

BIBLIOGRAPHY OF THE GEOLOGY AND MINERAL RESOURCES OF OREGON (FOURTH SUPPLEMENT)

January 1, 1956 to December 31, 1960



Compiled by
Miriam Roberts

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

1970

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
1069 State Office Building
Portland, Oregon 97201

BULLETIN 67

**Bibliography of the Geology and
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CONTENTS

	<u>Page</u>
Introduction	iii
Sources	1
Bibliography	3
Subject Index	47

BIBLIOGRAPHY of the GEOLOGY and MINERAL RESOURCES of OREGON

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Introduction

Bulletin 67 is the fourth supplement to the original "Bibliography of the Geology and Mineral Resources of Oregon" by Ray C. Treasher and Edwin T. Hodge, which was published in 1936 and is now out of print. The first supplement, compiled by John E. Allen and published as Bulletin 33, carried the bibliography through the year 1945. The second supplement, compiled by M. L. Steere and published as Bulletin 44, extended the bibliography through 1950. The third supplement, compiled by Margaret L. Steere and Lillian F. Owen, covered the material that was published during the five-year period from January 1951 through December 1955, and was issued as Bulletin 53. This, the fourth supplement, is a survey of publications which appeared from January 1956 through December 1960. A fifth supplement, covering the subsequent 10-year period, is planned.

Publications which were consulted in the compilation of the fourth supplement are listed on pages 1 and 2. This bibliography, as well as those published previously, includes theses, open-file reports, and other material which was not published but is available for inspection in libraries.

Gratitude is extended to everyone who assisted with the preparation of this bulletin, especially to librarians at the Oregon State Library, the University of Oregon, Oregon State University, Portland State University, and the Multnomah County Library, for their assistance in locating source material.

The first section of Bulletin 67 consists of an alphabetical listing of authors and the titles of their articles. The subject index which follows lists the names of the authors and refers by number to the particular articles involved.

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Subject Index

(The numbers refer to entries in the bibliography)

AEROMAGNETIC STUDIES

Western Oregon: Bromery

AGATE (see GEM STONES)

AGATE BEACH FORMATION

Foraminifera: Stewart

AGGREGATE

Annual review: Mason 1, 4, 6, 9, 11
Active mines and mills: Oreg. Dept. Geol. 25
Expanded shale industry: Oreg. Dept. Geol. 5
Pumice firm on solid base: Rock Products 2

ALDRICH MOUNTAINS

Geology: Thayer 5, 6, 7
Petrographic studies, graywackes: Thayer 8

ALDRICH MOUNTAIN QUADRANGLE

Geology: Thayer 1, 6, 8

ALLUVIUM

Localities:
Spray quadrangle: Lindsley
Tualatin Valley: Hart 2
Umatilla River basin: Hogenson 1, 2

ALUMINA (see BAUXITE, CLAYS and SHALE)

ALUMINUM

Annual reviews: Mason 1, 6, 9
Industry: Baber 1-5; U.S. Bur. Mines 1, 3

ALVORD CREEK FORMATION

Localities:
Alvord Valley: Libbey 4

ALVORD LAKE THREE QUADRANGLE

Geology, northwest quarter: Johnson

ALVORD VALLEY

Borax lease: Mason 7
Boron deposits: Libbey 4

ANA RIVER

Geology: Conrad

ANALYSES

Methods: Hoagland
Chemical analyses:
Analytical laboratories: Hoagland
Chromite ores: Sullivan
Crump geyser: Oreg. Dept. Geol. 22
Zirconium: U.S. Bur. Mines 2
Geochemical investigations:
Igneous rocks: Nockolds
Spectrographic analyses:
Analytical laboratories: Hoagland
Cadmium: Oreg. Dept. Geol. 15
Chromite: Sullivan
Mercury: Town
Nickeliferous ores, Shamrock mine: Shelton
Uranium: Matthews 1

ANCIENT MAN (see ARCHAEOLOGY)

ANLAUF QUADRANGLE

Geology: Hoover

ANTHROPOLOGY (see ARCHAEOLOGY)

ANTICLINES (see FOLDING)

ANTIMONY

General: U.S. Bur. Mines 1
Mining history, Baker County: Wagner 6

APPLEGATE GROUP

Geology, Medford quadrangle: Wells
 Petrographic studies: Howell, P. W. 7
 Triassic age: Reeside

AQUIFERS (see GROUND WATER)

ARCHAEOLOGY

Artifacts:

Columbia River points, carvings:
 Osborne 1
 Cougar Mountain cave: Cowles
 Fort Rock cave sandals: Hester
 Obsidian carvings: Dake 5
 Pottery: Osborne 2
 Wasco County kitchen midden: Cressman 2

Bibliography:

General: Oregon Hist. Soc.
 Klamath Basin: Swartz

Cultures:

Coastal: Osborne 3
 Hunting and gathering economy: Osborne 3
 Marsh and river situations: Osborne 3

Localities:

Chief Joseph Dam: Osborne 1
 Columbia River: Allen, E.K.; Osborne
 1, 2; Strong, E.; Cressman 2
 Chief Joseph Dam: Osborne 1
 Cougar Mountain cave: Cowles
 Fort Rock cave: Hester
 Hobo cave: Osborne 2
 Kalapuya area: Osborne 3
 Kawumkan Springs midden: Cressman 1
 Klamath Basin: Cressman 1; Osborne 3;
 Swartz
 Link River rock dams: King
 McNary Dam: Osborne 1, 2
 Medicine Rock cave: Cressman 1
 Paisley cave: Hester
 Petroglyph Point: Cleghorn
 Plateau Kalapuya: Osborne 1
 Portland-Vancouver area: Osborne 1
 Sauvie Island: Osborne 1, 2
 Stockhoff basalt quarry: Bryan
 The Dalles: Cressman 2; Osborne 2
 Tule Lake: Cleghorn
 Wakemap site: Caldwell; Osborne 1, 2, 3

Radiocarbon measurements:

Five-mile Rapids: Barendsen
 Fort Rock cave: Hester
 Klamath prehistory: Cressman 1
 Paisley cave: Hester
 The Dalles midden: Crane

ARTIFACTS (see ARCHAEOLOGY)

ASBESTOS

Production: Baber 1; U.S. Bur. Mines 1

ASH (see VOLCANIC ASH)

ASH FLOWS (see WELDED TUFF)

ASTORIA FORMATION

Foraminifera: Stewart

Localities:

Cape Kiwanda: Laurence 2
 Centralia-Chehalis area, Wash.: Snively
 Corvallis to Depoe Bay: Bostwick

BAKER COUNTY

Analyses:

Erionite, a fibrous zeolite: Staples 2
 Magmatic and metasomatic rocks: Goodspeed 2
 Magnesian hornfels, Bald Mt. batholith:
 Taubeneck 2
 Zircon in rocks: Poldervaart 1

Geologic maps:

Cornucopia: Goodspeed 1
 Huntington quadrangle: Berry; Kennedy
 Olds Ferry quadrangle, part of: Spiller
 Rock units of northeastern Oregon: Wagner 5
 Sparta quadrangle: Greene
 Wallowa Mountains, southeastern part of:
 Wetherell

Geology:

Bald Mountain batholith:
 argillites in: Taubeneck 5
 emplacement of: Taubeneck 9
 geology: Taubeneck 1, 7
 magnesian hornfels in: Taubeneck 2
 zircons in: Taubeneck 3
 Cornucopia: Goodspeed 1, 2
 Cornucopia stock:
 emplacement of: Taubeneck 9
 intrusion of: Taubeneck 8
 Huntington quadrangle: Berry; Kennedy
 Layered intrusions: Poldervaart 2
 Olds Ferry quadrangle, part of: Spiller
 Rock units: Wagner 5
 Sparta quadrangle: Greene
 Tertiary volcanology, structure: Thayer 6
 Wallowa Mountains, southeastern part:
 Wetherell
 Willow Lake intrusion: Poldervaart 2

BAKER COUNTY, continued:

- Ground water:
 - Snake River basin: Newcomb 7
- Mineral industry:
 - Chemical Lime Co.: Lenhart 2; Libbey 1; Vervaeke
 - Haines Granite plant burns: Baker Record-Courier
 - Mining in Baker County 1861-1959: Wagner 6
 - National Industrial Products Corp: Libbey 1
 - Oregon Portland Cement Co.: Libbey 1
- Minerals and resources:
 - Erionite: Deffeyes
 - Gem stones: Schlegel
 - Limestone: Lenhart 2; Libbey 1; Wagner 4
 - Manganese: Appling 2
 - Perlite: Jaster
 - Uranium: Jarrard
- Mining history:
 - Gold and Oregon's settlement: Rand
 - British investment and Oregon mining: Spence
 - Mining, 1861-1959: Wagner 6
- Paleontology:
 - Plant microfossils, Columbia Plateau: Gray, J. 3

BAKER QUADRANGLE

- Permian stratigraphy: Natl. Research Council

BALD MOUNTAIN AREA

- Geology: Snook

BALD MOUNTAIN BATHOLITH

- Geology: Taubeneck 1, 2, 3, 5, 7, 9

BASALT

- Geomagnetism: Cox 1
- Petrology: Waters 2
- Rock unit, northeast Oregon: Wagner 5

BASEY FORMATION

- Geology: Dickinson 1

BASIN AND RANGE PROVINCE

- General: Baldwin 4; Jaeger
- Geology:
 - Alvord Lake Three quadrangle: Johnson

BASIN AND RANGE PROVINCE, continued:

- Geology, continued:
 - Beaty Butte Four quadrangle: Maloney
 - Cougar Mountain cave: Cowles
 - Faulting, Lake County: Donath 2
 - Fault scarps, Lake County: Trauger
 - Steens Mountain: Fryberger; Wilkerson
 - Structure: Donath 1
 - Volcanology and structure: Thayer 5, 6, 7
- Geomorphology: Oreg. Dept. Geol. 17
- Ground water:
 - Ana Springs: Brown, S. G. 5
 - Klamath River basin: Newcomb 5
- Pleistocene lakes: Brogan 1; Conrad; Trauger
- Radiocarbon dating: Broecker; Cressman 1
- Stratigraphy: Age of faulting, Lake County: Trauger
- Wisconsin glaciation: Dillon

BASTENDORF FORMATION

- Foraminifera: Stewart
- Guide book: Baldwin 5

BATES QUADRANGLE

- Geology:
 - Southeast quarter: Nelson, A. M.
 - Southwest quarter: Mobley

BATHOLITHS (see INTRUSIONS)

BAUXITE (see also ALUMINUM)

- General: Allen, V. T.; Miller, J. A.
- Analyses: Corcoran 2; Hartman, J.A. 1, 2
- Annual reviews: Mason 1, 6, 9
- Localities:
 - Anlauf and Drain quadrangles: Hoover
 - Garden Home: Oreg. Dept. Geol. 2
 - Salem Hills: Corcoran 2; Hartman, J.A. 2

BEACHES (see also SHORELINES)

- Black sands: Hunt
- Gem stones: Ransom
- Granite erratics: Howell, P. W. 6

BEATY BUTTE FOUR QUADRANGLE

- Geology, eastern part: Maloney

BEGG FORMATION

- Geology: Dickinson 1

BEND QUADRANGLE

Geologic map: Williams

BENTON COUNTY

Geology:
 Guide book: Bostwick
 Ground water:
 Willamette Valley, irrigation: Highsmith
 Mineral resources:
 Gem stones: Schlegel

BENTONITE

Annual reviews: Mason 6, 9, 11

BEULAH AREA

Geology: Bowen

BIBLIOGRAPHIES

Educational institutions: Am. Geol. Inst.
 Geologic studies: Schlicker 4
 Ground water: Newcomb 2
 Iron ore resources: Luttrell
 Nickel: Pratt
 Theses: Chronic, B.J.; Oregon Hist. Soc.;
 Schlicker, 3, 4; Turner
 Titanium: Lawthers
 Water quality: Westgarth
 Zirconium: Abshire 1, 2

BLACHLY QUADRANGLE

Geology: Baldwin 1

BLACK SANDS (see also BEACHES)

Beneficiation: Hunt
 Deposits:
 Chromite: Miller, J. A.
 Continental shelf: Trumbull
 Ilmenite: Miller, J. A.
 Titanium: Miller, J. A.
 History:
 Randolph: Bright
 Resources: Kauffman

BLAKELEY(?) FORMATION

Foraminifera: Stewart

BLUE MOUNTAINS

Archaeology: Bryan
 Fossil flora:
 Chlorophycean algae: Gray, J. 4
 Miocene microfossils: Gray, J. 3
 Miocene pollen floras: Gray, J. 1
 Geology:
 General: Baldwin 4
 Courtrock quadrangle: Napper
 Dale quadrangle: Dale
 Huntington quadrangle, NE $\frac{1}{4}$: Berry
 Huntington quadrangle, NW $\frac{1}{4}$: Kennedy
 Monument quadrangle, NW $\frac{1}{3}$: Jolly, J.H.
 Monument quadrangle, S $\frac{1}{3}$: Jolly, J.L.
 Ritter quadrangle: Thomas, G. M.
 Umatilla River basin: Hogenson 1, 2
 Volcanology and structure: Thayer 5, 6, 7
 Willow Creek-Cow Creek valley area: Wolff
 Geomorphology: Oreg. Dept. Geol. 17

SOHEMIA DISTRICT

Mining history: Nelson, Ray

BONE MOUNTAIN QUADRANGLE

Stratigraphy: Imlay 4

BORING LAVAS

Ground-water resources: Mundorff
 Localities:
 Clark County, Wash.: Mundorff
 Guide book: Wilkinson 5
 Oregon City: Baldwin 2
 Portland quadrangle: Trimble

BORON

Annual reviews: Mason 9
 Resources:
 Alvord Valley: Libbey 4; Mason 7
 General: U.S. Bur. Mines 1, 3
 Southern Oregon: Smith, W. C.

BRICK AND TILE (see CLAYS AND SHALE)

BRIDGE OF THE GODS

Indian legend: Lawrence, D. B. 2
 Landslide: Brogan 2; Lawrence, D. B. 2

BRISBOIS FORMATION

Geology: Dickinson 1

BROKEN TOP

Glaciers: Handewith 1

BUFFALO MINE

Mineralization: Pilcher

BUILDING STONE (see STONE)

BURIED FORESTS

Localities:

Cascade Rapids: Lawrence, D.B. 2

Mount Hood: Lawrence, D. B. 3

BURNS QUADRANGLE

Geology: Dickinson 1

CALCITE

Northern Wallowa Mountains: Smedes 1

CALDERAS

Ash flows: Smith, R. L.

CAMAS VALLEY QUADRANGLE

Geology:

Northeast quarter: Moore, J. F.

Southeast quarter: Harms

Southeast third: Peterson 1

CANYON CITY QUADRANGLE

Geology: Crowley

Petrographic studies, graywackes: Thayer 8

CANYONVILLE QUADRANGLE

Stratigraphy: Imlay 4

CARBON 14 DATING (see DATING, ABSOLUTE)

CARBON DIOXIDE

Annual production: Baber 1-5

Annual reviews: Mason 1, 9, 11

Sources: Soda-water springs: Wagner 7

CASCADE ANDESITE

Guide book: Wilkinson 5

CASCADE RANGE

(see HIGH CASCADES; WESTERN CASCADES)

CASCAN FORMATION

Localities:

Schoolie Flat area: Newcomb 1

CATLOW RIM

Geology: Johnson

CAVE JUNCTION QUADRANGLE

Stratigraphy: Imlay 4

CAVES

Lavacicle Cave: Brogan 5

CEMENT (see LIMESTONE)

CERAMIC MATERIALS

Localities:

Willamette Valley: Kelly 1

CHEMICAL ANALYSES (see ANALYSES, CHEMICAL)

CHICO FORMATION (see HORNBROOK FORMATION)

CHROMITE

Annual production: Baber 1-5; Wagner 2

Annual reviews: Mason 1,4,6,9; Oreg. Dept.

