GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

Vol. 21 PORTLAND, OREGON 1955

GEOLOGICAL NEWS-LETTER
Official Publication of the
Geological Society of the Oregon Country
703 Times Building, Portland 4, Oregon
POSTMASTER: Return Postage Guaranteed

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Officers of the Executive Board, 1955 - 1956

			Zone	Phone
President:	Mr. Wm. F. Clark	3613 S.E. 9th Avenue	2	BE 4-7096
Vice-Pres:	Mr. Edward D. Bushby	2626 S.W. Ravensview Drive	1	CA8-3021
Secretary:	Mrs. Leo F. Simon	7006 S.E. 21st Avenue	2	BE 6-0549
Treasurer:	Mr. Robert F. Wilbur	2020 S.E. Salmon Street	15	BE 5-7284

Directors: Mr. Raymond L. Baldwin (1956) Dr. Francis G. Gilchrist (1956)
Mr. Albert J. Keen (1957) Mr. Leroy A. Palmer (1958) Mr. Fay W. Libbey (1957)

Staff of Geological News Letter

			Zone	Phone
Editor:	Mr. Orrin E. Stanley	2601 S.E. 49th Avenue	6	BE 5-1250
Asst. Editor:	Mrs. Lillian F. Owen	5933 S.E. Lafayette Street	6	PR 4-9729
Assoc. Editors:	Mrs. Rudolph Erickson	249 S.W. Glenmorrie Drive, Oswego		NE6-1873
	Mr. Ray S. Golden	3223 S.E. 19th Avenue	2	BE 4-3921
	Miss Margaret L. Steere	2064 S.E. 72nd Avenue	16	PR 4-6382
	Miss Emily Moltzner	Board of Trade Building	4	CA2-2420
Library Editor:	Dr. Francis G. Gilchrist	0644 S.W. Palatine Hill	1	NE6-4792
Business Manager:	Mr. Edward A. Kelham	14018 S.E. Linden Lane	22	OL4-2196

Committee Chairmen

Program:	Mr. Raymond L. Baldwin	Display:	Mr. Earl W. Minar
Field Trips:	Mr. Murray R. Miller	Research:	Mr. Rudolph Erickson
Librarian:	Dr. James Stauffer	Service:	Miss Margaret L. Steere
Membership:	Mrs. Leslie C. Davis	Museum:	Dr. J. C. Stevens
Publicity:	Mr. H. Bruce Schminky	Public Relations:	Mr. Clarence D. Phillips
Social:	Mrs. Wm. F. Clark; Mrs. Albert J. Keen	Historian:	Miss Ada Henley

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 Membership Chairman, Mrs. Leslie C. Davis, 7704 S.E. Taylor Street, Phone AL 3-6723. Regular annual dues (single or family memberships) are $5.00 for residents of Multnomah and adjacent counties; $2.50 for others; and $2.00 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. Tenth Ave. and Yamhill St.

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

Library Browse Nights: Once a month. Lewis and Clark College.

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.

CALENDAR FOR JANUARY

Thursday Jan. 6 — Luncheon Meeting - Room 305 YMCA

Tuesday Jan. 11 — Library and Discussion Night - Biology Building, Lewis and Clark College, 7:30 to 10:00 p.m. In case of snow or ice requiring chains the meeting will be canceled. Call TU 4808 or BL 1-4972 in case of uncertainty. Color-slide enthusiasts are urged to bring ten or twelve of their best slides, preferably ones of geological interest, for showing. A little summer sun will add enjoyment to a winter night.

Thursday Jan. 13 — Luncheon Meeting - Room 305 YMCA

Friday Jan. 14 — Friday Night Meeting - Library Hall, 7:00 p.m.
Mr. A. W. Hancock, famous amateur paleontologist, will speak on "The Pageant of Old Oregon."
Exhibit of fossil Cycad and Palms by Mr. Richard Rice.

Thursday Jan. 20 — Luncheon Meeting - Room 305 YMCA

Thursday Jan. 27 — Luncheon Meeting - Room 305 YMCA

Friday Jan. 28 — Friday Night Meeting - Library Hall, 7:00 p.m.
Dr. Arthur C. Jones - "Aerial Glimpses of Western Geology," with kodachrome slides.

* * * * *

Many of our members are looking forward to the first Audubon Screen Tour of the season, January 27, 1955, at 8:00 p.m., in Cleveland High School Auditorium, 3400 S.E. 26th Avenue, when Charles E. Mohr of the Audubon Center, Greenwich, Connecticut, will show his all-color movie, "Outdoor Almanac." These screen tours have been very popular in the past. The price is 75 cents or $2.00 for the season of three tours.

****

NEW MEMBERS - GSOC - December 1954

		Phone
Lilly, Mr. and Mrs. Elwin R.	2170 N.E. Hancock Street, Zone 12	MU 1433

JUNIOR MEMBER

Duckwall, Fred D.	811 Oak Street, Hood River, Oregon	3562

ERROR IN TELEPHONE NUMBER

Clark, William F.	3616 S.E. 9th Avenue	FI 7096

****

"INDOOR FIELD TRIP" - SUNDAY, NOVEMBER 21, 1954

Some fifty members of the Society, together with a few friends and visitors, accepted the invitation of three members of the Agate and Mineral Society to visit their homes and see their collections. Under the direction of our trip leader Murray Miller we made "ron-de-voo" in the Hollywood district and then split into three groups; allotting to each group the time and sequence necessary to avoid congestion at any location.

Mr. and Mrs. E. R. Rockwell showed us a large display of dendritic and other types of agate arranged in panels and beautifully illuminated from behind to show the detail of each thin section. Of equal interest was their collection of mineral crystals, polished slabs, "thunder eggs" in section, and agatized limbwood.

Mr. and Mrs. Al McGuiness, in the opinion of one of our members who has an extensive collection of his own, possess an "outstanding and well-rounded collection of crystals." They showed also gorgeous displays of agate sections in illuminated panels. Many of the visitors were grateful for the opportunity of adding to their own collections from a supply of extra material which Al had set out for this purpose: crystals of calcite from King's Valley and of quartz from Placerville, California.

At the home of Mr. and Mrs. Lon Hancock the extensive display of fossils was a most interesting supplement to Lon's crystals and polished material. Both animal and plant material are arranged in chronological sequence around his display room. In size and in age they progress from minute marine forms of the early Paleozoic era to his "bone yard" of the more recent Tertiary period. A pictorial account of their development is displayed on the walls above the shelving. To add further to the realism there is a pronounced anticline in the shelving, somewhere between Jurassic and Cretaceous. Whether designed for effect or a result of sheer weight, the deformation surely is well adapted to the use to which Lon puts his interesting display, making it available to numerous groups interested in the study of paleontology.

The Geological Society is highly appreciative of the spirit shown by these members of the Agate and Mineral Society in inviting us to their homes for an afternoon of entertainment and of study. (R.F.W.)

****

The talk by Leo Simon, December 10, 1954, on his and Johanna's trip east has been interestingly written up by Herbert Laurence and will be included in the February issue of the News Letter.

****

RE HOMO SAPIENS

Mr. Louis E. Oberson, one of our charter members, is this year's president of the Men's Garden Club and finding himself very busy. Incidentally, their small daughter Mary Louise, a very meticulous little person, accompanied her parents on the recent basement trip to view outstanding collections. On her return home she assembled her own modest collection, arranged it carefully on shelves, and added a neatly lettered sign: "Please do not handle!"

Speaking of presidents, our own genial president Al Keen has been chosen by the Oregon Agate and Mineral Society to lead their destinies for the coming year. "Nothing succeeds like success." (A.H.)

****

BACKYARD GEOLOGIST

By

Edward A. Kelham

Do you sit at home and feel sorry for yourself because for one reason or another you cannot take the long field trips for ancient bones or decipher the history of volcanoes past and present? Don't! There is probably as much geology to be found in your own back yard as your friends will find when they get up before breakfast and take off in the chilly dawn for the land beyond the ranges.

This writer has had to avoid long, hard trips for some years now and has discovered that the geology of his own over-sized city lot is quite fascinating. After all anything that nature has done with rocks or soil is geology. With this in mind the reader is invited to come along with us on a geological trip in our own back yard.

First, let us stand on the patio, a good vantage point, and survey the terrain. We see that the back half of the lot is nearly flat; if there is any surface drainage it is hard to detect. We examine the soil and see that it is very dark, almost black, and of fine texture. It produces fine vegetables now but not many years ago it was a wet-weather marsh. Not many centuries ago it must have been a swamp. Before that it was undoubtedly a shallow lake. When digging post holes or ditches I have found that the black soil is at most about two feet deep. Below it we find a reddish clay containing small pieces of decaying rock. If we take a stone several inches through and break it open we find that the center is hard, very fine grained, and almost jet black in color. It has a familiar look. Quite evidently the floor of the ancient lake was Columbia River basalt; we have dug into its decaying upper surface. A few feet farther down we would probably find an unweathered, impenetrable layer.

To the right of the path is a rock garden built of dark gray "honeycomb" rock, "vesicular lava" in geological terms. We hauled it in from an outcropping near the top of one of the Boring Hills a few miles to the east. Geologists say these hills were active volcanoes at the beginning of the Pleistocene or earlier; but the slight degree of weathering and the thin soil cover on this deposit of "yeasty" lava would indicate that this flow must have occurred at a much later date.

Let us knock off a chip from one of these rocks and examine the fresh break with a hand lens. It is gray in color, similar to Cascade andesite lavas. The fresh surface appears "frosty," and the lens reveals tiny crystals sparkling in the light. The lens also reveals little vesicles formed by gas bubbles in the molten lava. The structure of the rock is coarse, not dense like Columbia River basalt. Some of the larger vesicles have small zeolites attached to the walls, looking like little pellets of snow.

About the middle of the lot from east to west and near the south line, a large hole nearly eight feet deep was dug when the house was built, to accomodate a septic tank. Here the soil proved to be somewhat sandy and became progressively more sandy as the digging continued until at the bottom of the hole nearly pure sand was found.

The soil in the front yard is entirely different. It is coarse, granular, and dries quickly. When I dug a deep ditch through it a few years ago I found it underlaid by a deposit of coarse gravel of unknown depth and ranging in size from sand up to boulders a foot in diameter. The latter are well rounded and

show but little weathering. Evidently they were deposited by running water and that not too long ago. When broken some of the cobbles are certainly Columbia River basalt. Others are of varying shades of gray or reddish and are of coarse texture. They are Cascade andesite origin perhaps. The lot is about a mile east and 200 feet above the present bed of the Willamette River; but there are indications both to the north and to the south that at some time in the past the river flowed much closer to it than it does now.

Among the cobbles found in the digging, one is different. It is a mica schist about the size of my fist, and is now in my collection. Geologists say there is no similar rock in the Willamette drainage basin; so it is undoubtedly an erratic, either ice rafted or tree rafted from east of the Cascades via the Columbia River. It had a long and eventful journey before it came to rest in my front yard.

In order to provide an outlet for my drainage system I had to deepen a roadside ditch a block or so to the north. Part of the way I dug two feet deep through a yellowish-brown clay. In this I found stream-worn pebbles completely weathered to the same texture as the surrounding clay, but retaining the original shape, and perfectly outlined on sides and bottom of the ditch. They must, therefore, be vastly older than the unweathered pebbles found in my front yard. Is this a sample of the Mayger weathering mentioned by Treasher?

Thus endeth the lesson in backyard geology. How about a field trip in your backyard some time?

****

A TRIP DOWN GEOLOGIC TIME

A Report on a Class Field Trip up the Columbia River Gorge

By
Ollie Urbigkeit
Student at Portland State College

"A trip down geologic time." How silly that sounds. But last Wednesday we actually did just that! The first stop, just past the town of Troutdale on the Sandy River, brought us in view of the sunburst patterns that resulted from cooling, when the Boring lava flowed out on top of the Troutdale formation. Observing the Troutdale formation, one can readily distinguish between the different types of current that brought the gravels and silt to their resting place. The larger rocks indicate swift waters, while the smaller pebbles and abundance of silt reveal slower and calmer waters.

As we continued up the Columbia River gorge, Dr. Hopson, our instructor, called attention to the fact that the land on top of the Troutdale formation usually has the form of rolling hills, as may be seen on both the Oregon and Washington sides of the river.

We paused overlooking the gorge long enough to pick out certain objects which had a bearing on our geology lectures at the time: Beacon Rock, the remains of a volcanic plug; and Cape Horn on the north or Washington side of the river, a continuation of a lava flow from the Oregon side. We also noticed the striking difference between the mountains of the two states: The mountains on the Washington side are flat topped with remnants of Columbia River basalt protecting the softer Eagle Creek formation beneath.

The ride to Larch Mountain's summit which followed next was fascinating. We tried to locate "larches" (noble firs) and to find dikes of Cascade andesite pushing up through the Portland hills silt. We learned that the Portland hills silt which now covers the hills is related to wind-blown deposits of eastern Washington and Oregon.

The glowing descriptions of Mount Hood that have been printed by the Oregon Chamber of Commerce fall far short in describing that majestic peak seen from Larch Mountain on that beautiful day. Just enough snow had fallen upon the slopes to cover the scars of past volcanic activity. The green of the forests and folds of the valleys provided the setting. Perhaps somewhere through those valleys, a million years or so ago, flowed the ancestral Columbia River.

On the way to Vista House we observed the red bauxite strip beneath the Troutdale formation and forming the upper layer of Columbia River basalt. At Vista House we saw evidence of a delta formation in the Troutdale gravels. Then descending into the Columbia River basalts we noted pillow lava with its peculiar rings caused by cooling under water. Farther down in the gorge small valleys have been carved out by the wearing backward of the water falls.

Traveling on up the gorge we could see the many layers of Columbia River basalt which indicate numerous flows. The jointing of the basalt is into columns and brickbats.

The Eagle Creek formation which underlies the Columbia River basalt in the middle of the gorge was extremely interesting, since petrified logs were discovered protruding from the lava flows. I might mention at this point that I have traveled up and down the route covered by our field trip, and this is the first time I have ever noticed these logs. Several students after digging in the road cuts were rewarded by finding fossils of leaves. Others found pieces of petrified wood. Dr. Hopson pointed out that the Eagle Creek formation near Bonneville is a slide area. We observed slides on both the Oregon and Washington sides.

Continuing up the gorge, we saw the lava flows (Columbia River basalt) begin to roll: anticlines being the upfolds and synclines the downfolds. At Hood River we found a formation similar to that of the Troutdale formation. However, the rocks there were not rounded as they are near Portland.

At this point our field trip was concluded. It was worth much more to me than the fare paid to charter the glass-topped bus. I'm looking forward to the next trip.

(The reader of this paper should refer to the geological column published in the April 1954 issue of the News Letter, p. 34, for the sequence and ages of the formations.)

****

We quote the following from the Portland City Club Bulletin concerning Mr. Leroy Palmer, our columnist who so ably reports the luncheon meetings: "Leroy A. Palmer, mining engineer and formerly head of the San Francisco Commonwealth Club's Research Section on Mineral Industries for five years, has accepted the Research Board's appointment as chairman of the study on Trans-River Transportation." (A.H.)

****

IGNEOUS ROCKS ON DISPLAY AT LIBRARY NIGHT

A pelting, driving rain and windstorm failed to discourage the twenty-two enthusiasts who assembled at Lewis and Clark College for a "library and discussion night" on Tuesday evening, December 18. And they were well rewarded for the effort. In addition to the attractions of the Bushby Room, with its well-filled shelves of splendid geologic material, Dr. Stauffer had prepared a fine exhibit of igneous rocks in the biology laboratory on the second floor, with three high-powered microscopes set up for our use, and others available if desired.

An added attraction was the exhibition on the first floor of Oregon scenes in water colors by Oregon artists.

After a social half hour, during which coffee, tea, and excellent cookies were graciously served by our hostess, Mrs. Catherine Clark, the group dispersed at ten o'clock. By that time the storm had abated and we drove home under a clear sky with a full view of the myriads of twinkling city lights. (A.H.)

****

LUNCHEON NOTES

Ray Baldwin talked November 11th on railroad development as he had seen it in his native state of New Jersey and in the West. Near Mr. Baldwin's home were two "mountains" about 400 feet high; but of seven railroads only one went through them, the other six avoiding them by paralleling or skirting them. The Baldwin family was interested in a 4½-mile local line which was taken over by the Erie in 1891. E. H. Harriman, who controlled the Erie, planned improvements on the New Jersey situation by electrifying the "Baldwin Line" and building a new road around the mountains to develop a growing residential territory but these plans were interrupted by his death. The railroad tycoon controlled 23,000 miles of railroad when he died in 1909.

When Mr. Baldwin came to Portland in 1901 Harriman and James J. Hill were engaged in battle, each trying to keep the other out from what he considered his territory. Eventually, through construction of the S.P and S., the successors of each (both by that time dead) succeeded in gaining access to the competitive territory.

November 18 brought out another large attendance. The 23 members present were well rewarded by Orrin Stanley's interesting talk on past and present efforts at flood control in the City of Mexico. This city is situated in the Valley of Mexico, an area of 2300 square miles rimmed by mountains. In the valley is a shallow lake, and on an island in the lake the Aztecs built their city. As the city was only a little higher than the lake and was troubled by high water in flood seasons, the early emperors built dikes; but these were only partially successful. Further relief was attempted by tunneling through one of the ridges to carry the water out of the valley. The tunnel was in hard clay but was not lined. It caved in. Ten to 15 years later an unusually heavy rain caused a flood which drowned about 20,000 of the inhabitants including the Spanish viceroy. The Spaniards being in power then, decided to convert the tunnel into a canal, a proceeding that involved removal of 50,000,000 cubic yards of earth and took 150 years to accomplish. Meantime an earthquake obligingly opened some underground channels which allowed the flood waters to drain from the valley. In the 1890's the city built a tunnel at a lower level than the canal and as this has a capacity of 200,000 cubic feet per minute it has finally taken care of the flood problem.

(L.A.P.)

****

CALENDAR FOR FEBRUARY

Thursdays — Luncheon Meetings - Room 305 YMCA
February 3, 10, 17, and 24.

Friday Feb. 11 — Friday Night Meeting - Library Hall, 7:00 p.m. Lloyd Ruff, geologist with the Army Engineers, will give a talk on "Idaho, the Gem State," illustrated with a series of slides showing geological features.

Tuesday Feb. 15 — Library and Discussion Night - Biology Building, Lewis and Clark College 7:30 to 10:00 p.m. The subject of the discussion will be leaf fossils. Members and friends are invited to bring specimens for identification. Available literature on the subject will be on display.

Friday Feb. 25 — Annual Business Meeting and Election of Officers - Library Hall, 7:00 p.m. Following the business there will be a showing of a new sound color film, "In the Beginning." Much of it centers around the Grand Canyon. It was produced by the Socony-General Petroleum Company.

Sunday Feb. 27 — Field trip to study soils. Mr. Jack McDermid of the Red Soils Experimental Farm of the State of Oregon and Clackamas County, which is located at Oregon City, will conduct a tour of some exposures of soil derived from our valley formations. The soil profiles should interest all of us. Meet at the Federal Building (Post Office) on 99E in Oregon City at 1:00 p.m. The trip will be canceled in case of snow or freezing temperatures.

