

BULLETIN 78

**BIBLIOGRAPHY OF THE GEOLOGY
AND
MINERAL RESOURCES OF OREGON
(FIFTH SUPPLEMENT)**

January 1, 1961 to December 1, 1970



**STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES**

1973

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

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Compiled by

Miriam S. Roberts, Margaret L. Steere, and Caroline S. Brookhyser
Oregon Department of Geology and Mineral Industries

1973



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BIBLIOGRAPHY of the GEOLOGY and MINERAL RESOURCES of OREGON

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Introduction

Bulletin 78 is the fifth supplement to the original "Bibliography of the Geology and Mineral Resources of Oregon," compiled by Ray C. Treasher and Edwin T. Hodge and published in 1936. The fifth supplement lists publications that appeared during the ten years, 1961-1970. Several articles published before those dates but not listed in previous bibliographies are included because of their potential value to the researcher. As in previous bibliographies, this one includes theses, open-file reports, and other unpublished materials which may be available only in certain libraries.

The first section of this bulletin contains an alphabetical listing by author of all citations, complete with publication data. A subject index follows.

The list of serial publications cited is on page iv and is alphabetized by the abbreviations used in the author citations. A listing here does not infer that all issues of a particular journal were searched, although where possible this was done.

The previous supplements to Treasher and Hodge's "Bibliography of the Geology and Mineral Resources of Oregon," 1936, are as follows:

- Supplement 1 - Bulletin 33, covers 1936-1945, by John E. Allen
- Supplement 2 - Bulletin 44, 1946-1950, Margaret L. Steere
- Supplement 3 - Bulletin 53, 1951-1955, Margaret L. Steere and Lillian F. Owen
- Supplement 4 - Bulletin 67, 1956-1960, Miriam Roberts

Our appreciation is extended to librarians who assisted in locating source material, especially those at Oregon State Library, University of Oregon, Oregon State University, Portland State University, and the Multnomah County Library. Corrections and additions to this present volume which users may wish to submit will be appreciated by the compilers.

SERIALS CITED

Abs. N. American Geol. - Abstracts of North American Geology
 Acta Zool. Cracoviensia (Krakow, Poland)
 Am. Assoc. Adv. Sci. Pub. - American Association for the Advancement of Science Publication
 Am. Assoc. Petrol. Geologists Bull. - Bulletin of the American Association of Petroleum Geologists
 Am. Geophys. Union Trans. - Transactions of the American Geophysical Union
 Am. Jour. Sci. - American Journal of Science
 Am. Midland Naturalist - American Midland Naturalist
 Am. Mineralogist - American Mineralogist
 Am. Mus. Nat. Hist. Bull. - Bulletin of the American Museum of Natural History
 Am. Mus. Novitates - American Museum Novitates. American Museum of Natural History
 Am. Philos. Soc. Trans. - Transactions of the American Philosophical Society
 Am. Soc. Civil Engineers Proc., Jour. Waterways and Harbors Div. - Proceedings of the American Society
 of Civil Engineers, Journal of the Waterways and Harbors Division
 Am. Soc. Civil Engineers Proc., Power Div. Jour. - Proceedings of the American Society of Civil Engi-
 neers, Journal of the Power Division
 Appl. Spectroscopy - Applied Spectroscopy
 Arctic Anthropology
 Assoc. Amer. Geographers Ann. - Annals of the Association of American Geographers
 Bull. Volcanol. - Bulletin Volcanologique
 Calif. Acad. Sci. Occas. Paper - Occasional Papers of the California Academy of Sciences
 Calif. Acad. Sci. Proc. - Proceedings of the California Academy of Sciences
 Calif. Div. Mines and Geology Bull. - California Department of Natural Resources,
 Division of Mines and Geology Bulletin
 Calif. Div. Mines and Geology Min. Inf. Serv. - " " " " " " " Mineral Information Service
 Calif. Div. Mines and Geology Spec. Rpt. - " " " " " " " Special Report
 Calif. Mining Jour. - California Mining Journal
 Canadian Jour. Earth Sci. - Canadian Journal of Earth Sciences
 Chem. Geology - Chemical Geology
 Colo. Univ. Studies Ser. Earth Sci. - University of Colorado Studies, Series in Earth Science
 Condor - Condor, Journal of the Cooper Ornithological Society, Berkeley
 Contr. Mineral. Petrology - Contributions to Mineralogy and Petrology
 Cushman Found. Foram. Research Contr. - Contributions from Cushman Foundation for Foraminiferal Research
 Deep-Sea Research
 Dissert. Abs. - Dissertation Abstracts
 Drill. Internat. Mag. - Drilling International Magazine
 Earth and Planetary Sci. Letters - Earth and Planetary Science Letters
 Earth Sci. - Earth Science
 Ecology
 Econ. Geol. - Economic Geology and the Bulletin of the Society of Economic Geologists
 Elect. World - Electric World
 Eng. Geol. - Engineering Geology
 Eng. and Mining Jour. - Engineering and Mining Journal
 EOS - American Geophysical Union Transactions
 Florida Acad. Sci. Quart. Jour. - Quarterly Journal of the Florida Academy of Sciences
 Gems and Minerals
 Geochim. Cosmochim. Acta - Geochimica et Cosmochimica Acta
 Geol. Assoc. Canada Spec. Paper - Special Paper of the Geological Association of Canada
 Geol. Mag. - Geological Magazine, Hertford, England
 Geol. Rundschau - Geologisches Rundschau
 Geol. Soc. America Bull. - Geological Society of America Bulletin
 Geol. Soc. America Mem. - Geological Society of America Memoir

Geol. Soc. America Spec. Paper - Geological Society of America Special Paper
 Geol. Soc. Japan Jour. - Journal of the Geological Society of Japan
 Geol. Soc. Oregon Country News Letter - Geological Society of the Oregon Country News Letter
 Geol. Survey Canada Bull. - Bulletin of the Geological Survey of Canada
 Geo-Marine Techn. - Geo-Marine Technology
 Geophysics
 Geophys. Jour. - Geophysical Journal
 GeoSci. Abs. - GeoScience Abstracts
 Geotimes
 Harvard Univ., Mus. Comp. Zoology Bull. - Bulletin of the Museum of Comparative Zoology, Harvard
 Hydrobiologia
 Idaho Bur. Mines and Geology Pamph. - Idaho Bureau of Mines and Geology Pamphlet
 Internat. Oil and Gas Devel. - International Oil and Gas Development
 Irish Naturalists' Jour. - The Irish Naturalists' Journal
 Japanese Assoc. Mineral. Petrol. and Econ. Geol. Jour. - The Journal of the Japanese Association of
 Mineralogists, Petrologists, and Economic Geologists
 Jour. Arnold Arboretum - Arnold Arboretum Journal, Harvard University
 Jour. Geology - Journal of Geology
 Jour. Geol. Educ. - Journal of Geological Education
 Jour. Geomagnetism and Geoelectricity - Journal of Geomagnetism and Geoelectricity
 Jour. Geophys. Research - Journal of Geophysical Research
 Jour. Mammalogy - Journal of Mammalogy
 Jour. Marine Res. - Journal of Marine Research
 Jour. Materials - Journal of Materials
 Jour. Paleont. - Journal of Paleontology
 Jour. Petrology - Journal of Petrology
 Jour. Sed. Petrology - Journal of Sedimentary Petrology
 Jour. Waterways and Harbors Div. - Proceedings of the American Society of Civil Engineers, Journal of
 the Waterways and Harbors Division
 Kansas Geol. Survey Bull. - State Geological Survey of Kansas Bulletin
 Kansas Univ. Paleont. Contr. - University of Kansas Paleontological Contributions
 Kent State Univ. Research Ser. - Kent State University Research Series
 Lapidary Jour. - Lapidary Journal
 Limnol. Oceanog. - Limnology and Oceanography
 Madroño
 Marine Geol. - Marine Geology, International Journal of Marine Geology, Geochemistry and Geophysics
 Mazama
 Meteoritics
 Michigan Univ. Mus. Zoology Occas. Paper - University of Michigan Museum of Zoology Occasional Paper
 Michigan Univ. Mus. Paleont. Contr. - Contributions from the Museum of Paleontology, University of
 Michigan
 Milit. Engineer - Military Engineer
 Mineralogist
 Mineralog. Rec. - Mineralogical Record
 Mining Jour. - Mining Journal, London
 Moon
 Natl. Geographic Mag. - National Geographic Magazine
 Natl. Speleol. Soc. Bull. - Bulletin of the National Speleological Society
 Nature
 New York Acad. Sci. Ann. - Annals of the New York Academy of Sciences
 New York Acad. Sci. Trans. - Transactions of the New York Academy of Sciences
 Northwest Sci. - Northwest Science
 Nova Hedwigia Beihefte
 Ocean Indus. - Ocean Industry

Offshore
 Oil and Gas Jour. - Oil and Gas Journal
 Ore Bin - The ORE BIN
 Oregon Acad. Sci. Proc. - Proceedings of the Oregon Academy of Science
 Oregon Business Review
 Oregon Dept. Geol. and Mineral Indus. Bull - Oregon Department of Geology and Mineral Industries
 Bulletin
 Oregon Dept. Geol. and Mineral Indus. GMS - Oregon Department of Geology and Mineral Industries
 Geological Map Series
 Oregon Dept. Geol. and Mineral Indus. Misc. Paper - Oregon Department of Geology and Mineral
 Industries Miscellaneous Paper
 Oregon Hist. Soc. Quart. - Oregon Historical Society Quarterly
 Oregon Mus. Sci. Indus. Student Research Ctr. - Oregon Museum of Science and Industry Student Research
 Center
 Oregon State Engineer Ground Water Report
 Oregon Univ. Mus. Nat. Hist. Bull. - University of Oregon Museum of Natural History Bulletin
 Oriente Univ. Inst. Oceanography Bol. - Boletín del Instituto Oceanográfico de la Universidad de Oriente
 Pacific Builder and Engineer
 Pac. Discovery - Pacific Discovery
 Palaeobotanist
 Paleontology
 Pure and Appl. Geophysics - Pure and Applied Geophysics
 Quart. Jour. Geol. Soc. London - Quarterly Journal of the Geological Society of London
 Radiocarbon
 Rev. Geophysics - Review of Geophysics
 Rev. Paleobot. Palynol. - Review of Paleobotany and Palynology
 Royal Astron. Soc. Geophys. Jour. - Geophysical Journal of the Royal Astronomical Society
 San Diego Soc. Nat. Hist. Trans. - Transactions of the San Diego Society of Natural History
 Science
 Seismol. Soc. America Bull. - Bulletin of the Seismological Society of America
 Soil Sci. - Soil Science
 Soil Sci. Soc. America Proc. - Soil Science Society of America Proceedings
 South. Calif. Acad. Sci. Bull. - Southern California Academy of Science Bulletin
 State Geologists Jour. - State Geologists Journal
 Texas Jour. Sci. - Texas Journal of Science
 Torrey Bot. Club Mem. - Torrey Botanical Club Memoirs, Rutgers University
 Univ. Calif. Publ. Geol. Sci. - University of California Publications in Geological Sciences
 Univ. Utah Bull. - Bulletin of the University of Utah
 U.S. Bur. Mines I.C. - U.S. Bureau of Mines Information Circular
 U.S. Bur. Mines R.I. - U.S. Bureau of Mines Report of Investigation
 U.S. Geol. Survey Bull. - U.S. Geological Survey Bulletin
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 Veliger - The Veliger
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 Wash. State Inst. Tech. Bull. - Washington State Institute of Technology Bulletin
 Wash. State Univ. Lab. Anthropology R. I. - Washington State University Laboratory of Anthropology
 Report of Investigations
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Sea stacks and reefs: Hunter, R. E.
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CAPE SEBASTIAN STATE PARK
Geology: Howard, J. K. 2

CARBON DIOXIDE
Annual production: Fulkerson 1, 3
Geology of deposits: Wagner, N. S. 10

CARBON-14 DATING (see ABSOLUTE DATING)

CASCADAN OROGENY
Circumpacific structural rejuvenation: Dott 10
Dalles-Umatilla syncline: Newcomb 9
Eocene deltaic sedimentation: Dott 9
Ochoco Summit: Gamer 1
Southwest Oregon coast: Dott 7

CASCADE ANDESITE
Cascade Range: Christiansen
Columbia River Gorge: Baldwin 10
Fly Creek and Round Butte Dam quads.: Hewitt
Hood River Valley and Cascade Locks: Sceva 3, 4
McKenzie River valley: Jan
Pillow structure: Lund, E. H. 4

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WESTERN CASCADES)

CASCAN ANDESITE
Mutton Mtns.: Perrault 2

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Goble area: Evans, H. T.; Staples 8, 10
Owyhee Dam area: Staples 8, 10

CAVE JUNCTION QUADRANGLE

Galice Fm., Babyfoot Lake area: Wise, J. P.
Josephine peridotite sheet: Ramer
Stratigraphy: Imay 1

CAVES (see SPELEOLOGY)

CAVINESS QUADRANGLE

Geology of northern part: Wolff 1, 2

CEDAR BUTTE

Geology, "augite locality": Nelson, D. O.

CEDAR MOUNTAIN QUADRANGLE

Geology: Russell, R. G.

CEDARVILLE SERIES

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Plush area: Larson 1

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CERAMIC MATERIALS

Pacific Stoneware: Ore Bin 14

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Lake Owyhee State Park: Corcoran 3
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CHAMPOEG STATE PARK

Ground water, demonstration well: Sceva 6

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Ferruginous bauxite: Ore Bin 10

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CHETCO PEAK QUADRANGLE

Geology, Galice Fm., Babyfoot Lake area: Wise, J. P.

CHETCO RIVER AREA

Geology, Babyfoot Lake: Wise, J. P.
Mineral resources, chromite: Ramp 1
Sediments, grain size analysis: Bloomquist

CHROMITE (see also BLACK SANDS)

Geology of deposits: Ramp, 1; Thayer 11
Grants Pass stockpile: Hunter, W. L.
Occurrences: Thayer 11
Beach sands: Hess, H. D.
Blue Mtn. region: Thayer 10
Illinois River Valley: Ramer
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John Day country: Thayer 12
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Southwestern Oregon: Ramp 1
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Recent volcanism: Taylor, E. M. 2
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CINNABAR TUFF TONGUE (see also FIELDS CREEK FORMATION)

Nomenclature: Brown, C. E. 4; Cohee

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Absolute dating:

Laurel Hill pluton and dike: Bikerman
Molalla flora: Axelrod 5

Engineering geology, Tualatin Valley region:
Schlicker 5

Geologic maps, unpublished:

Molalla-Salem Slope area: Hampton 6

Geology:

Field trips:

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Lake Oswego area: Nafziger 1; Rentsch
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Newton 28

Western Cascades: Pack 1, 2, 4

Western Oregon: Snively 14

Geomorphology, Lake Oswego area: Parsons,
R. B. 2

Ground water:

East Portland area: Foxworthy 2; Hogenson 3

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Levels 1961-1965: U.S. Geol. Survey 23

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Minerals and mineral resources:

Gold and silver, North Santiam district: Brooks 6

Gravel deposits: Glenn 1

Kaolin: U.S. Bur. Mines 4

Mercury: Baker 2; U.S. Bur. Mines 3

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- Oil and Gas; nitrogen well at Molalla: Newton 4
- Stratigraphy, Tertiary: Snavely 3
- Surface water:
 - Willamette River basin: Oreg. St. Water Res. Bd. 5; Oster 2
 - Willamette meteorite: Lange 4, 9

CLACKAMAS UPLAND

- Geology: Howell 4

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- Absolute dating, fossil mammals: Evernden 2
- Fossil flora: Hergert
 - Acacia wood: Gregory, I. 4
 - Fern, dennstaedtioid: Arnold 2
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- Fossil vertebrates:
 - Colodon? hancocki*, sp. nov. (Tapiroidea): Radinsky
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 - Ochoco Pass freshwater fish: Cavender 1
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 - Aldrich Mtn. quad.: Thayer 4
 - Antelope-Ashwood area: Peck 5
 - Bend AMS quad.: Stensland; Swanson, D. A. 4, 6
 - Blue Mtn. region: Thayer 10
 - Clarno area: Hergert
 - Courtrock quad.: Thayer 7
 - Cove Palisades State Park: Bartholomay 2; Peterson, N. V. 18
 - Dayville quad., SW $\frac{1}{4}$: Forth
 - Deschutes-Umatilla plateau: Newcomb 10
 - Dufur quad.: Waters 5
 - Eagle Rock quad.: Waters 7
 - High Lava Plains province: Walker 14
 - John Day country: Thayer 11
 - Long Creek quad.: Thayer 6
 - Lookout Mtn. quad: Swinney
 - Madras quad.: Waters 6
 - Mitchell 30' quad.: Lukanuski; McKnight, B. K. 2; Patterson, R. L.; Wilkinson
 - Monument quad.: Wilcox, R. E. 3
 - Mount Vernon quad.: Brown, C. E. 3
 - Mutton Mountains: Perrault 2
 - Newberry Caldera: Higgins
 - Ochoco Reservoir quad.: Waters 8
 - Ochoco Summit: Gamer
 - Oregon King mine: Libbey 2; Ojala
 - Picture Gorge quad.: White, W. H.
 - Pilot Rock-Heppner areas: Pigg
 - Post quad.: Waters 4
 - Prairie City quad.: Thayer 8

CLARNO FORMATION, Localities, continued

- Stein's pillar area: Waters 2
- Umatilla River basin: Hogenson
- Stratigraphy; "post-Clarno" of Waters: Swanson, D. A. 5
- Structure:
 - Early Tertiary deformation: Fisher 12
 - Post-Clarno uplifts: Rogers 2

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- Archaeology; ancient bay, Seaside: Dark
- Estuaries, sedimentation: Lockett 1, 2
- Fossil invertebrates:
 - Astoria Fm. mollusks: Moore, E. J.
 - Miocene foraminiferal stages: Turner
- Gem stones; quartz crystals: Speckels
- Geology:
 - Astoria Formation concretions: Boggs 1, 7
 - Coastal landslides: North 1, 2
 - Columbia River Basalt: Dodds, R. K. 3, 4
 - Columbia River sediments: Whetten 3, 5
 - Clatsop Spit: Kidby
 - Ecola State Park landslide area: Schlicker 1
 - Saddle Mtn. field trip: Nafziger 2
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 - Shoreline changes: Behlke
 - Subsurface, lower Columbia basin: Newton 28
 - Svensen quad.: Dodds, R. K. 2
 - Tertiary: Snavely 3, 4, 14
- Ground water, Clatsop Plains sand dune area:
 - Frank, F. J. 1, 3
- History: Astoria Fm. type locality: Dodds, B. R. 1, 2
- Mineral prospecting, beach sands: Ore Bin 26, 31
- Minerals and mineral resources:
 - Black sands: Clifton 3; Kauffman; Peterson, E. C.
 - Monazite: Overstreet
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 - Columbia River:
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 - Water temperatures: Moore, A. M. 3
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- Ground water, sand-dune area: Frank, F. J. 1, 3

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- Annual production: Collins, R. P. 1, 2, 3; Fulkerson, 1, 2, 3, 6, 7; Gray, J. J. 1, 2, 3
- Building construction, Portland: Mason, R. S. 15
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 - Arago deposit: Baldwin 14
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 - Cascadia channel: Griggs, G. B. 6
 - Vale deposit: Corcoran 2

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- Occurrence:
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 - John Day Formation: Ames 2; Fisher 1, 2, 8
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- Petrographic studies: Brown, R. E. 1; Fisher 1
- Chemical analyses: Ames 1, 2

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- Localities:
 - Blue Mtn. region: Thayer 10
 - Sawtooth Ridge: Patterson, P. V. 2
 - Snake River Canyon: Brooks 8; Vallier 6
 - Sparta quad.: Prostka 1, 2
 - Wallowa Mtns.: Nolf 2
- Paleotectonics, Permian system: Ketner 1
- Stratigraphy:
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COAL

- Annual production: Collins, R. P. 1; Fulkerson 3, 6
- Fossil flora; Palynology, Coos Bay area: Hopkins, W. S.
- Geology of deposits: Mason, R. S. 22
- Coos Bay field: Baldwin 14; Dott 9; Geer 2; Klohn, M. L.; Yancey
- Squaw Basin and Eden Ridge beds: Wayland
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- Industry:
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- Fossil invertebrates; Echinoderm described: Blake, D. B. 2
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- Sedimentary features:
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 Blue Mtn. region: Thayer 10
 Standard mine ore treatment: Hill

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Supplee area: Perrault 1

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Collier Butte area: Burt, W. D.
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 Klamath Province: Baldwin 16; Koch, J. G. 2
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 Metamorphic zonation: Blake, M.C.
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Ashland area: Elliott; Peterson, G. L. 1
 Central-western Oregon: McWilliams
 Dixonville quad., northern part: Champ
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 South Umpqua Falls region: Kays 6
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Geology: Burt, W. D.
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Fossil invertebrates; Oligocene marine worm:
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 Tertiary, altitude of: Axelrod 5

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 Volcanism:
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Salvage: Bergen
 Wildcat Canyon site inundated: Cole

Bonneville Reservoir:

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Dike swarms:

Chief Joseph: Taubeneck 19
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 Tualatin Valley region: Schlicker 5

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 East Portland area: Hogenson 3
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 Cape Lookout State Park area: Mangum
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1, 2

Geology:

North-central Coos Bay quad.: Kohn, M. L.

