GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

THE GEOLOGICAL NEWS LETTER

1962

Volume 28

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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Luncheon - Mr. Leo Simon

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To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country; the establishment and maintenance of a library and museum of geological works, maps, and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of better acquaintance and closer association among those engaged in the above objectives.

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(See "Calendar of the Month")

Evening Meetings: Formal lectures or informal round-table discussions on geological subjects, on the second and fourth Fridays of each month at Public Library Hall, S.W. 10th Avenue and Yamhill.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon in Room B, Chamber of Commerce Building, S.W. 5th Ave. and Taylor St. $1.00 per plate.

Publication: The Geological News Letter, issued once each month, is the official publication.

YMCA

CALENDAR

Buffet luncheon every Thursday noon, second floor, Portland Chamber of Commerce, 824 S.W. 5th. $1.25.

Friday
January 12 — 7:30 P.M. Mr. Hollis Dole, Director, Ore. Dept. of Geology & Mineral Industries, to lecture on the Cretaceous Period, as one of the series on historical geology. Illustrated with slides.

Tuesday
January 16 — 7:30 P.M. Library, Peebles Hall, Lewis and Clark College. Reading Time. Many choice books and publications available. Followed by illustrated talk on "The Owyhee Country" by Albert R. Kenney. Refreshments. Murray Miller, Chairman.

Friday
January 26 — Dr. June Patullo, Dept. of Oceanography, Oregon State University, to lecture on Research as Accomplished during 1961 in Oceanography. Illustrated with slides and other material. 7:30 P.M.

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NEWS OF MEMBERS - -

Michael, 16-year-old son of MR. AND MRS. HOLLIS P. DOLE, was chosen by the Portland Exchange Club as Boy of the Month for November . . . CLAIR E. PENSE is the newly elected Treasurer of the Professional Land Surveyors of Oregon . . . At the travelog shown by DR. FRANCIS G. GILCHRIST on December 8th, when asked in what state a certain picture was taken, he replied, "In the state of ecstacy."

RALPH MASON - Please see The Ore-Bin for a preview of "Mason's Mineral Mansion". No need of wood; for Mason. He has a mineral product for any part of your house you can name.

LEO SIMON is the newly elected 1st Vice President of the Oregon Audubon Society . . MAY DALE became MRS. PAUL E. DUNN on December 22nd. Their address is temporarily 117 N.W. Trinity Place. Our society extends felicitations.

SYMPATHY is extended to: The family of OSCAR BERG, whose brother EMIL, County Assessor of Clatsop County, passed away recently at Astoria. Also to the SCHMINKYS on the death of Ruth's sister DORIS BILLS of Tillamook.

* * * * * *

A limerick appeared in B. MIKE'S column of The Oregonian December 15: "A most lovely tree is the gingko, As pretty as any that grows, Except that the female she stinko, And you need a clothes pin for your nose." It was prompted by the recent article in The Oregonian's Home and Garden Magazine by Dean Collins, "Gingko Tree: A Living Fossil." The fruit of the female tree is very malodorous. Who's guilty of this doggerel?

* * * *

ROCK AUCTION

Friends of Lon Hancock will be interested to learn that the Hancock Memorial Room Fund is richer by $429.08, thanks to the generous efforts of the Willamalane Rock and Gem Club of Springfield, Ore. This club held a rock auction on November 5, with proceeds going to the Memorial Fund. Six or seven rock clubs donated materials for the auction, and Mrs. Hancock contributed some of Lon's specimens. Our warm thanks and appreciation to everyone connected with this project.

BRING YOUR ROSTER UP TO DATE!

New Members Welcomed:

Mr. Charles P. Keyser, c/o University Club, 1225 S.W. Sixth Ave., Portland, Tel: CA 3-6237;

Mr. and Mrs. Dennis A. Larson and children, 1923 E. 19th Avenue, Eugene, Ore., Tel: DI 4-7754;

Mr. and Mrs. Bert Michel, 620 S.W. Grant, Portland 1, Tel: CA 8-2533;

Mr. and Mrs. O. Winston Taggart, 5255 S.W. Dosch Rd., Portland 1, Tel: CH 4-5540 (home), office CA 6-2744.

Changes:

Mrs. Robert L. Bryan. new address - Crater Lake, Oregon.

Dropped:

George V. Elder, S.E. Brooklyn Street
Margaret E. Hughes, 1070 S. W. Gaines
Mr. and Mrs. Chester Wheeler, 14119 S.E. Madison
Mr. and Mrs. Wilkes B. Wirth, 8520 N. John Avenue.

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ATTENTION, TOURISTS -- See this planet first.

-- Space Age Tourist Guide

ELECTION TIME - 1962

Nominations for Fiscal Year Beginning March 1, 1962 ---
(Report of Nominating Committee)

In accordance with Article VIII, Section 1, of the By-Laws of our Society, the Nominating Committee has filed with the Secretary the following list of nominees for office for the fiscal year beginning March 1, 1962:

President	Mr. Leonard DeLano
Vice-President	Albert R. Kenny
Secretary	Miss Hilda Freed
Treasurer	Miss Clara L. Bartholomay
Director (3-year term)	Mr. J. R. Rentsch
Editor of News Letter	Mr. Irving Ewen

Each of these candidates has signified his willingness to serve the Society in the capacity to which nominated.

In accordance with the By-Laws, other nominations may be made by members of the Society by filing with the Secretary, a list of such nominations, which shall be signed by at least ten members of the Society.

Hilda W. Freed, Secretary
918 American Bank Building
Portland 5, Oregon

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LOST - A WHALE

November 22, 1961

Dr. John Allen,
Dept. of Geology,
Portland State

Dear Doctor:

A month ago I mentioned to you that the Kansas City Museum had the skull and

LOST - A Whale - cont'd

rib of a whale which had been dug up in Oklahoma. You gave very good reasons why this was unlikely. (The seas had withdrawn from Oklahoma long before the advent of mammals.) But I wrote to the museum and asked if the specimen were fossilized or natural bone and what might be the age of the enclosing formation. The enclosed letter is their reply.

October 26, 1961

Dear Mr. Murphy:

In reply to your inquriy of Oct 18 we regret to say that this specimen has been destroyed. Its history was quite hazy. It was quite hard and partially fossilized. It had been a part of the Daniel B. Dyer collection and had been dug up at Big Bear Creek, Oklahoma.

It was thought to be an Arctic or Humpback whale. Also that perhaps it had been brought to the site of its discovery by some traveling show, even though it seems quite unlikely that so long ago there was adequate transportation for so large a specimen.

Sincerely yours,

Wilbur E. Phillips, Director.

(Continued Murphy to Dr. Allen -)

By gosh, these geologists are getting too big for their britches! Here was a nice harmless old whale enjoying the warmth and security expressly due a senior citizen when along comes some skeptical scientist with a bunch of durn fool questions and he gets thrown out.

Cordially yours,

Truman Murphy.

(Dr. Allen to Mr. Rentsch: Nov. 27 (enclosing both above letters) Isn't there a news letter item here?

John Allen.

Nov. 29 Rentsch to Murphy - Any Comment?

Nov. 30 Murphy to Rentsch:

Your durn tootin'! Comes now one Immanuel Velikowsky in his book, "Earth in Upheaval", 1955 (Doubleday) who's agin it. In fact, he's agin most everything that has to do with uniformity. Says he, most of the changes that have been taking place in this old planet have been of the nature of cataclysmic evolution, instantaneous catastrophes, convulsive paroxysms. None of this long drawn out evolution business for him.

Erratics, says he, are not necessarily ice borne. Chances are some of 'em were washed up against a mountain by a great tidal wave. Coal didn't accumulate in oozy swamps over millions of years. It came in one full swoop by forest fire, hurricane and a big swoosh of sea water. Lions, elephants and hippopotami didn't gang up in caves nor go to the La Brea Tar Pits to die together. They were washed in to these places from a great distance in a Pluvial spate. Whales, says he, have been found in New Hampshire and in Quebec. He could have added, in Oklahoma, I'm for the guy. Anybody who's willing to legitimize my old whale's got my vote.

Very sincerely yours,

C. T. L. Murphy

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BARGAIN DAY --

Cornucopia Gold Mine was recently bought for $11,100.00 by Craig Stolle of Spokane. This mine near Baker was opened about 1884 and is said to have produced 15 million in gold. It has been closed for 20 years. Ore-Bin - Dec. 1961

HISTORY OF THE BONANZA MINE

Oregon's largest and most productive quicksilver mine, the Bonanza, situated about 7 miles east of Sutherlin in Douglas County, was closed in October 1960. During the current year mining and reduction equipment has been dismantled and the property offered for sale. The mine had been in almost continuous operation since 1937 and had produced more than 39,000 flasks to account for about 38% of Oregon's total quicksilver production. Although the eventual depletion of minable reserves of any quicksilver mine must be considered inevitable, closure of the Bonanza mine was like the passing of an old friend to the mining people of the West.

The history of the Bonanza mine dates back to the early days of mining in Oregon. Cinnabar is said to have been discovered there some time during the 1860's. Some of the early development was done by the Bonanza Quicksilver Mining Co., which was organized in 1878. This company reportedly installed the Scott furnace, parts of which are still on the property. Following these activities, the property passed through the hands of several individuals and groups, none of which succeeded in putting the mine on a paying basis.

Most of the early operations were confined to float and surface ore mined from a glory hole in the outcrop of the north or main ore body and from several short adits all less than 250 feet long. In 1935 the mine was acquired by H. C. Wilmot, who organized Bonanza Mines, Inc. (renamed Bonanza Oil & Mines Corp. in 1951), and development of a small ore body that lay several hundred feet to the south was started. A 5-deck Herreshoff furnace of 50-tons-per-day capacity was installed and in late 1937 production began.

Continued underground exploration led to the discovery of "good" ore in the north hill in 1939 just as the south ore body was playing out. As a result, two 100-ton-per-day Gould rotary furnaces were added to the treatment plant. Discovery and development of the rich ore body had come at a period when war time demands were forcing quicksilver prices to record highs, and for the year 1940 the Bonanza mine ranked second among the quicksilver producers in the United States with a production of 5733 flasks. The Bonanza mine was the only major quicksilver mine in Oregon to continue operations through the war years. One of the rotaries was dismantled and moved to the company's property at Hermes, Idaho, in the summer of 1942. For several years prior to closure of the mine only the remaining rotary furnace had been in use.

The ore bodies at the Bonanza mine occurred as irregular lenses scattered along a shear zone in Eocene sandstone beneath a layer of relatively impervious shale. The shear zone, having an average dip of about 45°, approximately parallels the bedding in the sandstone, but in some places transects it, particularly at points where flexures in the latter occur. Localization of the mineralizing solutions within the shear zone is thought to have been aided considerably by the imperviousness of the overlying shale. For much of its length the shear zone was found to be thin and indistinct but locally and unpredictably it widened to form lens-shaped zones which contained the ore bodies.

Where first encountered on the 370 or main haulage level, the principal ore body of the mine proved to be about 600 feet long and as much as 60 feet thick. Because of a gradual tapering of the ore body to a width of about 4 feet and a length of 150 feet on the 700 foot level, it was feared in 1944 that mining below the 700 foot level would prove unprofitable. Fortunately nodal extensions and subsidiary lenses of good ore were encountered along the shear zone materially lengthening the life of the mine. Ore has been mined from the surface to an inclined depth of about 1450 feet. Economical recovery of ore from the 1450 foot level, the last to be developed, proved impossible under present conditions.

-- Howard Brooks, Field Geologist,
Baker Office

Ore-Bin,, Sept. 1961

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EXPLORING THE OREGON COAST --

Oregon State University, Corvallis (Special) -- Three new research grants totaling $373,000 have been received by the OSU Department of Oceanography to explore the Oregon coastal waters.

The earth's crust under the ocean and tiny fish of the sea will be studied under funds of the new grants, according to Dr. Wayne V. Burt, head of oceanography.

Other studies already under way will be expanded. These include work on Oregon currents, inventories of plant and animal life, chemistry of the ocean, pollution problems in coastal estuaries and ocean floor life.

Factors that might affect submarine operations will also be noted, Dr. Burt said. OSU's research vessel, Acona, will be used for all studies.

The Office of Naval Research provided $184,000 in new funds; National Science Foundation, $140,000 and Atomic Energy Commission, $49,000.

AEC funds will be used to study tiny animals of the ocean -- those that range in size from microscopic plankton to the food fishes. Called plankton, these animals are intermediates in the food chain of the sea.

The Office of Naval Research selected OSU two years ago as one of 10 schools in the nation to conduct a vast 10-year program of research in waters surrounding the United States.

-- The Oregonian

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TOWERING OCHOCOS MONOLITHS

By Phil Brogan -
Staff Correspondent, The Oregonian

The towering, sentinel-like "Monoliths of the Ochocos," gray these dull winter days, pink under the summer sun, are known to few Oregonians.

They are rhyolitic remnants of Oregon's "dawn age" lands, of Clarno age. They are perched on the sides of timbered hills facing Mill Creek east of Prineville. They are known as the Twin Pillars and Stein's Pillar. Even deer hunters are hardly aware of their presence until they reach their bases and look up at monuments hundreds of feet high.

Both monoliths are "cousins" of a well-known formation on Crooked River, downstream. This is Smith Rock, frequently used by alpinists in training work.

The various monoliths are erosional features in the multi-million year old Clarno formation exposed in the Blue Mountain downwarp. The Smith Rock monoliths are boldly tilted to the southeast.

Part of an old land mass formed before the Cascades formed along the western skyline, the monoliths were formed of volcanic debris shortly after interior Oregon shook off the last of its Cretaceous oceans.

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HERE & THERE

Refining Fires of Earth --

Lillian Mihelcic in the current issue of Rock Hounds tells of a five-ton nugget of pure copper found on Isle Royale, Lake Superior. This is the spot where the American Indian dug up much of this metal.

To top this, Russia reports a 31-pound gold nugget found on Kolyma River, Siberia.

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CONGO'S RICHES - -

What's all the fuss?

Well, 60% of the world's production of cobalt, 7% of its copper, 16% of its germanium. Besides, there is cadmium, manganese, radium, uranium, zinc, iron, nickel, lead, platinum, palladium, tin, gold and silver.

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ELDORADO DITCH -

Begun in 1867 and running in curves 134 miles through the high dry country south of Baker, it was the life blood of the gold camps there in those days. Its cost, 1/2 million and was in use over 50 years.

- - Baker County Sketch Book

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DEVIL'S TOWER AND GEOLOGIC DATING

This spectacular landmark at Moorcroft, Wyoming standing 1800 feet high and 2400 feet across its base has just been dated by the Potassium-Argon method, giving its age as 40.5 million years. This accords with the geologists' theory as making it of Tertiary age. It is said to be the throat of an ancient volcano.

Dated by - William A. Bassett, Nat'l Lab.
Upton, N. Y.

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HOLE-IN-THE-GROUND

Close inspection of this spectacular geologic feature in Central Oregon has recently been made by Peterson and Groh. The bowl-like depression is 5,000 feet across and has a depth of 425 feet. They pronounce it as of volcanic origin.

-- The Ore-Bin, October 1961

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FOSSILS FROM SPACE

Four scientists of New York working as a team have discovered what is thought to be the fossils of one-celled life in meteorites. The organisms found look like a kind of algae but like nothing terrestrial. Identical finds have been found in meteorites from four widely separate regions of our planet.

Top scientists say it will take time to weigh the evidence which seems to indicate these life forms come from outer space.

- - Life, December 8, 1961

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CALENDAR

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Friday February 9 — 7:30 p.m. Meeting, Room A, Central Library, 801 SW 10th Avenue. Dr. Paul W. Howell, Geologist with U.S. Army Engineers - " The Eocene and Oligocene Epochs of the Tertiary Period. "

FIELD TRIP To be Announced Later.

Tuesday February 20 — 7:30 p.m. Library Night, Biology Bldg., Peebles Hall, Lewis & Clark College. Time for Reading. Then Ray Golden will talk about Eastern Oregon's wonders. Murray Miller, Chairman

Friday February 23 — 7:30 p.m. Meeting, Room A, Central Library, 801 SW 10th Avenue. Sam Sargent, Project Geologist, U.S. Army Engineers. - Subject - "Geology of The Dalles Area". Illustrated.

ANNUAL BANQUET, GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

The Annual Banquet of 1962 will be held March 9th at St. David's Church, 2800 S.E. Harrison Street, 6:30 p.m. Mr. and Mrs. Leo Simon are taking reservations (BE 6-0549, or CA 3-0300), $2.25 per plate.

Mr. Albert Keen will be the toastmaster. Dr. Ewart Baldwin of the Dept. of Geology, University of Oregon and in 1960-61 Fulbright professor of Geology at the University of Dacca, East Pakistan, will be the speaker of the evening. Subject - "My Year in East Pakistan". (illustrated)

Mrs. A. W. Hancock is music chairman. -If you become inspired to compose a new geology-oriented song, call Mrs. Hancock. Mrs. Hancock has put together a book of all our previous songs, with the music, for the benefit of future occasions. In this connection, we should like to have the names of all in the society who sing - solo, or chorus - or who play instruments.

Dr. and Mrs. Paul Howell are entertainment chairmen - if you are secretly thinking up a stunt, skit, or theatrical production, confess it to Dr. or Mrs. Howell. For your encouragement, no one has ever been sued for "take offs" on the personnel of the society.

The members of the banquet committee will meet at the home of Dr. and Mrs. Jones the evening of February 13th - buffet supper at 6:00, later a brain-storming session for the benefit of the banquet evening.

Those wishing to make place cards, furnish decorations, or if you have ideas of any kind concerning the banquet, call Dr. or Mrs. Arthur C. Jones, co-chairmen of the banquet, CA 2-3100, or CA 2-6464.

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BRING YOUR ROSTER UP TO DATE!

Changes:

Mr. and Mrs. James S. Buckner, new address, Route 2, Box 68C, Sherwood, Oregon

Dr. Elizabeth H. Schirmer, 2424 N.W. Northrup (10) Phone - no change.

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NEWS OF OUR MEMBERS AND FRIENDS

Dr. Ruth E. Hopson, Assoc. Professor of General Science at Portland Center, State System of Higher Educations Extension Division, presided at the annual meeting of the American Nature Study Society in Denver in December, and in January attended a "Conference of Land and People" conducted by the U.S. Dept. of Agriculture in Washington, D.C.

NEWS OF MEMBERS AND FRIENDS - cont'd

Mr. and Mrs. Oscar K. Berg recently vacationed in Arizona, where they did bird-watching, geologizing and botanizing . . . President, Dr. John H. Hammond and his wife enjoyed the sunshine of Santa Monica, Calif. in January.

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Sympathy is extended to: the family of Gail DeWitt of Prairie City, who passed away recently . . . and to Ralph S. Mason, whose Mother died early in January after a brief illness.

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Mrs. Elinor Johnson, much respected member of G. S. O. C., has been chosen "Seaside Senior Citizen 1961" by the Junior Chamber of Commerce of that city. All members of our society are cordially invited to attend a reception in her honor on Sunday, February 11th, from two to five p. m. This gathering will be held at the Seaside Hotel at Seaside.

Roland Wilbur Brown, age 68, passed away on December 21, 1961. Mr. Brown was not a member of our society but a friend who will long be remembered on account of his rare ability in the field of Paleobotany with special interest in the Northwest.

He served with the U. S. Geologic Survey from 1929 to 1935 and with the National Research Council from 1935 to 1940. He was known world-wide as a specialist of fossil plants of the Mesozoic and Cenozoic ages.

As a writer his fame rests on his book The Composition of Scientific Words, 1954.

At the time of his passing he was living retired at Leheighton, Pa. and planting an arboretum.

- - Mrs. E. Gordon, Salem, Oregon

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FIELD TRIP TO ALBANY -

After waiting more or less patiently for the last passenger to climb on board, the GSOC members finally welcomed Leonard "Delay" Delano and the glass-topped Grayline bus with "Mac" at the wheel shoved off for Albany. Sunday, January 21, was clear, cool and windy and the visibility was excellent. Both Mt. Hood and Mt. Jefferson were muffled in wind-blown snow which billowed up to obscure their summits, huge icicles clung to the new road cuts along the Salem Freeway and roadside ponds were thick enough for kids to play on. After a quick stop for coffee in Albany the group of 26 unloaded at Oregon Metallurgical Corporation just south of town where Irv Ewen, the trip chairman, was waiting with six Oremet staffers. Two-and-a-half hours later the group emerged after having consumed more coffee and donuts and dozens of facts and figures concerning the intricate operations conducted in the various departments.

Oregon Metallurgical is a "space age" metals producer. Although its principal product has been titanium it also casts and forges other refractory metals such as tungsten, vanadium, and zirconium. Some of Oremet's production is in the form of surface-turned ingots obtained from vacuum-arc furnaces. Castings are also made for special shapes and process industry parts where either high corrosion or heat resistance is required. Some of the metals are much lighter than steel but tungsten proved to be much heavier.

After a quick stop for lunch the group visited the Wah Chang Company plant just north of Albany. In many respects the plant is similar to Oremet. Wah Chang handles many of the refractory metals in its integrated facilities and can treat the raw ore, some of which originates with the beach sands of Australia, through to finished product which may be either in powder form or rolled or forged bars, rods and strip. In the foil mill zirconium, rolled to a thinness of half a thousandth of an inch, eventually becomes the filler for photographic flashbulbs. Hydrogen atmosphere furnaces, electron beam furnaces, normal atmosphere furnaces, pressure vessels made from old 16 inch naval rifles, and dozens of other machines kept the group shuttling from one building to another for two and a half hours. The scrupulous cleanliness of both Oremet and Wah Chang was everywhere evident. Contamination of only 100 parts per million exceeds the limits. An excess of boron in one instance was eventually traced to the

-more

Field Trip to Albany - cont'd

use of Boraxo in the wash rooms. The Navy maintains inspectors at both plants, and in traditional naval style they put on white gloves and periodically look for dirt.

George A. Deefeldorfer

(It should be noted here that some of our old-timers remarked that on no previous trip which they could remember had we received greater courtesy and willingness to explain each and every detail of the many things observed. These boys knew the unrolling of their red carpet.

- Many thanks,
The Editor

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100 MILLION YEARS - METEOR DUST

Meteoritic dust particles about 100 million years old have been found deep in earth layers in California.

During routine inspection of drill cores with microscope, grains of dark, heavy metallic quality which resembled weld-spatter were found. In checking other drill samples similar particles were recovered in many areas of the state.

After refining the rock the rare spheres were identified by the use of magnets and microscope as of meteoritic origin.

The rock which contained these particles were of Cretacious, Miocene or Pleistocene in age, the oldest of which is about 100 million years. These samples came from three different counties of California.

Science News Letter, January 20, 1962

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OREGON GEOLOGICAL MAPPING

At the Lewis and Clark Explosition in 1905 the first topographic maps of Oregon were available. These maps were prepared in 1897 and were reprinted and given out as souvenirs at the Oregon State Building on the Exposition grounds. Bruce Schminky remarks that the maps were a nice piece of work except that the elevations given were two feet in error. Ruth Prentiss has presented her copy of the map to the Oregon Historical Society.

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WAPATOO or SAUVIES ISLAND

At Portland's doorstep lies the West's largest island, which has some claim to fame.

Here Captain Vancouver paused to name Mt. St. Helens and Mt. Hood. Here Lewis and Clark stopped to buy dogs and wapatoo, which passed as Chinook potatoes. Here trader Nathaniel Wyeth (1834) built Ft. William and started a dairy farm -- this could be called the starting of Portland since for trading it was near the junction of the Willamette and Columbia Rivers.

It was here Captain Vancouver sent his lieutenant William Broughton to establish dairy herds to supply the fort, and so began Oregon's dairy industry.

G. S. O. C. made a field trip to this island in 1937. It seems to have been directed by Franklin Davis. Two geologic features were noted in particular at that time. First, that the island begins where the Willamette enters the Columbia and that the latter makes a sharp angle to north at this point. Secondly, when the river reaches the north end of the island, 15 miles farther downstream, it makes another sharp turn (west) on reaching Warrior's Rock. This obstruction jutting out into the channel is perhaps a sill of basalt and is said to carry through to Washington shore. Thus, the rivers flow was checked and material held in suspension was deposited as alluvial.

- - more

Wapatoo or Sauvies Island - cont'd.

Another remarkable feature is Oak Island, and this we may say is an island within an island. Oak Island covers a large area at about the center of the present island proper and is called a remnant from Pleistocene erosion. Here is found the only gravel or stone of any kind on the entire 24,000 acres of this alluvial deposit--Sauvies Island.

One more geologic feature demands attention. Sauvies is almost entirely a flood plain and subject to flooding when the river was in freshet before the present 32-foot dike was erected. One area, however, on the west side has an elevation of 50 to 60 feet. This is known as an aeolian deposit of Burlington Sand derived from sands carried by the Columbia. -(so designated by the U.S. Department Agriculture Soil Survey.)

Many members of G.S.O.C. continue to visit this island of historical fame since it is so easily reached by the new bridge and improved roads. Here is a wide field for the geologist, archeologist, the Audubon enthusiast, not to mention its fishing, ducking, boating, bathing and its great trees that were old when Columbus came to find the new world, America.

At present the dikes are being raised and repaired, the Columbia is being contained along its eastern shores, a new fish pond of great size is being built, and suburbia is spreading over many areas.

--- J. Rentsch

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FORT ROCK PARK

Bend--January 28, 1962 - One of Oregon's most spectacular and geologically interesting landmarks is to be developed as a state park.

It is Fort Rock, in Lake County near the northern terminus of the Great Basin penetration of Oregon. Title of the land is to be given to the state by Lake County and by R. A. Long, rancher who owns a strip of the 160 acres sought.

State Highway Engineer Forest Cooper said that preliminary work will include construction of a short spur road into area from the nearby village of Fort Rock. The story of the area will be outlined on a wayside sign.

The person assigned the wording of that sign faces a difficult task, for the story of Fort Rock is geologically complicated.

Fort Rock, nearly half a mile in diameter and 325 feet high at its most lofty point, is the product of volcanism of a type unique in the Pacific Northwest. The formation apparently is the remnant of a huge tuff ring, formed by volcanic mud spraying from a central crater.

The mud-spraying action possibly occurred when water covered the Fort Rock basin, in Lahontan times. That was the period when pluvial weather flooded the Salt Lake Basin to the east to a maximum depth of 1,000 feet and flooded much of northwestern Utah. Geologists call that ancient lake Bonneville.

In the same epoch, another sprawling lake covered parts of Nevada, Northeastern California and the ancient Quinn River Valley of southeastern Oregon. Isolated lakes formed to the north. Ancient Fort Rock lake was one of these.

Apparently the Fort Rock landmass, a giant south-facing amphitheater, came into existence in those damp days. Geologists say there is definite association of the Fort Rock tuff ring with water.

Waves of ancient Fort Rock lake, which spread east to Christmas Lake and covered that area to a depth of some 200 feet, played a major role in the shaping of the Fort Rock formation, characterized by steep outer walls. The walls are not of the native basalt of the old lake region, but are composed of a comparatively soft material -- the indurated ash and mud of the old volcano.

Fort Rock possibly was built up like a giant mud bubble, with material from the central vent slumping back to the crater as the explosive force died.

Providing ancient tribes lived in nearby Cow Cave, oldest known habitation of man in Oregon, in the days Fort Rock was active they viewed a spectacular sight: Steam boiling from the ancient lake, lava-like mud spouting from a central vent and eventually the appearance of the massive tuff ring.

Eventually, the lake disappeared, after shaping the formation into a huge amphitheater.

-- Phil Brogan (The Oregonian)

CALENDAR

Buffet luncheon every Thursday noon, second floor, Portland Chamber of Commerce, 824 S.W. 5th. $1.25

Friday March 9 — 6:30 p.m. Annual Banquet, St. David's Episcopal Church, 2800 S. E. Harrison. Speaker: DR. EWART BALDWIN of the Dept. of Geology, University of Oregon.

Sunday March 18 — FIELD TRIP by bus to Salem Hills bauzite area. Leave Portland State College, S.W. Park & Mill at 8 a.m. Urgent to get your tickets at annual banquet or phone Leonard Delano, BE 6-2139, or R. F. Wilbur, BE 5-7284. RAYMOND E. (ANDY) CORCORAN of the State Dept. of Geology & Mineral Industries, will lead the trip.

Tuesday March 20 — 7:30 p.m. Library Night, Biology Bldg., Peebles Hall, Lewis & Clark College. Time for reading, followed by thrilling journey by boat down the John Day river with new members MR. AND MRS. BERT MICHEL, who took part in the Mazama expedition last summer. Spectacular views of geological formations, exciting maneuvering of craft through dangerous rapids, as their many colored slides take you through this unique canyon. Murray Miller, chairman.

Friday March 23 — 7:30 p.m. Meeting. Room A, Central Library, 801 S.W. 10th Ave. ALBERT R. KENNEY, our new vice president, will take us for "Fossil Exploration in Cwyhee River and Sucker Creek area", using his own colored slides and specimens from this remote section of eastern Oregon.

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BRING YOUR ROSTER UP TO DATE!

New Members:

Mr. and Mrs. Jay F. Turner, 5611 S.E. Madison, Portland 15 - Tel BE 4-1143
Mr. Maurice M. Albertson, 9106 S.W. Terwilliger Blvd., City, Tel-CH 4-7668
Mr. and Mrs. Russell A. Paige, 904 E. 26th St., Vancouver, Wash.
Tel - CX 4-6490 (Home); Business - CX 3-1478
Miss Shirley O'Dell, 2140 S.W. Palatine St., City 19 Tel - CH 6-1339

Changes:

Mr. and Mrs. Ralph S. Mason, New address-3932 S.W. Idaho Terrace,
Tel. No. Same - CH 4-2106
Dr. Arthur Jones - Business Telephone - CA 2-9107 (correction)

Resigned:

Mr. and Mrs. John C. Cleghorn
Mr. Robert J. Deacon

Changes:

Mr. Casper H. Magennis, New address - 2336 N. Baldwin St. (17),
Mail address - P.O. Box 3635 M.O.,
Tel - BU 5-9085
John H. Whitmer, M.D. - New address - c/o Dept. of Psychiatry,
Stanford Medical Center, Palo Alto, California
Mr. and Mrs. Theodore Johnston to Rt. 1, Box 1, Moro, Oregon
Mr. Joseph Wimmer New address - 5005 N.E. Multnomah St., (13)
Mr. and Mrs. Jack Nelson to 635 SE 41st (14)
Mrs. Vera Hinkle to 2615 SE Courtney Rd. (22) Tel - 659-2160.

NEWS OF OUR MEMBERS - -

Gasps of astonishment followed IRV EWEN'S announcement of scheduled visit to the home of Mr. and Mrs. Richard Rice February 18 at his suggestion that we "stagger in", until he explained that we should not all arrive at the same time. A large and enthusiastic group of members and guests enjoyed the Rices' hospitality and exclaimed over their marvelous exhibit of fossils, rocks and minerals.

Sympathy of our society is expressed to GWEN HELM, whose mother, Mrs. Maude Scott, passed away recently.

The MAZAMA ANNUAL, just published, has two articles by DR. RUTH E. HOPSON: "The Arctic Alpine Zone in the Three Sisters Region", being excerpts and revisions from "The Study of a Valley, the McKenzie River Region of Oregon, with Special Reference to the Educational Significance of its Natural History." It is illustrated by several of her photographs and two aerial shots by LEONARD DELANO. Her second article, "Collier Glacier, 1961" is a report of her visit of August 19, 1961, "to take the twentieth annual photograph since 1934 and to observe the changes that had taken place during the last year." . . . Also in Mazama Annual is RALPH S. MASON'S article, "Did Mt. Mazama Collapse in June or January?" which concludes by answering the question. Mt. Mazama is best known for our world famous Crater Lake contained in the caldera created by the eruption . . . The MAZAMA RESEARCH COMMITTEE includes GSOC members: DR. RUTH HOPSON, DR. DONALD B. LAWRENCE, RALPH S. MASON, CLARENCE PHILLIPS and KENNETH PHILLIPS.

At our luncheon Thursday, Feb. 15 were GSOC member MRS. ARVIN P. (JERRY) LINDQUIST and her friend MRS. AGNES PENNOYER, both of the Western Geological Society of Olympia. They brought several very fine specimens of fossilized teredo (commonly called shipworm), from Twin, Wash., one of which is beautifully polished. They also gave us an autographed copy of their Society's booklet, "Basic Geology for Teachers", by Roger Easton. It is generously illustrated, in layman's language, and is another welcome addition to our library. We hope to see them and others from Olympia.

HELP OUR SECRETARY -

The secretary reports good response to the request for an indication of interestes in helping with Society activities.

In a few cases the circulars were sent back with no return address or other indication of member's name. If you recall such omission, please call the Secretary, at CA 2-3714.

A $5 dues remittance was received in currency with no return address. Member should advise the Treasurer.

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INTREPID GEOLOGIST BRAVES WINTER STORM

Although it seemed another ice age was approaching, it proved to be geologist Sam Sargent, Special Assistant to the Resident Engineer at the John Day Dam, driving down from The Dalles over the slippery highway, to talk at our February 23rd meeting. His subject was "The Geology Along the Columbia River", with specific emphasis on the many types, flows and formations of basalt. The 35 to 40 members and guests who heard his humor-sprinkled address agreed with program chairman Leonard Delano who introduced him as "the best dam geologist in the Northwest." Credit is given the U. S. Army Engineers District Office at Walla Walla for loaning Mr. Sargent to give us this outstanding and profusely illustrated talk.

OMSI --
Camp Hancock Applications

Applications for Camp Hancock are now in the mail. Dates for the three sessions are: June 24-July 7, July 8-July 21, July 22-Aug. 4. The forms must be mailed back not later than April 30. Anyone interested in receiving information about the camp and application blanks

OMSI-Camp Hancock Applications (cont'd.)

should write or call OMSI. Brochures for Camp Arago are also available upon request. We will have a repeat of our Science Tour, but detailed information is not yet available.

Camp Positions Open

There are positions open on the Camp Hancock staff for counselors with science background, for assistant cooks, and for a campground assistant. If you are interested, call CA 6-4518, for information.

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TORTOISE LIFE SPAN IS DOUBLE A MAN'S

By Hal Boyle

New York--Things a columnist might never know if he didn't read his mail:

The Biblical span of man's life is 70 years--which most us now can hope to reach after 5,000 years of human civilization... Zoo records have established these longevity figures for other creatures: giant tortoise, 152 years; box turtle, 123; great horned owl, 68; snapping turtle, 57; eagle, 55; toad, 36; bullfrog, 30; English sparrow, 23; wolf, 16; beaver, 12.