Geol. 3; U.S. Bur. Mines 1, 3

Beneficiation, black sands: Hunt

Chrome mine closes: Oreg. Dept. Geol. 9

Exploration: Chrome mining nearing end:

Dole 4

Ferrochrome plant study: Oreg. Dept. Geol. 8

Flotation: Sullivan

Geology: Lower Illinois River district: Ramp 2

Localities:

General: Libbey 2

Chrome Ridge: Ramp 1

Coos County: Walsted

John Day region: Hundhausen 2; Sullivan

Lower Illinois River area: Ramp 2

Sand, marine terraces: Kauffman

In serpentine: Thayer 4

Southwestern Oregon: Ramp 3

Willow Creek-Cow Creek valley area: Wolff

Production nears end: Dole 4

Purchase program:

Grants Pass depot: Thayer 4

Production 1951-1956: Wagner 2

CHROMITE, continued:

Purchase program, continued:
 Stockpile closes: Oreg. Dept. Geol. 11
 Reserves: U.S. Bur. Mines 3

CINDERS

Annual reviews: Mason 1
 Industrial uses: Mason 3

CINNABAR (see MERCURY)

CLACKAMAS COUNTY

Geology:
 Pleistocene flood deposits: Stauffer 1
 Road cut: Stauffer 2
 Scotts Mills: Gilchrist 2
 Tryon Creek canyon: Stauffer 2
 Western Cascades: Peck 2
 Willamette River, drainage changes:
 Baldwin 2
 Ground water:
 Willamette Valley irrigation: Highsmith
 Meteorites:
 Willamette meteorite: Lorge 3, 4
 Mineral resources:
 Limestone occurrences: Libbey 1;
 Mason 13
 Paleontology:
 Early Miocene floras: Wolfe 2

CLARNO AREA

Geology: Taylor
 Localities:
 Camp Hancock: Bragon 4

CLARNO FORMATION

Fossil flora:
 New genus of fungi: Scott 2
 Menispermaceae, evolution of: Scott 1
 Silicified plants: Arnold
 Localities:
 Bald Mountain area, Richmond quadrangle:
 Snook
 Clarno basin: Taylor, E. M.
 Courtrock quadrangle: Napper
 Guide book: Wilkinson 3, 4, 5
 Schoolie Flat area: Newcomb 1
 Spray quadrangle: Lindsley
 Umatilla River basin: Hogenson 2
 White Butte area, Mitchell quadrangle:
 Howard

CLATSOP COUNTY

General:
 History, legends, industries: Miller, E. G.
 Geology:
 Nehalem River basin, unpublished geologic
 map: Young 2
 Mineral resources:
 Gem stones: Schlegel
 Water resources:
 Nehalem River basin: Young 2

CLAYS AND SHALE

Annual production: Baber 1-5
 Annual reviews: Mason 1
 Occurrences:
 Clay basins: Kelly 2
 Willamette Valley: Kelly 1

CLOVER CREEK GREENSTONE

Localities:
 Elkhorn Mountains: Toubeneck 7
 Northern Walla Walla Mountains: Loudon;
 Smeders 1
 Stratigraphy:
 Permian: Natl. Research Council

COAL

Annual production: Baber 1-4
 Annual reviews: Mason 1, 4, 6
 Localities:
 General: Wier
 Centrolia-Chehalis district, Wash.: Snively
 Eden Ridge: Leshner; Mason 2
 Toledo-Castle Rock district, Wash.: Roberts
 Mining history:
 Baker County, 1861-1959: Wagner 6

COALEDO FORMATION

Guide book: Baldwin 5
 Foraminifera: Stewart

COASTAL AREA

Gem stones: Ransom
 Geomorphology: Oreg. Dept. Geol. 17

COAST RANGE

Fossil invertebrates: Raup; Stewart
 Geology:
 General: Baldwin 1, 4; Howell, P.W. 1

COAST RANGE, continued:

- Geology, continued:
 Anlauf quadrangle: Hoover
 Camas Valley quadrangle: Peterson 1
 Cape Kiwanda: Lawrence 2
 Clear Creek: Collins
 Coast Range escarpment: Hansen, F.D. 1
 Drain quadrangle: Hoover
 Humbug Mountain area: Koch, J. G.
 Landslide lakes: Baldwin 3
 Structural trends: Hintze 1
 Sutherland quadrangle: Westhusing
 Volsetz quadrangle: Schnoible
 Geomagnetism: Eocene basalt flows: Cox 1
 Geomorphology: Oreg. Dept. Geol. 17
 Oil and gas exploration: Buddenhagen;
 Hansen, F. D. 2
 Stratigraphy:
 Hansen, F.D. 1; Henriksen; Stewart
 Structure: Hansen, F. D. 1
 Surface water:
 Floods of January 1953: Rontz
 Nehalem River basin: Young 2
 Trask River basin: Young 3
 Umpqua River basin: Oreg. State Water
 Res. Bd. 1

COBALT

- Deposits:
 Quartzburg district, Grant County: Vhay
 History, Standard mine: Wagner 1
 Industry: Oreg. Dept. Geol. 25

COBURG HILLS

- Marcola quadrangle: Bristow

COFFEE CREEK FORMATION

- Fossil flora: Mamay
 Localities:
 Central Oregon: Ogren
 Grindstone-Twelvemile Creeks area:
 Mamay

COLEBROOK SCHIST

- Petrographic studies: Howell, P. W. 7

COLESTIN FORMATION

- Western Cascades: Peck 2

COLUMBIA COUNTY

- Geology:
 Nehalem River basin, unpublished geologic
 maps: Young 2
 Mineral resources:
 Gemstone localities:
 Agates, Clear Creek: Collins
 Zeolite, Goble: Mineralogist 6
 Paleontology:
 Sunset Highway locality: Steere 2
 Vertebrates: Anacanthin fishes: David
 Water resources:
 Nehalem River basin: Young 2

COLUMBIA PLATEAU

- Fossil plants:
 Green algae: Gray, J. 2
 Microfossils: Gray, J. 3
 Miocene floras: Choney
 Geology:
 General: Hubbard
 Volcanology and structure: Thayer 5, 6, 7
 Mineral resources: Hubbard

COLUMBIA RIVER

(also see COLUMBIA RIVER GORGE)

- Archaeology:
 Chief Joseph Dam: Osborne 1
 McNary Dam: Osborne 1
 Plateau Kalapuya: Osborne 1
 Portland-Vancouver area: Osborne 1
 Stone Age: Strong, E.
 Wakemop site: Caldwell; Osborne 1;
 Strong, W. D.
 Channeled scabland: Bretz
 Geology, McNary Dam: Monahan
 Stratigraphy: Ringold Formation: Newcomb 3

COLUMBIA RIVER BASALT (see also BASALT)

- Correlations with:
 Portland Hills Silt: Howell, P. W. 5
 Fossil flora: Gray, J. 2
 Geology:
 Direction of flow: Waters 2
 Bend quadrangle and High Cascades: Williams
 Ilee area: Dickinson 1
 Volcanology and structure: Thayer 5, 6, 7
 Geomagnetism: Cox 1; Runcorn
 Ground-water resources:
 General: Newcomb 6
 Subsurface dams: Newcomb 8
 Tualatin Valley: Hart 2

COLUMBIA RIVER BASALT, continued:

- Ground-water resources, continued:
 Umatilla River basin: Hogenson 2
- Localities:
 Aldrich-Mountain quadrangle: Thayer 1
 Aldrich-Strawberry Mountain range:
 Thayer 1
 Central Oregon: Ogren
 Centrolia-Chehalis district, Wash.: Snively
 Courtrock quadrangle: Napper
 Eastern Oregon: Stearns 1
 Guide book: Wilkinson 3, 5
 Imnaho region: Waters 3
 Izee quadrangle: Wallace
 John Day quadrangle: Thayer 3
 John Day region: Waters 3
 Logdell quadrangle: Wallace
 Mount Vernon quadrangle: Thayer 2
 Northern Wallowa Mountains: Smedes 1
 Oregon City: Baldwin 2
 Portland quadrangle: Trimble
 Ritter quadrangle: Thomas, G. M.
 Snake River canyon: Ross; Savage
 Spray quadrangle: Lindsley
 Umatilla River basin: Hogenson 1, 2
 Petrographic studies: Campbell, C. D.;
 Waters 3

COLUMBIA RIVER GORGE

- Bridge of the Gods: Brogan, 2; Lawrence,
 D. B. 2
 Field trip: Wilkinson 5
 Geology: Howell, P. W. 5

CONTINENTAL DRIFT

- Pacific Basin: Menard
 Rock magnetism: Runcorn

CONTINENTAL SHELF

- Geology: Montgomery; Trumbull, J.
 Mineral resources: Trumbull, J.

COOS BAY QUADRANGLE

- Stratigraphy: Imloy 4

COOS CONGLOMERATE

- Fossil invertebrates (Echinoids): Durham

COOS COUNTY

- Absolute dating:
 Lamont natural radiocarbon measurements:
 Olson
- Ground water:
 Resources of sand dunes: Brown, S. G. 2
- Mineral industry:
 Beneficiation of beach sands: Hunt
 Smelting of chromite concentrates: Walsted
- Mineral resources:
 Eden Ridge coal deposit: Mason 2
 Gem stones: Schlegel
 Limestone occurrences: Peterson 2
 Mangonese deposits: Appling
 Terrace gravels: Pacific Builder and
 Engineer
- Mining history:
 British investment: Spence
 Randolph: ghost gold town: Bright
- Paleontology:
 Cenozoic foraminifera: Stewart
 Early Cretaceous ammonites: Imloy 1
- Stratigraphy:
 Cenozoic foraminifera: Stewart
 Jurassic and Cretaceous formations, relations
 of: Imloy 3

COPPER

- Annual production: Bober 1-5; U.S. Bur. Mines 3
 Annual reviews: Mason 1, 9, 11
 Industry: Oreg. Dept. Geol. 25
- Localities:
 Northeastern Oregon: Wagner 5, 6
 Quartzburg district, Grant County: Vhay
 Shamrock mine: Shelton
 Standard mine: Wagner 1
 Tokilmo-Waldo mining district: Hundhausen 1
- Mining history:
 Baker County, 1861-1959: Wagner 6

COPPEROPOLIS MINE

- Copper-cobalt deposits: Vhay

COQUILLE AREA

- Carbon-14 dating: Olson
 Floods of January 1953: Rantz

COQUILLE FORMATION

- Localities:
 Cape Kiwando: Laurence 2
 Eugene-Coos Bay via Reedsport: Baldwin 5

CORNUCOPIA MINING DISTRICT

Geology: Goodspeed 1
 Relict dikes: Raddick
 Textural features of rocks: Goodspeed 2

CORNUCOPIA QUADRANGLE

Geology: Wetherell

CORVALLIS QUADRANGLE

Guide book: Bastwick

COUGAR DAM

Rock mechanics: Snyder 1

COUGAR PEAK AREA

Geology: Haddock

COURT ROCK QUADRANGLE

Geology:
 Northern two-thirds: Napper
 Southern third: Cummings
 Volcanology and structure: Thayer 6

COVE PALISADES STATE PARK

Geology: Wilbur
 Map: Gilchrist 1

COW VALLEY

Geology: Wolff
 Ground water: Oregon State Engineer 2

COWLITZ FORMATION

Localities:
 Rocky Point quarry: Steere 2
 Toledo-Castle Rock district, Wash.:
 Roberts
 Stratigraphy: Henriksen

COYOTE BUTTE FORMATION

Fossil flora: Mamay
 Localities:
 Grindstone-Twelve-mile Creek area: Mamay
 Stratigraphy:
 Paleozoic rocks: Ogren
 Permian: Natl. Research Council

CRATER LAKE

Ash flows: Smith
 Glowing avalanche deposits: Hoy 1
 Pumice deposits: Hoy 1
 Scoria bombs: Hoy 1

CRETACEOUS

General:
 Guide book, Prineville to John Day:
 Wilkinson 3
 Marine conglomerates: Taubeneck 6
 Pacific Coast Upper Cretaceous: Anderson
 Correlations: Imlay 4; Popenoe, W.P. 2
 Formations:
 Chico Group; Hornbrook Formation:
 Peck 1; Steere 3
 Fossil invertebrates:
 Ammonites: Imlay 1, 5; Jones, D.L. 1;
 Peckard 1
 Endemic sequences: Popenoe, W. P. 1
 Molluscs: Imlay 2
 Pelecypods: Jones, D. L. 2
 Upper Cretaceous: Anderson; Howard
 Geology:
 Camas Valley quadrangle: Peterson 1
 Humbug Mountain: Koch, J. G.
 Northern Wollawa Mountains: Smedes 1, 2
 White Butte area, Mitchell quadrangle:
 Howard

CROOK COUNTY

Geologic maps, unpublished:
 Paleozoic rocks: Ogren
 Jim Robertson ranch area: Waisgerber
 Suplee area: Vigrass
 Geology:
 Jim Robertson ranch: Waisgerber
 Suplee area: Vigrass
 Mineral resources:
 Gem stones: Schlegel
 Limestone: Libbey 1; Wagner 4
 Uranium: Peterson 3; Schofer
 Oil and gas exploration:
 Sedimentary basins: Corcoran 1
 Paleontology:
 Fossil flora:
 Spotted Ridge Formation: Mamay
 Fossil invertebrates:
 Pelecypods, genus Pterotrigonia: Jones 2
 Permian ammonoids: Miller, A. K.
 Stratigraphy:
 Paleozoic rocks: Ogren
 Jim Robertson ranch area: Waisgerber
 Triassic formations: Reeside

CROOKED RIVER

Fossil vertebrates:
 Mascoll fauna: Downs
 Geology: Wilbur
 Geologic map: Gilchrist, F. G. 1

CRUMP GEYSER

History of activity: Oreg. Dept. Geol. 22, 23

CURRY COUNTY

Aeromagnetic maps, published:
 Kerby and Grants Pass quadrangles: Balsley
 Geology:
 Humboldt Mountain area: Koch, J. G.
 Meteorite:
 Port Orford meteorite: Lange 4
 Mineral industry:
 Beneficiation of beach sands: Hunt
 Mineral resources:
 Gem stones: Schlegel
 Limestone: Peterson 2
 Manganese: Appling 1
 Priceite: Mineralogist 4
 Paleontology:
 Early Cretaceous ammonites: Imlay 5
 Stratigraphy:
 Jurassic and Cretaceous formations,
 relations of: Imlay 4
 Surface water:
 Rogue River basin: Oregon State Water
 Res. Board 3

DALE QUADRANGLE

Geology: Dole

DAM SITES

Archaeology:
 Big Bend project: Newton
 Flood control recommendations, Snake River:
 Oreg. State Water Res. Bd. 2
 Geology:
 John Day basin: Holdredge
 McNary Dam: Monahan
 Nehalem River basin: Young 2
 Trask River basin: Young 3
 Localities:
 Klamothe River: Newman
 Link River: King
 McNary Dam: Monahan

DAM SITES, Localities, continued:

Nehalem River: Young 2
 The Dalles Dam: Allen, E. K.
 Trask River: Young 3

DANFORTH FORMATION

Localities:
 Beatty Butte: Four quadrangle: Maloney
 Petrographic studies:
 Campbell, I.; Maloney

DATING, ABSOLUTE:

Radiocarbon dating localities:
 Bandon area: Rubin 2
 Bridge of the Gods: Bragan 2; Lawrence, D.B. 2
 Coquille area: Olson
 Crater Lake: Rubin, 2
 Five-Mile Rapids: Barendsen; Friedman
 Fort Rock cave: Briggs; Hester
 Lake Bonneville: Braecker
 Lake Lahontan: Braecker
 Mount Hood: Lawrence, D. B. 3; Rubin 2
 Neskowin area: Rubin 1
 Nye Beach - Newport area: Rubin 2
 Paisley Cave: Hester
 Paisley Five Mile Point Caves: Friedman
 Port Orford: Heusser
 The Dalles area: Crane; Barendsen
 New method using obsidian: Friedman

DAYS CREEK FORMATION

Correlations: Imlay 4

DAYS CREEK QUADRANGLE

Stratigraphy: Imlay 4

DAYVILLE QUADRANGLE

Geology: Dickinson 1
 Paleozoic rocks: Ogren

DESCHUTES COUNTY

Geologic map, published:
 Bend quadrangle and central portion High
 Cascade Mountains: Williams
 Geology:
 Lavacicle Cove: Brogan 5
 Mineral resources:
 Gem stones: Schlegel
 Lightweight aggregate from pumice: Rock
 Products 2

DESCHUTES-UMATILLA PLATEAU

Geology: Baldwin 4
 Geomorphology: Oreg. Dept. Geol. 17

DEUTERIC ALTERATION

Picture Gorge Basalt: Lindsley

DIATOMITE (see also AGGREGATE)

Annual production: Baber 1-5
 Annual reviews: Moson 1, 6, 11
 Localities:
 Drinking Water Pass: Gray, W. L.
 Northeastern Oregon: Wagner 4
 Richland Valley: Stearns 1

DIATREMES

Locality:
 Fort Rock: Howell, P. W. 8

DIKES (see INTRUSIONS)

DILLER FORMATION

Geology: Harms

DOTHAN FORMATION

Correlations: Imlay 4

DOUGLAS COUNTY

Geologic maps, published:
 Medford quadrangle: Wells
 Siuslaw River area: Baldwin 1
 Geology:
 Antioch quadrangle: Hoover
 Camas Valley quadrangle: Harms; Moore,
 J. F.; Peterson 1
 Coast Range escarpment: Hansen 1
 Drain quadrangle: Hoover

DOUGLAS COUNTY Geology, continued:

Glide quadrangle: Patterson
 Medford quadrangle: Wells
 Sutherlin quadrangle: Hampton 1; Westhusing
 Tyee quadrangle: Hampton 1
 Western Cascades: Peck 2
 Mineral resources:
 Ferronickel production: Bogert
 Gem stones: Schlegel
 Gold placer mining: Romp 4
 Limestone: Libbey 1; Peterson 2
 Manganese: Appling 1
 Nickel: Dake 4; David; Mallard
 Silica, Quartz Mountain: Romp 5
 Paleontology:
 Early Cretaceous ammonites: Imlay 5
 Stratigraphy:
 Coast Range escarpment: Hansen 1
 Jurassic and Cretaceous formations: Imlay 4
 Upper Cretaceous rocks: Peck 1
 Surface water:
 Rogue River basin: Oreg. State Water Res.
 Bd. 3
 Umpqua River basin: Oreg. State Water Res.
 Bd. 1

DRAIN QUADRANGLE

Geology: Hoover

DREWSEY FORMATION

Geology, Drinking Water Pass: Gray, W. L.