Revisions: Baldwin 11

State Parks near Cape Arago: Ehlen 1

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Soils engineering:

Highway embankment failure: Bell

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Geology:

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Revisions: Baldwin 11

Mineral resources; coal: Wayland

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Fossil invertebrates: Armentrout

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Paleontology:

Fossil flora:

Miocene silicoflagellates: Orr 1, 2

Palynology, Coos Bay area: Hopkins, W. S.

Fossil invertebrates:

Astoria Fm. mollusks: Moore, E. J.

Echinodermata described: Blake, D. B. 2

Late Pleistocene: Zullo 3

Mediargo, new Tertiary genus: Terry

Miocene: Armentrout

New genus of gastropod: Hertlein

Pliocene: Armentrout

Rock-boring clam: Evans, J. W. 1, 2

Fossil vertebrates; Pliocene: Armentrout

Petrology:

Convolute lamination of sediments: Dott 2

Depositional environment of ancient sediments:

Bloomquist

Eugeosynclinal deposits, Tyee Fm.: Snavely 6

Sea-level rise, time of: Hubbs

Stratigraphy:

Coos conglomerate: Armentrout

Correlation of Cretaceous formations: Popenoe

Cretaceous sequences: Peterson, G. L. 1

Empire Fm.: Armentrout

Langlois quad.: Phillips, R. L.

Tarheel Fm.: Armentrout

Tertiary geologic history: Snavely 3

Tyee Fm. biostratigraphy: Bird

Structural geology:

Langlois quad.: Phillips, R. L.

Mesozoic-Cenozoic tectonic history: Dott 7

Surface water, south coast basin: Oreg. St. Water

Res. Bd. 4

COPPER

Annual production: Bowen 2; Collins, R. P. 1, 2, 3;

Fulkerson 1, 2, 3, 7; Gray, J. J. 1, 2, 3

Exploration: Gray, J. J. 2

Geochemical sampling: Ore Bin 25

Geology:

Bohemia mining district: Lutton

Cowboy Mine: Shenon

Mines:

Iron Dyke, Queen of Bronze: Bowen 2

Standard, ore treatment: Hill, R. B.

Occurrences:

Blue Mtn. region: Thayer 10

Denio Canyon gossan: Rowe

Snake River canyon: Morrison, R. F. 2

Sparta quad.: Prostka 1, 2

Production and potential: Knostman 2

Resources: Bowen 2; Everett, F. D.

COPPERFIELD QUADRANGLE

Geology: Vallier 1

COQUILLE FORMATION

Coast near Bandon: Ehlen 2

Northwestern Oregon: Snavely 4

COQUILLE QUADRANGLE

Geology:

Fairview-McKinley area: Nelson, E. B.

Myrtle Point area: Baldwin 14

T. 29S., R. 11 W.: Fairchild

T. 28S., R. 11 W.: Magoon

COQUILLE RIVER AREA

Geology, Sitkum quad.: Trigger

Mineral resources; Chromite: Ramp 1

Umpqua Fm., biostratigraphy: Thoms 2

CORNUCOPIA MINE

Sale: Ore Bin 9; Oregonian 2

CORNUCOPIA QUADRANGLE

Fossils; Permian brachiopod: Waterhouse

Geology:

Cornucopia stock: Taubeneck 2, 11, 13

Snake River Canyon: Vallier 1

Metamorphism: Taubeneck 6

Wallowa Mtn. uplift: Taubeneck 7

CORVALLIS QUADRANGLE

Geology, Albany-Newport area: Bromery 4

COUGAR PEAK AREA

Geology: Walker 3

COURT ROCK QUADRANGLE

Geologic map: Thayer 7

John Day Fm., pyrogenic mineral stability:

Fisher 13

Ignimbrite: Fisher 8

COVE PALISADES STATE PARK

Geology: Bartholomay 2; Peterson, N. V. 18

Pleistocene Lake Metolius, volcanic evidence:

Campbell D. 3

COW CREEK LAKES AREA

Petrography of basalts: Millhollen

COW CREEK VALLEY

Ground water: Newcomb 3

COW VALLEY

Basaltic caprock as aquifer: Foxworthy 1

Geology, Brogan quad.: Fouch

Ground-water resources: Brown, S. G. 1;

Foxworthy 1

COWLITZ FORMATION

Fossil corals, new species: Blake, D. B.

COWLITZ FORMATION, continued

Fossil nautiloid, new species: Palmer, K. V. W. 1, 2

Localities:

- Central-western Oregon: McWilliams
- Kelso-Cathlamet area, Wash.: Livingston
- Nehalem River area: Geol. Soc. Ore. Country News Letter 1; Howell 3
- Northwestern Oregon: Snively 4
- Vernonia-Banks area: Mason, R. S. 12

COYOTE BUTTE FORMATION

Fossil invertebrates:

Fusulinids:

- New species *Polydiexodina*: Bostwick 3
- Suplee area: Skinner, J. W.
- Permian paleotectonics: Ketner 1
- Suplee area tectonics: Perrault 1

COYOTE HILLS VOLCANICS

Plush area: Larson 1

CRACK-IN-THE-GROUND

Geology: Peterson, N. V. 2

CRATER LAKE (see also MAZAMA ASH, MOUNT MAZAMA)

- Aeromagnetic and gravity survey: Blank 3, 4
- Bathymetry: Byrne 1, 11
- Caldera studies: Williams, H. 1, 2, 3
- Chemical analyses of obsidian and pumice: Jack 2
- Dating eruption: Briggs; Edwards
- General description: Bue; Edwards
- Hydrology: Phillips, K. N. 2
- Indian myths: Clark, E. E.
- Limnology, sediment studies: Burke; Nelson, C. H. 1, 2
- Llao Rock dacite: Ryden
- Pumice:
 - Soil development on dated deposits: Tidball
 - Sorting, fragment size: Fisher 7
 - Volume: Williams, H. 3
- Silic lavas, flow layering: Benson 3
- Structural lineaments: Allen, J. E. 2; Blank 4
- Submerged volcano: Brogan 1; Williams, H. 1
- Tritium: Simpson
- Volcanic ejecta, accidental: Taylor, E. M. 3
- Sorting: Fisher 7

CRATER LAKE NATIONAL PARK

- Ecology of pumice desert: Horn, E. M.
- Geology: Williams, H. 2

CRATERS (see also CRATER LAKE)

Maars:

- Big Hole: Lorenz
- Collier State Park: Peterson, N. V. 3
- South-central Oregon: Peterson, N. V. 5
- Moon, and Oregon volcanoes: Waters 3
- Sawtooth Ridge, Baker County: Patterson, P. V. 2

CRESCENT AMS QUADRANGLE

Geology, E $\frac{1}{2}$: Walker 10

CRETACEOUS (see also MESOZOIC, PALEONTOLOGY)

Formations: see Days Creek, Myrtle Group, Hornbrook

Fossil invertebrates:

- Ammonites, in *Buchia* zones: Imlay 6
- Anisoceras*, new species: Packard 1
- Buchia* zonation: Jones, D. L. 1, 2; Imlay 6
- Meekia*, enigmatic genus: Saul
- Pinna: Packard 2; Peterson, G. S. 4

Fossil plants:

- Chuckanut Fm. correlation: Pabst
- Historical background of flora: Detling
- New Valanginian flora: Lowther

Intrusions:

- Klamath Mtns.: Kays 5
- Wallowa batholith: Nolf 4

Localities:

- Ashland area: Elliott; McKnight 3
- Bone Mtn. quad.: Krans
- Cape Sebastian State Park: Howard, J. K. 2
- Caviness quad.: Wolff 2
- John Day Country: Thayer 12
- Klamath Mtns.: Irwin 3
- Mitchell area: Fisher 12; McKnight 1, 2; Swanson, D. A. 6; Wilkinson
- Sea stacks and reefs: Hunter, R. E.
- Suplee area: Dickinson 6, 7; Vigrass
- Oil-test cores age-dated: Ore Bin 52

Sedimentation:

- Convolute lamination: Dott 2
- Flysch, southwest Oregon: Aalto 2
- Granitic clasts in conglomerates: Taubeneck 17
- Marine embayment: Buddenhagen 1
- Mudstones, effect of intrusions: Jarman, C.
- Plutonic clasts in conglomerates: Taubeneck 20
- Sandstone, slump structures: Boggs 5
- Superimposed rhythmic patterns: Dott 5

Stratigraphy:

- Correlation of formations: Popenoe
- Regional sequences: Peterson, G. L. 1, 2, 3
- Southwest Oregon, *Buchia* zones: Jones, D. L. 1, 2; Imlay 6

Tectonics:

- Chronology: Gilluly 1
- Discontinuities: Peterson, G. L. 2, 3
- Late Mesozoic orogenesis: Koch, J. G. 2; Irwin 2
- Quartz diorite line: Moore, J. G. 1

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Fossil Flora:

- Acacia Wood: Gregory, I. 4
- Palm wood: Gregory, I. 2
- Worm-bored poplar: Gregory, I. 3

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Fossil invertebrates:

- Late Jurassic ammonites: Imlay 1
- Meekia, Cretaceous pelecypod: Saul
- Suplee area: Walters

Fossil vertebrates; Miocene mammals: Shotwell 9

Geology:

Paulina Basin: Davenport

Quadrangles:

Bend: Swanson, D. A. 4, 6

Crescent: Walker 10

Dayville: Forth

Eagle Rock: Waters 7

Lookout Mountain: Swinney

Mitchell: Lukanuski

Ochoco Reservoir: Waters 8

Post: Waters 4

Stein's Pillar area: Waters 2

Suplee-Izee area: Dickinson 5, 6, 7; Perrault 1;

Vigross

Ground water:

Levels, 1961-1965: U.S. Geol. Survey 23

Prineville area: Robinson, J. W.

Minerals and mineral resources:

Agates: Ashby 1, 2

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Mercury: Bailey 3; Brooks 2; U.S. Bur. Mines 3

Petrographic analysis, concrete sand: DePuy

Stratigraphy:

Correlation of Cretaceous formations: Popenoe

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Suplee area Devonian rocks: Kleweno 1, 2

Structure; John Day uplift: Buddenhagen 1, 2

CROOK POINT AREA

Cape Sebastian-Crook Point area: Howard, J. K. 1

Cape Sebastian State Park: Howard, J. K. 2

CROWLEY AREA

Geology: Green, A. R.

CUPRUM QUADRANGLE

Geology, Snake River Canyon: Brooks 5, 8; Vallier 1

CURRY COUNTY

Absolute dating:

Picea sitchensis cones: Sullivan, B. M. 1

Pleistocene invertebrates: Richards

Geology:

Alpine tectonism: Kays 5

Babyfoot Lake area: Wise, J. P. 5

Cape Blanco area: Dott 1; Farooqui

Cape Sebastian State Park: Howard, J. K. 2

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Deltaic sedimentation: Dott 4

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Horse Sign Butte black sand deposit: Baldwin 12

Humbog Mtn. State Park area: Koch, J. G. 1

Langlois quad.: Lent

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Lower Illinois River: Ramp 5

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Pearse Peak diorite: Kaiser

Pleistocene deposits: U.S. Geol. Survey 16

Quosatana Butte area: Schwab

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Coal; Squaw Basin and Eden Ridge: Wayland

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Heavy minerals: Boggs 3; Kulm, L. D. 8, 9

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Oregon Islands Natl. Wildlife Refuge:

Weissenborn 1, 4

Platinum in beach deposits: Mertie

Priceite, Lone Ranch area: Hoffman

Stream-sediment samples: Bowen 3

Paleontology:

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Dothan (?) fossils discovered: Ramp 9

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Depositional environment of ancient sediments:

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Fluvial sediment size-shape relationships, Elk

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Nickel-bearing stream sediments: Ore Bin 53

Pebble counts, Sixes River: Boggs 4

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Pleistocene deposits: U.S. Geol. Survey 16

Port Orford Conglomerate: Farooqui

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Stratigraphy:

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Late Mesozoic, Port Orford-Gold Beach area:

Koch, J. G. 3

Marine terraces near Cape Blanco: Janda

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Tertiary geologic history: Snavely 3

West-central Klamath Province: Widmier

Structure:

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Langlois quad.: Phillips, R. L.

Mantle-derived peridotites: Medaris 1, 2

Mesozoic-Cenozoic tectonic history: Dott 7

Mesozoic orogenesis: Koch, J. G. 2

Thrust fault, lower Rogue River: Baldwin 15

Surface water, south coast basin: Oreg. St. Water

Res. Bd. 4

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DALLES FORMATION (see also DESCHUTES FORMATION, MADRAS FORMATION)

Age designation: Cohee

Ellensburg flora of Washington: Smiley

Ground water, artificial recharge: Foxworthy 3

Lithology: Newcomb 8

Localities:

Antelope-Ashwood area: Peck 5

Columbia River Gorge: Baldwin 10

Cove Palisades State Park: Peterson, N. V. 18

Deschutes Canyon: Hall

Dufur quad.: Waters 5

Madrass quad.: Waters 6

Mount Hood area: Wise, W. S. 5

Mutton Mtns.: Perrault 2

Sherman County soil survey: Mayers

Western Cascades: Griggs, A. B.

Stratigraphy:

Deschutes-Umatilla plateau: Newcomb 10

Eastward extension: Newcomb 8

Structure:

Dalles-Umatilla syncline: Newcomb 9

Post-Clarno uplifts: Rogers 2

DALLAS QUADRANGLE

Geology: Baldwin 6

DAM AND RESERVOIR SITES

Archaeology, John Day Reservoir: Cole

Engineering geology:

Cougar Dam: Eisiminger

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U.S. Bur. Reclamation 2

Rogue River Basin Project: U.S. Bur. Reclamation 1

Round Butte Dam: Campbell, D. G. 1, 2

Smith River reservoir: Staples 4

Geology:

Alsea River basin: Young, L. L. 5

Brownlee: Brooks, 5, 8; Stearns 3

Detroit: Peck 2; Punggrassami

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Nehalem basin: Young, L. L. 4

Owyhee: Corcoran 3

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Prineville: Swanson, D. A. 6

Round Butte: Peterson, N. V. 18

Thief Valley: Couch 1

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DANFORTH FORMATION

Localities:

Basin and Range province: Walker 17

Buzzard Creek area: Walker 18

Harney Basin: U.S. Geol. Survey 7

Malheur Natl. Wildlife Refuge: Walker 12

Plush area: Larson 1

Sawtooth Creek quad.: Beeson, M. H. 1

Supplee-Izee area: Dickinson 5

Petrographic studies: Davenport

Ash flows: Beeson, M. H. 2; Lund, E. H. 2, 3

Trace elements of silicic volcanic rocks:

Beeson, M. H. 3

Welded tuff: Lund, E. H. 1

DATING (see ABSOLUTE DATING)

DAYS CREEK FORMATION (see also MYRTLE GROUP)

Ammonites from Buchia zone: Imlay 6

Localities:

Dixonville quad.: Hixson

Klamath Mtns. province: Ramp 6

Roseburg-Grants Pass area: Steere

Roseburg quad.: Johnson, W. R.

Stratigraphy:

Lower Cretaceous discontinuity: Peterson, G. L. 3

Regional Cretaceous sequences: Peterson, G. L. 1

DAYVILLE QUADRANGLE

Geology: Forth

Stratigraphy; regional Cretaceous sequences:

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Clinoptilolite: Fisher 1, 2

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DEER BUTTE FORMATION

Fossil floras:

Sucker Creek-Trout Creek: Graham 1

Trapper Creek: Axelrod 1

Fossil vertebrates:

Freshwater fish (*Esox*): Cavender 3

Mammals: Shotwell 9

Localities:

Cedar Mtn. quad.: Russell, R. G.

Freezeout Mtn. area: McMurray

Lake Owyhee State Park: Corcoran 3

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Owyhee Reservoir area: Kittleman 2, 3, 4

Western Snake River basin: Newton 8

Stratigraphy and lithology: Johnson, A.