The moral here, if there is one, is: "If you enjoy living, be as busy as a tortoise--and to heck with the eager beavers."

Heaven holds a billion stars, but on the clearest night a child can look up and see only about a thousand. . . Our sun is comparatively a young star--about five billion years old . . . The age of the oldest stars in our galaxy -- "The Milky Way" -- is estimated to be 20 billion years, give or take a month.

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ALASKAN LAND BRIDGE OR PACIFIC VIKINGS 3000 B. C. ?

Pottery may have been brought across the Pacific 5000 years ago by travelers on strong ocean currents.

Anthropologists believe that pottery found in Ecuador was carried across the ocean from the Far East, rather than by a land route because similar pottery has not been found elsewhere on the Pacific Coast of Central or North America.

The location of Ecuador supports this theory in respect to two major ocean currents. One is the Equatorial Counter current flowing from the Caroline Islands eastward just north of the equator. The other is the Japan or Black Current flowing from Japan to Canada and then dividing into the Alaskan and California Currents. The latter current flows southward along the coast of Mexico and Central America.

During the first four months of the year another current begins at Panama and flows south toward the Ecuadorian Coast where it merges with the west-flowing Humboldt Current. A drifting vessel on these currents would thus have reached that part of the Ecuadorian Coast where the pottery of the Valdivia culture was found, providing ocean currents have not shifted much in 5,000 years.

Also supporting a direct connection with the Far East are the similarities in decoration and shape of East Asian and Ecuadorian pottery suggesting first hand contact. In Japan resemblances are closest to the mid-Joman period dating from the same age as the Ecuadorian pottery, or 2,000 to 3,000 B. C. The Ecuadorian pottery has been dated by the Carbon 14 method.

The Ecuadorian Valdivianculture is attributed to one group of early shell fish-gathering people living along the Pacific Coast from California to Chile. Shell fish hooks and stone tools were found at the Valdivian sites. Anthropologists state that the technological and artistic level of the pottery of this culture is too high to represent a local invention of pottery making.

This is reported in Science M 135-71 - '62. The anthropologists reporting are Dr. Emilio Estrada of Ecuador, also Drs. Betty Meggers and Clifford Evans of the Smithsonian Institute, Washington, D.C.

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CANADA'S PRE-CAMBRIAN SHIELD -

Billions of years ago some weakness in the earth's crust allowed a flow of magma to pour forth near Hudson Bay to cover 1,800,000 square miles of that northland. This is known as the great granitic shield as it was later swept clean by the continental glaciers to enrich the farm lands of our Midwest.

Today this vast rock pile is recognized as one of the greatest mineral treasure chests the world has ever known. The government of Canada has recognize this potential and the search is on for new mineral wealth. Many new mines are already in production. Canada leads the world in the output of nickel and asbestos. She ranks second in uranium, zinc, aluminum, gold, platinum and cadmium; besides she ranks fifth in producing titanium, copper, lead, cobalt and magnesium. With such success so recently achieved, what wonder that today the geologist and prospector is ranging far and wide to discover new riches.

Recently the "Labrador Trough" has seen the beginnings of the production of iron ore. Here is an ore body 50 miles wide and 750 miles long reaching all the way up to Hudson Strait. The goal for 1965 is 30 million tons per year to be shipped south to the St. Lawrence Seaway and thus to the world market.

Commerce Magazine

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A COLD AND BOILING SEA

Among the more inhospitable segments of the earth's surface, the frigid continent of Antarctica remains--for scientists--one of the most magnetic. There is still so much to learn that more than a dozen nations maintain expeditions there. Last week, as they took over their new research ship Eltanin, assorted scientists supported by the National Science Foundation prepared to push U.S. exploration still further--into Antarctica's dangerous, storm-churned seas.

Built originally as a small, tough freighter for lugging supplies to Air Force bases in the Arctic, and named after a northern star often used in navigation, Eltanin was refitted to the Antarctic scientists' tastes. Her holds are stuffed with well-equipped laboratories. She bristles with the strange apparatus that researchers use to draw new knowledge out of air and sea.

Rich Convergence. Early next April, when Eltanin begins her first year-long cruise at the start of the Antarctic winter, she will steam due south from Cape Horn until she reaches the solid pack ice of the Bellingshausen Sea. Then a quartering course will carry the ship many times across the "Antarctic Convergence," where cold water from the south dives under the warmer water of the Atlantic, Pacific and Indian oceans. This region boils with life, from tiny diatoms to whales, and marine biologists believe it may some day become the world's richest source of protein food.

From stem to stern, the Eltanin sprouts radio and radar antennas. The biggest of them, an imposing array of two intersecting squares, is specially designed to listen for "whistlers," the strange, low-frequency radio signals that strike down from outside the atmosphere. Most whistlers heard in the Antarctic are believed to originate in lightning flashes in the northern hemisphere. The radio waves apparently climb thousands of miles into the fringes of the ionosphere, guided by the earth's magnetic field; then they curve down again to hit a "coordinate point" in the southern heimsphere.

Global Greenhouse. While Eltanin's biologists ply their nets and trawls and her radiomen tune for whistlers, meteorologists studying the turbulent Antarctic atmosphere will launch weather balloons from a sheltering hangar on the ship's stern. Oceanographers will study the tossing sea water by measuring its temperature, salinity, and oxygen content at all depths ranging up from the bottom. They will chart ocean currents and plunge long tubular probes into the ocean floor. The cores of silt they bring up will give glimpses of Antarctic geologic history over millions of years.

- - Time Magazine

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ROLAND BROWN - By Phil Brogan

Bend--A scientist who aided greatly in interpreting the ancient story of the West through a study of plants that grew millions of years ago, Roland W. Brown, is dead.

Dr. Brown, a frequent visitor to Oregon through the years, served with the U.S. Geologic

Roland Brown - cont'd

Survey from 1929 to 1935. He was with the National Research Council from 1935 to 1940. Dr. Brown won world-wide recognition for his study of fossil plants of the Age of Reptiles and the first epochs of the Age of Mammals.

On various occasions, Dr. Brown's field work brought him into the old lands of Central Oregon where Cretaceous sea beds now form the crest of mountain ranges. In those beds, Dr. Brown found plants that are new to science. He also provided data of value in dating the old land in the heartland of Oregon that had their beginning in Devonian times, in the Age of Fishes.

Dr. Brown won special recognition for his studies of a strange Meozoic fern given the name Tempskya. Fossils of this fern which grew when dinosaurs were abundant in Colorado, Wyoming and adjacent states, had been picked up by collectors for many years because of their mottled beauty, but no attempt had been made to identify the genus. Not until 1924 did A. C. Seward study the fossils and announce that a new fern had been added to the Mesozoic flora. The specimen was from Wheatland. Mont.

Nothing more was known of that fern until 1936 when Dr. Brown published a short paper setting forth its distinguishing characteristic. That was the beginning of a study by Dr. Brown that led to the discovery of a number of new species of the ferns. Interest in Tempskya grew, and it was found in many western states, including Oregon.

One of the most important Oregon finds was in the Greenhorn mining district in the Blue Mountains west of Baker. Jasperized specimens of Temskya, greatly valued by collectors of gem material, were found in placer outwash at Greenhorn.

Tempskya grew in Oregon when fan palms flourished in a green world, to be the home in Clarno times of the giant Thunderbeast and its kin.

Other Items Attract

Dr. Brown's interests were not confined to the interesting Temskya ferns: He wrote of Miocene leaves, fruits and seeds of the western states. He made notable additions to the fossil floras of the region. He found isles of plant fossils in Oregon lands whose shores were washed by Mesozoic seas.

But as years roll on, Dr. Brown's fame probably will rest not in his fossil collections, but in a book, "The Composition of Scientific Words."

Dr. Brown was 68 at the time of his death, which occurred at his home in Lehighton, Pa.

The Oregonian

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NEW HIGHLY ACCURATE EARTH MEASURING DEVICE

Using satellites and a newly-developed ballistic camera, Coast and Geodetic Survey scientists believe they can improve the accuracy of earth measurements ten fold, Secretary of Commerce Luther H. Hodges announced today in reporting the acquisition soon of a $95,000 ballistic camera system by the C & GS.

"This development will revolutionize the surveying and mapping field," Secretary Hodges said. "By training such camera systems on a satellite against a background of stars of known position and identity, Survey scientists tell me they will be able to chart our earth with fantastic accuracy. For example, while current methods enable us to chart a 3,000 mile distance to an accuracy of within 140 feet, the new system which they are calling 'Satellite Geodesy' will chart to within 14 feet.

"This greater accuracy in pinpointing places and distances could evolve within the next few years, Coast and Geodetic Survey scientists believe, as a result of this pioneering work being undertaken to observe artificial satellites in orbit," he said.

Ballistic cameras are capable of photographing artificial satellites, such as ECHO, against a star background. Geodesists, knowing the relative position and identity of the stars, can determine the precise orbit of the satellite. Using two or more ballistic cameras recording the same object in orbit, C&GS technicians are going to compute exact positions on the earth's surface. This will result in a "tighter" geodetic control network --

(over)

New Highly Accurate Earth Measuring Device-

vitally important to surveyors, engineers, and the Nations's missile defense system.

Key to the entire program is the ballistic camera, a term used for any type of mobile camera utilized for missile-tracking work. The Coast and Geodetic Survey is acquiring its first ballistic camera this month.

U.S. Dept. of Commerce, Office of the Secretary,
January 23, 1962

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OREGON'S MINERAL INDUSTRY in 1961

by Ralph S. Mason

After staunchly surging upward each year for the past five years in spite of several nationwide economic reverses, Oregon's value of minerals produced dipped slightly in 1961. Preliminary estimates by the U.S. Bureau of Mines for last year's mineral production show a total of $48,089,000, a drop of approximately 12 percent. Reduction in the demand by industry for sand and gravel and cement accounted for the bulk of the decline. The long-range trend in Oregon's mineral economy is perhaps best reflected in the 50 percent increase of the state's contribution to the total United States mineral production since 1955. During the same period total United States mineral production increased about three percent.

Completion of a trans-state natural gas line and early construction of additional gas and products lines and distribution facilities in the state (see December 1961 Ore.-Bin) presage a new series of metallurgical developments which may well have widely ranging economic signifance. Possible pattern for such a trend has been established at Albany, "exotic metals capital of the United States," where three space-age metals operations employ nearly 1,000 men. All of the raw materials other than power and water for these plants are shipped into the state. Exploration for oil in the state went forward on two fronts. Four major oil companies engaged in off-shore investigations during the last half of the year and there was intensive leasing in the central Willamette Valley as the year ended.

January 1962 - Ore.-Bin

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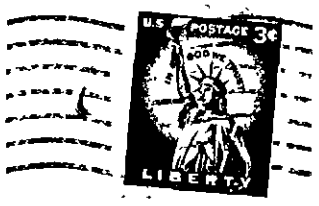

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Society Objectives

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country; the establishment and maintenance of a library and museum of geological works, maps, and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of better acquaintance and closer association among those engaged in the above objectives.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities

(See "Calendar of the Month")

Evening Meetings: Formal lectures or informal round-table discussions on geological subjects, on the second and fourth Fridays of each month at Public Library Hall, S.W. 10th Avenue and Yamhill.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon in Room B, Chamber of Commerce Building, S.W. 5th Ave. and Taylor St. $1.00 per plate.

Publication: The Geological News Letter, issued once each month, is the official publication.

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* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

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CALENDAR

Buffet luncheon every Thursday noon.

Friday April 13 — "Today in West Berlin, East Berlin and Moscow," a factual presentation with slides by Ernest W. Peterson who visited them late in 1961. Library - 7:30 pm.

Sunday April 15 — GSOC Field Trip. Meet at 9:00 a.m. at Willamette Stone State Park, a mile north of Burnside on Skyline Boulevard. Trip will include Skyline Boulevard to Dixie Mountain and adjacent areas of geologic, botanic and historic interest. Leader to be announced.

Monday April 23 — Portland State College Auditorium, 8:00 p.m.
Dr. Tjeerd von Andel, oceanographer for Scripps Institute of Oceanography, La Jolla, California, will speak on "Sedimentation on the Continental Shelves." Lecture to be illustrated w/slides.

Saturday April 28 — Field Trip for Juniors.
Group will leave Fred Meyer parking lot on McLoughlin Blvd., Oak Grove, 8:30 a.m. Trip to be to fossil and mineral localities in the Butte Creek area. Please bring your lunch. For further details, call Dr. John Hammond, OL 4-5570.

Friday April 27 — Central Library - 7:30 p.m.
Dr. Edwin T. Hodge, well-known charter member, will speak on "A Geologist Looks at Angola, Africa," a review of his visit for Bethlehem Steel Company.

* * * * * * *

BRING YOUR ROSTER UP TO DATE!

CHANGES OF ADDRESS -

Miss Ada Henley to 2545 S.W. Terwilliger Blvd., Portland (1) CA 6-4911
Mrs. L.P. Hewitt to 2545 S.W. Terwilliger Blvd., Portland (1) CA 6-4911
Mr. & Mrs. James Running to 1951 N.E. 142nd Street, City
David W. Ford to 6454 S.E. 77th Avenue, City
Mr. & Mrs. Kenneth C. Hammill to 1905 N.E. 77th Avenue, City (13)

* * * * *

DEPOSITIONAL ENVIRONMENT OF THE PORTLAND HILLS SILT

The Portland Hills Silt first attracted the attention of geologists with the publication of Diller's (1896) "A Geological Reconnaissance in Northwestern Oregon" - USGS 17th Annual Rept. Since that year at least sixteen workers in the fields of geology and soils have written specifically about the formation and have added materially to our knowledge of it. So far as is now known, the distribution of the Portland Hills Silt is confined to a narrow area along the Columbia River from Larch Mountain westward to the river's mouth. From the Gorge near Larch Mountain it spreads out fan-wise, extending southward as far as Petes Mountain on the Willamette River and westward into the Tualatin Valley as far as the Chehalem Mountains. Down river from Portland the formation is more restricted in extent and has not been identified more than a few miles away from the river. Tracing the formation is done largely on the basis of its mineral content, which has linked it rather definitely to alluvium carried down the Columbia River from regions of metamorphic and plutonic rocks far to the east and north. In all fairness it must be admitted, however, that as yet no one has checked the mineral content of the Portland Hills Silt against that of the older micaceous sediments which border it, or are near it, on all sides, so there could be some misidentification of deposits. Also, the

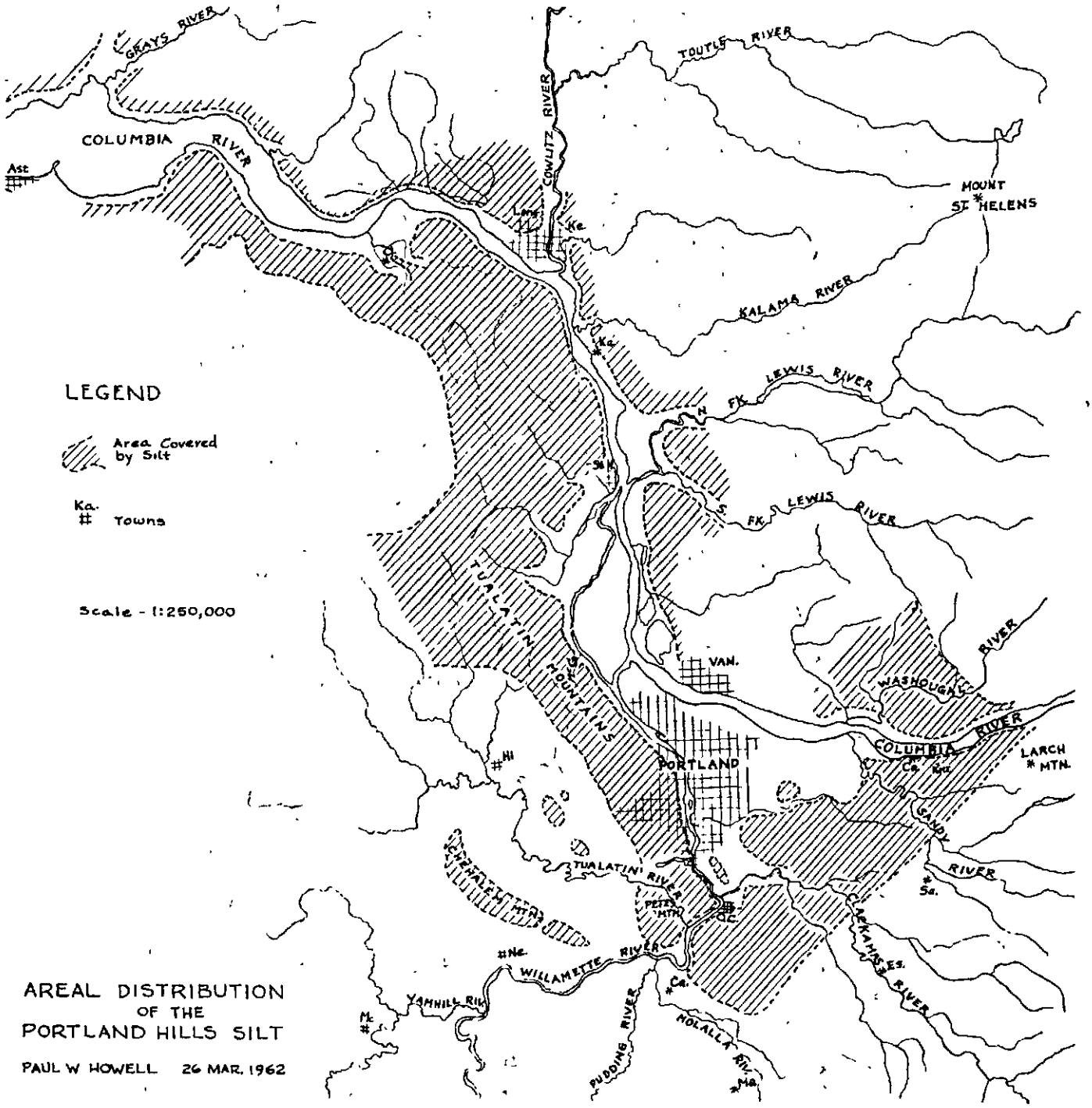
Depositional Environment of Portland Hills Silt - cont'd

source may not be completely confined to Columbia River alluvium. Finding its original southern extent is complicated by late erosional and depositional activities in the lower Willamette Valley. For an excellent description of the formation and its mineral content the reader is referred to Lowry and Baldwin (1952) "Late Cenozoic Geology of the Lower Columbia River Valley, Oregon and Washington". Bull. G.S.A., Vol. 63, pp. 1-24.

Recent highway, railroad, and real estate construction has made available a number of excellent new exposures of the formation, and has revealed hitherto unknown facts about it. The locations of some of the most important new exposures are: (1) Corbett Quarry, (2) freeway cuts paralleling Barbur Blvd., (3) Canyon Road cuts near OMSI, (4) SP&S RR cuts from Cornelius Pass northeast along McCarthy Creek canyon, and (5) new road cuts and quarries along the lower Columbia River. The most important fact that has recently come to light concerning the formation is that it consists of two members, an old massive "silt" (the type Portland Hills Silt) and a younger well-stratified "silt". The old "silt" is characterized by even texture, lack of bedding features, and an all-pervasive rusty tan color. It is present on the uplands east and southeast of Portland to elevation 1300 feet, on the Tualatin Mountains to elevation 1500 feet, on most of the high hills within the Tualatin Valley, and on the higher hills along the lower Columbia River. The younger "silt" is characterized by distinct bedding, and by changes in texture and color from bed to bed or by groups of beds. Some beds contain vegetal remains and are bluish gray. More characteristic colors are light tan, brown, and red. It is present in west Portland to elevations as high as 600 feet, along McCarthy Creek to an elevation of at least 350 feet, beneath a wide expanse of the plains north of Vancouver, Washington to elevations as high as 300 feet, and at the Kalama and Longview gravel quarries to elevations well above 200 feet. North of Vancouver along the S.P. RR tracks it extends below river level. A deposit of the younger "silt" has been identified in the West Linn terrace across from the mouth of the Clackamas River, but as yet none has been identified in the Willamette Valley south of West Linn. Physiographic expression suggests the remnant of a delta deposit in the Tualatin Valley just north of Oswego Gap, in Sec. 1, T2S, R1W and Sec. 6, T2S, R1E.

Although the old "silt" is massive and has many of the characteristics of a loess deposit, its distribution along the Columbia River below Portland appears to bear little relation to the prevailing winds. In and adjacent to Portland, the silt could have been in part transported by the strong dry east winds out of the Gorge. The character of the upper gray "silt" layer at Cornell Road Pass does suggest such an origin, but there is little other supporting evidence. The spread and decrease in wind velocity from the Columbia River Gorge westward should have produced a marked grain size gradation from east to west. Numerous mechanical analyses performed by Theisen and others, and close visual examination of many exposures, however, do not bear this out. In fact, the coarsest samples of "silt" collected by Theisen were from his Apiary and Clatskanie locations, well out of the strong east wind area. The alternative to wind deposition is fluviatile deposition, but fluviatile deposition of an unusual nature. The massive character of the old "silt" member suggests a large scale, non-pulsating flushing of silts from the plains of eastern Washington down through the Gorge to the Portland and lower river areas. The large differences in elevations of the old "silt" deposits further suggests a deep ponding of the Willamette Valley and a silt depth of several hundred feet in the Portland area. High level Pleistocene accumulations of clay and talus along valleys in the Western Cascades tend to support this concept. The geologic process required for such deposition immediately suggests a connection with glacial floods, but the consolidation and weathering of the deposits point to a time much earlier than the Missoula Flood, probably earliest glacial time. The small grain size of the sediments points to slack water conditions throughout deposition. Coarser materials may have underlain the silts, but, if so, they have been largely removed by later erosion. Such a possibility is indicated by a remnant of old weathered and well consolidated erratic-bearing gravels on the north end of Mount Tabor. These gravels extend to at least elevation 450 feet. A similar deposit overlying Boring Lava and capped with silt forms much of the butte in the north half of Sec. 24, T1S, R2E.

Depositional Environment of the Portland Hills Silt - continued



Along the freeway paralleling Barbur Blvd. a marked unconformity exists between the old "silt" member and the young one. So far as is known to the writer, this is the only locality where actual contact between the two members has been exposed. At all other localities visited identification of members was made on the basis of bedding characteristics. Depositional environment for much of the younger member was definitely lacustrine. Except at the West Linn locality there is not even a suggestion of gravel at the base of the member, which in several places rests directly and unconformably on the Troutdale formation. At one of the railroad borrow pits on McCarthy Creek the younger member rests directly on deeply weathered and laterized Columbia River basalt. Bedding characteristics of the "silt" suggest normal seasonal influxes of material. The younger "silts" along the freeway and on Canyon Road at OMSI contain local lenses of gravel. Beds of coarse gravel at the base of the West Linn terrace exposure appear to have come from the Clackamas or the Willamette River. Other beds at West Linn are of coarse sand and contain mica flakes up to 1mm in diameter. Vegetal remains are very plentiful in some

Depositional Environment of the Portland Hills Silt- continued

beds at West Linn and at OMSI and are a common constituent of those along the freeway. Elsewhere carbonaceous material seems to be wholly or largely lacking.

Conclusion:

As time goes by and more data on the Portland Hills silt accumulates, it becomes more than ever apparent that the formation is unusual both in origin and in sedimentary character. Its stratigraphy and history of accumulation is showing a complexity unrealized by early workers. Although the older "silt" has many of the characteristics of a loess deposit, the evidence against eolian origin is becoming overwhelming. There remains yet to be explained the erosional removal of such large masses of the formation as once existed here in the lower Willamette and Columbia River valleys, and why remnants of the silt still persist on ridge noses and summits of the adjacent mountains. What about remnants of the formation in the upper Gorge and east of the Cascade Mountains. If the hypotheses presented in this article are tenable, there must be supporting evidence farther up the Columbia River valley. An effort will be made to answer these questions in future articles.

- - - - Paul W. Howell

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GSOC ANNUAL MEETING - SECRETARY'S REPORT Portland, Oregon
February 23, 1962

ELECTION RESULTS

At the current date the Secretary has received 112 marked ballots and, since no other candidates were nominated in the manner provided for in our By-Laws, the slate of nominees submitted by the nominating committee is elected as follows :

President	Mr. Leonard Delano
Vice-President	Mr. Albert R. Kenney
Secretary	Miss Hilda W. Freed
Treasurer	Miss Clara L. Bartholomay
Editor	Mr. Irving Ewen
Director, 3 years	Mr. J. R. Rentsch

MEMBERSHIP DATA

Our current membership is as follows:

	Total Members
108 Family memberships	216*
89 Single adult memberships	89
Total adult members	305
6 Junior members	

This membership is approximately the same in number as on the same date at the end of the preceding year.

* Does not include children covered by family memberships.

Respectfully submitted,

Hilda W. Freed, Secretary Feb. 23, 1962

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THE G. S. O. C. TWENTY-SEVENTH ANNUAL BANQUET

Our museum is a reality instead of a dream. This was the motif of the annual banquet of 1962, in recognition of the successes of the Oregon Museum of Science and Industry, in which members of the Geological Society have had such decisive roles. Doctor Edwin T. Hodge, our founder and first president, sounded the need and the hope for a science museum in the first years of our existence as the G. S O. C. Dr. J. C. Stevens, founder of our Museum, worked and gave untiringly for many years towards its materialization. Many members of our society are so identified with OMSI that they collectively personify this clever elf and his motto that 'science is fun'. In fact, the continuing vigor of our Geological Society is a living expression of this element in our association and our community.

G. S. O. C. Twenty-seventh Annual Banquet - continued

The tables at the banquet hall at St. David's Episcopal Church were filled well before the banquet hour. They were cleverly decorated with 'sizzling sattelites', complete with blue clouds. There were treasure packets of real-looking rocks at each name plate, which the rock hounds in the audience later discovered were candy, by the usual method of licking the pebbles to test them. And the menu was truly unique, in our tradition, with filet of mastodon or baked teleost, ground dolomite, jade pebbles and volcanic bombs, tuff stone with ulexite topping, and pitchblende suspension to drink.

President John Hammond was introduced by our master of ceremonies, Al J. Keen, to greet the members and distinguished guests, who immediately thereafter raised their voices in song in praise of this 'Land of the Fossil Hunters', set to the tune of our own Oregon State song. Following the paleontological dinner, our new president was inducted into office, with a token presentation of the gavel made of wood from the old Spanish bees-wax ship which was lost on Nehalem Spit centuries ago, and the official copy of Dr. Condon's Two Islands, which the President must guard throughout the year. Retiring President, John H. Hammond reviewed the year, and Leonard H. Delano, incoming, gave a "Bird's Eye View of 1962", his title being especially well chosen in the fact that his specialty and business is aerial surveying and photography. John Hammond was given a brand new geological pick, inscribed in proper form with G. S. O. C. 1961-62. Honors were tendered to Dr. J. C. Stevens for his work as founder of the Museum of Science and Industry, to Dr. Edwin T. Hodge for his early encouragement of the work throughout his two presidencies of our Society and his entire career as teacher and field geologist, to Dr. Sam Diack, in absentia, for his untiring promotion of OMSI to the point of its present outstanding success, and to Ralph Mason representing the official Museum Board. Rudolph Erickson was surprised in being given an Honorary Life Membership in the Geological Society of the Oregon Country.

A historical sketch of our Museum was read by the author, Viola L. Oberson (Mrs. Louis) who was the first official employee of the corporation and very much a part of the successful efforts to bring OMSI to completion, and who has also been a most valued member of the G. S. O. C., together with Louis and their daughter. Many of the facts which she outlined were new to us, even to many who have been closely in touch with the later developments. We were all reminded of the years of work and the encouragement and money which has made our Museum a reality instead of a dream! All honor to every one who has had a part in this realization. The Lon Hancock Memorial Room will be a continuing reminder to our membership, in particular, of the part that Lon, in his quiet enthusiasm, played in the development of the Museum, and of interest among many thousands of students, young and old, in our own G. S. O. C.

Everyone joined in the sentiment that 'The Oregon Country Ain't What She Used To Be' in singing Ken Phillips' classic song 'De Re Geologica'; surely no other aggregation could begin to handle the satisfying long words of that song as well. This signalled an uplift, geologically speaking. Then the chief feature of the evening followed with an illustrated lecture by Prof. Ewart M. Baldwin, of the Department of Geology at the University of Oregon, and a long-time member of our Society, on the subject of "My Year in East Pakistan". This was both an intellectual and an esthetic treat, as the colored transparencies were excellent, and gave us a vivid impression of what both Pakistans and northern India are like, with their varied peoples as well as their vast contrasts of topography and geology. We are all invited to visit his Department and museum at the Eugene campus.

The finale of the banquet was in the tradition of fun of the preceding twenty six, a Paul Howell-ing lampoon of a rock-swallowing Gee-socker who developed a pain, and, upon crude but effective surgical investigation by knife-wielding surgeons, proved to be laden with a wide variety of specimens from all parts of the Oregon Country. Some items extracted from the really capacious insides of the victim included rhyolite nodules from the Clarno country, clams from the Astoria Miocene, scoria from the Bend area, and a bit of lava from the Steens. This patient was more like an ostrich, or a dinosaur, than a modern Geesocker. The most controversial find was a bone of some avian type, guessed by the operators to be at least 34,000,000 years old. Leo Simon came to the rescue by identifying it as the leg bone of a chicken which had been dead less than three days! This brought the operation to a close, though the operators forgot to sew up the poor victim. In spite of this,

G. S. O. C. Twenty-seventh Annual Banquet - continued

the whole affair was a Howelling success. Some young athlete in a red sweater and a long, black mustache sang something about some daring and wearing young men with their gee-olo-gees, to the tune of 'The Daring Young Man on the Flying Trapeze', in reminiscence of the first outburst into song at the first annual banquet of the G. S. O. C., and by request of the Banquet Committee.

That did it, so everyone joined in the final uplift by singing "Good-bye, Rock Hunters, Good-bye."

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ACCEPTANCE SPEECH
by Leonard Delano

It is with humility that I take on the responsibilities of President of the Geological Society. The honor to serve with such an enthusiastic and capable crew of G-socers will not be taken lightly, I assure you.

The Geological Society can be likened to an explorers' club in the fields of geology and related sciences. Each fascinating safari into the jungle of accumulated information provides a trail which becomes more familiar with known landmarks for ourselves and others.

In planning a small mapping project the question arises: Is it to be tied to the State Lambert Coordinate System? Though an independent grid system for the project may be entirely satisfactory for engineering purposes of that area, unless it is tied to the State Coordinate System or the main triangulation net, its relationship to other state points is not definite.

Thus it is in geology and other sciences. The relationship of one formation to another or one segment of information to another can be of vital importance.

Quoting Cedric Wright, "Suddenly one becomes aware one lives in an eternity and hears strange footsteps ascending anciently trodden pathways."

Strange footsteps - Have you heard them? Perhaps you have and perhaps you have contemplated the visual drama of geological processes of the past. How fascinating it would be if we had a time lapse movie taken from a space satellite of the vast and dramatic changes which have occured in the building of our present land and water areas! Such a movie would hold us on the edges of our seats in the spectacular uplifts and shifting of the earth's crust, the appearance and disappearance of vast land forms, the advance and retreat of the ice ages, the shrinking and expansion of ocean areas, volcanic pyrotechnics and numerous other phenomena. It would be a spectacle which, if we had the emotional and physical endurance to watch, would leave us limp. And it would answer many of our questions of the past.

But, would it be better than our present situation? Possibly not. For the fun is as much in the seeking as it is in the finding. And in the seeking we can be working together.

During the coming months impetus of the Society shall continue without let-up of enthusiasm evidenced in the past. Much work is to be done by chairmen of regular committees and of special committees, and the fine spirit of cooperation will make all of our projects a pleasure to perform.

All members should consider themselves part of the membership committee. Attention is called to continued efforts spearheaded by our past president, Dr. John Hammond, in the young G-SOCS department in the field of high school and college ages.

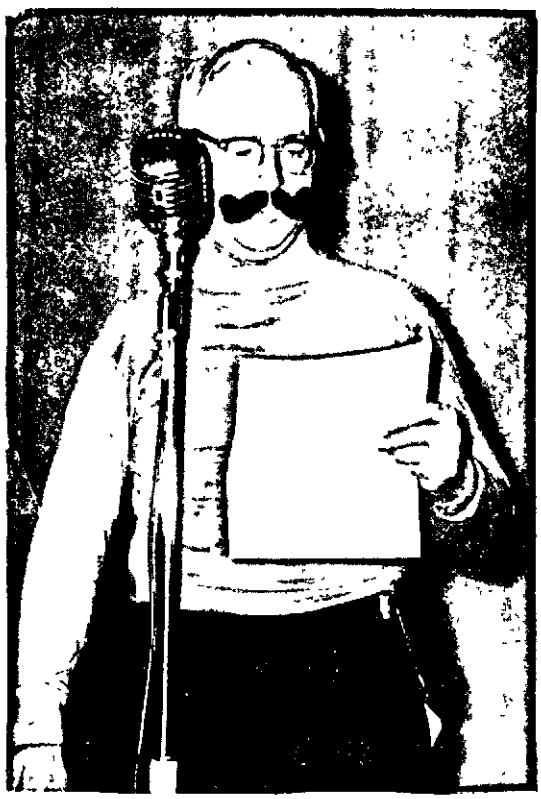
ANNUAL BANQUET - 1962

Outgoing President, Dr. John Hammond, hands gavel to Mr. Leonard Delano.

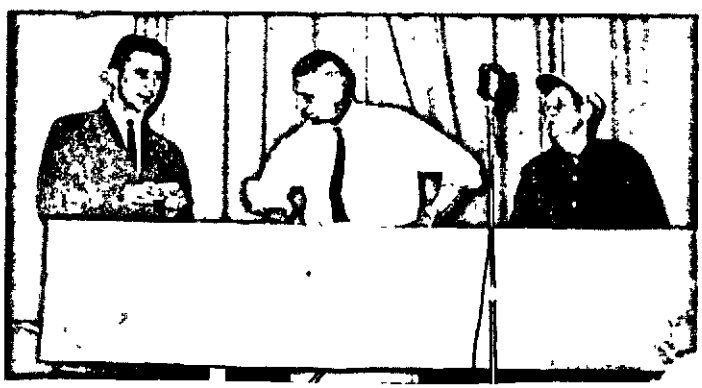
Dr. Ewart Baldwin.
Featured Speaker

Mrs. Viola Oberson
reviews the History of OMSI

Leonard Delano, Al Keen, Dr. Arthur Jones and Dr. John Hammond join in final song, "Goodby, Rock Hunters, Goodby".