DREWSEY QUADRANGLE

Geology, Drinking Water Pass: Gray, W. L.

DRINKING WATER PASS

Geology: Gray, W. L.

DRY ICE

Carbon dioxide: Wagner 7

DUNES (see SAND DUNES)

DURKEE AREA

Erionite: Staples 2

DUTCHMAN BUTTE QUADRANGLE

Stratigraphy: Imlay 4

EAGLE CAP PRIMITIVE AND WILD AREA

Geology, Wallowa Mountains: Smedes 1, 2

EAGLE CAP QUADRANGLE

Geology: Wetherell

EAGLE CREEK FORMATION

Guide book: Wilkinson 5

EARTH, INTERIOR

Mantle: Menard

EARTHQUAKES (see also SEISMIC STUDIES)

Submarine: Menard; Tacher

EAST PACIFIC RISE

General: Menard

EDEN RIDGE COAL FIELD (see COAL)

ELK RIDGE ARGILLITE

Stratigraphy: Natl. Research Council (Permian)

ELKHORN MOUNTAINS

Geology: Toubeneck 1,2,3,5,7

Locality:

Bold Mountain batholith: Toubeneck 1-3

Petrographic study:

Argillites: Toubeneck 5

ELKHORN RIDGE ARGILLITE

Localities:

Bold Mountain batholith: Toubeneck 1

Ritter quadrangle: Thomas, G. M.

Willow Lake intrusion: Toubeneck 7

ELK RIVER BEDS

Foraminifera: Stewart

EMPIRE FORMATION

Fossil invertebrates:

Foraminifera: Stewart

Mollusca: Trumbull, E. J.

Localities: Baldwin 5

ENGINEERING GEOLOGY

(see DAM SITES; LANDSLIDES)

EOCENE

Fossil flora:

General: Axelrod 3

Bridge Creek flora: Dorf

Clarno Formation ferns: Pobst

Hansen coal mine floras: Brown, R. W. 1

Menispermaceae evolution: Scott 1

Sunset Highway area: Steere 2

Fossil invertebrates:

Cephalopods: Kummel

Foraminifera: Stewart

Pelecypods: Steere 2; Vokes

Fossil vertebrates:

Rocky Point quarry: Steere 2

Geomagnetism:

Siletz River Volcanics: Cox 1

Spray quadrangle: Lindsley

Localities:

Anlauf quadrangle: Hoover

Camas Valley quadrangle: Harns; Moore, J. F.;
Peterson 1

Drain quadrangle: Hoover

Rocky Point quarry: Steere 2

Salem-Dallas area: Steere 5

Spray quadrangle: Lindsley

Sunset Highway area: Steere 2

Oil and gas exploration: Newell

Stratigraphy: Henriksen

ERIONITE

Occurrence and structure: Staples 3

X-ray study: Deffeyes; Staples 2

ERRATICS

Channeled scabland: Bretz

Kyanite: Brogan 3

Localities:

Beverly Beach: Howell, P. W. 6

Lake Oswego: Stauffer 1

ESTUARIES

General: Cooper, W. S.

EUGENE AREA

Formations:

Eugene Formation: Steere 4

Fisher Formation: Steere 4

Spencer Formation: Steere 4

Fossil localities: Steere 4

EUGENE FORMATION

Localities:

Guide book: Baldwin 5; Wilkinson 2
 Eugene area: Steere 4
 Salem-Dallas area: Steere 5
 Solem Hills: Corcoran 2

Quadrangles:

Eugene: Kleck
 Leaburg: Schlicker 2
 Lebanon: Allison
 Lowell: Schlicker 2
 Marcola: Schlicker 2

EUGENE QUADRANGLE

Geology: Kleck

EVANS, DR. JOHN

Oregon Territory exploration: Longe 2,5,6

EXPANDED SHALE (see also: AGGREGATE)

Annual reviews: Mason 1, 4

FAULTS AND FAULTING

Aquifers in Columbia River Basalt: Newcomb 6

Circumpacific orogeny: St. Amand

Dam construction: Snyder 1

Fault-block basin:

Summer Lake: Brown 5; Conrad

Localities:

Aldrich Mountain: Thayer 1; Wilkinson 4
 Alvord Lake Three quadrangle: Johnson, G.D.
 Beaty Butte Four quadrangle: Moloney
 Cascade uplift: Hintze 1
 Centralia-Chehalis district, Wash.: Snavely
 Chrome Ridge area: Romp 1
 Coast Range anticlinorium: Hintze 1
 Cougar Peak volcanic area: Haddock
 Drinking Water Pass: Gray, W. L.
 Glide quadrangle: Patterson
 Gordo escarpment: Tocher
 Izee quadrangle: Wallace
 John Day area: Thayer 3; Wilkinson 4
 Klomoth River basin: Newcomb 5
 Lake County (central): Donath 2
 Lake County: Trauger; Peterson 5
 Lakeview uranium area: Peterson 4
 Logdell quadrangle: Wallace
 Mendocino escarpment: Tocher
 Mendocino fracture zone: Tocher

FAULTS AND FAULTING, Localities, continued:

Offshore: Tocher

Quartzburg district, Grant County: Vhay

Southwestern Washington: Henriksen

Spray quadrangle: Lindsley

Steens Mountain: Fryberger; Wilkerson

Summer Lake area: Donath 1

Wallowa Mountains: Smedes 1

Wornar Valley: Peterson 5

White Butte area, Mitchell quadrangle:
 Howard

Willamette Valley: Moody

Winter Ridge: Trauger

Mechanics of faulting: Benioff

Subsurface clams: Newcomb 8

Thrust faults: Smedes 1, 2

Volcanology and structure: Thayer 5, 6, 7

FERN RIDGE TUFFS

Snow Peak quadrangle: Smith, R. I.

FERROALLOYS (See also: CHROMITE, NICKEL)

Annual reviews: Bober 3,4,5; U.S. Bur. Mines
 1, 3

Ferrochrome: Hunt; Sullivan

Ferrochrome-silicon: Hundhausen 2; Walsted

Smelting procedure: Walsted

FERRUGINOUS BAUXITE (see BAUXITE)

FIRE ASSAY

Analytical laboratories: Haagland

FISHER FORMATION

Fossil plants: Patterson; Steere 4

Localities:

Anlauf-Drain quadrangles: Hoover

Eugene area: Baldwin 5; Steere 4

Quadrangles:

Glide quadrangle: Patterson

Leaburg quadrangle: Schlicker 2

Lowell quadrangle: Schlicker 2

Marcola quadrangle: Schlicker 2

FLORENCE AREA

Ground water: Hampton 2

FLUVIATILE DEPOSITS

Northeastern Oregon: Wagner 5
Radiocarbon dating: Olson

FOLDING

Anticlines:
Lakeview uranium area: Peterson 4
Oakland anticlines, Glide quadrangle:
Patterson
Localities:
Centralia-Chehalis district, Wash.: Snively
Chrome Ridge area: Ramp 1
Drinking Water Pass: Gray, W. L.
Izee quadrangle: Wallace
Logdell quadrangle: Wallace
Paleozoic rocks, central Oregon: Ogren
Southwestern Washington: Henriksen;
Snively
Spray quadrangle: Lindsley
Wallowa Mountains: Smedes 2
White Butte area, Mitchell quadrangle:
Howard
Synclines:
Foil Mountain syncline: Wilkinson 4
Volcanology and structure: Thayer 5, 6, 7

FOLEY RIDGE

Geology: Howell, P. W. 4

FORMATIONS (see GEOLOGIC FORMATIONS)

FORT ROCK AREA

Geology: Howell, P. W. 8; Trauger

FORT ROCK CAVE

Fiber sandals, radiocarbon dating: Briggs

FOSSIL INVERTEBRATES

General:
Fresh water: Conrad
Faunal assemblages:
Cretaceous: Anderson; Peck 1; Howard;
Imlay 1, 5; Jones, D.L. 2;
Popenoe, W. P. 1
Eocene: Harms; Steere 5
Oligocene: Steere 5

FOSSIL INVERTEBRATES, Continued:

Faunal assemblages, continued:
Permian: Miller, A. K.
Pleistocene: Valentine
Pliocene: Durham; Gray, W. L.; Brattstrom
Triassic: Squires

Fossils described:
Ammonites: Anderson; Imlay 1
Brachiopods, Permian: Cooper, G. A.
Turtle: Brattstrom

Localities:
Comas Valley quadrangle: Harms; Peterson 1
Central Oregon: Ogren
Coast Range: Cox 1
Cowlitz River-Willapa Hills area, Wash.:
Henriksen
Crooked River: Jones, D. L. 2
Drinking Water Pass: Gray, W. L.
Eugene area: Steere 4
Fort Rock area: Trauger
Glide quadrangle: Patterson
Grove Creek: Jones, D. L. 1, 2
Izee area: Dickinson
Klamath River basin: Newcomb 4
Mitchell area: Packard 1
Mount Helba: Vokes
Rome area: Brattstrom
Salem-Dallas area: Steere 5
Seamounts: Enbysk
Southwest Oregon: Imlay 4
Summer Lake: Conrad; Smedes 1; Trauger
Sunset Highway area: Steere 2
Waldport: Jones, R. W.
Wallowa Mountains: Smedes 1
White Butte area: Howard

Phyla and classes:
Ammonites: Howard; Imlay 4, 5; Miller,
A.K.; Packard 1; Popenoe, W.P. 1;
Smedes 1
Brachiopods: Cox 1; Ogren
Bryozoans: Ogren
Corals: Ogren; Squires
Crabs: Howard
Crinoids: Ogren; Smedes 1
Echinoids: Durham; Howard; Imlay 4;
Pitkey; Raup
Foraminifera: Cox 1; Henriksen; Howard;
Imlay 4; Jones, R. W.; Patterson;
Popenoe, W.P. 2; Snively; Stewart
Fusulinids: Ogren
Mollusca: Cox 1; Imlay 2, 5; Jones, D.L. 2;
Kummel; Packard 1, 2; Popenoe, W. P. 2;
Taylor, D.W.; Valentine; Vokes
Ostracods: Ogren

FOSSIL PLANTS

General:

- Age-generic change: Wolfe 4
- Climatic changes: Dorf
- Columbia Plateau Miocene: Gray, J., 3
- Coniferous forest development: Wolfe 1
- Early Miocene floras: Wolfe 2
- Leaf-form and structural analysis: Wolfe 4
- Paleobotany, Western Cascades: Wolfe 3
- Wisconsin climate: Dillon

Formations:

- Clarno Formation: Howard; Pabst; Scott 2
- Little Butte Volcanic Series: Wolfe 3
- Moscill Formation: Gray, J., 4
- Mehama Formation: Eubanks
- Picture Gorge Basalt: Lindsley
- Rhododendron Formation: Wolfe 3
- Spotted Ridge Formation: Momoy

Fossil floras:

- Alvord Creek: Axelrod 1; Wolfe 4
- Blue Mountains: Wolfe 4
- Bridge Creek: Brown, R.W. 3; Dorf; Wolfe 4
- Callawash: Wolfe 1, 4
- Clarno: Arnold; Axelrod 3; Bones; Wolfe 4
- Comstock: Axelrod 3; Wolfe 4
- Crooked River: Brown, R. W. 3
- Dalles: Wolfe 4
- Eagle Creek: Wolfe 4
- Faraday: Wolfe 4
- Fossil: Brown, R. W. 3
- Goshen: Axelrod 3; Wolfe 4
- Hansen coal mine: Brown, R. W. 1
- Kennedy ranch: Brown, R. W. 3
- Knox ranch: Brown, R. W. 3
- Lyons: Wolfe 4
- Moscill: Axelrod 3; Choney; Gray, J. 4; Wolfe 1, 4
- Mehama: Wolfe 4
- Miocene-Pliocene: Axelrod 1
- Rujada: Lakhonpal; Wolfe 4
- Spotted Ridge: Momoy
- Stinking Water: Wolfe 4
- Succor Creek: Wolfe 4
- Tertiary (late): Axelrod 2
- Trout Creek: Wolfe 4
- Troutdale: Wolfe 4
- Twickerham ranch: Brown, R. W. 3
- Willomette: Wolfe 4
- Vernonia: Wolfe 4

Fossil plants described:

- Algae, fresh-water: Gray, J. 4
- Algae, Miocene green: Gray, J. 3
- Angiospermous floras: Lakhonpal; Scott 1; Wolfe 4

Fossil plants described, continued:

- Calamites: Momoy
- Conifers: Lakhonpal
- Cryptocarpus, new genus of fungi: Scott, R.A. 2
- Diatoms: Okuno
- Dicranophyllum: Momoy
- Fernlike plants: Momoy
- Ferns: Pabst
- Fungi: Scott 2
- Phyllothea: Momoy
- Pollen: Gray, J. 1, 2
- Tribe Tinosporaceae, evolution of: Scott 1

Localities:

- Clarno area: Bones
- Cougar Peak volcanic area: Haddock
- Eugene area: Steere 4
- Glide quadrangle: Patterson
- Grindstone-Twelve-mile Creek area: Momoy
- Lakeview uranium area: Peterson 4
- Mitchell quadrangle: Pabst
- Paulina area: Momoy
- Snow Peak quadrangle: Smith, R. I.
- Southwestern Oregon: Imlay 4
- Spray quadrangle: Lindsley
- Sunset Highway area: 2
- Thomas Creek area: Eubanks
- Western Cascades: Peck 2
- Wheeler County: Scott 2
- White Butte area: Howard

FOSSIL VERTEBRATES

General:

- Intercommunity relationships: Shotwell 2
- Intercontinental faunal relationships: Shotwell 1
- Systematic descriptions: Shotwell 1

Fossils:

- Cretaceous (Ichthyosaur): Howard
- Hemphillian assemblage: Shotwell 1, 2
- Juntura (Clarendonian): Russell
- Moscill: Downs

Fossils described:

- Brontotheres: Bragan 4
- Fish: David
- Leporidae (rabbits and hares): Dawson
- Species of Nimravus (Carnivora, Felidae): Todley

Localities:

- Arlington: Shotwell 2
- Beulah area: Bowen
- Brownlee Dam: Stearns 1
- Cougar Peak volcanic area: Haddock
- Fossil: Brown, R. W. 3
- John Day area: Tooley
- Klamath River basin: Newcomb 4
- Lafayette: McMinnville News-Register

FOSSIL VERTEBRATES, Localities: continued:

Lakeview uranium area: Peterson 4
 McKay Reservoir: Shotwell 1
 Spray quadrangle: Lindsley
 Tualatin Mountains: Howell, P. W. 3
 Umatilla County localities: Shotwell 2
 White Butte area: Howard

