291. Munger, T. T. and Isaac, L. A. **Silvicultural Studies in the Douglas Fir Region**

A series of studies to determine the silvicultural basis for forest cutting practices in the Douglas fir region. A large amount of information has already been obtained through hundreds of permanent sample plots and otherwise concerning the silvics of Douglas fir and associated species in even-aged stands, concerning seed production, dissemination, seedling establishment, and effects of fire and other environmental factors. Current work is directed chiefly to study of the silvicultural aspects of partial cutting in the various types of this region.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4292. Munger, T. T. and Kolbe, E. L. **Silvicultural Studies in the Pine Region**

A series of studies to determine the principles which are basic to good silvicultural practices in the ponderosa pine region. A large number of permanent plots are under observation to test the effect of various types of selective cutting, to demonstrate the maturity selection system, to study mortality and growth of trees of various classes, and to observe the development of advance and subsequent reproduction under various conditions of site, type, and stand treatment.

(Continuing) Prof.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4293. Nettleton, H. I. and Kearns, R. S. **The Effect of Thinning on Second Growth Douglas Fir on the Peavy Arboretum**

The establishment of sample plots of second growth Douglas fir, of which one will be systematically thinned to permit increased growth opportunities. At five year intervals, the growth characteristics of the trees on the two plots will be measured and compared.

(Continuing) Prof.

Oregon State College, School of Forestry, Corvallis

4294. Schopmeyer, C. S. **Planting**

To develop methods of artificial regeneration which are economically and silviculturally satisfactory.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Silviculture, Missoula, Mont.

4295. Wellner, C. A. and Davis, K. P. **Harvest Cuttings of the Western White Pine Type**

To develop methods of cutting that will result in adequate natural regeneration of desired species through investigation of controlling factors.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Silviculture, Missoula, Mont.

**WOOD TECHNOLOGY**4296. Anderson, E. A. **Wood Properties and Utilization**

Various studies on the properties and uses of West Coast woods, their suitability to accepted and new uses, the decrease of waste during manufacture, more efficient utilization of unavoidable waste, increased service from wood through selection of suitable species and the use of preservatives, and the development of new outlets for the so-called inferior species.

(Continuing) Gen. Pub.

Pacific Northwest Forest and Range Exp. Station, Portland, Oreg.

4297. Anderson, I. V., Rapraeger, E. F. and Whitney, C. N. **Timber Harvesting and Conversion Investigations—Properties and Uses of Western Larch, White Fir, Lodgepole Pine, Western Red Cedar, and Other Little Used or Secondary Species of the Northern Rocky Mountain Region**

To furnish owners and users of the secondary timber species of the Northern Rocky Mountain Region with information in published form on the available supply, quality, and suitability for specific uses of these woods.

(Continuing) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

4298. Bedwell, J. L., assisted by T. S. Buchanan, T. W. Childs, G. H. Englerth, and J. W. Kimmey. **Decays and Stains of Forest Products**

Building rots; blue and other stains of lumber; and miscellaneous decays of wood in storage, transit, and use.

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4299. Buchanan, T. S. and Englerth, G. H., assisted by J. W. Kimmey and E. H. Tryon. **Decay of Wind-Thrown Timber**

Rate of reduction of merchantable volume resulting from decay after wind throw in various forest types of western Oregon and Washington.

(Continuing) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4300. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Absorption of Moisture by Seasoned Lumber in Storage and in Service**

The investigation of (1) rate at which seasoned lumber and other wood products absorb or lose moisture when in storage or in service under various atmospheric conditions, (2) equilibrium moisture content of various commercial species at different seasons of the year in the main lumber-producing regions of British Columbia, and (3) the means by which the swelling and shrinking of wood in service may be retarded.

( ) Prof.

Vancouver, B. C.

4301. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **The Air-Seasoning of Douglas Fir Structural Timbers and of Western Red Cedar**

Cooperative studies with the lumber industry in connection with the air-seasoning of lumber to conform with special requirements of various export markets.

( ) Prof.

Vancouver, B. C.

4302. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Air-Seasoning of Lumber**

(a) To determine the effect of seasonal variations and different methods of piling and handling on the air-drying of the commercial species and sizes of lumber in the different forest regions of Western Canada; (b) to determine the best air-seasoning practice for each region.

( ) Prof.

Vancouver, B. C.

4303. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **The Feasibility of Partially Seasoning Western Hemlock Lumber in Carrier Loads while Awaiting Shipment**

Cooperative studies with the lumber industry in connection with the air-seasoning of lumber to conform with special requirements of various export markets.

( ) Prof.

Vancouver, B. C.

4304. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **Kiln-Drying of Lumber**

To obtain information on factors controlling drying and on kiln-drying methods in order to improve lumber seasoning practice in British Columbia. The project covers: (1) investigation of the effect of temperature, humidity, and circulation on the rate and quality of drying; (2) preparation of kiln-drying schedules for the commercial sizes of British Columbia lumber and wood products; (3) study of the effect of changes in dry kiln methods and of changes in moisture content specifications on present practice; (4) determination of the shrinkage of the commercial sizes of lumber when seasoned and the effect of different drying conditions on shrinkage; (5) improvement of drying practice by means of kiln demonstrations, cooperation with industrial plants, and by means of publications and lectures.

( ) Prof.

Vancouver, B. C.

4305. Dominion of Canada, Department of Mines and Resources, Forest Products Laboratory, Division of Timber Products. **The Rate of Drying of the British Columbia Hardwoods**

Air-seasoning as a preliminary to kiln-drying of maple, birch and cottonwood.

( ) Prof.

Vancouver, B. C.

4306. Kimmey, J. W. and Englerth, G. H. **Decay and Stain in Fire-Killed Timber**

Rate of reduction of merchantable volume resulting from decay after fire in various forest types of western Oregon and Washington.

(1945) Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4307. Moore, E. B. **Physical Properties of Douglas Fir Plywood**

Physical properties, strength, yield point, modulus of elasticity, in tension. Form factors for various shapes of beams. Emphasis on sheathing grade.

( ) Prof.

State College of Washington, Pullman, and Douglas Fir Plywood Assoc.

4308. Owens, H. S., Ehrlich, J. and White, E. V. **The Hemicelluloses**  
A study of the occurrence of arabogalactan in nature and an investigation of the chemistry and products derived from this polysaccharide.  
( ) Prof.  
University of Idaho, School of Forestry, Moscow
4309. Schrader, O. H., Jr. **The Strength Properties of Douglas Fir as Influenced by the Structure of the Wood**  
A specific study of variation in strength due to changes in specific gravity between springwood and summerwood to be correlated with structural variations in the wood element.  
(1940) Prof.  
University of Washington, College of Forestry, Seattle
4310. Shank, J. O. **The Length of the Tracheids in Second Growth Douglas Fir of Pulpwood Dimensions**  
Young Douglas fir trees consisting largely of sapwood, selected from a variety of sites, are being studied to determine their suitability for pulp manufacture. A special type of camera lucida has been constructed so that large numbers of measurements can be made quickly.  
(1940) Prof.  
University of Washington, College of Forestry, Seattle
4311. Voorhies, G. **The Kiln Drying of Northwest Woods**  
The study involves (1) the general drying technique used in kiln drying native woods, (2) the determination of drying schedules, and (3) the physical factors affecting drying.  
( ) Prof.  
Oregon State College, School of Forestry, Corvallis
4312. Voorhies, G., Davis, S. and Newberg, A. **The Cause and Prevention of Black Stain in the Drying of Redwood Lumber**  
1. Investigation of the extractives of redwood and their probable relationship to the black stain. 2. Development of drying conditions which will prevent the formation of this black stain.  
(1939) Prof.  
Oregon State College, School of Forestry, Corvallis
4313. Wangaard, F. F. **Heat Conductivity of Wood**  
Heat conductivity values are to be obtained for a number of commercially valuable woods of the Northwest with especial attention to growth characteristics and their relationship with conductivity.  
(1941) Prof.  
University of Washington, Engineering Experiment Station and College of Forestry, Seattle

**4314. White, E. V. Lignin Studies**

Fundamental investigations relative to the structure and chemical reactions of lignin isolated from woody tissues.

(1940) Prof.

University of Idaho, School of Forestry, Moscow

**4315. White, E. V. The Measurement of "Degree of Gelatinization" of Cellulose and Wood**

The physical and mechanical properties of woody tissues and of cellulose relative to the capacity of these substances to imbibe and to retain water.

(1939) Prof.

University of Idaho, School of Forestry, Moscow

**4316. White, E. V. The Plasticization and Adhesion of Wood Particles**

Methods for the utilization of woody tissue in the production of plastic moulding materials.

(1939) Prof.

University of Idaho, School of Forestry, Moscow

**4317. Whitney, C. N. Wood Preservation Investigations—Service Test Records**

(1) To determine the durability of treated and untreated telephone poles, fence posts, ties, and miscellaneous timbers produced from timber trees native to Montana, Idaho, and eastern Washington. (2) To ascertain the comparative value of various wood preservatives and treating processes. (3) To disseminate results of said work.

( ) Prof., Gen. Pub.

Northern Rocky Mountain Forest and Range Experiment Station,  
Division of Forest Products, Missoula, Mont.

## **IV. MINERAL RESOURCES**

### **INDUSTRIES BASED ON MINERALS**

4318. Ingersoll, G. E. **A Survey of the Chromite Ore Industry in the U. S. A.**  
The feasibility of establishing an electrolytic metal plant in the Pacific Northwest utilizing the chromite ores of Washington, Oregon, Alaska, Montana.  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4319. Ingersoll, G. E. **Survey of the Chromium Industry to Determine Feasibility of Establishing a Plant for the Reduction and Fabrication of Chromium Products with Grand Coulee Power**  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman

### **MINES AND MINING**

4320. Anderson, A. L. **Geology of the Nickelodeon Prospect in Kittitas County, Wash.**  
Thesis, (1939) Prof.  
University of Washington, College of Mines, Seattle
4321. Bethel, H. L. **The Beneficiation of Skagit County Talc**  
Thesis, (1939) Prof.  
University of Washington, College of Mines, Seattle
4322. Doerner, H. A. and Harris, D. L. **Flotation Concentration of the Chewelah Magnesite Ores**  
Commercial experiments by the Northwest Magnesite Company at Chewelah to utilize a new process which will greatly increase the reserves of available magnesite.  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4323. Fahrenwald, A. W. and Cooke, J. P. **Study of the Non-Floatability of Sub-Sieve Sizes in Flotation Feed of Sunshine Mine Ore**  
Investigation includes flotation tests, size distribution, and microscopic studies.  
(1939) Prof.  
Idaho Bureau of Mines and Geology, Moscow, in coop. with U. S. Bureau of Mines



4324. **Fahrenwald, A. W., Newton, J. and Bryant, B. L. Flotation-Concentration of Latah County Beryl near Troy, Idaho**

A metallurgical process for separating the beryl mineral from the worthless siliceous gangue minerals prior to the treatment of beryl by the usual electrothermic process.

(1939) Prof.

Idaho Bureau of Mines and Geology, Moscow

4325. **Forward, F. A New Process for Refining Nickel**

Laboratory experiments in improved refining processes which promise a significant reduction in commercial costs of present usage.

(Continuing) Prof.

University of British Columbia, Dept. of Mining, Vancouver

4326. **Gillies, G. A. New Frothers for Flotation**

Practical tests using several series of synthetic organic compounds developed in the Chemistry Department to produce more effective flotation.

(Continuing) Prof.

University of British Columbia, Dept. of Mining, Vancouver

4327. **Gillies, G. A. Selective Flotation of Gangue Minerals**

These are the non-metal bearing minerals in an ore which up-to-date have resisted commercial separation by means of flotation. Experiments are in progress with new methods that promise success.

(Continuing) Prof.

University of British Columbia, Dept. of Mining, Vancouver

4328. **Gonzales, D. The Geological Features of the Eureka Mine, British Columbia**

Thesis, (1939) Prof.

University of Washington, School of Mines, Seattle

4329. **Ingersoll, G. E. The Latest Methods of Mining and Mining Engineering in the Coeur d'Alene Mining District**

( ) Prof.

State College of Washington, Mining Experiment Station, Pullman

4330. **Kirschner, H. W. Recovery of Gold from a Placer Deposit near Ellensburg, Wash.**

Thesis, (1939) Prof.