Dr. Arthur C. Jones lends his artistic talent with a rendition of 'Gee-ol-o-geez"



Irv Ewen, left, identifies rock for Al Kenney and Truman Murphy

ANNUAL BANQUET

Geological Society

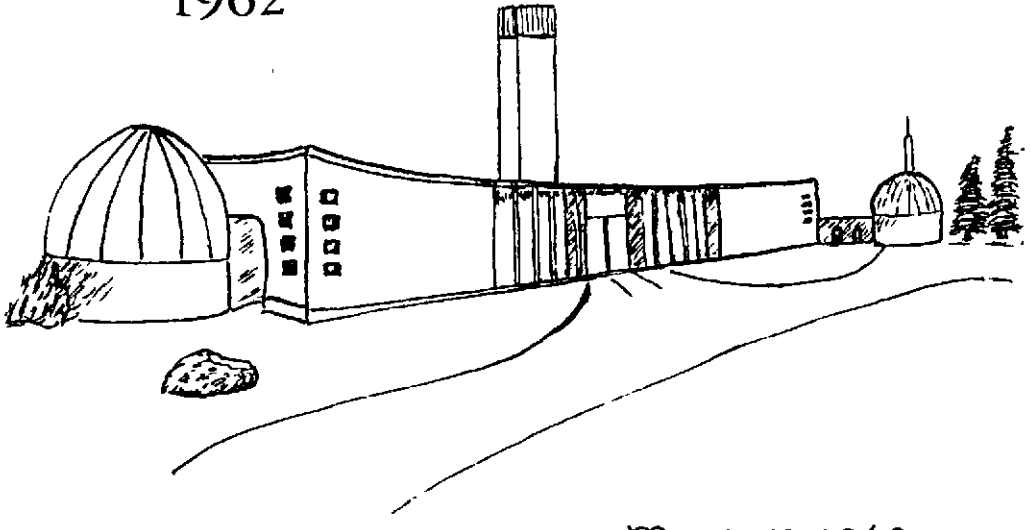
of the Oregon Country

27

9

March

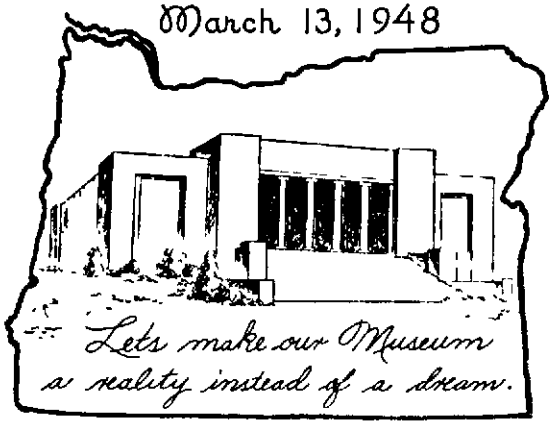
1962



Our Museum

a Reality

Instead of a Dream



27th

ANNUAL BANQUET

CHAIRMEN

Toastmaster	Mr. Albert J. Keen
Music	Mrs. A. W. Hancock
Entertainment	Dr. Paul W. Howell
Decorations	Miss Marjorie A. Fessenden Miss Shirley M. Odell
Gifts	Mr. H. Bruce Schminky
Hospitality	Mrs. Leo F. Simon
Tickets and Reservations	Mr. Leo F. Simon
Photography	Mr. Irving W. Jones
Publicity	Mrs. Emily Moltzner
Speaker	Mr. Leonard H. Delano
Printing	Mr. & Mrs. C. Rosenberry
General Chairmen	Dr. and Mrs. Arthur C. Jones

With recognition to many members of the above committees, and to volunteers.

Our thanks to the "Women of St. David's Church" for their joyful endeavor in arranging our dinner.

And to Irv Ewen for his thoughtful assistance.

St. David's Episcopal Church, 2800 S. E. Harrison

OFFICERS

PRESIDENT

1961	1962
Dr. John H. Hammond	Mr. Leonard H. Delano

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SECRETARY

Miss Hilda Freed	Miss Hilda Freed

TREASURER

Miss Clara L. Bartholomay	Miss Clara L. Bartholomay

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Dr. James Stauffer	Dr. John H. Hammond
Mr. Stephen W. Blore	Mr. Leo F. Simon
Mr. Ralph S. Mason	Mr. Ralph S. Mason
Dr. Paul W. Howell	Dr. James Stauffer

MENU

ORIENTAL TOPAZ WITH INCLUSIONS
(Moulded Tropical Salad)

FILET OF MASTODON
(Swiss Steak)
or
BAKED TELEOST
(Fish)

GROUND DOLOMITE
(Mashed Potatoes)

JADE PEBBLES
(Peas)

VOLCANIC BOMBS
(Rolls)

TUFF STONE WITH ULEXITE TOPPING
(Baked Fruit Cocktail Dessert
with whipped cream)

PITCHBLENDE
(Coffee)

SPHALERITE IN SUSPENSION
(Tea)

TWENTY-SEVENTH ANNUAL BANQUET
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

PROGRAM

Mr. Albert J. Keen
Master of Ceremonies

GREETINGS — President, Dr. John H. Hammond

"LAND OF THE FOSSIL HUNTERS" - Everybody Sing

DINNER

REVIEW OF 1961 — Dr. John H. Hammond

"BIRD'S EYE VIEW" of 1962 - Mr. Leonard H. Delano

PRESENTATIONS OF HONORS

"Historical Sketch of Our Museum" - Viola L. Oberson (Mrs. Louis)

DE RE GEOLOGICA - - - - - - - - Everybody Sing

INTERMISSION

"MY YEAR IN EAST PAKISTAN" - Dr. Ewart Baldwin

"HILLS OF OREGON" - - - - - - - - - Everybody Sing

"GEE-OL-O-GEEZ" - - - - - - - Dr. Arthur C. Jones

FUN FEATURE - - - - - - - - - - - Dr. Paul W. Howell and associates

"GOOD BYE ROCK HUNTERS" - - - - - Everybody Sing

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

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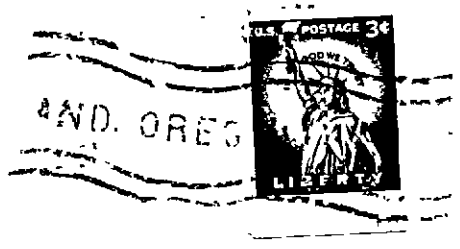

State of Oregon
Dept. of Geology & Mineral Industries
1069 State Office Bldg.
Portland 1, Oregon

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Officers of the Executive Board 1962-63

			Zone	Phone
President:	Mr. Leonard Delano	14300 S. E. Rupert Drive	22	OL 4-1626
Vice-President:	Mr. Albert R. Kenney	Box 491, Oregon City, Ore.		
Secretary:	Miss Hilda Freed	1969 S. W. Park	1	CA 2-3714
Treasurer:	Miss Clara L. Bartholomay	1620 N. E. 24th Ave.	12	AT 4-6986

Directors: Mr. Ralph Mason (1 yr.) Mr. Leo Simon (2 yr.) Mr. J. R. Rentsch (3 yr.)
Dr. John Hammond Dr. Paul Howell

STAFF OF GEOLOGICAL NEWSLETTER

Editor:	Mr. Irving Ewen	4128 N. E. 76th Ave. City	(13)	AT 1-7098
Bus. Mgr.	Mr. Robert F. Wilbur	2020 S. E. Salmon St.	(14)	BE 5-7284

COMMITTEE CHAIRMEN

Jr. G. S. O. C.	- Dr. John Hammond	Membership:	- Miss Marjorie Fessenden
Program	-	Research	- Mr. Rudolph Erickson
Field Trips	- Al Kenney; T. Murphy	Library	- Miss Marie Wagner; Mrs. Murray Miller
Social	- Mrs. Emily Moltzner		
Display	- Mr. Dennis Carmody	Historian	- Mrs. James Running
Publicity	- Mr. William Freer	Pub. Relations	Mr. Clarence Phillips
Museum	- Mr. Ralph Mason	GSOC Library night	- Dr. Francis Gilchrist

Luncheon - Mr. Leo Simon

Society Objectives

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Society Activities
(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR MAY 1962

Note: All Scheduled times are Pacific Daylight Saving Time

Every Thursday — LUNCHEON - Campbell Court Hotel, 1115 S.W. 11th Avenue near Main Street.
12:00 Noon - Cafeteria Style, cost $1.00
Eat and meet in private room where rock specimens are examined, publications are discussed, and frequent informal talks are heard. For further information call Mr. Leo Simon, Luncheon Chairman at BE 6-0549 (residence) or CA 3-0300 (business).

Sunday May 6 — FIELD TRIP - Newport Area and Oceanographic Vessel Open House.
10:00 A.M. - Meet at Otter Crest State Park (U.S. Hwy. 101). Trip leader Al Kenney will explain features of the area and then the group will caravan to the Devil's Punch Bowl.
12:00 Noon - Lunch at Newport. Restaurants available or bring your own lunch and join the group at Yaquina Bay State Park.
1:00 P.M. - Acona Open House at Newport. The O.S.U. Dept. of Oceanography will hold open house aboard the oceanographic vessel at its moorage for the Society. Later, the group will visit geologic points of interest in the Beverly Beach area.
For further information call co-chairman Mr. C. T. L. Murphy at CA 7-3253 or Mr. Albert Kenney at PR 5-5697.

Friday May 11 — LECTURE - Central Library (Room A), 801 S. W. 10th Avenue.
7:30 P.M. - Dr. John Eliot Allen, Professor of Geology at Portland State College, will speak on the Miocene Epoch. Talk to be illustrated with slides and charts. This lecture is one of a series on historical geology.

Tuesday May 15 — LIBRARY NIGHT - Lewis and Clark College (Peebles Hall), on S. W. Palatine Hill Rd.
6:00 P.M. - Annual Spring Library Night picnic will be held by the swimming pool. Coffee will be furnished, but bring your own picnic supper. In the event of inclement weather, festivities will be shifted to the geology laboratory. After supper there will be sightseeing around campus or browsing in the library.
8:00 P.M. - Peebles Hall. Showing of recent films of geological interest.
For further details call Dr. Francis Gilchrist at NE 6-5942.

Sunday May 20 — FIELD TRIP - Columbia Gorge and Grand Canyon of the Deschutes River.
8:00 A.M. - Leave Portland from N. W. 10th Avenue and Hoyt Street via special chartered train (Union Pacific) sponsored by the Vernonia, South Park and Sunset Steam Railroad, Inc. From two private coaches reserved for the Society, the group will see awe-inspiring geological formations enroute to Madras. Dr. Paul Howell, trip leader, will lecture. Package deal for $9.95 includes transportation tax, trip, and meals (continental breakfast enroute and baked ham dinner at Madras).
For reservations and information call Dr. Paul W. Howell at CH 4-5728 (residence) after 6 P.M. or Mrs. Emily Moltzner at AL 4-2362 (residence) after 6 P.M.

Friday May 25 — LECTURE - Central Library (Room A), 801 S.W. 10th Avenue
7:30 P.M. - Mr. Robert Otis Van Atta, Assistant Professor of Geology, and students at Portland State College will present "Oregon Geology". This presentation is part of the Junior GSOC Program sponsored by the Society under the direction of Dr. John Hammond.

Sunday May 27 — SPECIAL - Dedication of Hancock Memorial Room at OMSI
2:00 P.M. - Oregon Museum of Science and Industry, S. W. Canyon Road.
Dedication program will take place in the main auditorium on the lower level.
For additional information call Mrs. Barbara Curtis at CA 6-4518.

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY
FINANCIAL STATEMENT
FOR THE YEAR ENDED FEBRUARY 28, 1962

RECEIPTS:

Dues - 1961	$ 246.50
Dues - 1962	542.50
Newsletter	.50
Banquet - 1961	164.25
Banquet - 1962	130.50
Excess field trip funds	26.15
	$1110.40

EXPENSES:

Newsletter	$ 580.29	
Banquet - 1961	347.80	
Banquet - 1962	2.75	
Stationery, printing, postage	43.19	
Miscellaneous	162.00	
	$1136.03	$1136.03

Mike extension cord	$ 9.75
Treasurer's Bond, 3 yrs.	12 50
Memorials	10.00
Library insurance, 3 yrs	22.40
Ore. State Corp. fee	5.00
Picnic expenses	20.07
Camp Hancock - toaster	16.88
Student Promotion	39.38
Program speaker	15.00
Book fund	1.00
Field trip	10.02
	$162.00

Excess of year's expenditures over receipts	$ 25.63
Balance February 28, 1961	$1650.88

Less:

Excess of year's expenditures over receipts	$ 25.63	
Transferred to Portland Federal Savings	500.00	
		525.63
Balance February 28, 1962		$1125.25

Portland Federal Savings	$ 619.20
Transferred 5-1-61	500.00
Dividends	38.41
	$1157.61

Respectfully submitted,

Clara L. Bartholomay

MARCH FIELD TRIP TO SALEM HILLS

GSOC'ers enjoyed an entertaining and informative trip to the Salem Hills via chartered bus. Mr. Raymond E. (Andy) Corcoran, geologist for the State of Oregon, Department of Geology and Mineral Industries, took the group to visit the ferruginous bauxite deposits of the Salem Hills.

Mr. Corcoran was a most qualified trip leader as he has previously done extensive work as a geologist for the Department of Geology in the investigation of these bauxite deposits. The results of the investigation were published by the Department of Geology in Bulletin 46 entitled "Ferruginous Bauxite Deposits in the Salem Hills, Marion County, Oregon" in 1956. The publication was co-authored by Mr. Corcoran and Mr. Fay Wilmot Libbey, Mining Engineer.

The Society is appreciative of Mr. Corcoran's personally guided tour to the Salem Hills and for the following informative article which he has written especially for the Geological News Letter.

Editor

BAUXITE DEPOSITS OF THE SALEM HILLS
Marion County, Oregon

by

Raymond E. Corcoran*

Introduction

Early in 1944, iron-rich or "ferruginous" bauxite (aluminum ore) was discovered in Oregon in the Columbia-Washington Counties area by the Dept. of Geology and Mineral Industries. These deposits, underlying the Portland Hills west of Scappoose, were immediately investigated by the Dept. to determine their economic potential, and a report was published a few months later giving the results of the survey. As a result of this investigation, the Aluminum Co. of America began an extensive program of exploration of this area which lasted nearly seven years. Alcoa now owns several thousand acres of bauxite land, both in northwestern Oregon and across the Columbia River in Washington, within a few miles of their large aluminum reduction plant at Vancouver.

At the time of the exploration of Columbia and Washington Counties, bauxitic material was found in the Salem Hills south of the capitol. An investigation of these deposits was begin by the Dept. of Geology and Mineral Industries in the summer of 1953, and continued during the succeeding summers of 1954 and 1955. During this period twenty seven hand-augered drill holes were put down, and these showed the presence of a fairly extensive ferruginous bauxite zone underlying the higher areas.

In addition to the large deposits which are known to occur in the hills northwest of Portland and south of Salem, smaller outcrops of bauxitic clay have been found along the Clackamas River from its mouth as far upstream as Estacada; in the hills above the Little North Fork of the Santiam River near Mehama; and in the eastern part of the Chehalem Hills north of Newberg. It is hoped that more field work will reveal other deposits in the northern Willamette Valley large enough to encourage the development of a new industry in Oregon.

Geology of the Salem Hills

The bauxites in the Salem Hills are developed through the surface weathering, or "laterization", of lava flows correlated with the Columbia River Basalt. The basalt lies on marine sediments of the middle Oligocene Eugene Formation. In most places the basalt is covered by a red silty clay, partially laterized, of Pleistocene (?) age, but locally, particularly in what appear to be old erosion channels, the lavas are overlain by tuffaceous clays tentatively identified as a part of the Fern Ridge Tuffs of Pliocene (?) age.

The Salem Hills occupy the southern end of a large syncline which plunges to the north. The Eola Hills, which are a northern extension of the Salem Hills, form the western limb of this syncline, and the Waldo Hills along the east side of the valley, form the eastern limb.

* Geologist, State of Oregon, Dept. of Geology & Mineral Industries.

Erosion of the relatively soft sediments of the Eugene Formation along the southern and western margin of the Salem Hills has oversteepened the slope beneath the lava capping, and landslides are common in this area. To the north, the lavas slope gently toward the central part of the Valley.

Laterization

The term "laterite" was first used during the early 1800's to describe the red ferruginous soils of India which, after being quarried and allowed to dry, become hard enough to be used for building construction. In later studies, greater emphasis was placed on the genetic implications of laterization, and the weathering factors responsible for its development. Nowadays, most workers agree that laterization is essentially a de-silication process by downward leaching of surface waters in which the alkalies and alkaline earths are eliminated along with silica. Laterites are found to range in composition from relatively pure iron oxide of the type originally described in India to aluminous varieties almost free from iron (i.e., high-grade bauxite). Primary laterite is not a sediment in the ordinary sense of the word, but a residual rock formed in situ by chemical alteration of a parent rock as a result of the special type of weathering known as laterization. Under the right conditions, therefore, almost any rock can be laterized if the rate of erosion does not exceed the rate of chemical decomposition. The best bauxite deposits are found in the tropics where the warm humid climate together with abundant vegetation accelerate the chemical breakdown of the surface rocks. Laterites will usually be composed of varying amounts of the secondary aluminum oxide mineral, gibbsite, the secondary iron oxide minerals, limonite or goethite, and small amounts of the titanium minerals, ilmenite or leucoxene, and the aluminum silicate clay minerals, halloysite or kaolinite.

Geology of the deposits

The Northwest bauxites, as typified by the Salem Hills deposits, occupy an intermediate position between high iron laterites and high alumina laterites, probably due in part to the composition of the parent rock, and to variations in climatic effects. The laterite derived from the uppermost flows of the Columbia River basalt in the Salem Hills was first formed as a blanketlike deposit of fairly large extent. Subsequent uplift of the Hills caused dissection of the bauxite deposit and it now occurs largely as erosional remnants capping the higher knobs. (See accompanying map.)

The average thickness of the bauxite section in the Salem Hills as determined from drill samples is 14.4 feet. This figure may be somewhat low as several of the holes in the northeastern part of the laterized area bottomed in low-silica bauxitic material. Most of the in-place bauxite in the Salem Hills is the so-called "earthy" variety. The pisolitic horizon common in the deposits farther north in the Portland Hills was found in only a few holes in the Salem area. A representative sample of the "earthy" bauxite will contain 35% alumina, 32% iron oxide, 6% silica, 6% titania, and 21% chemically combined water (L.O.I.). The higher grade buaxite nodules widely dispersed throughout the soil horizon and in the upper part of the laterite section in some areas are of three general types, based on difference in texture. These are: 1, dense porcellaneous; 2, porous granular; and 3, red pisolitic. The dense porcellaneous variety is almost pure gibbsite and a representative sample will contain 60% alumina, 4% silica, 5% iron oxide, and 31% chemically combined water (L.O.I.). The red pisolitic variety is quite rare in the Salem Hills and has been found in only two or three localities.

Production of aluminum

The conversion of bauxite ore to aluminum metal is a two-step process; chemical separation (Bayer process) and electrolytic reduction (Hall process). The ore is first treated with caustic soda solution which dissolves the aluminum-bearing mineral, gibbsite, and leaves the iron oxide, titanium oxide, or aluminum silicate minerals as an insoluble residue. The "red mud" residue is discarded and the pure aluminum oxide is precipitated from the caustic solution, dried and calcined for shipment to the electrolytic reduction plants. The reduction plants mix the pure aluminum oxide with a small amount of aluminum fluoride in "pots", where it is reduced to aluminum metal by electrolysis using carbon electrodes. Because of the large amounts of electricity required, there are at present eight aluminum reduction plants operating in the Pacific Northwest where water power provides a cheap energy source. Unfortunately, most of the Bayer plants are in the Middle

(Cont'd P. 28)

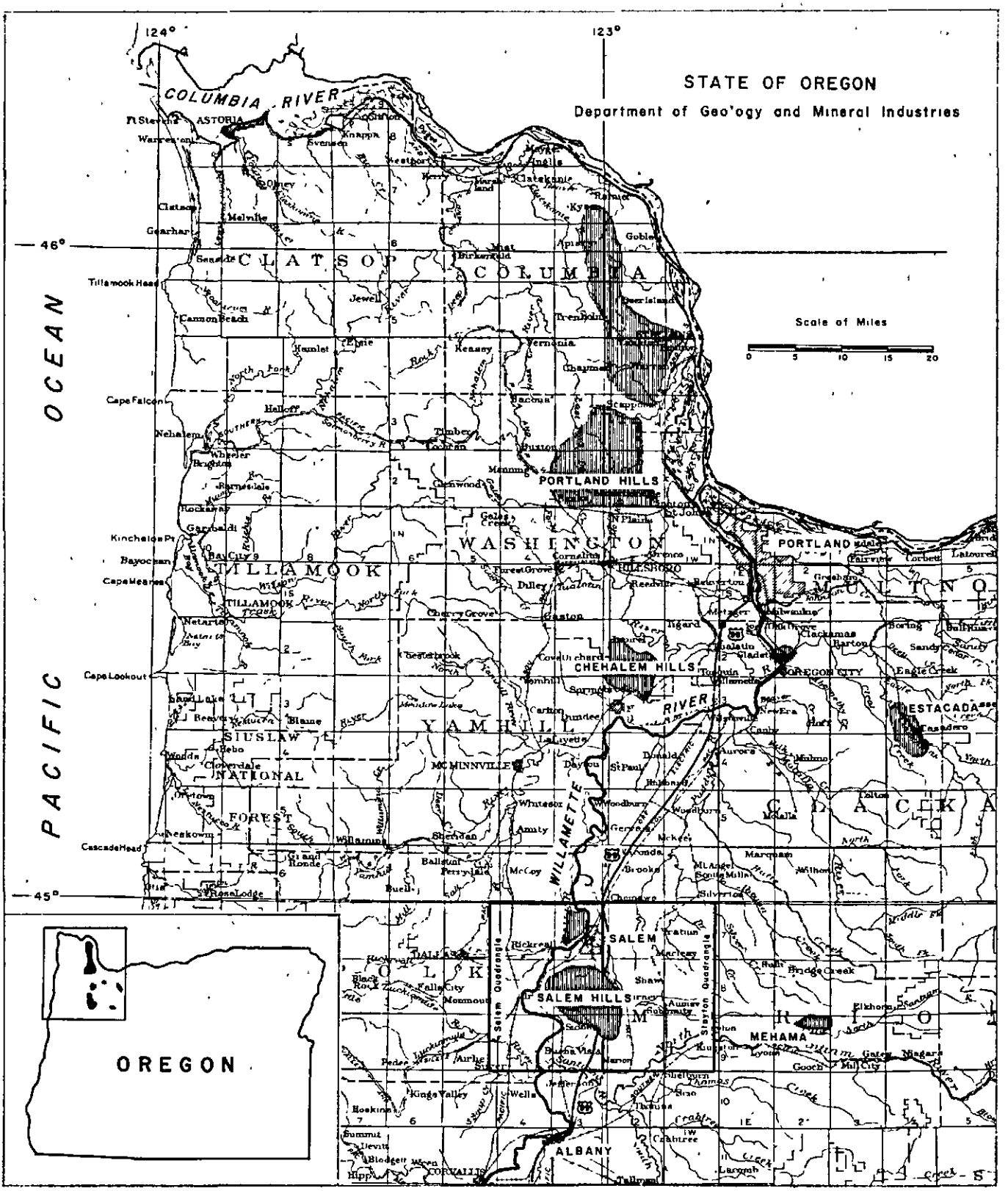

Figure 1 - Index Map Showing Ferruginous Bauxite Deposits in Northwestern Oregon

West or South close to the Arkansas bauxite deposits (the only domestic source of good quality bauxite at the present time), and Gulf Coast ports to which the Jamaican or South American bauxites are shipped. It should be noted that almost 80% of all bauxite processed in this country comes from foreign countries.

Because of the high content of iron in the Salem ore a process that would produce both alumina and iron would be of greater commercial value than one in which only the alumina would be utilized. A process developed in Norway first smelts the ferruginous bauxite in an electric furnace together with lime as a flux and coke as a reducing agent. Pig iron and calcium aluminate slag are the products from the electric furnace. The slag is further treated with sodium carbonate solution with later introduction of carbon dioxide gas to precipitate aluminum hydroxide. The aluminum hydroxide is then filtered and calcined to produce alumina.

Conclusion

The ferruginous bauxites of the Pacific Northwest are of marginal quality when compared with those in Jamaica or South America, and for this reason are not being mined at the present time. As noted above, this country is dependent in large degree upon these foreign countries for supplying us with the necessary raw material for our production of aluminum. If our foreign sources were to be cut off because of political or military intervention, the domestic reserves represented by the Oregon bauxites would be available to supply our needs for many years to come.

* * * * * * * * *

CAMP HANCOCK SUMMER CAMPS

The Oregon Museum of Science and Industry has announced that there are still a few vacancies for the junior paleontology summer camp. The three two-week sessions are under the direction of Bruce Nelson. Camp dates are: first session - June 24th to July 7th, second session - July 8th to July 21st, and third session - July 22nd to August 4th.

Cost per student for one two-week session is $75.00 which includes transportation from Portland, board, and lodging. Students furnish own bedding.

The camps are a wonderful opportunity for young students with a definite interest in paleontology. Eligibility is limited to students between 12 and 17 years of age.

Applications may be obtained from the Oregon Museum of Science and Industry, 4015 S. W. Canyon Road, Portland, Oregon. For further information call Mrs. Barbara Curtis at OMSI, CA 6-4518.

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EAST AND WEST BERLIN

Contrast between the free West in West Berlin and the Communist world -- evidenced in East Berlin and Moscow was ably demonstrated by Ernest W. Peterson in his illustrated lecture of April 13th. A good attendance heard Mr. Peterson, former church and automobile editor of the Journal and Mrs. Peterson who visited these areas late in 1961.

Lack of consumer goods and transportation in both East Berlin and Moscow and poor development of East Berlin was demonstrated by slides shown. Peterson is showing his slides at his own expense and the G. S. O. C. expresses its appreciation for his work.

X X X X

A GEOLOGIST LOOKS AT ANGOLA, AFRICA

Angola, Africa, its economy, geography, culture and lack of mineral resources, do not recommend it for U. S. investment, worry or participation, said Dr. Edwin T. Hodge in the second April lecture on April 27th. Dr. Hodge, founder and first president of the Society, was in his excellent classroom form. A large audience, including visitors from Salem Geological Society, enjoyed the capable presentation sparkling with the Hodge humor and hope he will be in attendance again soon.

X X X

Murray Miller led a group of flower enthusiasts on two field trips, April 28th and 29th, in the Oregon City - West Linn area.

WILLAMETTE STONE AND SKYLINE BOULEVARD FIELD TRIP

By C. T. L. Murphy

Threatening weather failed to discourage the sixteen car loads of GSOCers who met at Willamette Stone State Park on the Skyline, Sunday morning April fifteenth. Leader Bruce Schminky conducted them all down the path to the location of the original survey marker for the whole of the Northwest. Armed with old maps and new discourse he mentioned the early explorations and then led his hearers up to the time of the initial survey in 1851. As chief of the City of Portland Survey department, Mr. Schminky was singularly equipped for the lecture which he had given for the Society many times in the past.

He mentioned surveyor John Preston's many difficulties in the pioneer environment among which were the shortage of manpower, for many of the settlers had gone to the Klamath Mountains gold rush, the high cost of supplies and of labor, and the difficult terrain to be surveyed. By direction of his superiors at Washington, D. C. he ran his base line below the Columbia River's southernmost bend which is at about Troutdale. His meridian had to stay out of the rivers as much as possible though it did cross Vancouver Lake and still had to avoid rough mountains at the back of St. Helens. The compromise junction took place on the southwest slope of the Tualatin Mountain at Portland's back door and here, surrounded by a concrete platform stands the little pyramid which marks the starting point of the Northwest survey. Of course, vandals have removed the bronze button with its crossed lines.

Society members who have an interest in this branch of earth science should read Mr. Schminky's four-part article entitled The Public Land Survey in the Oregon Country which appears in Volume 10, 1943 of the Geologic News Letter, available in the Society's library at Lewis and Clark and in the City Public Library. This gives a complete coverage of the subject.

Second and third stops on the heights oriented the viewer with the topography of the region and here Bruce explained by a detailed drawing a cross-section of the drainage of the Portland area from the Hills on the west to Chamberlain Mountain at Troutdale on the east. At the quarry near Cornelius Pass the party noted west dipping volcanics which would indicate that section is on the west limb of an anticline. Here the party ate lunches.

The farthest north of the expedition brought the trippers to the Rune Stone, 3.4 miles north of Logie Trail Road and .7 miles north of Happy Ranch. Here in the east bank of a roadcut there stands out of the clay a thick slab of basalt bearing mysterious carvings of straight lines that resemble the letters H, I and E. This stone was discovered by highway engineers and was investigated by local geologists a few years ago. The find was written up in the Ore Bin. The presence of the stone a few feet deep in the clay with no other rocks nearby and with landslide conditions unlikely, it would seem to be of man-carved and man-placed origin yet there seems to be no meaning to its legend if indeed it bears a legend.

Dr. Paul Howell gave the discourse at this point and also at the last stop which was down the Logie Trail to a point 1.8 miles above the junction with US 30 at Rainbow Lake. Here he taught a lesson in importance of identification of geological phenomena by scientific deduction. In a gully only a hundred feet or so off the switchback road there appears an exposure of very recent vulcanism. It's quite startling to find the fresh cinders, the baked earth typical of a volcanic vent, the whole spilling down the gully. But here Dr. Howell explained there had been apparently a hot blaze of combustible material, maybe a pile of logs at logging-off time, sufficiently hot to fire the very earth adjacent into a startling replica of volcanic treatment. This was all very satisfying for it was argued that if the old mountain in our back yard started to throw its weight around none of us in Portland would feel very safe.

* * * * * * *

BRING YOUR ROSTER UP TO DATE!

Changes:

Mr. and Mrs. Robert S. Fisher, Rt. 1, Box 270, Sherwood, Ore. (Box change only)
Mr. and Mrs. Albert R Kenney - address and telephone changed to 3945 S. E. Gladstone, Portland 2; PR 5-5697.

New Members - Mr. John D. (Jack) Pollard, Residence - 7244 SW 23rd; CH 4-4767

(More names last page.)

FOOTNOTE TO THE OREGON TRUNK

By William Freer

Note: This article is of historical rather than geological interest. However, it was considered to be timely in view of the forthcoming train excursion on May 20th to Madras via the Columbia Gorge and Deschutes River.
Editor

A little over fifty years ago, in March of 1908, when the last spike had been driven in the Spokane, Portland and Seattle Railway -- on which we will make the first segment of the May 20th junket to Madras -- Jim Hill thought he had built the most beautiful railroad in the country. Of course, beauty is where you find it, and through engineering eyes beauty in a railroad is judged ultimately by its performance; the ease and economy of / operation. Hence, as opposed to some more popular forms of beauty not here discussed, restraint in the curves and flatness of the grade are greatly admired. This is what makes the S. P. & S. so remarkable, for its specifications revealed these imposing statistics: Except for its climb out of the Snake River Canyon and one other place where it crosses a controlling ridge -- a maximum grade of 0.2 percent, compensated 0.04 percent per degree of curve on a maximum curvature of three degrees. That its water level alignment traverses some of the finest scenery in the country through the Columbia River Gorge is of no consequence.

So skillfully was this railroad located and constructed that it has been said that a boxcar given an energetic shunt in Spokane would not stop rolling until it got to Vancouver, Washington, and theoretically this is almost true. At any rate it has always been a money-maker, and during the thirties, when all the other roads were fighting for their lives, with its roadbed and rolling-stock neglected and rundown, the little S. P. & S. still made money for its parent companies, the Great Northern and the Northern Pacific, and helped them over the hump of the depression . . . . We just mixed some metaphors --

But rather than the S. P. &S., this dissertation was intended to be on the Oregon Trunk -- on which we will make the second segment of the junket. The Oregon Trunk, like the Oregon Electric, is a child of the S. P. &S., so to speak, and they are parts of its system. And here, for the sake of the members of the Society who are too young to remember, and who may be interested in historical railroading as well as geology, we will digress for a little background.

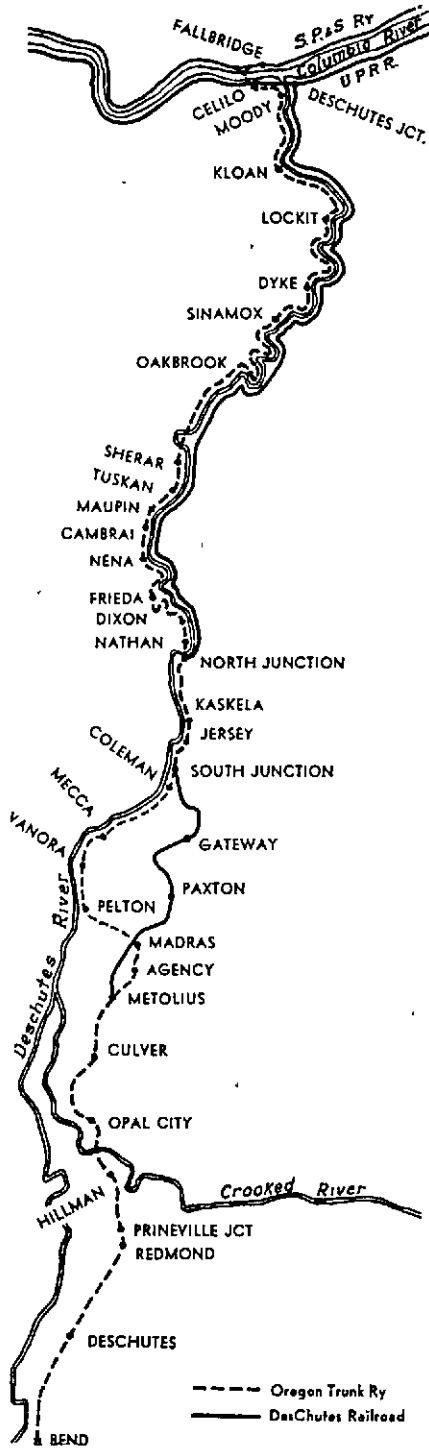
By 1905, the year of the Lewis and Clark Exposition in Portland, that Titan of the rails, James Jerome Hill, an Horatio Alger type if there ever was one, had bulldozed the Great Northern across the country from St. Paul, Minnesota to Puget Sound by undaunted courage, stubborn determination, and unlimited energy; and all without the aid of the government land grants and other subsidies that the other trans-continental rialroads had received. Besides this, he now controlled the Northern Pacific System, and also another great midwestern railroad complex, the Chicago, Burlington and Quincy, comprising altogether a vast railroad empire. He was called, in fact, the Empire Builder, and today the Great Northern's crack transcontinental passenger train is so named in his honor.