****

ANNUAL MEETING OF THE OREGON ACADEMY OF SCIENCE

The thirteenth annual meeting of the Academy will be held on the Willamette University campus at Salem on Saturday, February 26. Papers will be presented in four different sections: Biology, Chemistry, Geology-Geography, and Mathematics-Physics. Amateurs as well as professional scientists are urged to attend.

* * * * *

ANNUAL BANQUET NOT FAR OFF

The Annual Banquet will again be held at the Mt. Tabor Presbyterian Church, S.E. 54th and Belmont, at 6:30 p.m., on March 11, 1955. Mrs. Fred Nelson of the Dorcas Society of that church will have charge of the dining room and meal. Mr. and Mrs. Leo Simon are responsible for the ticket sales. Further information may be had by contacting Mrs. William Clark, TU 4908.

* * * * *

ANNUAL CONDON LECTURES TO BE IN MAY

Dr. J. Robert Oppenheimer has been selected to give the annual Condon Lectures in Portland State College auditorium on May 3 and 4, 1955. His topic will concern the constitution of matter.

****

Our members will be interested to learn of the forthcoming marriage of Patricia Ann Bryan, daughter of Mr. and Mrs. Robert L. Bryan, long time GSOC members, to Mr. William Ek, of Portland, on February 19, at 8:00 o'clock p.m., Rose City Presbyterian Church. A cordial invitation is extended to all GSOC members to attend. After a short wedding trip, the young couple will be at home to their friends at the Binford Apartments, this city. (J.E.)

****

REPORT OF NOMINATING COMMITTEE

A nominating committee consisting of Bruce Schminky, chairman, Mrs. A. W. Hancock, Dr. Ruth Hopson, Leo Simon, and Edward Kelham, report the following nominations for officers for the ensuing year:

President . . . . . Mr. William F. Clark

Vice-president . . . . . Mr. Edward D. Bushby

Secretary . . . . . Mrs. Johanna Simon

Treasurer . . . . . Mr. Robert F. Wilbur

Board Member . . . . . Mr. Leroy A. Palmer

Editor of the
News Letter . . . . . Mr. Orrin E. Stanley

****

NEW MEMBERS - GSOC - JANUARY 1955

		Zone	Phone
Abramovic, Mr. and Mrs. Emil	7730 S.W. Macadam	1	CH 7245
Buffham, Mr. and Mrs. Merton E.	6221 N.E. 23rd Avenue	11	WE 5248
Delano, Mr. and Mrs. Leonard H.	1536 S.E. 11th Avenue	14	EM 2139
Gregory, Dr. and Mrs. Victor	3621 S.E. Ankeny Street	15	FI 3137
Harrison, Mrs. Ruth	1879 S.W. 10th Ave., Apt. 12	1	BE 0255
Leonard, Mr. Laurie	1525 S.W. 10th Avenue	1	BR 9900
Steele, Mr. and Mrs. Glenn E.	Garden Home, Oregon		
Whitmer, Dr. John H.	1411 N.E. Tenth Street, Grants Pass, Ore.,		GR 6-4616

****

RE HOMO SAPIENS

In spite of a very wet Sunday, May and Eddie Bushby's "open house" at their new location, 2626 S.W. Ravensview Drive, was well attended. Their new home suggests cozy comfort within, and the Bushby's are looking forward to enjoying the attractive glassed-in court with its wonderful view of the mountains; also the view from the little balcony on the upper floor.

Mr. Orrin Stanley, whose photographic hobby has delighted us on many occasions, has discovered that he himself is photogenic - to his profit. Yielding to the persuasive eloquence of a salesman for the National Portrait Exhibitors Forum of Denver, he bought a ticket and had his "picture took." In due time he sent a further small sum on receipt of word from the Forum that this would entitle him to have the photograph exhibited. It won sixth prize. He waved a check for fifty dollars before our covetous eyes at the luncheon on December 24.

Myrtice Fowler is having a respite from teaching. She is serving on the jury through the month of January to February 5, and finding it both interesting and profitable.

Via Bruce Schminky and the underground, we learn that the most desirable location in the new zoo area, commanding a view of the entire tract, has been set aside for the Museum of Science and Industry. Now all we have to do is to get the building! (A.H.)

****

THE PAGEANT OF OLD OREGON

Address by Alonzo W. Hancock in
Library Hall, January 14, 1955

The title of this discussion, "The Pageant of Old Oregon," could be misleading; for a pageant is generally understood to be an entire picture presented from the beginning to the end. But on this occasion we regretfully have to make an exception, and for two reasons: first, because of the limited time we have for presenting our subject; and, secondly, because the story of Old Oregon reaches so far back into the past that its beginning is lost in the misty depths of time.

Let us liken our story to a stage drama in five acts; four of them have already been played, and we are permitted to witness only the fifth and final act, namely the Cenozoic or Age of Mammals. Geologically speaking this fifth act began not too long ago, say about 100 million years. The entire story is based upon authenticated facts. The stage across which the actors move is real; the actors are real; and the events which they portray are parts of history. Through the alchemy of nature this history has been preserved for us, and the living has been transformed into stone; and lest some should doubt, we have some of the stones on display with us this evening.

Close of Mesozoic Era

Let's on with the story. The curtain has lifted, and we find ourselves in the midst of a great crustal revolution (geologists call mountain building periods). Stresses deep within the earth have elevated the floor of the old Mesozoic Sea until its material makes up what is now known as the Rocky Mountains. Far to the west these same disturbances are also much in evidence, for from the troubled western waters first known as the Cretaceous Sea Old Oregon emerges.

It is at this point that we turn the spotlight upon Oregon; and we shall keep it trained upon her for the remaining epochs of her eventful journey.

Eocene Epoch

For a long time after the sea had vanished and Oregon's surface was dry land, the crustal disturbance continued until the entire area was squeezed and crumpled and folded into a jumble of rugged mountains. Many of the broken mountains exploded into violent volcanoes and poured forth vast quantities of ejecta: rhyolites, basalts, and andesites. It is from these rhyolites, in later times, that the Angel Wing and the Thunder Egg have been garnered; and from the basalts have been collected the Antelope and Beacon Hill gem stones.

As volcanic materials filled the valleys and erosion planed away the highlands, the surface of Oregon became a nearly featureless plain. Tropical rain forests of palm, cinnamon, and avacado spread across the land. Along the darkened trails, beneath these exotic forests, moved such bizarre beasts as Amynodon, largest mammal of the age; Moropus, a clawed monster resembling a horse but as large as an elephant; Uintatheres, Brontotheres, and Rhinoceroses no larger than a sheep; fox-sized horses; and deer the size of a common house cat. The epoch is called the Eocene or Clarno.

Oligocene Epoch

As the moving finger writes we notice that the western-flowing rivers become clogged. Low-folding hills stretching from Alaska to California seem to be the cause, for the waters unable to flow unhampered to the sea spread slowly across

the wide valleys and form lakes which in turn expand into fresh-water seas. Around these seas the forests have changed to redwood, oak, maple, ash, and sycamore. The dominant animals now are rhino, three-toed horses, deer; cats, and wolves.

The climate is somewhat cooler, and the annual rainfall has dropped from 50 to 40 inches. Ashes from exploding volcanoes carried by the wind and streams begin to cover the lowlands and fill the basins and lakes. They often trap and preserve plants and animals. The iron content to these ashes as it is moved up or down by the changing water tables oxidizes and produces the brilliant colors to be seen in the Painted Hills; and between these bands of color in ashen beds sleep the preserved remains of plants and animals of the long ago. Today they are our fossil beds. The epoch is the Oligocene or the John Day.

Miocene Epoch

Countless generations come and go in this seemingly timeless land, but change must come. It is Nature's law, and things do change. Oregon's erstwhile level lands are once more twisted, warped, and broken. Possibly during this process, miles beneath the surface, Pluto's melting pots are disturbed, and some spill over. From a thousand fractures there pours forth a flood of molten magma. Life, both plant and animal, either moves or is destroyed; and one of earth's most beautiful gardens is turned into a blackened desert. Valleys, hills, and mountains sink beneath this ocean of liquid fire and an area of 200,000 square miles is inundated. It is Oregon's darkest hour. Visible evidence of this great catastrophe is today widespread. Its rocks are commonly known as the Columbia River basalt. The rainfall is now 30 inches. The age is the Miocene.

Pliocene Epoch

Time heals all things, so we are told. Nature's working tools, rain, wind, and frost, attack these hardened surfaces and rot and grind them into sand and clays. To these new-formed soils plants return. This time it is hackberry, ash, and poplar with their modern look. In the new forests we meet the horse again, but not the midget with the three toes. The horse is growing up. His teeth are longer and sharper. His diet has changed from the tender leaves of plants to the tougher and more nutritious grasses. He has changed from a browsing to a grazing animal. He also has acquired some new neighbors; the elephant, the camel, and the broad-faced ox. Rainfall is now down to 20 inches. And we call the epoch the Pliocene.

Close of the Pliocene

As we closely observe the moving panorama, Nature is busily working upon a new project. From north to south across the Oregon country she has thrown a belt of fire. From belching smoke stacks prodigious quantities of a new type of lava is being poured, namely andesite. Thus a great mountain range, the new Cascades, is born. Mt. Hood, Mt. Jefferson, the Three Sisters, and possibly a hundred other volcanoes are active at the same time. Mt. Mazama was the giant of them all. Later (in the Pleistocene) with one terrific explosion it blows its summit skyward. Many cubic miles of material fall back upon the Oregon Country as glassy pumice. The walls of the great volcano collapse and tumble back into its own cauldron. Finally the immense cauldron fills with crystal clear water, forming what we proudly call the "Sea of Silence," the deepest fresh-water lake upon our globe, Crater Lake.

The Oregon Country, to compensate for vast areas forever lost beneath these mountains, moves her shore line 100 miles westward, retrieving from the floor of the old Pacific many thousands of square miles of the fertile lands we shall call western Oregon. Thus we enter the age of Pleistocene.

Pleistocene Epoch

While still bathed in the red, shimmering glow of volcanic beacons, old Oregon now braces herself for what appears to be in the offing another major catastrophe; this time it is not fire but the reverse. From out of the Northland, moving slowly but surely in her direction, comes a solid sheet of ice. In places it is more than a mile thick. It virtually destroys everything within its path. Seemingly as a precaution Oregon places thick shields of ice over her highlands lest erosion from excessive moisture sculptures her shapely mountains into blackened piles of rubble.

Much of her life forms, both plants and animals, have now fled southward to warmer climes. Her drainage systems are already taxed beyond their normal capacity. Much of the Canadian Country to the north has already been over-run and lies sprawled in helpless paralysis beneath the ice. The great Frazer River, unable to reach the Pacific by her old channel, joins the Columbia across what is now known as Washington.

To the east one arm of the icy monster has been thrust across the upper Missouri. The beautiful Yellowstone, no longer able to reach the Atlantic, spills her waters westward into a tributary of the Columbia and heads for the Pacific. In Montana an inland sea called Lake Missoula forms behind a barrier of ice.

The great geological nightmare finally comes to an end when, for some unknown reason, the frost king ordered a halt almost within the shadow of Mt. Hood and began a slow retreat to the north bringing on the end of the age of ice.

The ice that trapped Lake Missoula, no longer able to hold, breaks. Floods surge across northern Idaho, Western Washington, central Oregon, and on southward until the outlying portions lashed over into Nevada and northern California. The great flood which poured down the Columbia River gorge crested far above the Vista House at Crown Point. The lower Columbia became clogged with the present site of Portland 600 feet under water, and the Willamette Valley became an inland sea.

Recent

Life once more returns to the Oregon Country, and with it there comes a new master. Out of Asia, across the dry land which is now the Bering Sea then down the Pacific's widened strand, moves this conqueror, Aboriginal Man.

History we are told repeats itself, and we are to witness a classic example of this saying. On the same stage, with a similar act, and somewhat similar performers, but with this difference - the former actors came from out of the West, but from out of the East the new will come. Daring spirits in search of wealth and adventure pour onto the land. By a series of miraculous discoveries they are rewarded beyond their wildest dreams. Cornucopias, horns of plenty, are found to be more than overflowing. Nature had planted gold under the hills in this land of the sunset. She had clothed her mountains with the finest of timbers. She had covered her valleys deep with fertile soils.

Stories of this magical land spread like wildfire. From out the crowded East, legions of land-hungry peoples begin to surge westward. Of all the migrations of history, this was one of the greatest and possibly the last. Old ties are broken; old tradition forgotten as these seemingly numberless hordes push across their own frontiers into perils and hardships undreamed of. As the doors of hope seemed to close behind them the gates of promise opened ahead. Every obstacle that fate could muster was thrown across their paths. Deserts, mountain ranges, swollen streams, and savage tribes are encountered and subdued. Yet onward, ever onward, moves this surging human sea, until the spirit of the great Pacific seems to lift its hand and say, "This far thou shalt go and no farther."

And now we see aborigines and frontiersmen stacking their arms, the forests falling beneath the axe; the ships, the white-winged seraphs of the seven seas, are crowding the harbors; the giants of the rails are feeling their ways through the mountain passes; and the hum of the motor plane is in the air. Civilization has arrived.

As the curtain rings down on the Oregon that was, the pageant of her past has ended.

****

DISPLAY OF THE RICE COLLECTION OF FERN, CYCAD, AND PALM FOSSILS

Before his address at the January 14th meeting Mr. Hancock spoke of the display by Richard Rice of ferns, cycads, and palms, which he believes to be the finest in the world. The cycads, he said have a very interesting story. They made their first appearance in the Triassic, reached culmination in the Jurassic, declined in the Cretaceous, but are still with us. They have buds resembling the magnolia, although these are not true flowers. Cycads are gymnosperms with their seeds exposed; not angiosperms with seeds enclosed in an ovary. A great deal of pollen is required to assure fertilization of the seeds. An average stalk may have 100 seeds. One spore will pollenize one seed, but for each seed the plants produce five-million spores. Cycads have been found in Mexico as much as 10 feet high and 24 inches in diameter. Many are thought to be 1,000 years old.

The Tempskya, a fern, is found only in western North America. It had its heydey during the Cretaceous. Specimens 9 feet long and 16 inches in diameter have been found. The large bud at the top is described as really a bundle of ferns tied together. Thus it differs from any living plant. They originated in the Triassic, reached the height of their development in the Jurassic and Cretaceous, and are still found in Eocene deposits.

The palms are not old compared with the others. They originated in late Cretaceous but culminated much later. Mr. Rice, telling about his specimens, said that fossil palms are scattered over a belt in Texas which is 300 to 400 miles long and 50 to 60 miles wide. The fossils are found in coarse sand which has not been disturbed. The cycads came from southeastern Utah in the Morrison formation which is Jurassic. (E.M.Barr)

****

Dr. Ruth Hopson, who is national president of the American Nature Study Society, attended the joint meeting of that Society and the National Association of Biology Teachers in Berkeley, California, December 26-31. She presided at several of the sessions, and gave an address on the Natural History of the Lava Beds National Monument, Northern California; also an address before the ANSS and the National Speleological Society on Lava Tube Caves, Lava Beds National Monument.

8500 MILES WITH THE SIMONS

By

T. Herbert Laurence

Friday evening, December 10, 1954, will be long remembered by the GSOC as the night that Leo Simon recounted by words and beautiful slides his and Johanna's 8500-mile summer trip. The Simons "shot several birds with one stone." They attended mineral conventions, a graduation exercise at the University of Wisconsin, took rafts of pictures, and collected many choice and unique specimens - all in one trip.

Their itinerary took them through Idaho, Utah, Wyoming, South Dakota, Minnesota, and Wisconsin going; and Michigan, Illinois, Kentucky, Missouri, Kansas, Oklahoma, Texas, New Mexico, Colorado, Wyoming, Montana, Idaho, and Washington returning.

Leo showed us first a slide of eastern Oregon so we could see the similarity of the level Columbia River Plateau with the Great Plains of the Mid-west. However, there is a difference - you see the mountains on the skyline in Oregon. After going through southern Idaho the Simons arrived in the green Salt Lake Valley. It is a part of ancient Lake Bonneville. Its shore-line terraces are still visible on the slopes of the Wasatch Mountains. At Salt Lake City they attended the Rocky Mountain Mineral Convention, and while there they also visited the Bingham Copper Mine. This is an immense open-pit mine which resembles a huge amphitheater. If its descending tiers of railroad tracks were used for seats it would accommodate eight million people.

From Utah their journey took them to the Rock Springs region of Wyoming where some of the largest coal mines are located. Here they also saw good examples of spheroidal or domelike eroded granite intrusives. Next the South Dakota Badlands reminded them of Oregon's John Day Country. By now time was running short necessitating longer driving time. However, they made an over-night stop at Albert Lea, Minnesota. (This lethargic mid-western city is this reporter's birthplace.) The next day brought them to their destination, Madison, Wisconsin, the site of the University of Wisconsin. At the University's commencement program they witnessed the conferring of a doctor's degree on their son-in-law, Wilmer J. Miller. Following the graduation the Simons and their daughter, Mrs. Lotus Miller, started for northern Wisconsin and Michigan; but soon after starting they were plagued by an unusually heavy rain. Nevertheless, they did get a "peek-a-boo" at the confluence of the Mississippi and Wisconsin rivers and later also at the Lake of the Clouds. In a brief spell of sunshine, they took pictures of Pre-Cambrian rocks. Since these are the oldest-known rocks, we shared their thrill upon seeing them via Mr. Simon's wonderful colored slides. In spite of the inclement weather they also were able to view the largest body of fresh water in the United States, Lake Superior.

Returning to southern Wisconsin the Simons attended the Mid-west Mineral Convention at Milwaukee, and from there they went to Chicago. Needless to say, only one place in Chicago stopped Leo - the Chicago Museum of Natural History. Ordinarily museums are rather cold and indifferent to the common curiosity seeker, but the Simons found that their GSOC membership card was a virtual passport to the entire institution, and to other places later on. After leaving Chicago they went to Springfield where they paid their respects to President Lincoln by visiting his beautiful memorial. In southern Illinois they stopped awhile at the coal measures where coal is mined by stripping off the overburden of loose sand, clay, soil, etc. On top of the first layer of coal they found "coal balls," odd spherelike objects of plant vegetation which have been very tightly rolled and compressed into balls. Besides these "coal balls," they also collected concretions that looked like ordinary water-worn oval-shaped conglomerate pebbles on the outside, but which when struck sharp blows with a geological hammer split open lengthwise to show perfect imprints

Urged on by their daughter they visited the cypress swamps in Kentucky where the Ohio River joins the "Father of Waters" (Mississippi River). At St. Louis they visited the Botanical Gardens and saw growing tall and green many of the plants whose leaves are found as fossils in eastern Oregon. Then they crossed Missouri to the Tri-State Mines where the corners of Missouri, Kansas, and Oklahoma come together. In one of these mines there is 28 miles of road underground, and the tailings are piled as high as a five-story office building. Lead and zinc ores are here in sedimentary limestones, not in igneous intrusions as they are in the Rocky Mountains. The lead from the Tri-State Mines is often called "soft lead" to distinguish it from the desilverized lead of the West. As a rule ores do not supply many good specimens especially of the crystalline kind. Again, however, the magic wand of Mr. and Mrs. Simon's GSOC membership card brought them good luck for they were able to obtain some exceedingly select specimens of galena, sphalerite, aragonite, etc.