University of Washington, School of Mines, Seattle

4331. Lomen, A. J. **Geology and Milling at the Shamrock Mine near Nome, Alaska**  
 Thesis, (1939) Prof.  
 University of Washington, School of Mines, Seattle
4332. Oregon State Department of Geology and Mineral Industries. **The Oregon Mines Catalog** (Bull. No. 14)  
 A compendium of information relating to Oregon mines and mining properties.  
 ( ) Prof., Gen. Pub.  
 Portland, Oreg.
4333. Schatz, R. W. **Chromite Milling in the Northwest**  
 ( ) Prof.  
 State College of Washington, Mining Experiment Station, Pullman
4334. Schatz, R. W. **The Milling and Concentration of Washington Chromite Ores**  
 An economic method by which Washington chromite ores can be made available.  
 ( ) Prof.  
 State College of Washington, Mining Experiment Station, Pullman
4335. Schatz, R. W. **Mining Industry in the State of Washington**  
 ( ) Prof.  
 State College of Washington, Mining Experiment Station, Pullman
4336. Stoll, W. C. **The Independence Mine, Willow Creek District, Alaska**  
 Thesis, (1939) Prof.  
 University of Washington, College of Mines, Seattle
4337. Warren, H. V. **Gold Deposits in British Columbia**  
 The detailed study of a large number of ores to find out the manner in which the gold is associated with the several ore and gangue minerals and thereby facilitate: (a) intelligent forecasts regarding the persistence of an ore body; (b) anticipation of mining and milling difficulties with the aid of the Haultain Infra-Sizer and Super Panner it has been possible to give a thorough analysis of and explanation for all gold lost in any particular mill tailings. In 1938, ores or mill tailing products of the following mines were analyzed:
- |                |                  |                     |
|----------------|------------------|---------------------|
| Pioneer        | Gold Belt        | Kelowna Exploration |
| Sheep Creek    | Privateer        | Lake Chelan         |
| Kootenay Belle | Premier          | Caribou Gold Quartz |
| Howe Island    | Relief Arlington | Ymir Yankee Girl    |
| Reno           | Island Mountain  | Hedley Mascot       |
- (Continuing) Prof.  
 University of British Columbia, Dept. of Geology, Vancouver, B. C.

**4338. Yancey, H. F. and Geer, M. R. Field Investigations of Coal Washing Methods (Se-2)**

(1) To collect data on performance of various coal washing methods in operating plants; (2) to give assistance to commercial plants in connection with some washing problems in Washington; (3) to assist operators to use new or improved washing techniques, especially those developed by the Bureau technologists.

(Continuing) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with University of Washington, College of Mines, Seattle

**4339. Yancey, H. F., Geer, M. R. and Lance, W. E. Washability of Fine Sizes of Coal, Including Washing Tests in Laboratory (Se-1)**

The determination of new methods for cleaning efficiently the large amount of fine coal produced in mining the steeply pitching beds of Washington and other western states. The difficulty of cleaning coal efficiently increases greatly with decrease in particle size because the number of particles per unit weight is greater.

(Continuing) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with University of Washington, College of Mines, Seattle

#### **REGIONAL STUDIES AND SURVEYS**

**4340. Ainsworth, J. L. The Barkerville Gold Belt, British Columbia**

Thesis, (1939) Prof.

University of Washington, College of Mines, Seattle

**4341. Anderson, A. L. Geologic Studies of Mineralized Areas in Idaho**

This type of work has been in progress for some fifteen years. Many projects have been completed and many reports published. Several are now in the process of publication and other projects are contemplated.

(Continuing) Prof.

Idaho Bureau of Mines and Geology, Moscow, in coop. with U. S. Geological Survey

**4342. Bassett, R. G. The Relationship of Gold to the Ore Minerals of Cornucopia, Oregon**

Thesis, (1939) Prof.

University of Washington, College of Mines, Seattle

**4343. Campbell, C. D. Phosphate Minerals in a Pegmatite North of Deary, Idaho**

( ) Prof.

State College of Washington, Mining Experiment Station, Pullman

4344. Culver, H. E. and Bennett, W. A. G. **Genesis of Chromite Ores of Skagit County**  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4345. Culver, H. E. **Intrusives and Resultant Ore Deposition in North-eastern Washington**  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4346. Fahrenwald, A. W. and Scheid, V. E. **Geologic Study of the Latah County Clay Deposits**  
The investigation comprises the taking of samples at widely scattered points; geologic mapping; chemical analyses; beneficiation, plasticity, and burning tests and studies.  
(1940) Prof.  
Idaho Bureau of Mines and Geology, Moscow
4347. Ingersoll, G. E. **An Economic Survey of Chromium in the Pacific Northwest**  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4348. Ober, T. M. **Placer Deposits on the Deschutes and Crooked Rivers of Oregon**  
Thesis, (1939) Prof.  
University of Washington, College of Mines, Seattle
4349. Perry, E. S. and Sahinen, U. M. **Highland Mining District**  
( ) Gen. Pub.  
Montana Bureau of Mines and Geology, Butte
4350. Roberts, M. **Mineral Resources of Washington**  
This investigation covers the nature and occurrences of ores and other economic minerals, also the mining technique and the economic features of production.  
(Continuing) Prof.  
University of Washington, College of Mines, Seattle
4351. Sahinen, U. M. **Rochester Mining District**  
( ) Gen. Pub.  
Montana Bureau of Mines and Geology, Butte

4352. Seager, G. F. **The Geology and Ore Deposits of the Jardine-Crevasse Mountain Mining District, Park County, Montana**

An accurate geological survey of the Jardine-Crevasse Mountain mining district, Park County, Montana, with emphasis upon the structure and mineralogy of the gold veins of this locality, with the hope that knowledge of the habits and behavior of these veins will lead to greater development of not only this district but neighboring areas with similar geological features.

(1940) Prof., Gen. Pub.

Montana State Bureau of Mines and Geology, Butte

4353. Seager, G. F. **Jardine Mining District**

( ) Gen. Pub.

Montana Bureau of Mines and Geology, Butte

4354. United States Works Progress Administration. **State-Wide Mineral Survey**

WPA—465-93-3-132 ( ) Prof.

Portland, Oreg.

4355. Washington State Department of Conservation and Development. **Directory of Mineral Operators of Washington**

Bull. No. 34, ( ) Prof., Gen. Pub.

Olympia, Wash.

4356. Washington State Department of Conservation and Development. **Magnesite and Dolomite Resources of Washington**

Bull. No. 36, ( ) Prof.

Olympia, Wash.

4357. Williams, M. Y. **Oil Resources of Peace River, British Columbia**

Determination of oil structures and location of drilling sites.

(1940) Prof.

University of British Columbia, Vancouver, B. C.

4358. Wilson, H. **Bleaching Clays in the Pacific Northwest**

( ) Prof.

University of Washington, School of Mines, Seattle

4359. Wilson, H. **Chromite in Washington**

( ) Prof.

University of Washington, School of Mines, Seattle

4360. Wilson, H. **Silica Sands in Washington**

( ) Prof.

University of Washington, School of Mines, Seattle

**RESEARCH: TECHNOLOGICAL**

4361. Cady, L. C. **Thermal Decomposition of Phosphate Rock**  
( ) Prof.  
University of Idaho, Dept. of Chemistry and Chemical Engineering, Moscow
4362. Davis, E. P. and Warren, H. V. **Studies on the Various Methods of Determining Small Amounts of Telluride Minerals in Polished Sections**  
The study compares the results of studies of the tellurides made in the U. S. A., Germany and Australia, and reviews attempts made to find a more satisfactory method of determination. Suites of tellurides from Australia, Colorado, Germany, Japan, British Columbia, and California have been used in this work.  
(Continuing) Prof.  
University of British Columbia, Dept. of Geology, Vancouver
4363. Doerner, H. A. and Dilling, E. D. **Development of a Process for the Extraction of Magnesium Metal from Washington Magnesite Ore**  
Direct reduction of  $MgO$  by carbon and purification of the resulting magnesium metal by distillation in electric furnaces.  
(1939) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4364. Doerner, H. A. and Gould, W. D. **Development of a Process for the Production of Magnesium Chloride from Washington Magnesite Ore**  
Production of anhydrous  $MgCl_2$  by treating in an electric furnace a mixture of  $MgO$  and carbon with chlorine.  
(1939) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4365. Doerner, H. A. and Harris, D. L. **Development of a New D. C. Electric Furnace for the Electrolysis of  $MgCl_2$  Dissolved in Fused Salts**  
The production of high-purity (99.98%) magnesium metal from anhydrous  $MgCl_2$  free from chloride inclusions.  
(1939) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4366. Drucker, A. E. **The Development of an Electro-Hydrometallurgical Process for the Production of High-Purity Manganese Metal from Olympic Peninsula Manganese Ores**  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman
4367. Drucker, A. E. **Electrolytic Aluminum Metal from Washington Clays**  
A method for utilizing Washington clays as a source of aluminum.  
( ) Prof.  
State College of Washington, Mining Experiment Station, Pullman

4368. Drucker, A. E. **Electrolytic Manganese Metal from Olympic Peninsula Ores**

A method for the production of high-purity metal from the high-silica manganese ores of the Olympic Peninsula, Wash.

( ) Prof.

State College of Washington, Mining Experiment Station, Pullman

4369. Fahrenwald, A. W., Staley, W. W. and Shaffer, R. E. **Metallurgical Investigation of the Physical Characteristics and Recovery of Idaho Placer Gold**

To determine the floatability of placer gold in the Snake and Salmon river valleys of Idaho. Where this does not respond to flotation, microscopic studies will be made to determine the causes.

(1939) Prof.

Idaho Bureau of Mines and Geology, Moscow

4370. Lasselle, P. A. **Studies on Phosphate Rock**

( ) Prof.

University of Idaho, Dept. of Chemistry and Chemical Engineering, Moscow

4371. Roberts, M. **Treatment and Utilization of Washington's Mineral Products**

Investigations of the treatment and utilization of Washington's mineral products.

(Continuing) Prof.

University of Washington, College of Mines, Seattle

4372. Sloss, L. L. **Insoluble Residue Studies of Paleozoic Formations of the Northern Rocky Mountain Oil Fields**

Results of the study will make it possible to recognize the stratigraphic position of fragmentary samples recovered from oil well borings and thus aid materially in the development of the petroleum industry of this region.

(1940) Prof.

Montana School of Mines, Butte

4373. United States Works Progress Administration. **Study Involving Utilization of Sands, Clays, etc., Seattle**

WPA—465-93-3-36, ( ) Prof.

Portland, Oreg.

4374. Wilson, H., Skinner, K. G. and Dammann, A. **Preliminary Study of the Properties and Uses of Pacific Northwest Diatomite (Se-29)**

Diatomite from the numerous deposits occurring in the Pacific Northwest is becoming more important in the building, metallur-

gical, and beet sugar industries. The suitability of materials from these deposits for known and new uses will be investigated.

(1940) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with College of Mines, University of Washington, Seattle

4375. Wilson, H. and Raine, F. F. **Properties and Uses of Soapstone and Talc from Deposits of the Pacific Northwest (Se-22)**

(1) Design of apparatus for the determination of the coefficient of expansion at high temperatures, (2) colormetric tests with an accurate colorimeter, (3) use as a filler in paint and paper, (4) acid and basic slag resistance, (5) petrographic studies of original and fired samples, (6) tests of new samples.

(1939) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with College of Mines, University of Washington, Seattle

4376. Wilson, H., Skinner, K. G. and Blanchard, M. K. **Refractory Properties and Uses of Olivine (Se-24)**

The concluding study of those made during the past 3 years on the olivine of northwestern Washington, where these rocks occur in commercially uniform deposits. The high-melting temperature and low shrinkage and loss of weight on firing make olivine desirable for use as a basic refractory in metallurgical operations, in Portland cement kilns, and possibly for the lower temperature boiler and heating-unit field now dominated by fireclay.

(1940) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with College of Mines, University of Washington, Seattle

4377. Wilson, H. and Hurst, T. L. **Refractory Properties of Chromite in the Pacific Northwest (Se-26)**

A preliminary study of the chromite from Montana can be extended to the Washington chromite and carried into the field of recrystallization of chromite at high temperatures to produce a pure, high-temperature-load-resisting product which will be better than the present chrome refractories.