But when he built the S. P. & S. from Spokane to Portland, he encroached deeply into the private territory of another Titan of the rails, Edward Henry Harriman. Mr. Harriman controlled with verve, imagination and considerable assurance an equally vast railroad empire consisting of the Union Pacific and the Southern Pacific systems. Incidentally, Mr. Harriman also had serious aspirations toward the Grand Trunk Railway -- now the Canadian National, and the Trans-Siberian Railway of Russia. He just didn't live long enough. Had he ever achieved control of the Trans-Siberian, the implications stagger the imagination. It almost reminds us of the time that Bernard Shaw mentioned that if Ivan the Terrible had married Queen Elizabeth, he would doubtless thereafter have been known as Ivan the Terrified.

The Messrs Harriman and Hill had tangled before, first when Jim Hill had bought the Burlington from under Harriman's nose, and later when Harriman came within a split eyelash of absconding with the Northern Pacific when Hill wasn't looking. As a matter of fact, between uneasy truces, they had battled each other for twenty years -- in Wall Street, in the courts, in politics, and on the right-of-way in the field. In retaliation for

this invasion into his territory, Harriman so harried the construction of the S. P. & S., that, when he also bought right-of-way into Tacoma and terminal rights there, and began tunnels in both Tacoma and Portland, Jim Hill effected a compromise, double-tracked his main line from Portland to Seattle, and gave Harriman trackage rights to the Sound.

In spite of this, no sooner was the S. P. & S. finished than Jim Hill was ready to get into trouble again. He wanted to build a line into Central Oregon, and eventually on south to California. The Deschutes River canyon seemed to offer the best route for his purpose, and having quietly made all the necessary negotiations through his great chief engineer, John F. Stevens,* who was operating incognito, he announced his intentions of building a railroad from Fallbridge -- now Wishram -- across the Columbia and up the west bank of the Deschutes to Bend, thus setting the stage for the drama of the last great battle of the last great moguls of Western railroading.



Acknowledgment is made to SP&S Ry. Co. for permission to reproduce sketch from Gold Spike Issue of Dope Bucket, and to Messrs. Guy LaSalle and T. O. Monaghan for their helpful courtesy in opening files to us.

Despite all of Jim Hill's careful secrecy Edward Harriman was not taken by surprise, for it almost seemed that these tycoons could read each other's minds, and if Mr. Hill insisted on going into Central Oregon, Mr. Harriman was going right along to watch him. It might have appeared to an astute observer that these men were suspicious of each other --

For on July 2nd 1909, without the formality of any announcement whatever, a train of twenty-six cars of laborers, construction equipment and supplies was quietly eased over the Union Pacific into the mouth of the Deschutes River Canyon, and Mr. Harriman began the building of his own road -- The DesChutes Railroad -- up the east bank of the river.

Caught by surprise, Porter Brothers and Welch, the same contractors who had built the S. P. & S. for Jim Hill, immediately began work on the Oregon Trunk with a force of a hundred men and forty horses and wagons consigned to them on that favorite old river boat, the Baily Gatzert. Thus was the battle joined, and it marked the beginning of the end of an era. The end, not yet quite discernible, appeared to be in the form of the internal combustion engine.

This last battle was a dilly, and all of Oregon and the Railroading West watched with interest. It was rough and tough and nasty, and as the tempo of the work increased, it got worse. Soon both factions had a thousand men or more working on each side of the river, and though the river provided a natural barrier, it could be crossed. After dark forays were made from one side to the other, and participants engaged in whole-hearted mayhem. They clobbered each other with pick handles, rolled boulders down on each other, and delighted in shooting up each other's powder dumps. Indeed, for the duration, every day sounded like the Fourth of July. Scarcely a train on either side ever left for the Columbia without a consignment of battered workmen for the hospital in The Dalles. Occasionally some one was killed.

The grading through the tough Columbia River basalt went doggedly on, and except for a small steam shovel near the mouth of the Deschutes, the entire Oregon Trunk as far as Metolius was built by hand. The canyon was too precipitous and narrow to get any mechanical equipment up. While the Harriman Interests had a direct rail connection with the Union Pacific, the Oregon Trunk had to ferry supplies and equipment across the Columbia on barges pushed by the old sternwheeler Norma. Two of the barges were built to carry trains.

There is neither space nor reason to go into the many involvments of the construction of these two railroads. Suffice it to say that at North Junction, where the Oregon Trunk was forced to cross the river, sanity at last prevailed, and an agreement was made for the joint use of the DesChutes tracks between North Junction and South Junction. The agreement was made for 999 years, and a worrisome thought is that there are only 947 years to go. From South Junction to Bend the Oregon Trunk is on its own right-of-way, and in another agreement it gave the DesChutes joint use of its tracks from Metolius to Bend. Altogether, there were fifty-three miles of joint trackage on October 5, 1911, when Mr. Hill drove the golden spike celebrating the completion of the joint Hill-Harriman railroad to Bend, and the end of the last of the great railroad wars.

Times have changed for the railroads, and not for the better. After the First World War, with heavy renewal expense due both railroads, proposal was made by the Oregon Trunk to consolidate both roads to one line under joint operation, and in 1936 the DesChutes abandoned its line from the Columbia to South Junction and began operating on the Oregon Trunk, retiring nearly a hundred miles of trackage. All maintainance is now done by the Oregon Trunk. On our trip up the Deschutes, as we look across the river at fabulous geology that Dr. Paul Howell will explain and interpret for us, we will be able to see the old abandoned DesChutes grade for nearly a hundred miles. It is rather sad --

Of a total of eighty-seven bridges built on the Oregon Trunk, the two most spectacular ones are the first, across the Columbia at Celilo, whose footings had to be built during low water because the current was so swift, and the high steel arch crossing of the Crooked River, and this is spectacular. It is a two-hinge steel arch span 340 feet long and 320 feet above the river. When built it was one of the high bridges of the world, the highest arch in the United States, and the highest bridge except for the Southern Pacific's Pecos River viaduct in Texas, which beat it by one foot. This bridge is so high, and the air under it so dry, that if you drop an ordinary kitchen match from it, it will ignite before it gets to the bottom. If you don't believe this, just try it. --

Unfortunately, you won't have a chance to, for it is just a little beyond where we are going. _ _ _ _ _ _

*John F. Stevens, the great locater and engineer who found the lost pass in the Rockies for Jim Hill's Great Northern Railroad, is commemorated in a statue in Marias Pass that can be seen from the train at Summit, Montana.

William M. Freer

* * * * * * *

JUNIOR GSOC FIELD TRIP TO WILHOIT SPRINGS AREA

The field trip for junior GSOC'ers on Saturday the 28th of April led by past president Dr. John Hammond was damp, but enthusiastically successful so say the kids and so say the adults who accompanied them. The look into the Oligocene by the group may have prompted the youth of an extra hankie or two the day following, but oh boy those fossils!

Look for more junior GSOC and young GSOC activities from Dr. Hammond's corner.

Leonard Delano

* * * *

BRING YOUR ROSTER UP TO DATE!

Changes:

Mrs. Gail T. (Peacha G.) De Witt, Bates, Oregon

New Members:

Mr. Robert (Bob) Hart (Junior member), Residence - 18506 S. E. Wilmot, 22; OL 4-7865.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

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Museum	- Mr. Ralph Mason	GSOC Library night	- Dr. Francis Gilchrist

Luncheon - Mr. Leo Simon

Society Objectives

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Society Activities
(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR JUNE 1962

Note: All scheduled times are Pacific Daylight Saving Time

Every Thursday	LUNCHEON - Campbell Court Hotel, 1115 S.W. 11th Ave. near Main 12:00 Noon - Cafeteria Style, Cost $1.00 Eat and meet in private room where rock specimens are examined, publications are discussed, and frequent informal talks given. Further details from Leo Simon, luncheon chairman - BE 6-0549 (res.) or CA 3-0300 (business)
Friday June 8	"The Tualatin Valley Mastodon Find" will be told by Ronald Sund and John George, seniors at Portland State College. They will also show alides and specimens of their recent discovery southwest of Portland. This is paleontology in our front yard and still news. Hear first hand how these young men did it.
Saturday & Sunday June 9-10	FIELD TRIP - Southern Oregon trip lead by Len Ramp and Norm Peterson of Grants Pass office of Ore. Dept. of Geology & Mineral Industries. First assembly point 12:00 noon, Douglas County Fair Grounds, Roseburg, followed by lunch stop at South Umpqua Park, just behind Fairgrounds. At least four scheduled stops on Saturday, of which the last is at Riddle, then on to Hanna Nickle Mine for a tour of top of Nickle Mtn. After Nickle Mtn. tour return to Highway 99 to evening camp site at Blue Star Memorial Campground about 5 miles south of Canyonville at mouth of Packard Creek. Sunday assembly by 9:30 AM (unless otherwise announced) at town of Wolf Creek. To Stop No. 1 - Turn east up Coyote Creek to old mining town of Golden and Joe - Joe Placer Mine. To Stop No. 2 - Return to Hwy 99, continue south to Sunny Valley, turn left up Grave Creek, then left on King Mtn. Truck Trail to Greenback Mine. After this return to Grave Creek road and continue up Grave Creek. To Stop No. 3 - Divide between Grave Creek and Pleasant Creek. Afterward on down Ditch Creek, and if time permits will stop on Pleasant Creek at old Gold Dredge (Sect. 22, T. 34 S, R. 4 W.) Continue down through Evans Valley to Rogue River and return to Grants Pass. Contact Truman Murphy - CA 7-3253 or Al Kenney - PR 5-5697 any time before June 9 for further details. Use GSOC bumper cards or GSOC identification. A fine trip lead by local professionals.
Friday June 22	LECTURE - Central Library (Room A) 8-1 S.W. 19th Ave. To be announced. Illustrated, and one you will want to hear.
Saturday June 23	FIELD TRIP - Junior GSOC. Lead by Dr. John Hammond to Buck Creek fossil leaf locality in Sandy River area. Meet at Lewis & Clark Park 1:00 P.M. (upstream from R.R. bridge.) adjoining Troutdale.
	LIBRARY NIGHT is adjourned for summer until September. Dr. Francis Gilchrist, Chairman, NE 6-5942.
JUNE 16-17	Work party to Camp Hancock. Call OMSI for details and for other available dates.

COMING EVENTS -

ANNUAL PICNIC, Mt. Tabor Park - Friday, August 10.

FIELD TRIP up Clackamas River is planned for July.

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CURRENT NEWS NOTES

Research of two undergraduates in geology at Portland State College was described by them and their instructor, Mr. Robert Van Atta, on May 25th at the Society's regular lecture meeting. Richard Larrett told of special analysis studies in Siletz Volcanics between Lee's Camp and Cedar Mountain adjoining Wilson River Highway.

David Ford told of his work in the Lower, Middle and Upper Coaledo Formations near Coos Bay.

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Sam Sargent, geologist for the U.S. Corps of Engineers, Walla Walla District, has left his residence in The Dalles for a position with a private consulting firm in Pakistan for work on one of the world's largest dams. His talk on The Columbia River Basalts this past winter was a GSOC program highlight.

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DATA FOR FIELD TRIP JUNE 9 AND 10, 1962

The Roseburg area is underlain by thin bedded sandstone and shale, basalt dikes and pillow basalt masses of the Umpqua formation. J. S. Diller mapped and described these Eocene rocks while doing the geology of the Roseburg Quadrangle in 1898.

Stop #1 - Along the highway right-of-way in secs. 26 and 35, T. 27S., R. 6 W., cuts expose excellent examples of pillow structure in submarine basalt flows -- thin lenses of shale are interbedded. Diller called the basalts "diabase".

Within a few miles of leaving Roseburg the contact between the Tertiary Umpqua formation and the older Mesozoic rocks is crossed.

Stop #2 - Is a small outcropping of glaucophane schist on the west side of the highway adjacent to the Drive-In Theater. The glaucophane schist occurs as small masses within Jurassic sandstones and metavolcanic rocks. Diller mapped these as Myrtle formation. They have since been redefined as the Days Creek and Riddle formations in this area.

Continuing south the highway crosses a northeast-trending belt of Dothan sandstone.

Stop #3 - Just north of Myrtle Creek highway cuts expose serpentine that is intruded by dacite dikes and contacts pebble conglomerate and sheared mudstones of the Riddle formation. Occasional buchia piochii, index fossils for the uppermost Jurassic rocks are found in the sheared mudstones and the conglomerate.

Stop #4 - Highway rock quarry ("greenstone") is located near the camp site.

Sunday to Canyon Mtn. Pass and Stage Road Pass the highway crosses metavolcanic and metasedimentary rocks of the Rogue and Galice formations. At the top of Canyon Mountain the highway cuts through a small stock of intrusive quartz diorite. The metavolcanic rocks are generally called greenstones and were probably originally effusive basaltic flows. The Galice formation is made up mainly of fractured slate with minor sandstone and conglomerate.

Stop #1 - Bedrock is Galice formation and the gold bearing gravels border both sides of Coyote Creek as high as 100 feet above the present stream.

Grave Creek underlying rocks are greenstone of the Applegate Group rocks and Galice formation. - Stop #2.

Stop #3 - On the divide between Grave Creek and Pleasant Creek there are some younger Cretaceous sandstones that are called the Hornbrook formation. Locally these sandstones contain abundant fossils, mainly the pelecypod, Trigonia. Occasional ammonites are found as well as a variety of gastropods.

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NEW MEMBERS

Mr. Rinehard Staaser and grandson, Rob, 8110 S. E. Sunset Lane, Portland, Oregon
Mr. & Mrs. Edward J. Long and son, Michael, 600 E. Fairfield, Gladstone, Oregon
Mr. & Mrs. Charles Sweet, Jr., and children, 5550 N. W. 137th Ave., City - Res. MI 4-6752
Mr. Arthur W. Boylston, 1717 SW Park, #618, City - CA 3-5682
Mr. & Mrs. Cecil E. Trainer and daughter, Brenda Ann, 815 F. Ave., Lake Oswego, NE 6-2824
Mrs. Ruth W. Smith, 2525 N.E. 12th - Res. AT 7-6316; business CA 8-9181, Ext 261
Mrs. Constance Riley and children, 5220 SE 42nd Ave., City - Res - PR 4-8540, office CA 8-9181

FOREWORD

To Alonzo W. Hancock, dedicated searcher of secrets in the fields of geology, paleontology and paleobotany and a teacher of these secrets, we dedicate this issue of the News Letter. He served as president of the Geological Society of the Oregon Country in 1945. An attempt has been made to tell of some of his work and interests in these few pages, but we must admit that it is not adequate in the telling for there is so much to tell.

Those of us who are amateurs in the above fields can reflect on the fact that Lon Hancock exceeded many of the professionals in his accomplishments.

The Society and members of the staff of the News Letter are grateful to Mrs. Hancock and to the News Letter contributors in making this issue possible. Perhaps in future issues additional material from the Hancock files can be made available.

LHD

WITH THE SIMPLEST OF TOOLS

In this day of modern science and research most of the projects are so overburdened with gadgets and paraphernalia that you can't see the scientist. This was not the case with Lon Hancock. His keen sense of sight, coupled with a seemingly uncanny "hunch" of where to look helped him locate his many exciting finds. Once he began to excavate to remove a large skull or bone he worked with infinite patience and slowness, lest he destroy more than he found. Under the searing sun of September or the chilly winds of early spring, Lon worked at his hobby, usually alone, or with some trusted helper. Visitors to one of his "digs" were always amazed with the simplicity of his equipment. Aside from the occasional use of shovel and wheelbarrow to remove loosened earth and rock, Lon relied almost entirely on one tool. It was small, it was inexpensive, it had a sturdy red handle, it was an ice pick.

(Photo by Ed Bushby)

Dedication of the Hancock Memorial Room

Formal dedication of the Hancock Memorial Room took place in the auditorium at the Oregon Museum of Science and Industry on Sunday, May 27th. More than 200 friends, Camp Hancock campers, and members of the OMSI governing Board were present for the ceremony. Reverend Byron Travis gave the invocation. Dr. J. Arnold Shotwell, curator of the Natural History Museum at the University of Oregon, gave the main address. He was introduced by Marsh Corbitt, president of OMSI.

After responding to her introduction, Mrs. Lon (Berrie) Hancock was prompted to tell of Lon's early start in fossil hunting. As a boy of seven going to grade school in Arkansas, he discovered some Crynoids near the school well. His curiosity and search for information followed him with his parents in their covered wagon to the Oregon Country. As a seventeen year-old, he found a fossil fish and other finds followed as he grew older.

"Integrity in the field of science," said Dr. Shotwell, "depends upon the scientist himself. Lon Hancock was a good example of this integrity."

Ralph Mason spoke for the Hancock Memorial Room Committee.

The Hancock Room was opened when Mrs. Hancock cut the ribbon at its entrance, after which a procession of those attending admired the displays from Lon's collection.

Director Loren McKinley and Mrs. Barbara Curtis of the OMSI staff, aided by others, served refreshments following the dedication and viewing.

The Hancock Memorial Room

In creating the Hancock Memorial Room the Oregon Museum of Science and Industry tried to duplicate as nearly as possible the arrangement and the spirit that Lon Hancock had built into his own private museum in his home. Visitors to the Memorial Room will find each of the geologic periods arrayed on shelves in their proper order, starting with the earliest of known fossils and ending with artifacts left by primitive man in geology's yesterday. Hanging from the ceiling is a large thin-walled geode which serves as a lamp shade -- just as it did in Lon's room which played host to thousands of school children.

In the center of the room is a glass case containing the large skull of his most famous find, the mio-mastodon. It was this skull that attracted world-wide attention and also earned for him the title of "Fossil elephant hunter". Lon was always careful to point out that the word "fossil" applied to what he was hunting for, not necessarily his own condition. A diorama in one corner of the room shows Camp Hancock, one of Lon's most cherished projects. A large aerial photograph shows the camp and the famous fossil nut beds on the hills beyond the camp. A color photo of Lon, a fossil in each hand, walking up from the mammal bed excavation, recalls the man that so many knew and loved.

R. S. M.

Hancock Collection Moves To OMSI

A "museum within a museum" has been created at the Oregon Museum of Science and Industry. The Hancock collection which had been seen by thousands of people while it was in Lon's home has been transferred to OMSI where a special room has been set aside for it. Funds contributed by his many friends, including boys and girls who had attended Camp Hancock, made possible the furnishing of the Hancock Room. The cases were built by OMSI staff members who used red birch for most of the construction. All of the plate glass for the sliding doors was donated by a father of a boy who had spent a summer at Camp Hancock.

The Hancock collection is unique in several ways. First, it is the best collection of Eocene age mammals ever found in Oregon; second, it is a collection made almost entirely by the efforts of one man; third, the collection represents the single most important discovery of vertebrate mid-Cenozoic fossils in the western United States in nearly half a century. Lon Hancock discovered the first positive evidence that Eocene mammals roamed throughout central Oregon. In that sparkling moment he populated the hills and valleys of the John Day country with a richly assorted multitude of animals both large and small. A skilled observer, but an unschooled paleontologist, Lon continued his discoveries of ancient animals until shortly before his death just a year ago.

As news of his discoveries spread throughout the scientific world Lon began to

Hancock Collection Moves to OMSI - cont'd

receive inquiries and visits from paleontologists who had searched in vain for what he had found in the Clarno Hills. His most famous discovery, and the one that probably gave him the most satisfaction and pleasure, was the "missing link" in the long line of elephants. George Gaylord Simpson, of the American Museum of Natural History, who happened to be in Portland for a Condon Lecture, was the first to identify Lon's find as an important contribution to paleontology. It is interesting that Dr. Thomas Condon, years after his death, was indirectly responsible in guiding Dr. Simpson to Lon Hancock and thus firmly establishing him also as one of the major contributors to Oregon geology.

In setting up the Hancock Memorial Room, the Hancock Memorial Room committee agreed that space would be provided not only for Lon's collection but for fossil material of special scientific importance which might be subsequently found at the sites which he originally discovered. Not all of the material in the Hancock collection will be on display in the cases. Some specimens will be made available to research workers for study and comparison and will be kept in storage trays until needed. The committee felt that Lon would have wanted it this way, since he was even more interested in making his discoveries available to others than he was in merely collecting them. At OMSI, school children will be able to see Lon's collection almost exactly as he had it displayed in a room he had set aside in his own home. Untold hundreds of youngsters visited Lon's home to see his collection and to hear his talk about rocks and fossils.

The Hancock Room at OMSI will accomplish three major objectives: One, the preservation intact of Lon's collection two, it will make available for study fossil material unavailable anywhere else; three, the Room will serve as a continuing inspiration to the future scientists who can see the valuable contribution made by a man who worked with the simplest of tools. Lon roamed the John Day countryside listening to what it had to say and watching for what it had to show him. He observed in the finest scientific manner, he collected with care and he has made the world a more interesting place to live in.

Ralph Mason

IN MEMORY OF LON

By Mrs. L. P. Hewitt*

The dedication of the "Lon" Hancock Memorial Room at the Oregon Museum of Science and Industry is another step forward in spreading the influence of Lon's life-work for the Oregon Country. It makes available to science students his valuable collection of fossils. It demonstrates what an individual can accomplish by his native curiosity and persistence even with little opportunity for academic education. Lon did not under-estimate the need of schooling, however, for as soon as he was married and companioned by an understanding wife and where night classes were available he pursued his education in English grammar, geography, geology, mineralogy, paleontology and anthropology in evening Extension classes provided by the Oregon System of Higher Education. Seven years of night classes and intensive study Lon attended after walking miles during the day delivering mail.

Just as Thomas Condon, whose book on Oregon geology, "The Two Islands," became his cherished companion Lon himself became Oregon's amateur paleontologist. Condon did not accept the theory held by earlier scientists that the Oregon territory must have been separated from the prolific fossil beds in the Bad Lands east of the Cascade Mountains by water or some other obstruction but believed that mammal remains of the Miocene Age might yet be found in Oregon deposits.

It must have given Lon Hancock great satisfaction that it was he who discovered the fossil jaws of the four-tusked elephant ancestor, of which George Gaylord Simpson of the National Museum of Natural History wrote after seeing and studying Lon's specimen in 1953. "It seems certainly to belong to the genus Miomastodon, and quite possibly to the species Miomastodon merriami, the elephant ancestor that migrated from Asia during the abundant animal life of from ten to twenty million years ago. It is a little known link in the evolution of elephants and is much the best specimen of that genus or species that has yet been found. It is therefore of outstanding scientific importance. We have known for some time that the mastodon was common in the Pleistocene but its earliest ancestors were poorly known. The skull suggests that their age is probably late Miocene although it is just possible that

In Memory of Lon - cont'd

they may be a little earlier or a little bit later." The announcement was carried by the New York Times and copied all over the country.

This was not Lon's first discovery of Eocene mammal remains in Eastern Oregon. There was the fossilized tooth of a primitive running rhinoceros called Hyrachus which he had dug out of the Clarno Nut Beds snuggled close beside an Eocene walnut. It was identified by Dr. Ralph Cheney and Dr. Earl Packard of the University of California at Berkeley.

It had been a newspaper story of the finding of a petrified walnut by an oil well employee while sinking a test well in Eastern Oregon that had first brought Lon and his wife, Berrie, to the John Day valley. Much searching by Lon resulted in his finding the fossil walnuts that had lived in Oregon fifty or sixty million years ago when the climate was tropical. These Clarno Nut Beds have brought men from many universities and continue to bring young people and scholars for the thrill of collecting fossil nuts from Eocene times.

In 1952 in a packet of fossil nuts which Lon sent to Richard A. Scott, a paleontology student at the University of Michigan, then in England comparing fossil nuts from America with those of England he found in Lon's packet a nut new to American science whose modern relatives live only in the Malay Peninsula on large climbing vines growing on jungle trees. Mr. Scott wrote Lon that they had not been found either living or fossil before in America but that the genus grew in England during Eocene times. At the University of Michigan the new nut was named Paleophytocrene hancockii.

In 1954 the Oregon Academy of Science gave our Alonzo Hancock a citation for (1) his recovery of the fossilized lower Jaw with teeth of the small swift-running rhinoceros, (2) the finding of the only known complete fossilized head of a Miomastodon and (3) the discovery of the fossil nut Paleophytocrene hancockii.

The same year came Lon's discovery of what came to be known as the New Fossil Beds from which he and his assistants obtained many bone fragments and teeth of the Amynodon, a large aquatic rhynoceros, the Brontothere and the Uintathere, identified by Dr. Shotwell of the University of Oregon; the Chaliothere (Moropus), Tapir and a huge carnivore, possibly a Hyaenodon, all new to the Oregon Country; also the Harychus, the tooth of which Lon had found earlier in the Nut Beds. By the end of the season there had been recovered the femur and claw of the Pantadont, a huge prehistoric tapir-like animal, a Creodont, Eppihippus, a horse-like creature thought to be a little later than Eohippus. These finds made the new mammal beds of prime importance to paleontologists. A look about this Memorial Room gives evidence of Lon's numerous discoveries.

But of all Lon's achievements nothing gave him greater satisfaction than the establishment of what came to be known as Camp Hancock. Always he remembered how much he had needed information and leadership in his avid interest in nature and its outcroppings during his formative years. He had yearned to help the youth gain their training out in the field through their own investigations. When the Museum of Science and Industry was seeking financial backing Lon had interested the director in the possibility of a science camp out in the John Day region and had taken him to see a location which Lon and Berrie had cleared of rocks and other obstructions to make it useable, out in the scattered junipers in a hollow of the hills about three miles north of the little town of Clarno. It lies about half way between Antelope and Fossil in Wheeler County.

The first two-week camp session was held in 1951 with fourteen boys in attendance with ten volunteer instructors and staff members. The purpose of the camp was advertised as "educational, recreational and character building". The fee was fifty dollars and the equipment simple. From the first Lon Hancock was the dominant spirit and acted as both geologist and paleontologist. Berrie was dietitian and head of the dining room with volunteer assistants. Stanley Shirk, the director of the Museum of Science and Industry was also camp director, with volunteer professors in geology, ornithology, botany, nature study. The camp was a huge success and, as was anticipated, proved to be excellent advertisement for the Museum. Year by year the number of applicants grew, camp equipment was donated by gifts from the Agate and Mineral Society, the Geological Society of the Oregon Country, churches, parents. Very soon the number of applicants required a second two-week session and then a third and the attendants were limited to forty a session besides the volunteer staff of instructors, teachers and doctors.

Always Berrie Hancock, Lon's devoted wife and companion has been dietitian and head of the volunteer dining room force. She has continued to serve the camp since Lon's

In Memory of Lon - cont'd

death in the summer of 1961. Also Berrie has carried out Lon's wishes and has given his valuable collection to the Museum of Science and Industry instead of allowing eastern museums to acquire his most valuable specimens.

Contributions have poured in from the friends and admirers in Oregon and many other states to furnish this memorial room with its cases for Lon's collection. And Alonzo Wesley Hancock lives on, in his contributions to the geology and paleontology of the Northwest, in Camp Hancock in the Clarno with its influence on teen-age boys and girls, in the hearts of the thousands who have come under the spell of his personality.

* It has been announced that the book by Mrs. Hewitt on Lon Hancock will be published in the near future.

THE NEW MAMMAL BEDS

An excerpt from an article from Lon's files as furnished by his wife tells comments on the mammal beds.

Among the events which made headlines in the field of Paleontology during the year of 1954 was the uncovering of a quantity of animal bones at a location which has become known as the New Mammal Beds. The word "New" was designated because of the fact that other mammal exposures had been found earlier in nearby vicinities, but much higher in the geologic column.

The new find is located at the base of Iron Mountain near the confluence of Pine Creek and the John Day River.

To be more precise, in Section 28, Township 7, Wheeler County, Oregon. The strike of the beds seem to be northeast by southwest and they dip fifteen degrees to the west.

The formation is composed of rhyolitic tuff mixed with sand and gravel, with lenses of well cemented conglomerate, indicating water deposition. While some of the bone fragments are well rounded from travel, others are sharp and rough showing no signs of transportation.

Possibly a statement at this time would not be amiss, explaining why the writer considers this to be an important find, and at the same time examining the order of events which led to the ultimate discovery.

For many years the adjacent Clarno hills have been yielding a remarkable Eocene flora; because of the variety of forms and the beautiful state of preservation, this collecting field has become internationally famous, but the disturbing element throughout the years has been the utter deficiency in evidence of animal life. This fact has been so noticeable that such a prominent scholar as John C. Merriam has been led to comment that, to the best of his knowledge, not a trace of vertebrate life has ever been found in Oregon's Eocene sediments. This thought was repeated by Dr. Chester Stock, Dr. Edwin T. Hodge, and others, a problem difficult to comprehend because of the fact that fossil beds of this particular age with similar flora in other sections of the world display numerous evidences of animal life.

And in Lon's own words the details of the search are reviewed as follows --

"Now in regard to my own efforts, for more than twenty years I have consistently combed these hills and at times accompanied by such scientists as Dr. Ralph Chaney of the University of California, Dr. Chester Arnold of the University of Michigan, and Dr. Richard Scott of Harvard, always with the constant hope that a fossil bone of some animal would show up, and so late in September 1940 my dreams finally came true, squeezed tightly against an agatized walnut, a small but perfect tooth came into view. This specimen was quickly dispatched to the University of Oregon for identification, from there to the University of California, and they in turn forwarded it on to the Museum of Natural History in New York. Where it was identified as Hyrachus, a primitive Upland Rhinoceros, the first animal to be found in the Eocene of Oregon.

"During the next few years following, several unidentifiable bone fragments were found. In June 1952 while prying a large boulder loose from a cliff I found not only the jaw but several complete teeth, which Dr. Arnold Shotwell of the University of Oregon announced to be from an animal known as Brontothere or (Thunderbeast).

"Late in the fall of 1953 while searching for crystals about a mile north of the fossil nut beds, Albert McGuiness picked up some flat stones lying loose in clay as float. These he brought to my home in Portland and asked what kind of rocks they were. After examining

In Memory of Lon - cont'd

them closely I recognized them as bones. Since this was so late in the season nothing was done about them at that time but in April of 1954 Mr. McGuiness directed me to the area in which the fragments were found. After some searching more pieces of float turned up. During April and May I made five trips to this locality, one with Murray Miller, one with Rudolph Erickson and Leo Simon. After digging numerous test holes and dating the discovery some bones were finally found in place, officially determining this to be a real fossil deposit. From these new diggings I recovered possibly two hundred fragments and several teeth, among them the Amynodon, the Brontothere, and Uintathere and were identified by Dr. Shotwell.

"During the months of June and July 1954, students and staff members from the camp of the Oregon Museum of Science and Industry were invited to participate in the excavation, until the end of their session in July. The work was carried on intermittently thru the summer and fall. Lloyd Ruff advised in field Geology. The total number of pieces recovered during the season was estimated to be more than three thousand bone fragments and teeth. The animals so far identified are the Amynodon, a huge aquatic rhinoceros, Hyrachus, a small running rhinoceros, a Chaliothere (Moropus), Tapir, a Uintathere, and a huge carnivore, possibly a Hyaenodon, all new to Oregon country."

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MAUPIN SADDLE

By A. W. Hancock

A few miles east of Antelope on the way to Fossil the road passes through a wind gap at the summit of the ridge known as Maupin Saddle. The view which suddenly looms before the motorist is not only breath-taking as a scenic wonder, but is just as remarkable in other respects, especially if you are interested in geology.

The great Clarno basin lies spread before as an enormous chalice, through which the John Day river like a silver thread winds first to one side, then the other, finally disappearing through the hills to the north.

From this point one could spend hours, not only drinking in the natural beauty, but also trying to decipher just what has happened--it looks as if nature had thrown a tantrum while attempting to build the Blue Mountains and had broken and twisted and squeezed the whole mess together, with many of the parts failing to settle back into their proper groove. Into this mosaic have been woven blocks of white volcanic ash block basalts grey matamorphics, multicolored rhyolites, limestones and granites.

Tho these hills have already yielded mineral wealth computed in millions, many fossils scientifically priceless, it is still a collector's paradise practically unexplored. Acres of her hillsides, miles of her canyons have never felt the impact of the prospector's hammer. Thru this geological window the student can peer deeply thru the veil of past time, pleistocene formations from which fossil elephants have been removed. Landmarks definitely pliocene, immense outcrops of miocene oligocene sediments dot the landscape and these underlain with eocene tuffs.

Westward toward the Ochocos are rocks which were deposited in a cretaceous sea, farther to the east the hills are supposedly jurassic and triassic, while due north the Wallowas contain marble, deposited as lime in a permian sea at the time the dinosaurs were beginning their conquest of the earth, and due east the formation is carboniferous.

At the Battle of the Pyramids, Napoleon wishing to impress his troops said, "Soldiers, fifty centuries are looking down upon you." We can go the general one better by saying to the traveler in Maupin Saddle, not merely fifty centuries but "three million centuries are looking down upon you."

A. W. H.

* * * * *

One of Lon's favorite sayings was that "It was better to have boys breaking rocks to see what was in them than to have boys breaking locks to see was behind them."

GEOLOGICAL NEWS LETTER

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Society Activities
(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR JULY 1962

Note: All scheduled events meet on Pacific Daylight Saving Time.

Every Thursday — LUNCHEON - YMCA, 831 S.W. 6th Avenue (Use Taylor Street entrance)
12:00 Noon - Eat and meet in the Mountain Room adjacent to the YMCA cafeteria. An opportunity to examine and discuss publications and specimens, and to hear occasional informal talks. For further information call Mr. Leo Simon, Luncheon Chairman, at BE 6-0549 (residence) or CA 3-0300 (business.)

Friday July 13 — LECTURE - Central Library (Room A), 801 S.W. 10th Avenue
7:30 p.m. - Miss Hazel Newhouse, teacher of geography in the Portland Public School System and instructor with the Portland Summer Session will lecture on "Iceland, a Geographic and Brief Geologic Panorama". An interesting topic and in season for that sweltering feeling.