In Oklahoma they saw oil wells. In Texas they saw a very old mountain range, the Arbuckle Mountains. Only the roots of folds remain. The beds stand almost vertical and give the appearance of rows of monuments in a cemetery. In New Mexico they stopped at the famous Carlsbad Caverns for two reasons: to see the beautiful caverns themselves; and to watch the bats depart from their caves; but the bats were "batty" and either didn't show up or left by another entrance. They were two of some 1500 people who went through the caves on the second tour.

By now "horsetrader" Simon was in rare form, and he acquired many more choice and unique specimens for his collection. In fact, he obtained so many that it became necessary for him to have over-load springs installed on his car in order to bring the specimens home to Portland. The Simons then went to Colorado, where they visited the School of Mines at Golden and from there to the Garden of the Gods. At the city museum in Denver they saw a unique gold display which included specimens of gold crystals. Soon they were again in Wyoming visiting the Grand Tetons, huge intrusives which tower 12,000 to 13,000 feet from the level plain and many blue lakes. Since the Tetons are just around the corner from Yellowstone National Park, it had to be visited too. At Butte they visited the Anaconda Copper Mines and obtained some wonderful copper minerals as well as a delicate pink rhodochrosite specimen.

It is indeed a privilege to know the Simons who travel to places of great learning, like oases in the desert, where they drink deeply of the cool and refreshing waters, and then fill their canteens and pass them on to others.

****

RE HOMO SAPIENS

Two noteworthy visitors at the luncheon on December 9 were Dr. T. J. O'Neill, resident geologist of the New Jersey Zinc Company in Spokane, Washington, a former student of Oregon State College, the guest of Hollis Dole; and Mr. Robert Stearns from the State Corporation Commissioner's office in Portland, introduced by Ralph Mason. That particular luncheon was practically a "sell out," with an attendance of 27, making a full table.

* * * * *

Mr. Cleveland Johnson, one of our directors, is now convalescing at home after an operation on November 16 which kept him in the hospital for 30 days. We hope to see him out again soon. He and Mrs. Johnson had a most interesting trip in July and August of last summer. They toured the eastern and southern states, attended a family reunion of 118 persons in West Virginia, and returned via the west coast, covering more than 8,000 miles. They enjoyed excellent weather everywhere and brought home some 300 slides. (A.H.)

****

TWO NEW MAPS PUBLISHED

Two Oregon geologic maps were issued in 1954 by the U.S. Geological Survey in cooperation with the State Department of Geology and Mineral Industries. Both are accompanied by descriptive texts.

1. Geology of the Galice Quadrangle, Oregon, by F. G. Wells and G. W. Walker. This is part of the Survey's new series of geologic maps replacing the earlier folios. It is for sale by the State Dept. of Geology and Mineral Industries, 1069 State Office Building, Portland. Price $1.00.

The Galice quadrangle is in northwestern Josephine County in a very rugged part of the Klamath Mountain region. Sedimentary, metamorphic, and igneous rocks of Jurassic and Cretaceous age crop out across the quadrangle in northeast-trending stripes. The rocks are closely folded and broken. Most of the strata dip steeply eastward. The Rogue River crosses the quadrangle in a deep canyon, along which Quaternary terrace gravels lie at three levels. Millions of dollars worth of gold has been taken out of this area, most of it prior to 1912. Lode gold came from veins in the igneous intrusions, and placer gold came from the terrace gravels.

2. Geology of the West-Central Border Area of the Willamette Valley, Oregon, by H. E. Vokes, D. A. Myers, and Linn Hoover. This is Oil and Gas Investigations Map OM 150, and is for sale by Distribution Section, Geological Survey, Denver Federal Center, Denver, Colorado. Price 50 cents.

This map is printed in various patterns of green and consequently is not as easy to read as are most geologic maps. However, there is much of interest on the map and in the text. The area covered includes that part of the Corvallis, Albany, Monroe, and Halsey quadrangles which lies west of the Willamette River. The rocks that crop out are: Siletz River volcanics of lower Eocene age; Tyee and Spencer sedimentary formations of middle and upper Eocene age respectively; Oligocene(?) basaltic intrusives; and Quaternary gravels, silts, and erratics. One of the prominent features is the Corvallis fault which can be traced for more than 20 miles. It trends northeast across the map area in a line running roughly through Philomath, Corvallis, and Lewisburg. Siletz River volcanic rocks have been uncovered on the northwest or upthrown side of the fault zone, while the younger Tyee and Spencer sediments remain on the southeast side. The faulting occurred during Eocene time. The amount of displacement is believed to be several thousand feet. A number of fossil localities containing marine molluscs are spotted on the map in outcrops of the Spencer formation. (M.L.S.)

****

LUNCHEON NOTES

December 2nd Marvin Lytle talked to us on public land surveys. He stated that all surveys of the public domain are under government supervision. Formerly a Surveyor General was appointed for each state. Such an officer was appointed for Oregon in 1852. The surveys were executed under contract; that is, a surveyor would contract with the government to survey certain areas for a definite bid price. At first this worked well; but it later proved unsatisfactory as there was a tendency to slight the work and finish the job in the least possible time. Many poorly established monuments have now been destroyed, and no doubt many that were reported were never actually set. This has led to trouble, for in the last resort all surveys must relate back to a government corner, and if the site of a corner cannot be identified, confusion results.

It must have been noised about that Bob Wilbur was to talk at the December 9th meeting, for 26 members and guests attended, the largest number at any meeting at which your scribe has been present.

Bob's talk was on the loess (lō-ĕss or lŭs - Webster) deposits of eastern Nebraska with which, in the vicinity of Omaha, he has been familiar since boyhood. The deposits are fine limestone and clay of aeolian origin. During the first or Nebraskan period of glaciation vast quantities of bedrock material were eroded and deposited in a basin in central Nebraska. Water from the melting glaciers converted this into a lake. But there was no increment to this lake because it had no inlet, and a stratum of porous sandstone which underlaid it drained off whatever rain fell on the surface. Eventually the lake dried up. The later advances of the Illinois and Wisconsin ice sheets were accompanied by strong westerly winds. They poured over the dessicated lake bed and carried its fine sediments to their present positions, the loess deposits we see today.

December 16th Ralph Mason explained and demonstrated the use of the Mineral Identification Cards that have been published recently. (See News Letters) Taking a theoretical case he showed how all but two of one hundred cards, each representing a mineral, could be eliminated by five insertions of the skewer, thus leaving the final identification to one of two minerals, or in most cases to only one. Ralph told us that the cards have become so popular that the first printing has been practically exhausted.

The talk December 23rd was by Mr. Travis on the Lake Mohunk Mountain House, situated on Lake Mohunk about 18 miles west of Kingston, New York. The lake lies in a depression in a large block of "Shagumuck grit" a dense, closely cemented quartzitic rock which had slid from an adjacent mountain of the same material. The lake has no visible inlet or outlet, but since the water is fresh there must be subterranean channels connected with it. It was discovered by Albert Smiley, a Quaker, who was a professor at Bowdin College. Mr. Smiley raised money to buy the surrounding property and develop a unique retreat - not a resort. At one end of the lake he built the Mountain House - not a hotel - with accommodations for a thousand guests, and laid out beautiful gardens. Roundabout is beautiful scenery with many crystal caves, and scattered about there are 800 summerhouses. The place is operated along Quaker lines, as simply as possible. No autos are allowed inside the grounds, and all conveyance whether of passengers or luggage is by horse-drawn vehicles. The property is still in the hands of the Smiley family which keeps up the old traditions of operation and maintenance.

At the December 30th luncheon Clarence Phillips gave us an interesting talk on water from the legal angle. For many years water was so abundant that no thought was given to regulating its use. As early as 1860, however, the Federal Government recognized that some control was necessary and attached certain restrictions to land patents. These were modified later; and in 1877 the Desert Land Act was enacted to provide for water to be used to reclaim lands selected from the public domain. In Oregon no regulation was attempted by the State until the latter part of the 19th century. Even then the only requirement was that a person proposing to divert water should post a notice. In 1909 an amendment required that notices of appropriation be filed with the State Engineer. But it denied any further riparian rights and abrogated any vested rights not put to beneficial use during a 2-year period. In 1931 an act was passed permitting the diversion of water for generation of hydro-electric power. Two commissions, the Upper Willamette and the Upper Columbia, have been created by the State to adjust conflicts between users in these areas. Recently the Water Resources Commission, a State body, has been appointed to study the entire water situation and make recommendations to the Legislature. It is expected that the report which is now ready will excite considerable controversy when it is submitted. (L.A.P.)

CALENDAR FOR MARCH

Thursdays
March 3, 10, 17, 24, and 31 - Noon Luncheon Meetings at the Chamber of Commerce, SW Fifth and Taylor. Note the change in location. An excellent buffet-type lunch is served. Price One Dollar.

Friday Mar.11 **TWENTIETH ANNUAL BANQUET** of the Geological Society of the Oregon Country, 6:30 p.m., at the Mt. Tabor Presbyterian Church, S.E. 54th and Belmont. An evening of song and fest with an address by Hollis M. Dole on "Structure in Volcanic Rock" is in prospect. Tickets $2.25; call BEacon 0300 during business hours or EMpire 0549 after 6:00 p.m. for reservations. (Be sure your gizzard is in good condition, for the menu lists a choice of Eocene Diatryma et breccia or Oncorhynchus loaf.)

Tuesday Mar. 22 Library and Discussion Night - Biology Bldg., Lewis and Clark College, 7:30 to 10:00 p.m. It is suggested that fossil woods be on display. As usual there will be a period of visiting around the coffee cups.

Friday Mar.25 Friday Night Meeting - Library Hall, 7:00 p.m.
Dr. Edwin T. Hodge will talk on "South of the Equator in Africa."

Sunday Mar.27 Field trip to study soils. Mr. Jack McDermid of the Red Soils Experimental Farm of the State of Oregon and Clackamas County will conduct a tour of some exposures of soils derived from our valley formations. Meet at the Federal Building (Post Office) on 99E in Oregon City at 1:00 p.m. This trip originally announced for February was postponed because of the illness of the leader.

AUDUBON SCREEN TOUR

SECOND AUDUBON SCREEN TOUR, March 21 at 8:00 p.m., Cleveland High School Auditorium. Fran W. Hall of Carlton College will show a color film, "South to Siesta Land," depicting life in Mexico from its tropic plains to its cool highlands. These nature tours brought to us by the Audubon Society are among the highlights of the year.

* * * * *

NOTE OF THANKS

The retiring editor wants to thank the many who have helped him get out the News Letter this past year. Especially he wants to mention the work of Mrs. Owen in typing the issues and putting them through the press. Without her skilled efforts the paper would not be what it has been. Margaret Steere and Ralph Mason of the State Department of Geology and Mineral Industries have been of great help in checking the geology of papers. Mr. Leroy Palmer has supplied most interesting accounts of the talks given at the Thursday luncheons, and they were always received by the editor on time. I wish there were space to continue names. On behalf of the new editor I would express this wish: that members of the Society be very faithful in sending in copy, and that some who think they can't write, or who find themselves "to busy," break down and submit material. An editor has more fun using the blue pencil than the pen. (FGG)

****

FAY LIBBEY HONORED BY THE OREGON ACADEMY

The Oregon Academy of Science, holding its annual meeting at Willamette University on Saturday, February 28, honored our fellow member, Fay W. Libbey, who recently retired as director of the State Department of Geology and Mineral Industries. The citation for his contributions to Oregon science was effectively made by Dr. W. D. Wilkinson of the Department of Geology at Oregon State College.

At the same meeting papers were read by Lon Hancock and Lloyd Ruff, respectively, on the paleontology and stratigraphy of the new Clarno mammal beds. A goodly number of members of GSOC were present at the meeting. (FGG)

****

NEW MEMBERS

		Zone	Phone
Lloyd, Mr. and Mrs. L. G.	01139 S.W. Palatine Hill Road	1	BL 1-4493
Haggerty, Mr. and Mrs. E. W.	SW Fielding Road, Oswego, Ore.		BL 1-4020

CHANGE OF ADDRESS

Buck, Mr. and Mrs. Shirley - Willamette Manor,	2705 S.E. River Road, Milwaukie	22	
Baldwin, Mr. and Mrs. Raymond L.	4300 S.W. 82 Ave.	1	CY 2-1452
Ewen, Irving G. - Delta Sigma Phi	242 N. 15 Ave., Corvallis, Oregon		
Fenton, Dr. and Mrs. Ralph	13100 S.W. Riverside Drive Oswego, Oregon	1	BL 1-4364
Hampton, Gene	100 N. 25th, Corvallis, Oregon		
Stafford, Mr. and Mrs. A. W.	Rte. 2, Ellensburg, Washington		
Triol, Miss Ella	West Linn, Oregon		
Weber, Mr. and Mrs. David	138 S.E. 80th Ave.,	16	KE 8175

DUES ARE PAYABLE NOW

****

Norris Stone's son, Norris, Jr., whose stories have appeared in the past in the Saturday Evening Post and other national publications, has recently sold a story to Metro-Goldwyn-Mayer, entitled "Deadly Peacemaker."

(A.H.)

****

MONUMENT TO GEOLOGICAL PAST ON LC CAMPUS

A large ice-deposited granitic erratic from the gravel quarries west of Lake Oswego has recently been placed on the Lewis and Clark College campus through the courtesy of the Tigard Gravel Company. The boulder bears xenolithic inclusions. It is planned to mount it in concrete and place on it a plaque bearing a suitable legend. An erratic of this sort was placed on the Willamette University campus some years ago by the Salem Geological Society. (F.G.G.)

****

THE GLACIAL HISTORY OF THE COLUMBIA BASIN

By
Francis G. Gilchrist

Based largely on an interview with Dr. Edwin T. Hodge and on certain of his writings.

It is fifteen years since Dr. Hodge and his students threaded the canyons and climbed the hills of the Columbia River drainage seeking to piece together the story of how what was once a small mountain stream, a tributary of the Willamette, became the second greatest river of North America.1/

PRE-GLACIAL TOPOGRAPHY

Before the glacial period, that is, a million or so years ago, the mountains of the northwest (except for our high volcanic peaks and the Pleistocene lava flows) were pretty much as they are today. The drainage, however, was different. The great gateways, gorges, and gaps had not yet come into existence. Picture to yourself the Willamette River flowing northward in its broad valley, perhaps to Puget Sound. To the west was the Coast Range; to the east the young but still growing high Cascades. East of the Cascades the basaltic lava plains (Columbia Plateau of Washington and Oregon) were arid, much as they are today.

A series of structural ridges (anticlines) crossed the plateau roughly from east to west dividing it into basins. Some of the basins may have contained saline or dry lakes. Before the rise of the high andesite Cascades these basins probably drained westward. Most northern of these transverse ridges was the Sanderson-Cheney divide (see map). Then in succession southward were the Waterville-Adrian divide (not shown), the Frenchman Hills, the Saddle Mountain divide, the Rattlesnake Hills, and the Horse Heaven Hills. Continuing southward in Oregon a similar series of anticlines has been described by Hodge. These are the Ortley, the Tygh Ridge, the Mutton Mountain, the Hay Creek, and the Prineville anticlines.

North of the Sanderson-Cheney divide the drainage was probably northward through corridors between the mountain ranges of British Columbia. It was a part of the Fraser River drainage system. Eastern Oregon and southern Idaho may have had no outlet to the sea, or they may have drained southward into what is now the Great Basin.

THE COMING OF THE ICE

Gradually the climate became colder. Glaciers appeared in the mountains and stretched down the valleys. Northward in the plateau region of British Columbia the annual snow fall became greater than the summer melts, and the first of a series of three continental ice sheets a mile or more deep accumulated and pressed southward. The effect was to cut off the drainage northward from Washington into British Columbia by way of the Okanogan Valley and the parallel valleys to the east. A lake developed for a time between the ice front and the Sanderson-Cheney divide, which presumably found an outlet at the then head of the Okanogan Valley where the Columbia River now turns south. Finally, however, the lobes of the ice sheet transgressed the Sanderson-Cheney divide at four places and laden streams poured southwestward.

1/ This small mountain stream is not to be confused with the earlier ancestral Columbia River which crossed the old Cascades in Pliocene time before the andesites of the younger high Cascades were added, and whose delta deposits in the Portland area are known as the Troutdale gravels. According to Hodge this older river may have

The story as Dr. Hodge interprets it is complicated. The ice lobe that came down the Okanogan Valley dammed the outlet of the lake, and then crossing the divide its melt waters began cutting the Moses Coulee. In time the ice dammed this outlet and forced the waters from the east, fed by the ice front and by Spokane River, to take the route of the Grand Coulee. Still farther east a broad ice sheet (Cheny lobe) breached the divide in two places, and its waters formed the Telford and Cheney passages. Rushing along with their loads of ice, glacial debris, and rock flour, the streams plucked rocks from their basaltic beds, dug pot-holes, and spread brick-bat gravels widely across the surface. They made intricate and braided patterns as they were shifted here and there by jams of ice brought down from the front of the glacier. The melting of the ice jams left kettle holes in the outwash gravels, or built morainelike deposits of erratic boulders borne far from the north and east. Thus, carved by successive glaciations, the area became the scablands of southeastern Washington.

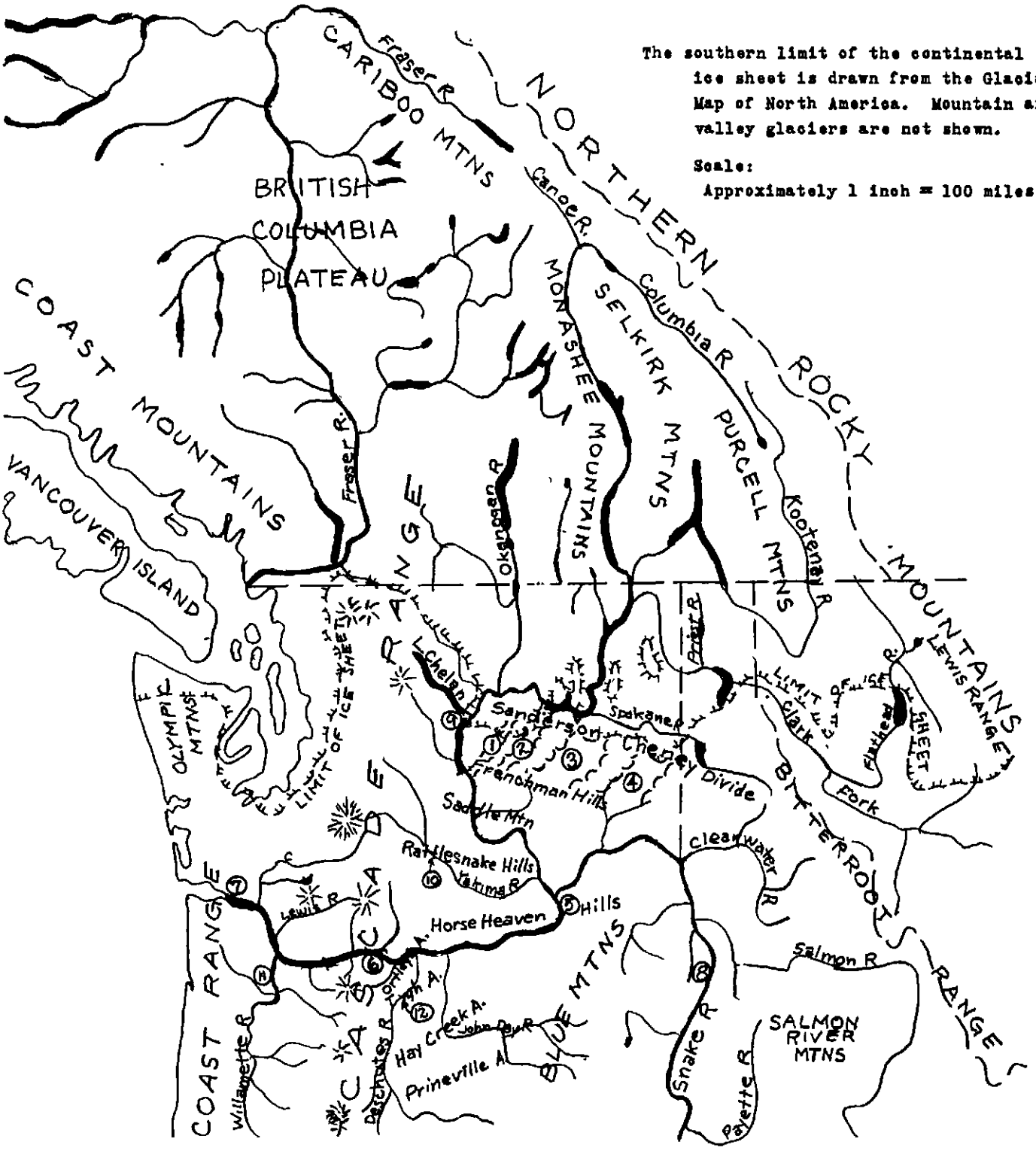
At its farthest advance the Okanogan lobe of the ice sheet moved as far south as the lower end of glaciated Chelan Valley. It dammed the valley and caused a lake to rise until its waters overflowed its southern wall and formed a wind gap known as Navarre Coulee. Today beautiful Lake Chelan extends sixty miles into the heart of the Cascades, dammed at its lower end by the morainal gravels of the Okanogan ice sheet.