DELINTMENT LAKE QUADRANGLE

Lower Jurassic ammonites: Imlay 5

DESCHUTES COUNTY

Absolute dating:

Charcoal:

Lava Cast Forest: Buckley 3

McKenzie Pass area: Chatters 6

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13, 15; Tamers

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Geology:

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Ground water:

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Round Butte Dam: Campbell, D. G. 1, 2

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Archaeology; kitchen middens: Roscoe

Geology:

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Ground water:

Cow Valley: Foxworthy 1

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Geology, reservoir area: Punggrassami

DEVONIAN

Middle Devonian fauna: Kleweno 1

Suplee area: Danner 3; Kleweno 1, 2;

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Bandon area: Orr 1

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Collier State Park area: Peterson, N. V. 3

Davis Lake: Messina-Allen

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Ironside Mtn. quad.: Lowry

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Localities:

Brogan quad.: Fouch

Caviness quad.: Wolff 2

Malheur Gorge area: Haddock 2

Owyhee region: Kittleman 3, 4

Miocene mammals: Shotwell 9

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Geology: Champ; Hixson

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Blue Mtn. region: Thayer 10

Ironside Mtn. quad.: Lowry

Topographic history, Snake River Basin: Axelrod 4

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Fossil invertebrates:

Buchia piochii (Gabb) discovered: Ramp 9

Late Jurassic ammonites: Imlay 1

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Babyfoot Lake area: Wise, J. P.

Cape Blanco area: Dott 1

Collier Butte area: Burt, W. D.

Coos Bay: Dott 9

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Horse Sign Butte area: Baldwin 12

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Myrtle Creek area: Coleman 1

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Roseburg-Grants Pass area: Steere 2

Quadrangles:

Dixonville: Hixson

Powers: Born

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Stratigraphy:

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Structure:

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Mesozoic-Cenozoic tectonism: Dott 7

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Absolute dating, Loon Lake: Ore Bin 7

Faults, Roseburg area: Baldwin 4, 5

Fossil invertebrates:

Mollusca:

Ammonites from Buchia zones: Imlay 6

Structural and stratigraphic significance of

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Geology:

Klamath Mtns. province: Ramp 6

Nickel Mtn. mine: Chace; Cumberlandidge

Quadrangles:

Anlauf, Drain: Hoover

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Gladwell; Onions

Western Cascades: Peck 1, 2, 4

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Ground water, coastal area: Hampton 3; Ore. St.

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Minerals and mineral resources: U.S. Bur. Mines 2

Chromite: Ramp 1; Trost

Gold and silver: Brooks 6

Kaolin: U.S. Bur. Mines 4

Mercury: Bailey 3; Brooks 2; U.S. Bur. Mines 3

Nickel: Hotz 5

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Stream-sediment samples: Bowen 3

Petrology:

Glaucophane-bearing metamorphic rocks:

Taylor, H. P. 2

Nickeliferous laterites: Hotz 2

Peridotite: Hotz 1

Summit Rock cavity minerals: Kleck

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Western Cascades volcanic series: Kays 6

Stratigraphy:

Correlation of Cretaceous formations: Popenoe

Cretaceous sequences: Peterson, G. L. 1

Roseburg 15' quad.: Johnson, W. R.

Tertiary geologic history: Snively 3

Western Cascades volcanic series: Kays 6

Structure:

Mesozoic-Cenozoic tectonic history: Dott 7

Roseburg 15' quad.: Johnson, W. R.

Surface water:

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Umpqua River basin: Curtiss

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Snake River Canyon: Vallier 1

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Juntura Basin: Shotwell 3
Owyhee region: Kittleman 3

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Geology: Waters 5

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DURKEE QUADRANGLE

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EAGLE CAP QUADRANGLE

Geology: Carnahan
Metamorphism: Taubeneck 6
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Clackamas upland: Howell 4
Columbia River Gorge: Baldwin 10
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Hood River Valley: Sceva 2, 4
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Wind River (Wash.) area: Sullivan, Irma

EAGLE ROCK QUADRANGLE

Geology: Waters 7

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Engineering geology:
Portland area: Gates; Schlicker 3
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Offshore: Bostrom; Couch 5; McEvilly;
Rinehart, V. J. 1
Portland: Couch 4; Dehlinger 1, 2;
Heinrichs 1; Westphal

EARTHQUAKES, Recorded, continued

Puget Sound, April 29, 1965: Algermissen;
Chiburis 1; Steinbrugge
Vancouver, Dec. 2, 1841: Strong 4
Warner Valley, 1968: Couch 3
Travel-time curves:
Offshore 1968: Couch 5
Pacific Northwest: Dehlinger 4
Warner Valley: Couch 3
Western Oregon, 1962-1963: Dehlinger 3
Tsunamis:
Oregon coast: Schatz
Warning system: Pattullo

ECOLA STATE PARK

Geology, landslide area: Schlicker 1

ECONOMIC GEOLOGY (see MINERAL DEPOSITS; MINERAL RESOURCES; specific mineral)

For areal, see subhead under areal listing

EDEN RIDGE (see also COAL)

Biostratigraphy, Tyee Fm.: Bird
Geology: Baldwin 9
Powers quad: Born

ELIOT GLACIER

Field trip: Mason, R. S. 27

ELK RIVER BEDS

Fossil invertebrates:
Mollusca date beds as Pliocene: Addicott 1
Pelecypod *Psephidia*: Clifton 4
Fossil vertebrates; mammals, Cape Blanco: Leffler

ELKHORN MOUNTAINS

Geology: Brooks 11

ELKHORN RIDGE

Geology: Derksen

ELKHORN RIDGE ARGILLITE

Fusulinids, crinoids in Baker County rocks:
Bostwick 1
Localities:
Blue Mtn. region: Thayer 10
Burnt River Canyon: Ashley 1, 2
Durkee quad.: Prostka 3
Snake River Canyon, Huntington to Hells
Canyon: Brooks 5
Sparta quad.: Prostka 1, 2
Sumpter quad.: Derksen
Permian system paleotectonics: Ketner 1
Petrology: Switek
Stratigraphy: Switek
Structure:
Basin and Range faulting: Switek
Jurassic, Cretaceous: Switek
Late Mesozoic orogens: Hamilton 1

ELKTON QUADRANGLE

Geology, lower Umpqua River area: Baldwin 1

ELKTON SILTSTONE MEMBER (TYEE FORMATION)

Central-western Oregon: McWilliams

Nomenclature: Baldwin 1; Bird; Snively 6

Sublittoral to neritic deposition: Thoms 2

ELLENSBURG FORMATION

Ellensburg flora in Wash.: Smiley

Localities: Bingham

Dufur quad.: Waters 5

Madras quad.: Waters 6

Simcoe Mtns. volcanic area, Wash.: Sheppard 1

Petrography; Fused tuff and peperites: Schmincke 1

EMERY

Western Cascades: White, J. C.

EMPIRE FORMATION

Erosion by rock-boring clam: Evans, J. W. 2

Fossil invertebrates: Armentrout; Ehlen 1

Mediargo, n. gen. in Cymatidae: Terry

Miocene marine mollusks: Moore, E. J.

Fossil vertebrates: Armentrout

Localities:

Cape Blanco area: Dott 1

Coast, near Bandon: Ehlen 2

Coos Bay area: Armentrout; Baldwin 11; Dott 9; Terry

Langlois quad.: Lent

State Parks near Cape Arago: Ehlen 1

EMPIRE QUADRANGLE

Echinoderm described: Blake, D. B. 2

Geology: Armentrout; Baldwin 11; Dott 9; Ehlen 1

ENGINEERING GEOLOGY (see DAM SITES, EARTHQUAKES, ENVIRONMENTAL GEOLOGY, FLOODS, LANDSLIDES, SOILS)

ENRIGHT QUADRANGLE

Geology, Cedar Butte area: Nelson, D. O.

ENTERPRISE QUADRANGLE

Geology, Lostine River valley: Goebel

Lower Jurassic ammonites: Imlay 5

Petrography, Cornucopia stock: Taubeneck 11

Wallowa Mtn. uplift: Taubeneck 7

ENVIRONMENTAL GEOLOGY (see also EARTHQUAKES, FLOODS, LANDSLIDES, SOILS)

Dams:

Carmen Smith diversion tunnel: Staples 4; Western Construction

John Day Dam spillways: Nelson, P. 1

Rogue River Basin Project, Talent Div.: U.S. Bur. Reclamation 1

ENVIRONMENTAL GEOLOGY, continued

Hazards:

Landslides:

Coastal: North 1, 2; Oreg. St. Highway Div.

Volcanic: Hyde

Mudflows: Hyde

Nueces ardent: Hyde

Portland area: Gates; Schlicker 3

Tualatin Valley: Schlicker 5

Land-use planning:

Marion County: Schlicker 6, 7

Mid-Columbia aggregate and rock sites: Olcott

Mid-Columbia River waterfront: Meyers

Mineral resources: Dole 5

Tualatin Valley: Schlicker 5

Materials:

Engineering properties of soils: U.S. Soil Conserv. Serv.

Future sand, gravel, crushed rock requirements:

Olcott; Schlicker 5, 6, 7

Resource analysis, Neskowin to Tillamook:

Oreg. St. Highway Div.

Urban development:

Zoning laws: Schlicker 4

Waste disposal:

Coos Bay and Eden Ridge coal fields: Geer 2

Columbia River estuary - radionuclide movement: Prych

EOCENE

Formations:

Burpee, name abandoned: Snively 6

Of southwestern Oregon: Baldwin 3

See also:

Clarno

Coaledo

Colestin

Cowlitz

Goble Volcanic Series

Keasey

Siletz River Volcanic Series

Spencer

Toledo

Tyee

Umpqua

Yamhill

Fossil flora:

Acacia wood: Gregory, I. 4

Chuckanut Fm. correlation: Pabst

Clarno Fm.: Axelrod 2, 4

Ferns: Arnold 1, 2

Coos Bay area: Hopkins, W. S.

Historical background: Detling 2

Paleogene biostratigraphy: Wolfe 4

Palm wood: Gregory, I. 2

Palynology: Tschudy

Snake River basin: Axelrod 4

Worm-bored poplar: Gregory, I. 3

EOCENE, continued

Fossil invertebrates:

- Echinoderm: Blake, D. B. 2
- Eutrophoceras, n. sp.: Palmer, K. V. W.
- Fairview-McKinley area: Nelson, E. B.
- Two new corals: Blake, D. B. 1

Fossil vertebrate:

- Colodon? hancocki, sp. nov. (tapiroidea): Radinsky
- Hemipsalodon skull: Mellett
- Sand shark: Applegate

Localities:

- Bend AMS quad.: Swanson, D. A. 6
- Cedar Butte: Nelson, D. O.
- Central Coast Range: Snively 7
- Coast Range: Lovell 4
- Cove Palisades State Park: Peterson, N. V. 18
- Glide quad.: Thompson
- Lincoln County: Groben
- Lookout Mtn. quad.: Swinney
- Northwestern Oregon: Snively 4
- Saddleback area: MacLeod 2
- Western Cascades: Peck 2

Sedimentation:

- Authigenic silicates in Spencer Fm.: Enlows
- Coos Bay deltaic: Dott 9
- Klamath Mtns.: Irwin 3

Stratigraphy:

- Central-western Oregon: McWilliams
- Siletz River Volcanics: Snively 8
- Tyee Fm. provenance: Lovell 2, 3
- Western Cascades volcanic series: Kays 6
- Western Oregon: Snively 3

Tertiary eugeosyncline: Snively 11, 14

- Basaltic volcanism: Snively 10
- Bone Mtn. quad.: Krans
- Geology of south end: Baldwin 9

Volcanism: Lipman

- Submarine eruption field: Gilluly 1

EOLA-AMITY HILLS AREA

- Ground water: Price 4, 5

ERIONITE

- Adsorption properties: Eberly
- Description: Staples 1
- Rome area: Eberly

ERRATICS

Localities:

- Dallas-Valsetz quads.: Baldwin 6
- Erratic Rock State Park: Wilcox, L.
- Mulino site: Murphy, C. T. L. 1
- North Willamette Valley: Glenn 2

ESTACADA FORMATION

- Portland area: Trimble

ESTUARIES

Geomorphology:

- Marshes prograding: Johannessen
- Recent physical changes: Dicken

Localities:

- Columbia River: Lockett 1, 2; Snively 9
- Nestucca Bay: Oreg. St. Highway Div.
- Netarts Bay: Oreg. St. Highway Div.
- Sand Lake: Oreg. St. Highway Div.
- Yaquina Bay: Byrne 17; Neiheisel

Sediments:

- Estuarine sediment movement: Byrne 17; Neiheisel
- Quaternary deposits, Newport area: Snively 11
- Seismic studies, tsunamis: Schatz

EUCHRE MOUNTAIN QUADRANGLE

- Igneous petrology, Saddleback area: MacLeod 2

EUGENE FORMATION

Fossil invertebrates:

- Oligocene marine molluscan fauna: Hickman
- Zeolite filling and replacement: Staples 6

Localities:

- Bohemia mining district: Lutton
- Brownsville quad.: Hauck
- Northwestern Oregon: Snively 4, 14
- Western Cascades: Peck 4
- Yamhill quad.: Schlicker 2

Mineral resources:

- Bauxite deposits, Salem Hills: Corcoran 1
- Bohemia mining district: Lutton

EUGENE QUADRANGLE

- Ground-water geology: Ham
- Oligocene marine molluscan fauna: Hickman

F

FAIRVIEW PEAK QUADRANGLE

- Geology, Bohemia mining district: Lutton

FAULTS

Absolute dating:

- Cenozoic silicic volcanism, Great Basin: Armstrong

Basin-Range province: Donath 1, 2; Hamilton 2, 3;

- Morrison, R. B.; Taubeneck 18; Walker 17
- Harney County: Maloney 1
- Klamath County: Peterson, N. V. 17; Walker 3
- Klamath graben: Peterson, N. V. 12
- Lake County: Peterson, N. V. 17; Walker 3

Block faults:

- Blue Mtns.: Thayer 10
- Brogan quad.: Fouch
- Cedar Mtn. quad.: Russell, R. G.
- Eagle Cap quad.: Carnahan, G. L.

FAULTS, Block faults, continued

Freezeout Mtn. area: McMurray
 Grande Ronde River basin: Hampton 5
 Hart Mtn.: Larson 1; Walker 11
 Owyhee Upland: Corcoran 9
 Paisley Mtns.: Muntzert 1, 2
 Plush area: Larson 1
 Warner Mtns.: Delano 3

Engineering geology, Carmen Smith tunnel: Staples 4

Geomagnetic data: Watkins 2, 7, 8, 12, 13

Gravity data:

Hole-in-the-Ground: Kim
 Josephine County: Kays 1, 2, 3
 Northwestern Oregon: Bromery 3
 Southwestern Oregon: Bruemmer 1, 2

Klamath Mountains province:

Regional: Coleman 1; Gamer 2; Kays 2, 5; Ramp 6; U.S. Geol. Survey 8
 West-central: Widmier

Lineaments:

Mohave: Barosh
 Wallowa-Olympic: Skehan 2, 3

Localities:

Aldrich Mtn. quad.: Thayer 4
 Anlauf quad.: Hoover
 Bone Mtn. quad.: Krans
 Burnt River Canyon: Ashley 1, 2
 Cape Arago area: Ehlen 1
 Cape Sebastian-Crook Point area: Howard, J. K. 1, 2
 Coast Range, southern: Baldwin
 Cedar Butte area: Nelson, D. O.
 Collier Butte area: Burt, W. D.
 Coos Bay area: Baldwin 11; Dott 9
 Crescent AMS quad.: Walker 10
 Dixonville quad.: Champ; Hixson
 Drain quad.: Hoover
 Fort Rock Basin: Hampton 4
 Harper area: Weeden
 Hellgate area: Nafziger 3
 John Day area: Thayer 12
 Lookout Mtn. quad.: Swinney
 Malheur Wildlife Refuge: Walker 12
 Mitchell Butte quad.: Corcoran 2
 Mount Vernon quad.: Brown, C. E. 3
 Newberry area: Peterson, N. V. 13, 15
 Picture Gorge quad.: White, W. H.
 Picture Rock Pass area: Ikeagwauni
 Portland area: Dehlinger 2; Kenney; Schlicker 3
 Post quad.: Waters 4
 Powers quad.: Born
 Roseburg area: Johnson, W. R.
 Sitkum quad.: Trigger
 Sparta quad.: Prostka 1
 Suplee-Izee area: Dickinson 7
 The Dalles area: Newcomb 12
 Trout Creek Mtns.: Carlton
 Wallowa Mtns.: Taubeneck 7
 Warner Mtns.: Delano 3

FAULTS, continued

Named faults:

Adel: Ore Bin 18
 Brothers: Higgins 1, 5; Walker 14, 17
 Cascade: Jan; Punggrassami
 Hamilton-Long Creek: Thayer 6, 7
 Illinois Valley system: Ramer
 John Day: Brown, C. E. 3
 Kings Valley: Bromery 4
 Middle Mountain: Fisher 6
 Mitchell: McKnight, B. K. 2; Swanson, D. A. 4, 6; Wilkinson
 Northwest Rift Zone: Higgins 5; Peterson, N. V. 13, 15
 Richmond: Fisher, 12

Shear zones:

Port Orford: Mackay
 Powers quad., Baker Creek: Hess, P. D.
 Snake River Canyon:
 Oxbow area: Brooks 5; Stearns 5; Vallier 1, 2
 Cougar Creek area: Vallier 5

Thrust faults:

Agness area: Blake, M. C.
 Coastal: Irwin 2
 Klamath Mtns.: Coleman 1; Hamilton 4
 Langlois quad.: Lent
 Lower Rogue River: Bailey 2; Baldwin 15
 Roseburg area: Baldwin 4, 5
 Separation of Dothan from Galice Fm.: Hotz 4

FERN RIDGE TUFFS

Localities:

Clackamas upland: Howell 6
 Marion County: Schlicker 6, 7
 Western Cascades: Griggs, A. B.

Mineral resources:

Bauxite deposits, Salem Hills: Corcoran 1

FERROALLOYS (see also CHROMITE, NICKEL)

Industrial plants: Kingston 2

Production: Kingston 1, 2, 4

Annual: Collins, R. P. 2, 3; Fulkerson 1, 6, 7;
 Gray, J. J. 2, 3

FERRUGINOUS BAUXITE (see BAUXITE)

FIELDS CREEK FORMATION

Localities:

Aldrich Mtns.: Brown, C. E. 4
 Canyon City quad.: Brown, C. E. 5
 Mount Vernon quad.: Brown, C. E. 3
 Nomenclature: Brown, C. E. 4
 Cinnabar Tuff Tongue: Cohee

FISHER FORMATION

Fossils; Goshen flora: Axelrod 2

Stratigraphy: McWilliams, R. G.

Western Cascades: Griggs, A. B.