(1939) Prof.

U. S. Bureau of Mines, Northwest Experiment Station, in coop. with College of Mines, University of Washington, Seattle

---

## V. WATER RESOURCES

### ECONOMICS OF WATER

4378. Horner, G. M. **Hydrologic Studies on Watersheds of Different Characteristics**

Six watersheds ranging in size from 2.33 to 16,704 acres are included in this project. Each area is provided with a Parshall flume



and a water stage recorder for the measurement of run-off, while soil losses are determined by hand sampling during the run-off period.

( ) Prof.

Soil Conservation Experiment Station, Pullman, Wash.

4379. **Monson, O. W. Forecasting Runoff During Irrigation Season on Basis of Snow Surveys**

A tabulation of snow surveys in Montana and an analysis of the correlation between water content of snow cover at end of winter with runoff from various stream basins during the irrigation season, May 1-September 30.

(1940) Gen. Pub.

Montana State College, Agricultural Experiment Station, Bozeman

4380. **Monson, O. W. Water Requirements of Crops in Montana**

A study of the amount of water delivered for irrigation and the time distribution of demand for water with various cropping patterns.

( ) Prof.

Montana State College, Agricultural Experiment Station, Bozeman

4381. **Monson, O. W. Water Rights in Montana**

A list of decrees for streams in Montana from which water is diverted for irrigation, with a short discussion of water rights in general.

(1939) Prof., Gen. Pub.

Montana State College, Agricultural Experiment Station, Bozeman

4382. **Monson, O. W. and Slagsvold, P. L. Water Requirements for Irrigated Crops**

To secure data to show the relationship between the amount and frequency of water applications and yields; the gross water requirements for irrigated lands, for specific farms, and for certain crops; and the allowable annual cost for water as related to certain crop and livestock farming programs.

(1939) Prof., Gen. Pub.

Montana State College, Agricultural Experiment Station, Bozeman

4383. **United States Department of Agriculture, Soil Conservation Service, Regional Division of Water Facilities. Basic Ground-Water Studies in the Malad Valley, Southern Idaho**

The accumulation of the essential data that must be known before the construction of certain dams can proceed.

( ) Prof.

Spokane, Wash.

4384. United States Department of Agriculture, Soil Conservation Service, Regional Division of Water Facilities. **The Yamhill Basin Area, Oregon**

A compilation of available information on ground-water conditions in that area.

( ) Prof.

Spokane, Wash.

4385. Wolf, R. **Municipal Water Works in Washington**

The facilities, financial conditions, types of water works of cities and towns, comparisons as to rate structure, and other data of interest to local officials.

(1939) Prof.

University of Washington, Bureau of Governmental Research, Seattle

4386. Woodward, L. **Streamflow Investigation**

To determine for bunchgrass-granitic soil range lands of southern Idaho the factors involved in stream flow and the watershed management practices required for maintaining cover conditions that will yield maximum quantities of usable stream flow.

(Continuing) Prof.

U. S. Dept. of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah

#### REGIONAL SURVEYS

4387. United States Department of Agriculture, Soil Conservation Service, Regional Division of Water Facilities. **The Ten Mile Drainage of Whatcom County, Washington**

Preliminary investigations as to ground-water conditions in this watershed. About 60 wells have been investigated and all of the available conditions logged.

( ) Prof.

Spokane, Wash.

## **VI. POWER RESOURCES**

### **ADMINISTRATION AND CONTROL**

4388. Grant, H. H. **Statistics of Electric Companies—1938**

Statistical state-wide study of the industry.

(1939) Gen. Pub., Prof.

Washington State Dept. of Public Service, Olympia

### **ECONOMICS OF POWER**

4389. Bloch, I. **Investigations of Pacific Northwest Resources and Their Development Through Utilization of Electric Power**

Present reports: No. 38128-1 Aluminum  
No. 381118-1 Ferro Alloys  
No. 381110-1 Magnesium  
No. 381117-1 Steel  
No. 38114-1 Calcium Carbide  
No. 38114-2 Rayon  
No. 39130-1 Ferrochromium Alloys  
No. 3914-1 Carbon Electrodes

Other reports will include strategic minerals, forest products, farm products, etc. Each of these studies will be reported in the following way:

- I. References, Maps, Graps, and Tabulated Material
- II. Market Possibilities and Consumption
  - (a) Pacific Northwest
  - (b) National
  - (c) Export
- III. Description of Specific Markets and Use of Products
- IV. Existing Manufacturing Plants in Pacific Northwest
- V. Power Requirements
- VI. Materials Needed
- VII. Availability and Costs of Raw Materials
- VIII. Transportation Rates
- IX. Type of Plant Recommended

(1939) Prof.

U. S. Dept. of the Interior, The Bonneville Project, Portland, Oreg.

4390. Grant, H. H. **Electric Power and Power Markets in Washington**

Summary of the status of the electric power industry in the State of Washington as of 1937—graphs, statistics.

( ) Gen. Pub., Prof.

Washington State Dept. of Public Service and Washington State Planning Council, Olympia

4391. United States Department of the Interior, Research and Investigation Program, The Bonneville Project. **The Production and Distribution of Electric Power in the Pacific Northwest and Factors Affecting Its Utilization**

Power, Land and Water Resources, Mineral Resources, Transportation, Industry and Commerce, Population.

( ) Prof., Gen. Pub.

Portland, Oreg.

## VII. FISHERIES

### BIOLOGICAL RESEARCH

4392. Barnaby, J. T. **Bristol Bay Salmon Investigation—Marine Phase**  
An investigation of the migration routes of the salmon, rate of travel, growth, and mortality in ocean, and physical and biological factors influencing the salmon during their stay in salt water.  
(1943) Prof.  
U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.
4393. Barnaby, J. T. and DeLacy, A. C. **Investigations of the Age, Growth, Mortality, of the Dolly Varden Trout**  
An investigation dealing with the abundance and migration of the Dolly Varden Trout with especial regard to the relation of the salmon populations.  
(1940) Prof.  
U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.
4394. Barnaby, J. T. and DeLacy, A. C. **Investigations on the Red Salmon Fisheries of the Karluk River, Alaska**  
This investigation deals with the fluctuations and causes of the fluctuations in abundance of red salmon fisheries of this watershed. Studies are being made on the age, growth rate, and the mortality rate both in fresh and salt water.  
(1939) Prof.  
U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.
4395. Craig, J. A. and Suomela, A. J. **Columbia River Investigation**  
Surveys of streams to discover physical factors influencing salmon spawning and programs for rehabilitation of salmon runs. Studies of abundance by means of statistics of catch and weir counts. Studies of spawning habits and life histories of the migratory fish of the Columbian Basin.  
(1944) Gen. Pub., Prof.  
U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.
4396. Dahlgren, E. H. **Alaska Herring Investigation**  
Studies of the life history, of the abundance, and causes contributing to the fluctuations in such abundance, of the Pacific herring, in Alaska.  
( ) Prof., Gen. Pub.  
U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.
4397. Davidson, F. A. **Bristol Bay Salmon Investigation—Oceanographic Survey**  
This portion of the general study of the Bristol Bay salmon investigation deals with a complete physico-chemical survey of

Bristol Bay and contiguous waters, to determine the physical and chemical characteristics of the waters and the directional drifts of currents that influence them.

(1943) Prof.

U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.

4398. Fish, F. F. **Fish Pathology**

A continuous program of research dealing with the epidemiology and pathology of fish diseases in the broadest sense of these terms. The scope of this research program includes studies on the predisposing factors underlying the appearance of fish diseases, the effects of such diseases upon the body tissues of infected hosts, and the development of effective methods for preventing and controlling diseases among hatchery fish.

(Continuing) Prof.

U. S. Bureau of Fisheries, Pathology Laboratory, Seattle, Wash.

4399. Fuqua, C. L. **Feeding of Montana Grayling (*Thymallus Montanus*) at the Bozeman, Montana, Station**

The feeding of artificial foods to Montana Grayling fry and fingerlings in the fish hatchery. Period covered, 1937-1938.

( ) Prof.

U. S. Bureau of Fisheries, Bozeman, Mont.

4400. Guberlet, J. E. **Studies on the Parasites of Halibut**

( ) Prof.

University of Washington, Dept. of Zoology, Seattle

4401. Hasler, A. and Naturalist Staff of Crater Lake. **Fish Food, Fish Distribution and Fish Population in Crater Lake**

A study to determine food supply, numbers and distribution of fish in Crater Lake.

( ) Prof.

U. S. Dept. of the Interior, National Park Service, Crater Lake, Oreg.

4402. Kelez, G. B. **Bristol Bay Salmon Investigation—Fresh Water Phase**

This is a portion of the general study of the Bristol Bay salmon fishery. It will include the evaluation of spawning escapements, age analysis of the runs, determination of mortality during the egg stage and during the fresh water residence, analysis of biological factors influencing growth and survival during this portion of the life history of the red salmon.

( ) Prof.

U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.

4403. Kelez, G. B. **Coho Salmon Investigation**

A study of the life history of the coho (silver) salmon in the Puget Sound district, determination of changes in abundance of this valuable commercial and sport fish, and the development of methods for rebuilding runs in streams now badly depleted or barren.

( ) Prof., Gen. Pub.

U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.

4404. Kincaid, T. **Fresh Water Copepoda of the Pacific Coast**

An attempt to show the influence of Asiatic fauna in peopling the fresh water bodies of the Pacific Coast. An analysis has been made of over 3000 plankton samples derived from several thousand lakes ranging from Mexico to Northern Alaska.

( ) Prof.

University of Washington, Dept. of Zoology, Seattle

4405. Schaefer, M. B. **A Study of the Razor Clam Fishery of the State of Washington**

Life history of the razor clam, changes in abundance of razor clam stocks, effects of the fishery on the stocks, means of regulation of the fishery to produce the optimum sustained yield.

(1942) Coll., Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

**CONSERVATION AND PROPAGATION**4406. Chapman, W. M. **Further Investigations into the Preservation of the Salmon and Steelhead Runs at Grand Coulee Dam**

Ecology of salmon, methods of efficiently propagating runs to be cut off by Grand Coulee dam.

(Continuing) Coll., Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

4407. Davidson, F. A. and Hutchinson, S. J. **Alaska Pink Salmon Investigation**

To study the causal factors responsible for the fluctuations in the abundance and time of appearance of the pink salmon runs in Alaska. To recommend the opening and closing dates for salmon fishing in Alaska for the purpose of conserving the salmon resources and maintaining their numbers for future generations. To study all phases of the life history of the pink salmon that are related to or have a bearing upon their conservation.

(Continuing) Prof., Gen. Pub.

U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.

4408. Royal, L. A. and Ellis, C. H. **The Relationship of Hatchery Operation to the Propagation of Silver and Chum Salmon**

Efficiency of present hatchery practices, methods of increasing efficiency. Life histories of salmon in fresh water. Sources and

magnitude of natural mortality.

(Continuing) Coll., Prof., Gen. Pub.

Washington State Dept. of Fisheries, Minter Creek Biological Station, Seattle

**4409. Smith, R. T. Preservation of the Salmon Runs at Lewis River Dam**

Ecology of Lewis River salmon runs, efficiency of operation of the Lewis River hatchery, methods of modifying hatchery operations to produce greater efficiency, determination of factors effecting the efficiency of the Lewis River hatchery.

(1940) Coll., Prof.

Washington State Dept. of Fisheries, Seattle

**4410. Townsend, L. D., Eriksen, A. and Earnest, D. Domestic and Trade Waste Pollution and Its Effects on Fish Life**

(Continuing) Coll., Prof., Gen. Pub.

Washington State Pollution Commission, Seattle

**ECONOMIC ASPECTS**

**4411. Gregory, H. E. The Economic Setting of the Fisheries Industries of the Pacific Northwest**

( ) Prof., Gen. Pub.

University of Washington, Seattle

**4412. Royal, L. A. and Erickson, D. W. The Statistics of the Commercial Fisheries of the State of Washington**

Accumulation, tabulation, and analysis of current statistics of yield of the commercial fisheries of the State of Washington.

(Continuing) Coll., Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

**4413. United States Works Progress Administration. Economic Research, Northwest Fisheries, Seattle**

WPA—365-93-3-1. ( ) Prof., Gen. Pub.