The waters which flowed from the north across the Sanderson-Cheney divide collected as a great lake known as Lake Lewis. It was bounded on the south by the Horse Heaven Hills. It was fed also by the Snake River from the east. When the lake had risen to 2300 feet above the present sea level it spilled southward across a low point or col in the Horse Heaven Hills and so began to cut the gorge known as the Wallula Gateway.

In turn another lake was formed, bounded on the north by the great Columbia fault along the southern limb of the Horse Heaven Hills, bounded on the east by the Blue Mountains, on the west by the andesitic lavas of the youthful high Cascades, and on the south by the rising surface of the Columbia basalt plateau. The name Lake Condon has been given to this body of water. When it attained an elevation above the present sea of 1900 feet this lake in turn discovered a col or "divide" and spilled westward across the Ortley anticline and the Cascade Range, down what had been a small mountain valley, toward the Willamette River. Thus began the cutting of the magnificent Columbia River Gorge through the Cascade Mountains.

Flowing westward the waters entered the Willamette Valley. They would possibly have flowed northward if the lobe of the ice sheet, occupying the Puget Sound area, had not blocked their course. And so yet again a lake or perhaps a sound was formed. We shall call it glacial Willamette Sound. At times it may have been below sea level and have had more than one connection with the sea. When, however, its water rose 400 feet above the present sea level it developed its present outlet across the Coast Ranges to the sea. Thus in sequence there were formed: (a) the lake of the ice front north of the Sanderson-Cheney divide which breached the divide at four or five places; (b) Lake Lewis which rose until it overflowed the Wallula Gateway; (c) Lake Condon which broke across the Cascades to form the Columbia River Gorge; and finally (d) Willamette Sound which made its way to the sea by what is now the outer gorge of the Columbia.

A similar story might be told of Lake Missoula in northern Idaho and western Montana, which was impounded by the eastern (Cheney) lobe of the great northern glacier until its waters overflowed westward and joined the Columbia.



SKETCH MAP OF THE COLUMBIA RIVER AND FRASER RIVER BASINS

(1) Moses Coulee
(2) Grand Coulee
(3) Telford passages
(4) Cheney passages
(5) Walulla Gateway
(6) Columbia River Gorge
(7) Outer gorge of the Columbia
(8) Hells Canyon of the Snake
(9) Navarre Coulee (Lake Chelan)
(10) Union Gap (Yakima River)
(11) Oswego Lake gorge
(12) Water gap through Tygh Ridge

But lakes, geologically speaking, are ephemeral things, especially when they are fed by glacial streams white with rock flour and loaded with alluvium. Consider the fact that man-made Lake Roosevelt above Grand Coulee Dam will silt up within a few human generations; or that Lake Mead above Hoover Dam will be filled even sooner. Lake Lewis, Lake Condon, and the Willamette Sound became filled by gravels and silt and by occasional erratic boulders borne by floating ice. Indeed annual varves can be demonstrated in fresh road cuts in the beds of glacial Lake Lewis. In Dr. Hodge's words, the lakes became "land bridges" across which braided streams flowed from their entrances to their exits.

Dr. Hodge does not think it necessary to postulate a great flood, such as Bretz described, which was released when the ice that dammed Lake Missoula gave way. According to Bretz many cubic miles of water swept across the scablands of Washington, rushed through the Wallula Gateway temporarily restoring Lake Condon, and plunged down the Columbia River Gorge to raise the water of the Tualatin and Willamette valleys 400 feet above the present sea level. More normal processes, Dr. Hodge believes, will account for the geological features.2/ He reminds us also of the tremendous fluctuations of sea level. The sea has been down. At Bonneville the bottom of the fill in the Columbia River is eighty feet below sea level. At Portland it is 1500 feet below the present sea. At Astoria it is 3000 feet down; and seaward there is a submarine canyon a mile deep. The sea has also been up. There are terraces along the southern Oregon coast 1500 feet above the present shore. It seems to be uncertain how high the sea rose in the Portland area.

Following the cutting of the gateways and gorges, erosion removed much of the outwash gravels and lacustrine deposits which filled lakes Lewis and Condon. The streams entrenched themselves across their aggraded plains and became superimposed upon the buried east-west anticlinal divides. Thus the Yakima River flowing southeast along the eastern border of the Washington Cascades cut a series of water gaps. The most southern of them, Union Gap, was through Ahtanum Ridge, the westward extension of the Rattlesnake hills. Thus also in Oregon the Deschutes River was superimposed across the Tygh Ridge.

FINAL RETREAT OF THE ICE

As already noted there is evidence of three or more glacial epochs separated by warmer interglacial stages. The gateways, gaps, and gorges which must have been begun at the time of the first glaciation, were deepened and filled and then deepened again with each subsequent advance and recession of the ice.

Evidence of the retreat of the last ice sheet is to be seen in the topography of British Columbia. A study of the map of this province suggests that along the western flank of the Rockies, between the Rockies and the Selkirk and Cariboo mountains, a great river once flowed northward from Montana. The lobe of ice which accumulated in this long valley transformed it into a glacial trough. As the ice retreated northward or withdrew toward the bordering mountains, a series of lakes may have been formed. The most southerly of these occupied what is now the upper valley of the Kootenay River. It found an outlet to the west near its southern end. A second lake farther north broke westward (or reoccupied an old waterway) around the northern end of the Selkirk Mountains. This segment of the old glacial valley is today the

2/ There is evidence in and around Portland of a gigantic flood in the recent geological past. For instance, just west of the gorge in which Lake Oswego lies there are gravel pits which show foreset bedding toward the west, and which contain ice-borne erratics and also tremendous blocks of Boring lava and boulders of limonite. These blocks and boulders must have been plucked from nearby Oswego gorge as the water rushed through into the Tualatin Valley. To the south of the gravel pits are the Tonquin scablands, formed possibly as the flood moved southward toward the Willamette Valley.

headwaters of the Columbia River and of its tributary from the north, Canoe River. Still farther north a possible third lake formed and, cut off at the south by morainal deposits (?) it gained an outlet far to the north. Today this part of the long valley is the upper reaches of the great Fraser River. Between the Kootenay and the upper Columbia, and again between Canoe River (tributary of the Columbia) and the Fraser River, there are portages. West of the Selkirks and just east of the Monashee Mountains, the Columbia's waters entered another great glacial valley. Here it was forced to flow southward to join the Spokane River. Today the Upper and Lower Arrow Lakes through which the Columbia flows still occupy this valley.

And so it has come about that a little mountain stream, a tributary of the Willamette, flowing down the western slope of the youthful high Cascade Range a few miles north of where Mount Hood now stands, became the recipient of the waters of a great empire, an empire stretching twelve hundred miles from south to north and extending eastward to the crest of the Rocky Mountains.

REFERENCES AND SOURCE MAPS

Hodge, Edwin T. 1930 Late Tertiary climatic changes of Oregon. Monthly Weather Review, 58: 405-411.

——— 1934 Origin of the Washington scablands. Northwest Science, 8: 4-11.

----- 1938 Geology of the Lower Columbia River. Geol. Soc. Am. Bull., 49; 831-930.

----- 1942 Geology of North Central Oregon. Oregon State College, Studies in Geol., No. 3. 76 pp.

Geological Society of America. 1945 Glacial Map of North America. Special Paper No. 60.

National Geographic Society. 1941 Map of Northwestern United States and neighboring Canadian Provinces. Nat. Geog. Mag., June 1941.

Geological Survey of Canada. 1948 Geological Map of British Columbia, Map 932a.

****

DR. ARTHUR JONES SHOWS GEOLOGY AS SEEN FROM THE AIR

The Kodachrome slides shown to the Society on January 28 were taken mostly from plane windows by a busy doctor as he sped his way to medical meetings. But although Dr. Jones is an amateur, yet he is quite a student of geology; and to him the land forms which he saw from the air were meaningful. The pictures included some taken on a low-altitude trip to Medford and back, and again on a non-stop trip to Los Angeles. He added a few pictures of the San Francisco Bay area as seen from Mount Tamalpais. Especially interesting were the views of the old channel of the ancestral Clackamas River; of the Tonquin channels; the Calapooya Mountains - a part of the old Cascades but with granite poking through; Table Mountain near Medford; the Agate Desert and its mounds; the graben in which Klamath Lake lies; the superimposed stream pattern of the Klamath Ranges; the alluvial fans from the Tehachapi pass into the southern end of the San Joaquin Valley; and the dissected Santa Monica Hills near Los Angeles.

(F.G.G.)

****

ROCKS TOLD THIS STORY

By
Phyllis Holliday
Student at Lewis and Clark College

On Wednesday afternoon, there were we six
Taking a drive out into the sticks.
So, when our car had been suitably parked
By the proper rock quarry we promptly debarked.
Down in the pit was the why we had come;
The rocks were evidence where they were from.
What was the cause of the area's condition?
This was the question, its answer our mission.
The foreset bedding gave indication
Of the great force that had come from the east in the nation.
Angular rocks neither smooth nor worn
Showed that from close at hand by a flood they were borne.
Yes, by a flood from Montana they say,
Where water poured out when an ice dam gave way.
It rushed down the river, a watery panel,
And even flooded through Oswego channel.
The presence of granite in the area and gneiss,
are proof the Oswego rocks were carried by ice.
A basalt that is younger than Columbia basalt
Was plucked from near where the flood came to halt.
There are samples of opal and dark limonite
And even tree roots to be found at this site.
It was only a few thousands of years ago
At the end of the Ice Age the deposits were so.
This then, we six learned, was the wonderful story
Told by an interesting geological quarry.

(The above is a report on a visit of a part of Dr. Stauffer's geology class to the gravel pits of the Tigard Gravel Company near the new Portland-Salem Highway, west of Lake Oswego. It is the site referred to in footnote 2, page 22, of this issue.)

****

LLOYD RUFF TALKS ON "IDAHO, THE GEM STATE"

By
Joe Sato

On Friday, February 11, 1955, Mr. Lloyd Ruff, Geologist with Army Engineers, gave a talk and showed colored slides on "Idaho, the Gem State." Idaho was crossed by Lewis and Clark in 1805 and invaded by the Astor overland party a few years later. In 1860 gold was discovered at Pierce. Evidences of homesteading in the state are the scattered Prince Albert tobacco cans, snoose packages, and old unpainted buildings weathered and bleached by natural processes.

In 1863, Idaho became a territory. In 1890, it was admitted as a state to the Union. It is famous because of the Old Oregon Trail in the southern part of the state. Lewiston, which is located on the Snake River at the Washington-Idaho boundary with an elevation of 700 feet is Idaho's only "seaport." The headwaters of the Snake River are in Yellowstone Park and in the Teton Range in Wyoming. The upper Snake River tributaries provide numerous beaver dams, one dam for each foot of rise in elevation.

Physiographically, Idaho is divided into the Southern Rockies, the Northern Rockies, the Columbia Plateau, and the northern Basin-and-Range Provinces. The geology of Idaho ranges from the Pre-Cambrian to the Recent. In the vicinity of Cour d' Alene, are found massive rocks, "Belt series," which show ripple marks produced by water. This area is heavily mineralized with gold, silver, lead, zinc, and cadmium.

Paleozoic and Mesozoic rocks are pronounced at the southeastern corner of the state near the Utah boundary. In the Permian rocks are found phosphates, which contain a small percentage of uranium. The Idaho granodiorite batholith is found in central Idaho and is of Mesozoic age. This area is heavily mineralized; and mining of gold, silver, lead, tungsten, and cobalt is carried on. The Cenozoic deposits are mostly lavas.

National Forests cover almost one-half of the state. At Bruneau, three miles from the Snake River are two sand dunes with heights of 460 feet. The wind seems to be blowing in a vortex, for the two dunes are moving in opposite directions around a wind-blown crater between them, sixty feet in depth.

****

LUNCHEON NOTES

By
Leroy Palmer

The luncheon on January 6th heard Howard Rose talk on the Big Bend National Park. This is situated in the "Big Bend" of the Rio Grande River along the southern boundary of Texas. The bend is sharp so that the general outline of the park is that of a blunt triangle. The river has cut through the bordering mountains in three places thus forming deep canyons with precipitous sides, so steep that in many places one can not reach the bottom even on foot. This makes it easy to study the canyon walls. They are seen to consist of strata of sandstone and limestone beautifully variegated in color. Between them the river is treacherous with many boulders, cascades, and rapids. Farther back from the river the Chisos Mountains of igneous origin attain an elevation of 8000 feet. In the interior of the mountains there is a basin hemmed in by peaks except for one gap, called "the window." The Roses were reminded of Oregon when they found Douglas fir and ponderosa pine, quite out of their natural habitat. They were much impressed by the beauty of the park and consider their trip well worth while.

January 13th Leo Simon talked on the birds of our vicinity. Each year about Christmas time the local Audubon Society spends a day taking a bird census of our area. The last time Leo led a group covering a part of the city. In this limited area it counted 5100 birds and identified fifty different species, four or five of which had not been recorded previously. He spoke particularly of the starling which was imported from Europe to the Eastern United States several years ago. The birds have multiplied and migrated westward so that now they are quite common in Oregon. They still go east each year for breeding, but as they increase in number it is expected that they will establish breeding grounds in our locality and become permanent residents.

On January 20th, Dr. Ruth Hopson presented the case against changing the classification of the Three Sisters Primitive Area to a wild-life area. Such a change would enable the Forest Service to restore approximately 50,000 acres to the Willamette National Forest and so authorize lumbering in what is now a primitive area. Dr. Hopson urged that no change be made, or if change must come that it be limited to that portion of the primitive area that lies on the west slope of the mountains.

Mr. Leroy Palmer, January 27th, told of some applications of the mining laws with which he had had contact. He mentioned one location, made under old mining district rules, where 29 locators subscribed to a notice covering ground that would have been included in two claims under the later federal laws and told of the confusion that resulted in fixing the boundaries of a location through failure to allow for migration of outcrop. Some cases of apex litigation were described with blackboard illustrations.

Fay Libbey followed Mr. Palmer with an interesting account of the apex litigation instigated by F. Augustus Heinze during the first decade of the century that set the entire Butte district by the ears.

On February 3rd the scheduled speaker was unable to attend, so Mr. Libbey and Leroy Palmer substituted. Mr. Libbey, with blackboard illustrations, told of his experience as a young engineer at the Wickenburg mine in Arizona. The mine, a rich one, was considered to be worked out, but careful geological study indicated that what was supposed to be a pinch in the vein was a fault plane. Properly conducted exploration based on the geological work located the faulted segment of the vein, which added many millions of dollars to the production of the mine.

Mr. Palmer gave some account of the discoveries of the Bunker Hill and Sullivan and Tonopah mines, both of which were found largely by accident.

The February 10th talk was by Mr. Matthews on the subject of gold dredging. He illustrated it with colored slides of the operations of Yuba Consolidated Goldfields in California. The first attempt at gold dredging was in 1850, but it was not until 1903 that the industry really took hold and began to develop along present day lines. Citing Yuba's Nos. 18 and 20 Tom told us that these float in a pond and each has a chain of 18 cubic feet (2/3 cu. yd.) digging buckets, and that these are so mounted that they can dig 110 feet below the water line and against a 70-foot bank, a total digging range of 180 feet. The gravel thus excavated is discharged to a trommel, 9 by 30 feet, which screens out the finer gravel and directs it to jigs on which the gold is recovered. The efficiency of gold recovery has been increased to the point that some of the old gravels are being worked for the third time. Operating costs have been reduced to seven cents per cubic yard, so that a good profit can be made on twelve-cent gravel, the average of this deposit. Today dredging is by far the most important means of gold production in both California and Oregon.

Rudolph Erickson took over February 17th with a talk on the Lewis and Clark expedition as described in the books by Bernard DeVoto and by John Bakeless. The expedition consisted of 33 men beside the leaders. Most of them were army men, with some civilians who acted as interpreters and general handy men. Military dicipline prevailed throughout. This paid off, as only one death occurred during the expedition; and although they lived intirely by hunting there was only one shooting accident, not fatal. Start was made from St. Louis, Missouri, in May 1804, and the first winter was spent in the "Mandan Country" in what is now North Dakota. Thence they pushed on in the following spring, crossed the Continental Divide and made camp near Chinook, Wash., expecting to spend the winter there. Three weeks of heavy and incessant rain caused them to move from this site about Christmas to the south side of the Columbia River where they established Fort Clatsop and stayed until March 30, when they started homeward. The party arrived in St. Louis in September 1906, nearly two and one-half years after their departure. As there had been no word from them in that time, the expedition had been given up as lost. As a reward for their outstanding work Clark was made governor of Missouri and Lewis of the newly acquired Louisiana Purchase territory. Clark lived until 1838 but Lewis, always a stormy petrel, met a violent death while on a journey to Washington, whether by murder or suicide was never determined.

CALENDAR FOR APRIL

Thursdays
April 7, 14, 21, and 28 - Noon Luncheon Meetings 2d floor Chamber of Commerce Building, S.W. Fifth and Taylor. Up steep stairway from Fifth Avenue entrance or by automatic elevator from smaller doorway on Taylor Street right into dining room. Buffet luncheon. One dollar.

Friday Apr. 8 — Friday night meeting, Library Hall, 7:00 P.M. Mr. Thomas Matthews, spectroscopist with the State Department of Geology and Mineral Industries, will discuss "Minerals for Atomic Energy with Reference to Prospects in Oregon."

Tuesday Apr. 19 — Library and discussion night, Biology Building, Lewis and Clark College, 7:30 to 10:00 P.M.