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FLOODS (see also COLUMBIA RIVER, PLEISTOCENE)

Pleistocene:

- Lake Bonneville; Snake River: Stearns 3
- Lake Missoula: Howell 8
- Lake Oswego area: Parsons, R. B. 2

Recent:

- Basin and Range province: Butler
- Glacial moraine erosion, Broken Top: Nolf 3
- Geologic hazards: Schlicker 5, 6, 7
- January 1965: Waananen 1
- Streamflow and sediment data: Waananen 2
- Magnitude and frequency: Butler; Hulsing
- December 1964: Rantz; Waananen 1
- Streamflow and sediment data: Waananen 2
- Water-discharge determinations: Dempster

FLUORINE

- In silicic volcanic rocks: Coates

FLUVIATILE DEPOSITS

- Flood plain, Willamette Valley: Beattie
- Glaciofluvial, Umatilla River basin: Hogenson 2
- Localities:
 - East Portland area: Hogenson 3
 - Ordance area: Sceva 5
 - Tualatin Mtns.: Howell 2
 - Willamette Valley: Balster 2, 3; Beattie

FLY CREEK QUADRANGLE

- Geology: Hewitt

FLYSCH SEDIMENTATION

- Southwest Oregon: Aalto 2
- Western Cordilleran: Danner 4

FOLDING

Anticlinal:

- Aldrich Mtn.: Bartholomay 1; Thayer 3, 4
- Bingen and Ortley: Baldwin 10; Newcomb 12
- Black Butte: Thayer 3
- Blue Mtn.: Fisher 12; Hogenson 2; Newcomb 9, 13; Swanson, D. A. 3, 4, 6; Thayer 10
- Breitenbush: Jan; Peck 2, 4; Punggrassami
- Cape Arago: Ehlen
- Clackamas: Peck 2, 4
- Columbia Hills: Newcomb 9, 12
- Condon: Newcomb 9
- Coquille Bank: Mackay
- Horse Heaven: Hogenson 2; Newcomb 9, 10
- Klondike: Hall
- Mehama: Peck 2, 4; Punggrassami
- Mitchell: Jarman, C.; McKnight, B. K. 1, 2; Wilkinson
- Oakland: Baldwin 5
- Ochoco: Swanson, D. A. 4, 6
- Ortley: Newcomb 6, 9
- Post: Swanson, D. A. 4, 6
- Pulaski: Baldwin 14
- Richmond: Fisher 12

FOLDING, Anticlinal, continued

- Rieth: Hogenson 2; Newcomb 9
- Rocky Prairie: Newcomb 6
- Service: Robison
- St. Patrick: Hampton 4
- Tualatin Mtns. system: Schlicker 5

Eugeosynclinal:

- Deltaic sedimentation in belts: Dott 4
- Rogue River area: Baldwin 15
- Southwestern coast: Dott 7
- Tyee Fm. deposits: Rogers 4; Snively 6
- Western Cordilleran limestones: Danner 1, 2

Fold systems:

- Burnt River Canyon area: Ashley 1
- Columbia River Group: Newcomb 13
- Cooper-Bull Mtns. system: Schlicker 5
- Coos: Baldwin 11; Dott 9; Mackay
- Geosynclinal system, Oregon and California: Dickinson 8

Pacific geosyncline: Gilluly 1

- Parrett Mtn.-Chehalem Mtns.: Schlicker 5

Geosynclinal:

- Supplee-Izee area: Danner 3; Dickinson 5, 6, 7
- Western Oregon-Wash. Tertiary: Baldwin 9; Snively 2, 3, 4, 10, 11, 14

Quadrangles:

- Anlauf and Drain: Hoover
- Bone Mtn.: Krans
- Caviness: Wolff 2
- Coos Bay: Kohn, M. L.
- Coquille: Fairchild
- Dallas and Valsetz: Baldwin 6
- Ironside Mtn.: Lowry
- Langlois: Lent
- Mitchell: Patterson, R. L.
- Mount Vernon: Brown, C. E. 3
- Powers: Hess, P. D.
- Sitkum: Fairchild, Trigger
- Sparta: Prostka 1

Lava flow geometry: Benson 3

Localities:

- Aldrich-Ochoco area: Howell 7
- Cape Perpetua: Whitcomb 2
- Cedar Butte: Nelson, D. O.
- Coast Range: Dietz
- Continental margin: Byrne 16
- Fairview-McKinley area: Nelson, E. B.
- French Prairie area: Price 6
- Horse Heaven mining district: Swanson, D. A. 3
- Jones marble deposit: Ramp 2
- Josephine peridotite sheet: Ramer
- Klamath Lake area: Peterson, N. V. 17
- Klamath Mtns.: Godchaux 1; Kays 4, 5; Ramp 6
- Marion County: Schlicker 7
- May Creek Schist belt: Kays 7
- Myrtle Point area: Baldwin 14
- Newport area: Snively 11
- North-central Oregon: Rogers 2

FOLDING, Localities, continued

Picture Gorge area: Gibson 2
 Pueblo Mtns.: Rowe
 Simcoe Mtns. volcanic area, Wash.: Sheppard 1
 South Umpqua Falls region: Kays 6
 Steens-Pueblo Mtns.: Avent 2
 Tieton River area, Wash.: Swanson, D. A. 2
 Wallowa-Olympia lineament: Newcomb 9; Skehan 2, 3, 4

Synclinal:

Agency: Hogenson 2
 Dalles-Umatilla: Newcomb 8, 9, 10, 12; Robison
 Long Creek: Thayer 6
 Mitchell-Monument downwarp: Fisher 12
 Mosier: Baldwin 10; Newcomb 6, 8, 12
 Orchard: Newcomb 6
 Sardine: Peck 2, 4; Punggrassami
 Simpson Reef: Ehlen
 Snake River: Geldstzer
 South Slough: Ehlen
 Willamette: Punggrassami

FORMATIONS (see GEOLOGIC FORMATIONS, or specific formation name)

FORT ROCK AREA

Fossil fauna, Fossil Lake: Allison, I. S.
 Geology: Hampton 4; Heiken; Peterson, N. V. 11; Walker 10
 Gravity and magnetic surveys: Kim
 Ground water: Hampton 4
 Prehistory and environment: Bedwell

FORT ROCK FORMATION

Fort Rock Basin: Hampton 4
 Hole-in-the-Ground Crater: Kim
 Picture Rock Pass area: Ikeagwauni

FOSSIL INVERTEBRATES

Ammonites:

Cretaceous, Hornbrook Fm.: McKnight 3
 Cretaceous, new species Anisoceras: Packard, E. L. 1
 In Buchia zones: Imlay 6
 Jurassic locals, eastern Oregon: Wagner 2
 Jurassic, central Oregon: Imlay 1
 Southwest Oregon: Imlay 1
 Late Jurassic: Hallam

Brachiopods:

Permian, assemblages: Ketner 1
 Cornucopia quad.: Waterhouse
 Homestead area: Vallier 3
Kuvelousia leptosa, n. gen.: Waterhouse

Bryozoa:

Burnt River Canyon area: Ashley 1, 2
 Homestead area: Vallier 3

Coral:

Eocene: Blake, D. B. 1

FOSSIL INVERTEBRATES, Coral, Eocene, continued

Dasmia americana, n. sp.: Blake, D. B. 1
Stichopsammia (?) vokesi, n. sp.: Blake, D. B. 1

Crustacea:

Crabs, commensal in pelecypod: Zullo 2
 Isopod, n. sp.: Geol. Soc. Oregon Country News Letter 3

Fairview-McKinley area: Nelson, E. B.

Echinoderms:

Eocene, Ophiocrossota baconi: Blake, D. B. 2
 Fairview-McKinley area: Nelson, E. B.
 Langlois quad.: Lent
 Oligocene, Salenia: Zullo 1

Faunal assemblages:

Cenozoic molluscan: Addicott 1, 2, 3, 4, 5, 6, 7
 Cretaceous index fossils: Popenoe
 Eocene, Tyee: Bird
 Jurassic molluscan: Imlay 1, 2, 3, 4, 5, 6
 Mesozoic, Supplee-Izee area: Dickinson 7
 Miocene, Astoria Fm.: Dodds, R. K., 2, 4; Moore, E. J.

Miocene, Tarheel Fm.: Armentrout
 Oligocene, Eugene Fm.: Hickman
 Permian-Triassic, northeast Oregon: Bostwick 1
 Pleistocene, southwest Oregon: Addicott 1; Zullo 3

Pliocene, Empire Fm.: Armentrout

Foraminifera:

Bolivina sacchensis, n. sp.: Bird
 Cascadia Basin: Griggs, G. B. 6, 7
Elphidium oregonense, Cascadia deep sea channel: Griggs, G. B. 3, 5

Eocene: Bird; Thoms 1, 2
 Eocene Pseudophragmina in Umpqua Fm.: Thoms 1
 Marginal marine environment: Fowler 3
 Marine dolomite: Russell, K. L. 1

Miocene:

Absolute dating: Turner
 Astoria Fm.: Dodds, R. K. 2, 4; Gonzalves
 Nye Mudstone: Murata 2
 Netarts Bay distribution: Hunger
 Permian: Bostwick, 1, 3, 4, 5; Ketner 1; Skinner, J. W.; U.S. Geol. Survey 8; Wilkinson

Pleistocene-Holocene deep-sea sediments: Duncan 2

Pleistocene trends: Fowler 2

Polydiexodina oregonensis, n. sp.: Bostwick 3

Processes affecting distribution: Harman

Recent: Jarman, G. D.

Sublittoral, trends: Boettcher 1, 2

Tertiary: Fowler 1, 4

Tertiary correlations: Rothwell

Tethyan fauna: Bostwick 4, 5

Freshwater:

Fossil Lake: Allison, I. S. 1
 Juntura Basin: Taylor, D. W.
 Pliocene-Pleistocene lakes: Hanna 1, 2

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FOSSIL INVERTEBRATES, continued

Gastropods:

Cenomanian to Turonian: McKnight 3
 Drupinae, Pliocene: Hertlein
 Mediargo, new genus: Terry
Olivella baetica Carpenter: Richards
Omphalotrochus Permian: Yochelson
Turritella, Eocene: Nelson, E. B.

Localities:

Astoria area: Dodds, B. R. 2
 Bandon area: Addicott 2; Zullo 3
 Bone Mtn. quad.: Krans
 Brogan quad.: Fouch
 Brownsville quad.: Hauck
 Cape Arago area: Ehlen 1
 Cape Blanco area: Addicott 1, 2; Allison, E. C.; Richards
 Cape Sebastian area: Howard, J. K. 2
 Coos Bay area: Armentrout; Baldwin 11
 Dixonville quad.: Champ; Hixson
 Eola Hills: Wilcox, L.
 Fairview-McKinley area: Nelson, E. B.
 Glide quad.: Elphic
 Homestead area: Vallier 3
 Langlois quad.: Lent
 Lower Umpqua River: Baldwin 1
 Medford-Ashland area: McKnight 3
 Newport, Yaquina Bay area: Snively 5, 11
 Roseburg quad.: Hicks
 Saddleback area: MacLeod 2
 Snake River Canyon: Vallier 1
 South Coast Range: Baldwin 9
 Suplee area: Kleweno 1, 2
 Suplee-Izee area: Buddenhagen 1; Dickinson 7
 Svensen quad.: Dodds, R. K. 2

Mollusks:

Astoria Fm.: Moore, E. J.
 Cape Blanco, Pleistocene age determinations: Richards
 Cenozoic distribution: Addicott 2, 4, 5, 6, 7
 Elk River beds: Addicott 1
 Eugene Fm.: Hickman
 New Tertiary species: Addicott 3
 Zeolite filling and replacement: Staples 6

Nautiloid:

Eocene, Eutrophoceras, n. sp.: Palmer, K. V. W. 1, 2

Ostracodes:

Eocene, Tyee Fm.: Bird

Pelecypods:

Buchia concentrica (Sowerby): Imlay 1
Buchia piochii in Dothan: Ramp 9
Buchia, southwest Oregon stratigraphy: Blake, M. C.; Camp 1; Champ; Dott 1; Lent; Ramp 9
Buchia uncitoides: Imlay 6
Buchia zones: Imlay 6; Jeletzky 1, 2; Jones, D. L. 1, 2; U.S. Geol. Survey 8
Dosinia, Coos Bay dredgings: Baldwin 11

FOSSIL INVERTEBRATES, Pelecypods, continued

Lupherella, new genus: Imlay 4
Meekia, Cretaceous: Saul
Ostrea, Tyee Fm.: Nelson E. G.
Otapiria, n. sp.: Imlay 4
Pinna, Cretaceous: Packard 2; Peterson, G. L. 4
Psephidia, Elk River beds: Clifton 4
 Rock-boring clams: Evans 1, 2
 Trigonina localities: McKnight 3; Steere 2
Venericardia, Tyee Fm.: Baldwin 11; Nelson, E. B.
 Radiolaria:
 Eocene, Tyee Fm.: Bird
 Mesozoic chert, Langlois quad.: Lent
 Pleistocene-Holocene deep-sea sediments: Duncan 1; Griggs, G. B. 3
 Worm, Adekunbiella durhami Adegoke, n. gen., n. sp.: Adegoke

FOSSIL LAKE

Absolute dating, ash bed and fossils: Buckley 4
 Geology: Allison, I. S. 1
 Vertebrate fossils:
 Birds: Brodkorb 2; Howard, H.; Jehl 1, 2
 Mammals: Hibbard

FOSSIL PLANTS

Absolute dating:
Acer macrophyllum wood: Buckley 6
Mollala flora: Axelrod 3
 Owyhee Reservoir area: Geldstzer
 Tertiary floras: Evernden 1
 Algae; silicoflagellates, Bandon area: Orr 1, 2
 Conifers; Bridge Creek flora: Pabst
 Diatoms:
 Miocene fresh-water: VanLandingham 1, 2
 New species: Sovereign
 Ferns:
 Chuckanut Fm. correlations: Pabst
 Clarno flora: Arnold 1, 2; Pabst
 Evolution and distribution:
Osmunda: Miller, C. N.
Tempskya: Arnold 3; Dake 1
 Molalla area: Axelrod 3
 Snake River basin: Axelrod 2
 Species described:
Acrostichum preareum: Arnold 1
Dennstaedtiopsis aerenchyronata, n. gen., n. sp.: Arnold 2
Osmunda: Miller, C. N.
 Floras:
 Alvord Creek: Evernden 1; Smiley
 Blue Mtns.: Axelrod 4; Smiley
 Bridge Creek: Chaney; Evernden 1; O'Dell
 Clarno: Chandler; Evernden 1; McKee, T. M. 1, 2; Pabst
 Colestin: Peck 2, 4

FOSSIL PLANTS, Floras, continued

- Collawash: Gray, Jane 2
- Deschutes: Evernden 1; Smiley
- Eagle Creek: Gray, Jane 2; Smiley
- Faraday Dam: Gray, Jane 2
- Goshen: Chaney; Evernden 1
- John Day: Evernden 1
- Latah: Gray, Jane 3
- Little Butte Volcanics: Peck 2, 4
- Mascall: Axelrod 4; Evernden 1; Smiley
- Miocene: Axelrod 5
- Molalla: Evernden 1; Gray, Jane 2, 5
- Rattlesnake: Evernden 1
- Rujada: Gilchrist
- Sardine: Peck 2, 4, 6
- Skull Springs: Evernden 1
- Sparta: Hoxie
- Stinking Water: Axelrod 4; Evernden 1; Smiley
- Succor Creek: Axelrod 1, 4; Eubanks 2; Evernden 1; Graham 1, 2, 3; Smiley; Taggart
- Sweet Home: Gregory, I. 1
- Trapper Creek: Axelrod 1
- Trout Creek: Evernden 1; Graham 1, 2, 3; Smiley
- Upper and lower Dalles: Smiley
- Western Cascades: Klucking; Peck 2, 4
- General:
 - Chapaaral flora, postglacial history: Detling 1
 - Climatic changes related to leaf margins: Wolfe 3
 - Columbia River Basalt associations: Gray, Jane 3
 - Correlations with Miocene Nevada flora: Wolfe 2
 - Determining altitudes of Tertiary floras: Axelrod 2, 5
 - Drowned forest, Columbia River: Strong 3
 - Historical background: Detling 2
 - History of plant assemblages: Wolfe 5
 - Paleogene biostratigraphy: Wolfe 4
 - Study of leaves: Hammond
- Leaves: Hammond
 - Lucuma stanleyi: Chaney
 - Margin analysis: Wolfe 3
 - Ostrya oregoniana: Chaney
- Localities:
 - Clarno area: Hergert; McKee, T. M. 1, 2
 - Coos Bay area: Hopkins, W. S.
 - Elk River, Cretaceous: Lowther
 - Grande Ronde basin: Hampton 5
 - Pilot Rock area: Pigg
 - Snow Peak quad.: Klucking
 - Umatilla River basin: Hogenson 2
 - Western Cascades: Peck 2, 4, 6; Wolfe 1
- Nuts, seeds, fruits:
 - Clarno mammal bed: McKee, T. M. 1, 2
 - Clarno nut bed: Chandler
- Pollen:
 - Columbia River Basalt association: Gray, Jane 3
 - Coos Bay area: Hopkins, W. S.