GABBRO

Translation gliding in plagioclase: Sen

GALICE FORMATION

Correlations: Imloy 4
 Fossil invertebrates: Imloy 2

GEM STONES

General: Dake 2; Schlegel; U.S. Bur. Mines 3
 Localities:
 Field guide: Dake 1
 Central Oregon: Hafner; Mineralogist 1
 Jackson County: Dysart
 Oregon coast: Ransom
 Production statistics: Bober 2, 4
 Agate:
 Agate, celebrated: Dake 3
 Agates, outstanding: Birdsall
 Localities: Collins; Dake 8; DeVoe;
 Gilchrist, H.; Ransom
 Origin of: Allen, J. E.
 Fire opal: Hart Mountain mine: Dake 9
 Garnet: Mineralogist 8
 Josephinite (also see oregonite):
 Mineralogist 7
 Obsidian: Dake 5, 6
 Oregonite (new name): Ramdohr
 Rhodonite: Mineralogist 2
 Thunder eggs:
 General: Bober 2; Mineralogist 3
 Cutting of: Dake 2
 Localities: Bober 2; Brown, R.W. 2;
 Dake 7
 Origin of plantlike features: Brown, R.W. 2
 Tourmaline: Vhay
 Zeolites: Dake 10
 Zircons: Larsen

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(see Individual Geologic Names)

GEOLOGIC MAPS, PUBLISHED

Field guidebook: Wilkinson 1
 Index to mapping: Oreg. Dept. Geol. 21
 Mining areas: Lakeview uranium area: Peterson 4
 Regional:
 Central Oregon field trip: Gilchrist, F.G. 1
 Oregon, general: Hintze 2
 Southwestern Oregon: Peck 1
 Southwestern Washington: Henriksen
 Quadrangles and areas:
 Aldrich Mountain quadrangle: Thayer 1
 Bend quadrangle: Williams
 Corvallis to Depoe Bay: Baldwin 5
 Corvallis to Prineville: Wilkinson 2
 Elkhorn Mountains: Bald Mountain batholith;
 Taubeneck 1
 Eugene to Coos Bay: Baldwin 5
 High Cascades, central portion: Williams
 Izee quadrangle: Wallace
 John Day quadrangle: Thayer 3
 John Day to Bear Valley: Wilkinson 4
 Lebanon quadrangle: Allison
 Leggett quadrangle: Wallace
 Medford quadrangle: Wells
 Mount Vernon quadrangle: Thayer 2
 Picture Gorge to Portland: Wilkinson 5
 Portland: Griffin, W. C.; Trimble
 Prineville to John Day: Wilkinson 3
 Siuslaw River: Baldwin 1
 Tokima-Walda mining district: Hundhausen 1
 Vancouver, Wash.: Griffin, W. C.
 Warner Valley (Crump geyser): Peterson 5

GEOLOGIC MAPS, UNPUBLISHED

Open-file reports:
 Black Butte mine: Waters 1
 Clark County, Wash.: Mundorff
 Coos Bay sand-dune area: Brown 2
 Copper-cobalt deposits, Quartzburg district:
 Vhay
 Klamath River basin: Newcomb 5
 Nehalem River basin: Young 2
 Tualatin Valley: Hart 2
 Umatilla River basin: Hagenson 2
 Quadrangles and areas:
 Alvord Lake Three quadrangle, NW $\frac{1}{4}$: Johnson
 Bates quadrangle, SE $\frac{1}{4}$: Nelson, A.M.
 Bates quadrangle, SW $\frac{1}{4}$: Mabley
 Beaty Butte Four quadrangle: Maloney
 Beulah area: Bowen
 Buffalo mine, Grant County: Pilcher

GEOLOGIC MAPS, UNPUBLISHED

- Quadrangles and areas, continued:
 Burns quadrangle: Dickinson 1
 Comas Volley quadrangle, SE $\frac{1}{4}$: Harms
 Comas Volley quadrangle, SE $\frac{1}{3}$: Peterson 1
 Comas Volley quadrangle, NE $\frac{1}{4}$: Moore
 Clarno basin, Mitchell quadrangle:
 Taylor, E. M.
 Cougar Peak volcanic area: Haddock
 Courtrock quadrangle, S $\frac{1}{3}$: Cummings
 Courtrock quadrangle, N $\frac{2}{3}$: Napper
 Dole quadrangle: Dole
 Dayville quadrangle: Dickinson 1
 Drewsey quadrangle: Gray, W. L.
 Drinking Water Pass: Gray, W. L.
 Glide quadrangle: Patterson
 Hungbug Mountain area: Koch, J. G.
 Huntington quadrangle, NE $\frac{1}{4}$: Berry
 Huntington quadrangle, NW $\frac{1}{4}$: Kennedy
 Izee quadrangle: Dickinson 1
 Lone County (western): Bray
 Morcola quadrangle: Bristow
 Mitchell quadrangle: Howard
 Monument quadrangle, NW $\frac{1}{3}$: Jolly, J. H.
 Monument quadrangle, S $\frac{1}{3}$: Jolly, J. L.
 Port Orford quadrangle: Koch, J. G.
 Quartzburg district: Vhoy
 Riley quadrangle: Dickinson 1
 Ritter quadrangle: Thomas, G. M.
 Seneca-Silvies area: Crowley
 Sparta quadrangle, NE corner: Greene
 Spray quadrangle: Lindsley
 Steens Mountain: Fryberger; Wilkerson
 Suplee area: Vigor
 Susanville quadrangle, SE $\frac{1}{3}$: Humphrey
 Susanville quadrangle, N $\frac{1}{3}$: Thompson
 Sutherlin quadrangle: Hampton 1
 Sutherlin quadrangle, N $\frac{1}{3}$: Westhusing
 Tyee quadrangle, SE $\frac{1}{4}$: Hampton 1
 Umatillo River basin: Hogenson 1
 Valsetz quadrangle, SW part: Schnoible
 Waldport area: Jones, R. W.
 Wallowa Mountains, SE part: Wetherell
 Wallowa Mountains, northern: Landon
 White Butte area: Howard
 Willamette Volley, southern: Kleck
 Willow Creek-Cow Creek volley area: Wolff
- Stratigraphy:
 Later Mesozoic, Jim Robertson ranch:
 Waisgerber
 Paleozoic rocks: Ogren
- Structure:
 Basin and range: Donoth 1

GEOLOGIC NAMES

Index of: Wilson 1, 2

GEOLOGY OF OREGON

General: Baldwin 4; Ekman
 History: Dr. John Evans: Lange 2, 5, 6
 Scenic: Ekman

GEOMAGNETISM

General: Cox 2
 Formations:
 Columbia River Basalt: Campbell, C. D.
 Picture Gorge Basalt: Lindsley
 Siletz River Volcanics: Cox 1
 Magnetic declination in Oregon: Steere 1
 Paleomagnetic measurements: Runcorn

GEOMORPHOLOGY

Oregon divisions: Oreg. Dept. Geol. 17
 Western Oregon: Howell, P. W. 1

GILLIAM COUNTY

Fossil vertebrates, Arlington locality:
 Shotwell 2
 Geology:
 Guide book: Wilkinson 5

GLACIAL ERRATICS (see ERRATICS)

GLACIAL GEOLOGY

Localities:
 High Cascades: Handewith 1
 Northeastern Oregon: Wagner 5
 Northern Wallowa Mountains: Smedes 1
 Theories:
 Polar wandering: Handewith 1

GLACIERS

Crevasses: Hopson
 Glacial measurement:
 Collier Glacier: Hopson
 Eliot Glacier: Lawrence, D. B. 1
 Localities:
 Cascade Mountains: Hubley
 Collier Glacier: Hopson
 Eliot Glacier: Lawrence, D. B. 1
 Mount Hood: Lawrence, D. B. 1, 2
 Three Fingered Jock: Handewith 1

GLACIERS, continued:

Recent changes:

Cascade Mountains: Hubley

Collier Glacier: Hopson

Glacial survey: Handewich 1

Moraines: Hopson

GLIDE QUADRANGLE

Geology, northern third: Patterson

GLOSSARIES (See also: GEOLOGIC NAMES)

General: Howell, J. V.; Weller

GOBLE VOLCANIC SERIES

Eocene stratigraphy: Hemiksen

GOLD

Active mines and mills: Oreg. Dept. Geol. 25

Annual production: Bober 1-5; U.S. Bur.

Mines 1

Annual reviews: Mason 1, 4, 6, 9, 11

Geology, Buffalo mine: Pilcher

Gold and Money Session: AIME; Hines

Localities:

Bohemian district: Nelson

Granite mining district: Pilcher

Huntington quadrangle: Kennedy

Northeastern Oregon: Wagner 5

Quartzville: Maxwell

Sand, marine terraces: Kauffman

Southwestern Oregon: Ramp

Willow Creek-Caw Creek valley area: Wolff

Lode mines:

Active mines and mills: Oreg. Dept.

Geol. 25

Standard mine: Wagner 1

Mining history:

Baker County, 1861-1959: Wagner 6

Bohemia district: Nelson

Buffalo mine: Pilcher

Standard mine: Wagner 1

Placers:

Active mines and mills: Oreg. Dept.

Geol. 25

Classification of deposits: Ramp 4

Methods of mining: Ramp 4

Southwestern Oregon: Ramp 4

Statistics, 1952-1956:

American Bur. Metal Statistics

GOODWIN PEAK QUADRANGLE

Geology: Baldwin 1

Petrography and petrology: Broy

GRANITIC ROCKS

Granite plant burns: Baker Record-Courier

Petrographic studies:

Granite: Walton

Zircons: Larsen; Poldervoort 1

Quartz diorite boundary: Moore, J. G.

Western Cascades: Buddington

GRANT COUNTY

Geology:

Aldrich Mountain quadrangle: Thayer 1

Bates quadrangle: Mobley; Nelson, A. M.

Buffalo mine: Pilcher

Courtack quadrangle: Cummings; Napper

Dale quadrangle: Dale

Elkhorn Mountains, Bald Mountain batholith:

Taibeneck 1

Izee area: Dickinson 1, 3

Izee quadrangle: Wallace

John Day Formation: Fisher 1

John Day quadrangle: Thayer 3

Logdell quadrangle: Wallace

Monument quadrangle: Jolly, J. H.;

Jolly, J. L.

Mount Vernon quadrangle: Thayer 2

Quartzburg district: Vhay

Ritter quadrangle: Thomas, G. M.

Seneca-Silvies area: Crowley

Suplee area: Vigrass

Susanville quadrangle: Humphrey; Thompson

Tertiary volcanology and structure:

Thayer 5, 6

Ground water:

Phreatophytes: Robinson

Mineral resources:

Chromites, John Day: Hundhausen 2

Chromites, flotation of: Sullivan

Copper-cobalt deposits, Quartzburg district:

Vhay

Gold and silver:

Buffalo mine: Pilcher

Granite mining district: Kach, G. S.

Limestone occurrences: Libbey 1; Wagner 4

Manganese deposits: Appling 2

Oil and gas exploration:

Sedimentary basins: Corcoran 1

Uranium: Jarrard

Mining history:

British investment and Oregon mining: Spence

GRANT COUNTY; Mining history, continued:

Gold and Oregon's settlement: Rand
Standard mine: Wagner 1

Paleontology:

Plant microfossils, Columbia plateau:
Gray, J. 3

Species of *Nimravus*: Toohy

Petrographic studies:

Jurassic marine tuffs: Dickinson 3
Marine clastic rocks: Dickinson 2
Triassic graywackes, Aldrich Mountains:
Thayer 8

Volcanic clastic rocks: Fisher 2

Stratigraphy:

Triassic formations, correlation of:
Reeside

GRANTS PASS QUADRANGLE

Maps, aeromagnetic: Balsley

GRAVELS

Lacomb gravels: Smith, R. 1.; Wilkinson 2

Leffler gravels: Smith, R. 1.; Wilkinson 2

Linn gravels: Smith, R. 1.; Wilkinson 2

Localities:

Bear River Ridge, Wash.: Howell, P.W. 2

Terrace gravels in highway construction:

Pacific Builder and Engineer

GRAVITY MEASUREMENTS

Airport network: Woollard

Bouguer anomalies: Harrison

GRAYWACKES

Aldrich Mountains: Thayer 8

Izee-Suplee quadrangles: Wallace;
Dickinson 1

GRAYLOCK FORMATION

Geology: Dickinson 1

GREAT BASIN

(see BASIN AND RANGE PROVINCE)

GROUND WATER

General:

Bibliography, Oregon: Newcomb 2
Carbon dioxide, natural sources of:
Wagner 7

GROUND WATER; General, continued:

Legislation: Seevo

Observation wells: Brown, S. G. 3, 4

Artesian pressure:

Ano Spring: Brown, S.G. 3, 4

Artificial recharge: Hart 3

Floods of January 1953: Rantz

Localities:

Clark County, Wash.: Mundarff

Cow Valley, Malheur County: Brown, S.G.
2; Oreg. State Engineer 2

Florence dune-sand area: Hampton 2

Klamath Falls: Hart 1

Klamath River basin: Newcomb 5

Snake River basin: Newcomb 7

The Dalles area: Oreg. State Engineer 1

Tualatin Valley: Hart 2

Umatilla River basin: Hogenson 2

Vancouver, Wash.: Griffin, W. C.

Willamette Valley: Highsmith

Phreatophytes: Robinson

Resources:

Clark County, Wash.: Griffin, W.C.;
Mundarff

Columbia River Basalt: Newcomb 6

Coos Bay sand dunes: Brown, S.G. 2

Cow Valley, Malheur County: Brown, S.G. 2

Florence dune-sand area: Hampton 2

Klamath River basin: Newcomb 5

Schoolie Flat area, Wasco County: Newcomb 1

Snake River basin: Newcomb 7

Tualatin Valley: Hart 2

Umatilla River basin: Hogenson 2

Well records:

Observation wells: Brown, S. G. 3, 4

Schoolie Flat area: Newcomb 1

GUIDE BOOKS

Corvallis to Depoe Bay: Bostwick

Corvallis to Prineville: Wilkinson 2

Eugene to Coos Bay: Baldwin 5

General: Wilkinson 1

John Day to Bear Valley: Wilkinson 4

Logdell to Pine Creek: Imlay 3

Picture Gorge to Portland: Wilkinson 5

Prineville to John Day: Wilkinson 3

GYPSUM

Annual production: Bober 1

Localities:

Northeastern Oregon: Wagner 5, 6

Mining history:

Baker County, 1861-1959: Wagner 6

HARNEY BASIN

Formations: Campbell, 1.
Sedimentary basins: Corcoran 1

HARNEY COUNTY

Dating:
Absolute dating, Lake Lafontan: Broecker
Relative dating: volcanic rocks, age and correlation: Walker
Geology:
Alvord Lake Three quadrangle: Johnson
Beatty Butte Four quadrangle: Moloney
Beulah area: Bowen
Drinking Water Pass: Gray, W. L.
Steens Mountain: Fryberger; Wilkerson
Supplee area: Vigross
Mineral resources:
Boron, Alvord Valley: Libbey 4; Mason 7
Gem stones: Schlegel
Limestone: Wagner 4
Oil and gas: Buddenhagen; Corcoran 1
Perlite: Jaster
Uranium: Peterson 3; Schofer
Paleontology:
Miocene chlorophycean algae: Gray, J. 4
Plant microfossils, Columbia Plateau:
Gray, J. 3
Stratigraphy:
Paleozoic rocks: Ogren

HARNEY FORMATION

Central Oregon: Ogren

HEAVY MINERALS (see BLACK SANDS)

HECETA HEAD QUADRANGLE

Geology: Baldwin 1
Petrography and petrology: Broy

HEINRICHITE

White King mine: Gross

HELLS CANYON

Petrographic studies: Lupton
Seven Devils Volcanics: Lupton

HEPPSIE ANDESITE

Medford quadrangle: Wells

HIGH CASCADES

General:
Pacific Coast Trail: Heald 1
Geology:
General: Baldwin 4
Central portion: Williams
Cenozoic volcanism: Peck 3
Oregon's three violent Sisters: Heald 2
Geomorphology: Oreg. Dept. Geol. 17
Guide book: Wilkinson 2
Glaciers:
Alpine glaciers: Handewith 1
Cascade glaciers: Hubley
Collier Glacier: Hopson
Glacial photography: Mason 14
Mount Hood: Handewith 1, 2;
Lawrence, D. B. 1, 3
Petrology:
Direction of flow in basalts: Waters 2
Stratigraphy:
High Cascade Series: Howell, P. W. 4

HIGH LAVA PLAINS

Geology: Baldwin 4
Geomorphology: Oreg. Dept. Geol. 17

HILLS CREEK DAM

Rock abutments: Snyder 1
Tunnels: Snyder 2

HISTORICAL GEOLOGY

General: Baldwin 4
Albion quarry: Jones, D. L. 1

HISTORY OF OREGON

Dr. John Evans, pioneer geologist: Lorge 2,5,6
Pacific Northwest: Johansen

HOOD RIVER COUNTY

Geology:
Bridge of the Gods: Lawrence, D. B. 2
Eliot Glacier: Lawrence, D. B. 1
Guidebook: Wilkinson 5
Mount Hood:
Glacier variations: Handewith 2
Radiocarbon dating: Lawrence, D. B. 3
Glaciology:
Eliot Glacier measurements: Lawrence, D. B. 1
Glacier variations, Mount Hood: Handewith 2
Radiocarbon dating, Mount Hood: Lawrence,
D. B. 3

HORN BROOK FORMATION

Change of nomenclature from Chico
Formation: Steere 3
Localities: Peck 1

HOT SPRINGS (see THERMAL SPRINGS)

HUMBUG MOUNTAIN

Geology: Koch, J. G.