Friday Apr. 22 — Friday night meeting, Library Hall, 7:00 P.M. Mr. LeRoy Palmer, Mining Engineer, with long experience in mining and public land matters, will lecture on "Mining and Civilization."

Sunday Apr. 24 — Leo Simon will lead the field trip in Silver Falls State Park and from there to the Oregon Tuff Rock Quarry about 15 miles distant. Group will meet at Park Headquarters, about 15 miles southeast of Silverton at 10:00 A.M. and will spend some time exploring and photographing the various falls and other points of interest before lunch which will be eaten in the park. The caravan will then leave for the quarry. The round trip from Portland will be about 150 miles.

AUDUBON SCREEN TOUR

The last of this season's Audubon Screen Tours will be seen in the Cleveland High School Auditorium, Monday evening, April 25, at 8:00 P.M., when Olin Sewall Pettingill will show scenes from the north tip of the lower peninsula of Michigan. Some of his films have been used in Walt Disney's "Nature's Half Acre." This should assure one that the work is of a high order.

TELEPHONE COMMITTEE

TELEPHONE COMMITTEE CHAIRMAN Mrs. Amza Barr, 4830 S.E. 62 Avenue, will appreciate having prompt notice of changes in telephone numbers to lessen the burden of her rather difficult work. According to Mrs. Barr, her committee will be prepared to answer your questions regarding trips, library nights, picnic, and any GSOC extras.

May I suggest that you copy the names and telephone numbers of this committee in your telephone directory - - - now.

Mrs. Amza Barr . . . PR 4-2459

Mrs. R. L. Baldwin . . . . CY 2-1452

Mrs. Wm. F. Clark . . . . FI 7096

Miss Ada Henley . . . . EA 1475

Mrs. H. B. Schminky . . EM 3903

CONDON LECTURES

Watch the papers for the subjects of the next Condon lectures to be given by Dr. Robert Oppenheimer in the auditorium of the Portland State College on the evenings of May 3 and 4. These lectures are free to the public.

****

NEW PLAY AT OSWEGO

Announcement has just reached us from the Lake Oswego Community Players of the premiere presentation of a full length comedy titled Beloved Rake by playwright Jane Erickson, the latter part of April.

A special performance is planned for Thursday evening, April 28, 8:30 p.m., as "friends of the playwright" evening. The play will be given "in the round" at Odd Fellows Hall, Oswego, one block east of Oswego Grade School. A point that should be of particular interest to GSOC members is the fact that the play settles the question, once and for all, of the "why and wherefore" of earthquakes.

Tickets are $1.25 each and reservation is unnecessary.

* * * * *

NEW MEMBERS

			Phone
North, Mr. and Mrs. Harold F.	1304 S.E. 88th Avenue	Zone 16	KE 8150

CHANGE OF ADDRESS

Walsted, Mr. and Mrs. John P. Route 2 - Monmouth, Oregon

Your secretary, Mrs. Leo Simon, 7006 S.E. 21st Avenue, Portland 2, Oregon, EMpire 0549, asks that she be informed as soon as possible of any change of address and/or telephone number. Attention to this matter will assure you of getting Geological Society mail more promptly.

PROMPT PAYMENT OF MEMBERSHIP DUES, mailed to Mrs. Simon at the above address will save her the trouble of mailing a bill. The fiscal year began March 1, 1955. NOTICE: Dues now $5.00; Juniors, $2.00; others, $2.50.

* * * * *

BINDING NEWS LETTERS

Ray Baldwin calls the attention of all persons wishing their volumes of the Geological News Letter bound that he will have this work done at the usual price of twenty-five cents (25¢) a volume, if the magazines are delivered to him at the Thursday luncheons or at his home, 4300 S.W. Laurelwood Drive, Portland 1, Oregon.

It will be necessary for you to remove all staples and to arrange the pages in proper sequence, since one cannot expect these services to be included in the small charge of 25¢ a volume.

* * * * *

NEWS OF MEMBERS

Irving W. Jones, son of Dr. and Mrs. Arthur C. Jones, and Elinor A. Brodie, daughter of Dr. and Mrs. Walter Brodie, were married Sunday, March 20, at the Unitarian Church.

The GSOC members, many of whom remember when Irving had to use both hands to swing a geologist's pick, wish the best of everything for the young couple.

Mr. and Mrs. Phil Brogan came over the mountains to attend the annual banquet, and their presence made the evening brighter for those of us who see them all too seldom. . . . Other seldom-seen members were Mr. and Mrs. Ben F. Smith and Mr. M. F. Calef. These two men were seen talking over Spanish War days with O. E. Stanley. . . Miss Margaret Hughes "risked her life" to ride to the banquet with Ray Baldwin at the wheel. It is not known whether that ride spoiled her appetite or if she just doesn't like cherry pie. Perhaps she needs more exercise to develop an appetite.

GEOLOGY OF PORTLAND AND VICINITY*

By
Roger C. Elsey**

The area under discussion is contained in five 15-minute quadrangles: Camas, Portland, Boring, Hillsboro, and Oregon City. Each quadrangle covers an area of approximately 220 square miles. Or, to look at it in another way, the area is bounded on the north by the Columbia River, on the west by the Tuality Hills (Portland hills), south to Canby and Estacada, and in the east by the town of Sandy, Oregon.

The oldest known rocks are Oligocene and lower Miocene marine sediments which were deposited on an ocean floor 30 to 40 million years ago. None of these rocks are exposed at the surface of our area of study, but they are known to exist by those who have sunk wells for water.[11] Some of the wells were useless because of the saline water which had moved up through the porous sedimentary material, contaminating the ground water.

The black rocks which form the cliff at the intersection of Broadway Drive and Terwilliger near Duniway Park are called Columbia River basalts. Basalts are a group of dense igneous rocks from dark gray to black in color. The minerals in the rock are usually too small to be seen without the aid of a magnifier. There are several varieties of basalts, but the one in question is called an olivine basalt because of the abundance of that mineral contained in the rock. One of the outstanding characteristics of this rock is its propensity to form three- to six-sided columns.[5] These columns are formed by contraction, at right angles to the cooling surface of the molten lava.

The Columbia River basalts are considered the basement rocks of Portland as they are the oldest known exposed rocks in the area. They form the core of the west hills, as any deep canyon can clearly show, and, as they are dipping at angles of 10 to 20 degrees, they soon disappear beneath the surface of the Willamette Valley and do not reappear until the foothills of the Cascades are reached east of Troutdale, Oregon. Here the basalts are dipping westward with a 5-degree angle. Thus, one could safely assume that Portland occupied a structural basin called a syncline.

During the Miocene period (30-40 million years ago) the earth shuddered with great earthquakes, and in the eastern part of Oregon fissures were opened in the earth from which cubic miles of molten rock poured over the old land surface. This volcanic activity continued intermittently for millions of years. In eastern Oregon this formation is more than 6,000 feet thick, thinning westward. It is not more than 3,000 feet thick in the Columbia River Gorge and from 1200 to 1500 feet thick in the Portland area. This formation extends to the present coastline where it has dwindled to less than 200 feet in thickness.

This formation forms a vast volcanic plateau extending over 250,000 square miles of Washington, Oregon, and Idaho.[11] The Columbia River basalts are made up of a series of lava flows from 20 to more than 100 feet in thickness. Sometimes eruptions were followed by long periods of quiescence. These periods of

---

*This article to be continued with bibliography in May issue.
**Student at Portland State College.

repose often lasted for decades or centuries during which the lavas were decomposed to fertile soils and covered with forests before being covered by new sheets of basalts.[14]

By the close of middle Miocene time most of Oregon was a dark and drab plateau of basalt. This condition was a short-lived one because of the mild and humid climate that prevailed. Trees and grasses soon spread over the lands devastated by eruptions. This is known to be true because of the kinds of fossil leaves found from this period.

Shortly after the last eruption took place the basalts in the Portland area were folded into a series of anticlines and synclines. This gave streams greater velocity, thus greater carrying power, and soon the basins were filled with the debris of erosion. Dr. E. T. Hodge, former Professor of Geology at Oregon State College, named this formation the Troutdale after the town of Troutdale where the type locality is found.

The best places to see the Troutdale formation are at the east end of the Base Line Road bridge over the Sandy River. Here it forms a cliff about 100 feet high. The Troutdale formation has a total thickness of 1000 feet and formerly covered the Portland area as a great piedmont fan stretching from Crown Point to south of Oregon City, north into southern Washington and west to St. Helens. As a result of the folding, mentioned above, the base levels of streams were radically changed. Streams formerly flowing on a gently sloping plane were now activated and down cutting was renewed. As the folding progressed the streams were forced to drop their sediments and the basin began to fill.

The Troutdale formation extends to the region of the Sandy River east of Gresham and south of the Columbia River to Sandy, Oregon, and has a definite sequence of beds within it. At the base of this sequence are the Columbia River basalts. Above this, throughout the whole general area is a thick section of mud stones or silt stones, clay, and sandstones. This forms a section of fine sediments that is more than 700 feet thick in some places and perhaps as little as 100 feet or less in others. At the top of this section is the fossil leaf-bearing horizon. The leaves are mostly concentrated in a thin layer and according to Dr. R. W. Chaney, Paleobotanist at the University of California, they are Pliocene in age.[9] Above the fossil leaf section is a section of sandstones and conglomerate. The sandstones are composed of basic volcanic glass and predominate in the section. The origin of these small particles of volcanic glass contained in the sandstones has not been discovered but it does indicate that volcanic activity was going on somewhere fairly close by. Another thin layer of fine sediments, thirty to fifty feet thick, consisting of fine sand and siltstones overlies the last section. On top of this there is another section composed of sandstones and conglomerates, and as before, the sandstones are predominantly basic volcanic glass. This section is more than 200 feet thick. Most of the Troutdale formation is found in the eastern margin of the basin although patches of it are found in the west Portland hills, particularly along Cornell Road. An exposure in the east bank of the Willamette River just south of the Steel Bridge may be Troutdale. Mount Tabor is composed of it as is Kelly Butte.

One of the characteristics of the Troutdale conglomerate is its ability to form vertical cliffs. The pebbles which make up this section are firmly indurated (cemented). Another characteristic is the abundance of quartzite pebbles. This fact shows the source of the formation to have been the Columbia River for this rock (quartzite) is found only in northern Washington.

In order to clarify our position in the geologic column I would like to quickly review the formations covered so far. First, the whole area is presumably underlain by marine and near-shore Oligocene deposits. The oldest exposed rocks are the eroded and deformed Columbia River basalts which flowed over the old land surface and into the ocean which at that time was only as far away as St. Helens, Oregon.[9] The Troutdale formation lies upon the eroded basalt surface.

The Boring lavas, Pliocene and early Pleistocene in age, form an interesting map unit. Volcanic activity, during this time, was discontinuous regionally and interrupted locally, but perhaps several volcanoes were in active eruption at the same time. The Mount Tabor cinder cone is related to the Boring volcanics, but most of the Boring lavas were not explosive. They erupted quietly in regular "shield" volcano form. Elk Point and Swede Hill to the west of Portland were volcanoes during this time as was a vent that existed on the crest of the Portland hills between Cornell and Thompson roads. Mount Sylvania, west of Lewis and Clark College, is the best example of a "shield" volcano in this area. Kelly Butte also had a vent, though the hill, like Mount Tabor, is predominantly composed of Troutdale pebbles. One can see the feeder dike coming up through the Troutdale conglomerate and then flowing down the side over the former erosional surface. Rocky Butte, at first glance, appears to be entirely lava, but on the west side, below the tunnels, there have been discovered weathered gravels that are part of the Troutdale sequence of deposition. On the north side of the Mount Tabor cinder cone, flow material has been discovered. Also, Boring lava was exposed during the excavations for the water reservoir. This indicates there were lava flows in addition to the explosive activity.

Boring lavas are also widely distributed to the north of the Columbia River in Washington. In Red Rock quarry, vent material, probably from the Prune Hill locality, has been discovered. It is an oxidized, open-textured material. The presence of Troutdale pebbles in the lavas at Red Rock quarry, Kelly Butte, Rocky Butte, and Mount Tabor indicates that the Boring lavas are later than the Troutdale formation and came up through it. Green Mountain is another Pliocene or early Pleistocene volcanic cone resting on the Troutdale formation.[11] In Battleground, Washington, just north of Vancouver, is a crater lake formed in a Boring vent.

Boring lava is most peculiar. Most olivine basalts are black and dense looking, but the Boring lavas are not black and not too dense and have an inflated texture. The color is so light as to cause most geologists to hesitate about calling it a basalt of any kind until they know its mineral composition. Since the Boring lavas contain very little glass it may explain this light color and account for most of the difference between it and the Columbia River basalts.

The earliest volcanoes during the Boring epoch were of the explosive type. They erupted violently and threw out great quantities of hot volcanic ash that acted like a fluid when it struck the earth. As this material rolled down hillsides and into canyons it picked up pebbles, cobbles, boulders, and pieces of wood and leaves which were rolled inside of the mass. It filled canyons and buried hills, and is often found interbedded with the Boring lavas and tuffs.

As found today the Boring agglomerate, as it is called, is a structureless mass with a tuffaceous matrix containing cobbles, fragments of lava, and pieces of wood that are so unaltered that they may be burned.[8]

Later, during this time, the volcanoes lost their explosive nature and settled down to a more sedate production of molten lava.

The volcanoes in the Portland area, as if they were envious of their eastern neighbors, began to sputter, fume, and emit lavas, which were mostly of the same inflated character. These lavas capped many old Troutdale hills such as Kelly Butte and Mount Tabor. The lavas also flowed over old surfaces into streams, thus blocking drainage and giving rise to large lakes. The Boring lavas (named after the Boring hills southeast of Portland) must have been very viscous as no one flow traveled very far.[10]

The West Portland hills are flanked in places by Boring lavas, and several intra-canyon flows that poured down old stream channels can be seen. For the most part these lavas have been eroded away.

The Clackamas River was dammed in two places by Boring lava flows which caused the streams to become impounded. The lakes were finally drained when the river was able to aggrade allowing the water to return to its former channel.

The falls at Oregon City are probably the most unique of the lava dams. The dam raised the water level almost 400 feet.[10] It is thought that this dam forced the Willamette River to detour through the lower Tualatin River channel and Oswego, until the dam was breached and the present falls formed, allowing the Willamette to return to its original channel. (To be continued.)

****

ANNUAL BANQUET

By
Elizabeth Barr

The twentieth anniversary of the Geological Society of the Oregon Country was celebrated at the annual banquet March 11 at Mt. Tabor church. A. W. Hancock served as master of ceremonies in his inimitable manner, always enjoyed. The retiring president, Albert Keen, reviewed the history of the society, and was presented with a fellowship certificate as retiring president. Norris Stone was given a letter of appreciation for his work of assembling and printing a collection of appropriate songs for the Society, which will be preserved for future use. Mrs. May Bushby was presented with a book, From an Antique Land, by August Huxley, in recognition of her work as librarian.

Mr. Hollis Dole of the State Department of Geology and Mineral Industries was the main speaker. His subject, "Structure in Volcanic Rock," was illustrated with colored slides, made in Oregon. He developed the thesis that many lava flows heretofore believed to be in several layers are only one layer, spoke of the structure of pillow lavas, and discussed the Columbia River basalt. Mr. Dole and Mr. Keen were each given a geologist's pick.

Two playlets were featured, written by Mrs. Rudolph Erickson. The hilarious first, "A Gink with a Gingko," was the search for a Gink thought to be at large carrying a dangerous parasitic disease. Dr. D. E. Weber was the doctor, Kenneth Phillips his flunky, and Norris Stone the scapegoat. The second playlet was about the plaque honoring Thos. Condon at Sheep Rock in the John Day country. Principals were Dr. Edwin T. Hodge and Leo Simon.

Mrs. William T. Clark was in charge of arrangements, assisted by Mrs. G. C. Hazelhurst. Daffodils and coast huckleberry greenery formed the decorations. Miss Ada Henley prepared the place cards and front cover of the program, using the 20th anniversary theme.

The new officers were introduced and the new president, Mr. Wm. Clark, spoke of his hopes for the new year.

REPORT ON YOUR LIBRARY AND MINE

These are the last few comments of your librarian "outgoing" after a three-year term.

Since the Library Catalog was issued in December 1952, acquisitions to YOUR LIBRARY AND MINE have been as follows:

Books - numbered by Dewey decimal system 85
Pamphlets, periodicals in series, etc. 457

The Book Purchasing Fund (donated by members) which has been spent wisely by your Book Purchasing Committee, and the many generous gifts of books and periodicals from members have made the above figures possible. These statistics make me overjoyed, and I think you will agree that the increase for a two-year period (1953 and 1954) has been very gratifying.

I'd like to bring to your attention that not only books and periodicals have been carded, but many articles also. For example: Are you interested in "The Tetons"? If you are, you will find a card which reads:

TETONS (Wy)
By: Francis Gresa and Ruth Prentiss
In: MAZAMA, p. 5, vol.XXXI, no. 13, Dec. 1949
(interesting article with beautiful plates)

There are dozens of such articles carded separately, which gives one a very complete coverage of a subject.

I have prepared a handbook of instructions outlining the method of cataloging items in YOUR LIBRARY AND MINE, loaning out items, etc., in the hope that it may help guide the incoming librarian and his committee. There will be several extra copies for those members who are particularly interested and, of course, there will be a reference copy.

There are a few items from the library that have been <u>on loan too long</u>. Please, search your own bookshelves and return to the library any items which have been borrowed so that they may be available for other members to use. One month has been considered the maximum loan period. Thank you.

During my three-year term as librarian, when YOUR LIBRARY AND MINE was housed in our home, Ed and I enjoyed the browsing nights which were evenings of good fellowship and learning. These are continuing successfully at Lewis and Clark College, the new headquarters of the library, with reading hour, special programs, and coffee time. I know the library will continue to grow and prosper under the capable guidance of your new librarian and your new officers who, I feel, will give it the same enthusiastic moral and financial support offered by the Presidents and Boards in office during 1952, 1953, and 1954.

May I take this opportunity to say that I appreciated the Society's way of saying "thank you" to me in its letter of appreciation and gift of the book <u>From An Antique Land</u>. I hope I may serve the Society in its library and other interests for many years.

Yours in the interest of YOUR LIBRARY AND MINE

May R. Bushby, Outgoing Librarian

****

ON THE BLESSINGS OF ADVERSITY

While sitting in my car on a steep hillside in Seattle, some days ago, and waiting, perhaps a little impatiently, for the truck from the AAA (not the AA) to come to the rescue, it did not seem that anything good, interesting, or beneficial could possibly come from the embarrassing situation, for one must admit that, at the time, there was little to indicate any future but a dark one. I had backed into a parking space a little too sharply, the right rear wheel had climbed over the low curb and dropped into a depression prepared for it by perhaps hundreds of other wheels. In trying to pull out I had killed the motor, and in cooperation with the general Seattle practice, the starter refused to turn the motor over, this being Saturday afternoon when all union motor shops are closed tight, and it seemed a fine time to get a much-needed rest.

When I got out of the car I found that I had backed into a parking meter post, but fortunately, had not broken it. I hurried to a drug store and entered a telephone booth from which the rate card had been removed, but I had used telephones before and knew what to do, so I put a nickel in the five-cent slot. Nothing happened. I hung up and went into another booth where I found that "two nickels or one dime" was necessary to get action.