FOSSIL PLANTS, Pollen, continued

- Late-glacial: Heusser
- Miocene, Columbia Plateau: Martin, P. S.
- Western Cascades: Wolfe 1
- Pachysandra: Gray, Jane 2
- Paleoecological application: Hopkins, W. S.
- Postglacial, correlation with pumice: Hansen
- Tertiary: Gray, Jane 1, 2, 3, 4, 5; Tschudy
- Wood, identification methods: Eubanks 1, 2; Gregory, I., 1, 2
- Wood, localities:
 - Cedar Butte: Nelson, D. O.
 - Sucker (Succor) Creek: Eubanks 2
 - Sweet Home Petrified Forest: Dake 2; Gregory, I. 1
 - Thomas Creek: Eubanks 1
- Wood, species:
 - Acacia: Gregory, I. 4
 - Euptelea, Eocene Clarno: Scott, R. A. 2
 - Ginkgo bonesii, new species: Mihelcic 3
 - Ginkgo, in Tertiary: Scott, R. A. 1
 - Metasequoia: Cheney
 - Palm: Gregory, I. 2
 - Populus: Gregory, I. 1, 3
 - Tempskya: Dake 1

FOSSIL VERTEBRATES

- Absolute dating:
 - Cenozoic mammalian chronology: Evernden 2
 - Fossil Lake faunas: Allison, I. S. 1
 - John Day fauna: Rensberger 1
 - Myiodon harlani (sloth) fragments near LaGrande: Mielke
 - Owyhee Reservoir-Sucker Creek region: Geldstzer
- Birds:
 - Coot, Fulica minor Shufeldt, new name: Brodkorb 2
 - Grouse, Dendragapus: Jehl 2
 - Juntura Pliocene: Brodkorb 1
 - "Pigmy goose," Anabernicula, new species: Howard, H.
 - Pleistocene, Fossil Lake: Jehl 1
 - Scale and cluster analysis: Johnson, L. 1
- Cetacean (toothed whale), Aetiocetidae, n. family: Emlong
- Fish:
 - Eugene Fm. shark teeth: Hickman
 - Genus Esox in Quartz Basin: Cavender 3
 - Ictalurus (catfish) in Juntura Basin: Miller, R. R.
 - "Idaho Lake" fauna: Miller, R. R.
 - New species described:
 - Novumbra oregonensis, n.s.: Cavender 2
 - New genus(?) of Salmonidae: Dalzell
 - Ochoco Pass fauna, freshwater: Cavender 1
 - Oligocene mudminnow, Painted Hills: Cavender 2
 - Pacific salmon, Klamath River basin: Miller, R. R.
 - Sand Shark, Odontaspis: Applegate
- General, Bering land bridge dispersal: Repenning 2
- Localities:
 - Beatty Buttes: Dawson
 - Black Butte: Shotwell 10

FOSSIL VERTEBRATES, Localities, continued

- Cape Blanco: Leffler
 Empire Fm.: Armentrout
 Drewsey: Shotwell 10
 Fossil Lake: Allison, I. S. 1; Hibbard; Howard, H. John Day: Stirton 2
 Juntura Basin: Shotwell 3, 4, 5, 10
 McKay beds: Hogenson 2; Newcomb 8; Shotwell 7
 Quartz Basin: Hutchison 2
 Skull Springs: Hutchison 2
- Mammalian faunas:
 Pleistocene, Cape Blanco: Leffler
 Potassium argon dates: Evernden 2
 Quaternary, North America: Hibbard
 Southeast Oregon communities: Shotwell 2, 3, 4, 5, 6, 9, 10
- Mammals:
 Carnivore, Hemiposalodon: Mellett
 Chalicotheres, late Tertiary: Skinner
 Ground sloths: Quaintance 1, 2; Mielke
 Horses, biogeography in Great Basin: Shotwell 1
 Hipparion: Shotwell 1
 Pliohippus: Shotwell 1
 Insectivores (shrews, moles):
 Aquatic mole: Hutchison 3
 John Day Fm.: Stirton 1
 Peromyscus: Shotwell 7
 Shrews: Hutchison 2; Shotwell 7
 Soricidae: Repenning 1
 Talpidae (moles): Hutchison 1, 4
 Oreodonts, phylogeny: Schultz
 Peccaries, revised: Stirton 2
- Rodents:
 Arvicolinae (Rodentia): Repenning 3
 Entoptychine gophers of John Day Fm: Rensberger 2
 Lagomorphs (Oreolagus) Miocene: Dawson
 Late Tertiary geomyoids: Shotwell 8
 Tertiary Scuridae: Block
 Sea lion (Astoria Fm., Miocene) Desmatophoca oregonensis: Mitchell
 Tapirs, origin and evolution: Radinsky
 Reptiles; Late Jurassic ichthyosaur: Camp; Koch, J. G. 4

FOSSILS

- General: Ekman
 Fossil Lake faunas: Allison, I. S. 1
 Pacific University Condon collection: Adams

FREEZEOUT MOUNTAIN AREA

- Geology: McMurray

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GABLE CREEK FORMATION

- Mitchell quad.: Gamer 1; Wilkinson

GALICE FORMATION

- Chemical analyses: Kays 7
 Fossil invertebrates:
Buchia: Blake, M. C.
 Late Jurassic ammonites: Imlay 1
 Petrography; diorite intrusions: Lund, E. H. 5
 Quadrangles and areas:
 Babyfoot Lake area: Wise, J. P.
 Coos Bay: Dott 9
 Hellgate Canyon: Ore Bin 32
 Josephine peridotite sheet: Ramer
 Klamath Mtns.: Kays 5; Koch, J. G. 2;
 Ramp 6
 Langlois quad.: Lent
 Port Orford-Gold Beach area: Koch, J. G. 3
 Powers quad.: Hess, P. D.
 Rogue River: Baldwin 15
 Roseburg-Grants Pass area: Steere 2
 Siskiyou Mtns.: Dickinson 2
 Sixes River area: Boggs 3, 6
- Stratigraphy:
 Contemporaneity of Dothan-Galice Fms.: Baldwin 13, 15
 Dothan-Rogue relationships: Hotz 3, 4
 Regional Cretaceous sequences: Peterson, G. L. 1
 Structural relations: U.S. Geol. Survey 8
- Structure:
 Gravity field: Kays 2
 Late Jurassic unconformity: Dott 8
 Mesozoic-Cenozoic tectonism: Dott 7
 Structural relations: U.S. Geol. Survey 8

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- Gravity investigations:
 Zones of local metamorphism: Kays 1, 3
 Zones of major tectonism: Kays 2
- Petrography:
 Rogue Fm.: Helming
 Zones of local metamorphism: Kays 1, 3

GEM STONES (see also THUNDEREGGS)

- Annual production: Collins, R. P. 1, 2, 3;
 Gray, J. J. 1, 3; Shaffer
- Agates:
 Economic value: Shaffer
 Localities: Mason, R. S. 23
 Agate beaches: Browning 1
 Agate Flats: Kohn
 Drews Reservoir: Peterson, N. V. 17
 Eagle Point: Kohn
 Lake Owyhee State Park vicinity: Corcoran 3
 Owyhee Upland province: Corcoran 9
 Friday ranch: Peck 5
 Prineville area: Ashby 1, 3
 Stinkingwater Mountain: Gail 2

GEM STONES, Agates, continued

- Varieties: Browning 2
- Dendritic: Kohn
- Chalcedony: Mason, R. S. 23
- Geodes:
 - Economic value: Shaffer
 - Molalla River: Hoven
- Geology of deposits: Mason, R. S. 23
- Jasper:
 - Economic value: Shaffer
 - Localities: Mason, R. S. 23
 - Agate beaches: Browning 1
 - Biggs Junction: Gail
 - Drews Reservoir: Peterson, N. V. 17
 - Stinkingwater Mtn.: Gail 2
 - "Oregonite": Ramp 3
- Lazulite: Ramp 4
- Localities: Mihelcic 1; Shaffer
- Blue Mtn. region: Thayer 10
- Obsidian:
 - Economic value: Shaffer
 - Localities:
 - Burns area: Gail 1
 - Glass Buttes: Heflin 1
- Opal: Mason, R. S. 23
- Economic value: Shaffer
- Hart Mtn. Natl. Antelope Refuge: Walker 11
- Petrified wood:
 - Economic value: Shaffer
 - Localities: Mason, R. S. 23
 - Klamath County: Peterson, N. V. 17
 - Stinkingwater Mtn.: Darling; Gail 2
 - Sweet Home area: Rodgers
- Quartz crystals, Youngs River: Speckels
- Rhyolite, economic value: Shaffer
- Specimen preparation; sodium-bearing minerals:
 - Morrison, R. F. 4
- "Sunstones" (potash feldspar):
 - Lake County: Heflin 2; Stewart, D. B.

GEOCHEMICAL INVESTIGATIONS

- Isotopic studies:
 - Andesites: Hedge 1, 2
 - Composition of lead, Coast Range: Tatsumoto;
 - U.S. Geol. Survey 1
 - Intrusion-ground water interaction: Taylor, H. P. 3
 - Lead and strontium, Cascade Mtns.: Church 1, 2
- Localities:
 - Abert Lake playa sediments: Jones, B. F.
 - Alameda mine: Libbey 4
 - Cascade Mtns.: Church 1, 2
 - Andesite volcanoes: McBirney 2
 - Central Coast Range, Snively 7
 - Continental shelf sediments: White, S. M. 1, 2
 - Dinner Creek welded ash-flow tuff: Haddock 2
 - John Day Fm.: Hay 4, 5
 - Klamath, Lake Counties: Peterson, N. V. 17
 - Marine sediments near Columbia River: Osterberg

GEOCHEMICAL INVESTIGATIONS, Localities, cont'd

- Owyhee Plateau volcanic rocks: Kittleman 1
- Saline lakes: VanDenburgh 1, 2
- Steens Mtn. basalts: Gunn, B. M.
- Materials:
 - Diagenetic carbonates: Murata 1, 2
 - Lead and strontium in crystalline rocks:
 - Hopson, C. A. 1
 - Rare-earth elements in sediments: Collins, K. A.
 - Tektites: Lange 1
 - Tritium: Simpson
 - Vanadium: Busch
 - Zinc in basalts: Rader
- Mineral exploration methods: Dole 7
- Sedimentary rocks; graywacke: Rogers 3
- Stream sampling: Ore Bin 25
- Alameda mine: Libbey 4
- Lower Illinois River: Ramp 5
- Southwestern Oregon: Bowen 3; Trost
- Volcanic rocks:
 - Changes in titanium concentration: Watkins 17
 - High-titania alkali-olivine basalts: Robinson, P. T. 1, 2
 - Phosphorus in granitic rocks: Vistelius

GEOLOGIC CATASTROPHIES (see EARTHQUAKES, FLOODS, LANDSLIDES)

GEOLOGIC EDUCATION

- Art and geology: Allen, J. E. 3
- Camp Hancock: Brogan 5; Peterson, J. V. 1
- Courses for non-majors: Allen, J. E. 1
- Multiple sites for field camps: Staples 9

GEOLOGIC FORMATIONS (see also individual formation names)

- New names:
 - Cinnabar Tuff Tongue: Brown, C. E. 3
 - Hilt Fm.: Elliott
 - Ingle Tuff Tongue: Brown, C. E. 3
 - Tarheel Formation: Armentrout

GEOLOGIC MAPS, PUBLISHED

- Aeromagnetic maps:
 - Albany-Newport area: Bromery 4
 - Lebanon quad.: Bromery 1
- Bouguer gravity:
 - Mendocino escarpment: Dehlinger 8
 - Southwestern Oregon: Blank 3
- Formations:
 - Columbia River Group: Newcomb 13
 - Dothan-Rogue relationships: Hotz 3
 - John Day: Hay 4
- Index of: Corcoran 6
- Localities:
 - Alameda mine: Libbey 4
 - Alsea River basin: Young, L. L. 5
 - Baker Valley geohydrology: Lystrom 2
 - Belknap Crater-Yapoah Crater-Collier Cone area: Groh 1

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Burnt River Valley area: Price 8
 Canyon Mtn. Complex: Thayer 1
 Cape Arago area state parks: Ehlen 1
 Cape Lookout State Park: Mangum
 Cape Meares State Park: Mangum
 Cape Sebastian State Park: Howard, J. K. 2
 Cedar Butte: Nelson, D. O.
 Clatsop Plains sand-dune area: Frank 3
 Coastal landslides: North 1
 Columbia Basin, lower: Newton 28
 Coos Bay area: Baldwin 11; Newton 21
 Cornucopia stock: Taubeneck 11
 Devils Garden: Peterson, N. V. 11
 Devils Hill-Broken Top-Lava Butte areas: Groh 2
 Eola-Amity Hills area: Price 5
 Fort Rock: Peterson, N. V. 11
 Fort Rock Basin: Hampton 4
 French Prairie area: Price 6
 Hanford Plant area: Schmidt 2
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 Hole-in-the-Ground area: Peterson, N. V. 2, 11
 Homestead area: Vallier 3
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 John Day region: Buddenhagen 1; Thayer 12
 Juntura Basin: Bowen 6
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 Newport area: Snively 12
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 Oregon: Dole 7
 Regional gravity: Thiruvathukal
 Volcanic areas: Peterson, N. V. 8
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 Oregon King mine: Libbey 1
 Owyhee Reservoir area: Kittleman 4
 Pleistocene lakes: Feth 1
 Missoula: Fryxell 3
 Portland area: Dehlinger 2; Hogenson 3
 Earthquake geology: Schlicker 3
 Prineville area: Robinson, J. W.
 Rogue River, lower: Baldwin 15
 Salem Heights area: Foxworthy 4
 Sawtooth Ridge: Patterson, P. V. 2
 Simcoe Mtns. volcanic area, Wash.: Sheppard 1
 Sixes River area: Boggs 3
 Snake River basin, western: Newton 8
 Snake River Canyon:
 Granite Creek to Pittsburg Landing: Vallier 5
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 Willamette basin, lower: Newton 28
 Oil and gas: Newton 7; Stewart, R. E.
 Quadrangles:
 Adel AMS: Walker 4
 Aldrich Mtn.: Thayer 4
 Anlauf: Hoover
 Bend AMS ($E\frac{1}{2}$): Swanson, D. A. 6
 Canyon City AMS: Brown, C. E. 5; Thayer 3
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 Crescent AMS ($E\frac{1}{2}$): Walker 10
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 Monument: Wilcox, R. E. 3
 Mount Vernon: Brown, C. E. 3
 Ochoco Reservoir: Waters 8
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 Sparta: Prostka 1
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Formations:
 Astoria: Gonsalves
 Columbia River Basalt: Holmgren
 Deer Butte: Johnson, A.
 Deschutes: Stensland
 Galice, Babyfoot Lake area: Wise, J. P.
 Otter Point: Aalto
 Rogue, Galice quad.: Helming
 Umpqua: Thoms 2
 Gravity data:
 Gravity models for peridotite injection:
 Bruemmer 1
 Southwest Oregon: Blank 1
 Localities:
 Applegate Group: Heinrich
 Bohemia mining district: Lutton
 Brattain area: Muntzert 1
 Burns Junction-Malheur area: Ellison
 Burnt River Canyon area: Ashley 1
 Burnt River Valley: Price 2
 Cape Sebastian-Crook Point area: Howard, J. K. 1
 Central-western Oregon: McWilliams

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Coast Range, central: Witt
 Coast strip near Bandon: Ehlen 2
 Collier Butte area: Burt, W. D.
 Continental terrace off central coast: Maloney 3
 Cow Creek Lakes area: Millhollen
 Crater Lake National Park: Frank, F. J. 2
 Crowley area, Malheur County: Green, A. R.
 Detroit Reservoir area, western: Punggrassami
 Freezeout Mtn. area: McMurray
 Greyback igneous complex: Godchaux 1
 Harper area, Malheur County: Weeden
 Hole-in-the-Ground Crater: Kim
 John Day uplift: Buddenhagen 2
 Josephine peridotite sheet: Ramer
 Klamath Province:
 Orogenesis: Koch, J. G. 2
 Paleozoic-Triassic contact: Engelhardt
 West-central: Widmier
 Marine Cretaceous rocks near Mitchell: McKnight,
 B. K. 1
 Medford-Ashland area: McKnight, B. K. 3
 Molalla-Salem Slope area: Hampton 6
 Monument Peak area: Hagood
 Newberry Crater: Higgins 3
 North Willamette Valley: Glenn 2
 Northern Oregon-Columbia River Basalt: Holmgren
 Oregon King mine: Ojala
 Owyhee Reservoir area: Geldstzer; Kittleman 2
 Paulina Basin: Davenport
 Picture Rock Pass area: Ikeagwauni
 Pilot Rock-Heppner areas: Pigg
 Plush area: Larson 1
 Prineville Dam: U.S. Bur. Reclamation 2
 Pueblo Mtns., south-central: Rowe
 Quosatana Butte area: Schwab
 Snake River Canyon: Vallier 1
 Cache Creek-Dug Bar: Morrison, R. F. 2
 Squaw Basin and Eden Ridge: Wayland
 Stinking Water Creek area: Gregory, C. D.
 Sucker Creek-Trout Creek area: Graham 1
 Trout Creek Mtns.: Carlton
 Western Cascades:
 Central and northern: Peck 2
 North of latitude 43°: Peck 1

Quadrangles:

Ashland: Elliott
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 N $\frac{1}{2}$: Stensland
 Bone Mtn., NW $\frac{1}{4}$: Krans
 Brogan, NW $\frac{1}{4}$: Fouch
 Brownsville, NW $\frac{1}{4}$: Anderson, R. W.
 SW $\frac{1}{4}$: Hauck
 Caviness, N $\frac{1}{2}$: Wolff 2
 Cedar Mtn.: Russell, R. G.
 Coos Bay, north-central: Klohn, M. L.
 Coquille: Fairchild
 Courtrock: Thayer 7
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 Dixonville, SW $\frac{1}{4}$: Hixson
 Eagle Cap, SW: Carnahan
 Eugene, SW $\frac{1}{4}$: Ham
 Fly Creek: Hewitt
 Glide:
 Middle 1/3: Thompson
 Northern 1/3: Patterson, P. V. 1
 Southern 1/3: Elphic
 Ironside Mtn.: Lowry
 Langlois, S $\frac{1}{2}$: Lent
 Long Creek: Thayer 6
 Lostine Valley: Beeson, Melvin; Goebel
 Marcola, south 1/3: Maddox
 Mitchell: Lukanuski
 NE $\frac{1}{4}$: Patterson, R. L.
 Powers, NE $\frac{1}{4}$: Hess, P. D.
 South 1/3: Born
 Picture Gorge: White, W. H.
 Prairie City: Thayer 8
 Quartzville: Punggrassami
 Roseburg, SW $\frac{1}{4}$: Hicks
 Round Butte Dam, N $\frac{1}{2}$: Hewitt
 Sawtooth Creek, north-central: Beeson, M. H.
 South-central: Bateman
 Sitkum: Fairchild
 South-central: Trigger
 Sparta: Prostka 1
 Spray: Lindsley
 Sumpter, Elkhorn Ridge: Derksen
 Sutherlin, southern third: Lawrence
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 Sediments:
 Continental shelf, Newport: Bushnell
 Yaquina Bay: Kulm 1

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 Geologic history: Baldwin 8; Corcoran 7

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 Remanent magnetism, Marys Peak sill: Clark,
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 Reversals in intrusive rocks: Bikerman; Dunn,
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 Volcanic rocks: Creer
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- Guano Valley: Watkins 15
- Lake County: Larson 2
- Laurel Hill pluton: Bikerman; Ito 2, 3
- McKenzie River: Jan
- Marys Peak Sill: Clark, H. C. 1, 2, 3, 4, 5
- Plush area: Larson 1
- Southeastern Oregon: Camfield; Strangway; Watkins 1, 3, 4, 7, 15, 16
- Steens Mtn.: Larson 3; Watkins 9, 11, 17, 18, 19; Wilson, R. L. 1, 2
- Still Creek intrusion: Ito 1
- Petrologic variations, Miocene volcanism: Watkins 4, 10, 17
- Structural relationships:
 - Anomalies: Camfield
 - Application to sea-floor spreading: Irving
 - Faults: Watkins 2, 5, 12, 13
 - Tectonic rotation: Taubeneck 12; Watkins 14