Portland, Oreg.

**4414. Vaughan, Elizabeth. Alaska Salmon Statistical Investigation**

Its purposes are: (1) to collect all records available of the daily catch of salmon in Alaska from each form of gear; (2) to add to those early records the current data as it becomes available each year; (3) to carefully index and segregate these data into usable form and to furnish these tabulations as they may be required for the analysis of specific problems.

( ) Prof., Gen. Pub.

U. S. Bureau of Fisheries, Biological Station, Seattle, Wash.

**FISHING INDUSTRY****4415. Biely, J. British Columbia Fish Oils Research**

This research entails a study of the vitamin A and D contents of British Columbia fish oils. To date a thorough study has been made of the vitamin D content of pilchard, herring and salmon oils. The biological tests have been conducted with chicks according to the A. O. A. C. method of analysis. The results have been correlated with rat tests. At the present time a detailed study is being made of the nature of vitamins A and D in fish oils. Considerable effort and time have been devoted to perfecting the A. O. A. C. method of biological assay of fish oils, as well as standardization of fish oils for utilization in commerce.

(1941) Prof., Gen. Pub.

University of British Columbia, Vancouver

**4416. Gregory, H. E. Study of North Pacific Fisheries with Special Emphasis on the Salmon Industry**

(1939) Prof., Gen. Pub.

University of Washington, College of Economics and Business, Seattle

**4417. Gregory, H. E. and Barnes, K. Pacific Northwest Fisheries**

(1939) Gen. Pub.

American Council, Institute of Pacific Relations, New York City

**4418. Kincaid, T. Oyster Industry of the Pacific Coast**

To bring together data accumulated over a long period of years to form a report on the history and present status of this industry.

( ) Prof.

University of Washington, Dept. of Zoology, Seattle

**4419. Melton, W. R. The Fisheries Industry in Washington, Oregon and Alaska**

Brief historical sketch, description of the processes of the industry, and a survey of wages, hours, and working conditions.

(1939) Gen. Pub.

National Youth Administration of Washington, Tacoma

**4420. United States Works Progress Administration. Study of Fishery Products, Seattle**

WPA—765-93-3-1. ( ) Gen. Pub.

Portland, Oreg.

**POLITICAL ASPECTS****4421. Bingham, J. W. and Riesenfeld, S. International Law Relating to Fisheries**

(1939) Gen. Pub.

American Council, Institute of Pacific Relations, New York City



## **VIII. HUMAN RESOURCES AND PROBLEMS**

### **FORMS OF SETTLEMENT**

4422. Merriam, W. B. **Economic and Social Zonation of Spokane, Washington**

A study of the factors which have led to the growth of Spokane as an urban center and the development of its functional pattern.

(1939) Prof.

Eastern Washington College of Education, Cheney

### **LABOR AND EMPLOYMENT**

4423. Beers, H. W. **Survey of Farm Labor Supply and Demand in the Yakima Valley**

FERA Project ( ) Prof.

State College of Washington, Pullman

4424. Brooks, Harriet D. **Employment Practices As They Exist in Seattle Social Agencies**

This study was undertaken at the request of the Puget Sound Group of the American Association of Social Workers, to learn what are the personnel standards and practices of social agencies in King County, Wash. Schedules have been completed for 27 agencies on which the thesis will be based.

Master's Thesis, (1939) Prof.

University of Washington, Graduate School of Social Work, Seattle

4425. Hennes, R. G. **Personnel Requirements of the Civil Engineering Profession in the State of Washington**

A study of the number of civil engineers gainfully employed in this state, and of the number of civil engineering graduates that can be expected to find entrance to the profession in this state annually.

( ) Prof., Gen. Pub.

Planning Committee, Seattle Section, American Society of Civil Engineers, Seattle, Wash.

4426. Kraenzel, C. F. **Farm Labor Mobility in the Montana Beet Fields**

Residence history of beet laborers, their family composition, working conditions, sources and amount of income, and opportunities for employment outside the State of Montana.

( ) Prof., Gen. Pub.

Montana State College, Bozeman

4427. Landis, P. H. **Social and Economic Characteristics of the Professional Farm Laborer**

( ) Prof.

State College of Washington, Pullman

4428. Landis, P. H. **A Study of Farm Labor Supply and Demand in the Yakima Valley, Washington**  
The socio-economic characteristics of the hop workers, their mobility and standard of living.  
( ) Prof.  
State College of Washington, Agricultural Experiment Station, Pullman
4429. Leonard, Eugenie A. and Purvine, W. **Occupational Studies and Industrial Survey**  
Studies of the main industrial occupations in the Portland area.  
(Continuing) Prof., Gen. Pub.  
Bureau of Occupational Survey, Dept. of Vocational Education, Portland Public Schools, Portland, Oreg.
4430. Menefee, S. C. **A Study of Seattle's Strike Situation**  
( ) Prof., Gen. Pub.  
University of Washington, Seattle
4431. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Industrial Employment in the Pacific Northwest**  
(1939) Prof., Gen. Pub.  
Portland, Oreg.
4432. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **The Over-All Problem of Employment in the Region**  
(1939) Prof., Gen. Pub.  
Portland, Oreg.
4433. Reuss, C. F. **A Social and Economic Study of the Hop Pickers of the Yakima Valley**  
( ) Prof.  
State College of Washington, Pullman
4434. United States Works Progress Administration. **Study of Youth and the Labor Market, Seattle**  
WPA—565-3-6. ( ) Gen. Pub.  
Portland, Oreg.

#### **MIGRATION**

4435. Landis, P. H. **The Drouth Immigrant and His Adjustment Problems in the State of Washington**  
( ) Prof.  
State College of Washington, Pullman

**4436. Landis, P. H. A Field Study of Drought Immigrants**

(1939) Prof.

Washington State College, Agricultural Experiment Station, Pullman, cooperating with Division of Social Research, WPA

**4437. Landis, P. H. and Wakefield, R. The Drought Immigrant's Adjustment to the West**

The study focuses on problems of social and economic adjustment of the immigrant to the West, studying the previous background in relation to the present experience of the immigrant.

(1939) Gen. Pub.

State College of Washington, Agricultural Experiment Station, Pullman

**4438. Moore, E. H. Patterns of Age, Sex and Direction of Interstate Mobility 1920-1930 and of Interstate and Intercounty Mobility 1930-1940**

The mobility patterns for the 48 states for a decade of prosperity and a decade of depression. While it gives national coverage, its findings will be of unusual significance to the Northwest which as recipient of the mobile population will sense the problems of mobility perhaps more than other sections.

(1941) Prof.

University of Oregon, Eugene

**4439. Pacific Northwest Regional Planning Commission. A Study of the Land and Migration Problems in the Pacific Northwest States**

The study will cover (1) land suitable for settlement, (2) problems of settlement, (3) public works construction and action to promote wise settlement and wise land use and (4) legislative program for state and federal action.

(1939) Gen. Pub., Prof.

Portland, Oreg.

**4440. United States Department of Agriculture, Bureau of Agricultural Economics, Office of Oregon State Land Planning Specialist (in cooperation with Resettlement Administration and Oregon State College). Migrants, with Particular Reference to Those in Oregon**

A comprehensive survey of the migrant situation, the problems arising therefrom, and possible measures for dealing with the situation.

(1939) Prof., Gen. Pub.

Corvallis, Oreg.

**POPULATION: CHARACTERISTICS AND DISTRIBUTION OF**

4441. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Problems of Settlement in Relation to Grazing**  
(1939) Prof., Gen. Pub.  
Portland, Oreg.
4442. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Problems and Opportunities of Settlement in Areas Contiguous to Forests**  
(1939) Prof., Gen. Pub.  
Portland, Oreg.
4443. Topping, C. W. **Census Tracts in Vancouver, B. C.**  
(1940) Prof., Gen. Pub.  
Dominion of Canada, Bureau of Statistics, Victoria, B. C.

**POPULATION TRENDS**

4444. Bakkum, G. A. **A Population Study of Oregon**  
An analysis of (1) the growth and distribution of population in relation to socio-economic factors, (2) the composition and characteristics of present population groups, and (3) inter- and intra-state migrations and mobility. The study attempts to reconstruct the population history of Oregon in the light of the present situation and to point out current trends.  
(1939) Prof., Gen. Pub.  
Oregon State College, Dept. of Sociology, Corvallis
4445. Landis, P. H. **Washington Population Changes during 1937**  
(1939) Prof., Gen. Pub.  
State College of Washington, Agricultural Experiment Station, Pullman, coop. with U. S. Dept. of Agriculture
4446. Schmid, C. F. **Mortality Trends in the State of Washington**  
( ) Prof.  
University of Washington, Dept. of Sociology, Seattle

**SOCIAL CONDITIONS**

4447. Epstein, J. **Housing of Low-Income Groups in the City of Seattle**  
Housing conditions, city growth, planning, and social factors in relation to income structure of population and suggested remedial measures.  
(1939) Prof.  
Advisory Housing Commission, Seattle, Wash.

**4448. Odell, M. Cooperative Organization in Seattle**

Master's Thesis ( ) Prof., Gen. Pub.

University of Washington, Seattle

**4449. Pubols, B. H. A Study of Income Parity for Agriculture**

A study of 238 schedules of retail prices paid by Washington farmers for commodities purchased, data on service charges, and other information needed in estimating income parity for agriculture.

( ) Prof.

State College of Washington, Agricultural Experiment Station, Pullman, coop. with U. S. Bureau of Agricultural Economics

**4450. Reuss, C. F. Rural Social Institutions in Washington**

A state-wide study to analyze trends in distribution, services, and functions of such institutions of rural life in Washington, as the country newspaper, the rural church, county government, the rural library, and health facilities in relation to social change.

( ) Gen. Pub.

State College of Washington, Agricultural Experiment Station, Pullman

**4451. Topping, C. W. The Ecological Distribution of Accommodation Groups in Vancouver, B. C.**

Maps have been made of the distribution of Orientals, Jews, homeless men, etc. Land usage has also been checked and recorded on maps. Field studies are continuing and material from other studies, e. g. housing, transferred. Maps of family size by race and ecological area have been made for groups on which this information could be obtained.

( ) Prof.

University of British Columbia, Vancouver, B. C.

**4452. Topping, C. W. Housing in Vancouver, B. C.**

House to house surveys are made checking every fourth house in a block; land usage maps are made in some cases. The same facts are checked for each house but especially delapidated houses are given a special report.

(1939) Prof., Gen. Pub.

University of British Columbia, Vancouver Housing Assoc., Housing Committees of the City Council and the Federation of Social Agencies, the Youth Council, Vancouver, B. C.

**4453. Topping, C. W. Medical Services to Indigents**

A study of cards at various public and private institutions and the spotting of the information on maps, etc., with a view to discovering areas served, amount of service, total costs, etc.

( ) Prof., Gen. Pub.

University of British Columbia, Vancouver, B. C.

**4454. Topping, C. W. Social Resources in Greater Vancouver**

A card system, kept up to date, giving details for ready reference on all social resources in the area. Studies of the genetic rise of each new development in the area are made, e. g. the Metropolitan Health Board of Greater Vancouver, the T. B. Control Division of the Province of British Columbia, the V. D. Control Division of British Columbia, Health Insurance in British Columbia, etc.

(Continuing) Prof., Gen. Pub.

University of British Columbia, Vancouver Council of Social Agencies, et al, Vancouver, B. C.

**SURVEYS: SOCIAL****4455. Ash, E. The Prison Community (Monroe Reformatory, Washington)**

Master's Thesis, ( ) Gen. Pub., Prof.

University of Washington, Graduate School of Social Work, Seattle

**4456. Dann, R. H. The Deterrent Effects of Capital Punishment in Cities of the Pacific Coast**

( ) Prof., Gen. Pub.

Oregon State College, Dept. of Sociology, Corvallis

**4457. Hayner, N. S. Urban Delinquency in the Pacific Northwest**

( ) Prof.

University of Washington, Seattle

**4458. Moore, E. H. Typical Age-Sex Compositions of Western Counties Whose Chief Occupation is Agriculture, Grazing, Mining or Lumbering**

For each occupation, the ten counties with the highest percentage of workers reported in this occupation are chosen. From these ten counties, a composite age-sex composition grouping is established in order to show the influence that certain functional groups have on the composition of the population.