After dialing my number a sweet voice wanted to know where I was and what was the matter. I answered in great detail - too great detail, the lady said. There wasn't room on the official blank for all that I had said, which had been the names of the intersecting streets where the car was standing. She wanted to know just the number of the house from which I was phoning. I dashed out of the booth and asked the clerk. He didn't know, but hunted up a prescription blank which had the store address on it and gave me the dope which I relayed to the Three-A girl. Then went back to the car and waited, trying to keep calm by working a cross-word puzzle. This also helped me to avoid the scathing glances of the University students who wondered (no doubt) if when their hair got white, they would park their cars cornerwise against a parking meter.

The meter was working, even though it was Saturday afternoon. (Maybe the meters are not unionized.) So I eased its conscience with another nickel and struggled with an eight-letter word meaning "Disconcerting (Colloq.)."

Then the red truck with the big white AAA sign stopped alongside.

The driver got into my car and stepped on the starter button, looked sad, and began explaining about the Seattle automotive unions and their interest in the "do it yourself" craze that is sweeping the nation. But, and his face brightened a bit, he knew a one-man shop that turned up its nose at the unions. Maybe he could take me there. He coupled onto my helpless mass of inert metal and I got into the truck with him.

As we pulled away from the place on which I still had rent paid for another half hour, he radioed the AAA office and asked them to find out if Jack was still in his shop. He was. And when we got there he was just getting a car out of the shop and was ready to tackle mine.

I have been in a great many auto repair shops in various parts of our own great republic as well as in Canada and Mexico, and <u>never</u> saw one so immaculate and orderly. The floor was clean except for the tracks of my car's tires. Every tool, and every piece of equipment (and he said that there was $16,000.00 worth) was in its place, shiny, and ready for immediate use.

He tried the starter, grunted, got out and got under, according to the 1913 formula, and came out with a very greasy and dirty mechanism which he took apart and showed me that the cogs had all worn off from the Bendix drive. Then he went to a little cupboard and came back with a new bit of machinery which he put in place of the worn-out part, and I was soon on my way, (almost) rejoicing.

This delay made it impracticable for me to make the return to Portland that evening, so I accepted the hospitality of the Lewis and Clark Hotel in Centralia, knowing that Lewis and Clark had been in much worse jams than the one I had just come through; and had a restful night.

So restful was the night, and so beautiful was Sunday afternoon that I was able to satisfy a curiosity of thirty years standing as to what lay east of the sign pointing to Rose Valley, and when, after a dozen or more miles of beautiful, winding roads, I came to a steep, and muddy stretch and decided to turn around, I got the car crosswise of the whole road and the motor stalled again. But, glory be! it responded to the touch of the starter pedal, and the rest of the trip to Portland was made without further trouble.

But I couldn't help being thankful that the real trouble with the starter had happened where both the AAA and Jack's Motor Service were available instead of twelve miles off the main highway and nobody knows how far from a telephone.

The moral? Have your accidents in town, and during union working hours, whenever possible.

O.E.S.

****

RE HOMO SAPIENS

No, the Raymond Baldwins have not moved, although they have been "up in the air" for some time following the official act of changing their house number and the name of the street from Laurelwood Drive to S.W. 82nd Avenue. A petition by the Baldwins and their neighbors so touched the hearts of the "powers that be" that the original name of the street has been restored. The official address of the Baldwin family now is 4300 S.W. Laurelwood Drive, Portland 1, Oregon.

* * * * *

Lon Hancock's masterly article in the February issue of the Geological News Letter, entitled "The Pageant of Old Oregon," which gives the geologic history of Oregon in the Cenozoic era, is in itself worth the price of membership, says Carl Richards, one of our Salem members. A.H.

* * * * *

The State Mapping Advisory Committee, of which Fay W. Libbey is chairman, has asked the U.S. Geological Survey to make topographical maps for 9000 square miles of south central Oregon. He calls attention to the fact that only 30 percent of the State has been mapped topographically in the more than seventy years that the Government has been mapping the United States. The territory which the committee is asking to be mapped extends from the California border to Crater Lake and from Klamath Falls to Hart Mountain.

* * * * *

Ken Bishop, geologist with Continental Oil Co., was the guest of Hollis Dole at the March 17th luncheon. He contributed interesting information concerning some deep water wells in California which had been the subject of Albert Keen's "five-minute talk" which, by the way, held closer to the five-minute limit than many others, and was packed with interest.

J. Rademacher, an avid young geologist, was Ralph Mason's guest at the St. Patrick's day luncheon. No, we do not believe that he is an Irishman.

GSOC TALKS AT LUNCHEON MEETINGS

On February 24 Bruce Schminky gave a brief review of the accomplishments during 1954 of the Publicity Committee of which he has been chairman since 1950. During the past fiscal year the society has been accorded 440 column inches of space in Oregon newspapers. By far the greater part of this was in the Oregonian and East Oregonian and more than half of it was devoted to the plaque that the society installed in honor of Dr. Thomas Condon. This newspaper space was the equivalent of 2.6 pages of reading matter. At the rate charged for classified ads it would have brought the paper publishing it approximately $3200 but Bruce relieved the minds of those present by assuring the meeting that he had no intention of billing the society on the basis of the value of his services. The 1954 scrap book was passed around and examined with interest and Bruce was warmly commended for the swell job he has turned in as publicity chairman.

On the ancient Chinese theory that one picture is worth a thousand words, Orrin Stanley, on March 3d, supplemented his talk about Mexico with several large photographs of scenes in that country, and was thus able to limit his talk to not too much more than the theoretical five minutes. He said that the early Mexicans are believed to have descended from some of the Mongol tribes of Asia who may have crossed on land that later sunk below Bering Strait, and then were forced southward by increasing cold weather. This is thought to have been about 12,000 years ago. The oldest man-made structure now known in Mexico was abandoned 8,500 years ago. Archaeological explorations are hampered by lack of funds, but interesting finds are still being made.

One of our most interesting talks was the one given on March 10 by Miss Ada Henley on the Portland Hotel which awakened nostalgic memories among many of those present. The talk was based on Miss Henley's connection of 25 years with the hotel while she had an office there as Public Stenographer.

Henry Villard, a pioneer in the development of this area, who was responsible for bringing the Northern Pacific Railroad into Portland, felt that the St. Charles, then the leading hotel, did not fit into the future that he foresaw for the city. Consequently he made plans for a hotel that would - and did - become famous throughout the nation. In 1883 he bought the site for $75,000 and in 1884 the foundation was laid. Financial difficulties intervened and after some delay the project was taken over by Messrs. Ladd, Corbett, and Failing who saw it through to completion so that it was finally opened in 1890. For the first few years it was a losing venture, then matters improved and it attained a widespread reputation. It was Richard W. Childs, who took over in 1916, who really put it on the map so that it became known, literally throughout the world, not only as a first class hotel but for its hospitality and congenial atmosphere.

Miss Henley related many interesting reminiscences of employees and distinguished guests whom she met in connection with her work, recalling particularly Lord Charles Beresford, Lord High Admiral of the British Navy, Ernest Thompson Seton, Carveth Wells, and Harry K. Thaw. Miss Henley passed around her scrapbook which was almost - but not quite - as interesting as her talk. An interesting feature of the scrapbook was an advertisement "Rates $3.00 per day. American Plan."

****

The tables have not been turned at the Chamber of Commerce dining room, but customers begin filling their plates now at the south end of the line where the meat dish is served, then with the knowledge that they are to have real nourishment, they can amble along and complete the filling of their plates with the more ornamental jello dishes and desserts. Plenty of hot coffee is on the tables and there is no long period of waiting to be served.

****


Annual Banquet
G.S.O.C.
March 11, 1955.
20
YEARS
-PHOTOS-
O.E.
STANLEY-
BUSHBY + BUSHBY


Annual Banquet
G.S.O.C.
March 11, 1955.
20
YEARS
A.H.
-PHOTOS-
O.E.
and STANLEY-
BUSHBY + BUSHBY

BANQUET COMMITTEE

CAMELLIA CORSAGES:
Mrs. Ben F. Smith

GIFTS:
Mr. and Mrs. H. Bruce Schminky

HOSPITALITY:
Mr. and Mrs. Raymond L. Baldwin
Mrs. Amza Barr
Miss Glenna M. Teeters

MUSIC:
Mrs. A. W. Hancock
Dr. Arthur C. Jones

PHOTOGRAPHY:
Mr. Edward D. Bushby
Mr. Orrin E. Stanley

TICKETS:
Mr. and Mrs. Leo F. Simon

BANQUET ARRANGEMENTS:
Mrs. William F. Clark
Mrs. Glen C. Hazelhurst
Miss Ada Henley

* * *

O F F I C E R S

1954	1955
PRESIDENT	
Mr. Albert J. Keen	Mr. William F. Clark
VICE PRESIDENT	
Mr. Earl W. Minar	Mr. Edward D. Bushby
SECRETARY	
Mrs. Leo F. Simon	Mrs. Leo F. Simon
TREASURER	
Mr. Robert F. Wilbur	Mr. Robert F. Wilbur
EDITOR	
Dr. Francis G. Gilchrist	Mr. Orrin E. Stanley

D I R E C T O R S

Mr. Rudolph Erickson	Mr. Raymond L. Baldwin
Mr. Norris B. Stone	Dr. Francis G. Gilchrist
Dr. Francis G. Gilchrist	Mr. F. W. Libbey
Mr. Raymond L. Baldwin	Mr. Albert J. Keen
Mr. F. W. Libbey	Mr. Leroy A. Palmer

******

MENU

DINNER NO. 1

EOCENE DIATRYMA ET BRECCIA

HYDROUS KAOLINITE

or

ONCORHYNCHUS LOAF

GARNET CONGLOMERATE

DIATOMITE PYROMORPHITE

SLABBED RUBY GRANITE

LIQUID BASALT

* * *

DINNER NO. 2

TURKEY AND DRESSING

GIBLET GRAVY

or

SALMON LOAF

CRANBERRY SALAD

MASHED POTATOES STRING BEANS

CHERRY PIE

COFFEE OR TEA

* * *

PROGRAM

Twentieth Annual Banquet

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Mr. A. W. Hancock
Master of Ceremonies

"TWENTY YEARS" Song . . . . . EVERYBODY

DINNER

OUR TWENTY YEARS . . . . . Mr. Albert J. Keen

NINETEEN FIFTY FIVE . . . . . Mr. William F. Clark

PRESENTATION OF FELLOWSHIP CERTIFICATE

INTERMISSION

"A HUNDRED MILLION" Song . . . . . EVERYBODY

STRUCTURE IN VOLCANIC ROCK . . . . Mr. Hollis Dole

A GINK WITH A GINGKO
by
G.S.O.C. PLAYERS

"THE OREGON COUNTRY" . . . . . EVERYBODY

THE PROFESSOR TAKES A HAND
by
CHARTER MEMBER PLAYERS

"GOODBYE, ROCK HUNTERS, GOODBYE" . . . . EVERYBODY

* * *

TWENTY YEARS
(Auld Lang Syne)

For twenty years we've worked and played,
We've had a lot of fun.
We like to think we've learned a lot,
But know we've just begun.

Chorus:

For twenty years, my dears,
For twenty years,
We've wandered over Oregon,
For twenty years.

For twenty years we've picked and dug
Into the mountain side.
And to our hoard of rocks and bones
We point with joy and pride.

We search the cliffs for fossil shells,
When we are at the beach.
It seems the ones we want the most
Are always out of reach.

These twenty years have been well spent,
We've opened Nature's door.
We'll step inside and look around,
For twenty years more.

* * *

LET'S ALL SING

"GOODBYE, ROCK HUNTERS, GOODBYE"
Tune: Goodbye, My Lover, Goodbye

Our Banquet now is at an end
Goodbye, Rock Hunters, goodbye,
We'll work a year and meet again
Goodbye, Rock Hunters, goodbye.
Geodes and fossils, banquets, and wassails,
Campers with "tossles,"
Goodbye, Rock Hunters, goodbye.

* *
*

GOOD NIGHT

* * *

Annual Banquet

G.S.O.C.

March 11, 1955.

20 YEARS

1935 1955

CALENDAR FOR MAY

Thursdays
April 5, 12, 19, and 26 - Noon Luncheon Meetings, 2d floor Chamber of Commerce Building, S.W. Fifth and Taylor. Up steep stairway from Fifth Avenue entrance or by automatic elevator from smaller doorway on Taylor Street right into dining room. Buffet luncheon. One dollar.

Friday May 13 — Friday night meeting, Library Hall, 7:00 P.M. Mr. F. W. Libbey, former director of the State Department of Geology and Mineral Industries, will talk on "Metals to Remember." The metals he will discuss will include titanium, lithium, cobalt, columbian, and tantalum.

Tuesday May 17 — Picnic at Lewis and Clark College at 6:00 P.M. Bring your own lunch to the picnic area near the swimming pool. Coffee will be furnished and there will be a fire for those who wish to roast meat. In case the weather is unfavorable we will retire to the geology laboratory nearby. After eating, colored slides of the Cascades will be shown. Everyone having such pictures is urged to bring along a dozen select shots for the showing. We will see something of the geology of the Cascades and try to guess the names of the mountains, lakes, streams, etc., shown in the slides. Since this is our regular library night those who wish may retire to the library to browse (or graze). As usual there will be some displays and microscopic exhibits. Everyone is urged to come and have a good time.

Friday May 27 — Friday night meeting, Library Hall, 7:00 P.M. Mrs. Kelsey Ramey Osborne will speak on "Trailing Lewis and Clark." Mrs. Osborne has retraced the Lewis and Clark travels and will show photographs of the country as it appears now, and tell the dramatic story of the Lewis and Clark expedition.

Saturday, Sunday, Monday — May 28, 29, 30 - Field trip to Camp Hancock. In cooperation with Oregon Agate and Mineral Society. Subject: Paleontology; Leaders: A. W. Hancock and Ted Hedin.

This is to be a three-day camping-out trip with headquarters at Camp Hancock, two miles east of the Clarno bridge over the John Day River on the road between Antelope and Fossil, State Highway 218. Choose your own route from Portland. The estimated round-trip driving distance is 375 miles.

Water and toilets are available at the camp, but campers will bring their own food, shelter, and cooking equipment. For those not prepared for camping, John's Motel in Fossil will have accommodations, but reservations should be made well in advance. There is also a hotel at Fossil which is about 16 miles east of Camp Hancock.

The program includes side trips to the nut beds, agate beds, old mammal beds, zeolite deposits, and Knox Ranch.

The FIRST trip will leave camp at 9:00 A.M., Saturday, May 28.

The SECOND trip will leave camp at 1:00 P.M., Saturday, May 28.

Other trips will be announced at the EVENING CAMPFIRES.

Murray Miller, Trip Chairman.

****

"PEACEFUL CONQUEST"
Lewis and Clark Expedition

Of special interest to GSOC members is the announcement of publication under auspices of Old Oregon Trails, Inc., of a book entitled Peaceful Conquest - Story of the Lewis and Clark Expedition, by Kelsey Ramey Osborne.

According to Dr. Burt Brown Barker who wrote the preface, it is a "blending of real history, geography, biography, and Indian life . . . and succeeds in capturing the full panoramic sweep of history, at the same time depicting life from many aspects by means of human interest sidelights."

Mrs. Osborne is scheduled to address our Society on Friday evening, May 27, and we are certain after enjoying her illustrated lecture on the subject to look forward eagerly to the reading of this interesting volume. Copies are available in paperback at $1.00, or clothbound, $2.25, and may be procured by contacting Old Oregon Trails Association, 824 S.W. Fifth Avenue (ATwater 9411, Ext. 46).

Jane Erickson

****

NEW MEMBERS

			Phone
Dryden, Miss Averil	931 N.W. 20th Avenue	Zone 9	CA 2992
Kille, Mrs. Mable A.	3840 S.W. Tunnelwood Road	" 1	BE 6230
Steller, Mr. Neil	1504 N.E. 30th Avenue	" 13	GA 0051
Munson, Mr. and Mrs. Harry C.	4072 N.E. 32nd Avenue	" 12	TR 6856

CHANGE OF ADDRESS

Sterrett, Mr. Chester	3320 S.W. 100th	" 1	CY 2-1357

****
DUES ARE DUE
****

NEWS OF MEMBERS

The March 1955 issue of Professional Engineer, a quarterly magazine issued by the American Association of Engineers, is designated as "A Hobby Issue for Engineers." It contains articles by such eminent engineers as David B. Steinman, the designer of the St. Johns Bridge in Portland; and a "look-see" at other members of the Association who have reached maturity or retirement, by M. E. McIver, National Secretary, AAE, a part of which we quote:

> "Photography is another hobby rather common to engineers. Several interesting snapshots have been received at National Headquarters from that grand octogenarian, Orrin E. Stanley of Portland, Oregon. He was a lively spark-plug at AAE conventions in the early days and will be so remembered by some of the older members of AAE. A photograph which we value very much is one taken of Mr. Stanley by Mr. Stanley, and is here introduced to 'pretty up' the article.
>
> "Encouraged by his son, he sent copies of this self-taken photograph which he made in his own 'dark room' to his friends, including the National Secretary who values the picture because of his loyalty to AAE, and his active participation in the Association's early program. American Photography, a copy of the magazine he was holding when the camera snapped him, thought well enough of the picture to print it with comment. His Christmas greeting cards bearing some of his choice 'snaps'

GEOLOGY OF PORTLAND AND VICINITY

By
Roger C. Elsey

(Continued from the April 1955 issue)

The Pleistocene period is a fascinating era to study because with the approach of the "ice age" things began to happen. Although continental glaciation extended only as far south as Centralia, Washington, the melt waters of the ice and the debris they carried reached the Portland area with profound effect. With the advent of the glacial epoch there was increased stream run-off caused either by increased precipitation, melting of ice and snow fields, or both. The Sandy and Bull Run rivers ran bank full, and occasionally spilled over the banks, as above Dodge Park. Boring lava had flowed across the Sandy River at its mouth (The Chamberlain Hill flow) but was soon removed as the flood waters attacked it and other flows with full fury.

The load of the streams was increased owing to more active erosion. Suspended material was carried northward and deposited as a piedmont fan in the Columbia River valley. This process of erosion and sedimentation continued until the Columbia River valley became choked with rock-waste sediment.[10]

Much of the waste material was brought from the upper regions of the Columbia River basin.

Mountain glaciation which affected the Portland area headed at Mt. Hood and, during the glacial period, ice accumulated on the mountains and came down the valleys in a much larger manner than now. We know that during the Pleistocene age there were at least two major ice advances down the Sandy River.[11] One of these probably reached the Columbia River, and the other probably got to within seven or eight miles of the gorge. There is some evidence that there were two other advances but they were not nearly as extensive. The most recent glacier probably extended as far as Brightwood or Salmon Creek and the older glacier may have reached the town of Sandy. The deposits of those valley glaciers consist of both out-wash and till. Waste products of the glaciers were deposited by melt waters as they advanced and retreated in the valley. The melt-water deposits of an advancing glacier were over-ridden by ice and covered with glacial till, and then as the glacier retreated more outwash was deposited on top of the till. The deposits of any major glacial advance are characterized by out-wash, a covering of till, and another layer of out-wash on top of this. Topographic position and the amount of weathering of the till and out-wash help to differentiate between these.