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- Continental terrace:
 - Cascadia deep-sea channel: Griggs, G. B. 4
 - Effect of East Pacific Rise: Byrne 18
 - Off central coast: Byrne 2; Maloney 4
 - Off northern coast: Byrne 3
 - South of Coos Bay: Byrne 6, 7
- Localities:
 - Belknap Crater-Yapoh Crater-Collier Cone areas: Groh 1
 - Clackamas upland: Howell 4
 - Clear Lake: Benson 2
 - Crater Lake: Byrne 11
 - Crater Lake Natl. Park: Williams, H. 2, 3
 - Crooked River Canyon: Campbell, D. 3
 - Devils Hill-Broken Top-Lava Butte areas: Groh 2
 - Erosion pinnacles: Ore Bin 30
 - Hole-in-the-Ground, Fort Rock, Devils Garden: Peterson, N. V. 11
 - Kings Valley-Price Peak area: Parsons, R. B. 1
 - Ladd Creek mudflow: Birch
 - Lake Oswego area: Parsons, R. B. 2
 - Lavacicle Cave: Ore Bin 28
 - Metolius Canyon: Campbell, D. 3
 - Newberry Volcano area: Peterson, N. V. 10
 - Oregon Caves: Contor
 - Oregon Coast: Delano; Dicken
 - Northern: Byrne 5
 - Portland area: Trimble
 - Pueblo Mtns.: Rowe
 - Seaside area, ancient bay: Dark
 - Snake River Canyon: Vallier 1
 - State Parks near Cape Arago: Ehlen 1
 - Volcanic landforms: Peterson, N. V. 4, 5, 6, 7
 - Yaquina Bay: Whitcomb 1
- Regional: Thornbury
- Terraces:
 - Portland area: Trimble
 - Southern Willamette Valley: Balster 3

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- Volcanic features compared to lunar features: Waters 3

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- AERORADIOACTIVITY MEASUREMENTS
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GEO THERMAL ENERGY (see also THERMAL SPRINGS)

- Federal leasing law: Electrical World
- Geology of areas: Godwin; Peterson, N. V. 12, 14
- Greenhouse heating: Lake County Examiner 3
- Heat flow determinations: Blackwell 1, 2
- Investigations: Gray, J. J. 3
- Localities: Bauer; Bowen 5; Electrical World; Groh 3
- Crump Geyser: Ore Bin 18
- Diamond Craters: Peterson, N. V. 6
- Hart Mtn. Natl. Antelope Refuge: Walker 11
- Klamath, Lake Counties: Peterson, N. V. 12, 14, 17

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- Crump geyser:
 - Exploration for steam: Ore Bin 18
 - Action explained: Rinehart, J. S. 1, 2

GILLIAM COUNTY

- Absolute dating:
 - Charcoal, Arlington site: Chatters 1, 2
 - Wildcat Canyon site: Chatters 9; Crane 3
- Environmental geology; Mid-Columbia River waterfront plan: Meyers
- Fossil vertebrates; Later Tertiary Talpidae: Hutchison 4
- Geology:
 - Dalles-Umatilla syncline: Newcomb 8, 9
 - Deschutes-Umatilla plateau: Newcomb 10
- Minerals and mineral resources:
 - Aggregate and rock sites: Olcott
 - Pozzolanic ash: Ore Bin 37
- Surface water, John Day River basin: Oregon St. Water Res. Bd. 2

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- Absolute dating; deep-sea sedimentation change: Duncan 1
- Localities:
 - Cascadia Channel: Griggs, G. B. 5
 - Crater Lake Natl. Park: Frank, F. J. 2
 - Deschutes-Umatilla plateau: Newcomb 10
 - Hood River Valley: Sceva 3, 4
 - Northeastern Oregon: Sorem
 - The Dalles area: Newcomb 12
 - Umatilla River basin: Hogenson 2

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- Broken Top Mtn.: Nolf 3
- Wallowa Lake: Crandell 2

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Boulder movement; Ladd Creek mudflow: Birch

Localities:

- Eagle Cap quad.: Carnahan
- Eliot Glacier, recession: Dodge, N. A.
- Fraser: Wise, W. S. 5
- High Cascades: Ekman; Griggs, A. B.
- Lostine River valley: Goebel
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- Mesozoic conglomerate flysch: Aalto 2
- Mesozoic orogenesis and sedimentation: Koch, J. G. 2

HUMBUG MOUNTAIN CONGLOMERATE

- Localities:
 - Klamath Mtns. province: Ramp 6
 - Port Orford-Gold Beach area: Koch, J. G. 3
 - Sea stacks and reefs: Hunter, R. E.
 - Sixes River area: Boggs 3, 6
- Stratigraphic relationships:
 - Lower Cretaceous discontinuity: Peterson, G. L. 3
 - Mesozoic stratigraphy and tectonism: Koch, J. G. 3
 - Post-Nevadan Mesozoic geology: Baldwin 16
- Structure:
 - Late Jurassic unconformity: Dott 8
 - Late Mesozoic orogenesis: Koch, J. G. 2

HUMBUG MOUNTAIN STATE PARK

- Geology: Koch, J. G. 1

"HUNSAKER CREEK FORMATION"

- Snake River Canyon: Vallier 1, 4

HUNTER CREEK BASALT

- Fossil vertebrates; Miocene: Shotwell 9
- Localities:
 - Brogan quad.: Fouch
 - Malheur Gorge area: Haddock 2
 - Owyhee region: Kittleman 3, 4

HUNTINGTON QUADRANGLE

- Conglomerate layer near Lime: Brooks 4
- Geology, Snake River Canyon: Brooks 5, 8

HURWAL FORMATION

- Localities:
 - Lostine River valley: Goebel

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HURWAL FORMATION, Localities, continued
 Snake River Canyon, Huntington to Hells
 Canyon: Brooks 8
 Sparta quad.: Prostka 1, 2
 Wallowa Mtns.: Nolf 1, 2
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 GLACIATION, PLEISTOCENE)

IDAHO GROUP

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 Lake Owyhee State Park: Corcoran 3
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 Owyhee Upland province: Corcoran 9
 Western Snake River basin: Malde; Newton 8

IGNEOUS ROCKS (see also individual rock types)
 Cenozoic K/Na ratio: Moore, J. G. 2

IGNIMBRITE (see WELDED ASH-FLOW TUFFS)

ILLINOIS RIVER

Exploration by boat: Ramp 5
 Josephine peridotite sheet: Ramer; Jorgenson
 Minerals and mineral resources:
 Black sand: Baldwin 12; Clifton, H. E. 3
 Chromite: Ramp 1
 Copper: Ramp 5
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 Molybdenum: Ramp 5
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IMNAHA RIVER

Geology, Snake River Canyon: Vallier 1

INDUSTRIAL MINERALS (see AGGREGATES,
 DIATOMITE, LIMESTONE, MINERAL
 INDUSTRIES, SAND AND GRAVEL, STONE)

INGLE TUFF TONGUE (see also LAYCOCK GRAY-
 WACKE)

Nomenclature: Brown, C. E. 4; Cohee

INTRUSIONS (see also CANYON MOUNTAIN
 COMPLEX, WALLOWA BATHOLITH)

Batholiths:

Ashland: Ramp 6
 Bald Mtn.: Brooks 11; Coleman 1; Hampton 5;
 Staples 3; Taubeneck 4, 13; Thayer 2, 10
 Cenozoic granitic, Cascade and Coast Ranges:
 Skehan 2, 4
 Idaho: Hamilton 1; Morrison, R. F. 2; Thayer 2
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Wallowa: Brooks 11; Hamilton 1; Hampton
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 Cedar Butte: Nelson, D. O.
 Cenozoic, swarms: Taubeneck 18
 Chief Joseph swarm: Taubeneck 19
 Columbia River Group: Newcomb 13
 Cornucopia swarm: Taubeneck 12; Watkins 14
 Crescent quad.: Walker 10
 Diorite, Sixes River area: Boggs 6; Lund,
 E. H. 5
 Dufur quad.: Waters 5
 Feeder swarm for Columbia River Basalt:
 Taubeneck 16
 Glassy basalt at Copperfield: Stearns 2
 Grande Ronde swarm: Gibson 1, 2;
 Schmincke 2; Shaw, H. R. 1, 2;
 Taubeneck 12; Watkins 14
 John Day country: Thayer 12
 Joseph Creek swarm: Gibson 2
 Laurel Hill: Bikerman; Dunn
 Monument swarm: Fisher 12
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 Oregon swarms as Yakima Basalt feeders:
 Swanson, D. A. 1
 Oxbow on Snake River: Stearns 4
 Saddle Mtn. State Park: Nafziger 2
 Sawtooth Ridge: Patterson, P. V. 2
 Snake River Canyon: Morrison, R. F. 2
 Sparta quad.: Prostka 1
 Tertiary near Mitchell: Jarman, C.
 Western Detroit Reservoir area: Pungrassami
 Geochemistry; interaction with meteoric ground
 waters: Taylor, H. P. 3

Localities:

Anlauf and Drain quads: Hoover
 Babyfoot Lake area: Wise, J. P.
 Brattain district: Muntzert 1, 2
 Burnt River Canyon area: Ashley 1, 2
 Coast Range: Tatsumoto
 Coastal centers of Miocene volcanism:
 Snively 13
 Columbia Plateau: Gibson 2
 Dallas-Valsetz quads.: Baldwin 6
 Dixonville quad.: Champ
 Dixie Butte and Vinegar Hills areas: Perrault 3
 Greyback igneous complex: Godchaux 1, 2
 Holbrook-Irondyke: Vallier 1
 Imnaha, lower: Morrison, R. F. 2
 Ironside Mtn. quad.: Lowry
 John Day country: Thayer 12
 Josephine peridotite sheet: Hotz 2
 Klamath Mtns.: Irwin 3; Ramp 6
 Lane County: Staples 6
 Laurel Hill, Still Creek: Wise, J. P.
 Lookout Mtn. quad.: Swinney

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McKenzie River porphyry: Lund, E. H. 6
 Madras quad.: Waters 6
 Mitchell area: Jarman, C.
 Mitchell quad.: Patterson, R. L.
 Monument quad.: Wilcox, R. E. 3
 Mount Emily (Tertiary): Ramp 6
 Myrtle Creek area: Coleman 1
 Owyhee region: Kittleman 4
 Pedro Mtn.: Wolff 2
 Post quad.: Waters 4
 Pueblo Mtns.: Rowe
 Sandstone, Astoria: Dodds, R. K. 1
 Snake River Canyon: Brooks 8; Vallier 1
 Still Creek stock: Hopson, C. A. 2
 Submarine geology: Dehlinger 6
 Willamette Valley, southern: Shaw, J. H.
 Wind and Shellrock Mtns., Beacon Rock:
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Petrography:

Augite in granites containing hornblende:
 Taubeneck 10
 Batholiths compared: Larsen
 Controls on barite mineralization: Dunham
 Needle Point pluton: Piwinskii 1, 2, 3, 4
 Southern Willamette Valley: Shaw, J. H.
 Willow Lake-type layered granitic: Taubeneck
 8, 13, 14

Plutons:

Benson Creek: Lund, E. H. 5
 Brattain district: Muntzert 1, 2
 Composite: Taubeneck 3
 Diorite, southwestern Oregon: Kaiser
 Game Lake Lookout: Lund, E. H. 5
 Geosynclinal system: Dickinson 8
 Granite Peak: Lund, E. H. 5
 Granitic: Taubeneck 11, 13
 Granodiorite, Jackson County: Gilluly 4, 5;
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 Gray Butte: Lund, E. H. 5
 Imnaha Valley: Morrison, R. F. 1
 Iron Mtn.: Lund, E. H. 5
 Johnson Creek: Lund, E. H. 5
 Jurassic and Cretaceous: Nature 2
 Langlois quad.: Lent
 Late Cretaceous, Klamath Mtns.: Kays 5
 Laurel Hill-Still Creek: Bickerman
 Lawson Creek: Lund, E. H. 5
 Major, of Wallowa batholith: Taubeneck 9
 May Creek Schist belt: Kays 7
 Needle Point: Piwinskii 1, 2, 3, 4
 Pearse Peak: Lund, E. H. 5
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 Sixes River Middle Fork: Lund, E. H. 5
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Sills:

Gabbroic, central Coast Range: Snively 1
 Granophyric ferrogabbro: U.S. Geol. Survey 6
 Marys Peak: Clark, H. C. 1, 2, 3, 4, 5
 Robinette area: Stearns 1

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Annual production: Collins, R. P. 3; Fulkerson
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 Geology of deposits: Mason, R. S. 24;
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Geology and mineral resources: Lowry

IZEE AREA

Geology: Dickinson 1, 2, 5, 6, 7
 Lower Jurassic ammonites: Imlay 5

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Engineering geology:

Rogue River Basin project: U.S. Bur.
 Reclamation 1
 Sand and gravel: Schlicker 9, 10

Fossil invertebrates:

Cretaceous pelecypods:
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 Pinna: Packard 2

Geology:

Applegate Group, Kinney Mtn. area:
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 Roseburg-Grants Pass area: Steere 1
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 Metamorphic rocks:
 Applegate Group: Heinrich
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 Meteorites, Sams Valley shower: Lange 5
 Minerals and mineral resources:
 Chromite: Heinrich; Ramp
 Coal, Squaw Basin and Eden Ridge: Wayland
 Gem stones:
 Dendritic agates: Kohn
 Lazulite: Ramp 4

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Gold, silver: Brooks 6; Koschmann

Applegate Group: Heinrich

Mining history: Haines

Placers: Weissenborn

Iron, Tolman deposit: Mason, R. S. 24

Mercury: Bailey 3; Brooks 2; U.S. Bur.

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Palmer Creek, War Eagle mines: Trost

Molybdenum: King, R. U. 2

Stream-sediment samples: Bowen 3

Tungsten: Lemmon

Petrology:

Greyback igneous complex: Godchaux 1, 2

Nickeliferous laterites: Hotz 2

Stratigraphy:

Cretaceous: Elliot; McKnight 3; Peterson, G.

L. 1; Popenoe

Structure:

Paleozoic-Triassic contact: Engelhardt

Pluton, Jurassic-Cretaceous: Gilluly 5; Ramspott

Slump: Boggs 5

Surface water: Harris, D. D. 2, 3

JEFFERSON COUNTY

Absolute dating:

Recent volcanism: Taylor, E. M. 1, 2

Archaeology, Round Butte sites: Roscoe

Fossil flora:

Dennstaedtioid fern from Clarno Fm.: Arnold 2

Fern genus Acrostichum: Arnold 1

Geology:

Antelope-Ashwood area: Peck 5

Cove Palisades State Park: Bartholomay 2;

Peterson, N. V. 18

Oregon King mine and vicinity: Ojala

Quadrangles:

Bend AMS, E½: Swanson, D. A. 4, 6

Fly Creek: Hewitt

Madras: Waters 6

Mitchell: Lukanuski

Round Butte Dam: Campbell, D. G. 1, 2;

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Three Fingered Jack lightning strike: Weese

Ground water: Oreg. St. Water Res. Bd. 7

Minerals and mineral resources:

Gold and silver: Brooks 6

Oregon King mine: Libbey 1, 2

Mercury: Bailey 3; Brooks 2; U.S. Bur. Mines 3

Petrography:

John Day Fm.: Robinson, P. T. 2, 3

Mount Jefferson area volcanics: Anderson, A. T.;
Greene

Pleistocene Lake Metolius: Campbell, D. G. 3

Stratigraphy, John Day Fm.: Robinson, P. T. 1;

Swanson, D. A. 3, 5

JOHN DAY AREA (see also JOHN DAY FORMATION)

Field trips:

Guidebook: Thayer 12

South Fork safari: Howell 7

Geology: Brown, C. E. 5; Thayer 12

JOHN DAY FORMATION

Absolute dating:

Mammals: Evernden 2

Vertebrate fauna: Rensberger 1

Chemical analyses:

High-titanium basalts: Robinson, P. T. 2, 3

Tuffs: Hay 5

Welded tuffs, Ashwood area: Peck 5

Fossil floras:

Antelope-Ashwood area: Peck 5

Bridge Creek: Axelrod 2

Gray Ranch: Axelrod 2

Popular account: Peterson, J. V. 2

Fossil vertebrates:

Chalicotheres: Skinner, M. F.

Faunal subdivisions: Rensberger 1

Gophers: Rensberger 2

Insectivore genus Micropternodus: Stirton 1

Mudminnow: Cavender 2

Oreodonts, new species: Schultz

Peccary evolution: Stirton 2

Squirrels: Black

Karstlike topography:

Officer's Cave: Parker, G. G. 1, 2

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Antelope-Ashwood area: Peck 3, 5

Bend AMS quad: Stensland

E½: Swanson, D. A. 4, 6

Courtrock quad.: Thayer 7

Cove Palisades State Park: Bartholomay 2;

Peterson, N. V. 18

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Dufur quad.: Waters 5

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Patterson, R. L.; Wilkinson

Monument quad.: Wilcox, R. E. 3

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Officer's Cave: Parker, G. G. 1, 2

Oregon King mine area: Libbey 2; Ojala

Painted Hills: O'Dell

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Mineral resources:

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- Ash-flow tuffs: Peck 3, 5; Walker 20
- Basalts: Robinson, P. T. 2, 3
- Calcic siliceous chabazite: Sheppard 7
- Diagenetic alteration: Hay 1, 3, 4, 5
- Ignimbrite layer: Fisher 8, 10, 11
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- Origin of lower part of formation: Hay 1
- Pumice bubble wall texture: Fisher 3
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- Facies changes: Robinson, P. T. 1
- Resurrected Oligocene hills: Fisher 6
- Subdivisions, correlation: Rensberger 1

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- Base of formation: Swanson, D. A. 3, 5
- Early Tertiary deformation: Fisher 12
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JOHN DAY FOSSIL BEDS STATE PARK

- Geology: Thayer 12
- Resurrected Oligocene hills: Fisher 6

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- Canyon Mtn. Complex: Coleman 1; Thayer 1
- Geology: Brown, C. E. 5

JOHN DAY RIVER BASIN

- Surface water: Oreg. St. Water Res. Bd. 2

JOHN DAY UPLIFT

- Ignimbrites: Davenport
- Structure and orogenic history: Buddenhagen 1

JORDAN VALLEY AMS QUADRANGLE

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- Petrographic studies, authigenic fluorite: Sheppard 3

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- Cornucopia stock: Taubeneck 11
- Wallowa Mtn. uplift: Taubeneck 7

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- Faults, lower Rogue River: Baldwin 15
- Fossil invertebrates, Late Jurassic ammonites: Imlay 1
- Geology:
 - Alpine tectonism and metamorphism: Kays 5
 - Babyfoot Lake area: Wise, J. P.
 - Hellgate Canyon: Ore Bin 32