Sunday July 15 — FIELD TRIP - Upper Clackamas River Area.
9:00 a.m. - Meet at Estacada, Oregon on the city end of the Clackamas River bridge. Dr. Paul W. Howell, a fellow GSOC'er, will be trip leader to this interesting area. Field trippers should arrive equipped with G-picks, cameras, lunches, etc. Car drivers are requested to display GSOC bumper cards. Additional information may be obtained by calling Mr. Chas. Truman Lafayette Murphy, Field Trips chairman, at CA 7-3253.

Tuesday July 17 — LIBRARY NIGHT - Cancelled during the summer months.

Friday July 27 — LECTURE - Central Library (Room A), 801 S.W. 10th Avenue
7:30 p.m. - "Geology in Vicinity of Junction of Palouse and Snake River areas of Washington and Oregon", by Richard Clem, Associate Professor of Geology at Whitman College, Walla Walla, Washington. Mr. Clem is also teaching at the Portland Summer Session.

ADVANCE CALENDAR OF EVENTS FOR AUGUST 1962

A preview of coming events for next month

LECTURE - No Friday evening lectures are scheduled for August.

Every Thursday — LUNCHEON - YMCA, 831 S.W. 6th Avenue (Use Taylor Street entrance)
12:00 Noon - Weekly luncheons as usual in the Mountain Room

Friday August 10 — ANNUAL PICNIC - In the Cinder Cone at Mt. Tabor Park
Early Evening - Details to be printed in the August issue of the Newsletter.

Saturday and Sunday August 18-19 — FIELD TRIP - White Pass, Washington
Overnight camping trip to a scenic and geologically interesting area with Dr. Paul W. Howell as trip leader.

Wednesday August 29 — SPECIAL - Lloyd Center Auditorium
8:00 p.m. - Talk illustrated with slides will be given by Mr. Paul Desautels, Associate Curator of Mineralogy and Petrology at the Smithsonian Institute.

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LECTURE ON THE TUALATIN VALLEY MASTODON FIND

At the Friday, June 8th, Central Library meeting Ronald Sund and John George -- who generously gave us time in the middle of taking examinations for their B. S. degrees at Portland State -- told the Society of exhuming a local mastodon (Mammut americanum) in the Tualatin Valley.

Speaking together in a simple, refreshing way, they gave a brief but concise account of the discovery of the find some years ago, and of their subsequent adventures in recently recovering most of the skeleton, for which they were given college credit.

This old inhabitant, not yet carbon dated, is estimated to have resided here five to ten thousand years ago, and spectacularly itself attended the meeting in part -- one vertebra, the first and second molars, and one femur and tibia -- all in a perfect state of preservation.

Colored slides of scenes at the site augmented the evening's presentation, for which Messrs. Sund and George are credited with one of the most unique and fascinating programs yet. Among other interesting things, Ronald Sund is an oil driller, and John George is a seal hunter.

W. H. F.

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LECTURE ON THE ROCKY MOUNTAINS

Mr. Richard Clem. associate professor of geology at Whitman College, Walla Walla, addressed the Society on Friday, June twenty-second. His illustrated lecture on the geology of the Rocky Mountains was concerned chiefly with the northern division from Yellowstone National Park through Montana to Glacier National Park.

As a member of Indiana University's field survey based in the Three Forks area in the summer of 1960, Mr. Clem explored and photographed unusual evidences of Rocky Mountain orogeny. These included igneous invasions into limestone beds, Eocene gravels on top of Sphynx Mountain, a diorite dike at the tip of Mt. Moran in the Tetons, and the Lewis overthrust of Glacier Park. Here also was noted the dark sill of basic rock that cuts horizontally through the shales and argillites of this section of the Belt series.

Trilobites were discovered in the shales of Cambrian age and the primitive, jawless fish was seen in Devonian and Silurian rocks of the Beartooth Range.

River terraces, alluvial fans, and cirques showed up prominently. Scenes of the 1925 landslide of the Gros Ventre valley of Wyoming and the 1959 earthquake and slide of the Gallatin were projected. The speaker gave it as his opinion that the Lewis and Clark cavern and others of like origin were dissolved out of the limestone before the mountain was uplifted.

C. T. L. M.

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JUNIOR GSOC FIELD TRIP

On Saturday, June 23rd, a dozen hearty junior and adult GSOC'ers braved the jungle-like underbrush to make the trek up Buck Creek, a tributary to the Sandy River, to visit a fossil locality described by Cheney.

The trip, led by Dr. John Hammond of the Society, was rugged for the group of thistle thrashers who returned home with an abundance of fossil leaf imprints as well as scratches and insect bites, plus rips and tears in their clothing.

Ed.

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NEWS OF MEMBERS

At a recent meeting, Dr. John Eliot Allen was presented with a special "passengar call" for those who are going north on his bus trip to Canada to view the geology enroute.

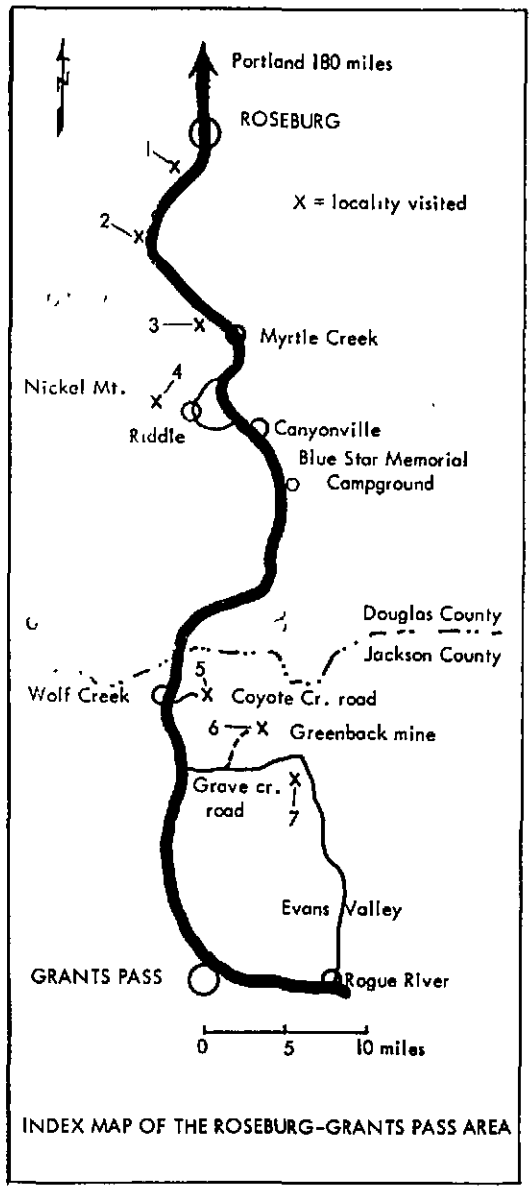
Kenneth Schramm and Hilbert Hanson were GSOC members laid up with illness during June. By the time this reaches News Letter readers they should be getting ready to attend the next GSOC meeting fit as a couple of bass fiddles.

FIELD TRIP TO THE ROSEBURG - GRANTS PASS AREA

By Margaret L. Steere*

The field trip June 9 and 10 in the Roseburg-Grants Pass area was a most enjoyable and informative experience for the 29 Gesockers who participated. Trip chairman Truman Murphy enlisted the aid of Len Ramp and Norman Peterson, geologists at the Grants Pass field office of the Oregon Department of Geology and Mineral Industries, who for two days showed us geologic features and mining operations that had our eyes bugging out. The following account of the trip made full use of the outline prepared by the two leaders.

The group met at noon on Saturday at the Douglas County Fair Grounds just south of Roseburg. After picnic lunch at the nearby South Umpqua Park, the caravan got underway, moving south on U.S. 99. Coming from Portland, Gesockers had been going backward in time, passing over Recent and Pleistocene sediments in the Willamette Valley, Miocene basalt in the Salem Hills, Oligocene marine beds in the Eugene area, and into Eocene rocks near Cottage Grove. Very soon we would be leaving the Cenozoic and move back into the Mesozoic era - the age of dinosaurs.



INDEX MAP OF THE ROSEBURG-GRANTS PASS AREA

Stop 1. This was our last view of the Eocene. A highway cut a short distance south of the Fair Grounds exposes submarine pillow lavas containing thin lenses of marine shales near the base of the Umpqua Formation. A few miles south of Roseburg we crossed the contact (hidden) between the Cenozoic and Mesozoic rocks. The Mesozoic rocks, which includes Triassic, Jurassic, and Cretaceous formations, underlie most of southwestern Oregon and represent the eroded stumps of ancient mountain ranges. The strata are so highly folded and faulted that one passes and repasses the same formations which crop out in northeast-trending belts.

Stop 2. In a field beside the road a metamorphic rock called glaucophane schist occurs as a small mass within the Myrtle Formation of Diller. The Myrtle Formation has now been split into Riddle and Days Creek Formations of Upper Jurassic and Lower Cretaceous age, respectively, on the basis of the species of clam Buchia found in it. Near the outcrop of schist, colorful chert was eagerly gathered until the owner of the field rushed in and drove us off. This points to the fact that one should obtain permission to collect rocks from private property.

Continuing south we passed over a northeast-trending belt of still older Jurassic rocks known as the Dothan Formation. In this area the sheared incompetent Dothan mudstones result in small landslides in highway cuts.

Stop 3. Just north of the town of Myrtle Creek, a large highway cut exposes bluish serpentine intruded by dacite dikes. At the southern end of the exposure, black pebble conglomerate and sheared mudstones of the Riddle Formation are in fault contact with the serpentine. Shearing in rocks is defined as deformation by pressure which causes small lateral movements along innumerable parallel planes. In spite of the extreme age of these old marine beds and the shearing of the rock, we found a number of well preserved casts of Buchia piochii, index fossil for the uppermost Jurassic.

Stop 4. At the town of Riddle, which lies 4 miles west of U.S. 99, we recharged our batteries with cokes and coffee in preparation for the trip up Nickel Mountain.

The tour to the top of Nickel Mountain to see the only nickel mine in the United States

* Geologist, State of Oregon, Department of Geology and Mineral Industries.

Field trip - cont'd

was an unforgetable experience. The view out over the Klamath Mountains, as we climbed upward, was unexpectedly beautiful, and from the top (elevation 3533 feet above sea level) one could really see what Diller meant by the old Klamath peneplane. for the remains of this almost level surface were plainly spread out before our eyes.

The mountain is owned by the Hanna Nickel Company, which removes nickel ore from open pits at the top of the mountain at the rate of a million tons per year. The ore is crushed, sorted, and loaded on a tramway which carries it to the Hanna Company mill at the foot of Nickel Mountain. Two Hanna geologists explained the geology and mining methods. The summit of the mountain is composed of peridotite, a basic igneous rock composed of olivine and enstatite carrying minute amounts of nickel. Prolonged weathering of this rock causes it to break down into laterite in which the nickel, dissolved from its parent mineral, is redeposited along cracks and seams as garnierite, a bright green mineral. Associated with the garnierite are silica and limonite.

The ore averages about 1 percent nickel but is upgraded to about 1.5 percent by sorting before it is trammed to the mill. The Hanna Company uses an electrometallurgical process in which the ore is added to ferrosilicon to form ferronickel containing 55 percent nickel and 45 percent iron. The ferronickel is shaped into ingots

The amount of garnierite removed by the Gesockers appeared to be enough to considerably reduce the elevation of Nickel Mountain; however, it was said that the ore extended to a depth of 150 feet and that there was enough to keep the operation going for at least 20 years.

This ended the first day of the field trip, and the party deployed to motels at Canyonville and the Blue Star Memorial Camp a few miles to the south. In the evening most of the Gesockers gathered around a cozy fire at the campgrounds and exercised the vocal chords.

Sunday morning the group and leaders met at the town of Wolf Creek. In this area the bedrock formations were chiefly metasedim ntary and meta-volcanic rocks of the Rogue and Galice Formations of Jurassic age. The prefix "meta" indicates that the rocks have been metamorphosed. The meta-volcanic rocks, frequently called "greenstones" were originally lava flows of andesitic composition. The metasediments are mainly fractured slate with minor amounts of sandstone and conglomerate.

Stop 5. The caravan turned off U. S. 99 and went up Coyote Creek road to the old mining town of Golden, whose picturesque wooden buildings stand empty but well preserved. In the bed of the creek is the Joe-Joe placer mine, which has operated seasonally since the 1850's. Gold-bearing gravels border both sides of Coyote Creek as high as 100 feet above the present stream level. The bedrock is Galice slate, the layers of which stand on end forming natural riffles for trapping the gold particles. Len Ramp and Norm Peterson had obtained special permission from the owners to see the placer and pan for gold. Two gold pans were produced from the group, and, much to our amazement, expert panners Norm and Len actually got gold.

The placer is operated during the winter and spring months when there is sufficient water pressure for hydraulic mining. The water is piped from upstream to a high head above the mining operation, and the gravel is broken from the bank under the force of the water from nozzles. It is washed through sluice boxes and the gold catches behind the riffles. At the end of the mining season the sluice box is cleaned out. It was said that anyone bending over to explore the box before the owners had cleaned it out would no doubt receive some buckshot in the posterior.

Stop 6. To reach our next stop, which was the famous Greenback mine, we returned to U. S. 99, drove south to Sunny Valley, east up Grave Creek. and then north on King Mountain Truck Trail to the mine. The Greenback mine is one of the largest gold lode mines in southwestern Oregon. It employed more than 100 miners in the late 1800's and early 1900's. Production is reported to be 3-1 2 million dollars.

Mr. and Mrs. "Ben" Turpin. caretakers at the mine, led the group into one of the mine tunnels where we groped our way in the dim light of the miner's lamp to see the vein from which some of the gold was dug. Below the tunnel was the remains of the former mill which burned in 1939, and a small new mill where the ore is crushed and amalgamated. Some of us made a short side trip to see an old arrastr wheel which crushed ore by dragging rocks over it.

Picnic lunch was partaken in the Turpins' side yard under the warm sun in the cool mountain breeze. This was the season for numerous wild flowers, and botanists in the group added

Field Trip - cont'd

many varieties to their collections.

Stop 7. After lunch the caravan returned to Grave Creek road, turned east and continued up Grave Creek, passing over greenstones of the upper Triassic Applegate Formation. The route then swung south on Pleasant Creek road. A short detour was made on a logging road to a high, barren divide between Grave Creek and Pleasant Creek. Here were exposed some Late Cretaceous sandstones called the Hornbrook Formation, representing a small remnant of a much more extensive deposit in the Late Cretaceous sea. Fossils were abundant, and we were able to collect large slabs of sandstone containing well-preserved external molds of Trigonia, a weird-shaped clam that was characteristic of Late Cretaceous.

This had to be our last geologic stop as the day was fast running out. The caravan continued down Pleasant Creek, through Evans Valley, and stopped at the small town of Rogue River where a small eating establishment operated by one person suddenly throbbed with business. Thus ended the second wonderful day of viewing, learning, and collecting. It might be mentioned that no dinosaurs were encountered, but there were some rather lively ticks in the area of Mesozoic rocks. We said goodby to our excellent trip leaders and fellow Gesockers. Some were fortunate enough to continue their trip to other areas, but most of us were forced to get aboard the new freeway and speed northward up the geologic time scale to the present.

M. L. S.

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ANNUAL BANQUET TABLE DECORATIONS

If you were at our banquet in March -- and we hope you were -- you might be interested to know -- and we're sure you will -- that our little table-decoration satelites went into orbit again on the evening of May 12th, when nineteen of them graced the banquet tables of the Convention of the Oregon State Federation of Federal Employees in the Empire Room of the Multnomah Hotel.

They induced much admiration and interested comment, and when the credits were given their short but rapidly growing history was related in detail in which Dr. Sam Diack, OMSI and GSOC all received warmly complimentary mention. There is never any telling in what surprising places the far-flung influence of GSOC may be felt.

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NAMEPLATES

New lapel "nameplates" have been purchased by order of the officers and board of directors of the Society. They will be made available to members for a nominal sum. They are to be worn at meetings and on field trips to help visitors and members identify each other.

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DUES DUE (or PAST DUE)

GSOC Treasurer, Miss Hilda Freed urges those who are delinquent with dues to hasten immediately in bringing their accounts up to date. Act now so that your name can be included in the official roster to be published in the August issue of the Newsletter.

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BRING YOUR ROSTER UP TO DATE!

New Members:

Mr. Harold L. Deyoe, 4348 N.E. 78th Avenue, Portland 18, Ore. Tel: AT 7-9017
Miss Alice Johnston, 1609 S.W. Park, Portland 1, Oregon
Mrs. Lyla L. Elliott, 1530 N. 99th W., McMinnville, Oregon

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STONE KNAPPING

By Emory Strong

The oldest industry in the world is the "knapping" of stone. It started perhaps 1.5 million years ago when some prehistoric Edison discovered that a useful tool could be fashioned by striking flakes from a pebble, leaving a sharp edge. The working of stone into useful form by knapping continues to the present day.

For hundreds of thousands of years the aborigines searched for and mined flint nodules to work into arrow points, spear heads, axes, and knives. Primitive people still chip out their weapons, but long after the invention of writing and printing, "civilized" men engaged in the primitive art of flint knapping.

The industry centered in Great Britain, partly due to the enterprise of that nation but mostly because of the supply of superior flint. mined from the Cretaceous chalk deposits. With the invention of gun powder and the flintlock rifle, the Britons reopened the prehistoric mines and the making of gun flints became a flourishing industry. There were large workings in France and Germany, also. One area near Brandon, England. the Lingheath Common, had been mined for over 2000 years but Grimes Graves, nearby, were even more ancient.

The method of mining the flint nodules was to excavate a pit about 8' by 4' into the chalk bed, continuing downward in offset steps until a layer containing the best nodules was found. Then the miner burrowed out in the stratum, sending to the surface nodules weighing 20 to 200 pounds. They were stored in sheds or covered with boughs or leaves until used, to prevent a change in color.

The workmen were known as "Crackers" and "Knappers". The nodules were first broken by the cracker with a heavy hammer so as to leave a block with a square face. The cracker then lay the block on his knee, protected with a leather pad, and with a hammer struck the piece, judging by the ring the character of the stone. If it was suitable, he struck from the surface a series of flakes by strong, even, accurate blows. The greatest skill was required to strike a flake of the proper size, and long enough to make four or five finished flints. A good cracker could make 5000 or more flakes a day.

The knapper took the flakes from the cracker for finishing into flints. Some crackers, of course, would knap their own flakes. The flake was held upon a leather covered stake and struck with a specially shaped hammer, breaking it into squares of a suitable size, after finishing the edges, to fit into the vice on the gun cock. A good knapper could make over 2000 flints a day. According to Mr. Arthur Woodward, expert on historical archaeology, the flints sold for about one dollar per 1000, and were packed in tubs carrying 5000 to 20,000.

The British and foreign armies used an enormous quantity of flints. The largest order on record is for 11,000,000, purchased by the Turks before the Crimean war. In the late 1700's, workers from the small community of Cerilly in France sold 300 tons of flints to the army. A great many were shipped to the United States for use by the traders, trappers, and Indians. On January 7, 1814, a North West Company express was attacked at The Cascades. the Indians capturing 34 packs of goods, among which were 3,536 gun flints. Many were found while excavating the Fort Vancouver site, and more are continually being found in the old Indian village sites along the Columbia. One old invoice shows that flints were worth 50 cents a dozen in trade.

Flint knapping can no longer be considered a flourishing industry in England, but a few knappers are still at work. Africa uses some of the product but most go to the United States for the use of devotees of the flint lock rifle.

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ANNUAL AUDIT

Compliments and appreciation for the work in the annual audit of the Geological Society finances by Mr. Rudolph Erickson of Erickson, Eiseman & Co., Certified Public Accountants, First National Bank Bldg., has been expressed by officers and board of the Society. It is echoed by everyone who knows of this annual chore which is done so excellently and without cost to the Society by Mr. Erickson.

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THE EXTRA DIVIDEND
By William Freer

One of the advantages of belonging to an organization like GSOC--if there is any other organization like GSOC -- is that every so often, out of a clear blue sky, we get an extra dividend.

The most recent extra dividend came on May 20th, in the form of an excursion up the Deschutes River Canyon to Madras, sponsored by that new but very enterprising and extremely interesting concern, The Sunset Tours Department of The Vernonia, South Park and Sunset Steam Railroad.

By eight o'clock on that Sunday morning over a hundred GSOCers and their guests, bright-eyed and bushy-tailed, were ensconced in two private coaches reserved for their use, clutching in their hot little hands a brochure titled TRIP LOG. On inspection this turned out to be an opus compiled by our Dr. Paul Howell, with the inclusion of the illuminating historical article, "Footnote on The Oregon Trunk", * appearing in the May issue of the Newsletter. On further inspection the Trip Log became so fascinating that we were reluctant to go to the diner -- two baggage cars -- for our breakfast -- Continental -- for fear of what we might miss while we were gone. Beautifully prepared, complete in every detail and reading like the Saturday Evening Post, it located, explained, and commented on all prime geologic attractions in the Columbia River Gorge -- with which we thought we were familiar -- and the Deschutes River Canyon -- with which we knew for sure we weren't.

Two hundred copies of this now famous log were taken along, and by the time we had crossed the Columbia the supply was melting like a snowball in you know where. Before we got to Camas it was sold out, and before we got home again another hundred copies had been ordered to be sent by mail. Sunset Tours requested an additional three hundred copies for their repeat trip the following Sunday, necessitating a second edition of four hundred copies. The log, covering twelve full pages, is too extensive for the Newsletter, but if you want one -- and are lucky -- you might still get one from Dr. Howell or Emily Moltzner, who mimeographed it, for twenty-five cents, a minimum charge.

Like the log, a detailed description of the trip is too much for the Newsletter; there is only room for a few of the highlights. Going up the Deschutes we saw tier upon tier of Columbia River Basalt; great escarpments with crenulated battlements; spectacular palisades of columnar basalt; flows of brickbat basalt; pillow lava in the cuts; Cedar Island, on which is a Great Blue Heron rookery; a great formation of tiered basalt that looked like an old cathedral; at Horseshoe Bend an engineers delight in which the track crosses the river on a bridge, goes directly through a tunnel, and immediately onto another bridge back across the river again; Indians fishing from their platform perches with dip nets; a narrow gut only twenty to thirty feet wide where the river flows through a lava flow of brickbat basalt. On we went, through the Mutton Mountains, through bright-colored Clarno Formations, into John Day Formations, and finally into Madras.

Here we were greeted at the station by the high school band, and whisked by hospitable citizens to the fairgrounds where we were given a ham dinner served by the pretty Jaycee-ettes of Madras, and after that other hospitable citizenry took some of us on tours of the surrounding countryside; to Round Top, Palisades Cove State Park, and the new Round Butte Dam site.

On the trip back we tried to pick up details we had missed going by reading the log backwards.

In the Columbia River Gorge again, with darkness descending, Paul Howell, that amazing virtuoso who can play either in the key of A or the key of C, broke out his guitar and Dr. Arthur Jones lead us in singing De Re Geologica; Daisy, Daisy; Clementine; Auld Lang Syne; Take Back Your Golden Garters, My Legs Are Turning Green, and other old perennials. And after that Drs. Jones and Howell and Truman Murphy did some really excellent harmonizing, best of which concerned some Ninety-nine Bottles Hanging On A Wall.

Home again, the aura of a perfect day was bright. It went to sleep with us; was still lingering in the bedroom when we got up; it followed us to work. It is still lurking in the

The Extra Dividend - cont'd

backs of our minds.

The Society, under its excellent leadership of the last years, has achieved a greater degree of organization, interest, and activity than ever before. And we have only started. Greater objectives loom ahead for us. But we do need more help. Your officers are overworked. and Dr. Howell and Emily Moltzner nearly killed themselves getting out the brochure, an immense amount of work. If you have hidden talents do not hesitate to make them known Contact your officers, your directors, your committeemen. The more you participate the greater your rewards, the more your extra dividends.

And now, one lingering thought -- that will be the caboose of this particular train of thought -- is that when we read this last paragraph we were so impressed with our own advice that we resolved to follow it ourself.

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CAMP HANCOCK FUND

Action was taken by the GSOC officers and board of directors earlier this year in expenditure of $50. toward the Camp Hancock Fund administered by OMSI. To this also was added $29. 87, the balance of the money raised by GSCC through the Camp Hancock tea in 1961.

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ANTI-LITTERBUG CAMPAIGN

HELP -- or in other words, Help Eliminate Litter Please, and don't be a litterbug on your field trips. Also, help clean up after some "knothead" that should know better. This, in brief, is the objective of the American Federation of Mineralogical Societies, of which our fellow GSOCer Al Keen, is National Secretary.

Operation HELP is being joined by the Geological Society, which concurs in a clean out-of-doors, and all members are asked to co-operate on field trips in this effort. Field trip chairmen and leaders will particularly be alert to this objective.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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Dr. John Hammond Dr. Paul Howell

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Publicity	- Mr. William Freer	Pub. Relations	Mr. Clarence Phillips
Museum	- Mr. Ralph Mason	GSOC Library night	- Dr. Francis Gilchrist

Luncheon - Mr. Leo Simon

Society Objectives

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Society Activities
(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S.W. 10th Avenue and Yamhill, 7:30 p.m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR AUGUST 1962

Note: All scheduled times are Pacific Daylight Saving Time

Every Thursday — LUNCHEON - YMCA 831 S.W. 6th Avenue (use Taylor Street entrance) 12:00 noon - Cafeteria Style, Cost $1.00
Eat and meet in private room where rock specimens are examined, publications are discussed, and frequent informal talks given.
Further details from Leo Simon, luncheon chairman - BE 6-0549 (res.) or CA 3-0300 (business)

Friday August 10 — ANNUAL PICNIC At the Crater, Mt. Tabor Park. Bring your pot luck dinner. 6:30 P.M. If the weather is cold, bring hot foods, some salads. If the weather is warm, salads should prevail. Committee will furnish coffee, tea, milk, butter and rolls. Bring table service. Rose Hamilton, PR 5-9762, and Mrs. Simon, BE 6-0549, are co-chairmen. They will be aided by Gwen Helm, Marjorie Fessenden, et al. If you wish to assist, contact Miss Hamilton. Teachers who are assisting on coffee committee are to contact Mrs. Simon. Motion pictures of "Volcanos in Action" will be narrated by Mr. Frank Hjort.

Saturday & Sunday Aug 18-19 — FIELD TRIP to White Pass, Washington. led by Dr. Paul Howell. This will be a camping trip with an overnight stop at one of the forest campgrounds in the vicinity. Trippers should assemble on Saturday, August 18th, not later than 9:30 A.M. Daylight Saving Time, on Washington State Highway No. 5 (NOT 5K) just after leaving U.S. No. 99 at the Marys Corner Junction. Marys Corner is 72 miles north of Vancouver and about 10 miles south of Chehalis. Passing the Mayfield Dam of the Tacoma Power Project, the route ascends the Cowlitz River and approaches but does not enter Mt. Rainier National Park at its southwest corner. Recent road construction exposes striking Cascade orogeny, the Palisades of the Cowlitz and other formations that are new to the Society. Beyond the pass the tour continues down the Tieton River past Rimrock Lake to the Yakima country and returns to Portland via Satus Pass and Goldendale. Bring your noon lunch, mosquito repellent, and display GSOC cards.

Tuesday August 21 — LIBRARY NIGHT - Cancelled during the summer months.

Friday August 24 — LECTURE - No Friday night lectures are scheduled during August.

Wednesday August 29 — SPECIAL EVENT - Mr. Paul Desautels, Associate Curator of Mineralogy and Petrology at the Smithsonian Institute, will speak at the Lloyd Center auditorium at 8:00 P.M. Mr. Desautels will show colored slides from the Smithsonian, with emphasis on the pseudomorphs. Sponsorship in this area is headed by the Oregon Agate and Mineral Society, with co-operation from other groups, including the Geological Society of the Oregon Country. Presentation of your membership card at the door of the auditorium will admit you. Should you accidentally leave your card in your old suit or winter coat, it is planned to have some alert GSOCer come to the door to identify you.

ADVANCE CALENDAR OF EVENTS FOR SEPTEMBER 1962

Every Thursday — LUNCHEON - YMCA, 831 S.W. 6th Avenue (use Taylor Street entrance.) 12:00 Noon - Weekly luncheons as usual in the Mountain Room.

Friday Sept. 10 — LECTURE - To be announced

Sat. & Sun. Sept 15-16 — FIELD TRIP to Newberry Crater and Fort Rock led by Ralph Mason. This will be an overnight trip.

PALOUSE AND SNAKE RIVER GEOLOGY

Members attending the Friday evening July 27th lecture at the Central Library found themselves suddenly detoured to the cool and spacious home of Dr. and Mrs. John Allen at the foot of Mt. Tabor, a most attractive change of scene.

Here, Mr. Richard Clem, Associate Professor of Geology at Whitman College in Walla Walla, who is teaching in the Portland Summer Session, favored us for the second time this summer

Speaking on Snake River Geology from the Lower Monumental Dam site to a point a little above the confluence of the Palouse with the Snake, Mr. Clem showed us, with both vertical and oblique aerial photographs of this great scab-land area the most puzzling phenomena, such as closed depressions with no reason for being; isolated areas and islands of loess to no purpose; giant gravel bars at the mouths of side canyons standing four hundred feet above the waters of the Snake; giant ripple marks on the giant gravel bars, and other mysterious formations -- mysterious, that is, until Mr. Clem explained his theory of the cataclysmic action that made this area what it is now.

It was, quite simply, the Spokane (Missoula) Flood. According to Mr. Clem, the flood came down over this area with such a whoosh that it swept everything in front of it along with it, thus creating the scab-lands and the areas of loess that it went around. In its momentum, it overflowed and crossed the Snake River canyon, and some of its waters found other access to the Columbia. Besides going down and across the Snake, it also went up, and here Mr. Clem cites four gravel bars in the Tucannon -- a small tributary of the Snake at Lyon's Ferry, just below the mouth of the Palouse -- the bedding planes of which decline in the upstream direction.

The terrific torrents built up the giant gravel bars; the hydraulic action on the perimiters made the giant ripple marks. It would have been something to see, but it's perhaps just as well that we didn't --

Mr. Clem also showed us some colored views of Palouse Falls, and a most fascinating man-made erosion called the Burlingame Ditch, or the Little Grand Canyon of Walla Walla. After the lecture, he gave each of us a beautifully made U.S. Army Corps of Engineers photo-map of the Lower Monumental Dam site showing many of the features of his lecture. Should we have further opportunity to hear Mr. Clem, our advice is· Don't miss him!

Addendum

Mr. Clem told us later that a government grant of $30,000 had been given Dr. Richard Daugherty, anthropologist, to make a final and official survey of the Lower Monumental reservoir site before it is flooded by the dam. Provision has been made to carbon date all specimens collected, which is of the greatest interest to geologists in helping to date the Spokane Flood.

The Society wishes to thank Mrs. John Allen for her gracious invitation of Friday evening. It made the event much nicer.

* * * * Editor

CORRECTION

To dispel any further anxiety of members who went on the Deschutes River Canyon excursion, and others who didn't, we hasten to say that we did not sing a song entitled, "Take Back Your Golden Garters, My Legs Are Turning Green", (obviously a song of disenchantment) as erroneously reported in the trip report, "The Extra Dividend". Naturally, no song of this type is to be found in the GSOC hymnal, and when querried, our correspondent, who claims to be overworked and underpaid, explained it this way --

"T't is a perfect example of simple transposition incurred by the confusion of having to write up too many field trips for too many organizations at the same time. Just imagine the consternation of the members of the Portland Metropolitan Area Girl Watchers Association when they read that they had been singing "Land of the Fossil Hunters" on their field trip!"

* * * * * Editor

WHAT'S YOUR NAME?

Plastic card-holders, 10¢ each, with your name hand lettered free. With so many new members, let's identify ourselves and stop apologizing for not knowing each other Give your name to Emily Moltzner, and she will give you your card at the next meeting.

LOG OF THE CLACKAMAS RIVER TRIP

By Don Campbell

Fifty members met at Estacada for the July 15th field trip up the Clackamas, led by Dr. Paul Howell. Here, doubling into fourteen cars, we headed upstream to our first stop, which was an exposure of coarse-grained lava which had cooled in large columns. These columns, fractured horizontally at regularly spaced intervals had eroded around the fractures to such an extent that the formation looked like spectacularly stacked doughnuts.

At this point, Jesse Rentsch inadvertently wrenched the morale of the party when he suddenly appeared with a large specimen of poison oak as an example of what to avoid. Clara Bartholomay, who, as our treasurer, always knows exactly what to do in any evantuality, promptly designated him as a contaminated mobile object, and the intrepid party, sternly repressing the natural inclination to panic resumed the schedule on schedule in the best tradition of the GSOC.

Our second stop revealed overlying Miocene Columbia River Basalt, the successive flows of which were clearly shown. This is a close-grained, hard rock. Next, we came to one of the most interesting features of the trip -- a prominent exposure of the contact zone of a basalt flow overlying the Eagle Creek Formation. The hot lava had been resisted by the mucky, swampy surface of the E. C. F., and in a thin stratum were found coal, carbonized wood, etc. Emily Moltzner secured a fine specimen. Also, there were many specimens of large lava vesicles completely filled with ocherized material. Some opal was found.

At Ripple Creek Junction Dr. Howell pointed out the Bull Creek Formation which is unusual in this region of completely igneous rock. Here a mountain lake had collected the sediments of eons, the gradation of the sediments being eloquently revealed. Laid down originally in horizontal position, it is now tipped at an angle of forty-five degrees on the mountainside. Either a landslide had displaced the original levels, or the pressures in the natural processes of mountain building had positioned the exposure as we see it now.

Luncheon was served from our own baskets at Rainbow Forest Campground beside the tumultuous waters of the fast falling Clackamas.

A platey andesite quarry was the next object of our attention. Here, a flow of coarse-grained, light-colored lava had cooled in vertical plates an inch thick and of rather large other dimensions, so that it is valued for flagstones. The site has been preempted by a private exploiter. Leo Simon may have a specimen of this.

At Timothy Lake, which is the uppermost bulge of the Clackamas and a holding device for river regulation, the party began to divide, some returning to Portland by the Shellrock Creek road, some by way of Mt. Hood, but most of us turned down the Skyline Drive which clings to the spine of the Cascades. It was interesting to note the difference in verdure of the two sides of the Cascades as we crossed back and forth along the crest. The geology of this area is spectacular, but the continuously changing panorama of forest, stream and contour is a worthy field for the most uninstructed traveler.