If we were to make a cross section of the Sandy River in the vicinity of Dodge Park these are some of the features we would notice. On the east side of the valley the elevation is about 900 feet above sea level. The river is about 200 feet in elevation. To the west there is a flood plain composed of recent alluvial deposits to about 300 feet. To the west there appears to be a series of terraces. The first is 400 to 500 feet in elevation and another at about 550 to 600 feet, the general elevation of the Gresham area. At the 800-foot level deeply weathered glacial till is exposed. Deep road cuts show material overlain by a coarse out-wash gravel. In each of these breaks we find glacial till usually covered by out-wash, but in many places it rests on bed rock, commonly the Troutdale formation. At the 450-foot level we find coarse out-wash with till above it. The out-wash is mainly unconsolidated sands - fine to coarse. It tells us that the Sandy River valley was a very broad and shallow valley in Pleistocene times. As the glaciers advanced down the valley, the streams deposited out-wash gravels.

The glaciers, in turn, over-rode the out-wash and deposited till. This process was repeated approximately four times during the Pleistocene period and, between each advance, the stream continued its down-cutting until the present time. If the glaciers did not advance too far down the Sandy River valley, its melt waters did. At the 450-foot level there is evidence of ponding. The Sandy River at this time was like an arm stretching into the lake. Since glacial times the Sandy River has eroded in the neighborhood of 200 feet into the valley and the only explanation for this is that the base level was lowered.

The Portland area is covered with vast amounts of sand, gravel, silt, and clay. As one moves westward, a change in grain size between sand and gravel, sand and sandy silt, and clay is progressively smaller. The larger materials lie at the east end of this ancient lake with smaller particles to the west. Other evidences of a lake in the Portland region are large, ice-rafted, angular blocks of rock called erratics. Some of them weigh many tons and are composed of granodiorite, granite, and metamorphic rocks, foreign to this region. They are found at elevations as high as 400 feet. In addition, in the eastern portions of the area under discussion is another type of boulder, some of which are partly rounded and as much as 15 to 20 feet in diameter. This type-rock, which has been derived locally, must have been transported by water of tremendous energy and then suddenly dropped, thus further evidencing a large body of water.

Some of these things have been explained by Bretz[3] who believed there was a tremendous flood that occurred rapidly and only lasted a short time. Most geologists laughed at him because of a few flaws in his evidence, but by and large he was right. What may have happened and what I think did happen was this: All of the drainage in the western mountains was impounded in glacial Lake Missoula. Pardee described this whole lake some 45 years ago. Thirty years later Pardee again told something of even greater interest. He said that he had decided that the lake was released suddenly and that 500 cubic miles of water was suddenly discharged. It seems that this lake could have discharged at a peak rate of about 10 cubic miles an hour. If this had happened, the lake could have been drained in two days. This wasn't the case though because, in its mad dash to the ocean, the water had to come through certain narrow areas in which only a small amount could be discharged in a day. Wallula gap was one place where the discharge was kept at about 40 cubic miles a day. The rest of the water backed up and was impounded forming a large lake extending into Wallula Valley. Evidence mainly depends upon the presence of erratics and other depositional material. There was ice to the north and the west so the water from Lake Missoula was forced to come down through Spokane, then through the Columbia River Gorge. Another large lake was formed in the gap in the Umatilla basin. From there the water rushed down the gorge until it reached Kalama. The water was backed up to a depth of 350 to 400 feet deep. At this time it moved into the Tualatin valley through the Oswego channel and south into the Willamette River valley. As this flood of water moved into the ponded area, it rapidly lost its energy. This hypothesis explains very well the deposited sediments in the Portland area and their origin. This explanation may not be absolutely correct, but it is the best that is known at this time.

As the flood waters poured into the ponded area they were forced to drop their loads of gravel, sand, and mud. Eventually the valley became filled with this debris to an elevation of at least 350 feet. As the water level was lowered the rivers re-excavated their channels, pausing at the 200-foot and 100-foot elevations. Three terraces and the present flood plain were formed.

While these deposits and terraces were being formed in the Columbia River valley, similar deposits and terraces were being formed in the lower Clackamas, Tualatin, and Willamette valleys.

Summary

Contentions and geological facts which are presented in more detail in the body of this paper are here summarized. Our historical approach to the geology of the Portland area has involved strata of Eocene to Pleistocene age.

We assumed that marine sediments of Oligocene and lower Miocene age were the oldest known rocks in the area from the evidence of well logs, as there are no known exposures of these rocks in the area.

The Miocene Columbia River basalts are the oldest exposed mappable rock unit in the area and is here considered the bed rock of this area. The basalts were errupted from large fissures in the eastern part of the state 30 to 40 million years ago and covered an area of 250,000 square miles. At the end of the volcanic activity these rocks, 1200 to 1500 feet thick in the Portland area, were folded and possibly faulted into a series of anticlines and synclines. As the folding progressed the increased carrying power of the streams started filling in the basins with the products of erosion.

The Troutdale formation, named by Hodge, was deposited as the result of the folding of the Columbia River basalts. They consist of sections of fine sand and clay, gravels, and conglomerates (indurated) containing quartzite pebbles, and have a total thickness of 1,000 feet.

The Boring lavas flowed over the old Troutdale surface from volcanoes within the area. These lavas also dammed many of the streams forming large lakes. These lavas soon became victims of erosion.

Continental glaciation indirectly affected this region with glacial waste, but glaciers from Mt. Hood, moving down the Sandy River valley, reached the Columbia River Gorge.

Lake Missoula, according to Pardee, was suddenly released and a total of 500 cubic miles of water poured into the Columbia River Gorge in a relatively short time, becoming impounded in certain narrow places such as Wallula Gap, Umatilla, and Kalama. The water, in the Portland area, was as much as 400 feet deep.

As the water level was lowered and the rivers able to re-excavate their channels, three terraces (300-, 200-, 100-foot terraces) and the present flood plain were formed.

Similar events were occurring in the Clackamas, Tualatin, and Willamette river valleys. This brings us up to date as far as the geological history is concerned. But the job is not done, for as long as there is a hill there will be erosion to tear it down to sea level.

Bibliography

1. Allen, J. E. - Contributions to the structure and paleontology of lower Columbia River Gorge. Master's Thesis, University of Oregon, 1932.

2. Allison, I. S. - Glacial erratics in the Willamette Valley: Geol. Soc. Am. Bull., vol. 46, pp. 615-632, 1935.

3. Bretz, J. H. - The Spokane flood beyond the channeled scablands: Jour. Geology, vol. 33, pp. 249-252, 1925.

4. Darton, N. H. - Structural materials in parts of Oregon and Washington: U.S. Geol. Survey Bull. 387, pp. 1-33, 1909.

5. Fenton, C. L., and M. A. - The Rock Book. Doubleday and Company, New York, 1950.

6. Lowry, W. D., and Baldwin, E. M. - Late Cenozoic geology of the lower Columbia River valley, Oregon and Washington: Geol. Soc. Am. Bull., vol. 63, pp. 1-24, 1952.

7. Schlicker, H. G. - Columbia River basalt in relation to stratigraphy of northwestern Oregon. Master's Thesis, Oregon State College, 1954.

8. Sheets, M. M. - Contributions to the geology of the Cascade Mountains in the vicinity of Mt. Hood. Master's Thesis. University of Oregon, 1932.

9. Treasher, R. C. - A Pleistocene damming of the lower Columbia River (abstract): Geol. Soc. Oregon Country, Geological News Letter, vol. 4, no. 24, p. 271, 1938.

10. " Geologic history of the Portland Area: Oregon Dept. Geology and Min. Industries Short Paper 7, 1942.

11. Trimble, D. - Geology of Portland and vicinity. Personal Communication, June 25, 1954.

12. Washburne, C. W. - The Reconnaissance of geology and oil prospects of northwestern Oregon. Government Printing Office, Washington, D.C., 1914.

13. Weaver, C. E. - Tertiary stratigraphy of western Washington and northwestern Oregon: Washington Univ. Pub. in Geology, vol. 4, 264 p., 1937.

14. Williams, H. - The ancient volcanoes of Oregon. Oregon State System of Higher Education, 1948.

****

ANOTHER ERRATIC

By

Edward A. Kelham

Early in March a builder excavating for a basement on a lot on the west side of S.E. Linden Lane, about 100 feet north of its intersection with Courtney Road, uncovered the tip of a large boulder composed of biotite-granite. The highest point of the boulder was probably about 12 inches below the surface. The exposed portion above the floor of the excavation measured 1½ feet high by 3½ feet wide by 5 feet long. Other dimensions of the boulder are unknown as no attempt was made to dig it up. The builder merely chipped off the top foot or so with an air hammer to get it below the level of the basement floor and left it in place. It is certainly large since the power shovel used in excavating was unable to shake it.

This boulder is undoubtedly an ice-borne erratic; further evidence of a short-lived Pleistocene lake occupying the lower portion of the Columbia-Willamette valley as suggested by Allison and others. The material surrounding the boulder is a loamy top soil shading downward to a silty clay which appears to be underlaid with a gravelly clay. Numerous subangular basalt boulders were present in the top soil. One 8-inch subangular boulder was porphyritic in appearance.

The location is about 180 feet above sea level and about 1000 feet west of McLoughlin Boulevard, between Milwaukie and Oak Grove. Snapshots were made of the exposed portion of the boulder, a number of samples saved, and a record made of the location.

****

AFRICA SOUTH OF THE EQUATOR
Lecture By
Dr. Edwin T. Hodge

March 25th we were honored with a talk by Dr. Edwin T. Hodge, the founder of our society, on "Africa South of the Equator." Dr. Hodge has returned recently from a year in Africa, most of which was spent in the little known Portuguese colony of Angola.

Viewing the map of Africa one notes that it can roughly be divided into two ovals, a northern and a southern, with the equator approximately the line of demarcation. The two ovals differ greatly from each other, in fact are more different than North and South America or Europe and Asia.

The general characteristic of the northern oval is that of a vast desert in the northern portion with a tropical rain forest on the south. All of the civilization is near the borders. As one moves inland population and civilization disappear.

In the southern oval, conditions are quite different. The western part is largely desert due to the fact that the warm winds from the Atlantic lose their moisture in passing over the cold South Polar current, resulting in a belt of perpetual fog along the coast but no rain inland. This fog belt makes a vast fishing ground which is being exploited by commercial fishermen from many parts of the world. From the desert one crosses a broad savannah and then, in the interior, encounters a tropical rain forest.

The people of the southern oval have been transgressive; they have spread out and populated the interior in contrast with the peoples of the northern oval.

The northern oval is populated by people of Arabian and Semitic origin, the latter having migrated from Asia before the days of Moses and persisted there. The Arabs and the Semites have blended with the Negroes who were native to the country and naturally there is no racial antipathy as this has been going on through the centuries. In fact during a portion of its history some of the Pharaohs who ruled Egypt were Ethiopians. The southern oval is populated by Europeans, mostly of the Nordic and Alpine races. These have not blended with the Negroes.

Before the white men came, the country was occupied by blacks (the Hottentots), a small people who lived in the southern part in what is now Cape Colony, and the Bushmen who made their homes in the northwestern part, of the southern oval. These latter are a hardy people, remarkable for their ability to live in the desert on the sands and rocky crags, subsisting on the desert vegetation and on small game that they snare or kill with bow and arrow.

Some anthropologists are convinced that certain human fossils found in Transvaal or Orange Free State are among the most ancient human remains, which would indicate that man may have originated in the center of the southern oval and thence dispersed throughout the globe.

Along the entire border of the southern oval is a range of mountains or a steep escarpment and back of this is an extensive plateau. In contrast with the western portion the eastern is warmed by the winds of the Indian Ocean and has a Mediterranean climate.

The geology is baffling to one who has gotten his training and experience elsewhere. Wind is the principal erosive agent; there is very little stream erosion. While other continents were undergoing "revolutions" and "disturbances" Africa was practically quiescent. This has resulted in a series of "stacked up" sedimentary rocks of great thickness and moderate dip which are assigned to the pre-Cambrian. It is in these flat-dipping rocks, now metamorphosed to hard quartzite, that there are found the famous gold-bearing "reefs," blanket formations that conform to the dip of the enclosing rocks and underlie vast areas. The Anglo-American Mining Company started its successful career by venturing to go far down on the dip, away from then existing workings, and sink a deep shaft in the hopes of encountering the reef. The venture was successful and Anglo-American is now one of the great mining corporations of the world. A peculiar phenomenon of mining on the reefs is the "rock bursts," great rushes of air under terrific pressure which occur in the course of mining.

Diamonds were first found in the streams from which they were traced to volcanic necks of "kimberlite," a yellow or blue clay characteristic of these deposits in which pure carbon was compressed naturally under enormous pressure, thus forming the diamonds that have made South Africa by far the greatest source of this precious stone.

Recently there has been considerable newspaper publicity over the announcement that General Electric has succeeded in manufacturing diamonds. This news has been doubtlessly overrated as the diamonds so produced are exceedingly small and the cost far in excess of that of recovering the natural stones. The "diamond trust" is not concerned over possible competition with gems but is somewhat disturbed over the thought that the artificial diamonds may eventually be produced in size and quantity to make them suitable for industrial use.

The gold mines, over the years, piled up great mountains of "tailings," the pulverized barren rock left after the gold had been extracted from it. These tailings were somewhat of a problem until it was discovered that they carry uranium in sufficient quantity to make its recovery profitable and now they are being worked for that metal.

The richest known deposit of uranium is in the Belgian Congo. The ore in this mine also carries gold but here the precious metal is the by-product. The Belgian Congo was explored for 50 years before its enormous mineral possibilities were appreciated. Rich copper and cobalt deposits of great size and a veritable mountain of high-grade manganese ore are some of the resources noted.

It is a matter of regret that space limitations of the News Letter do not permit reporting many of the features, such as relations of whites and blacks, labor conditions, travel and living conditions, and conflicts between agriculture and mining that Dr. Hodge brought out in his most interesting talk.

Leroy A. Palmer

****

Louis E. Oberson, a charter member of GSOC, is the new president of the Men's Garden Club of Portland. The club is to be host to the national convention of the Men's Garden Clubs of America in June of 1957.

****

INERTIA

Inertia may not be, strictly speaking, a geological subject, but, after all, it has to do with the movement of the earth as well as with the organization and operation of a society which has for its main object the study of the science of the earth: geology.

The Funk and Wagnalls definition of inertia (the Webster dictionary being in another room about 20 feet distant, and requiring the overcoming of a certain amount of inertia to consult it) is: "That property of matter by virtue of which it persists in a state of rest or of uniform motion in a straight line unless some force changes that state."

In getting out a monthly paper such as the Geological News Letter there is lots of inertia to be overcome. The first encounter with this phenomenon is within the mind of the editor who has been content to let the fate of the paper rest in other and more capable hands for many years. But the Fates, of which we may treat at a later date (inertia being willing) have willed a change, and who are we to try to go counter to their decree?

However, since the Fates have pulled this dirty trick they seem to have adopted a "hands off" policy; and here we are.

It is well known that in the membership of the Geological Society of the Oregon Country there are dozens of people, capable and probably willing to contribute articles of interest and great worth on geological matters - articles that would be enjoyed and appreciated by the readers. The problem is: how shall we overcome this inertia?

Sometimes an apparently immovable object can be started in motion by a sharp blow or a series of blows.

Is a word to the wise sufficient, or will it be necessary to use force to obtain the contributions needed to fill the next twelve issues of the News Letter with worthwhile articles?

OES

****

ALPHABET SOUP

Somewhere along the line, alphabet soup has crept into the Geological Society's News Letter. Look up a few articles in recent volumes and then try to discover who is the author. Of course anybody knows that O.E.S. is Mr. Orrin E. Stanley. But who are M.L.S., N.B.S., E.A.K., and M.R.M.? And who are the even more elusive two-letter combinations of B.N., C.C., S.K., and M.D.? Are these people so famous that they should be known by their initials? Or are they so bashful that they don't want to be known at all?

From a serious standpoint, many of the News Letter articles bearing these perplexing symbols contain sufficient geologic information to be used as references in other published works. Thus they deserve to be credited with an author and not an anonymous group of letters. We hope that O.E.S. will encourage his News Letter contributors to make full use of the alphabet when they sign their names.

X.Y.Z.

- - - - -

Dear X.Y.Z.

The editor sympathizes with you in the wish to know the honest-to-goodness names of the authors of the many worthwhile papers that are printed in the News

Letter. Some of them can be identified by referring to the annual membership list, but since that list gives not the least hint as to the identity of X.Y.Z., we shall not at this time try to bring the other authors into the limelight at this time.

The Editor

****

ANNUAL REPORT OF TREASURER FOR FISCAL YEAR 1954/55

Bank balance on hand 3/1/54			$ 763.02
RECEIPTS:			
Memberships	$ 525.00		
News Letter	13.25		
Annual banquet	145.25		
Stationery, printing, postage	2.10		
Library book fund	27.75		
Mineral-identification cards	150.50		
Miscellaneous	7.50		
Total		$ 876.35	
EXPENDITURES:			
Membership refunds account of overpayment	3.00		
News Letter	240.08		
Annual banquet	330.15		
Stationery, printing, postage	34.27		
Library book fund	69.16		
Condon Memorial	107.16		
Mineral-identification cards	132.97		
Miscellaneous	95.58		
Total		$1012.37	
EXPENDITURES IN EXCESS OF RECEIPTS:			136.02
BANK BALANCE ON HAND 2/28/55			627.00

* * * * *

ASSETS:			
U.S. National Bank, Main Office			
General funds		$ 609.11	
Library book fund		17.89	
			627.00
Furniture, fixtures, books, equipment; at cost			194.78
Library books purchased from book fund			101.86
Total			923.64
LIABILITIES:			none
NET WORTH			
Surplus			
General		$ 803.89	
Library book fund		119.75	
Total			$ 923.64

Respectfully submitted 3/1/55, /s/ R. F. Wilbur, Treasurer.

LUNCHEON NOTES

By

Leroy A. Palmer

On March 17th, Albert Keen talked about a most interesting theory of water occurrence advanced by Stephen Riis who lives in the Simi Valley in Southern California. Mr. Riis alleges that, applying his theory, he has drilled 70 wells and that only three have failed of production.

His method is to make a thorough geological study of an area under consideration and take core samples from it. Some of these samples are retained and some are sent to a laboratory for study. When the laboratory report is received it is carefully correlated with the samples that have been retained and the possibility of water production evaluated. The drilling of a well is governed by structural features rather than by formation and the water developed is magmatic or "primary" water, not water that has accumulated by percolation to an underground basin from precipitation on the surface. The site being governed by structure a well might be located in what otherwise would seem to be a most unusual place, such as the side of a mountain or high up on the wall of a canyon. Obviously the drilling must be done with extreme care so as to intercept the structure at exactly the right depth.

Wells have been drilled from 232 to 700 feet deep and have stood up under sustained pumping without decline or lowering of the water table. Such performance could be expected if the waters are truly magmatic and an indefinite yield could be looked for, barring some seismic disturbance which would affect the structure.

As might be expected an interesting discussion followed the talk.