HUNTINGTON QUADRANGLE

Geology:
Northeast quarter: Berry
Northwest quarter: Kennedy

HURWAL FORMATION

Correlations: Reeside
Geology: Laudon; Smedes 1

HYDE FORMATION

Geology: Dickinson 1
Jurassic sedimentation: Imley 3
Localities: Imley 3

ICE AGE (see PLEISTOCENE; WISCONSIN
GLACIATION)

IDAHO FORMATION (see IDAHO GROUP)

IDAHO GROUP

Fossil floras, late Tertiary: Axelrod 2
Localities:
Mitchell Butte quadrangle: Ladwig
Snake River canyon: Savage
Petrographic studies: Ladwig

IGNEOUS ROCKS (see also INTRUSIONS;
PETROGRAPHIC STUDIES; VOLCANIC ROCKS)

Geochemical investigations: Nockolds
Intrusives: Willow Lake type: Poldervaart 2
Localities: Northeastern Oregon: Wagner 5
Petrography: Poldervaart 1
Remnant magnetization: Campbell, C. D.

IGNIMBRITE (see WELDED TUFF)

ILMENITE

Sand, marine terraces: Kauffman

IMNAHA FORMATION

Southeastern Wallowa Mountains: Wetherell

INDUSTRIAL MINERALS: see
MINERAL INDUSTRIES;
MINERAL RESOURCES;
THE VARIOUS MINERALS

INTRUSIONS

Age of granitic plutons: Taubeneck 6
Bold Mountain batholith: Taubeneck 1,2,3,5,7
Bohemia district: Buddington
Cape Kiwanda: Laurence 2
Cornucopia: Goodspeed 1; Roddick
Cougar Peak volcanic area: Haddock
Dikes: Roddick
Elkhorn Mountains: Poldervaart 2
Emplacement of granitic plutons: Taubeneck 9
Glide quadrangle: Patterson
Granite problems: Walton
Izee quadrangle: Wallace
Lone County: Bray
Logdell quadrangle: Wallace
Monument dike swarm: Thayer 6
Northeastern Oregon: Wagner 5
Paleozoic rock, central Oregon: Ogren
Quartzburg district, Grant County: Vhay
Ritter quadrangle: Thomas, G. M.
Rock units, diorite: Wagner 5
Wallowa batholith: Taubeneck 4
White Butte area: Howard
Willow Lake type plutons: Poldervaart 2

IRON

Annual production: Bober 1-4
Annual reviews: Mason 9
Deposits: Luttrell

IRONSIDE FORMATION

Volcanology and structure: Thayer 5, 6, 7

IRONSIDE MOUNTAIN QUADRANGLE

Volcanology and structure: Thayer 5, 6, 7

IZEE QUADRANGLE

Geology: Dickinson 1; Thayer 5,6,7; Wolloce
Petrographic studies: Dickinson 1

JACKSON COUNTY

Meteorites:

Sam's Valley: Lange 4

Minerals and mineral resources:

Gem stones: Dysart

Gold placer mining: Ramp 4

Limestone: Libbey 1; Peterson 2

Manganese: Appling 1; Hewett

Nickeliferous ores, beneficiation studies:

Shelton

Rhodanite: Mineralogist 2

History, British investment: Spence

Paleontology:

Eocene floras, Hansen coal mine:

Brown, R. W. 1

Lower Cretaceous (Albian) fossils:

Jones, D. L. 1

Pelecypods (Pterotrignia): Jones, D. L. 2

Stratigraphy:

Chico Formation, new name: Steere 3

Upper Cretaceous rocks: Peck 1

Surface water:

Rogue River basin: Oreg. State Water
Res. Board 3

JEFFERSON COUNTY

Geology:

Bend quadrangle, and central portion

High Cascade Mountains: Williams

Field trip: Wilbur

Mineral resources:

Gem stones: Brown, R. W. 2; Duke 7;
Gilchrist, H.

Oil and gas exploration: Corcoran 1

Quicksilver: Gilbert

JOHN DAY AREA (see also
JOHN DAY FORMATION)

Formations:

Danforth Formation: Campbell, I.

Rattlesnake Formation: Campbell, I.

Fossil flora: Bones; Dorf; Gray, J. 1, 4

Fossil vertebrates: Dawson; Downs; Tootley

Geology: Cummings; Dickinson 1; Holdredge;

Jolly, J. H.; Jolly, J. L.

Guide book: Wilkinson 1, 4, 5

Localities:

Aldrich Mountain quadrangle: Thayer 1

Dale quadrangle: Dale

Izee quadrangle: Wallace

John Day quadrangle: Thayer 3

Logdell quadrangle: Wallace

JOHN DAY AREA, Localities, continued:

Mitchell quadrangle: Taylor, E. M.

Monument quadrangle: Fisher 1

Mount Vernon quadrangle: Thayer 2

Petrographic studies:

John Day Formation: Fisher 2

Jurassic marine luffs: Dickinson 3

Picture Gorge Basalt: Lindsley

Volcanic rocks: Dickinson 2; Thayer 5, 6, 7

JOHN DAY FORMATION

Fossil plants: Brown, R. W. 3

Fossil vertebrates: Dawson; Brown, R. W. 3

Gem stones: Brown, M. D.

Localities:

Guide book: Wilkinson 1, 5

Bald Mountain area: Snook

Bend quadrangle: Williams

Clarno basin: Taylor, E. M.

Courtrock quadrangle: Napper

High Cascades: Williams

Ritter quadrangle: Thomas, G. M.

Schoallie Flat area: Newcomb 1

Spray quadrangle: Lindsley

Mineral resources:

Perlite: Jaster

Petrographic studies: Fisher 2; Hay 2;

Smith 2

Volcanology and structure: Thayer 5, 6, 7

JOHN DAY QUADRANGLE

Geology: Thayer 3, 6

JORDAN CRATERS

Malheur County: Kindschy

JOSEPHINE COUNTY

Geology:

Chrome Ridge area: Ramp 1

Grants Pass quadrangle: Balsley

Illinois River chromite district: Ramp 2

Kerby quadrangle: Balsley

Takilma-Waldo copper district: Hundhausen 1

Minerals and mineral resources:

Chromite: Oregon Chrome mine closes:

Oreg. Dept. Geol. 9

Copper: Takilma-Waldo district: Hundhausen 1

Gem stones: Schlegel

Gold placer mining: Ramp 4

History, British investment: Spence

Josephinite: see oregonite

JOSEPHINE COUNTY

Minerals and mineral resources, continued:
 Limestone: Libbey 1; Peterson 2
 Manganese: Appling 1
 Oregonite (josephinite): Romdahr;
 Mineralogist 7
 Rhodonite: Mineralogist 2
 Silica: Mueller, E. E.
 Paleontology:
 Early Cretaceous ammonites: Imloy 5
 Stratigraphy:
 Jurassic, Cretaceous formations, relations
 of: Imloy, 4
 Surface water:
 Rogue River basin: Oreg. State Water Res.
 Bd. 3

JOSEPH UPLAND

Geomorphology: Oreg. Dept. Geol. 17

JUNTURA AREA

Fossil fauna, Clarendonian: Russell

JUNTURA FORMATION

Beulah area: Bowen
 Drinking Water Pass: Groy, W. L.

JURASSIC PERIOD

Correlation chart: Imloy 4
 Invertebrate fossils: Kummel; Packard 2
 Localities:
 Comas Valley quadrangle: Harms
 Grant County: Dickinson 1, 2
 Izee-Logdell quadrangles: Wallace
 Jim Robertson ranch: Waisgerber
 Northern Wallawa Mountains: Smedes 1
 Petrographic studies: Dickinson 3
 Stratigraphy:
 Central Oregon: Ogren
 Granitic plutons: Tavbeneck 6
 Logdell to Pine Creek: Imloy 6

KEASEY FORMATION

Fossil invertebrates (foraminifera): Stewart
 Fossil vertebrates (fish): David
 Localities:
 Salem-Dallas area: Steere 5
 Sunset Highway area: Steere 2
 Oil and gas exploration: Newell

KERBY QUADRANGLE

Aeromagnetic maps: Bolsley

KLAMATH COUNTY

Archaeology:
 Bibliography: Swartz
 Big Bend project, salvage program: Newman
 Historic water levels, Tule Lake: Cleghorn
 Klamath prehistory: Cresman 1
 Rock dams and ancient civilization: King
 Geology:
 Glowing avalanche deposits: Hoy 1
 High Cascade Mountains: Williams
 Yonno Formation: Newcomb 4
 Ground water:
 Hot ground water for heat: Hart 1
 Klamath River basin: Newcomb 5
 Paleontology:
 Fresh-water clam distribution: Taylor
 Surface water:
 Rogue River basin: Oreg. State Water Res.
 Bd. 3

KLAMATH MOUNTAINS

Geology: Baldwin 4
 Geomorphology: Oreg. Dept. Geol. 17
 Surface water:
 Rogue River basin: Oreg. State Water Res.
 Bd. 3
 Umpqua River basin: Oreg. State Water Res.
 Bd. 1

KLAMATH MOUNTAIN BATHOLITH

Quartz diorite boundary line: Moore, J. G.

KLAMATH RIVER BASIN

Archaeology: Newman
 Dams: Newman
 Geology: Newcomb 4, 5
 Ground-water resources: Newcomb 5

LACUSTRINE DEPOSITS

Northeastern Oregon: Wagner 5
 Ringold Formation: Newcomb 3

LAKE COUNTY

Archaeology:

Obsidian carvings: Duke 5

Dating:

Absolute dating:

Fort Rock Cave: Briggs

Lake Lahontan: Broecker

Relative dating:

Volcanic rocks, age and correlation of:
Walker

Geology:

Ana River: Conrad

Basin-Range structure: Donath 1

Cougar Mountain Cove: Cowles

Cougar Peak volcanic area: Haddock

Faulting: Donath 2; Trauger

Fort Rock - o diatreme: Howell, P.W. 8

Lakeview uranium area: Peterson 4

Pleistocene lakes: Brogan 1

Ground water:

Ana Springs: Brown, S. G. 5

Crump geyser: Oreg. Dept. Geol. 22,23;
Peterson 5

Minerals and mineral resources:

Gold: Lost Blue Bucket mine: Shaw

Manganese: Hewett

Obsidian: Duke 5, 6

Opal, Hart Mountain: Duke 9

Perlite: Jaster

Uranium: Jarrard; Lake County Examiner;
Oreg. Dept. Geol. 14; Peterson 3

Uranium minerals: Gross

Paleontology:

Fresh-water clam distribution: Taylor

LAKES (see also PLEISTOCENE)

Fossil invertebrates: Taylor, D. W.

Localities:

Klamath River basin: Newcomb 5

Lake Oswego: Stauffer 1, 2

Summer Lake: Conrad

Tule Lake: Cleghorn

Opalite mining district: Brooks 2

LANDSLIDES

General: Schlicker 1

Localities:

Bridge of the Gods: Brogan 2; Lawrence,
D. B. 2

Coast Range lakes: Baldwin 3

Lookout Point Dam: Staples 1

Mount Hood: Lawrence, D. B. 3

Spray quadrangle: Lindsley

LANDSLIDES, localities, continued:

Tualatin Mountains: Howell, P. W. 3, 5;
Lawrence 1

LANE COUNTY

Geology:

Florence dune-sand area: Hampton 2

High Cascades: Howell 4; Williams

Igneous intrusives: Bray

Leaburg quadrangle: Schlicker 2

Lookout Point Dam, landslide at: Staples 1

Lowell quadrangle: Schlicker 2

Lower Siuslaw River area: Baldwin 1

Marcolo quadrangle: Bristow; Schlicker 2

Western Cascades: Peck 2

Zeolite deposits: Kleck

Ground water:

Florence dune-sand area: Hampton 2

Willamette Valley, irrigation: Highsmith

Mineral deposits:

Black Butte mine: Waters 1

Paleontology:

Eugene area: Steere 4

LAVA FLOWS (see VOLCANIC ROCKS)

LAWS (see MINING LAWS)

LEABURG QUADRANGLE

Geology: Schlicker 2

LEAD

Annual production: Baber 1-5

Annual reviews: Mason 1

LIGHTWEIGHT AGGREGATE (see AGGREGATE)

LIMESTONE

Annual production: Baber 1-5; Mason 5

Annual reviews: Mason 1, 6, 9, 11

Agricultural stone: Libbey 1

Cement industry:

Active mines and mills: Oreg. Dept. Geol. 25

Cement plants expand: Rock Products 1

Chemical Lime Co. operation: Vervoeke

Market: Libbey 1

Quarry: Lienhart 2

History: Baker County, 1861-1959: Wagner 6

Localities:

Eastern Oregon: Wagner 4

Huntington quadrangle: Kennedy

LIMESTONE, localities, continued:

- In lentils: Imloy 4
- Olds Ferry quadrangle: Spiller
- Paleozoic inlier: Mamay; Ogren
- Western Oregon: Peterson 2
- White Butte area: Howard
- Quarries:
 - Active mines and mills: Oreg. Dept. Geol. 25
 - Chemical Lime Co.: Lerhart 2; Libbey 1; Vervaeke
 - Eastern Oregon occurrences: Wagner 4
 - Undeveloped deposits: Libbey 1

LIMONITE (see also IRON)

- Annual production: Bober 3
- Annual reviews: Mason 1

LINCOLN COUNTY

- Geology:
 - Granite erratics: Howell, P. W. 6
 - Guide book: Corvallis to Depoe Bay: Bastwick
 - Valsetz quadrangle: Schnoible
- Mineral resources:
 - Gem stones: Schlegel
- Paleontology:
 - Anacanthin fishes: David
 - Tertiary foraminifera, Waldport: Jones, R. W.

LINK RIVER

- Archaeology: Rock dams: King

LINN COUNTY

- Geology:
 - Lebanon quadrangle: Allison
 - High Cascades: Williams
 - Snow Peak quadrangle: Smith, R. I.
 - Western Cascades: Peck 2
- Ground water:
 - Willamette Valley, irrigation: Highsmith
- Mineral resources:
 - Electron-beam melting at Wah Chang: Matthews 3
 - Gold: Quartzville: Maxwell
- Mining history:
 - British investment: Spence
 - Quartzville: Maxwell
- Paleontology:
 - Fossil woods: Eubanks

LITTLE BUTTE VOLCANIC SERIES

- Western Cascades: Peck 2; Wolfe 3

LOESS (see also SOILS)

- Distribution: Theisen 1, 2
- Localities: Northeastern Oregon: Lewis

LOGAN VALLEY QUADRANGLE

- Volcanology and structure: Thayer 5, 6, 7

LOGDELL QUADRANGLE

- Geology: Thayer 5, 6, 7; Wallace

LONE MOUNTAIN FORMATION

- Localities:
 - Beaty Butte Four quadrangle: Maloney
- Petrographic studies: Maloney

LONESOME FORMATION

- Geology: Dickinson 1; Imloy 3
- Localities: Imloy 3

LONG CREEK QUADRANGLE

- Volcanology and structure: Thayer 5, 6, 7

LOOKOUT POINT DAM

- Landslide: Staples 1

LOST MINES AND TREASURES: Hult

LOWELL QUADRANGLE

- Geology: Kleck; Schlicker 2

LOWER SEDIMENTARY SERIES

- Correlation: Reeside
- Geology: Laudon; Smedes 1

McINTOSH FORMATION

- (SACCHI BEACH BEDS of local usage)

- Foraminifera: Stewart
- Localities: Baldwin 5

McKAY RESERVOIR

Fossil vertebrates: Dawson; Shotwell 1

McKENZIE RIVER

Geology: Bristow

MADRAS FORMATION

Localities: Newcomb 1; Wilkinson 3;
Williams

MAGNESIAN HORNFELS

Bold Mountain batholith; Toubeneck 2

MAGNETISM (see GEOMAGNETISM)

MAGNETOMETER SURVEY

Airborne profile: Agocs

MALHEUR COUNTY

Geology:

Beulah area: Bowen

Drinking Water Pass: Gray, W. L.