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- Merlin to Whiskey Creek: Nafziger 3
- Oregon Caves: Contor; Halliday
- Gravity investigations:
 - Galice area: Bruemmer 1, 2
 - Klamath Mtns.: Kays 1, 2, 3
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 - Levels 1961-1965: U.S. Geol. Survey 23
 - Oregon Caves Natl. Monument: Oster 1
- Minerals and mineral resources:
 - Almeda mine: Libbey 4
 - Chromite: Ramp 1
 - Copper: Shenon
 - Copper, lead, zinc: Bowen 2
 - Gem stones; Oregonite: Ramp 2
 - Gold and silver: Brooks 6; Koschmann
 - Placers: Weissenborn 5
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 - Mercury: Brooks 2; U.S. Bur. Mines 3
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 - Stream-sediment samples: Bowen 3
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 - Greyback igneous complex: Godchaux 1, 2
 - Nickel-bearing stream sediments: Ore Bin 53
 - Nickeliferous laterites: Hotz 2
 - Peridotite: Hotz 1; Ramer
 - Rogue Formation: Helming
- Stratigraphy:
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 - Popenoe
 - Dothan-Rogue Fm. relationships: Hotz 3, 4
 - Klamath Mtns.: Gamer 2
 - Mesozoic: U.S. Geol. Survey 8
- Structure, Galice quad.: Kays 1, 5
- Surface water, Rogue River: Harris, D. D. 2; Kitching

JOSEPHINE PERIDOTITE SHEET

- Petrology: Jorgenson; Ore Bin 53; Ramer

JOSEPHINITE

- Mineral description: Staples 1, 2

JUMP CREEK RHYOLITE

- Owyhee Reservoir area: Kittleman 2, 3, 4
- Sucker Creek flora area: Graham 1

JUNTURA BASIN

- Fossil invertebrates:
 - Fresh-water mollusks of Black Butte fauna: Taylor, D. W.
- Fossil vertebrates:
 - Black Butte local fauna: Shotwell 6
 - Ictalurus (catfish): Miller, R. R.
 - Mammalian fauna: Shotwell 4, 5
 - Pliocene birds: Brodkorb 1

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Petrographic studies, welded ash-flow tuff:
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Springs Member, Weberg Member

Fossil invertebrates:

Ammonites and pelecypods: Hallam; Imlay 1,
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Buchia zonation: Jones, D. L. 1, 2

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Fossil vertebrates; ichthyosaur from Curry County:
Camp

Intrusive rocks:

Josephine peridotite sheet: Ramer
Pearse Peak diorite: Kaiser

Localities:

Babyfoot Lake area: Wise, J. P.
Bandon area: Ehlen 2
Bone Mtn. quad.: Krans
John Day country: Thayer 12
Juniper Mtn. area: Wagner, N. S. 1, 2
Klamath Mtns.: Helming; U.S. Geol. Survey 8
Langlois quad.: Phillips, R. L.
Oregon Islands Natl. Wildlife Refuge:
Weissenborn 4
Port Orford-Gold Beach area: Koch, J. G. 3
Sea stacks and reefs: Hunter, R. E.
Snake River Canyon: Morrison, R. F. 3;
Vallier 2, 5

Suplee area: Dickinson 6, 7; Vigrass

Metamorphism, May Creek Schist belt: Kays 7

Stratigraphic nomenclature:

Aldrich Mtns. Group members: Brown, C. E. 4
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Stratigraphy:

Conglomerate near Lime: Brooks 4, 7
Dothan-Rogue relationships: Hotz 4
Flysch sedimentation: Aalto
Klamath Mtns.: Irwin 3
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Alpine tectonism and metamorphism: Kays 5
Angular unconformity, Snake River: Morrison,
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Klamath Mtns.: Kays 5
Late Mesozoic orogenesis: Koch, J. G. 2
Port Orford-Gold Beach area: Koch, J. G. 3

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Tectonic evolution: Gilluly 1
Tectonic history, southwest Oregon: Dott 7

Volcanic rocks:

Aldrich Mtns.: Brown, C. E. 2
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Dothan fossils: Ramp 9
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Land withdrawals: Mason, R. S. 7
Mineral resources; gold, chromite deposits:
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Fossil invertebrates:

Echinoid genus Salenia: Zullo 1
Microfaunal correlations: Rothwell
New marine worm, Adekunbiella durhami
Adegoke n. gen., n. sp.: Adegoke

Localities:

Central-western Oregon: McWilliams
Dallas-Valsetz quads.: Baldwin 6
Nehalem River area: Geol. Soc. Oregon
Country News Letter 1
Northwestern Oregon: Snively 4
Vernonia-Banks area: Mason, R. S. 12
Yamhill quad.: Schlicker 2

KEASEY QUADRANGLE

Eocene corals described: Blake, D. B. 1

KELLER CREEK SHALE

Canyon City quad.: Brown, C. E. 5
Mount Vernon quad.: Brown, C. E. 3
Nomenclature: Brown, C. E. 4

KELSEY BUTTE QUADRANGLE

Geology and morphology, lava tubes: Greeley

KERBY QUADRANGLE

Geology:
Babyfoot Lake area: Wise, J. P.
Josephine peridotite sheet: Ramer

KERN BASIN FORMATION

Lake Owyhee State Park: Corcoran 3
Mitchell Butte quad.: Corcoran 2

KIMBERLY QUADRANGLE

Geology, Miocene ignimbrite layer: Fisher 8
Petrography:
Clinoptilolite tuff: Fisher 2
John Day volcanic siltstone: Fisher 9
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Structure; Early Tertiary deformation: Fisher 12

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Absolute dating:

Crater Lake: Briggs

Mazama ash: Nelson, C. H. 3; Valastro 2;
Westgate

Middle Klamath River series: Valastro 1

Mount Mazama, Glacier Peak, relative ages:
Fryxell 2

Obsidian hydration rate: Johnson, L. 2

Aeromagnetic surveys, Crater Lake region:

Blank 4

Archaeology, Great Basin: Strong 5

Fossil freshwater fishes: Miller, R. R.

Geology:

Basin and Range province: Walker 17

Collier State Park area: Peterson, N. V. 3

Crater Lake:

Bathymetry: Byrne 1

Caldera floor: Williams, H. 1

Dendrochronology: Edwards

Geomorphology: Byrne 11

Limnology: Nelson, C. H. 1

Lunar applications: Smith, R. L.

Sediments: Nelson, C. H. 2

Submerged volcano: Brogan 1

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Crater Lake National Park: Williams, H. 2, 5

Pumice Desert: Horn, E. M.

Davis Lake diatoms: Messina-Allen

Eastern county: Peterson, N. V. 17

Flow layering in silicic lavas: Benson 3

Klamath Falls (AMS) quad., E₂: Walker 3

Maars: Peterson, N. V. 5

Mount Mazama:

Collapse: Mason 5

Eruption, wind direction: Fisher 4

Normal faults: Pease

Pliocene lake beds: Hanna 2

Sediment coring device: Burke

Geothermal resources potential: Groh 3;

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Ground water: Phillips, K. N. 2

Levels 1961-1965: U.S. Geol. Survey 23

Meteorite, Klamath Falls: Lange 10

Minerals and mineral resources: Peterson, N. V. 17

Mercury: Brooks 2

Perlite: Peterson, N. V. 1

Petrology:

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Mount Mazama ash: McBirney 1; Powers;

Steen 1, 2; Taylor, E. M. 3; Westgate;

Wilcox, R. E. 1, 2; Williams H. 3

Mount Thielsen fulgurites: Purdon

Soil development on pumice deposits: Tidball

Stream sediments: Bowen 3

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Stratigraphy:

Crater Lake sedimentation: Fryxell 1

Late Mesozoic orogens: Hamilton, 1

Volcanology, Crater Lake: Williams, H. 1, 3, 5

Water resources:

Crater Lake Natl. Park: Frank, F. J. 2

Upper Klamath Lake: Hubbard

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Geology: Walker 3

KLAMATH LAKE

Water resources: Hubbard

KLAMATH MOUNTAINS

Geology:

California-Oregon: Bailey 1; Irwin 1, 2, 3;

Oakeshott

Localities:

Babyfoot Lake area: Wise, J. P.

Bone Mtn. quad.: Krans

Cape Blanco area: Dott 1

Collier Butte area: Burt, W. D.

Dixonville quad.: Champ; Hixson

Greyback igneous complex: Godchaux
1, 2

Horse Sign Butte: Baldwin 12

Humbog Mtn. State Park area: Koch,
J. G. 1

Langlois quad.: Lent

Merlin to Whiskey Creek: Nafziger 3

Myrtle Creek area: Coleman 1

Myrtle Point area: Baldwin 14

Port Orford-Gold Beach area: Koch,
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Powers quad.: Born; Hess, P. D.

Roseburg quad.: Hicks

Regional: Baldwin 8, 16; Gamer 2; Irwin 3;
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Geomorphology from aerial surveys: Delano 3

Geophysical surveys:

Gravity models for peridotite injection:

Brummer 1, 2

Southwest Oregon: Blank 1, 3

Zones of local metamorphism: Kays 1, 3

Zones of major tectonism: Kays 2

Glacial history: Crandell 1

Metamorphism:

Anomalous, Jurassic rocks: Kays 4

Chlorite to staurolite zones: Kays 5

Low-temperature reaction zones: Coleman 1

May Creek Schist belt: Kays 7

Polyphasic assemblages: Kays 8

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Mineral resources:

Black sands: Ramp 6

Chromite: Irwin 3; Ramp 1, 6

Podiform deposits: Thayer 11

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- Coal, correlation of Squaw Basin-Eden Ridge beds: Wayland
- Copper: Irwin 3
- Gold and silver: Brooks 6; Irwin 3; Ramp 6
- Limestone: Irwin 3; Ramp 6
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Alumina, iron from bauxites: Fursman 2

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Mount Jefferson Primitive Area: Walker 5

Willamette Valley gravel deposits: Glenn 1

Petrography, Mount Jefferson area volcanics:

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Stratigraphy, Tertiary: Snively 3

Surface water, Willamette River basin: Oreg.

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Lostine River valley: Goebel

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Bromery 4

Marys Peak sill, geology: Clark, H. C. 1, 2,

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Fossil pollen:

Miocene: Martin, P. S.

Pachysandra: Gray, Jane 2

Fossil vertebrates:

Late Tertiary Chalicotheres: Skinner, M. F.

Tertiary squirrels: Black

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Localities:

- Canyon City quad.: Brown, C. E. 5
 - Courtrock quad.: Thayer 7
 - Dayville quad.: Forth
 - John Day country: Howell 7; Thayer 12
 - Long Creek quad.: Thayer 6
 - Mount Vernon quad.: Brown, C. E. 3
 - Ochoco Summit: Gamer 1
 - Paulina Basin: Davenport
 - Picture Gorge quad.: White, W. H.
 - Suplee-Izee area: Dickinson 7; Perrault 1
- Stratigraphic relationships:
- Columbia River Group nomenclature: Thayer 5
 - Late Tertiary silicic volcanism: Thayer 3

MAY CREEK SCHIST

- Chemical analyses: Kays 7
- Metamorphism: Kays 7

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Absolute dating:

- Banff National Park: Westgate
- Basin and Range: Antevs
- Continental terrace: Royse
- Distinguished from Glacier Peak: Powers
- Summer Lake: Allison, I. S. 2

Chronology: Wilcox, R. E. 2

- Artifacts: Sanger
- Cascadia channel: Griggs, G. B. 6
- Caves and rock shelters: Fryxell 1
- Mazama and Glacier Peak layers: Fryxell 2
- Northeastern Pacific: Nelson, C. H. 3

Geochemistry:

- Neutron activation analysis: Borchardt 2; Theisen

- Soils and clays: Chichester 2

Localities:

- Basin and Range province: Walker 17
- Big Hole maar: Lorenz
- Blanco Fracture Zone: Duncan 5
- Cascadia deep-sea channel: Griggs, G. B. 3; Kulm, L. D. 4
- Collier State Park: Peterson, N. V. 3
- Continental terrace: Carlson 1; Duncan 2; Royse
- Fort Rock cave: Strong 5
- Fossil Lake: Allison, I. S. 1
- Hole-in-the-Ground Crater: Kim
- Klamath County: Peterson, N. V. 17
- Mica Damsite, British Columbia: Mylrea
- Mount Rainier Natl. Park: Crandell 3
- Newberry Caldera: Higgins 1
- Northeastern Pacific: Nelson, C. H. 3

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- Clay mineralogy of soils: Chichester
- Compositional variations: Bockheim
- Continental terrace deposits: Royse
- Effects of weathering: Steen 1, 2

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- Bohemia mining district: Lutton
- Marion County: Schlicker 6, 7
- Western Cascades: Griggs, A. B.; Peck 2, 4

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- Geochemistry, secondary dispersion: Trost

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- Effects of humic-acid-type organics: Trost
- Opalite district caldera: Albers
- Quicksilver deposits: Brooks 2; U.S. Bur.
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- Serpentinite-type mercury deposits:
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- Mines and prospects: Brooks 1, 2; U.S. Bur.
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- Potential: Brooks 2, 3, 10; deWeese 2; U.S.
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- Stockpile policy threatens industry: Ore
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- Eagle Rock quad.: Waters 7
- Glide quad.: Patterson, P. V. 2; Thompson
- Horse Heaven mining district: Lukanuski
- Ironside Mtn. quad.: Lowry
- Lake and Klamath Counties: Peterson, N. V. 17
- Lookout Mtn. quad.: Swinney
- Ochoco Reservoir quad.: Waters 8
- Oregon King mine area: Ojala
- Pilot Rock, Heppner area: Pigg
- Pueblo Mtns.: Rowe
- Roseburg area: Baldwin 4, 5

Production:

- Annual: Brooks 2; Collins, R. P. 1, 2, 3;
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- By areas: Brooks 2

- History: Brooks 2; U.S. Bur. Mines 3

- Summary, 1965: Brooks 3

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Klamath Falls: Lange 3, 10
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 - Mount Hood: Wise, J. P.
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- Tectonic evolution, U.S.: Gilluly 1
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 - Charcoal from tree molds, Northwest Rift Zone: Peterson, N. V. 13, 15
 - Charcoal under pumice: Pearson; Tamers
 - Obsidian hydration rind: Peterson, N. V. 13
- Geology: Higgins 1, 2, 3, 4; Peterson, N. V. 9
- East Lake fissure: Higgins 5
- High Lava Plains province: Walker 14
- Petrographic studies:
 - Acid volcanic rocks: Jack 2
 - Ash and pumice: Borchardt 1; Higgins 4
 - Basalt-obsidian relations re-evaluated: Higgins 5
 - Neutron activation of pyroclastics: Borchardt 2; Theisen
- Seismic studies:
 - Longitudinal wave velocity in pumice: Thill
- Water resources: Phillips, K. N. 2

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- Geology: Higgins 1, 2, 4
- Lava tubes: Greeley

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- Geology: Snively 11, 12

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- Annual production: Collins, R. P. 1, 2, 3; Fulkerson 1, 2, 3, 6, 7; Gray, J. J. 1, 2, 3; Hotz 5
- Industry; Riddle mine: Fursman 1

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- Occurrences: Hotz 5
 - Eight Dollar Mtn.: Cornwall; Hotz 2
 - Josephine Creek near Cave Junction: Cornwall
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 - Nickel Mtn.: Chace; Cornwall; Cumberlidge; Fursman 1; Hotz 2
 - Pine Flat Mtn.: Hotz 2
 - Red Flats, Gold Beach: Cornwall; Hotz 2
 - Southwestern Oregon: Cornwall; Hotz 2
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- Petrographic studies:
 - Chemical analyses, Nickel Mtn. ore: Chace
 - Southwestern Oregon: Cornwall
 - Spectroanalysis of basaltic rocks: Turekian
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- Chemical analyses, peridotite: Kays 7
- Field trip, Hanna Nickel Co.: Steere 2
- Geology: Boldt; Chace; Cumberlidge; Fursman 1; Hotz 2

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- Fossils:
 - Microfaunal correlations: Rothwell
 - Molluscan assemblage referable to "Blakely": Addicott 4
 - New marine mollusks: Addicott 3
- Geology, Newport embayment: Snively 4, 5, 11, 14
- Mineralogy, diagenetic carbonates: Murata 1, 2



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- Hines, Pierre R.: Libbey 6
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 - Hart Mtn. Natl. Antelope Refuge: Walker 11
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- PUEBLO MOUNTAINS**
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- Supplee-Izee area: Dickinson 5; Perrault 1

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- Ignimbrites in Paulina Basin: Davenport

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- Ignimbrites in Paulina Basin: Davenport

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- Langlois quad.: Lent
- Late Jurassic unconformity: Dott 8
- May Creek Schist belt: Kays 7
- Mesozoic-Cenozoic tectonism: Dott 7
- Plush area: Larson 1
- Port Orford shear zone: Dott 1
- Pueblo Mtns.: Avent 1; Rowe
- Roseburg quad.: Johnson, W. R.
- Slump structure, Cretaceous(?) sandstones: Boggs 5
- South Fork John Day River: Howell 7
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- Suplee area: Perrault 1
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- Thrust contact, Colebrooke Schist over Myrtle Group: Bailey 2
- Trout Creek Mtns.: Carlton
- Tualatin Valley: Schlicker 5
- Tyee cuesta scarp: Trigger
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- White Salmon quad.: Newcomb 5
- Sea stacks and reefs: Hunter, R. E.
- Stereonet analysis, Umpqua-Tyee contact: Girard
- Tectonic rotation, Columbia Arc: Taubeneck 12, 13; Watkins 14
- Wallowa Mtn. uplift: Taubeneck 7
- Windgaps, Nehalem River: Howell

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- Astoria Canyon: Byrne 2, 3, 6; Carlson 1, 2, 3; Duncan 2, 3; Nelson, C. H. 5, 6; Osterberg; Russell, K. L. 1, 2
- Astoria Fan: Byrne 3; Duncan 2; McManus 2, 3; Nelson, C. H. 4, 5, 6; Shor 1
- Clay mineral origin: Russell, K. L. 2
- Deep-sea gravel: Griggs, G. B. 5
- Deposition: Nelson, C. H. 4, 5
- Geomorphology: Griggs, G. B. 4, 6
- Mazama ash: Nelson, C. H. 3
- Missoula flood deposits: Bretz
- Radioactive fallout particles: Gross 5
- Sediments: Carlson 3, 4; Duncan 3; McManus 1; Nelson, C. H. 5
- Bottom features: McManus 2, 3, 5, 6
- Cobb Seamount: McManus 5, 6; Shor 1, 2
- Geology: Mueller
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- Coquille Bank: Byrne 6
- Heceta Bank: Byrne 2, 9, 13; McManus 2; Maloney 4; Shor 1, 2
- Tertiary foraminifera: Fowler 1
- Newport Seaknoll: Jarman, G. D.
- Siltcoos Bank: Maloney 4
- Stonewall Bank: Byrne 2, 9, 13, 16; McManus 2; Maloney 4; Whitcomb 2
- Tertiary foraminifera: Fowler 1