( ) Prof.

University of Oregon, Eugene

**4459. Rojo, T. A. Filipino-American Contact**

Ph. D. Thesis, ( ) Gen. Pub., Prof.

University of Washington, Graduate School of Social Work, Seattle

**4460. Schafer, M. R. Study of Delinquency and Socially Related Factors, 1926-1936**

Will consolidate studies made of delinquency rates, economic resources, community resources, recreational interests and facilities, and material gathered in by the social survey made in 1934-1937.

( ) Prof., Gen. Pub.

College of Puget Sound, Tacoma, Wash.

4461. Topping, C. W. **An Ecological Study of Delinquency in Vancouver, B. C.**

Case studies of delinquents have been made and a preliminary investigation of gang activity has been undertaken. Boys clubs have been set up on the basis of delinquency maps and with a view to both studying and preventing delinquency. Delinquency has been correlated with other phenomena.

(Continuing) Prof., Gen. Pub.

University of British Columbia and various agencies, Vancouver, B. C.

4462. Topping, C. W. **The Urban Church in Vancouver**

To be presented to the General Council of the United Church of Canada in 1940.

(1940) Prof., Gen. Pub.

University of British Columbia, Vancouver, B. C.

4463. United States Works Progress Administration. **Juvenile Delinquency Survey, Seattle**

WPA—465-93-3-244, ( ) Prof., Gen. Pub.

Portland, Oreg.

4464. United States Works Progress Administration. **Juvenile Delinquency Survey, Vancouver, Washington**

WPA—665-93-3-48, ( ) Prof., Gen. Pub.

Portland, Oreg.

4465. Weeks, H. A. **A Study of Juvenile Delinquency in Spokane, Washington, During 1937**

( ) Prof.

State College of Washington, Pullman

4466. Weeks, H. A. **A Survey of Juvenile Delinquency and Recreation in Spokane, Washington, from 1932 to 1938**

( ) Prof.

State College of Washington, Pullman

4467. Yoder, F. R. **Rural Societal Evolution in the Palouse Country, Western Washington**

( ) Prof.

State College of Washington, Pullman

#### **WELFARE AND WELFARE ORGANIZATIONS**

4468. Beers, H. W. **Survey of Current Changes in the Rural Relief Load FERA Project, ( ) Prof.**

State College of Washington, Pullman

4469. Jackson, J. S. **The Colored Marine Employees Benevolent Association of the Pacific—The Life History of a Company Union**

Master's Thesis, ( ) Gen. Pub.

University of Washington, Graduate School of Social Work, Seattle

4470. Kraenzel, C. F. and Greiner, H. **Emergency Agency Expenditures in Montana, 1933-37**

A state-wide analysis to discover areas of maximum and minimum expenditure and to determine what readjustments in land use are necessary to remedy the situation.

(1939) Prof.

Montana State Dept. of Public Welfare and Montana State College, Bozeman

4471. Miller, Anne H. and Howard, Violet. **Directory of Social and Health Agencies—1939**

Revision of 1936 Directory as it relates to statewide social and health agencies and those in King County. This involves bringing the material up to date and issuing it as a revised directory of King County and statewide social and health agencies.

(1939) Prof., Gen. Pub.

University of Washington, Graduate School of Social Work, Seattle

4472. Moscovich, J., Leigh, Amy, and Topping, C. W. **Medical Service to Indigents in Vancouver, B. C.**

All medical service to indigents is being checked by social agencies and is being segregated so that the total may be determined. A reorganization may take place on the basis of the findings.

(1940) Prof.

Social Service Dept. of the City of Vancouver, the University of British Columbia, Vancouver, B. C.

4473. Oregon State College. **Analysis and Tabulation of Rural Rehabilitation: Case Analysis Schedules**

( ) Prof.

Corvallis, Oreg.

4474. Schlarb, J., Jr. **Survey of Medical Care**

Means by which medical aid can be rendered to those who can pay only partially for medical care needed; scientific medical service to be extended to all population in proportion to need.

( ) Prof.

Foundation for Social Research in Medical Care, Tacoma, Wash.



4475. Singer, Thelma. **The Care of Dependent Children in Multnomah County**

A thesis based on 160 cases investigated at the Court of Domestic Relations for the first part of 1938. It covers the causes, results, and prevention of dependency; disposition of these children; and the function of the court.

(1939) Prof.

Reed College, Portland, Oreg.

4476. Summers, O. H. **The Function of the Multnomah County Relief Committee**

A detailed analysis of the laws which set up the Multnomah County Relief Committee and of the problems in caring for the needy in that area.

(1939) Prof.

Reed College, Portland, Oreg.

4477. Topping, C. W. and Jackson, I. **Recreation in Vancouver, B. C.**

An attempt has been made to check all kinds of recreation and leisure time activity in the city. Maps of the location of all activities of the Park Board have been made and also of commercial and church activities.

(1940) Prof., Gen. Pub.

University of British Columbia, the Metropolitan Park Board, and the Federation of Social Agencies, Vancouver, B. C.

4478. Tyler, R. G. **Research on Methods of Disposal of Fruit Wastes**

Fruit wastes from apple and other fruit canneries and wineries are now seriously upsetting sewage disposal plants in this state. The present investigation will experiment with anaerobic and aerobic methods of digestion of the waste with both fresh and digested sewage sludge.

(1940) Prof.

University of Washington, Seattle

## IX. COMMERCE AND INDUSTRY

### INDUSTRIALIZATION

4479. Bloch, I. **Industrial and Economic Surveys of the Pacific Northwest**

These reports (of which one, Grays Harbor County, will be released shortly) attempt to analyze the economy of sub-regional divisions of the Pacific Northwest in order to determine the feasibility and desirability of specific industrial development, as well as anticipated growth in electric energy demands. Maps and graphs are used extensively, particularly to show trends.

( ) Prof.

U. S. Dept. of the Interior, the Bonneville Project, Poreland, Oreg.

4480. British Columbia, Bureau of Economics and Statistics. **An Economic Survey of the Area Adjacent to the Canadian National Railway between Prince Rupert and Yellowhead**

The survey is concerned with (1) industries thriving in the area, (2) the industries not thriving in the area, and (3) trends in population.

(1939) Prof., Gen. Pub.

Victoria, B. C.

4481. British Columbia, Bureau of Economics and Statistics. **Industry in British Columbia**

A series of industrial surveys to determine the potentialities of the region for this phase of development.

( ) Prof., Gen. Pub.

Victoria, B. C.

### MARKETS AND MARKETING

4482. British Columbia, Bureau of Economics and Statistics. **The Trade of British Columbia**

Trade research to provide data for the annual publication devoted to this field.

(Continuing) Prof., Gen. Pub.

Victoria, B. C.

4483. Burd, H. A. **The Mobility of Retail Trade in the State of Washington**

Figures and charts have been prepared showing the status of all cities of 2500 and over in the state.

( ) Prof., Gen. Pub.

University of Washington, College of Economics and Business, Seattle

4484. Burd, H. A. **Shifts in Business among Retail Trading Centers in Washington**  
( ) Prof.  
University of Washington, College of Economics and Business,  
Seattle
4485. Butterbaugh, G. I. **The Measurement of Business Activity in the Puget Sound Area**  
( ) Prof., Gen. Pub.  
University of Washington, Seattle
4486. Crawford, P. M. **Exports and Imports of Washington, Idaho and Montana**  
To translate the statistical figures of exports from and imports into the Washington, Idaho, Montana, and Alaska Customs Districts into understandable names of commodities, quantities, and values. At the present time, this material is not usable by the general public.  
(1939) Gen. Pub.  
Bureau of Foreign and Domestic Commerce sponsored WPA Project, Seattle, Wash.
4487. Dietrich, E. B. **American Trade and Trade Policy in the Pacific, 1929-1939**  
( ) Prof.  
American Council, Institute of Pacific Relations, New York City
4488. Dummeier, E. F. **Cooperative Purchasing in the State of Washington**  
( ) Gen. Pub.  
State College of Washington, Pullman
4489. Field, F. V. (ed.). **Economic Handbook of the Pacific Area (Revised Edition)**  
(1939) Prof.  
American Council, Institute of Pacific Relations, New York City
4490. Grant, H. H. **Statistics of Storage Warehouse Companies—1937**  
Statistical state-wide study of the industry.  
(1939) Gen. Pub., Prof.  
Washington State Dept. of Public Service, Olympia
4491. Heflebower, R. B. **Business Conditions in the Pacific Northwest**  
( ) Gen. Pub.  
State College of Washington, Pullman

4492. Heflebower, R. B. **A Measure of Business Condition in the Pacific Northwest**

An index of business activity for the Pacific Northwest in monthly form on an annual basis, involving some comparative studies of the industrial development of the Pacific Northwest.

(1939) Prof.

State College of Washington, Pullman

#### PUBLIC UTILITIES

4493. Gould, J. E. **Significant Facts Concerning the Important Public Utilities**

( ) Prof., Gen. Pub.

University of Washington, College of Economics and Business, Seattle

4494. Hall, J. K. **Public Utility Regulation**

(1939) Prof.

University of Washington, Seattle

4495. Hall, J. K. and Grant, H. H. **Public Utility Control, Management Contracts, and Intercompany Relationships**

Nation-wide study of economic and legal factors relating to the problem.

(1939) Prof.

University of Washington, Seattle

4496. Hall, J. K., Klug, V. C. and Hall, D. E. **Differentiated Rate of Return**

Study of the concept of rate of return in the regulation of public utilities, and of factors relating to this concept.

(1939) Prof.

University of Washington, Seattle

#### TRANSPORTATION

4497. Grant, H. H. **Statistics of Bus Companies—1937**

Statistical state-wide study of the industry.

(1939) Gen. Pub., Prof.

Washington State Dept. of Public Service, Olympia

4498. Grant, H. H. **Statistics of Railroad Companies—1937**

Statistical state-wide study of the industry.

(1939) Gen. Pub., Prof.

Washington State Dept. of Public Service, Olympia

4499. Grant, H. H. **Statistics of Steamboat Companies—1937**  
Statistical state-wide study of the industry.  
(1939) Gen. Pub., Prof.  
Washington State Dept. of Public Service, Olympia
4500. Greer, A. J. Case 7148, **Development of Costs of Line Haul Carriers by Motor Truck and Base Costs for Western Washington Area**  
(1939) Prof.  
Washington State Dept. of Public Service, Olympia
4501. Oregon State Highway Commission. **The Effect of Highway Alignment on Highway Transport Costs**  
( ) Prof., Gen. Pub.  
Salem, Oreg.
4502. Oregon State Highway Commission. **The Effect of Traffic Flow on Highway Transport Costs**  
( ) Prof., Gen. Pub.  
Salem, Oreg.
4503. Radius, W. A. **American Shipping on the Pacific**  
(1939) Prof.  
American Council, Institute of Pacific Relations, New York City
4504. United States Works Progress Administration. **City-Wide Traffic Survey, Spokane**  
WPA—465-93-3-99. ( ) Gen. Pub.  
Portland, Oreg.

## **X. GOVERNMENT**

### **A. POLITICS**

#### **POLITICAL PARTIES AND ELECTORATE**

4505. Chambers, Charlotte. **Political Parties in Oregon from 1868-90**

An interpretation of the election returns by districts based upon economic and social conditions, geographical position, ethnic character of the people, and the platforms and personalities offered by each party.

(1939) Prof., Gen. Pub.

Reed College, Portland, Oreg.

4506. Oregon, University of, Bureau of Municipal Research and Service. **Study of the Vote on the Initiative and Referendum Measures of 1936 and 1938**

Tabulations to show the vote in the various sections of the State of Oregon by community and population on the initiative and referendum measures of the special and general elections of 1936 and the general election of 1938.

(1939) Prof., Gen. Pub.

Eugene, Oreg.

#### **LEGISLATION**

4507. Johnson, Arlien. **A Handbook of Social Legislation in Washington**

A digest of social legislation relating to children, public welfare, marriage, divorce, mental patients, public health and safety.

( ) Prof., Gen. Pub.

University of Washington, Graduate School of Social Work, Seattle

4508. Oregon, University of, Bureau of Municipal Research and Service, and League of Oregon Cities. **Codification of the Ordinances of Various Oregon Cities**

A WPA project to continue the codification of the ordinances of Oregon cities.