Huntington quadrangle: Kennedy

Jordan Craters: Kindschy

Mitchell Butte quadrangle: Ludwig

Upper Willow Creek-Cow Creek valley
area: Wolff

Ground water:

Cow Valley: Brown, S. G.

Mineral resources:

Limestone: Wagner 4

Mercury: (schuetteite) Bailey; Benson;
Brooks 2

Mercury flotation: Kunze; Town

Oil and gas exploration: Corcoran 1

Perlite: Jaster

Uranium: Jarrard

Mining history:

British investment: Spence

El Dorado Ditch: Linn

Paleontology:

Fresh-water clam distribution: Taylor

Juntura Clarendonian fauna: Russell

Pliocene turtle: Brattstrom

MAMMALS (See FOSSIL VERTEBRATES)

MANGANESE

Annual production: Bober 2, 3, 4

Localities:

Borax hot spring, Lake County: Hewett

Northeastern Oregon: Appling 2

Southwestern Oregon: Appling 1

Tyrell mine, Jackson County: Hewett

Mining history:

Baker County, 1861-1959: Wagner 6

MAPLETON QUADRANGLE

Geology: Baldwin 1

Petrography and petrology: Bray

MAPS (see GEOLOGIC MAPS, PUBLISHED;
GEOLOGIC MAPS, UNPUBLISHED)

MARBLE

Northern Wallowa Mountains: Smedes 1

MARCOLA QUADRANGLE

Geology: Bristow; Kleck; Schlicker 2

MARION COUNTY

Geology:

Salem Hills ferruginous bauxite deposits:

Corcoran 2

Scotts Mills: Gilchrist, F. G. 2

Western Cascades: Peck 2

Ground water:

Willamette Valley irrigation: Highsmith

Mineral resources:

Salem Hills ferruginous bauxite deposits:

Corcoran 2

Titanium mineralogy of bauxites: Hartman 2

Uranium: Schofer

Paleontology:

Salem-Dallas fossil locality: Steere 5

MARKS RIDGE

Geology: Howell, P. W. 4

MARTIN BRIDGE FORMATION

Correlations: Reeside

Geology: Loudon; Smedes 1

MARYS PEAK QUADRANGLE

Guide book: Bostwick

MASCALL FORMATION

Fossil flora: Gray, J. 2, 3, 4
 Fossil vertebrates: Downs
 Geology: Dickinson 1; Thoyer 1, 2, 5, 6, 7
 Guide book: Wilkinson 3, 5

MEDFORD QUADRANGLE

Geology: Wells

MEHAMA VOLCANICS

Localities:
 Guide book: Wilkinson 2
 Leaburg quadrangle: Schlicker 2
 Lebanon quadrangle: Allison
 Lowell quadrangle: Schlicker 2
 Marcala quadrangle: Schlicker 2
 Snow Peak quadrangle: Smith, R. I.

MERCURY

Annual production: Bober 1-5
 Annual reviews: Oreg. Dept. Geol. 3, 25;
 Mason 1, 4, 6, 9, 11
 Exploration: Pennington
 Flotation methods: Kunze; Town
 Localities:
 Block Butte mine: Waters 1
 Bretz mine: Benson; Brooks 2; Kunze;
 Town
 Horse Heaven mine: Gilbert
 Nonpareil mine: Patterson
 Opalite mining district: Brooks 2
 Southern Steens Mountain: Wilkerson
 Mining history: Brooks 1
 Reserves: Pennington; U.S. Bur. Mines 1, 3

MESA BASALT

Beaty Butte Four quadrangle: Moloney

METALLURGY

Exotic metals annual review:
 Bober 1-5; Mason 4, 5, 6, 9, 11; U.S.
 Bur. Mines 3
 Ferrochrome plant study: Oreg. Dept.
 Geol. 8
 Ferrous metals annual review: Bober 3, 4, 5;
 Mason 6, 9, 11
 Nonferrous metals annual review:
 Bober 1-5; Mason 1, 6, 9, 11
 Metallurgical plants: Oreg. Dept. Geol. 25

METAMORPHIC ROCKS

Localities:
 Izee, Logdell quadrangles: Wallace
 Mitchell quadrangle: Howard
 Northeastern Oregon: Wagner 1
 Northern Wallowa Mountains: Smedes 1
 Petrographic studies: Toubeneck 5

METCHOSIN VOLCANIC SERIES

Washington: Henriksen

METEORITES

Classification: Lange 3
 Port Orford meteorite: Hult; Lange 4, 6
 Sams Valley meteorite: Lange 4
 Willamette meteorite: Lange 3, 4

MICROFOSSILS (see FOSSIL PLANTS;
FOSSIL INVERTEBRATES)

MINERAL INDUSTRIES

Annual production: Bober 1-5; Mason 5, 8, 10,
 12; American Bur. Metal Statistics
 Annual reviews: Mason 1, 4, 5, 6, 9, 11;
 Oreg. Dept. Geol. 25; New York Times;
 U.S. Bur. Mines 1, 3
 Methods:
 Black-sand beneficiation: Hunt
 Chromite concentrates, electric smelting:
 Walshed
 Kroll process, zirconium: U.S. Bur. Mines 2
 Magnesium-reduction process, zirconium:
 U.S. Bur. Mines 2
 Mercury flotation: Kunze; Pennington; Town

MINERAL RESOURCES

General: U.S. Bur. Mines 1, 3
 Atlas of Pacific Northwest: Hintze 3
 Continental shelf: Trumbull, J.
 Mineral deposits map: Oreg. Dept. Geol. 6
 Northeastern Oregon: Wagner 5

MINES DIRECTORIES

Active mines, 1960: Oreg. Dept. Geol. 25

MINING HISTORY

General: U.S. Bur. Mines 1
 British investment in Oregon mining, 1860-1900: Spence
 Mercury industry: Brooks 1
 Oregon's settlement: Rand
 Pacific Northwest: Johansen
 Localities:
 Baker County, 1861-1959: Wogner 6
 Bohemia district: Nelson, Roy
 Cornucopia gold mines: Goodspeed 1
 El Dorado ditch: Linn
 Lost Blue Bucket mine: Shaw
 Lost mines: Hult
 Malheur City: Linn
 Quartzville: Maxwell
 Randolph: Bright
 Standard mine: Wagner 1
 Tokilma-Waldo mining district: Hundhausen 1

MINING LAWS

Assessment regulation: Oreg. Dept. Geol. 16; Wogner 8
 General:
 Common varieties defined: U.S. Bur. Land Management 2
 Dredge mining: Oreg. Dept. Geol. 4; Mason 6
 Ground water: Scevo
 Long-range policy: Dale 1
 Mining claim procedure: Oreg. Dept. Geol. 12; U.S. Bur. Land Management 1
 Multiple use: Dale 3; Mason 6
 New laws passed by 85th Congress: Oreg. Dept. Geol. 10
 Nonmineral land patents: Oreg. Dept. Geol. 20
 Oil and gas exploration: Dale 2
 History: Libbey 3
 Wilderness Bill: Oreg. Dept. Geol. 13
 Withdrawals:
 Department protests: Oreg. Dept. Geol. 18
 Rogue River: Dale 5

MIOCENE EPOCH

Fossil flora:
 Chlorophycean algae: Gray, J. 3
 Columbia plateau: Chaney: Gray, J. 3
 Northwest Oregon: Wolfe 2
 Western Cascades: Wolfe 3
 Fossil invertebrates: Kummel; Stewart
 Fossil vertebrates: Dawson; Downs

MIOCENE EPOCH, Continued:

Localities:
 Aldrich Mountain quadrangle: Thayer 1
 Bend quadrangle: Williams
 Centralia-Chehalis area, Wash.: Snively
 Cougar Peak volcanic area: Haddock
 High Cascades: Howell, P. W. 4; Williams
 Monument quadrangle: Fisher 1
 Mount Vernon quadrangle: Thayer 2
 Spray quadrangle: Lindsley
 Wallowa Mountains: Smedes 1
 Petrographic studies: Hartman, J. A. 1; Lindsley
 Petrology: Waters 2
 Stratigraphy:
 Paleozoic rocks of central Oregon: Ogren
 Tertiary volcanology and structure: Thayer 5, 6, 7
 Volcanic rocks, south-central Oregon: Walker

MISSISSIPPIAN PERIOD

Stratigraphy:
 Paleozoic rocks of central Oregon: Ogren

MISSOULA FLOOD

Erratics:
 Kyanite in Portland: Brown 3
 Oregon beach: Howell, P. W. 6
 Localities:
 Lake Oswego: Stauffer 1, 2
 Oregon City: Baldwin 2
 New data:
 Channeled scabland: Bretz

MITCHELL ANTICLINE

White Butte area: Howard

MITCHELL AREA

Guide book: Wilkinson 3

MITCHELL BUTTE QUADRANGLE

Petrographic studies: Ludwig

MITCHELL QUADRANGLE

Fossil flora: Pabst
 Geology:
 Clornobasin: Taylor, E. M.
 White Butte area: Howard

MOLYBDENUM

Industry: Oreg. Dept. Geol. 25

MONUMENT QUADRANGLE

Geology:

Northwest third: Jolly, J. H.

Southern third: Jolly, J. L.

John Day Formation: Fisher 1

Volcanic clastic rocks: Fisher 2

MORROW COUNTY

Mineral resources:

Gem stones: Schlegel

Paleontology:

Hemphillian mammals: Shotwell 2

MOUNT HOOD

Glaciers:

Handewith 1, 2

Lawrence, D. B. 1, 3

MOUNT JEFFERSON

Glaciers: Handewith 1

MOUNT MAZAMA

Radiocarbon dating:

Five-mile Rapid site: Friedman

Fort Rock Cave: Briggs

Klamath prehistory: Cressman 1

Paisley Five Mile Point caves: Friedman

MOUNT VERNON QUADRANGLE

Geology: Thoyer 2, 6

MULTNOMAH COUNTY

Geology:

Columbia River: Mundorff

Erratic rock: Bogert, 3

Magnetization of basalt: Campbell, C.D.

Pleistocene flood deposits, Portland area:
Stauffer 1

Portland Hills Silt: Howell, P. W. 5

Portland quadrangle: Trimble

Tualatin Mountains: Loureace, T.H. 1

Western Cascades: Peck 1

Mineral resources:

Sand and gravel: Lenhart 1

MULTNOMAH COUNTY, Continued:

Nomenclature:

Tualatin Mountains (Portland Hills): Richards

Paleontology:

Museum mammoth tusk: Howell, P. W. 3

Water resources:

Portland and Vancouver: Griffin, W. C.

Willamette Valley irrigation: Highsmith

MYRTLE GROUP

Correlations: Imloy 4

Fossil invertebrates: Imloy 2, 5

NEHALEM RIVER

Waterpower resources: Young 2

NESTUCCA FORMATION

Fossil localities:

Salem-Dallas area: Steere 5

Oil and gas exploration: Newell

NEWBERRY CRATER

Geology: Wilkinson 2

NEWBERRY QUADRANGLE

Geologic map: Williams

NICKEL

Annual production: Baber 1-5; Oreg. Dept.
Geol. 25

Annual reviews: Mason 1, 6, 9; Oreg. Dept.
Geol. 3

Bibliography: Pratt

Exploration: Peridotite-serpentine occurrences:
Wagner 3

Nickel Mountain deposits: Bogert; Duke 4;
Davis; Mollard

Production processes:

Beneficiation studies: Shelton

Perrin process: Mollard

Ugine smelter process: Bogert

Reserves: U.S. Bur. Mines 3

Shanrockmine: Shelton

NICELY FORMATION

Geology: Dickinson 1; Imloy 3

Localities: Imloy 3

NYE FORMATION (see NYE MUDSTONE)

NYE MUDSTONE

Guide book: Bostwick
Tertiary fishes: David

OAKRIDGE AREA

Geology: Howell, P. W. 4

OCEANOGRAPHY (see SUBMARINE GEOLOGY)

OCHOCO FORMATION

White Butte area: Howard

OIL AND GAS

Annual reviews: Mason 1,4,9; Newton 1,2

Exploration, general:

Bober 1, 2, 3

Corcoran 1

Mason 1, 4

Newton 1, 2, 3, 4

Oil and Gas Journal 5, 6, 7

Popenoe, H. L. 1, 2, 3, 4, 5

Exploration localities:

Coast Range: Hansen, F. D. 2

Continental shelf: Trumbull, J.

Eocene formation: Newell

General: Newton 3

Harney Valley: Buddenhagen

Pacific Northwest: Deacon

Sedimentary basins: Corcoran 1

Reserve Oil & Gas Brue 1: Newell

White Butte area: Howard

Geology of sites:

Continental shelf: Montgomery; Trumbull, J.

Leases:

Oil & Gas Jour. 9

Oreg. Dept. Geol. 24

Mining laws: Dole 2

Natural gas: Newton 5; Stormont

Natural gas pipelines:

Bober 2,3,4; Oil & Gas. Jour. 2,3,4,8

Permits: Bober 1-5

Relinery studied: Oil & Gas Jour. 1

Well records: Newton 3, 4

OLDS FERRY QUADRANGLE

Geology: Spiller

OLIGOCENE

Fossil flora:

Modro-Tertiary geoflora: Axelrod 3

Clarno Formation ferns: Pabst

Pittsburg Bluff locality: Steere 2

Rujada flora: Lohkonpol

Western Cascades: Wolfe 3

Fossil invertebrates:

Cephalopods: Kummel

Crinoids: Steere 2

Crustacea: Steere 2

Echinoderms: Steere 2

Foraminifera: Stewart

Mollusca: Steere 2

Intrusives:

Western Lane County: Bray

Localities:

Centralio-Chehalis area, Wash.: Snavely

Monument quadrangle: Fisher 2

Salem-Dallas area: Steere 5

Spray quadrangle: Lindsley

Sunset Highway area: Steere 2

OREGONITE

New mineral name for josephinite: Romdohr

OSWEGO LAKE

Drainage changes, Willamette River: Baldwin 2

OWYHEE AREA

Owyhee Reservoir: Stearns 2

Petrographic studies, coarse clastics: Ladwig

OWYHEE BASALT

Geology: Drinking Water Pass: Gray, W. L.