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- Cascadia Abyssal Plain: Byrne 3; Duncan 2, 4, 6
- Biogenic elements in surface sediments: Enbysk
- Biolithology of sediments: Nayudu 3
- Bottom sediment types: McManus 1
- Geomorphology: Griggs, G. B. 4, 6
- Paleoclimatic conditions: Duncan 1
- Pleistocene foraminiferal trends: Fowler 2
- Seafloor mechanics: McEvilly
- Sedimentation: Griggs, G. B. 1, 3; Horn, D. R.; Kulm, L. D. 2, 6
- Seismic refraction studies: Shor 1, 2
- Cascadia deep-sea channel: Griggs, G. B. 1, 3, 4, 5, 6; Kulm, L. D. 2, 4, 6; McManus 2
- Continental margin: Braislín; Kulm, L. D. 8
- Deformation: Palmer, L. A.
- Mio-Pliocene formations: Baldwin 2
- Off southern Oregon Coast: Bales; U.S. Geol. Survey 22
- Sedimentary rocks: Kulm, L. D. 8; Maloney 2, 3
- Siletz River Volcanics: Snavelly 8
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- Tertiary basin: Byrne 9
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- Volcanics, extension from coast: Emilia 3
- Continental terrace geomorphology:
 - Central coast: Byrne 2; Maloney 3, 4
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- Foraminifera studies: Boettcher 1, 2; Fowler 1, 2, 3, 4, 5; Jarman, G. D.
- Gravity surveys:
 - Maps: Berg 9; Dehlinger 7, 8
 - Newport area: Rinehart, W. A. 1, 2
- Infrared and radar imagery: Snavelly 9
- Magnetic surveys:
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 - Juan de Fuca-Gorda Ridge: Peter
 - Newport area: Emilia 1
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- Mineral resources:
 - Continental terrace:
 - Gold distribution: Clifton 2
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 - Placer deposits: Kulm, L. D. 8, 9, 10
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 - Neglected mining frontier: Byrne 10
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- Chronology, Pleistocene-Holocene: Duncan 1, 2, 4; Griggs, G. B. 2, 3, 6
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- Climatic indicators: Fowler 5; Griggs, G. B. 7; Nayudu 2
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- Rates of accumulation: Carlson 1; U.S. Geol. Survey 17
- Textural trends: Byrne 14, 15
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- Buried channels off Columbia River: Berg, J. W. 6
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- Gorda Ridge: Heinrichs 2; Northrop 1, 2
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- Cavansite: Staples 8, 10

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- Late Tertiary Chalicotheres: Skinner, M. F.
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- Petrography, flow layering in silicic lavas: Benson 3

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- Mineralogy, cavity minerals: Kleck

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- Ground water, Baker Valley: Lystrom 2
- Permian and Triassic rocks, fossil fusulinids, crinoids: Bostwick 1
- Permian gastropod *Omphalotrochus*: Yochelson

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- Floods Dec. 1964, Jan. 1965: Dempster; Waananen 1, 2
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 - Nehalem River basin: Young, L. L. 4
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- Resources, general: Phillips, K. N. 1, 3; Weissenborn 5
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- Geology: Lawrence; Payton

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- Fossil woods, Holley area: Gregory, I. 1

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- Coos Bay area: Armentrout

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 - Low-temperature reaction zones: Coleman 1
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- Heat flow: Columbia Plateau: Blackwell 1, 2
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- Petrography:
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- Ground water, Baker Valley: Lystrom 2
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- Maryhill region quarries: Strong 2
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- Erosion, lightning strike: Weese
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Ground water:

- Basalt aquifers, Hermiston-Ordance area: Robison
- Levels, 1961-1965: U.S. Geol. Survey 23
- Ordance area: Sceva 5
- Umatilla drainage basin: Oreg. St. Water Res. Bd. 2
- Umatilla River basin: Hogenson 2
- Walla Walla River basin: Newcomb 7
- Loess in Walla Walla River basin: Mapes
- Mid-Columbia River waterfront plan: Meyers
- Structural geology; Olympic-Wallowa lineament: Skehan 1, 2, 3, 4

UMATILLA RIVER BASIN

Geology: Hogenson 2

- Deschutes-Umatilla Plateau: Newcomb 4, 10

Ground water, supply and quality: Hogenson 2

UMPQUA FORMATION

Age designation changes: Cohee

Environmental geology; Rogue River Basin Project:

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Foraminifera: Thoms 1, 2

Localities:

- Bandon, coast area: Ehlen 2
- Coast Range: Baldwin 9; Burns; Snavely 6
- Coos Bay area: Baldwin 11; Dott 9
- Fairview-McKinley area: Nelson, E. B.
- Horse Sign Butte vicinity: Baldwin 12
- Myrtle Point area: Baldwin 14

UMPQUA FORMATION, Localities, continued

Oregon, regional:

- Central-western: McWilliams
- Southwestern: Baldwin 7
- Western: Snavely 14
- Rogue River, lower: Baldwin 15
- Roseburg area: Baldwin 4, 5
- Sixes River area: Boggs 3, 6
- Western Cascades: Peck 2, 4

Quadrangles:

- Bone Mtn.: Krans
- Coos Bay: Kohn, M. L.
- Coquille: Fairchild; Magoon
- Dixonville: Champ
- Glide: Elphic; Patterson, P. V. 1; Thompson
- Langlois: Lent; Phillips, R. L.
- Powers: Born; Hess, P. D.
- Roseburg: Hicks
- Sitkum: Fairchild; Magoon; Trigger
- Sutherlin: Lawrence; Payton

Mineral resources:

- Coal: Wayland

Mercury: Trost

Petrology: Burns

- Thorium and uranium content: Rogers 1

Sedimentation:

- Eocene paleocurrent patterns: Scott, K. M.
- Sublittoral to neritic deposition: Thoms 2

UMPQUA RIVER AREA

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Chromite: Ramp 1

Geology:

- Lower river: Baldwin 1
- Post-Nevadan Mesozoic geology: Baldwin 16
- Roseburg quad.: Hicks
- Sediment transport: Onions
- Sutherlin quad.: Lawrence
- Umpqua estuary model study: Gladwell

Surface water:

- Chemical quality: Curtiss
- Radioisotope pollution: Gladwell

UNION COUNTY

Absolute dating:

- Sloth fragments: Mielke
- Stockhoff ranch site charcoal: Crane 2

Fossil vertebrates:

- Ground sloth skull: Quaintance 1
- Mammoth Myiodon skull: Quaintance 2

Geology:

- Grande Ronde River basin: Hampton 5
- Natural channels: Barnes, H. H.

Ground water:

- Grande Ronde River basin: Hampton 5
- Levels, 1961-1965: U.S. Geol. Survey 23
- Intrusions, Cornucopia: Taubeneck 11, 13, 14
- North Powder earthquake: Couch 1

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Late Tertiary silicic volcanism: Thayer 3
Tertiary geology: Lowry

URANIUM

Annual production: Collins, R. P. 1, 2, 3;
Fulkerson 1, 2, 3, 6, 7; Gray, J. J. 1, 2, 3
Exploration: Gray, J. J. 2
Lakeview area: Lake County Examiner 1, 2;
Osterwald; Peterson, N. V. 16
Mines:
Lucky Lass: Peterson, N. V. 16, 17
White King mine: Osterwald; Peterson, N. V.
16, 17
Resources: Peterson, N. V. 16

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VALSETZ QUADRANGLE

Geology: Baldwin 6
Saddleback area: MacLeod 2

VANADIUM

Annual production: Fulkerson 1, 2, 3, 6
Resources: Busch; Fischer 1
Bibliography: Fischer 2

VERMICULITE

Annual production: Collins, R. P. 1, 2, 3;
Fulkerson 1, 2, 3, 6, 7; Gray, J. J. 1, 2, 3
Occurrence:
Andesite flow near Lakeview: Walker 9
Bald Mtn. batholith: Staples 3

VESTER FORMATION

Aldrich Mtns.: Brown, C. E. 4, 5

VINSON ROCK QUADRANGLE

Lower Tertiary sedimentary rocks: Pigg

VOLCANIC ASH (see also MAZAMA ASH)

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Neutron activation:
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Chemical analyses:
Compositional variations, Cascade Range:
Taylor, E. M. 4
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Snively 7, 8
Differentiation of magma: Anderson, A. T.
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VOLCANIC ROCKS, Chemical analyses, continued

Standards of chemical composition: Ore
Bin 29

Stratigraphic relationships:

Canyon City quad.: Thayer 3
Coast Range: Snively 3, 4, 7, 8, 10, 13,
14, 15
High Cascades: Peck 6; Wise, W. S. 5
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Strato-volcanoes, Klamath Falls (AMS) quad.:
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VOLCANOES (see specific mountain name)

VONDERGREEN HILL PERIDOTITE

Port Orford-Gold Beach area: Koch, J. G.
2, 3

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WALLA WALLA RIVER BASIN

Age of Palouse Fm.: Newcomb 4
Geology: Newcomb 7, 10
Ground water: Newcomb 7
Sediment transport: Mapes

WALLOWA BATHOLITH

Geology:
Blue Mtn. region: Thayer 10
Lostine River valley: Goebel
Major plutons: Taubeneck 9
Needle Point pluton: Piwinski 1, 2, 3, 4
Snake River Canyon: Brooks 8
Orogeny: Thayer 2
Petrographic studies:
Explosion and injection breccias: Taubeneck 5
Igneous rock series: Piwinski 1, 2, 3, 4
Tonalite: Taubeneck 13

WALLOWA COUNTY

Fossil invertebrates:
Lower Jurassic ammonites: Imay 5

WALLOWA COUNTY, Fossil invertebrates, continued

Mesozoic pelecypods: Imlay 4

Geology:

Hells Canyon damsite: Schnaible

Joseph Upland: Newcomb 11

Lostine valley: Beeson, Melvin; Goebel

Snake River Canyon: Brooks 5; Vallier 1, 5

Glaciation, Wallowa Lake: Crandell 2

Intrusions:

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Cornucopia stock: Taubeneck 11, 13, 14

Grande Ronde dike swarm: Gibson 1, 2

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Taubeneck 5, 9; Thayer 2, 10

Minerals:

Manganese oxides todorokite and rancieite:

Gunn, D. W.

Tungsten: Lemmon

Stratigraphy:

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Wallowa Mtns.: Nolf 1, 2

Structure:

Olympic-Wallowa lineament: Skehan 1, 2, 3, 4

Wallowa Mtn. uplift: Taubeneck 7

Surface waters, chemical quality, Snake River basin: Laird

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Structure:

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Uplift: Taubeneck 7

Tectonism:

Overlapping of Mesozoic orogens: Hamilton 1

WALLOWA-OLYMPIA LINEAMENT

Snake River Canyon: Morrison, R. F. 2

WALLOWA-OLYMPIA LINEAMENT, continued

Tectonics: Skehan 1, 2, 3, 4; Taubeneck 12, 13;

Watkins 14

WALTERS HILL AREA

Geology: Trimble

WARM SPRINGS MEMBER (SNOWSHOE FORMATION)

Suplee-Izee area: Dickinson 5

WARNER BASALT

Parent magma related to block-faulting: Avent 5

WARNER MOUNTAINS

Geology: Larson 1; Walker 3

Geomorphology, aerial photography: Delano 3

WASCO COUNTY

Absolute dating:

Gravel, carbonaceous silt: Marsters

Wood chip, Mosier gravel quarry: Levin 1

Aggregate and rock sites: Olcott

Archaeology: Strong 2

Salvage, The Dalles area: Bergen

Geology:

Antelope-Ashwood area: Peck 5

Bend quad.: Swanson, D. A. 4, 6

Columbia River sediments: Whetten 1, 2, 5

Dalles-Umatilla syncline: Newcomb 8, 9

Damsites:

John Day lock and dam: Monahan

Mosier area: Paige

Deschutes-Umatilla plateau: Newcomb 10

Dufur quad.: Waters 5

Lower Deschutes Canyon: Hall

Madras quad.: Waters 6

Mutton Mtns.: Perrault 2

Natural channels: Barnes, H. H.

White Salmon quad.: Newcomb 5

Ground water:

Aquifers, The Dalles: Foxworthy 3

Deschutes River basin: Oreg. St. Water Res.

Bd. 7

Hood Basin: Oreg. St. Water Res. Bd. 1

In basalt: Newcomb 12

Levels, 1961-1965: U.S. Geol. Survey 23

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Mid-Columbia River waterfront: Meyers

Surface water, Hood Basin: Oreg. St. Water Res. Bd. 1

WASCO QUADRANGLE

Missoula flood, gravel deposits: Bretz

WASHINGTON COUNTY

Fossil sand shark: Applegate

Geology:

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- Tertiary geologic history: Snavely 3

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WEBER MEMBER (SNOWSHOE FORMATION)

- Supplee-Izee area: Dickinson 5

WELDED ASH-FLOW TUFF

- Absolute dating: Walker 14
- Localities:
 - Antelope-Ashwood area: Peck 2, 3, 5
 - Burns (AMS) quad.: U.S. Geol. Survey 7
 - Buzzard Creek area: Walker 18
 - Cove Palisades State Park: Peterson, N. V. 18
 - Harney-Malheur Lakes area: Walker 12
 - High Lava Plains province: Walker 14
 - Lake and Harney Counties: Walker 8
 - Malheur Gorge area: Haddock 2
 - Monument quad.: Wilcox, R. E. 3
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 - Owyhee region: Kittleman 3, 4
 - Paulina Basin: Davenport
 - Post quad.: Waters 4
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 - Santiam River basin: Helm
 - South Umpqua Falls region: Kays 6
- Gold and silver: Brooks 6
- Petrology:
 - Emery: White, J. C.
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 - Western Cascades volcanic series: Kays 6; Peck 1, 2, 4
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 - Columbia River Basalt as critical datum: Wheeler 3
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 - Cenozoic: Peck 6; Wheeler 4, 5
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 - North-central: Peck 1, 2, 4
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- Surface water:
 - McKenzie River basin: Colbert 1
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- Terrestrial gamma radiation: Wollenberg

WHALEHEAD FORMATION

- West-central Klamath province: Widmier

WHEELER COUNTY

- Absolute dating, Butte Creek cave: Chatters 4
- Fossil invertebrates:
 - Cretaceous pelecypod: Meekia: Saul
 - Pinna: Packard 2; Peterson, G. L. 4
 - New species of Anisoceras: Packard 1
- Fossil plants, Clarno: Hergert; McKee, T. M. 1, 2; Peterson, J. V. 2
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WHEELER COUNTY, Fossil plants, Clarno, continued

Nuts, seeds: Chandler

Wood: Scott, R. A. 2

Fossil vertebrates:

Evolution of Tapiroidea: Radinsky

Freshwater fish: Cavender 1

Late Tertiary geomyoid rodents: Shotwell 7

Miocene mammals: Shotwell 9

Novumbra oregonensis (minnow): Cavender 2

Geology:

Camp Hancock: Peterson, J. V. 1

Miocene ignimbrite layer: Fisher 8

Picture Gorge basalt: Aoki

Quadrangles:

Bend: Swanson, D. A. 4, 6

Lookout Mtn.: Swinney

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Diagenesis: Hay 1, 3, 5

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Pyroclastic flows: Fisher 9

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Geology: Newcomb 5, 8, 12

WHITSETT LIMESTONE LENTILS

Dixonville quad.: Champ

WILDCAT CREEK WELDED ASH-FLOW TUFF

Owyhee region: Kittleman 3, 4

WILLAMETTE LOWLAND

Missoula flood: Bretz; Crandell 1

Tertiary geologic history: Snavely 3

WILLAMETTE RIVER

Cougar damsite: Eisiminger

Geomorphology:

Drainage changes: Trimble

Lake Oswego area: Parsons, R. B. 2

WILLAMETTE RIVER, continued

Gravel deposits: Glenn 1; Schlicker

Surface water:

Floods, Dec. 1964, Jan. 1965: Waananen
1, 2

Flow characteristics of streams: Swift

Historical streamflow data: Orem 2

Patterns of runoff: Oster 2

Tidal reach at Portland: Dempster

Travel rates: Harris, D. D.

Waterpower withdrawals: Neal, D. W. 2

Willamette River basin: Oreg. St. Water
Res. Bd. 5, 6

WILLAMETTE SILT

Engineering geology: Schlicker 5

Localities:

Brownsville quad.: Hauck

Dallas-Valsetz quads.: Baldwin 6

Eola-Amity Hills area: Price 5

Lake Oswego area: Parsons, R. B. 2

Marion County: Schlicker 6, 7

Northwestern Oregon: Snavely 4, 14

North Willamette Valley: Glenn 2

Tualatin Valley: Schlicker 5

Yamhill area: U.S. Soil Conserv. Service

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Environmental geology:

Marion County: Schlicker 6, 7

Tualatin Valley area: Schlicker 4, 5

Yamhill area soil survey: U.S. Soil Conserv.
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Brownsville quad.: Anderson, R. W.

Dallas-Valsetz quad.: Baldwin 6

North Willamette Valley: Glenn 2

Portland area: Trimble

Southern valley: Balster 3

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Surface water:

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Geology, Cedar Creek damsite: Gaskill
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Snake River Canyon: Vallier 1

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YAKIMA BASALT (see also COLUMBIA RIVER GROUP)

Correlations: Bingham; Swanson, D. A. 2; Thayer 3, 5; Waters 1

Fossil plants, associated floras: Gray, Jane 3

Geomagnetism, Columbia Plateau: Watkins 8

Structural implications: Watkins 5

Localities:

Canyon City quad.: Brown, C. E. 5
Columbia plateau: Shaw, H. R.; Gibson 2
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Engineering geology, Tualatin Valley: Schlicker 5

Ferruginous bauxite, Chehalem Hills: Ore Bin 10

Geology: Snively 14

Erratic Rock State Park: Wilcox, L.

Soil survey, Yamhill area: U.S. Soil Conserv. Service

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Ground water:

Eola-Amity Hills area: Price 4, 5

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Stratigraphy:

Paleogene biostratigraphy: McWilliams

YAMHILL COUNTY, Stratigraphy, continued

Spencer Sandstone: Schlicker 2

Tertiary: Snively 3

Surface water, Willamette River basin: Oreg. St. Water Res. Bd. 6; Oster 2

YAMHILL FORMATION

Engineering characteristics: Schlicker 5

Fossil sand shark: Applegate

Localities:

Central-western Oregon: McWilliams
Dallas-Valsetz quads.: Baldwin 6
Newport area: Snively 11
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Yamhill quad.: Schlicker 2

YAMHILL QUADRANGLE

Sand and gravel: Glenn 1

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Fossils:

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Geology: Walker 17

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Geology of deposits: Sheppard 6

Filling and replacement in fossils: Staples 6

Localities:

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- Resources: Sheppard 6

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- Fulkerson 6; Gray, J. J. 1, 3

- Geochemical sampling: Ore Bin 25

- Geology of deposits:

- Bohemia mining district: Lutton

- Zinc in basalts: Rader

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