( ) Prof.

Eugene, Oreg.

### **B. ADMINISTRATION**

#### **ADMINISTRATIVE SURVEYS**

4509. Montana State College. **A Study of County Government**

Mont. WPA, WP 2600. ( ) Prof., Gen. Pub.

Bozeman, Mont.

**4510. Williston, F. G. County Government**

The organization and functioning of Pierce County, Washington, as a political unit.

(1939) Prof., Gen. Pub.

College of Puget Sound, Tacoma, Wash.

**4511. Williston, F. G. Government of City of Tacoma**

Study of city of Tacoma in terms of present political organization and functions.

(1940) Gen. Pub.

College of Puget Sound, Tacoma, Wash.

**ADMINISTRATIVE ORGANIZATION****4512. Biesen, C. A Manual of the Administrative Organization of State and Local Government in Washington**

A study of the administrative organization of Washington state government, the local units, and the relationships of the local jurisdictions to the state.

( ) Prof., Gen. Pub.

University of Washington, Bureau of Governmental Research, Seattle

**4513. Gould, J. E. A Critical Examination of the Administrative Record of the Interstate Commerce Commission**

( ) Prof., Gen. Pub.

University of Washington, College of Economics and Business, Seattle

**4514. League of Oregon Cities and Charter Committee of Cascade Locks, Oregon. A Draft of a Charter for the City of Cascade Locks, Oregon**

(1939) Prof., Gen. Pub.

City Hall, Portland, Oreg.

**4515. Oregon, University of, Bureau of Municipal Research and Service. Study of Local Government**

A study of the organization of thirty of the larger cities of Oregon with organization chart for each city accompanied by a short description of the government of the city.

(1939) Gen. Pub.

Eugene, Oreg.

4516. Waites, K. A. **The Inception of Responsible Government in British Columbia**

It traces the origins of self-government in British Columbia from 1851 to 1872 and deals fully with the period of confederation with Canada 1870-72. The study is based on materials in the Provincial Archives, Victoria, B. C.

( ) Prof., Gen. Pub.

Parliament Bldg., Victoria, B. C.

#### PERSONNEL

4517. Barthell, R. W. **In-Service Training of Public Employees in the Portland Area**

( ) Prof., Gen. Pub.

University of Oregon, Bureau of Municipal Research and Service, Portland Office, Portland, Oreg.

4518. Washington, University of, Bureau of Governmental Research and Association of Washington Cities. **Salaries of Municipal Officials in Washington for 1939**

A report which the Bureau of Governmental Research attempts to get out annually giving a summary of salaries paid principal municipal officers in Washington cities.

(1939) Prof.

Seattle, Wash.

#### FINANCE: FISCAL MANAGEMENT

4519. Lorig, A. N. **Budget Manual for Washington Municipalities**

A manual of suggested procedures for budget-making officers with particular reference to problems encountered in smaller municipalities, legal as well as practical aspects.

(1939) Prof.

University of Washington, Bureau of Governmental Research, Seattle

#### FINANCE: FINANCIAL SURVEYS AND STATISTICS

4520. Renne, R. R. **A Study of County Government**

To transcribe, tabulate, and summarize existing data on Montana county government receipts, expenditures, and administrative efficiency for the period 1914 to 1938.

(1939) Prof., Gen. Pub.

Montana State College, Bozeman



**FINANCE: INCOME****(A) REVENUE SYSTEMS**

4521. Oregon, University of, Bureau of Municipal Research and Service.  
**History of the State Revenue System Since 1920**

A study of all the statutes levying state taxes since 1920.

(1939) Gen. Pub., Prof.

Eugene, Oreg.

4522. Renne, R. R. and Burns, L. C. **A Study of Montana's Income Tax System**

To transcribe and tabulate data from individual state income tax returns for 1937, and from nontaxable returns for 1933 and 1934. Data will include occupation, amount and source of income, deductions, taxable income, taxes paid, and other related items.

(1939) Gen. Pub.

Montana State College and State Board of Equalization, Bozeman

**FINANCE: INCOME****(B) PROPERTY TAXATION AND ASSESSMENT**

4523. Oregon, University of, Bureau of Municipal Research and Service.  
**Study of the Relation of Special Assessments to Tax Collection**

Case studies of conditions in Marshfield and Eugene, Oregon, to determine to what extent tax delinquent property also has outstanding delinquent assessments.

(1939) Prof.

Eugene, Oreg.

4524. United States Works Progress Administration. **Transcribe and Assemble Data Concerning Land Ownership, Assessed Valuation, Tax Delinquency, etc.—State-Wide**

WPA—465-93-3-209, ( ) Prof., Gen. Pub.

Portland, Oreg.

**FINANCE: INCOME****(C) PROPERTY TAX LIMITATION**

4525. Oregon, University of, Bureau of Municipal Research and Service.  
**Homestead Tax Exemption Survey**

A tabulation of the assessment rolls of seven counties; namely, Coos, Lane, Marion, Polk, Washington, Multnomah, and Baker according to the value of property and its use, with an analysis of the effect on local taxing units of any measure that may be introduced in the 1939 legislature

(1939) Prof.

Eugene, Oreg.

4526. Oregon, University of, Bureau of Municipal Research and Service.  
**Tax Exempt Property**

An examination of the assessment rolls of Lane, Linn, and Marion counties to determine the location and valuation of all property which is exempt from the property tax and the reason for the exemption.

(1939) Prof.

Eugene, Oreg.

## FINANCE: INCOME

### (D) INCOME, INHERITANCE AND OTHER TAXES

4527. Hall, J. K. **A Study of Probated Estates in Washington with Reference to the State Tax System**

( ) Prof.

University of Washington, Seattle

4528. Montana State College. **A Study of Montana's Income Tax**

Mont. WPA, WP 112. ( ) Prof., Gen. Pub.

Bozeman, Mont.

4529. Renne, R. R. and Watkins, R. L. **A Study of Montana's Corporation Tax**

To assemble and analyze information contained in all corporation license tax returns for 1932, 1933, 1934, 1935, 1936, and 1937 to show changes in revenue which would probably accompany proposed changes in tax rates.

(1939) Prof., Gen. Pub.

Montana State College, Bozeman

## ADMINISTRATIVE LAW

4530. Smiley, T. **Municipal Licenses—Legal Aspects**

The licensing authority of cities of each class—its use for purposes of regulation and revenue, and the problems involved.

(1939) Prof.

University of Washington, Bureau of Governmental Research, Seattle

## ADMINISTRATIVE ACTIVITIES AND SERVICES

4531. Doolittle, Carolyn. **The Administration of State Institutions in Oregon**

A history of the development of state institutions for the insane, feeble-minded, juvenile delinquent, adult offenders, blind and deaf,

tubercular, and veterans, with special reference to problems of administration.

Master's Thesis, (1939) Prof., Gen. Pub.

University of Washington, Graduate School of Social Work, Seattle

4532. Eastman, A. **Control of Radio Interference**

A study for Washington municipal officials interested in control of radio interference, methods of control.

(1939) Prof.

University of Washington, Bureau of Governmental Research, Seattle

4533. Epstein, J. **Libraries in the State of Washington**

History, scope, and needs of municipal and regional libraries in the State of Washington.

( ) Prof., Gen. Pub.

University of Washington, Bureau of Governmental Research, Seattle

4534. Oregon, University of, Bureau of Municipal Research and Service. **Industrial Accident Commission Survey**

A survey of the insurance of Oregon public employes under the Industrial Accident Commission to determine the contributions made by public agencies in behalf of their employes and the benefits drawn by public employes under the Industrial Accident Commission.

(1939) Gen. Pub., Prof.

Eugene, Oreg.

4535. Oregon, University of, Bureau of Municipal Research and Service. **Study of the Operation of the Knox Law**

A study of the operation of the Knox Law with special reference to the nature of police activities under the law and to the administration of the state liquor stores.

( ) Prof.

Eugene, Oreg.

## **XI. EDUCATION**

### **ADMINISTRATION OF PUBLIC SCHOOLS**

4536. Harris, J. T. **The Economic Ability of the State of Washington to Finance Its Public Schools**

A study of the basic ability of the state to finance its schools.

( ) Gen. Pub.

State College of Washington, Pullman

### **TECHNIQUES OF EDUCATION**

4537. Stewart, L. **A Study of Silent and Sound Motion Picture Uses in City School Systems and Universities**

( ) Gen. Pub.

Seattle Public Schools, Seattle, Wash.

### **VOCATIONAL GUIDANCE AND TRAINING**

4538. Emerson, V. W. **A Guidance Program for a Small High School**

A guidance program planned in the light of local needs and possibilities.

( ) Prof.

State College of Washington, Pullman

4539. Windnagle, L. V. **Guidance in the Portland, Oregon, Schools**

A study basic to the formulation of a guidance program for the Portland schools.

( ) Prof.

State College of Washington, Pullman

## **XII. PLANNING**

### **HIGHWAYS AND TRANSPORTATION FACILITIES**

4540. McCullough, C. B. and Mitchell, H. E. **Highway Planning Survey**

A complete study of all highway finance and construction, maintenance, and all related phases grouped under four different headings:

1. Road Inventory Survey—consisting of an inventory of all existing highways and structures thereon.
2. Traffic Survey—traffic counts at selected stations over the entire state, and weighing of certain class of traffic to determine maximum loads held, and installation of a limited number of automatic records.
3. Financial Survey—including taxation, relation of costs of construction and maintenance and related financial matters.
4. Pavement Life Studies—a determination of the expected life of highway surfaces based on a study of existing surfaces.

(Continuing) Prof.

Oregon State Highway Dept., Salem, and U. S. Bureau of Public Roads

**REGIONAL: PACIFIC NORTHWEST**

4541. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Programs of Public Works and Public Employment**  
(1939) Gen. Pub., Prof.  
Portland, Oreg.

**RESOURCE-USE PLANNING: LAND USE**

4542. Oregon State Planning Board. **Land Use Studies: Clackamas, Clatsop, Josephine, Douglas, and Benton Counties, Oregon**  
( ) Prof., Gen. Pub.  
Portland, Oreg.
4543. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Conflicts in Land Policy**  
(1939) Gen. Pub., Prof.  
Portland, Oreg.
4544. Pacific Northwest Regional Planning Commission and Cooperating Agencies. **Programs in Land Development and Land Management**  
(1939) Prof., Gen. Pub.  
Portland, Oreg.
4545. Rockie, W. A. **A Reconnaissance of the Factors Affecting Present and Potential Land Use in Alaska**  
( ) Prof.  
U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.
4546. United States Department of Agriculture, Soil Conservation Service, Regional Section of Woodland Management, Pacific Northwest Region.  
  
To locate areas in the region in which there is a combination of fair to good agricultural land, fair to good second-growth timber, and markets for farm woodland products, which together make a favorable area for profitable farm forestry.  
  
(Continuing) Prof.  
Spokane, Wash.

### **XIII. MAPS AND DIAGRAMS**

#### **MONTANA**

4547. Renne, R. R. and Haight, R. B. **Preparation of Plat Sheets, etc.**

To prepare township plat sheets showing land classifications and soil types, productivity and present land use, present land ownership, land use within operating units and uncontrolled lands, and present tax status as a basis for detailed planning of local agricultural adjustments.

(1939) Prof., Gen. Pub.

Montana State College, Bozeman

#### **PACIFIC NORTHWEST**

4548. Denoyer-Geppert Company. **The Pacific Northwest**

Physical and political with inserts showing population, distribution and climatic conditions (rainfall and temperature)

44" x 58"; scale, 20 m. to 1"

Chicago, Ill.

4549. United States National Resources Committee. **Regional Map Series: Relief, Growing Season, Growing Season Precipitation, Types of Land Ownership, Land Use Problems, Non-Agricultural Lands, Potential Land Reclamation**

42" x 80"; 1:1,000,000; Probable reductions: 10½" x 20"

Lambert Project. ( ) Prof., Gen. Pub.

Portland, Oreg.