Late Tertiary floras: Axelrod 2

OWYHEE FORMATION (see OWYHEE BASALT)

OWYHEE UPLAND

Geology: Baldwin 4

Geomorphology: Oreg. Dept. Geol. 17

PACIFIC SLOPE

Surface water:
Rogue River basin: Oreg. State Water Res.
Bd. 3
Umpqua River basin: Oreg. State Water
Res. Bd. 1

PALEOBOTANY (see FOSSIL PLANTS)

PALEOECOLOGY

Hemphillian assemblage: Shorwell 1

PALEOMAGNETISM (see GEOMAGNETISM)

PALEONTOLOGY (see FOSSIL INVERTEBRATES;
FOSSIL PLANTS;
FOSSIL VERTEBRATES)

PALEOZOIC (see also: PERMIAN;
PENNSYLVANIAN)

Central Oregon: Ogren; Wallace

PALYNOLOGY (see FOSSIL PLANTS)

PAYETTE FORMATION

Localities:
Ancient Lake Payette: Stearns 1
Snake River canyon: Savage

PENNSYLVANIAN

Formations:
Spotted Ridge Formation: Momay
Fossil flora: Momay

PERIDOTITE

Josephine County: Romp 1, 2, 3
Occurrences in Oregon: Wagner 3

PERLITE (see also AGGREGATE)

Annual production: Baber 1-5
Annual reviews: Mason 1, 9
Occurrences:
Eastern Oregon: Jaster
Northeastern Oregon: Wagner 5
Reserves: U.S. Bur. Mines 3

PERMIAN

Fossil invertebrates: Cooper, G.A.; Miller, A.K.
Geology, Wallowa Mountains: Smedes 1, 2
Mineral deposits:
Copper-cobalt, Quartzburg district: Vhoy
Stratigraphy:
Central Oregon Paleozoic rocks: Ogren
Eastern Oregon: Natl. Research Council
Quartzburg district: Vhoy

PETROGRAPHIC STUDIES

Analytical laboratories: Hoogland
Bauxite, titanium mineralogy: Hartman 1, 2
Columbia River Basalt: Campbell, C.D.;
Thayer 6; Waters 3
Detrital sediments: Howell, P.W. 7
Erionite: Deffeyes; Staples 2, 3
Granite: Walton
Graywackes: Thayer 8
John Day Formation: Hay 2; Fisher 2
Jurassic marine tuffs: Dickinson 3
Low-grade mercury ores: Town
Marine clastic rocks: Erickson 2
Picture Gorge Basalt: Lindsley
Quadrangles and areas:
Aldrich Mountains, graywackes in: Thayer 8
Bald Mountain batholith: Poldervaart 1;
Taubeneck, W.H. 2, 3, 5
Beaty Butte Four quadrangle: Moloney
Cougat Peak volcanic area: Haddock
Cowlitz River-Willops Hills, Wash.:
Henriksen
Drinking Water Pass: Gray, W. L.
Mitchell Butte quadrangle: Ludwig
Monument quadrangle: Fisher 2
Snow Peak quadrangle: Smith, R. I.
Spray quadrangle: Lindsley
Wallowa batholith: Taubeneck 4
Wallowa Mountains: Goodspeed 2
Willow Lake: Sen
Willow Lake intrusion: Taubeneck 7
Rhyolite tuff breccia: Campbell, I.
Siletz River Volcanic Series: Cox 1
Strawberry Volcanics: Thayer 6
Translation gliding in plagioclase: Sen
Ultramafic complexes: Nable
Zircons: Larsen; Poldervaart 1; Taubeneck 3

PICTURE GORGE

Field trip: Wilkinson 5
Monument quadrangle: Fisher 1
Volcanology and structure: Thayer 5, 6, 7

PICTURE GORGE BASALT

Magnetic properties, Spray quadrangle:
Lindsley
Petrography, Spray quadrangle: Lindsley

PIKE CREEK VOLCANIC SERIES

Alvord Valley: Libbey 4

PITTSBURG BLUFF FORMATION

Sunset Highway fossil area: Steere 2

PLEISTOCENE

Flood deposits, Lake Oswego: Stauffer 1
Fossil invertebrates:
Foraminifera: Stewart
Fresh-water mollusca: Taylor, D.W.;
Trauger
Geology, Lake Lahontan: Conrad
Glaciation:
Collier Glacier: Hopson
Wisconsin climate: Dillon
Lakes, ancient: Bragon 1; Conrad; Cressman 1;
Howell, P.W. 8; Stearns 1,2; Trauger
Oregon: Baldwin 4
Portland Hills silt: Howell, P. W. 5
Portland quadrangle: Trimble
Radiocarbon dating: Broecker; Hester;
Heusser; Rubin 2
Sand dunes: Cooper, W. S.; Laurence 2

PLIOCENE

Fossil invertebrates:
Echinoids: Durham
Foraminifera: Stewart
Fresh-water mollusca: Taylor, D. W.;
Trauger
Fossil vertebrates:
Hemphillian mammalian assemblage:
Shotwell 1
Juntura Clarendonian fauna: Russell
Leporidae (rabbits, hares): Dawson
Localities:
Central Oregon: Ogren
Cougat Peak volcanic area: Haddock
Fort Rock: Howell, P. W. 8
High Cascades: Howell, P. W. 4
Klamath River basin: Newcomb 4, 5
Lake County: Trauger; Peterson 4
McKay Reservoir: Shotwell 1, 2
Spray quadrangle: Lindsley

PLUTONS (see INTRUSIONS)

POLAR WANDERING

Rock magnetism: Lindsley; Runcorn

POLK COUNTY

Geology:
Volsetz quadrangle: Schnoible
Ground water:
Willamette Valley, irrigation: Highsmith
Mineral resources:
Limestone: Libbey 1; Mason 13
Oil and gas: Newell
Paleontology:
Cenozoic foraminifera: Stewart
Solem-Dallas area: Steere 5
Stratigraphy:
Cenozoic foraminifera, implications of:
Stewart

PORTLAND HILLS (see TUALATIN MOUNTAINS)

PORTLAND HILLS ANTICLINE

Baldwin 2

PORTLAND HILLS SILT MEMBER
(of Troutdale Formation)

Fossil vertebrates:
Mammoth tusk: Howell, P. W. 3
Landslides: Howell, P. W. 3
Localities:
Portland quadrangle: Trimble
Willamette River: Baldwin 2
Origin: Howell, P. W. 5

PORTLAND QUADRANGLE

Geology: Trimble

PORTLAND SANDS AND GRAVELS

Localities: Baldwin 2
Mineral industries: Lenhart 1

PORT ORFORD FORMATION

Fossil invertebrates: Durham; Stewart
Guide book: Baldwin 5

PORT ORFORD QUADRANGLE

Geology: Koch, J. G.
Stratigraphy: Imjoy 4

PRAIRIE CITY QUADRANGLE

Volcanology and structure: Thayer 5, 6, 7

PRICEITE

Curry County locality: Mineralogist 4

PYMICE (see also AGGREGATE)

Annual production: Baber 1-5; U.S. Bur. Mines 1, 3

Annual reviews: Mason 1, 4

Industrial uses: Jackson; Mason 3

Localities:

Ana River: Conrad

Cougar Mountain cove: Cowles

Crater Lake: Hay 1; Smith, R. L.

Dorena: Smith, R. L.

Klamath River basin: Newcomb 5

QUARTZ DIORITE

Boundary in west: Moore, J. G.

QUARTZBURG DISTRICT

Copper-cobalt deposits: Vhay

QUATERNARY (see also PLEISTOCENE; RECENT)

Alvord Valley: Libbey 4

Spray quadrangle: Lindsley

Toledo-Castle Rock district, Wash.: Roberts

Wallowa Mountains: Smedes 1

QUICKSILVER (see MERCURY)

RADIOCARBON DATING

(see DATING, ABSOLUTE)

RAIL CABIN FORMATION

Geology: Dickinson 1

RATTLESNAKE FORMATION

Geology: Dickinson 1

Guide book: Wilkinson 1, 5

John Day quadrangle: Thayer 3

Petrographic studies: Campbell, 1.

Volcanology and structure: Thayer 5, 6, 7

RECENT

Age of faulting, Lake County: Trøger

Direction of flow in basalts: Waters 2

Localities:

Lake County: Trøger

Portland quadrangle: Trimble

REFRACTORY MATERIALS

Electron-beam melting, Wah Chang: Matthews 3

High-alumina clay: Roberts

Tests: Hundhausen 2

REMANENT MAGNETISM (see GEOMAGNETISM)

REPORTS

Biennial reports: Oreg. Dept. Geol. 1, 7, 19

RHODODENDRON FORMATION

Fossil flora, Western Cascades: Wolfe 3

Guide book: Wilkinson 2, 5

RICHMOND QUADRANGLE

Geology: Snook

RIDDLE FORMATION (in Myrtle Group)

Correlations: Imlay 4

Petrographic studies: Howell, P. W. 7

RILEY QUADRANGLE

Geology: Dickinson

RINGOLD FORMATION

Stratigraphy: Newcomb 3

RITTER QUADRANGLE

Geology: Thomas

ROAD LOG (see GUIDE BOOKS)

ROBERTSON FORMATION (in Mowich Group)

Fossil invertebrates: Packard 2

Geology: Dickinson 1; Imlay 3

Guide book: Imlay 3

ROCK MECHANICS

Hills Creek Dam, Cougar Dam: Snyder 1, 2

ROGUE FORMATION

Fossil invertebrates:
Pelecypod [Buchio] Aucello: Imloy 2

ROGUE RIVER

Floods of January 1953: Rantz
Surface water: Oreg. State Water Res. Bd. 3

ROMAN NOSE MOUNTAIN QUADRANGLE

Geology: Baldwin 1

ROSEBURG QUADRANGLE

Stratigraphy: Imloy 4

ROXY FORMATION

Medford quadrangle: Wells

SACCHI BEACH BEDS

(see McINTOSH FORMATION)

SALEM-DALLAS AREA

Fossil localities: Steere 5

SALEM HILLS BASALT

Bauxite deposit: Corcoran 2

SALEM QUADRANGLE

Bauxite: Corcoran 2

SAND AND GRAVEL

Annual production: Bober 1-5; U.S. Bur.
Mines 1, 3
Annual reviews: Mason 1, 4, 6, 9
Localities:
Toledo-Castle Rock district, Wash.:
Roberts
Portland area: Lenhart 1
Willamette River: Baldwin 2
Mineral industries: Lenhart 1

SAND DUNES

Ground water: Hampton 2
Localities:
Cape Kiwanda: Laurence 2
Coastal: Cooper, W. S.
Coos Bay: Brown, S. G. 2
Florence area: Hampton 2

SANDSTONE

Paleozoic inlier: Momoy
Umpqua Formation: Harris

SANTIAM RIVER

Snow Peak quadrangle geology: Smith, R. I.

SARDINE SERIES

Fossil flora: Wolfe 3
Western Cascades: Peck 2

SCHOOLIE FLAT AREA

Ground water: Newcomb 1

SCIO BEDS or FORMATION

Lebonore quadrangle: Allison

SCORIA AND VOLCANIC CINDERS

(see AGGREGATE)

SEAMOUNTS

Fossil distribution, foraminifera: Enbysk

SEDIMENTARY ROCKS

Geomagnetism: Cox 1
Localities:
Coast Range: Cox 1
Jurassic sedimentation: Imloy 3
McKay Reservoir: Shohvell 1
Northeastern Oregon: Wagner 5
Ringold Formation: Newcomb 3
Tualatin Valley: Hart 2
Vale-Ontario area: Buddenhagen

SEISMIC STUDIES

Oregon offshore: Tocher
San Andreas fault continuation: Shepard

SENECA-SILVIES AREA

Geology: Crowley

SERPENTINE

Occurrences in Oregon: Wagner 3

SEVEN DEVILS VOLCANICS

Petrographic studies: Lupton

SHALE (see EXPANDED SHALE)

SHERMAN COUNTY

Geology:

Guide book: Wilkinson 5

Mineral resources:

Agate discovery: Duke 8

SHORELINE (see also BEACHES)

Eustatic rise in sea level:

Drowned stumps: Rubin 1

SILETZ RIVER VOLCANIC SERIES

Corvallis to Depoe Bay: Bostwick

Geomagnetism: Cox 1, 2

SILICA (INDUSTRIAL)

Annual production: Baber 1, 2, 4, 5

Annual reviews: Mason 1, 4, 6, 9, 11

Resources: Mueller, E.E.; Ramp 5

SILTCOOS LAKE QUADRANGLE

Geology: Baldwin 1

Petrography and petrology: Bray

SILVER

Annual production: Baber 1-5; U.S. Bur.

Mines 1; Am. Bur. Metal Statistics

Annual reviews: Mason 1

Localities:

Northeastern Oregon: Wagner 5

SNAKE RIVER BASIN

Fossil invertebrates: Taylor, D. W.

Geology:

Ada and Canyon Counties, Idaho: Savage

Channeled scabland: Bretz

SNAKE RIVER BASIN, Geology, continued:

Huntington quadrangle, NE $\frac{1}{2}$: Berry

Huntington quadrangle, NW $\frac{1}{2}$: Kennedy

Nez Perce County, Idaho: Hubbard

Sedimentary basins: Corcoran 1

Snake River Canyon: Rosa

Geomorphology: Oreg. Dept. Geol. 17

Ground water: Newcomb 7

Localities:

Ada and Canyon Counties, Idaho: Savage

Hells Canyon: Lupton

Mitchell Butte quadrangle: Ludwig

Olds Ferry quadrangle: Spiller

Mineral resources: Savage

Petrographic studies: Ludwig; Lupton

SNOW PEAK LAVAS

Snow Peak quadrangle: Smith, R. I.

SNOW PEAK QUADRANGLE

Geology, northwest part: Smith, R. I.

SNOWSHOE FORMATION (in Izee Group)

Geology: Dickinson 1; Imloy 3

Localities: Logdell to Pine Creek: Imloy 3

SODIUM

Annual production: Baber 2

Annual reviews: Mason 1, 11

Summer Lake: Conrad

SOILS

Deposition of: Theisen 1, 2

Willamette Valley: Highsmith

SPARTA QUADRANGLE

Geology, northeast corner: Greene

SPECTROGRAPHIC ANALYSES

(see ANALYSES, SPECTROGRAPHIC)

SPENCER FORMATION

Localities:

Anlauf-Drezin quadrangles: Hoover

Eugene area: Steere 3

Guide books: Baldwin 5; Bostwick

Salem-Dallas area: Steere 5

SPOTTED RIDGE FORMATION

Fossil flora: Momay
Stratigraphy: Natl. Research Council; Ogren

SPRAY QUADRANGLE

Geology: Lindsley

SPRINGS

Borate deposits: Smith, W. C.
Carbon dioxide sources: Wogner 7
Localities:
Klamath River basin: Newcomb 5
Tualatin Valley: Hart 2
Umatilla River basin: Hogenson 2

STEENS MOUNTAIN

Geology: Fryberger

STANDARD MINE

History: Wagner 1
Mineral deposits: Vhay; Wagner 1

STEENS BASALT

Petrographic studies: Maloney

STEENS MOUNTAIN

Geology, southern part: Wilkerson

STEENS MOUNTAIN VOLCANIC SERIES

Alvord Valley: Libbey 4

STINKING WATER BASIN

Fossil floras: Gray, J. 1-4

STOCKS (see INTRUSIONS)

STONE

Annual production: Bober 1-5
Annual reviews: Mason 1, 4, 9, 11
Building stone: Oreg. Dept. Geol. 25
Mining history, Baker County, 1861-1959:
Wogner 6
Pumice: Jackson; Mason 3
Tuffs: Gray, W. L.

STRATIGRAPHY (see also HISTORICAL GEOLOGY)

General: Baldwin 4; Wilkinson 1, 2
Cenozoic foraminifera: Stewart
Cretaceous rocks: Popper, W. P. 2
Jurassic sedimentation: Imlay 3
Localities:
Bear River Ridge, Wash.: Howell, P.W. 2
Cowlitz River-Willops Hills: Henriksen
Jim Robertson ranch: Waisgerber
Lakeview uranium area: Peterson 4
Marcola, Leaburg, and Lowell quadrangles:
Schlicker 2
Southwestern Oregon: Imlay 4
Spray quadrangle: Lindsley
Wallowa Mountains: Loudon
Western Cascades: Wolfe 3
Paleozoic rocks, central Oregon: Ogren
Washington formations: Henriksen; Howell,
P. W. 2

STRAWBERRY MOUNTAIN

Volcanology and structure: Thayer 5, 6, 7

STRAWBERRY VOLCANICS

Slide Creek Member: Thayer 6

STRUCTURAL GEOLOGY

Direction of flow in basalts: Waters 2
Localities:
Aldrich-Strawberry Mountain range: Thayer 1
Coast Range: Hansen, F. D. 1
Glide quadrangle: Patterson
Hilis Creek Dam: Snyder 2
Izee quadrangle: Wolcott
Lakeview uranium area: Peterson 4
Logdell quadrangle: Wolcott
Spray quadrangle: Lindsley
Wallowa Mountains: Smedes 1
Structural trends: Hintze 1
Volcanology and structure: Thayer 5, 6, 7

SUBMARINE GEOLOGY

Cascadia Channel: Naval Research Rev.
Continental drift theory: Menard
East Pacific Rise: Menard
Seamounts: Enbysk

SUMMER LAKE AREA

Age of faulting: Trauger
Basin and Range structure: Donoth

SUMPTER QUADRANGLE

Geology, Buffalo mine: Pilcher
Volcanology and structure: Thayer 5, 6, 7

SUPLEE AREA

Geology: Ogren; Vigrass

SUPLEE FORMATION

Geology: Dickinson 1; Imlay 3
Localities: Logdell to Pine Creek; Imlay 3

SURFACE WATER

Compilation of records: U.S. Geol. Surv. 6
Floods:

January 1953: Rantz
Rogue River basin: Oreg. State Water
Res. Bd. 3
Snake River basin: Oreg. State Water
Res. Bd. 2
Umpqua River basin: Oreg. State Water
Res. Bd. 1

Localities:

El Dorado ditch: Linn
Grande Ronde River basin: Oreg. State
Water Res. Bd. 4
Portland: Griffin
Rogue River basin: Oreg. State Water Res.
Bd. 3
Snake River basin: Oreg. State Water
Res. Bd. 2
Umpqua River basin: Oreg. State Water
Res. Bd. 1

Quality:

Data inventory supplement: Northcraft
General: Westgarth
Grande Ronde River basin: Oreg. State
Water Res. Bd. 4
Nehalem River basin: Young 2
Rogue River basin: Oreg. State Water
Res. Bd. 3
Trask River basin: Young 3
Umpqua River basin: Oreg. State Water
Res. Bd. 1

Supply:

General: Young 1
Full Run River: Griffin
Grande Ronde River basin: Oreg. State
Water Res. Bd. 4
Great Basin: U.S. Geol. Survey 2, 11,
18, 23, 29, 32
Nehalem River basin: Young 2
Rogue River basin: Oreg. State Water
Res. Bd. 3

SURFACE WATER, Supply, Continued:

Snoke River basin: Oreg. State Water Res.
Bd. 2
Trask River basin: Young 3
Umpqua River basin: Oreg. State Water Res.
Bd. 1
Water rights:
Rogue River basin: Oreg. State Water Res.
Bd. 3

SURVEYS

Early explorations: Longe 2, 5, 6

SUSANVILLE QUADRANGLE

Geology:

Northern third: Thompson
Southeastern third: Humphrey

SUTHERLIN QUADRANGLE

Geology: Hampton 1; Westhusing

TAKILMA-WALDO MINING DISTRICT

Geology: Hundhausen 1

TANNER CREEK CANYON

Landslides: Howell, P. W. 3

TECTONICS (see FAULTS AND FAULTING;
FOLDING;
STRUCTURAL GEOLOGY)TERTIARY (see also EOCENE; OLIGOCENE;
MIOCENE; PLIOCENE)

Fossil floras: Wolfe 4
Invertebrate fossils, Waldport foraminifera:
Jones, R. W.