EPILOG

Nightcapping the above reported field trip, the now relaxed trippers met at the Delano's for a barbecued supper in their lovely back yard . . . hamburgers -- with all the trimmings . . . desserts of pie, ice cream, and a lavishly decorated cake . . .

This delightful surprise party was jointly hosted by Leonard and Emily Delano and Albert and Laurette Kenney in honor of their silver (25th) wedding anniversaries; the Kenney's being on the 17th, and the Delano's on the 18th.

Everyone helped, and everyone had a good time . . . Miss Elizabeth Prideaux had such a good time that she became a new member. After the guests had wished their hosts many more such happy anniversaries . . . and Leo Simon had kissed the brides . . . and Jack Pollard had shot and immediately delivered a picture of them with his Polaroid . . . they gradually drifted away in the glow of warm friendliness . . . and the setting sun . . .

E. M.

* *

ANNOUNCEMENT-

Emory Strong, well known in the field of Indian archeology, has been appointed Program Chairman.

William M. Freer is now serving as Assistant Editor of the Newsletter. The Society and the President appreciate their help.

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

AUGUST 1962

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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SOCIETY OBJECTIVES

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties, Columbia, Washington, Clackamas, Hood River, Skamania and Clark; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

SOCIETY ACTIVITIES

(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR OF EVENTS
SEPTEMBER 1962

Note: All scheduled events will meet on Pacific Daylight Saving Time until the 30th of September.

Every Thursday

LUNCHEON - YMCA, 831 S.W. 6th Avenue (Use Taylor Street entrance.)
12:00 Noon - Eat and meet in the Mountain Room adjacent to the YMCA cafeteria. A good opportunity to examine and discuss publications and specimens, and to hear occasional informal talks. For information call Mr. Leo Simon, Luncheon Chairman, at BE 6-0549 (residence) or CA 3-0300 (business).

Friday Sept. 14

LECTURE - Central Library (Room A), 801 S. W. 10th Avenue
7:30 P.M. - Dr. John Hammond will speak on "Hudsonian and Alpine Plants of the Pacific Northwest". The program will be enhanced with many colored slides taken by Dr. Hammond.

Sat. & Sun. Sept. 15 & 16

FIELD TRIP - Two-day (overnight) trip to Central Oregon
Saturday, 1:00 P. M. - Meet at the town of La Pine (about 25 miles south of Bend, Oregon) on Highway U. S. 97. Allow about five hours driving time from Portland.

Saturday's itinerary will include Hole-in-the-ground, Fort Rock, spectacular spatter cones, pahoehoe flows, aa flows, and lava tunnel.

Saturday night - Weather permitting, GSOC'ers will camp at the East Lake campground in Newberry Crater. (Junction for the road to the Crater is just north of La Pine.) The elevation of the area is over 6,000 feet so field trippers who plan to camp should come prepared with all camping gear plus covering for a cold nose. The traditional campfire with singing and story-telling will be included in the evening's activities. GSOC'ers who do not plan to camp out should make arrangements for motel or other accommodations.

Sunday, 8:00 A.M. - Assemble at East Lake Campground.
Points of interest to be visited will include obsidian and block pumice areas, Lava River State Park, Phil Brogan Trail, and Lava Butte.

Sunday, 1:00 P. M. - Group disbands to take individually selected routes back to Portland.

Tuesday Sept. 18

LIBRARY NIGHT - Peebles Hall, Lewis and Clark College
7:30 P. M. - "Summer Reflections" might well be the theme for this first GSOC Library Browse Night. GSOC'ers are invited to bring a dozen or more of the best slides from the summer field trips for showing during the evening program. Refreshments will be served. For further information call Dr. Francis G. Gilchrist, GSOC Library Night Chairman, at NE 6-5942.

Friday Sept. 28

LECTURE - Central Library (Room A), 801 S. W. 10th Avenue
7:30 P. M. - Mr. Francis Murphy (The Oregonian, "Behind the Mike") will present "In Search of Mayan Ruins". Mr. Murphy's talk, illustrated with colored slides, will review his latest visit to the Mayan Ruins in Mexico.

KUDOS TO TELEPHONE COMMITTEE

Through an oversight, the name of Mrs. Leslie C. Davis, our diligent telephone committee chairman has been recently omitted from the News Letter. At this time we apologize to Mrs. Davis We also, on occasion of calling the membership for the picnic, thank her and her committee, who are as follows: Mrs. Hayward Peirce, co-chairman; Mrs. Oscar Berg, Mrs. Cleveland Johnson, Mrs. Ruth Prentiss, and Mrs. James Stauffer.

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NEWS OF MEMBERS

Silver Anniversaries

Past President Dr. and Mrs. John Hammond celebrated their 25th wedding anniversary on August 25th in a family gathering at the summer home of his brother, Phillip Hammond, on the North Santiam.

President and Mrs Leonard Delano also celebrated their 25th wedding anniversary recently.

Another silver wedding anniversary was celebrated during July by Vice-President and Mrs. Al Kenney.

Schminkys Leave for Europe

The H. Bruce Schminkys and their daughter, Alice, left on August 19 for a European trip, prompted by the 10th international meeting co-sponsored by the American Congress of Surveying and Mapping. Bruce has been chairman of the Oregon Section during the past year. His 40 years of work for the City of Portland, where he was chief surveyor, were marked by a story on August 15th in The Oregonian which noted his retirement.

Bruce, eighth president of the GSOC, served in that position in our society in 1942. We all wish the Schminkys a pleasant trip and will be looking forward to a report on their return.

L H D

GSOC Bumper Stickers

Jack Pollard generously furnished the field trippers on the White Pass, Washington Field trip with those eye-catching blue and white adhesive bumper stickers that were printed in his own shop.

Franklin Browns

During the recent field trip to the White Pass area of Washington, we were pleasantly surprised to find the Franklin Browns, now residing in Seattle, in attendance with the group. Mr. Brown is a past president of the society.

Moltzner Secretarial Service

Mrs. Emily Moltzner (known to some GSOC'ers as Aunt Emily) has recently moved her business from the Board of Trade Building, where she has been for nearly ten years, to Suite 202 of the McKay Building at S. W. Third Avenue at Stark Streets.

Feature Article

The field trip report, appearing on the following pages, was written by Mrs. La Costa Sweet. The report was prepared with such excellence that it was decided to use it as the feature article for the September issue of the Newsletter.

WHITE PASS, WASHINGTON FIELD TRIP
Report by LaCosta Sweet

Thirty-five Gesockers, who, despite black skies and a pessimistic weather report, met Saturday morning, August 17, for a two-day field trip through Central Washington country were rewarded by an outstanding and informative trip. Dr. Paul Howell, trip leader, had been capably assisted in the trip planning and preparations by Truman Murphy and Al Kenney. Part of this outstanding preparation was in the form of a printed trip log which we all found to be an able guide between "bull-horn" lectures at the stops. Not the least value of a log like this is its later use for arm-chair geologizing and possible repeats of the trip.

The rendezvous point at the junction of U.S. 99 and Washington State Highway 5, near Mary's Corner, Washington, was on the Logan Hill formation. This Pleistocene alluvial deposit, equivalent in time to our own Sandy and Clackamas Valley fills, shows well-rounded rock fragments which retain their shapes but have been altered to clay. We headed eastward across this gently-rolling upland and discovered that in reality it was the uppermost of three river terraces, the third of which ended at the Cowlitz River, nearly 15 miles from our starting point.

Near the bridge over the Cowlitz River are excellent examples of varved sedimentary deposits left by glacial lakes. This river crossing also marked a great jump down the geologic column when for the first time we were in the Northcraft Formation. This Eocene deposit of lavas and tuffs form the rugged hills and the canyon of the Cowlitz which we began to see as we continued eastward up the alluvium-filled valley. The effects of glaciation on the resistant andesites, hanging valleys, and an andesitic plug, Tongue Peak, dominated the geology until the first stop at which we were introduced to a Lahar. The use of this term for a volcanic mud flow, Dr. Howell explained, probably originated in Indonesia where many such outpourings had been experienced. In the flow we found some very rounded and some very large rock fragments. There was also some carbonized wood which we eagerly examined. According to the log we could see Mt. Adams to the south from this point, but low, thick clouds prevented our confirming this particular fact.

The second stop was of even greater significance. At the town of Randle, lunch material was bought by those who might have been hungry otherwise, especially our hard working field trip leaders.

The third stop was back to business just beyond Randle. After being warned of potential headaches from loose overhangs we all collected excellent specimens of Zenoliths ("strange rock") from the block-jointed diorite. These are pieces of original country rock which had dropped into the intruding magma but did not actually melt into it. However, they became greatly altered by the penetration of magmatic juices and were recrystalized. The Zenoliths showed varying degrees of change, with some being nearly homogenous and others having developed many hornblende needles.

Lunch was the next major business of the day and this was transacted on the front lawn of the Packwood Ranger Station. When consulted first, the Ranger assured us that the sight of twelve cars parked there at one time gave an excellent impression of much activity. In fact, our hosts were so gracious that they provided sunshine in addition to a soft green lawn. To work off excellent lunches we left our cars parked and walked about a quarter of a mile north of town to a quarry in a hard-bedded claystone. Here were found fossilized seeds, branches and leaf specimens. We learned at this stop that Packwood and Mt. Rainier, a little to the north, are both in the center of the same large syncline.

After our lunch and walk we headed north and then east up out of the syncline and past the junction of Highway 5 and the Mt. Rainier Park Road, staying on Highway 5 and continuing through andesites, dacites and breccias probably of Oligocene age. Two miles beyond the junction we made the stop that brought forth cameras in mass. A very high cliff was formed by a sharply eastward rising anticline. Water-laid tuffaceous sediments formed many distinct beds which had not only been thrust up, but showed slumping and folding within the individual layers. These beds of the Ohanapecosh Formation had been laid down during the Eocene and then much later had been thrust up during the formation of the Cascades.

This was an area of outstanding geologic interest as well as of great beauty. Only a half mile beyond the anticline we pulled off into the Palisades Viewpoint where basalt columns over two hundred feet in height were visible. The still hot cameras were again put into rapid

White Pass Field Trip - cont'd

use to record this massive flow which had cooled into such tremendous tapering columns. During the Pleistocene an intra-canyon flow had completely filled the valley, but since had been cut down by the Clear Fork of the Cowlitz to leave us this magnificent exposure. Only a short distance beyond, our next stop looked again across the Clear Fork canyon to a stream which was flowing over the top of this late lava flow and formed frothy falls on its way into the canyon

Between this stop and the Summit of White Pass our road was through areas showing intensive folding and faulting of old volcanics and vast landslides. Even though the trip log didn't provide for it, common consent made the Summit Lodge a natural coffee stop and the rush toward the Lodge rivaled the previous rush for cameras.

The summit marked the beginning of Plio-Pleistocene andesites which show an unusual platey cleavage with red stainings on the joint faces. Near Dog Lake we passed Spiral Butte, a very red-colored mountain, from which most of these andesites had come. It probably was also the source of the flow which prompted our next stop.

At Clear Creek Falls the intra-canyon flow had been cut into a steep-sided and narrow gorge in which a waterfall of several hundred feet occurs. The sides of the gorge go straight down and drew gasps of wonder and caution. Leo Simon here introduced even we squeamish ones to a Rubber Boa which he had found on the trail. He showed us the strange rubbery skin and the vestigial hind legs and explained that it was a true constrictor just as its more famous relatives of the jungle.

A few miles remaining before we made our camp for the night were through intensely sheared and altered Mesozoic sediments and volcanics where greenstones, phyllites, and slates were much in evidence.

What can be said about our camp on Clear Lake except that campfires are always the highlight of Gesoc trips. Both Truman Murphy and Paul Howell played and sang anything and everything, "as long as it was of '06 vintage," to quote Paul. Even the story telling, as advertised in the trip log, materialized when Paul gave a moving rendition of "The Cremation of Sam Magee" which sent us all shivering off to bed.

A beautiful clear morning made our first stop at Rimrock Lake one of the most beautiful of the trip. Great cliffs of the Yakima Formation are exposed across the lake by massive landslides in weaker Oligo-Miocene sediments. The Yakima formation is of Miocene age, and weathers much like Columbia River Basalt, (Coriba), while the landslide areas resemble those north of Bonneville Dam. At the east end of the lake the road tunnels through a large andesite plug which has been dissected by a superimposed stream. Beyond the tunnel we passed through roadcuts exposing breccias and aa-lavas of lower Miocene age. Near the Tieton river we saw pillow basalts which were part of the lowermost flows of the Yakima basalt. Within the valleys are patches of Tieton Andesite of Plio-Pleistocene age which have been plastered against the older Yakima flows. This formation forms small columns which are frequently curved. As we crossed the Nachez River and started down its valley we were soon finding Ellensburg Formation on our left while Tieton Andesites were on our right. The Ellensburg formation is a light-colored sedimentary rock of Mio-Pliocene age, much of which is material that originated in volcanoes of the ancestral Cascades. We made a very informative jaunt from the town of Nachez to see this formation where it had been exposed on a hillside. Here we found a great thickness of layers laid in a time of downwarping by overloaded braided streams and then later uplifted. On the top was a layer of material carrying chunks of Columbia River Basalt deposited during the late Pleistocene.

On the way into our lunch stop in Yakima we went through a small, but outstanding, example of an anticline where both limbs were visible. No anticlines at lunch but an inviting wading pool in the City Park made many of us wish that we were splashing in it.

From Yakima we headed toward Granger and a quarry on its outskirts to examine the contact of the Ellensburg and Ringold Formations. Our route went through Touchet Silts which are typical of the pulsations of the Missoula Flood as found also in the Willamette silts. In the quarry we found the sedimentary Ellensburg formation overlain by the Ringold of the late Pliocene. This formation carried quartzites, granitic erratics and rhyolites from Precambrian areas of Canada. Within the two formations were clastic dikes which formed when cracks had occurred and mud flowed into them from above. As the mud dried it clung to the side surfaces of the cracks and remained there. More mud flowed in later

White Pass Field Trip - cont'd

and again dried. In this way, banding occurred within the dikes, making a most interesting formation to observe, but one impossible to take home as a specimen except as a paper bag full of dirt.

Toppenish was to be our disbanding point, but many of us decided to meet again in Goldendale and follow Jack Pollard down the road to Glenwood to an agatized wood location he had found. Eager roadbuilders and avid rock hounds had taken away much that had been there the previous week but most of us found a few beautiful pieces to treasure.

The trip back down the peaceful Columbia in the dusk made a beautiful end to an outstanding trip.

THE PICNIC
By Dennis Carmody

Mt. Tabor was in all its summer splendor as the Society gathered in the Crater, long the traditional setting for its picnics, and perfect for other pleasant activities such as visiting, renewing old acquaintances, and just breathing nice fresh air. The festivities began promptly and the picnic was one of the nicest in years.

Later, the Society retired to the amphitheater on the north slope and settled themselves for the evening's entertainment. Dr. Howell was called upon to give a thumb-nail sketch of the geologic history of the Mount Tabor volcano, which, quite naturally, he was able to do at the drop of a geology pick. The highlight of Dr. Howell's talk was his exciting personal view of the time of the formation of the cinder cone. He maintains that the cone was formed after the Troutdale formation, and he stated further that from the declination of the cinder layers the center of the cone appears to be to the west of the present excavation.

The main event of the evening was presented by Mr. Frank Hjort of the National Park Service. He began by describing the new museum at the Fort Vancouver Historical Site, built by funds of the Park Service. He invited all of us who are interested in things historical to visit the Site.

Our speaker's main subject was on the volcanic activity of the Pacific Rim. Speaking with a wealth of practical experience with volcanos, Mr. Hjort told us that the present Pacific Rim has been extended to include the Antarctic largely because of data assembled during the Geophysical Year.

Mr. Hjort continued with his subject to the specific volcano of Mauna Loa in the Hawaiian chain. He explained that in geologic history the volcanic activity in the Pacific has proceeded from the north, and that the last remnant of this cycle is in the southern parts. He showed us movies of the famed 1950 eruption of Mauna Loa. Surprisingly, lava from these eruptions runs the entire range of composition from rhyolitic to basaltic with basalt being greatly predominant over other types. Even among the basalts extruded, the character and composition vary greatly. Pahoehoe lava -- of ropy character -- is filled with gas, which we were surprised to learn, was mostly methane which gives it great fluidity. Aa lava -- of blocky character -- is formed when the gas content is low.

The famous black beaches of Hawaii are formed of basaltic glass fragments worn smooth by wave agitation; the green beaches are covered with olivine crystals and crystal fragments.

Most spectacular of all scenes were night views of spouting gas-filled lava along a great crack, and the flowing of white-hot lava into the sea. These pictures have been widely shown, and they are breath-taking for their realism.

Kudos are due the Picnic Committee for its excellent organization; Dr. Jones for being the best song-leader we know; and Emily Moltzner and Truman Murphy for the composition of the clever limericks that were sung during the evening. Which brings us to the academic question of whether or not limericks are a good thing. With so many present-day commodities suspect of undesirable side-effects, an analytically inquiring mind wonders if limericks shouldn't be further investigated. It is known that they are contagious and insidiously habit-forming, and it is thought that they might also be the cause of frustration and disillusionment. In support of this reasoning we submit the sad case of the geological duck who attended our picnic pot-luck. He took a big bite of Turkish Delight, and now his home fare is plain muck, Uh -- see what we mean?

THE AGE OF THE MT. TABOR CINDER CONE
By Dr. Paul Howell

In years past many a geologist has ventured to assign an age to the cinder cone at Mt. Tabor Park. Some did it hesitantly, others with aplomb. They did the best they could with the evidence available at the time. Now we have new evidence, or perhaps I should say we have evidence re-interpreted, for it was present all the time and we perceived it not. From it we can derive a new relative age but not a definite one. That will have to await another day.

Along the Sandy River we have abundant evidence that the Boring Lava poured out during a period somewhat later than Troutdale time. We know this because a period of vigorous, scouring erosion followed by alluviation by local streams separates the Troutdale formation from the Boring Lava at some places along the canyon walls. At other places the Boring Lava rests on the Troutdale formation; at no place is the Boring Lava covered by it. Along the Clackamas River, conditions are somewhat different. There the Boring Lava, where observable, appears to rest directly but unconformably upon Troutdale conglomerate and in many places is overlain by quartzite-bearing alluvium. If we examine this upper alluvium carefully, we find it has a weak matrix, composed mostly of silt but containing variable proportions of clay and sand. The cobbles are almost exclusively quartzites. Further, in some places we find this quartzite-bearing alluvium resting on local coarse alluvium of an assigned Pleistocene age. Similar relationships exist to the north in the Boring Hills.

If we come back now to Mt. Tabor we find on its north side a prominent four hundred and eighty foot terrace. Along the west side of this terrace is a long outcrop of Boring Lava and on the south across a small ravine is our Mt. Tabor cinder cone. On the north end of the terrace is a cut exposing various beds of gravel and one of silt. The gravel beds contain quartzites and other metamorphic rocks in profusion. Many of the gravel beds show an open texture indicative of strong flood conditions at the time of deposition, and in one bed is -- or was -- a granite glacial erratic. The gravel beds are only moderately consolidated, certainly less so than the typical Troutdale conglomerate.

Evaluating this evidence we can hardly conclude other than that these beds are Pleistocene in age, probably middle or early Pleistocene. Gravel beds exposed in road cuts along the east and south sides of Mt. Tabor at higher elevations have some Pleistocene aspects, but at this writing they cannot be definitely assigned a Pleistocene age.

On the basis of all this circumstantial evidence I feel certain that the Mt. Tabor cinder cone is post-Troutdale in age and that the main mass of Mt. Tabor might be post-Troutdale. Certainly the north side terrace is of Pleistocene age. A Pleistocene time for deposition of the quartzite gravel within the cinder cone crater is compatible with the surrounding evidence. Lastly, as a preponderance of data now points to a post-Troutdale age for the Boring Lava, the gravel in the cone can hardly have been deposited by Troutdale age streams.

MITCHELL POINT
By Emory Strong

Sometime when you are traveling east toward Hood River, stop for a few minutes at Mitchell Point, about two miles east of Viento Park. There is a gravel road turning right off Highway 30 just before you get to the Point. Park at and walk east on the old highway; near head-height is an interesting contact between the lava flows. It appears that the upper one flowed into a shallow pond, engulfing trees and vegetation, and forming distinct pillows. These are tree casts, and a seam of dense, black coal from which specimens of tightly compressed carbonized wood can be obtained.

Soon Mitchell Point will be blasted away to make more room to speed your journey through this scenic land. Gone forever will be this habitat of the rare, delicate Douglasia laevigata and many other beautiful flowers that draped the vertical cliff.

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THERE'S A RAINBOW 'ROUND MY SHOULDER

Since the season at Camp Hancock is over, we felt we would be sadly remiss in not publishing some kind of a report of the activities there, and being pushed for time we decided to rely on telephone interviews. We called Mrs Hancock first, and she reported another very successful season, during which --

The Northwest Federation of Mineralogical Societies, of which Lon and Berrie had been officers for many years, made a gift of $200.00 for a first-aid or hospital room at the camp, a valuable addition to the facilities.

The Eugene Mineral Club put up a sign proclaiming CAMP HANCOCK with a suitable inscription beneath. We hope that someone will bring us a good, clear photograph of this sign for publication in the NEWSLETTER.

The Tualatin Valley Gem Club built two lovely new facilities -- boys and girls rest-rooms -- that enhance the living conditions considerably. Berrie also told us that a lone raven has made the camp his abode, and that this season is unofficially known as The Year of the Packrats, a dozen of which attended all sessions. Previous years have been known as The Year of the Porcupines, The Year of the Badgers, The Year of the Squirrels, The Year of the Rabbits, and The Year of the Snake. Characteristically, Berrie made no mention of all the hard work -- cooking, washing dishes, and other chores that she did at camp.

Bob Hart, a veteran of several seasons at Camp Hancock, had an exciting and inspiring session. Among many other things, he opened and began work on the mammal beds which had not previously been touched this year, and on the first day he uncovered a large bone. With the help of Dede Dorfman, a promising future paleontologist, he recovered it in good condition. He says that it measured twenty-six inches in length, and he believes it to be the tibia of a rhino or a titanothere. A most impressive find.

Next, we called Marjorie Fessenden, our Membership Committee Chairman --

"What kind of a time did you have at camp this year, Miss Fessenden?"

"Oh, wonderful! Just wonderful. I found some little things, but nothing like Bob Hart's trophy. But I enjoyed every minute of it".

"What would you consider the high-light of the session? For you, that is --?"

"The high-light?"

"Well, isn't there something that impressed you particularly? Something that stood out above everything else? What is your brightest memory of camp?"

"Why -- why, it was the rainbow, of course! Oh, you should have been there!"

"Tell us about the rainbow, Miss Fessenden."

"Well, it was in the shower. You know the shower is just four poles with some burlap wrapped around, and the spray from the shower head makes the most beautiful rainbows! Sometime you'll have to go over there and take a shower just to see what I mean."

"You are doing very well, Miss Fessenden. Now tell us: Was the rainbow around your shoulder?"

"Why of course it was, silly. Where else could it have been?"

"And was there a sky of blue above?"

"Why certainly. The shower is open on top, you know, and the sky was quite blue most of the time."

"Thank you very much, Miss Fessenden. You've been most helpful."

If we remember correctly, long, long ago, in our childhood -- ahem -- we seem to recall a popular song entitled, "There's a Rainbow 'Round My Shoulder", and in any event, just offhand, we couldn't think of a better title for this report.

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CHANGES OF ADDRESS:

Dr. and Mrs. Victor Gregory - to Perkins State Hospital, Jessup Md.
Mr. and Mrs. Albert Kenney - to P. O. Box 491, Oregon City, Oregon
(Mailing address only. No change in residence.)

WILLAMETTE METEORITE

"The Willamette Meteorite" is the subject of a booklet written by Dr. Erwin F. Lange, Professor of General Science at Portland State College.

The booklet was published in observance of the 60th anniversary of its discovery on August 4, 1902. On August 4, 1962 a bronze marker was dedicated on the lawn of the Willamette Fire Hall, West Linn. Two sons of the finder were present for the dedication.

An excerpt from the opening of "The Willamette Meteorite" is reprinted as follows:

"The most interesting meteorite, noble in size and wonderful in physical features, was found near the border of Clackamas County, Oregon, in the autumn of 1902.... This meteorite having been found two miles from this town (to the northwest) I have given it the name as above, of Willamette Meteorite.

So wrote Henry A. Ward, expert in meteoritics, in 1904 after he had hurriedly journeyed across the United States to view and study the great meteorite which had been publicized in many newspapers throughout the United States.

To this day the 15-1/2 ton Willamette Meteorite remains the largest and most majestic iron meteorite to be discovered in this country. At the time of its finding, the Willamette was the third largest to be discovered on earth. Today, due to the discovery of other large meteorites, it is the world's sixth largest meteoritic discovery.

No meteorite has had a more interesting or a more unusual history. The story of the Willamette meteorite includes Indian rituals, a gigantic daylight theft, three judicial proceedings, an exhibit at a world's fair, a cross-country journey, and finally a permanent resting place amid a great meteorite collection in one of the world's major museums.

This great mass from space was quietly discovered in the fall months of 1902 by Ellis Hughes, once a Welsh miner, who had purchased a small farm about two miles west of Willamette, Oregon. Willamette since 1913 has been incorporated as part of the city of West Linn. Mr. Hughes made his discovery on land belonging to the Oregon Iron and Steel Company. In his later years he recounted the events of the discovery destined to bring him fame both in the scientific and judicial annals in the following words:

I was coming back from work where I had been cutting wood for the Willamette school. I saw this big rock but didn't think anything of it. I'd never seen it before. The next day when I came from work I saw half a broken saw lying near the rock. It was very rusty. Evidently some woodsman had dropped it there. I sat down on the rock. It was about 1-1/2 feet above the ground and very flat.

Bill Dale came by and said, "Hughes, have you seen this rock before?"

Yes, I said, I saw it yesterday. Then I picked up a large white stone and started to hammer on the rock. It rang like a bell.

"Hughes," Dale said to me, "I'll bet that is a meteor."

It would probably be there yet, but my wife had ideas. She was afraid somebody would go up and get it the next day.

Hughes, too, was somewhat concerned that curiosity seekers would come and carry off the large mass in small pieces. Accordingly, he set out to devise a plan whereby he could move the gigantic iron to his own property which he originally purchased from the Iron and Steel Company. During the fall of 1902 and spring of 1903 he worked in the dense woods in a very secretive manner making preparations for the moving of the meteorite, and hoping that his friends and neighbors would not become aware of his plan or of his treasure."

As further retold in the publication, litigation for possession of the meteorite and later transferal to the American Museum of Natural History developed into an eventful story.

L. H. D.

Copies of "The Willamette Meteorite" are available from Dr. Lange at 4852 Summit Street, West Linn, Oregon. (Phone - OL 6-7083.)

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

PORTLAND, OREGON October 1962

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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Luncheon - Mr. Leo Simon

SOCIETY OBJECTIVES

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties, Columbia, Washington, Clackamas, Hood River, Skamania and Clark; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

SOCIETY ACTIVITIES

(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR OCTOBER 1962

Every Thursday — LUNCHEON - YMCA, 831 S. W. 6th Avenue (Use Taylor Street entrance.)
12:00 Noon - Cafeteria style, approximate cost one dollar.
Eat and meet in private room (Mountain Room) adjacent to the cafeteria. Examine and discuss publications or specimens and hear informal short talks on geology and related subjects. Further information may be obtained by calling Mr. Leo Simon, Luncheon Chairman, at BE 6-0549 (residence) or CA 3-0300 (business).

October 12 Friday — LECTURE - Public Library (Room A), 801 S. W. 10th Avenue
7:30 P.M. - "The Pliocene Epoch", one of a series of lectures on historical geology being presented by the Society, will be reviewed with an illustrated talk by Dr. Don Wallace Schafroth. Dr. Schafroth, Assistant Professor of Geology at Portland State College, is a new member of the faculty.

October 16 Tuesday — LIBRARY NIGHT - Peebles Hall, Lewis and Clark College, S. W. Palatine Hill Rd.
7:30 P.M. - "A workshop of map reading" is planned for the evening. GSOC'ers will have an opportunity to examine and work with topographic and plastic relief maps, with emphasis on landforms of Oregon. Refreshments will be served. For information and directions call Dr. Francis G. Gilchrist, GSOC Library Night Chairman, at NE 6-5942.

October 21 Sunday — FIELD TRIP - One day trip to the Wilson River Area.
Details to be announced.
For information call Mr. Albert R. Kenney, trip leader, at PR 5-5697 or Mr. C. T. L. "Truman" Murphy, Field Trips Chairman, at CA 7-3253.

October 26 Friday — LECTURE - Public Library (Room A), 801 S. W. 10th Avenue
7:30 P.M. - "Geologic Problems in Drilling for and Distributing Natural Gas" is the title of the lecture to be presented by Mr. Joseph Smith of the Northwest Natural Gas Company.

COMING EVENTS

LECTURE - Dr. J. Arnold Shotwell of the University of Oregon is tentatively scheduled to speak to the Society during the latter part of November.

FIELD TRIP - A bus tour is being planned for the November field trip around the Portland area to view the influence and effects of geology on a local level.

LECTURE - By Mr. Levert Richards, Aviation Editor for The Oregonian, during January of 1963. Mr. Richards' talk will be a review of his trip to the Antarctic which he plans to make this coming December.

* * * * * * * * *

KING TUT'S MUMMY SOLILOQUIZES

By Emily Moltzner

I was the king of a mighty land;
Thousands of subjects kissed my hand.
Timid slaves my bidding did,
Damsels fair their faces hid.
Tempting viands graced my board
And ruby wines were freely poured.
Jewels rich and rare I had,
Raiment fine my body clad.

Armies vast, in bright array,
Stood poised and ready for the fray.
Pomp and power and wealth were mine . . .
All these were mine but for a time,
Fleeting, brief, the life of man
Is but a momentary span
Of what we call Eternity,
Which was, and is, and e'er shall be.

But few years had I lived when Death
Stole upon me; stopped my breath,
Stilled my laughter, hushed my song,
Reck'ed not that I was so young.
Linen bands my cold form drest;
A scarab lay upon my breast;
A tomb of stone was my abode,
Pictures my life story showed.

Oh -- where am I, and where are they --
We who knew life's work and play,
By the sacred river Nile
Flowing broadly mile on mile?
Ask the question; ponder well;
Answer not -- for who can tell
Where we go, or where abide
When this life is laid aside?

Therefore, love and work and play
Whilst thou hast thy little day.
Empty thou the cup of life,
Drink its draught of joy and strife.
A life replete, thy motto be,
Until death shall make thee free;
Then pass on to that strange shore --
Lost to Earth forevermore.

* * *

The above verses were written by Mrs. Moltzner over the name of "Margaret Rychon", Mrs. Moltzner's mother, and published on the Oregonian's editorial page in 1924 during the time of the exhumation of Tutankh-Amen by the late, great Egyptologist, Howard Carter, and Lord Carnarvon. They came to us by the merest quirk of fate just at the time we were publishing Mr. Libby's article on the same subject.

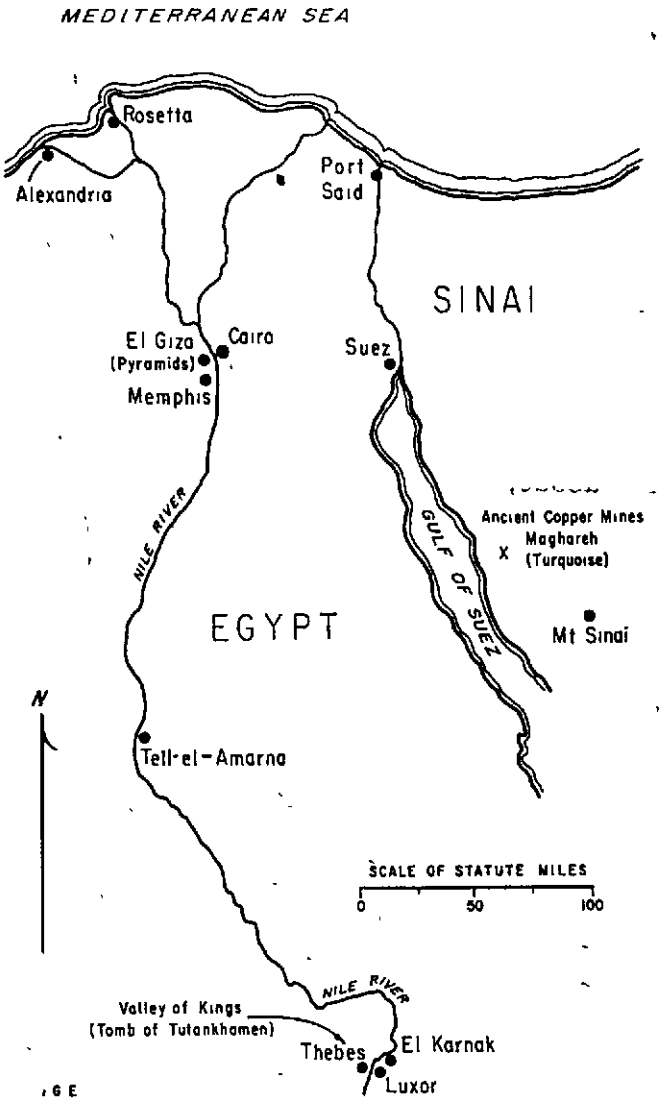
Editor

THE TREASURE OF TUTANKHAMEN

by

Fay W. Libbey

Egypt reached the zenith of her power and wealth during the period from the 16th to 13th centuries B. C. Her kings then exercised control over a large part of the known world centered around the eastern Mediterranean. By conquest she had pushed out her borders to the northeast, east, and south, and all these conquered peoples were forced to pay her tribute in gold and silver and slaves. The Pharaohs fully appreciated the beauty and indestructability of gold, as did their forbears back beyond recorded history, and gold always headed the list of their plunder and booty.



The treasure taken by conquest of a country was always the Pharaoh's personal property and not the nation's. The Pharaoh was the nation. Moreover he was not just the ruler; he was a divinity with powers which, in the minds of his subjects, extended into the hereafter.