#### **WASHINGTON**

4550. Elliott, T. H. **Surveying and Mapping Washington Side of the Columbia River from Camas to North Dalles, Washington**

The completed tracings made on the project were on a scale of 1" to 400' and coordinated with the maps made on a similar project on the Oregon side of the Columbia River. The coordination system was taken from the Axis of the Bonneville Dam and based on the War Department Coordinate System. The tracings are completed from Camas to Carson, Wash., a distance of about 30 miles.

(1939) Prof., Gen. Pub.

Northwest Regional Planning Commission, Portland, Oreg.

### **XIV. BIBLIOGRAPHIES**

#### **GOVERNMENT**

4551. Portland Municipal Reference Library and University of Oregon, Bureau of Municipal Research, Portland Office. **A Portland City Government Bibliography**

( ) Prof.

Portland, Oreg.

**PART III.**  
**CONTEMPLATED RESEARCH**

## **PART III**

### **CONTEMPLATED RESEARCH**

#### **I. GENERAL CONCEPTS OF THE NORTHWEST**

##### **ARCHAEOLOGY**

4552. Krieger, A. D. **Contributions to the Geoarchaeology of the Western United States**

Review of the physical and archaeological evidence of climatic change and its consequences in the western states since the glacial ages with particular reference to early man.

Prof.

University of Oregon, Eugene

##### **GEOLOGY—GENERAL AND ECONOMIC**

4553. Oregon State Department of Geology and Mineral Industries. **A Geologic Survey and Report on the Portland Area**

Prof.

Portland, Oreg.

4554. Oregon State Department of Geology and Mineral Industries. **Structural and Stratigraphic Studies in the Coos Bay Area**

Prof.

Portland, Oreg.

4555. Oregon State Department of Geology and Mineral Industries. **Topography and Geology of the Canyon City Chrome Belt**

Prof.

Portland, Oreg.

4556. Smith, O. J. **Fossil Wood in Southwest Idaho**

Prof.

College of Idaho, Caldwell

##### **HISTORY**

4557. Blinn, H. E. **Diplomatic History of the Pacific Northwest**

This study would cover all diplomatic issues, problems and controversies involving the Pacific Northwest, a unit of a collaborative work on the **History of the Pacific Northwest**.

Prof.

State College of Washington, Pullman

4558. Drews, R. A. **Kus Basketry Techniques**

A description of the techniques utilized in the manufacture of Kus baskets, both modern and aboriginal.

Prof.

University of Oregon, Eugene



**REGIONAL SURVEYS—GEOGRAPHIC AND ECONOMIC**

4559. Deutsch, H. J.
- Capitalism in the Pacific Northwest, 1832-1914**

A study of the relative importance of pioneer activity and capitalist promotion in the development of the region.

(1945) Prof.

State College of Washington, Pullman

**VEGETATION: NATURAL**

4560. Washington, State College of, Department of Botany.
- A Botanical and Ecological Survey of the Columbia Gorge above the Site of the Grand Coulee Dam**

The study should include a collection of botanical material now growing in nature within the area to be flooded by the lake above the Grand Coulee Dam. It should also include a careful study of ecological conditions.

Prof.

Pullman, Wash.

---

**II. AGRICULTURE****AGRICULTURAL ECONOMICS**

4561. Farm Credit Administration of Spokane.
- General Loan Experience**

An analysis of experience on 44,000 Federal Land Bank loans made 1917-1932 and comparable data for loans made since 1932.

Prof.

Spokane, Wash.

4562. Kolshorn, Agnes.
- Study of the Domestic Consumption of Oregon-Grown Prunes**

The problem will be considered from two angles: (1) the development of a reliable standard product; (2) the discovery of ways and means by which consumption may be stimulated.

Prof., Gen. Pub.

Oregon State College, School of Home Economics, Corvallis

**CROPS**

4563. Montana State College, Agricultural Experiment Station, Judith Basin Branch Station, coop. with United States Department of Agriculture, Bureau of Plant Industry, Division of Dry Land Agriculture.
- Expanded Studies of Crop Rotation, Tillage Methods and Effect on Different Crops When Grown on Land Which Has Been in Crested Wheatgrass for Various Number of Years**

The response of various crops from tillage methods when sown on land which has been in crested wheatgrass sod for ten or more years.

Gen. Pub.

Moccasin, Mont.

**DAIRYING AND LIVESTOCK**

4564. Nelson, J. A. **Development of a Standard High Quality and Uniform Cultured Buttermilk for the Commercial Market**  
(1940) Prof., Gen. Pub.  
Montana State College, Bozeman

**LAND RECLAMATION**

4565. Monson, O. W. **Prevention of Seepage from Irrigation Canals**  
The determination of seepage losses from irrigation canals under various conditions of soil, size of canal, and canal treatment, and for preventing seepage losses from standpoint of effectiveness and economy.  
Prof.  
Montana State College, Agricultural Experiment Station, Bozeman
4566. Monson, O. W. **Removal of Alkali Salts by Irrigation**  
To determine the feasibility of leaching out harmful alkali salts by flooding and drainage and the loss of fertility that results from leaching.  
Prof.  
Montana State College, Agricultural Experiment Station, Bozeman

**PESTS AND DISEASES**

4567. Pepper, J. H., Mills, H. B. and Hastings, E. D. **Study of the Diapause in the Codling Moth**  
A study of the resting stage in the codling moth in an attempt to increase control efficiency.  
Prof.  
Montana State College, Agricultural Experiment Station, Bozeman

**RANGE AND GRAZING**

4568. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. **Range Economic Investigations**  
Economics of range land use on approximately 70 million acres of land in this region devoted to range or directly dependent on range products for balanced production and stable population. Such questions as: the minimum size of ranch home units, the proper balance of cheap range feed with more expensive harvested feeds, better marketing practices for range livestock, and how to recognize and avoid the handicap of submarginal range land ownership will be investigated by a properly organized program of economic range research.  
Prof.  
Missoula, Mont.

**SOIL CONSERVATION AND EROSION****4569. Bonner, J. Terracing in the Dayton Area, Washington**

A survey regarding the feasibility and advantages of terracing.

Prof.

U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

**4570. Bonner, J. Terracing in the Chehalen Mountain Area**

A survey regarding the feasibility and advantages of terracing.

Prof.

U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

**4571. Bonner, J. Terracing in the Goldendale Area, Washington**

A survey regarding the feasibility and advantages of terracing.

Prof.

U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

**4572. Bonner, J. Terracing in the Pocatello Area, Idaho**

A survey regarding the feasibility and advantages of terracing.

Prof.

U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

**4573. Bonner, J. Terracing in the Pomeroy Area, Washington**

A survey regarding the feasibility and advantages of terracing.

Prof.

U. S. Dept. of Agriculture, Soil Conservation Service, Region 11,  
Spokane, Wash.

**4574. Montana State College, Agricultural Experiment Station, Judith Basin Branch Station, coop. with United States Department of Agriculture, Bureau of Plant Industry, Division of Dry Land Agriculture. The Use and Effect of Caragana as Buffer Strips on Various Crops and on Soil Erosion under Field Conditions**

1. The planting, care and establishment of the hedge or buffer strip. 2. The effect of hedge on the various crops. 3. The effect of the hedge on the control of snow, wind, rain, etc. 4. The effect of the hedge on the yield of crops in regards to the distance from the planting of shrubs. 5. To determine the practical use of buffer strips in field plantings.

Prof.

Moccasin, Mont.

### III. FOREST RESOURCES AND UTILIZATION

#### ASSOCIATED USES OF FORESTS

4575. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Forest Influences Staff. **Relation of Forest Cover on Streamflow in the White Pine Associations of the Upper Columbia River Watershed**

To determine the comparative influence of forest, brush, and other vegetative cover and bare land under varying conditions of topography, soil, precipitation, and other factors in: (a) Retarding runoff, (b) Delivering maximum amounts of usable water of good quality, (c) Preventing destructive floods, (d) Controlling erosion and consequent downstream silting, (e) Maintaining soil productivity.

Prof., Gen. Pub.

Missoula, Mont.

4576. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Forest Influences Staff. **Relation of Woodland and Grassland Cover to Streamflow in the Upper Missouri and Yellowstone Watersheds of Montana**

To determine the influence of grass and other vegetative cover, in conjunction with proper range use, in conserving water supplies for irrigation and other purposes, and in controlling erosion in eastern Montana.

Prof.

Missoula, Mont.

#### ECONOMICS, FOREST AND LUMBER

4577. Jeffers, D. S. **The Economic Position of Moscow Mountain Experimental Forest**

To determine the economic position of the Moscow Mountain Experimental Forest in (a) Latah County; (b) the markets pattern of the Inland Empire; (c) land use potentialities of the surrounding area, both forested and agricultural.

(1941) Gen. Pub.

University of Idaho, School of Forestry, Moscow

4578. Vaux, H. J. and Kearns, R. S. **Forest Lands as an Economic Resource in Benton County, Oregon**

To study the importance of forest lands as determinants of the economic welfare of Benton County, to provide a factual basis for the development of local policies designed to foster the optimum productive uses of the forest and to indicate the uses for which specific forest areas may be most appropriately managed.

Prof., Gen. Pub.

Oregon State College, School of Forestry, Corvallis

**MANAGEMENT**

4579. United States Department of Agriculture, Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Forest Economics Division. **Financial Aspects of Private Forestry in the White Pine Type of Northern Idaho**

The purpose of such a study is to determine and demonstrate profitable methods of management of the white pine forests of North Idaho for the continuous production of commercially valuable forest products and for the high economic use of the land. The orderly and profitable management of such timber lands requires a comprehensive study to determine (1) the extent of and the specific causes for forest land delinquency, (2) the financial returns to be expected under private, State and Federal ownership, and (3) the feasibility of sustained yield management for the type.

Prof.

Missoula, Mont.

**PROTECTION: FIRE**

4580. Gisborne, H. T. **The Social-Economic Justification for Forest Fire Control**

Forest fire control to date has been almost entirely justified by the cash revenue values of the resources protected. The more recently recognized aesthetic, recreational, and fish and game services of the forest have not been included in the past. The social-economic losses of a community as an aftermath of fire have likewise been completely omitted from past evaluations of fire damage. All these should be determined more definitely before fire control costs for any area can be justified in accordance with the use-dedications of areas made by land planning boards and Councils.

Prof.

Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

**PROTECTION: PATHOLOGY**

4581. Bedwell, J. L., assisted by Childs, T. W. **Infection, Incubation, and Periods Required for Production of Spore Stages of White Pine Blister Rust on White Bark Pine under Natural Conditions**

Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4582. Bedwell, J. L., assisted by Childs, T. W. and Englerth, G. H. **Dwarf Mistletoes on Western Conifers**

Investigations of host specificity in the genus *Arceuthobium* (Razoumofsky); determination of conditions necessary for infection, and the latent periods of the parasites.

Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

4583. Buchanan, T. S. and Englerth, G. H., assisted by Tryon, E. H. **Decay of Living Port Orford Cedar**  
Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4584. Childs, T. W., assisted by Bedwell, J. L. **Growth, Behaviour, and Mode of Damage of White Pine Blister Rust Cankers on White-Bark Pine under Natural Conditions**  
Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4585. Childs, T. W., assisted by Bedwell, J. L. and Kimmey, J. W. **Armilaria Mellea, Phytophthora Sp., and Other Root-Rots of Western Conifers**  
Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4586. Childs, T. W., assisted by Bedwell, J. L. and Tryon, E. H. **Growth, Behaviour, and Mode of Damage of White Pine Blister Rust Cankers on Sugar Pine under Natural Conditions**  
Prof.  
U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.
4587. Ehrlich, J. and assistants. **The Heartrots of Western Hemlock and Lowland White Fir in Northern Idaho, and Their Influence on Future Management**  
Determination of the various heartrots by field work supplemented by pure-culture isolations and inoculations, rate of development by diameter and age classes on different sites, and pathological rotations.  
Prof.  
University of Idaho, School of Forestry, Moscow
4588. Ehrlich, J. and assistants. **The Heartrots of Western Larch in Northern Idaho and Their Influence on Future Management**  
Determination of the various heartrots by field work supplemented by pure-culture isolations and inoculations, rate of development by diameter and age classes on different sites, and pathological rotations.  
Prof.  
University of Idaho, School of Forestry, Moscow

4589. Ehrlich, J. and assistants. **The Heartrots of Western White Pine and Their Influence on Management**

Determination of the various heartrots by field work supplemented by pure-culture isolations and inoculations, rate of development by diameter and age classes on different sites, and pathological rotations.