Localities:

Alvord Valley: Libbey 4
Portland quadrangle: Trimble
Siuslaw River area: Baldwin 1
Toledo-Castle Rock district, Wash.: Roberts
Waldport area: Jones, R. W.
Wallowa Mountains: Goodspeed 2
Morine basins: Corcoran 1
Remnant magnetization: Campbell, C. D.
Tectonics, Willamette Valley: Moody
Vertebrate fossils, Hemphillion: Shotwell 1
Volcanism: Peterson 3; Thayer 5, 6, 7

THE DALLES AREA

Archaeology: Cressman 2
 Ground water: Oreg. State Engineer 1
 Radiocarbon dating: Crone

THERMAL SPRINGS

Annual review: Mason 11
 Crump geyser: Oreg. Dept. Geol. 22, 23;
 Peterson 5
 Hot water for heating, Klamath Falls: Hart 1
 Mineral deposits, manganese: Hewett

THOUSAND CREEK FORMATION

Beaty Butte Four quadrangle: Moloney
 Petrographic studies: Moloney

THREE SISTERS

Glaciers: Handewich 1; Hopson
 Origin: Heald 2

TILLAMOOK COUNTY

Geology:
 Cape Kiwanda: Laurence 2
 Nehalem River basin: Young 2
 Trask River basin: Young 2
 Radiocarbon dating:
 Drowned stumps: Rubin 1
 Waterpower resources:
 Nehalem River basin: Young 2
 Trask River basin: Young 3

TITANIUM

Annual production: Baber 3,4,5; Mason 5
 Localities:
 General: Lowthers
 Sand, coast: Kaufman; Miller, J. A.
 Mineralogy: Corcoran 2

TOLEDO FORMATION

Foraminifera: Stewart
 Fossil fish: David
 Guide book: Bostwick

TOLEDO QUADRANGLE

Guide book: Bostwick

TRASK RIVER

Water-power resources: Young 3

TRIASSIC

Correlations: Reeside
 Fossil invertebrates, coral: Squires
 Localities:
 Aldrich Mountains: Thayer 1, 8
 Bald Mountain batholith: Toubeneck 1
 Grant County: Dickinson 1
 Izee-Lodgepole quadrangles: Wallace
 Medford quadrangle: Wells
 Wallowa Mountains: Loudon; Smedes 1;
 Wetherell
 Stratigraphy:
 Age of granitic plutons: Toubeneck 6
 Bald Mountain batholith: Toubeneck 6

TRINITY CREEK FORMATION

Wallowa Mountains: Wetherell

TROUTDALE FORMATION

Columbia River, transport of deposit: Howell,
 P. W. 2
 Correlations with Portland Hills Silt: Howell,
 P. W. 5
 Ground-water resources: Hart 2; Mundorff
 Localities:
 Bear River Ridge, Wash.: Howell, P.W. 2
 Guide book: Wilkinson 5
 Portland quadrangle: Trimble
 Tualatin Valley: Hart 2
 Willamette River, drainage changes: Baldwin 2

TROWBRIDGE FORMATION

Geology: Dickinson 1; Imlay 3
 Guide book: Imlay 3

TUALATIN MOUNTAINS

Fossil vertebrate: Howell, P. W. 3
 Landslides: Howell, P. W. 3; Laurence 1
 Not Portland Hills: Richards 1; Schminky

TUALATIN RIVER AREA

Pleistocene flood deposits: Stauffer 1
 Water resources: Hart 2
 Willamette meteorite: Longe 3
 Willamette River drainage changes: Baldwin 2

TUALATIN VALLEY

Ground-water resources: Hart 2

TUFFS (see also AGGREGATE; WELDED TUFF)

Industrial uses: Mason 3

Petrographic studies: Dickinson 1, 3

TUNGSTEN

Annual production: Baber 1-4; U.S. Bur. Mines 3

Annual reviews: Mason 1

TUNNEL POINT SANDSTONE

Eugene to Coos Bay: Baldwin 5

TYEE FORMATION

Foraminifera: Stewart

Fossil localities: Steere 5

Geology:

Anlauf and Drain quadrangles: Hoover

Comas Valley quadrangle: Moore, J. F.

Glide quadrangle: Patterson

Sutherlin quadrangle: Hampton 1;

Westhusing

Tyee quadrangle: Hampton 1

Guide books: Baldwin 5; Bostwick

Landslide lakes: Baldwin 3

Structure:

Coast Range escarpment: Hansen, F.D. 1

TYEE QUADRANGLE

Geology, southeast quarter: Hampton 1

UMATILLA COUNTY

Archaeology:

McNary Reservoir: Osborne 1, 2

Geology:

Basalt magnetization: Campbell, C. D.

McNary Dam: Monahan

Rock units: Wagner 5

Umatilla River basin: Hogenson 1, 2

Minerals:

Garnet: Mineralogist 8

Zeolites, Ritter Hot Springs: Mineralogist 5

Paleontology:

Hemphillian mammalian assemblage:

Shotwell 1, 2

Tertiary rabbits: Dawson

UMATILLA RIVER BASIN

Geology: Hogenson 1, 2

UMPQUA FORMATION

Foraminifera: Patterson; Stewart

Geology:

Anlauf and Drain quadrangles: Hoover

Comas Valley quadrangle: Harms; Moore, J. F.; Peterson 1

Eugene to Coos Bay: Baldwin 5

Glide quadrangle: Patterson

Medford quadrangle: Wells

Sutherlin quadrangle: Hampton 1; Westhusing

Tyee quadrangle: Hampton 1

Structure:

Coast Range escarpment: Hansen, F. D. 1

UMPQUA RIVER

Surface water: Oreg. State Water Res. Bd. 1

UNION COUNTY

Archaeology:

Stockhoff basalt quarry: Bryan

Geology:

Northern Wallowa Mountains: Smedes 1, 2

Mineral resources:

Limestone occurrences: Wagner 4

Water resources:

Grande Ronde River basin: Oreg. State Water Res. Bd. 4

URANIUM

Annual production: Baber 2-5; U.S. Bur. Mines 3; Oreg. Dept. Geol. 25

Annual reviews: Mason 1, 4, 6, 9, 11

Exploration: Schafer

Geochemical studies: Gottfried 2

Geology: Peterson 4

Heinrichite: Gross

Localities:

General: Gottfried 1; Jarrard

Lakeview area: Gross; Lake County Examiner; Oreg. Dept. Geol. 14; Peterson 3, 4

Steens Mountain: Wilkerson

Strawberry Mountains: Gottfried 2

VALSETZ QUADRANGLE

Geology, southwestern part: Schnoible

VERMICULITE

Annual reviews: Mason 1, 9

Exfoliation: Bober 1-5

VOLCANIC ASH

Monument quadrangle: Fisher 1

Spray quadrangle: Lindsley

VOLCANIC ROCKS (see also IGNEOUS ROCKS;
INTRUSIONS; PETROGRAPHIC STUDIES)

Dating, relative:

South-central Oregon: Walker, G. W.

Lava flows:

Klamath River basin: Newcomb 5

Stayton lavas: Wilkinson 2

Localities:

Northeastern Oregon: Toubeneck 1-9;

Wagner 5

Western Cascades: Peck 3

Petrographic studies: Hells Canyon: Lupton

Stratigraphy:

Southwestern Washington: Henriksen

Tertiary: Peterson 3

Worner Basalt: Peterson 4

Tectonics: Willamette Valley: Moody

VOLCANISM

Ash flows: Smith, R. L.

Direction of flow in basalts: Waters 2

Glowing-avalanche deposits: Hoy 1

Jordan Craters: Kindschy 1

Scoria bombs: Hoy 1

Stratigraphy:

Cenozoic: Peck 3; Thoyer 5, 6, 7

VOLCANOES (see MOUNT HOOD;
MOUNT JEFFERSON;
MOUNT MAZAMA;
THREE SISTERS)

WAKEMAP

Archaeology, Columbia River site:

Coldwell: Osborne 1,2,3; Strong, W. D.

WALDPORT AREA

Foraminifera: Jones, R. W.

WALLOWA BATHOLITH

Geology: Moore; Smedes 1, 2; Toubeneck,
W. H. 4, 9

WALLOWA COUNTY

Geology:

Basalt magnetization: Campbell, C. D.

Northern Wallowa Mountains: Loudon;

Smedes 1, 2

Rock units: Wagner 5

Southeastern Wallowa Mountains: Wetherell

Wallowa batholith:

Emplacement of: Toubeneck 9

Petrographic studies: Toubeneck 4

Mineral resources:

Gem stones: Schlegel

Limestone occurrences: Libbey 1; Wagner 4

Petrographic studies:

Columbia River Basalt, twofold division of:

Waters 3

Wallowa batholith: Toubeneck 4

WALLOWA LAKE QUADRANGLE

Geology: Smedes 1

Stratigraphy: Loudon

WALLOWA MOUNTAINS

Localities:

Cornucopia stock: Toubeneck 8

Mesozoic thrust faults: Smedes 2

Northern part: Smedes 1

Southeastern part: Wetherell

Wallowa batholith: Toubeneck 4, 9

Petrographic studies: Goodspeed 1, 2

Stratigraphy: Loudon

WARM SPRINGS FORMATION (in Calpitts Group)

Geology: Dickinson 1

WARM SPRINGS RIVER

Stratigraphy: Newcomb 1

WARNER MOUNTAINS

Lost Blue Bucket mine: Shaw

WASCO COUNTY

Archaeology:

The Dalles cultural sequences: Cressman 2

Geology:

Celilo Falls: Allen, E. K.

Clarno Basin: Taylor, E. M.

Ground water:

Schoolie Flat area: Newcomb 1

Minerals:

Gem stones: Schlegel

Plantlike features in thunder eggs and
geodes: Brown, R. W. 2

Radiocarbon dating: Sorensen; Crane

WASHINGTON COUNTY

Ground water:

Tualatin Valley resources: Hart 2

Willamette Valley irrigation: Highsmith

Mineral resources:

Bauxite, Garden Home: Oreg. Dept.
Geol. 2

Expanded shale: Oreg. Dept. Geol. 5

Paleontology:

Sunset Highway fossil locality: Steere 2

Waterpower resources:

Nehalem River basin: Young 2

WASHINGTON, STATE OF

Centralia-Chehalis coal resources: Snavely

Eocene stratigraphy, Cowlitz River-Willapa
Hills: Henriksen

Toledo-Castle Rock district: Roberts

WASSON FORMATION

(in Little Butte Volcanic Series)

Locality: Medford quadrangle: Wells

WATER (see also GROUND WATER;
SURFACE WATER)

Analysis: Northcraft

WEBER FORMATION (in Colpitts Group)

Geology: Dickinson 1

WELDED TUFF

Crater Lake area: Smith, R. L.

Dorena: Smith, R. L.

Drinking Water Pass: Gray, W. L.

John Day Formation: Smith, R. L.

WESTERN CASCADES

Bohemia gold mines: Nelson, R.

Fossil flora, Rujada: Lakhonpol

Geology:

General: Baldwin 4; Peck 2

Anlauf quadrangle: Hoover

Cenozoic volcanism: Peck 3

Drain quadrangle: Hoover

Granite emplacement: Buddington

Leaburg quadrangle: Schlicker 2

Lowell quadrangle: Schlicker 2

Marcola quadrangle: Schlicker 2

Snow Peak quadrangle: Smith, R. L.

Structural trends: Hintza 1

Geomorphology: Oreg. Dept. Geol. 17;

Howell, P. W. 1

Surface water:

Rogue River basin: Oreg. State Water Res.
Bd. 3

Umpqua River basin: Oreg. State Water Res.
Bd. 1

WHEELER COUNTY

Geology:

Bald Mountain area, Richmand quadrangle:
Snook

Clarno Basin, Mitchell quadrangle: Taylor, E. M.

Spray quadrangle: Lindsley

White Butte area, Mitchell quadrangle: Howard

Mineral resources:

Limestone deposits: Libbey 1

Oil and gas exploration: Carcaran 1

Zeolite locality: Thomas, J.

Paleontology:

Cryptocollax (fungi) from Eocene: Scott 2

Engonoceras (ammonite): Packard 1

Ferns of Clarno Formation: Pabst

Lower Cretaceous (Albion) fossils: Jones,
D. L. 1

WHITE BLUFFS (WASHINGTON)

Ringold Formation, type locality: Newcomb 3

WHITE BUTTE AREA

Geology: Howard

WILLAMETTE RIVER

Dams:

Hills Creek Dam rock abutments:

Snyder 1, 2

Lookout Point Dam landslide: Staples 1

Drainage changes: Baldwin 2

Flood of January 1953: Rantz

Pleistocene flood deposits: Stauffer 1

Willamette Falls: Baldwin 2

WILLAMETTE STONE

History, Dr. John Evans: Lange 6

WILLAMETTE VALLEY

Geology: Baldwin 4; Kleck; Moody;
Wilkinson 2

Geomorphology: Oreg. Dept. Geol. 17

Gravel deposits: Howell, P. W. 4

Lebanon quadrangle geologic map: Allison

Portland ore: Howell, P. W. 3, 5; Trimble

WILLAPA HILLS (Washington)

Stratigraphy: Henriksen

WILLOW CREEK AREA

Geology: Wolf

WIMER QUADRANGLE

Fossil invertebrates: Jones, D. L. 1

WISCONSIN GLACIATION (see also
GLACIAL GEOLOGY; PLEISTOCENE)

Fossil plants: Dillon

Willamette River: Baldwin 2

YAKIMA BASALT

Sproy quadrangle: Lindsley

YAMHILL COUNTY

Ground water:

Willamette Valley irrigation: Highsmith

YAMHILL COUNTY, Continued:

Paleontology:

Lafayette fossil locality: McMinville
News-Register

YAMHILL FORMATION

Foraminifera: Stewart

Fossil localities: Steere 5

Oil and gas exploration: Newell

YAQUINA FORMATION

Guide book: Bostwick

Fossil invertebrates, foraminifera: Stewart

Fossil vertebrates, fish: David

YAQUINA QUADRANGLE

Guide book: Bostwick

YONNA FORMATION

Geology: Newcomb 4, 5

ZEOLITES

Erionite: Deffeyes; Staples 2, 3

Localities:

Durkee ore: Deffeyes

Goble ore: Mineralogist 6

Ritter Hot Springs: Mineralogist 5

Wheeler County: Thomas

Willamette Valley: Kleck

ZINC

Annual reviews:

Bober 2; Mason 1; U.S. Bur. Mines 1

ZIRCONIUM

Annual production: Mason 5

Annual reviews: Bober 1-5; U.S. Bur.
Mines 1, 3

Bibliography: Abshire 1, 2

Localities:

Sand, marine terraces: Kouffman

Metallurgy: Nielsen; U.S. Bur. Mines 2

Plant installation: Nielsen

Zircon, crystallization of: Poldervoort 1