Among the rulers of this most prosperous period of Egyptian history were the Pharaohs of the Eighteenth Dynasty - Thotmes III, Amenophis III, Amenophis IV, and Ramses III. Amenophis IV changed his name to Arkenaten (or Arkenaton) when he founded a new religion and built a new city on the Nile called Tell-El Amana to honor the sun god Aten. Arkenaten (1) died without a male heir, and his successor to the throne was his son-in-law, Tutankhamen, a boy in his teens, whose prominence in history is due neither to military exploits nor success in statecraft, but wholly to the magnificence of his tomb as revealed by excavations of Englishmen Howard Carter (2) and the Earl of Carnavon in the early 1920's.

The discovery of the tomb in the Valley of Kings and the dramatic opening of the burial chamber (3) with its impressive sarcophagus, created a worldwide sensation which many people still remember as the biggest newspaper headline of the time.

The Valley of Kings, necropolis of Thebes, the ancient capital of upper Egypt, is west of the Nile opposite Luxor, about 325 air miles south of Cairo. The necropolis is in white amorphous limestone containing flint and flinty masses, often of large size.

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(1) Arkenaten's wife was Nefertiti, famous as being one of the great beauties of all time as shown by the portrait bust from El Amana found by a German expedition in 1912 and now in the Berlin museum.

(2) Howard Carter was an archeologist who had been engaged in studies for the National Museum at Cairo. The Earl of Carnavon was a wealthy Englishman who was deeply interested in archeological excavations in Egypt.

(3) Described in detail in "The Tomb of Tutankhamen" (two volumes) by Howard Carter, Cassell and Company, Ltd., publishers, London (1927). A complete illustrated inventory of the treasures is given in Carter's narrative. Most of them are now in the National Museum at Cairo.

Treasure of Tutankhamen - cont'd

Veins of calcite are not uncommon. The Valley had been excavated extensively in archeological research over the years. When Carter and Carnavon sought a concession, they were told that because of the intensive investigations previously made, there was very little chance of finding anything of interest. Nevertheless they persisted, mainly because Carter believed he had found some small evidence concerning the location of King Tutankhamen's tomb. Finally they were able to obtain a transfer to them of the concession of Theodore Davis an American who had carried on excavations in the Valley over a period of 12 years. Davis had made some important discoveries, among which were the tomb and mummy of Arkenaten, father-in-law of Tutankhamen. Because of the thoroughness of his work, Davis believed that nothing more of special interest to investigators could be found.

Carter was a disciple of Sir William M. F. Petrie, famous Egyptologist, whose attention to detail in his studies became a by-word in Egypt and Palestine. Carter made an extensive systematic survey of his terrain and finally selected a spot marked by old stone huts and flint boulders near the entrance to the excavated tomb of Ramses VI. The selection was indeed a fortunate one. After a relatively small amount of clearing of top material he exposed a stone step which proved to be the topmost of 16 steps leading down to a sealed door. When this was opened it showed the entrance to a tunnel filled with debris. The tunnel was 25 feet long and led in a westerly direction to a second sealed door. The seals indicated that this was in fact the entrance to Tutankhamen's tomb. The second sealed door opened into a plastered room 26 feet by 12 feet filled to overflowing with a helter-skelter collection of priceless art objects including golden couches, alabaster(4) vases, golden chariots, exquisite paintings, and unique shrines. In the west wall there was another sealed door which opened into a smaller room, 13 feet by 9-1/2 feet, also filled with similar treasures. A fourth sealed door was seen in the north wall where two black and gold life-sized statues, each adorned with golden kilts and sandals and holding mace and staff, stood facing each other as if standing on guard in a royal antechamber.

No sarcophagus had yet been found and Carter's hopes of finding it now pointed to the fourth sealed door guarded by these imposing figures. He felt reasonably sure that they had been so placed to guard the Burial Chamber, but whether or not it had since been violated remained to be proved.

At this stage of the proceedings Carter and Carnavon decided to suspend operations, reorganize their plans, and add to their technical staff so that they could take proper care of the rich finds already discovered; otherwise great damage might result. Therefore as a temporary measure of protection, they closed the tomb and filled in the entrance.

The New York Metropolitan Museum of Art, which was in close touch with the work, gave prompt and valuable cooperation at this time by assigning on loan to the project experts in specialized fields of archeological research. The Museum sent over Harry Burton, photographer; Hall and Hauser, draftsmen; and A. C. Mace, archeologist. The Egyptian government chemist, Mr. Lucas, joined the staff and Carter obtained immediate help on the ground from Egyptologists, Drs. Alan Gardner and James Breasted. After a three weeks' closure all was now in readiness to resume the work.

The first order of business was to prepare for the removal and transport of the many objects in the Antechamber. As one illustration of the attention to detail given to this phase of the work - a large wooden casket decorated on all sides with striking designs in brilliant colors, an outstanding example of Egyptian art, was filled with beautiful art objects, and Carter was busy for three weeks in cataloging and preparing them, together with the casket, for transportation. A total of 34 heavy packing cases from the Antechamber and annex were loaded on small flat cars of a portable railroad and moved 5-1/2 miles to a steam barge on the Nile for shipment down river to Cairo.

Finally the stage was set for the opening of the sealed door in the north wall of the Antechamber beyond which Carter hoped to find the sarcophagus of the king. Twelve people including Carnavon, his daughter (Lady Evelyn Herbert), Egyptian officials, and visiting archeologists were grouped before the door in the Antechamber as Carter picked out the

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(4) When alabaster is designated in ancient Egyptian description, the material is calcite and not gypsum.

stone work above the door to get a glimpse of what lay beyond. When he was able to peer through an opening, he was stunned, as were the other people present, for all that they could see was a wall of pure gold! As future events showed they were looking at one side of a golden shrine, 17 feet by 11 feet by 9 feet high, which occupied most of the sepulchral chamber. The shrine was completely covered with sheet gold and the sides were inlaid with panels of brilliant faience having symbolic signs designed to protect the dead.

As may be imagined the group was overwhelmed by the beauty and immensity of the sight. When Carter returned to a state of normalcy, he realized that he faced the enormous job of opening the shrine to get to the sarcophagus, opening the sarcophagus to reveal the mummy, and to do all this disentombment in a restricted space without injuring any of the priceless components.

Much careful preparation was necessary in order to open the shrine, including the removal of the brick wall between the Burial Chamber and the Antechamber to get working room. At the eastern end of the shrine there were two pairs of folding doors - the outer pair unsealed and the inner pair sealed. Inside the inner doors was a second shrine; inside the second was a third shrine, and inside the third was a fourth - the most brilliant of all in its artistry. When the fourth shrine was opened, a striking scene flashed into view in the form of an immense bright yellow quartzite sarcophagus, beautifully carved, in high relief, lying as it had been placed 3300 years before. It measured 8.8 feet long, 4.8 feet wide, and 4.8 feet high. The lid was of massive rose colored granite.

Removal of the shrines from the sepulchral chamber took 84 days of heavy labor. According to Carter the four shrines consisted of "about 84 parts, each being heavy, hard to handle, and very breakable".

Now the sarcophagus could be examined. The lid which weighed about 1-1/4 tons was raised with block and tackle, and exposed a golden effigy of the young king on the lid of a solid gold anthropoid coffin. The features were in sheet gold. The gold glittered as if it had just come from the mold. The head and hands were cast in three dimensions but the highly decorated remainder of the figure was in low relief. The face was of pure gold; the eyes were formed of aragonite and obsidian; the brows and lids were of lapis-lazuli glass.(5) The golden visage glowed as if alive. A small withered floral wreath still retaining a tinge of the original color rested upon the insignia on his forhead.

Three coffins were nested one within another. On the lid of the second coffin was a golden effigy of the king in richly ornamented ceremonial dress symbolizing Osiris. The third or inner coffin was of solid gold in the form of the king, all richly engraved and ornamented with cloisonne work - as Carter relates - an unforgetable sight. The form was 6 feet, 1.75 inches long and the wrought gold from 0.15 to 0 21 inches thick.(6) The total value of the caskets was immense by modern standards; the value of gold in the whole tomb was enormous.

On opening the inner coffin, the mummy was found wrapped in several layers of cloth. It had a metallic iron headrest. One hundred and forty-three pieces of jewelry were found scattered through the wrappings.

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(5) Complex brilliant blue mineral principally composed of lazurite, usually written $3NaAlSiO_4.Na_2S$ (sodium-aluminum sulphosilicate).

(6) Carter does not indicate the weight of gold in this coffin. All we have in the way of evidence is its length and thickness of metal. The outside measurements of the sarcophagus do not help as evidence. Also the sides of the coffin were curved and the effigy on the top complicates further any chance of an accurate calculation of the quantity of gold. A very rough approximation may be made by assuming a prismatic shape and neglecting abnormalities due to the curved surfaces. In this way we can arrive at a volume of about 1640 cubic inches of gold which at $367 a cubic inch gives a value of slightly more than $600,000 for today's gold value of the one coffin. We have no information on the fineness of the gold but the indications are that it was very pure because of its color, and also because of the excellence of the Egyptian goldsmith's craftsmanship.

Treasure of Tutankhamen-cont'd

A list of the ornamental stones found in the tomb includes obsidian, amethyst, malachite, alabaster (calcite), red carnelian, green feldspar, red jasper, lapis-lazuli, chalcedony, turquoise[7] and rock crystal.

A fine gold hafted dagger, with the iron blade still bright like steel[8] was found with the mummy. Gypsum plaster, not lime plaster, was used in the tomb. It is recorded that the burial chamber was sterile which, together with the arid climate, would probably account for the excellent condition of some perishable and oxidizable materials. A few small dead beetles were found.

It would be very difficult, perhaps not at all feasible, to appraise the treasure found in Tutankhamen's tomb in terms of money value. Aside from the actual weight of precious metals in the boxes, thrones, couches, chariots, shrines, and sarcophagus itself, the value of ornaments, pictures, carvings, and other art objects representing the highest forms of Egyptian art of this ancient period is incalculable.

Beyond the Tutankhamen treasure, one may only speculate concerning the total amount that was buried in the Valley of Kings. Twenty-seven Pharaohs were entombed in this necropolis of Thebes, and probably Tutankhamen was the least in importance among them. One's imagination becomes blurred in trying to apprehend the value of treasure buried with the Pharaohs in addition to that in the Valley of Kings. There were the many pyramid tombs and more than 500 cliff tombs for Egyptian royalty. All of these were furnished at the time of burial with treasures commensurable with the occupant's station in life and to insure that in his afterlife he would have the comforts to which he had been accustomed.

Practically all of the royal tombs were robbed, and after the fall of the Empire in 1150 B. C. not a single royal tomb was left intact. Grave robbing was a popular and lucrative occupation among the Egyptians. Whole families participated, and the skills of the craft were handed down from father to son. Carter found that Tutankhamen's tomb had been broken into and resealed, possibly twice, but for some inexplicable reason (it may be partly at least because of difficulties of removal of the stolen objects) very little of value had been stolen. It is recorded that Tutankhamen had a cliff tomb, in addition to the one in the Valley, and that robbers were caught in the act of robbing it. Even so, heavy golden vessels in the cliff tomb were appropriated by corrupt officials, so it is said.

Sic transit gloria mundi.

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(7) The ancient Egyptians valued highly certain semiprecious gem material. Turquoise, for example, was especially prized and was used in offerings to the gods as well as for royal ornaments. Over the centuries, with records dating back to about 3000 B. C. and continuing to about 1000 B. C., costly expeditions were sent into quarries in Sinai to mine and transport turquoise, some of which was of inferior quality, back to the home country. The Sinai area was very rugged and transport was beset with hardships.

Precious stones, such as diamonds, rubies, and sapphires, were unknown in ancient Egypt.

(8) It is recorded by Carter that iron was introduced into Egypt during Tutankhamen's time by the Hittites and that the dagger and the mummy's headrest of pure iron represent the earliest-dated discoveries of pure iron in Egypt. However, in De Re Metallica, translated by Herbert Clark Hoover and Lou Henry Hoover (1912) it is stated that the oldest Egyptian texts dating to 3500 B. C. refer to iron, and that in the British Museum there is a piece of iron found in the Pyramid of Kephron (3700 B. C.), also that Professor Petrie placed in the British Museum a fragment of oxidized iron which he found in Egypt and dated as of the VI dynasty (3200 B. C.)

Treasure of Tutankhamen-

References

Carter, Howard and Mace, A. C., The Tomb of Tutankhamen, Cassell and Company, Ltd., London, 1927.

Ceram, C. W., Gods, Graves, and Scholars, Alfred A. Knopf, publisher, New York, 1952.

Potter, Charles Francis, The Story of Religion, Grosset and Dunlap, publishers, New York, 1929.

Säve-Söderbergh, Torgny, Pharaohs and Mortals, Translated from Swedish by Richard E. Oldenburg, Bobbs-Merrill Company, Inc., publishers, New York.

FIELD TRIP TO FORT ROCK AND PLACES BEYOND -

A GSOC field trip is always something of an adventure. Saturday and Sunday, September 15 and 16, proved to be no exception. Meeting at La Pine at noon (either noon, DLS or PST seemed to be correct) the group assembled and our fearsome leader, Ralph Mason started off for the first stop at Hole-in-the-Ground, followed for miles by an ever-lengthening line of trusting members. Just how many members and friends there were no one ever knew, the number seemed to vary with each succeeding stop. At one memorable census-taking there were 17 people and 18 cars, or so it seemed. High water mark was 20 cars and about 40 people. Supplementing the GSOC'ers was a contingent from the Salem Geological Society.

The geologic phenomenon exhibited at Hole-in-the-Ground was briefly explained by the leader who pointed out that a recent issue of the Ore-Bin issued by the State of Oregon Department of Geology and Mineral Industries contained an article on the formation of tuff rings or maars.

There is apparently no way to get from Hole-in-the-Ground to Fort Rock---without a lot of backing and filling. Eventually, however, the caravan broke out on the plain and reached Fort Rock where the Salem delegation formally joined up. At this point the trip was only 45 minutes behind schedule. After making a side trip to the town(?) of Fort Rock to look for gas for one car, and after more backing and filling to let El Presidente Delano make a clockwise transit of the Fort Rock amphitheatre, the group was only one hour and fifteen minutes behind time. Five miles away and two hours later the group stopped to view some of the fantastic lava flows at the southeastern edge of the Devils Garden. A bit later the group clambered up the steep flank of a spectacular Spatter cone, locally known as "The Blowouts". At this point some of the members decided that they had better retreat before the fearsome leader got them all irretrievably lost. For those who toughed it out the last point of interest was Derrick Cave, a huge lava tube containing the marks of several stages of withdrawal and refilling It was now dusk and suddenly the harsh desert softened and became almost unreal. Venus and Jupiter and Mars sparkled and flashed, jack rabbits bumped across the road, and long draperies of dust hung suspended in the evening air, our constant companion to the very last.

Many of the group elected to flake out at La Pine for the night but the pure in heart went on to the scheduled camp deep in the heart of Newberry Crater, arriving about 11 p. m.

The next morning was a bit chilly but not enough to discourage anybody, after some prodding, to visit a pumice quarry which supplies abrasive blocks for an eastern manufacturer. Also visited was the famous obsidian flow beside the road. A few daring members drove up to Paulina Peak for a magnificent view. Irridescent cinders were gathered from a cinder cone just south of Lava Caves State Park and an underground tour of the Lava Cave was followed by lunch. A hike out the Phil Brogan Trail and the trip to the top of Lava Butte completed the formal part of the trip. The new observatory and museum on top of Lava Butte are almost completed and make an interesting addition to the view.

George A. Deefeldorfer

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ALPINE FLOWER TOUR WITH DR. HAMMOND

A lecture on "Mountain Plants and Their Environment" with 140 of his many beautiful slides held GSOC listeners of Dr. John Hammond fascinated September 14 at their regular meeting.

Closeups of wild flowers taken with his "strobe" camera is a specialty of Dr. Hammond, our 1961 president, which he started as a hobby three years ago He has more than 500 closeups of almost as many kinds of Northwest wildflowers, from the little Alpine plants to the varieties on the coast.

In addition, his scenic and geology slides are adding up fast. Dr. Hammond's collection is said to be one of the best of its kind on the West Coast.

* * * *

IN YUCATAN WITH B MIKE

At the Central Library on Friday evening, September 28th, it was the pleasure of GSOC to make another trip to the Yucatan Peninsula to explore Mayan ruins with our old friend Francis Murphy, the Oregonian's BEHIND THE MIKE.

First, of course, after picking up Ron Calvert -- whose father used to be an editor at the Oregonian -- we landed at Merida, the capitol of Yucatan, and from there we went to various places whose names we couldn't pronounce even if we could remember them. Our trouble was that we were concentrating so hard on Xkichmool that some of Francis' old buddies down there had been looking up some spanking new ruins for us to explore.

Three of this hemisphere's great pre-Columbian cultures flourished in Mexico: the Toltecs and the Aztecs on the central plateau, and the fabulous Mayans who had moved up from Guatemala to Yucatan. After stripping the jungle away we had time for only two sites on this trip, but they were amazements. Amazing to think that they had been built of huge blocks of limestone by a civilization that made no use of metals; who had not discovered the wheel. Yet they had a highly developed knowledge of astronomy, and a calendar superior to our own.

How many of these ruined temples remain undiscovered no one can say. Grown over by the jungle in inaccessible country, they are difficult to find and difficult to work. But suffice to say there must here be nearly a virgin field for exploration. Before coming back to Portland we stopped in at the ex-idyllic island of Cozumel just off the coast of Quintana Roo. Ex-idyllic because publicity has spoiled it. Tourists everywhere! Our appreciation to B Mike --

W. M. F.

* * * * *

LIBRARY NIGHT RESUMED

Following the customary summer recess, "Gee-Sockers" opened up the fall season for their library in Peebles Hall on Lewis and Clark campus the evening of September 18. Our field trips during the summer had apparently contributed to the interest in reading up on some of Nature's wonders we have seen, fallen into, groped through, climbed, photographed, or merely hammered chunks out of.

In addition to personal contributions of material on geological subjects other new acquisitions had been received from various State Departments of Geology and from the American Museum of Natural History.

Following the library session came the interesting program arranged by Chmn. Dr. Francis Gilchrist; Members had been invited to bring a dozen or more of their best slides, or movie-strips, for projection; views taken on field trips during the year.

No lack of variety here! There were Dr. Arthur Jones' views of the Montana Rockies from a "jet" at 33,000 feet and Fred Miller's flash of the group at the end of the trail in the lava-river cave. Among Dr. Stauffer's views from the Montana and B. C. Rockies was one of the 15-mile section of mountain-top in Glacier Park that now rides "piggy-back" over strata of younger rock From our West Hills ridge-road Al Kenney had captured a gorgeous view of a storm dumping a sizeable piece of the ocean on the Tualatin Valley.

Cross-bedding in gravels deposited by the "Missoula Flood" and views of his group of Junior members working in the Mollala and Callowash fossil-beds were typical of those

Library Night -

shown by Dr. Hammond. Leonard Delano had taken to the air for views of much of the coastline we had invaded early in the season. Beautiful shadow-effects among the shifting sand dunes of the coast featured some of those shown by Murray Miller.

Frank Merryman's movie-strips featured camp life and activities along the route of our White Pass trip east of Mt. Rainier. Jack Pollard's views included some showing the "feverish activity" at the old Joe-Joe placer mine on Coyote Creek when some of the group struck "pay-dirt". Ray Golden took us on an extended low-gear climb along rugged Leslie Gulch, a tributary to the Owyhee Canyon in the extreme southeast corner of Oregon.

These are but a few, although typical, of the field covered in the evening's program; topped off by the customary serving of refreshments. Dr. Gilchrist, in closing, expressed a desire for suggestions from members as to any particular subject they would like featured at these monthly gatherings.

R. F. Wilbur

* * *

NEWS OF MEMBERS

THE PERIPATETIC SCHMINKYS

In accordance with our request the Schminkys have been most cooperative in keeping the Thursday Luncheon informed of the activities of their Grand Tour of Europe, and somehow we have found it disconcerting. After word from them in Vienna and establishing their image dining on weiner schnitzel and waltzing to Strauss music until dawn in the summer palace of Schonbrunn beside the Danube, we suddenly find them waving to the famed Lorelei on their way down the Rhine and eating sauerbraten and gurkensalat mit sahne.

While we are still hoping that they won't overdo in sampling the Rhine and Moselle wines, and that when they are at Heidelberg Bruce won't become involved in a duel with any of the hot-headed young undergraduates there, we get a card from them in Brussels showing the best known -- if not the best -- work of one Francois du Quesnoy; the appealing figure of the Mannekin-Pis.

Though we have forgotten the details, the story goes something like this: A very young prince, son of the King of Belgium, unofficially went on a Grand Tour of his own, and much alarmed, the entire city turned out to search for him. His frantic father, the King, rather rashly vowed to have a statue of him made just as he was when he was found. Happily, he was found, though divested of his clothing and in an unconventional pose -- for a statue, anyway But the King was as good as his word, and ever since the people of Brussels have enjoyed this charming sculpture cast in bronze of a small boy bravely providing a natural fountain for them . . . . Which is a unique way to achieve immortality.

Just where the Schminkys are now, we wouldn't hazard a guess. They might be in Switzerland schussing down the Jungfrau and nibbling Gruyere or Emmenthal, or they might be in Holland inspecting the dikes of a new polder. Or they might be at home again. Wherever they are, we thank them, and we are sure they know we will be glad to see them.

W. M. F

P.S. The Schminkys arrived in Portland on Sunday, the 30th of September.

Ed.

DR. HODGE RECOVERING

Dr. Edwin T. Hodge, First President of our Society, is in Good Samaritan Hospital recovering from minor surgery.

* * * * * *

CHANGES OF ADDRESS

Mrs. Vera Hinkle to Mobile Homes Manor, 16901 S. E. Division, Tel: 254-4930.

Mr. and Mrs. Wayne Haglund to Apr. 9, Bldg. 6, Stauffer Place, Lawrence, Kansas.

HYDRAULIC INJECTION OF CLASTIC DIKES IN THE TOUCHET BEDS, WASHINGTON, OREGON, AND IDAHO

By R. C. Newcomb
U. S. Geological Survey

ABSTRACT

Dikes composed of silt, sand and gravel cut generally vertical, with great variety of size and spacing, in the Touchet beds, which are the lake-floor sediments of proglacial Lake Lewis. The Touchet beds occur in places widely distributed below 1,150 feet altitude in the Columbia River basin above Hood River.

The dikes are the main part of those described in detail by Lupher, whose basic observations are augmented by six groups of evidence bearing on the origin. (1) In plan, the dikes occur largely as polygonal networks with distance across the cells ranging generally from 50 to 400 feet. (2) Dikes occur most profusely at places within the altitude zone 400-800 feet and are few and weak above 1,000 feet. (3) Dikes are most numerous where Touchet beds overlie highly permeable materials. (4) The vertical section of a typical dike includes an irregular and involved "root" part at the bottom, a central "trunk" part, and an uppermost part where "branches" disperse and taper out. (5) The dikes cut all but the uppermost 10 or 20 feet of the thickest sections of the Touchet beds. (6) The silt laminae on the walls, the "wall seams" of Lupher, are filter cake attesting to outward filtration of sediment-carrying fluids from each successive dike lamina.

This information indicates the clastic dikes resulted from upward injections of ground water. Each hydraulic injection probably was caused by bank-storage effluent when a pressure difference was produced by a large lowering of Lake Lewis. Such a lowering occurred after a deterioration of the impounding dam and could have been a repetitious event. The first such lake lowering apparently produced a hydraulic lift and the injection of water into an equidimensional system of fractures. Later injections used mostly the established transverse dike planes and produced the many laminae of the dikes.

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Vice-President:	Mr. Albert R. Kenney	Box 491, Oregon City, Ore.		PR 5-5637
Secretary:	Miss Hilda Freed	1969 S. W. Park	1	CA 2-3714
Treasurer:	Miss Clara L. Bartholomay	1620 N. E. 24th Ave.	12	AT 4-6986

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Dr. John Hammond Dr. Paul Howell

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Asst. Editor	Mr. William M. Freer,	2405 S. E. Taylor St.	BE 2-9601
Bus. Mgr.	Mr. Robert F. Wilbur	2020 S. E. Salmon St. (14)	BE 5-7284

COMMITTEE CHAIRMEN

Jr. G. S. O. C.	- Dr. John Hammond	Membership:	- Miss Marjorie Fessenden
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Field Trips	- Al Kenney; T. Murphy	Library	- Miss Marie Wagner; Mrs. Murray Miller
Social	- Mrs. Emily Moltzner		
Display	- Mr. Dennis Carmody	Historian	- Mrs. James Running
Publicity	- Mr. William Freer	Publ Relations	- Mr. Clarence Phillips
Museum	- Mr. Ralph Mason	GSOC Library night	- Dr. Francis Gilchrist

Luncheon - Mr. Leo Simon

SOCIETY OBJECTIVES

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties, Columbia, Washington, Clackamas, Hood River, Skamania and Clark; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

SOCIETY ACTIVITIES

(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the officia. publication.

CALENDAR FOR OCTCBER 1962 -

Every Thursday — LUNCHEON - YMCA, 831 S. W. 6th Avenue (Use Taylor Street entrance.)
12:00 Noon - Cafeteria style, approximate cost of one dollar.
Eat and meet in private room (Mountain Room) adjacent to the cafeteria. Examine and discuss publications, specimens, and other items of interest. Listen to occasional short talks on geology and related subjects.
For further information call Mr. Leo Simon, Luncheon Chairman, at BE 6-0549 (residence) or CA 3-0300 (business).

November 9 Friday — LECTURE - Public Library (Room A), 801 S. W. 10th Avenue.
7:30 P.M. - "The Pliocene Epoch", one of a series of lectures on historical geology being presented by the Society will be reviewed with an illustrated talk by Dr. Don Wallace Schafroth, Assistant Professor of Geology at Portland State College. (Dr. Schafroth's talk, originally scheduled for October 12th, was postponed because of the Columbus Day storm.)

November 11 Sunday — FIELD TRIP - Bus tour of the Portland area. Cost, $2.00 per person.
9:00 A.M. - Leave Portland State College (Mill Street entrance near Park Avenue) via chartered Grayline sightseeing bus to observe the influence of geology on living, travel, economy, industry, and history of Portland. The "windshield geology" tour, led by Dr. and Mrs. Arthur C. Jones, will observe the wide and varied use of stone in public buildings, and visit historic sites and geologic features.
For further information and reservations call Mr. Truman Murphy at CA 7-3253 evenings only.

November 20 Tuesday — LIBRARY NIGHT - Peebles Hall, Lewis and Clark College.
7:30 P.M. - Dr. James Stauffer will present a tape recording one of Lon Hancock's talks to a class of geology students. The audio portion of the program will be augmented with visual presentation of colored slides of the Clarno area. Refreshments will be served.
For information and directions call Dr. Francis Gilchrist, GSOC Library Night Chairman, at NE 6-5942.

November 23 Friday — LECTURE - Public Library (Room A), 801 S.W. 10th Avenue.
7:30 P.M. - Mr. Al Keen will present "Utah Trips and Treasures", a program of slides and tape-recorded narration prepared by the Golden Spike Gem and Mineral Society of Ogden, Utah.

ADVANCE CALENDAR FOR DECEMBER 1962

December 14 Friday — LECTURE - The Pleistocene Epoch, one of a series of lectures on historical geology being presented by the Society.

December 16 Sunday — FIELD TRIP - Al Keen will lead a "basement tour" in the Northeast Portland area of private collections of gems, minerals, rocks, and a demonstration of lapidary work.

December 18 Tuesday — LIBRARY NIGHT - Cancelled due to the approaching holidays.

December 28 Friday — LECTURE - None scheduled during the holiday season.

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NEWS OF MEMBERS

SCHMINKY HONORED

At a City Council ceremony on October 26th, with fifteen others, our H. Bruce Schminky, eighth president of the GSOC, was given the official thanks of the Mayor and the Council together with a pin denoting forty years of hard work and faithful service to the City of Portland. Well done, Bruce!

INTRODUCING --

MR. FRED J. JORGENS and his son BILL, who came to us last July. Fred, as Purchasing Agent for Andersen Westfall Company, Inc. -- who are building both the Hilton Hotel and the Standard Insurance Plaza -- has a wide acquaintance and a finger in many interesting pies, one of which includes a trip to Denmark, Norway and Sweden the last part of this month. Nevertheless, he finds time to go hunting and fishing with Bill, age twelve, who is an ardent rock hound with an impressive collection of his own, and to be president of the Builder's Exchange of Oregon. Also, he is a devotee-- attention James Galt -- of the music of the Scotch bagpipes, about which he is more than well informed. Altogether, in acquiring Fred and Bill, GSOC couldn't have done better.

PRESENTING --

MISS ELIZABETH PRIDEAUX, who teaches remedial reading in the Portland Public School System. Miss Prideaux, Reed College '35, has also taught in the Portland Day School for the Deaf, given courses in the Remedial Reading Clinic at the Portland Extension Center, and once -- she has the soul of an adventuress -- worked for three years as a draftsman for the Soil Conservation Service. She is fond of the outdoors, gardening, and she is a connoisseur of landscaping. She took out her membership in July, and we hope that she will be as happy to belong to us as we are to have her.

FIELD TRIPPING

Mr. and Mrs. Leo Simon and Mr. and Mrs. Rudolph Erickson recently returned from a three-week tour of the southwestern United States. The Ericksons' and the Simons' formed a two-car caravan which visited a dozen or more national parks and monuments. Included in the itinerary was a visit to the four corners area where it is possible to stand on four states (Utah, Arizona, New Mexico, and Colorado) at one time.

In all, the caravan travelled nearly 5,000 miles in three weeks. That's field tripping!

LON HANCOCK BIOGRAPHY

Dr. J. C. Stevens reports that Biography of a Fossil Hunter by Ethel Erford Hewitt is now ready for printing.

Mr. Ralph Mason, chairman of "THE HANCOCK BOOK COMMITTEE" in charge of the project, along with Dr. John Hammond, and Mr. Loren McKinley have designated the Oregon Museum of Science and Industry to handle the sale of the book.

The committee reports that $1500 has been pledged, but about $1000 more is needed. GSOC'ers wishing to make (tax deductible) contributions to OMSI marked "For the Lon Hancock Biography" may do so.

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HOW THE NEHALEM RIVER LOST ITS HEAD

By Dr. Paul W. Howell

The Nehalem River begins its course on the east side of the Coast Range about seven miles west of the town of Timber at Cochran Pass. From this pass one can look down into the headwaters of the Salmonberry River which dashes off west to join the Nehalem at Salmonberry, only 13 miles away. To reach the same point the Nehalem must travel roughly 60 miles, - four times as far. At Cochran Pass tributaries of the two rivers are little more than a stone's throw apart. This proximity of headwater streams in itself is quite normal, for all land is drained by streams of some sort, and at their tips they may nearly touch each other. However, the relationships at Cochran Pass are not normal, as the following description will reveal, for it is here that the Nehalem River lost its head.

Cochran Pass is broad and open, and in it lies the little settlement after which it is named, now scarcely more than a ghost town. A railroad water tank is the main landmark, for it is via this pass that the Tillamook branch of the Southern Pacific Railroad wends its way to the coast. The broad open character of the pass is interesting, but more interesting still is the fact that it is filled with alluvium, in some places as much as 100 feet deep. Fresh railroad cuts on the east side of the pass expose the character of the alluvium thoroughly and reveal that most of it is gravel, some lenses of which are very coarse. The largest boulder noted was 16 inches in diameter, and sizes between 8 and 4 inches are common. The bulk of the gravel, however, is of smaller diameters. As much as 30% of the gravel is subangular to subrounded, indicating transportation of only moderate distances. The constituents are largely porphyritic basalts and lapilli tuffs from the Tillamook Volcanic Series. No metamorphic or other unusual rocks were found. Interbedded with the gravel at scattered intervals are persistent strata of finer sediments, - mixtures of sand and clay. The streams that now occupy the pass are "underfit", - that is, they are too small to have created the valley they now occupy. Further, most of them have entrenched themselves, cutting completely through the alluvium into the underlying bedrock.

What do these pieces of information mean to the geologist? First, the alluvium in the pass is too well rounded and much too abundant to have been deposited by the piddling streams that now occupy the pass. True, during some ancient period of aggradation these small streams could have filled the pass to the depth now represented, but the deposit would have been much more irregular in its stratigraphy. The character of the alluvium, therefor, indicates that the pass was once occupied by a stream of considerable size. Second, though there are Tillamook Volcanic Series rocks exposed on both sides of the pass, the exposures slope off rapidly to the east and shortly disappear beneath the Cowlitz Formation, whereas on the west they extend for many miles and rise to considerable heights. The western heights then are a much more likely source area for the alluvium. Third, the pass is much too extensive for the usual summit meeting of headward eroding streams. Such meetings normally create narrow saddles. Everything here points to stream piracy, so let's look for further evidence. Not far west of the pass we note that the upper section of the SalmonberryRiver has a "barbed" relationship to the general trend of the Salmonberry River valley, and a normal relationship to the trend of the upper Nehalem River valley. This completes our evidence, and we can now say with reasonable certainty that stream piracy did occur here. The Salmonberry River having a much shorter and steeper route to base level, undercut the upper Nehalem River drainage. The section occupied by Pennoyer Creek and that part of Salmonberry River above the mouth of Pennoyer Creek undoubtedly were once part of the upper Nehalem. The geomorphology of the area suggests that the Salmonberry had earlier pirated another section of the upper Nehalem and created the North Fork of Salmonberry River. Just how much of the upper Nehalem drainage has been thus pirated it is difficult to ascertain. Severe post-piracy modification of the topography has destroyed much of the evidence we need. The breadth of the pass and the rounding of the gravel at Cochran suggest a stream extending back 10 to 15 miles, but not necessarily in a straight line.

- over

How the Nehalem River Lost its Head - cont'd

Well, that is how the Nehalem River lost its head. A pirate stream nipped it off. When did this piracy occur? It may have begun when "subsequent" streams joined together to integrate the drainage of this part of the Coast Range into the Nehalem River system (Geological News Letter, Vol. 27, No. 6, p. 38), but the piracy at Pennoyer Creek probably occurred after the third uplift (mid-Pleistocene time). Consolidation and weathering of the material in Cochran Pass is comparable to that of some of the median terraces of Western Cascades streams, generally considered to be Pleistocene in age. The geomorphology of the Coast Range suggests a number of piracies such as the one at Cochran Pass. All these, however, postdate the windgaps left behind when downwarping of the region created the Willamette Valley and beheaded all streams previously flowing westward across this area to the sea (GNL, Vol. 23, No. 5, p. 35).