Prof.

University of Idaho, School of Forestry, Moscow

4590. Ehrlich, J. and assistants. **The Incidence of Heartrot in Western Red Cedar in Northern Idaho and Its Influence on Utilization**

Determination of ages and sites on which heartrot becomes a limiting factor in the utilization of cedar.

Prof.

University of Idaho, School of Forestry, Moscow

4591. Ehrlich, J. and assistants. **Life-History Studies of Northwestern Tree-Attaching Rust Fungi**

Field collection of fungi, pure culture on greenhouse-propagated hosts, artificial inoculation of suspected alternate hosts, and histologic study of infected tissues.

Prof.

University of Idaho, School of Forestry, Moscow

4592. Ehrlich, J. and assistants. **The Pathological Histology of Blister Rust in Western White Pine**

Collection, preparation, sectioning, staining, and histologic study of infected needles and bark at successive periods from inoculation to the development of pycnia and aecia.

Prof.

University of Idaho, School of Forestry, Moscow

4593. Ehrlich, J. and assistants. **The Pathological Histology of the Heartrots of Certain Northwestern Conifers**

Collection, preparation, sectioning, staining, and histologic study of authentic rot specimens.

Prof.

University of Idaho, School of Forestry, Moscow

4594. Ehrlich, J. and assistants. **Root Diseases and Rots of Western White Pine**

Determination of the various diseases and rots affecting this group with the causes and consequences of infestation.

Prof.

University of Idaho, School of Forestry, Moscow

4595. Kimmey, J. W., assisted by Bedwell, J. L., Buchanan, T. S., Childs, T. W., Englerth, G. H. and Tryon, E. H. **Infection, Incubation, and Periods Required for Production of Spore Stages of White Pine Blister Rust on Sugar Pine under Natural Conditions**

Prof.

U. S. Dept. of Agriculture, Bureau of Plant Industry, Portland, Oreg.

### SILVICULTURE

4596. Kitchin, E. A. and Park Naturalist Staff. **Relation of Porcupines to Forest Reproduction**

A study of life history and food habits of the porcupine in Mt. Rainier National Park seeking to ascertain the full effect of porcupine gnawing and girdlings of seedlings and young trees and upon forest reproduction.

( ) Prof., Gen. Pub.

U. S. Dept. of the Interior, National Park Service, Mt. Rainier National Park, Longmire, Wash.

### WOOD TECHNOLOGY—RESEARCH

4597. White, E. V. **Cellulose**

To devise and develop new and improved methods for the isolation of cellulose from plant tissues.

Prof.

University of Idaho, School of Forestry, Moscow

4598. White, E. V. **Cellulose Derivatives**

The preparation and investigation of new cellulose derivatives and a study of the products which may be obtained from such compounds.

Prof.

University of Idaho, School of Forestry, Moscow

4599. White, E. V. **Lignin**

An investigation into the isolation of lignin from woody tissues and a study of the properties and uses of this compound and its derivatives.

Prof.

University of Idaho, School of Forestry, Moscow



## **IV. MINERAL RESOURCES**

### **INDUSTRIES BASED ON MINERALS**

4600. Oregon State Department of Geology and Mineral Industries. **The Possibility of Using Oregon Diatomite in the Manufacture of Glass Brick**

Prof.

Portland, Oreg.

4601. Oregon State Department of Geology and Mineral Industries. **A Study of the Feasibility of a Lead and Zinc Reduction Plant in the Willamette Valley to Serve Cascade Mining Properties**

This deals with the Waelz or some other demonstrably successful process which is cheaper to install than the electrolytic type.

Prof.

Portland, Oreg.

### **MINES AND MINING**

4602. Oregon State Department of Geology and Mineral Industries. **Electrostatic Separation Studies for Beneficiation of Various Minerals**

Prof.

Portland, Oreg.

4603. Oregon State Department of Geology and Mineral Industries. **Investigation of the Possibility of Beneficiating Southern Clackamas County Limestone by Flotation or Otherwise, to Provide Agricultural Lime**

Prof.

Portland, Oreg.

4604. Oregon State Department of Geology and Mineral Industries. **The Placer Mining Industry in the State of Oregon**

Prof.

Portland, Oreg.

### **REGIONAL STUDIES AND SURVEYS**

4605. Oregon State Department of Geology and Mineral Industries. **Coal Deposits near Molalla and in Columbia County**

Prof.

Portland, Oreg.

4606. Oregon State Department of Geology and Mineral Industries. **The Coos Bay, Eden Ridge, and All Coals in Southwestern Oregon**

Prof.

Portland, Oreg.

4607. Oregon State Department of Geology and Mineral Industries. **Detailed Geologic Work in Mineralized Areas in the Wallowa Mountains in Connection with Tungsten and Molybdenum Deposits**  
Prof.  
Portland, Oreg.
4608. Oregon State Department of Geology and Mineral Industries. **Detailed Mapping of Lime on Connor Creek**  
Prof.  
Portland, Oreg.
4609. Oregon State Department of Geology and Mineral Industries. **Investigation of Known Occurrences of Nickel at Nickel Mountain, near Riddle**  
Prof.  
Portland, Oreg.
4610. Oregon State Department of Geology and Mineral Industries. **Pottery and Other Special-Use Clays Recently Discovered in Willamette Valley**  
Prof.  
Portland, Oreg.
4611. Oregon State Department of Geology and Mineral Industries. **Pumice and Pumicite Utilization**  
Prof.  
Portland, Oreg.
4612. Oregon State Department of Geology and Mineral Industries. **The Salt Deposits in Lake County**  
Prof.  
Portland, Oreg.
4613. Oregon State Department of Geology and Mineral Industries. **A Study of Oregon's Mineral Springs**  
Prof.  
Portland, Oreg.
4614. Oregon State Department of Geology and Mineral Industries. **Survey of Non-Metallic Mineral Occurrences**  
Prof.  
Portland, Oreg.

4615. Oregon State Department of Geology and Mineral Industries. **Survey of Quicksilver Deposits of Tiller Area**

Prof.

Portland, Oreg.

#### RESEARCH: TECHNOLOGICAL

4616. Oregon State Department of Geology and Mineral Industries. **Examination of the Known Borax Deposits of Harney County to Demonstrate Possibility of Utilization for Fertilizer**

Prof.

Portland, Oreg.

4617. Oregon State Department of Geology and Mineral Industries. **Study of Mineral Products Brought into Oregon from Outside to Determine Possibility of Using Oregon Minerals Instead**

Prof.

Portland, Oreg.

4618. Oregon State Department of Geology and Mineral Industries. **Tests on Oregon Coals to Demonstrate Their Adaptability for Byproduct Plants and Hydrogenation**

Prof.

Portland, Oreg.

4619. Oregon State Department of Geology and Mineral Industries. **Tests on Recovery and Separation of Chromite, Zircon, etc., from Coastal Back-Beach Alluvial Deposits**

Prof.

Portland, Oreg.

4620. Oregon State Department of Geology and Mineral Industries. **Utilization of a Large Silica Deposit Recently Uncovered**

Prof.

Portland, Oreg.

4621. United States Bureau of Mines and Washington State College, Mining Experiment Station. **Electrolytic Magnesium Metal from Washington Magnesite—A New Industry**

The results of commercial tests in a pilot-plant constructed by the Federal Bureau of Mines at Pullman in which costs, continuous operating conditions, and recoveries can be determined before this new industry can be established in Washington.

Prof.

Pullman, Wash.

## V. WATER RESOURCES

### ECONOMICS OF WATER

4622. United States Department of Agriculture, Soil Conservation Service, Regional Division of Water Facilities, Region 11. **Illinois River Drainage, Southern Oregon**

An investigation of ground-water conditions.

Prof.

Spokane, Wash.

---

## VII. FISHERIES

### BIOLOGICAL RESEARCH

4623. Schaefer, M. B. **Life Histories, Biological Statistics, Fisheries, and Means for the Regulation of Populations of Commercial Shellfish (with Particular Reference to Molluscs) of the State of Washington**

Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

4624. Schaefer, M. B. **Tagging Experiments with Surf Smelt, *H. Pretiosus***  
Marking experiments to determine migrations and racial segregation of surf smelt stocks of Puget Sound.

Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

4625. Smith, R. T. **Further Studies of the Shrimp Fishery of Puget Sound**  
Life histories and biological statistics of the shrimp populations of Puget Sound with a view to designing regulations to rehabilitate the stocks.

Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

4626. Smith, R. T. **Marking Experiments with Puget Sound Bottom Fish**  
Tagging experiments to determine migrations, natural and fishing mortalities, and racial segregation of the bottom fish stocks of Puget Sound with particular reference to flounders.

Prof., Gen. Pub.

Washington State Dept. of Fisheries, Seattle

**CONSERVATION AND PROPAGATION****4627. Royal, L. A. Fish Foods**

Testing various fish foods on an experimental scale and on a practical operating scale to assess their value for feeding young salmon in hatcheries of the State of Washington.

Prof.

Washington State Dept. of Fisheries, Seattle

**4628. Royal, L. A. Measurement of Efficiency of Salmon Hatcheries of the State and of Stocking Policies**

Prof.

Washington State Dept. of Fisheries, Seattle

---

**VIII. HUMAN RESOURCES AND PROBLEMS****SOCIAL CONDITIONS****4629. Idaho State Department of Public Assistance. Consumption Habits of Marginal Families in Idaho**

Prof., Gen. Pub.

Boise, Idaho

**4630. Idaho State Department of Public Assistance. Living Costs to Families with Marginal Incomes in Idaho**

Prof., Gen. Pub.

Boise, Idaho

**SURVEYS: SOCIAL****4631. Opler, M. K. A Study of Modern American Indian Communities in the State of Oregon**

This research will involve comprehensive surveys of typical American Indian communities located on reservations in this state. Account will be taken of the pre-existing cultural backgrounds of the peoples under investigation, of their history, of the resulting contemporary society, and the social and economic factors at work in the modern community.

Prof.

Reed College, Portland, Oreg.

## **IX. COMMERCE AND INDUSTRY**

### **INDUSTRIALIZATION**

**4632. Schaller, G. S. Sources of Utilization of Ferrous Scrap**

The availability, price, and supply of scrap iron and scrap steel in this region. The development of imposing sources of electrical energy may lead to the development of a metal industry based upon such raw material.

Prof.

University of Washington, College of Engineering, Seattle

### **MARKETS AND MARKETING**

**4633. Terrill, R. P. Oregon's Interregional Balance of Payments**

A statistical analysis of Oregon's annual balance of payments.

Prof.

Reed College, Portland, Oreg.

---

## **X. GOVERNMENT**

### **B. ADMINISTRATION**

#### **FINANCE: INCOME**

##### **(A) REVENUE SYSTEMS**

**4634. Epstein, J. The Tax Structure of the State of Washington**

History and analyses of taxes and public finance in the State of Washington. Limited for the most part to the State, with only incidental reference to local units of government.

Gen. Pub.

University of Washington, Bureau of Governmental Research, Seattle

#### **FINANCE: INCOME**

##### **(C) SERVICE CHARGES**

**4635. Biesen, C. Financing Sewage Disposal Plants**

The problem of financing sewage disposal plants in Washington cities with a critical analysis of the several alternative methods of handling existing situations.

Prof.

University of Washington, Bureau of Governmental Research, Seattle

## **OBJECTIVES OF NORTHWEST REGIONAL COUNCIL**

- 1. To stimulate a greater public awareness of the basic problems of the Pacific Northwest.*
- 2. To make available AT ALL EDUCATIONAL LEVELS accurate and stimulating materials concerning the social, economic and governmental problems of the region.*
- 3. To provide the machinery for conference and consultation among the advisory, research, planning and educational agencies concerned with the orderly development of the Pacific Northwest.*
- 4. To foster coordinated research in the natural and human resource fields so that wasteful duplication may be avoided and new fields for constructive research may become more clearly defined.*
- 5. To act as a clearing house for the interchange of bibliographic and other technical data of regional significance.*
- 6. To make known the training required and opportunities available for career service in the various agencies of Federal, State and local government. To encourage the extension of sound public-service training facilities.*
- 7. To assist by means of publication and grants-in-aid specific research of a highly significant character and primarily regional in scope.*