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TRAIN FIELD TRIP TO GARIBALDI

"Over the hills and to the sea" was the name given to the special excursion train to Garibaldi, Oregon sponsored by the Vernonia, South Park, and Sunset Steam Railroad.

Early on sunny Sunday morning, September 30th, the special sixteen-car train, including a chartered car filled with GSOC'ers, departed from Union Station in Portland. "Going round Robin Hood's barn", so to speak, the train wended its way southward through Milwaukie and Oswego, then northward to Beaverton, and finally westward through Hillsboro and Banks towards the coast range.

Dr. Paul Howell, a past president of the Society, kept GSOC'ers well informed with a running account of the windshield geology viewed enroute. An unscheduled stop (due to a broken air hose) in the Tillamook volcanics provided a worm's-eye view of an elk herd curiously looking down on the stalled train.

The town of Garibaldi welcomed the travelers with band music, a baked salmon dinner, and cruises on Tillamook Bay. Later, enroute back to Portland, the town of Rockaway entertained with a water show on Lake Lytle.

After dark, the GSOC car was echoing with the sound of music. Dr. Arthur C. Jones and Dr. Paul Howell accompanied by Mrs. Ardith Jones Hitchcock led the sing-along group in rock hounding songs and other old favorites.

Perfect weather, an enthusiastic group, superb scenery, balmy temperatures, fine food and hospitality provided participating GSOC'ers with another memorable "extra dividend" trip.

Editor

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COLUMBUS DAY STORM

On the eventful night of October 12th, about a half dozen hearty GSOC'ers ventured to the Public Library to hear Dr. Don Wallace Schafroth, the scheduled speaker for the evening. Needless to say, the lecture had been cancelled even though the Library had power. (Dr. Schafroth's talk has been rescheduled for November 9th.)

It is reasonable to assume that most GSOC'ers tolerated the storm-connected inconveniences better than average, since most are experienced outdoor people.

Coleman stoves and lanterns, carefully put away for the next camping season, were pressed into service.

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FIELD TRIP DOWN THE WILSON AND UP THE NESTUCCA

Sunday, October 21, 1962

We left Sunday morning and drove through a fog till we arrived at Glenwood where we started our log. From there to the summit we were happy to see the beautiful paintings on every leafed tree. The heart of a geesocker, so we are told. will skip a beat at the mention of gold. And golds there were many on tree, plant andfern all over the hills of the Tillamook burn.

We stopped at a quarry of mid-Eocene to gather up zeolites and some serpentine. Then up to the top of the Coast anticline through more splendid colors of tree and of vine into a country of basaltic tuff, black shales, slickensides and that sort of stuff; of big hanging valleys and pirates streams and barbed tributaries and pyritical seams.

A stranger we found who was picking at rocks was invited by Al to join the geesocks. That human dynamo, Aunt Emily Moltzner (we really don't know just how many volts'n'er) collared the man who was chipping columnar; "You're captured! Give name, rank and serial number."

We rounded a dike and then suddenly Clara says "Oh, look over there at those huge wave-cut terraces." When we stopped at a quarry Al Kenney was pointing at some rare examples of columnar jointing; a tertiary intrusive. . . Eocene, late and shales that had nearly been pressed into slate. A few more corners and we had our first look at the alluvial plains that support Tillamook.

If you're a birdlover and would like to see 'em we strongly suggest you see the museum. With his camera in hand, you'll find a great stalker in the museum's curator and host, Alex Walker. If to you a museum is antique and musty don't see Tillamook's .. it's not even dusty. The place is so light, so cherry and gay we almost hated to get under way.

Enroute to Cape Meares we had the good luck to see Milvoy's oysters asleep in the muck. Across the highway, along the road shoulder we dug some out that were very much older. Pelecypods: anadara, pectens, acila; chione, tellina, panope, crenella.

On the shingled beach we found many agates and under the cliff were some Pleistocene faggots.

The new road to Netarts and Beaver and Blaine and then we were headed for Portland again. The alder trees, on the coast such a fixture, looked for all the world like a Japanese picture. By the time we arrived at Rocky Bend Camp to see anything you needed a lamp. But G-picks came out when the group reached some dikes where flashlights were used as we dug zeolites. We called a quick halt in most certain terms when we found were standing on millions of worms.

'Twas a wonderful trip and our thanks they are many to our very good leader, dauntless Al Kenney. And this is the report of our trip there and back

- - by Marjorie, Gwen and Clara and Jack

P.S. The maids mentioned in this line were used to complete this rhyme.
BUT the credit for this act should go to our friend, Jack!

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NATURAL GAS

The Northwest Natural Gas Company entertained the GSOC at the Central Library regular meeting on Friday evening, October 26th, and they did it very well indeed. After a short introduction by Mr. Joseph Smith during which we learned that the Natural Gas industry was the sixth largest in the country; that it exerted daily power equal to 600 Hoover Dams, and that it paid annual Federal taxes in excess of $641,000, we were shown an excellent documentary color film with commentary of the process of drilling a well for gas.

The scene of the drilling operation was in the Mesa Verde National Park in the great San Juan Basin of northwestern New Mexico, and it was most interesting and educational to those of us not familiar with this type of operation. Mr. W. E. Covert, who showed the film, is recently from these very fields, and he augmented the sound track with comments of his own that were clarifying and amusing, and would have answered questions at the end had there been time for them.

An attractive and well written brochure with color plates was distributed at the close of the meeting. We wish to thank Mr. Smith, Mr. Covert, and the Northwest Natural Gas Company for their successful efforts.

W. M. F.

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NEW MEMBERS -

Miss Diantha Dorfman,	868 S. W. Burlingame Terrace, City,	CH 6-5148
Mrs. Elizabeth A. Gilliam,	1729 N. E. 17th Avenue, City	AT 4-8922
Mr. and Mrs. Kenneth Holliday,	2506 N. E. Halsey, City,	281-0570
Miss Eleanor L. Jackson,	50 S. W. Ridge Drive, City	244-7728
Mr. and Mrs. William W. Oekerman,	11618 S. E. Lincoln Court, City	AL 4-3054
Miss Effie Godman,	2328 S. W. Madison, City	CA 3-4919
Miss Kathryn Sims,	131 S. E. 24th Avenue, City 14	BE 4-5997
Mr. and Mrs. Harvey C. Fullman,	7325 S. W. Macadam (business)	CH 6-3341 (Bus.) NE 6-4254 (Home)
Mr. Loren A. Long,	Rte. 2, Box 122, Sherwood, Ore.	ME 9-2596
Mrs. Ruth L. Long,	Rte. 2, Box 122, Sherwood, Ore.	ME 9-2596
Mr. and Mrs. G A Kibler,	13245 S. E. Harold, City	771-8495
Mr. and Mrs. Irving Jones, children-Margaret and Randy	17112 S. W. Kelok Rd., Oswego, Ore.	NE 6-5416
Mr. and Mrs. David Hitchcock, children - Bruce, Judith, Carolyn	8418 S. W. 39th, City	CH 4-5626

ADDRESS CHANGE -

Turner, Mr. and Mrs. Jay E. (was listed as Jay F.) Change Tel. to 234-8730.

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Bus. Mgr.	Mr. Robert F. Wilbur	2020 S. E. Salmon St. City (14)	BE 5-7284

COMMITTEE CHAIRMEN

Jr. G. S. O. C.	- Dr. John Hammond	Membership:	- Miss Marjorie Fessenden
Program	- Mr. Emory Strong	Research	- Mr. Rudolph Erickson
Field Trips	- Al Kenney; T. Murphy	Library	- Miss Marie Wagner; Mrs. Murray Miller
Social	- Mrs. Emily Moltzner		
Display	- Mr. Dennis Carmody	Historian	- Mrs. James Running
Publicity	- Mr. William Freer	Publ Relations	Mr. Clarence Phillips
Museum	- Mr. Ralph Mason	GSOC Library night	- Dr. Francis Gilchrist

Luncheon - Mr. Leo Simon

SOCIETY OBJECTIVES

To provide facilities for members of the Society to study geology, particularly the geology of the Oregon Country* the establishment and maintenance of a library and museum of geological works, maps and specimens; the encouragement of geological study among amateurs; the support and promotion of geologic investigation in the Oregon Country; the designation, preservation, and interpretation of important geological features of the Oregon Country; the development of the mental capacities of its members in the study of geology; and the promotion of the better acquaintance and closer association among those engaged in the above activities.

* The "Oregon Country" is a loose term generally considered, as in the early days, to embrace the states of Oregon, Washington, Idaho, western Montana, and southwestern Wyoming.

Persons desiring to become members should contact the Secretary.

Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties, Columbia, Washington, Clackamas, Hood River, Skamania and Clark; $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

SOCIETY ACTIVITIES

(See "Calendar of the Month")

Evening Meetings: Illustrated lectures on geologic or closely related subjects, on the second and fourth Fridays of each month at Public Library Hall, S. W. 10th Avenue and Yamhill, 7:30 p. m.

Field Trips: Usually one field trip is scheduled for each month.

Library Night: Once a month. Lewis and Clark College, Biology Bldg.

Luncheons: Informal luncheons, with geological motif, each Thursday noon.

Publication: The Geological News Letter, issued once each month, is the official publication.

CALENDAR FOR DECEMBER 1962

Every Thursday — LUNCHEON - YMCA, 831 S. W. 6th Avenue (Use Taylor Street entrance) 12:00 Noon - Cafeteria style, approximate cost of one dollar. Eat and meet in private room (Mountain Room) adjacent to the cafeteria. Examine and discuss publications, specimens, and other items of interest. Listen to occasional short talks on geology and related subjects. For further information call Mr. Leo Simon, Luncheon Chairman, at BE 6-0549 (residence) or CA 3-0300 (business).

December 14 Friday — LECTURE - Public Library (Room A), 801 S. W. 10th Avenue. 7:30 P. M. - "The Pleistocene Epoch", another of the lectures in the series on historical geology being presented by the Society. Dr. James Stauffer, Professor of Geology at Lewis and Clark College, will review this interesting epoch with a lecture illustrated with slides.

December 16 Sunday — FIELD TRIP - Afternoon "basement tour" in Northeast Portland area. 1:00 P. M. - Meet at parking lot of Yaw's Top Notch Restaurant, 2001 N. E. 40th Avenue between Tillamook and Hancock Streets. Mr. Al Keen, leader of the "basement caravan", will assemble GSOC'ers into three separate groups for the tour. In this manner each group will be able to visit one of the three locations at the same time.

Three collections will be visited. Collections will include displays of minerals, crystals, fossils, petrified wood, and a wide variety of polished specimens. Two demonstrations of lapidary work are planned. One will feature the cutting of spheres and the other will demonstrate the cutting of cabachons.

December 18 Tuesday — LIBRARY NIGHT - Cancelled for this month.

December 28 Friday — LECTURE - None scheduled (holiday season).

COMING EVENTS FOR JANUARY 1963

FIELD TRIP - (Tentative) Arrangements are being made by Dr. James Stauffer to have the Society members visit the Museums of Natural History and Archeology and the Geology Building at the University of Oregon at Eugene. Transportation will probably be by chartered bus.

LECTURE - By Mr. Leverett Richards, Staff Writer, The Oregonian will be a review of an expedition to the Antarctic.

LIBRARY NIGHT - A symposium on identifying and dating of fossil leaves is being arranged by Dr. John Hammond and Dr. James Stauffer.

COMING EVENTS FOR FEBRUARY 1963

LECTURE - By Dr. John V. Byrne, Geologist at Oregon State University Department of Oceanography.

LECTURE - By Dr. J. Arnold Shotwell, University of Oregon.

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NEWS OF MEMBERS

MURPHY'S MOVE -

For the last couple of months Mr. C. T. L. Murphy, Field Trip Chairman for the Society, has been doing double duty as carpenter, painter, etc. in remodeling a duplex on the east side of Portland. Mr. and Mrs. Truman Murphy will be moving soon to their new quarters at 2027 N. E. Wasco Street.

PHILLIPS PROMOTED -

The Oregonian recently carried an announcement that Mr. Kenneth N. Phillips of the U. S. Geological Survey has been named Project hydrologist for a special investigation of Oregon's "closed" lakes. Mr. Phillips was Oregon district engineer of the surface water branch of the U. S. G. S. prior to his assignment to the special study project.

AUDUBON LECTURE -

Before a good audience at the Lloyd Center Auditorium on Monday, October 29th, Leo Simon gave the lecture, "Exploring With a Naturalist" that he was scheduled to have given on October 12th, Columbus Day. Leo is the First Vice-President of the Audubon Society.

BOB WILBUR HOME AGAIN -

Bob Wilbur returned from his annual trek to Little Rock, Arkansas, on November 16th. He reports digging in the Atoko Sandstones and Shales in Arkansas, and the Pennsylvania Formation in Nebraska without much result. But in the museum at Little Rock he did see giant quartz crystals three feet high and eighteen inches in diameter.

MAZAMA LECTURE -

On Wednesday, November 28th, Emory Strong gave an illustrated lecture, "Ancient Man on the Columbia and Colorado" to the Mazamas in their clubhouse on N. W. 19th Avenue.

WE ARE HAPPY TO PRESENT --

MISS KATHRYN SIMS, who comes to us from South Dakota, famed for the Bad Lands and the Black Hills; haunt of Wild Bill Hickok, Calamity Jane and Deadwood Dick; home of the buffalo and the war-like Souix -- Chief Crazy Horse, Rain-In-The-Face, Sitting Bull and his squaw, Squatting Heifer. Kathryn, a prairie flower with an inquisitive mind, pondered Horace Greeley's famous injunction to young men . . . decided to find out WHY. Whether she ever did or not, we do not know; she has never told us. But she must have found something out here that appeals to her, for that was eleven years ago, and she is still with us. Astute, discreet, serene, gracious, Kathryn is an accountant in the Portland Area Office of the Bureau of Indian Affairs, and after duty hours she is the efficient Treasurer of the National Federation of Federal Employees Local 7, a rather largish organization. Kathryn, we are glad to have you!

NEW MEMBERS -

Mrs. Lillian White and daughter, Linda, 1830 N. E. 25th, Portland 12, AT 7-7838
Mr. Ernst A. Rosen, 239 N. W. Skyline Boulevard, Portland, 223-0547

CHANGES OF ADDRESS -

Miss Alice Johnston (Student member) Akin Hall, 0615 SW Palatine Hill Rd. City 19, NE6-3601
Mr. and Mrs. Norris Stone, 3122 S. Glenmorrie Drive, Lake Oswego, Oregon
Mrs. Constance Riley, 2920 S.E. 77th, City 6
Mr. and Mrs. Earl E. Pagni, 11211 S.E. Flavel, City 66
Mr. C. T. L. Murphy, 2027 N. E. Wasco, City 12, 282-2027
Miss Almeda Smith, 1330 Rainier Road, Woodburn, Oregon
Dr. and Mrs Wilmer J. Miller, 209 Howard Avenue, Ames, Iowa

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PORTLAND GEOLOGY - WITH SOME HISTORICAL NOTES

By Arthur C. Jones, M.D. *

Once upon a time, a lo-o-o-ng time ago, the land where Portland lies was covered by the Pacific Ocean. The truth of the matter is that ocean water was only pushed away from this area some time in Miocene times, and possibly as late as upper Miocene at that, which takes us back only about twenty million years. Before that time, layer after layer of silts, volcanic ashes, and gravels were spread on a sloping sea bottom for no one knows how many eons. True enough, there had been up-wellings of hot lavas under and through this sea bottom some thirty to seventy miles to the west of what is now the site of Portland, during much of the Eocene time, 60 to 40 million years ago. Some of these thick lavas must have been thrust above the waves at times, while the days of the mammals dawned over lands to the east. These were perhaps islands off shore, that shore being somewhere about the western edge of the flat lands where now the Cascade Range stretches. These low shores supported a lush tropical forest, with palms, mahoganies, cycads and other thick-leaved trees, similar to those of Central America of today. Some of these leaves and wood were buried in the Goshen Eocene white tuffs near Eugene, a western equivalent of the Clarno beds in the John Day country.

Oligocene clams, snails and sand dollars succeeded their Eocene forbears in the sands now deep underneath Portland. These can now be dug out of the shales and sandstones of the Tualatin Valley rims and in some exposures near the western end of the Wildwood Golf Course. The ginkgo trees, dawn redwoods, cypress and cinnamon grew in semi-tropical woods near the shore, now east of Molalla.

This brings us to the deepest of the layers of rock which we explored on this fieldtrip of Gee-sockers, the Miocene lavas called Columbia River Basalts, which flowed out over the sedimentary layers which now underlie them. Flow upon flow of ropy semi-fluid basalt welled up through fissures to cover the lands to the eastward, to form a thick black rock flood over this part of Oregon, and also over wide patches of the old sedimentary brown rocks, clear to the present shore line and beyond.

Rivers ancestral to the Columbia washed gravels and sands from mountains to the east of the slowly rising country. Vast beds of this gravel gathered in a deepening basin which was destined to become the Willamette trough, or syncline. Quartzites, arkoses, schists, granites, and basalt pebbles settled out and were consolidated in the lower end of our valley to form great thicknesses of the early Pliocene Troutdale Formation. This extends down the Columbia as far as Kelso, south beyond the Clackamas River, and forms a sandwich filling between the old Columbia River Basalts and the mid-Pliocene Boring Lavas which Dr. Edwin T. Hodge named the Cascan Lavas. These lavas were not a continuous cover, but flowed out of vents to form shield volcanoes, across Multnomah and Clackamas Counties from east to west. Other craters broke out in a line which now is the western slope of the Portland Hills or Tualatin Mountains, as they are officially named, covering the edges of the basin which holds the Tualatin sedimentary beds. Mt. Sylvania is one of this group, and Mt. Scott, Kelly Butte, Rocky Butte, and others, broke out near the middle of the Willamette syncline.

Deformation appears to have been rapid during Pliocene time; the hills grew higher, and streams cut canyons in them, eroding off much of the Troutdale gravels, and the lavas above and below them. It may be that the entire land stood much higher above sea level in late Pliocene time than it does now. The first Cascade mountains rose and cut off westward flowing streams. The climate grew cooler with oak, maple, beech and sequoia trees.

The Portland Hills Silts overlie the Boring (Cascan) gray lavas and are quite surely early Pleistocene in age. Paul Howell has distinguished two members of this puzzling formation, the first member showing evidence of having been laid down under slack water conditions throughout its deposition, no bedding being evident; the younger member showing characteristics of bedding in a lacustrine lake-like situation. These silts extend up to elevations of 1500 feet on the hills northwest of Portland and extend from Larch Mountain and the hills north of Washougal as far west as Astoria along the lower Columbia.

The Willamette Silts form a veneer over most of the lower Portland area up to about

* Charter Member and Past President of the G. S. O. C.

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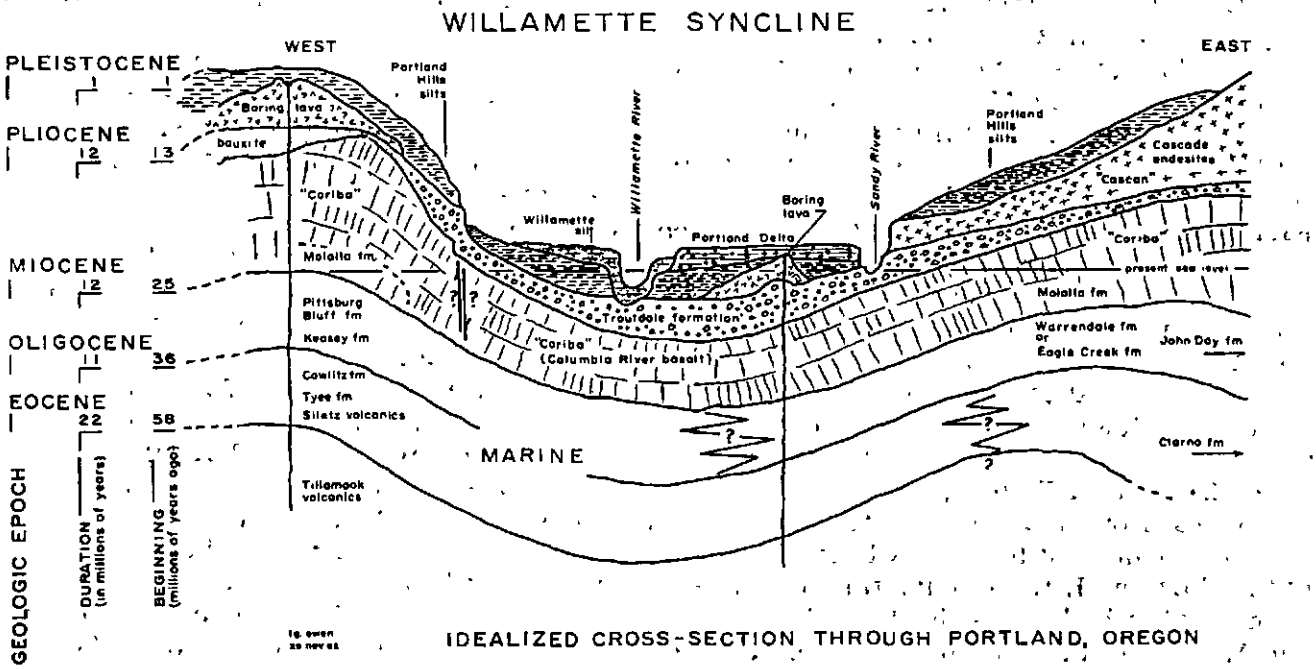
the 150 foot level, and these contain mica flakes, fine sand grains of quartz, garnet, and many other minerals which could have come from nowhere closer than the Chelan country of eastern Washington, or perhaps the Okanogan area or mountains of Idaho and Montana. These were probably laid down by the last great Pleiostocene flood, released toward the end of the last ice age as the glacial ice melted to let the waters of Lake Missoula flush out across the Columbia basin and down the gorge in a catastrophe which must have wiped out all life over vast regions. These waters filled the Willamette valley as far as Eugene with its burden of icebergs and rafted foreign erratic boulders of granite, schists and other total strangers to this western land. The Portland delta is mantled by sands and gravels dropped by this great flood as the waters spread out beyond the mouth of the Columbia gorge, extending to the Clackamas river southward and across Fourth Plain to the north, in Washington.

Flood channels were left in these vast delta deposits across the flat surfaces of alluvium on both sides of the present Columbia channel, around Rocky Butte, between the other East Portland hills. A final deeper cut in Sullivan's Gulch, through which drained a spate of subsiding water to the Willamette River, exposing old Troutdale gravel cliffs near river level. The Willamette Terraces have been cut in recent times by the river, hurrying to lower the valley floor again, perhaps held at the 200 and 100 foot levels by temporary filling or damming of the Columbia down-stream, or by eustatic changes in sea level during the brief recent.



IDEALIZED CROSS-SECTION THROUGH PORTLAND, OREGON

The foregoing is an oversimplified brief of the story of long ago that unfolded to a bus full of Geesockers on the November 11th trip around Portland. We saw the Willamette Silts near the Auditorium, glimpsed the Columbia River Basalts at the mouth of Marquam Gulch, and the Portland Hills brown silts perched above the old quarry there. The east end of the gulch is now filled with recent deposits of garbage and clay, and the high Fourth Street trestle that used to carry the Southern Pacific red electric trains has been replaced by a fill where Barbur Boulevard runs. Pictures of the old trestle and the grading in 1933 reminded us that time is short and that man has become a great erosional agent.

Building stones all over the city carry a most varied geological record, as witnessed by Wyoming sand stone in the walls of the City Hall, buff Indiana limestone with Paleozoic fossils in the County Courthouse, gray sandstone from Tenino in the old Pioneer Postoffice, Brachiopods, clams and snails, some corals and crinoid stems hide in marbles at the Union Depot, where we found them, and in the Medical Arts Building, the entry to the Benson Hotel, the panels along the stairways in Meier and Frank store, and all sorts of other unlikely places. The paving blocks about the Skidmore Fountain were from Europe via ship

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ballast, in part, and some of them were from native basalt in the big quarry north of St. Helens The old Newmarket Theatre at Second and Ankeny reminded us of the rococo gaslight period of the 1880's in early Portland.

We traced the outlines of Couch Lake, now under the railroad yards, and of old Tanner Creek, which ran along Canyon Road, past Goose Hollow and the old tannery that stood where the Stadium now is, and the Indian camp ground near what is now the intersection of West Burnside, 19th Avenue and Morrison. Tanner Creek is now imprisoned in a deep culvert directly beneath Multnomah Stadium - it used to meander across the flats to empty at the river end of Savier Street.

The sliding brown silts on both sides of Canyon Road buried a mammoth in late ice age time, as proven by a big tusk which was dug out just below the Oregon Museum of Science and Industry, in 1960. Spruce cones there prove that it was colder here when the big animal died. A rhinoceros tooth was found in these same clays in 1898 in Washington Park.

S. W. Fairview Boulevard and Skyline Road led us over more silts to Burnside, where we saw blocky, gray lava cliffs near the tunnel. These are mid-Pliocene Boring Lavas, remnants of an intra-canyon flow from a vent near what is now the summit of the Tualatin Mountains, just north along skyline road. There are quartzite pebbles in the clays that still perch above the Miocene basalt cliff above the shopping center at West Burnside and N. W. 24th Avenue, on a flat, wide terrace which looks as though it has been leveled off by some ancient stream.

Westover Terraces were man-made with hydraulic 'giants' in the 1900's, so lots of hill silts and gravels of mid-Pliocene "Troutdale" age were washed into Guild's Lake, forming part of the land for the industrial district that replaced the 1905 World's Fair grounds. Luckily a fine remnant of typical "Troutdale" stands as a cliff just below the east tunnel on Cornell Road. We had a fine look at it and took samples of rocks that must have come from as far east as the Bitter Root Mountains in Idaho and even the Belt Series of pre-cambrian quartzites and other metamorphics in the Canadian Rockies. The ancestral Columbia must have been busy in early Pliocene.

Magnificent logs in the Forestry Building reminded us again of Guild's Lake, as these were floated in from the river in 1905 to a tongue of that lake, and hoisted right up to the building site by steam donkey engine power. Alluvial fans along St. Helens Road showed that erosion is rapidly removing the old silts, the remains of Troutdale gravels and the weathered Columbia River Basalts, from the Tuality Mountains. These go higher as we go north. Maybe the western limb of the Willamette Syncline did break in a fault along here. (Recent reports indicate that the November quake may have originated on this fault.) The east side of these hills is certainly steep, almost like a fault scarp. Beautiful basalt columns mark the quarry where the Multnomah County "rock pile" used to be near the old Gasco plant. Here we crossed the Willamette meridian at an angle, to climb to the St. Johns bridge. The dense basalt cliffs furnish excellent anchorage for the heavy cables of this beautiful suspension span, high above the tallest ship's masts.

The hills look even steeper from the docks of Terminal 4, where we recalled that our two rivers graded good approaches for ship commerce, and laid a place for the ship-ways of shipyards for two wars, just down river from the terminal. The down-stream end of the Portland delta was just behind us, here mostly of fine sand and small gravels. We paused to look through the Union Pacific tunnel which burrows under the Peninsula from Mock's bottom, saw where the river had boiled up through the rialroad fill to flood Vanport in 1947. We stopped at Broadmoor Golf Links to see an artesian well that comes from 525 feet below, just under a hard stratum, and flows 600 gallons per minute.

Then on to N. E. Cully road, where two deep gravel pits display fine foreset beds, formed in the big Missoula flood about 11,000 years ago. Big boulders of Boring type lavas, sandstones from Troutdale cliffs up-stream, and even a massive Pliocene volcanic breccia chunk attested to the force of water that could roll them so far, down out of the Gorge and miles from the mouth of the Sandy River.

The view from both ends of Rocky Butte laid before us the long east-west row of eroded Pliocene Boring volcanoes, older than the upper Cascade range by at least two to five million years, and the north-south row of fiery cones of which our viewpoint was one. We were

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reminded that there are what may be crater lakes at each end of this row of hills. Battleground Lake to the north and the little lake at Gladstone camp grounds at the south, where a cinder pile and lava flows once blocked ancestral Clackamas River, for some millennia. The deep flood-scour channel east of the Butte could be traced around the south end of the volcano and west, where it widened out to form the basin of the Rose City Golf Links and to scallop the Portland Delta along the Alameda terrace. Sullivan's Gulch must have carried a lot of late flood water, late in this time, to produce a ready-made entry for rail and free-way to the middle of the city. The gulch emptied just south of the Steel Bridge.

Down we went, over the surface of the thick lava flow that thrust out toward the Columbia from the north end of Rocky Butte, then across to see a deposit of gravels and sand pushed up against the north end of Mt. Tabor. Here, again, were our old friends, the quartzites, greenstones, some gneiss pebbles and fine jaspers among basalt and andesite pebbles of all sorts. Paul Howell is sure these were left there some time during the Pleistocene, perhaps one of the earlier glacial stages. A granite erratic, buried among these deposits at S. E. Ash and Gilham streets suggested that ice rafting of such strangers can have happened more than once during the million years of the Ice Age. Emily Moltzner salvaged this crucial bit of evidence, along with some other high grade gravels, and she gave us the privilege of seeing them at her home at 72nd and Stark, enroute to Mt. Tabor and to Holgate Street.

The last of the trip led us across the eastern side of Mt. Tabor where we saw more gravelly Pleistocene strangers on S. E. 59th Avenue. Then down along a flood scour channel between Mt. Tabor and Kelly Butte, and on down over the terraces cut in the western edge of the Portland terrace gravels. Were these just Willamette river cut, or did eustatic levels of the ocean during interglacial times determine them? And did the Willamette once flow through the slough channel where Eastmoreland links and the railroads are? It's just as well that we end our trip with questions! That makes geology interesting and challenging.

UTAH TRIPS AND TREASURES

At the Friday, November 23rd, meeting at the Central Library, Al Keen presented a program of colored slides with a taped narration produced by the Golden Spike Gem and Mineral Society of Ogden, Utah. This production was the first prize winner in a competition of the one hundred and thirty-seven member clubs of the Northwest Federation of Mineralogical Societies, over which Al presides.

Suffice to say, it was the excellent program that we would naturally expect from Al, and a rock hound's bonanza. It was not difficult to understand why the many splendid and spectacular specimens, cut and beautifully polished, photographed to perfection, and tied together with the rhyming commentary had won the first prize in the competition. We wish to express our appreciation to Al for a very good evening indeed.

W. M. F.

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THE PLIOCENE EPOCH

The Pliocene Epoch was reviewed for us at the Friday, November 9th meeting by Dr. Don Wallace Schafroth, Assistant Professor of Geology at Portland State. This illustrated lecture, one of the series on historical geology being presented by the Society, had to be rescheduled because of the Columbus Day storm. Dr. Schafroth began his talk with paleogeographic charts of the North American continent and gradually worked over to where we feel most at home -- the west coast.

New on the Portland State Faculty, Dr. Schafroth gave a smooth, clear-cut exposition of his subject that held our interest, and we will be happy to have him again. It is always interesting to see a new face in the professional community, and we hope he will join the Society before he becomes too much involved with the exigencies of modern life.

W. M. F.

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JUNIOR GSOC FIELD TRIP

On Sunday, October 28th, Dr. John Hammond led a five-car caravan of Junior GSOC'-ers on a field trip to the Collawash fossil leaf locality. The beds are part of the Eagle Creek formation which is considered to be lower Miocene or upper Oligocene in age.

GSOC'ers, young and old, enjoyed the experience of breaking rocks and being rewarded with many fossil leaf imprints. Because of the abundance of carbonaceous material present, it is presumed that the locality was once a lake bed. Dr. Hammond reports that over one hundred different kinds of plants, both woody and herbaceous, have been identified from these beds.

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I. G. E.

GSOC LUNCHEONS

The Thursday noon luncheons of the Society, under the Chairmanship of Mr. Leo Simon, have become increasingly popular during the past few months. Currently, the group meets at the downtown YMCA at 831 S. W. 6th Avenue which is very near the central business district.

As stated in the GSOC Calendar, the luncheon meetings provide an excellent opportunity to examine specimens and publications brought by members and guests. Of particular interest are the short "five-minute" talks which usually seem to last a bit longer.

The luncheon group recently enjoyed hearing Mr. Maurice Albertson discuss weather and storms with reference to the Columbus Day storm in Portland. Another recent speaker was Mr. H. Bruce Schminky who told of experiences on his tour of Europe this fall.

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TELEPHONE COMMITTEE

We of the Society are indebted on many occasions to the help of the Telephone Committee. Mrs. Leslie C. Davis, whose name was accidently omitted from the inside front cover, is chairman of the committee. Other committee members are Mrs. Hayward Peirce, co-chairman along with Mrs. Oscar Berg, Mrs. Cleveland Johnson, Mrs. Ruth Eliot Prentiss, and Mrs. James Stauffer.

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O M S I

It is reported that the burning of the mortgage was observed by the Board of Directors and guarantors of the Oregon Museum of Science and Industry at a dinner on November 20, 1962.

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BY-LAWS CHANGES

To provide a more appropriate period between nominations of new officers and election, with a period in January when nominations can be made from the membership at large when so desired, the Board of Directors on November 23 unanimously passed an amendment to the By-Laws.

Briefly it is to provide date changes as follows:

That the final publication of the nominees as selected by the nominating committee be on or before January 15 to provide publication in the January Newsletter; that the nominations from members at large may be in on or before January 25 if such nominations are desired.

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NOMINATING COMMITTEE

President Leonard H. Delano has appointed Mr. Albert J. Keen to be chairman of the nominating committee. The nominating committee will prepare a slate of candidates for the annual election of officers of the Geological Society. The list of candidates selected by the committee will appear in the January 1963 issue of the Newsletter.

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FIELD TRIP FEE -

In September of this year, at its regular monthly meeting, the Board of Directors of the Society passed a resolution authorizing the collection of fifty cents fee from each adult participant on field trips.

The field trip fee would be levied only on occasion when it is deemed necessary to reimburse a trip leader for special expenses incurred in the research, planning, scouting, etc. of trips.

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ANNUAL BANQUET

Miss Marjorie A. Fessenden has been appointed general chairman of the annual banquet of the Society by President Leonard H. Delano. The annual banquet will be held on the evening of Friday, March 8, 1963.

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SUBJECT AND AUTHOR INDEX*
to
GEOLOGICAL NEWS LETTER
Volume 28, 1962

Compiled by M. L. Steere

*For author index see underlined names.

SUBJECT & AUTHOR INDEX - cont'd.