March 24th Tom Matthews, during luncheon, passed around several photographs showing the vicinity of Homestead and Copperfield and specimens of ore and country rock from the Iron Dike mine at the former locality and, after the luncheon, gave an interesting talk on the district and illustrated it with slides. This copper district lies along the Snake River just above the entrance to Hell's Canyon. The uppermost formation is basalt beneath which is a series of greenstones, estimated to be 2000 feet thick, in which are rhyolite dikes. The ores of copper, zinc, gold, and silver are associated with the dikes. The Iron Dike has been the most actively worked mine and has had an output of $5 million. Average assay value of the ore was 3.6 percent copper, one-fourth ounce gold, and one ounce silver. Development has been handicapped by the fact that the mines are well-nigh inaccessible, being situated high up on the side of a narrow steep canyon. In the case of the Iron Dike it was necessary to build the mill across the canyon from the mine and several hundred feet lower. In 1938 this unfavorable situation was relieved somewhat by driving a crosscut tunnel to the shaft.

The Red Ledge mine is practically in Hell's Canyon. It is estimated to contain 9 to 10 million tons of ore but under the same handicap as to getting it out to the river level. In 1916 a railroad was built into Copperfield which in its heyday had a population of 5000 but with the decadence of the mines the town dwindled and the railroad was abandoned and torn up. One reason for the mines' present inactivity is the uncertainty over the effect of a dam in Hell's Canyon on the mines.

Tom read an interesting account from "Oregon, End of the Trail" of how Copperfield got so lawless that on January 1, 1914, the Governor sent his secretary, a woman, with a small detachment of the National Guard with a threat to

proclaim martial law if certain conditions were not complied with at once. The Governor's demands were met and martial law was avoided.

On March 31st we had no regular speaker scheduled so the time was taken up by discussion of various subjects by different members. Ray Baldwin had told at a previous meeting of a news item that the Southern Pacific was laying a pipeline along its right of way to transport oil from Southern California to Texas but when some of the skeptics raised the point that this was akin to carrying coals to Newcastle he said he would check the account to be sure. He did. He was.

Mr. A. A. Lewis, guest of Hollis Dole, told of a professional trip to Texas to investigate limestone deposits and the value of paleontology in this connection as he found the deposits of limestone of commercial value to be definitely associated with certain distinctive fossils. Ed Kelham told that in opening a street in Oregon City a stratum of recent lava was removed, exposing the smooth face of an older lava beneath it. On this older lava were petroglyphs depicting a man and a horse, indicating that the later flow must have been in comparatively recent times.

April 7th no scheduled speaker was arranged so the time was taken up in general discussion. Mrs. Jones exhibited a map of Fremont's journey which showed the Oregon and California country and some of the territory east of it as it was known in 1844. She posted the map on the wall and it attracted much interest and comment. Mrs. Kelsey Ramey Osborne, who attended as guest of Mrs. Jones, gave an interesting preview of Peaceful Conquest, her forthcoming book on the Lewis and Clark expedition. Mrs. Osborne has traveled the Lewis and Clark trail herself and has prepared an account of the expedition which aims at being complete in all important phases but avoiding tiresome and unnecessary detail. Ralph Mason passed around a specimen of supposed-to-be uranium ore from Jackson County but declined to commit himself other than to say that it is "full of atoms." Tom Matthews told us some more detail about the Copperfield district which was the subject of his talk on March 24th, and Mr. Travis told of a trip along the shore near Cannon Beach and of finding some interesting rock exposures that have been uncovered recently by wave action.

****

NEWS OF MEMBERS

Louis E. Rydell, a charter member of GSOC, has been announced by the Columbia Section, American Society of Civil Engineers, as the candidate for National Director of that national society and, since the privilege of nominating an officer is rotated among the sections of a district, the election of Mr. Rydell is practically "in the bag." Our congratulations, including the editor's vote, are extended to Mr. Rydell who is now employed as Chief of the Planning and Reports Branch of the Walla Walla District, U.S. Corps of Engineers.

Estella I. Conner, member of GSOC, and Robert I. Clayton were married April 11, 1955. They made a trip to California and will be at home after May 1 at 1534 S.E. 41st Avenue, Portland; phone - EAst 8548.

Mrs. Nettie B. Crogster, a former member of GSOC, died Friday, April 8th, in a Portland convalescent home after a long illness. While a member of the Society she was active on field trips and was an ardent collector of specimens which she used in paving a small court at her home.

Miss Glenna Teeters suffered the breaking of nine ribs in an automobile accident on April 21 and was taken to the Emmanuel hospital for treatment.

****

CALENDAR FOR JUNE

Thursdays
June 2, 9, 16, 23, and 30 - Noon Luncheon Meetings, 2nd floor Chamber of Commerce Building, S.W. Fifth and Taylor. Up steep stairway from Fifth Avenue entrance, or by automatic elevator from smaller doorway on Taylor Street right into dining room. Buffet luncheon. One dollar.

Friday June 10 7:00 p.m. — Thomas Bones, Vancouver, Washington, a professional photographer and member of the Oregon Agate and Mineral Society will show his outstanding photographs from the vicinity of Clarno.

Sunday June 12 — GSOC will be host to Salem Geological Society on a joint field trip in the North Santiam country. Meet at the quarry of Juel and Son Flagstone Company, 1062 Mehama Road, in East Stayton near the lumber yard of Stayton Building Materials at 9:30 a.m.

Prof. Herman Clark or alternate will lead us east to Detroit or farther with stops at Detroit Dam and other places for geology. GSOC will furnish hot coffee for picnic lunch.

Murray R. Miller
Trip Chairman

Tuesday June 14 — Library Night at Lewis and Clark College.

Friday June 24 7:00 p.m. — Prof. Herman Clark, retired, of Willamette University and past president of the Salem Geological Society who has recently returned from the east coast will be our speaker at Library Hall.

****

DEFICITS (?)

The following is offered by the Treasurer to correct the erroneous impression that there was a deficit of $184.90 in putting on the Annual Banquet, March 12, 1954.

The Annual Report appearing in last month's issue of News Letter is of necessity a report of receipts and expenditures occurring during the fiscal year 3/1/54 to 3/1/55. Unfortunately data on any particular Annual Banquet are included in two annual reports due to the fact that it is held so close to the turn of the new fiscal year. The actual deficit for this banquet was $54.75. This "subsidy" was reduced to only $5.72 for the 1955 banquet with the slight increase in charge for the tickets.

R.F.Wilbur

****

REQUEST FOR NEWS LETTERS

There is a shortage of News Letters for the months of January, February, March, and April 1955. If friends and members of GSOC have extra copies available, please give them to Mr. Raymond L. Baldwin.

****

DR. CONDON, CONSERVATIONIST

It is our good fortune this month to have an illustrated article from the Geode (official publication of the Salem Geological Society) about the people and places in the life of Dr. Thomas Condon, Oregon's pioneer geologist, furnished by Carl F. Smith of the Salem Geological Society, all ready for binding into the News Letter. We can hope for, but scarcely expect things like this to happen often.

And looking at the picture of the revered scientist, one is inclined to speculate on the relationship between whiskers and knowledge. We are told that men have achieved great learning by using for study the time wasted by others in nonessentials.

If our office boy's calculations are correct, Dr. Condon, by not wasting ten minutes a day in shaving (and in the straight-razor and lather-brush days twenty minutes would be a more accurate estimate of shaving time), the learned doctor would have had 380 eight-hour days for study which a more dapper professor would have lost in shaving in the fifty years between ages of twenty and seventy.

The next question is: How much geological lore might an ordinary man be able to absorb in twelve and a half months of intense application to the study?

Of course none of us schedules his time so closely that no ten-minute periods are wasted in other pursuits than shaving or we might possibly have a more interesting and instructive News Letter. But is there amongst us anyone who has the stamina required to use those scattered bits of time as wisely as he knows how?

****

SAVING SPACE (?)

Doubtless matters of procedure in the production of this periodical of geological (and other) lore should be settled in the privacy of the magazine's spacious offices and not flaunted before our public, select though it may be, but we have had a request that contributions be signed by the authors, on the grounds that the readers are entitled to know who the writers are so that due weight may be given to the matter discussed. We feel that this request, even though signed by initials that do not appear in the membership roster, is worthy of consideration.

Some of the last-minute data of rather great importance are sent direct to the publication office and handled by the assistant editor who is responsible for the very neat arrangement of the publication, and she has been guilty of leaving out, not only the signature of a contributor, but the very significant word "Love" preceding the name.

We ask you if that is not carrying the saving of space a little too far?

The Editor

****

MODERATOR

Clarence D. Phillips, a charter member and Past President of GSOC, was moderator at a panel discussing "Masonry and the Alcohol Problem" at the Masonic Temple, Wednesday evening, April 13.

DR. AND MRS. THOMAS CONDON AT THEIR HOME IN NYE BEACH
PICTURE TAKEN IN 1901 BY MR. MELVILLE T. WIRE

THOMAS CONDON
PEOPLE AND PLACES TOUCHED BY HIS LIFE

ARTICLE 1

This is the first of a series of contemplated articles placing on record interesting facts concerning the life of Oregon's pioneer pastor-geologist, Dr. Thomas Condon. These will have no chronological sequence. This article concerns the picture shown on the other side of this sheet.

THE PICTURE

I have our esteemed fellow member, Oliver V. Matthews, to thank for the initial information and the negative. The picture is a photographic reproduction of a glossy print taken from a celluloid negative which, in turn, was produced from a print taken from an original glass negative of 1901.

THE PHOTOGRAPHER

The original negative was taken by Melville T. Wire in 1901. Mr. Wire was born September 24, 1877 at Austin, Illinois; now a part of Chicago. He attended the U. of O. preparatory school at Eugene in 1895-6 and entered Northwestern University's seminary (Garrett Biblical Institute) in 1899, graduating in 1902. His first pastorate was in Brownsville, Oregon. His nearly fifty years of Oregon Methodist ministry included a 1908-10 pastorate at The Dalles where his home was near that of Will Condon, nephew of Dr. Thomas Condon. His last pastorate, from which he retired in 1946 was at the Clinton-Kelly Methodist Church in Portland. Rev. and Mrs. Wire have a nice home at 975 Judson Street in Salem, where he engages in his hobby of producing purchasable etchings and water-colors of high merit, mostly of Oregon subjects. during the summers of 1899 and 1901 Mr. Wire, pursuing his photographic hobby rented studio space in the old Nye Beach bath house, the site of the present Natatorium approximately. This picture was taken during the 1901 season.

THE SUBJECT

The picture shows Dr. Thomas Condon and his wife, Cornelia, in front of their Nye Beach home. From its founding, in 1876, until his death in 1907, Dr. Condon headed the department of Geology of the University of Oregon. For a part of this period, his summer classes, held on Nye Beach, were popular for their presentation of the locality's ancient beach levels and marine fossils. The Condon home, pictured, was torn down several years ago and the lot is now vacant. The vacant site is at the southwest corner of the intersection of Agnes and Brock streets in Newport For this definite information, I wish to thank Mrs. Ada May Smith, Treasurer of the Lincoln County Historical Society. An extract from Mrs. Smith's interesting letter reads, "My family spent the summer of 1899 in Nye Beach and at that time Dr. Condon was conducting summer school or classes. My mother attended them. He often held them on the beach early in the morning and we would all go down and have breakfast on the beach". This fortunate contact certainly indicates trips to Newport with the prospect of new pictures and facts.

Carl F. Smith

GEOLOGY OF THE SILVER CREEK FALLS AREA, OREGON

By
Francis G. Gilchrist

One of these days some geologist is going to write an account of the geology of Silver Creek and its beautiful falls. Until then these brief notes apropos of the recent visit of our Society, April 24, 1955, to the area may have some value. The trip was led by Leo Simon. After visiting Winterfalls, Middle North Falls, Drake Falls, Double Falls, and Lower North Falls in the morning, we had basket lunch in the shelter of Silver Falls State Park. After lunch we stopped at South Falls and then drove to North Falls. Our last visit was to the Oregon TuffStone quarry where Mr. Franklin, owner and manager, showed us the method of sawing building blocks from the rock hillside. He let us all bring home samples for our collections.

Silver Creek is one of a series of parallel streams which flow northwestward in the foothills of the Western Cascades east of Salem, Oregon. The streams arise in a highland which Thayer (1939)* considered to be of structural origin and which he named the Mehama anticline. They flow into a basin, now filled with alluvium and silt, which he also considered structural and called the Willamette syncline. So parallel are the courses of these streams as shown on a map that one surmises that they originated as consequent streams on a fairly even surface. Locally this original surface must also have been gentle, for Silver Creek meandered before it incised its meanders. (See U.S. Geological Survey map of Lyons quadrangle.)

Three geological formations are present in the area:

(1) Pliocene tuffs. The uppermost formation is a tuff which Thayer termed the Fern Ridge tuffs. Presumably pumice and ash once fell over the entire area to a depth of a thousand feet or more and then slowly consolidated into rock. Silver Creek and adjacent streams have since then eroded the tuffs away from their lower valleys; but the tuffs remain as rounded hills and ridges between the streams in their upper reaches and as highlands surrounding their headquarters. In the neighborhood of Silver Creek Falls State Park the hills above the broad valley floor, i.e., above about 1,400 feet elevation, are Fern Ridge tuff.

On our field trip we visited the quarry of the Oregon TuffStone Company where building stones are being sawed out of the Fern Ridge tuff. The blocks are sold under the trade name of TuffStone. They are not unlike artificial pumice blocks in texture, weight, and insulating properties, but they have a natural color and beauty which the artificial products do not possess. They have been widely used in the local area for building purposes; for example, the First Methodist Church of Oregon City is built of this stone.

Thayer considers that the Fern Ridge tuffs rest conformably upon the underlying basalt flows and are a continuation of the same volcanic sequence. Schlicker (1954), however, finds evidence of an unconformity and suggests a Pliocene, possibly a late Pliocene date for the tuffs. This would make them roughly contemporaneous with the Rhododendron and Boring formations farther north. There are said to be interbeds of andesite in the tuffs.

(2) Miocene basalts. Thayer called the basalt flows which underlie the Fern Ridge tuffs, the Stayton lavas; but no one seems to doubt that they are a part of the Great Columbia River basalt flows of mid-Miocene times. They are the rocks

*See references at end of this report.

over which the falls plunge and which form the walls of the gorges below the falls. They appear to the casual observer to be completely horizontal; but they presumably have a slight dip northwestward toward the valley. In the Salem Hills the top of the basalt is deeply weathered to laterite (iron-rich bauxite); and a similar layer of laterite is reported near the falls region. This tends to confirm the later Pliocene date for the tuffs.

After the streams had removed much of the Fern Ridge tuff and reached the upper surface of the underlying basalt, they spread out and eroded broad valleys. Today the roads of the area run upon the thin soil which mantles this basalt surface.

But even rock as hard as basalt must ultimately yield to running water. Possibly energized by an increase in the tilt of the land Silver Creek broke through the several layers of basalt and formed a series of waterfalls. Gradually the falls ate their way headward, leaving behind them the deep, rock-walled gorge which we enjoy visiting today. Above the highest falls the forks of the stream still flow leisurely upon a basalt surface. By way of summary we may say that the topography of the tuffs above the basalt surface is in late maturity; that of the gorges below the basalt surface is in early youth.

Silver Creek has cut not just one but a series of falls, steps as it were, each step a different layer of the basalt. Thus the north fork has its Upper Falls, Middle Falls, Drake Falls, and Lower Falls; and the south fork has its Upper and Lower falls. Some of the falls, namely South Falls, North Falls, and Middle North Falls are deeply undermined. In the case of North Falls interbedded sediments lie beneath the "fall-maker" basalt flow. One can look upward beneath the deep overhang and see the casts of a forest which became enveloped in the flow of lava. In some of the other falls the jointed hexagonal columns at the bottom of a flow have broken away and left the denser top of the flow projecting.

In the lower part of its course Silver Creek has cut clear through the basalt into underlying marine sediments. At any rate on the first trip of the GSOC to Silver Creek, fossil shells were collected in the bed of the creek near Silverton (Keep, 1935).

(3) Oligocene marine sediments. This brings us to the oldest formation of the area; namely sediments and volcanics of Oligocene date. Although these are not exposed at the surface in the immediate neighborhood of the falls, they are reported but a few miles away in almost every direction. Those to the north, south, and west consist of sandstones and limestones containing marine bivalve and gastropod shells. The shelter in the state park where we ate our lunches is built of fossiliferous sandstone which was quarried not many miles away (near Turner?). The Oligocene sediments to the east, northeast, and southeast, on the other hand, are terrestrial volcanics containing leaf fossils. It thus seems likely that an ancient Oligocene sea shore passed not far from Silver Creek Falls, while eastward volcanoes poured forth their ash. The erratic distribution of the outcrops of Oligocene date suggests that the land surface had become folded and eroded into hills and valleys before the Miocene lavas outpoured, filled the valleys, and lapped around the hills.

The name of the Oligocene marine beds is not settled. Thayer called them the Illahe formation. Similar beds to the north are called the Butte Creek formation by Harper (1946). Schlicker (1954) correlates each of these with the Eugene formation, which name has priority. They contain about the same fauna as the Pittsburg Bluff formation of the Nehalem River basin.

Summary: An Oligocene sea shore rich in shell life once occupied the location of Silver Creek Falls. To the east volcanoes poured forth ash which fell or was washed into the sea (Eugene formation). The mid-Miocene brought floods of basalt (Columbia River basalt) which lapped around the hills and filled the valleys until the region was a lava plain. In time forests grew only to be buried by more flows. There seems to have followed a period with a warm, moist climate during which the upper layer of the basalt became weathered to laterite. Then, possibly late in the Pliocene, showers of ash and pumice again covered the landscape and in time became indurated to the Fern Ridge tuffs. Meanwhile Silver Creek and the adjacent streams flowing northwestward on the pumice surface eroded much of the tuff away producing broad valleys with a basalt floor. A mild uplift followed and the invigorated streams began cutting through the basalt. Falls formed downstream which, by working their way headward, produced the deep inner gorges that we behold today.

References

Harper, H. E.
1946 Preliminary report on the geology of the Molalla quadrangle, Oregon. Oregon State College Master's Thesis (unpublished).

Keep, Dorothy R.
1935 Silver Creek Falls trip: Geological Society Oregon Country News Letter, vol. 1, no. 18, pp. 5-8.

Schlicker, H. G.
1954 Columbia River basalt in relation to stratigraphy in northwest Oregon. Oregon State College Master's Thesis (unpublished).

Thayer, T. P.
1939 Geology of the Salem Hills and the North Santiam River Basin, Oregon: Oregon Dept. Geology and Min. Industries Bull. 15.

U.S. Geological Survey
1951 Topographic sheet of the Lyons quadrangle, Oregon.

****

ISOTOPE GEOLOGY

Isotope Geology by Rankama is a valuable source book for the geochemist and geophysicist. It forms the nest logical step beyond Geochemistry written six years previously by Rankama and Sahama. As the sciences develop they tend on one hand to specialize and on the other to overlap. It is in these boundary zones that Geochemistry found its greatest use as a common denominator for geologist and chemist. The present work refines this study with an investigation of geological phenomena by means of stable and unstable isotopes of elements and of changes in their abundance.

This is not a book for the layman or prospector and many geologists will perhaps wonder what has happened to their science. Though less than 25 years old, the idea of using isotopes to aid in solving geologic problems has come a long way. The impetus supplied by the use of fissionable materials has been great. There are many branches of geology which stand to benefit from a greater knowledge of isotope geology. The much-maligned continental driftists now have a solid basis on which to postulate energy sources, as do the adherents of the convectional theory. Estimates of the age of the earth are constantly being changed, largely through isotopic research.

Isotope geology is a powerful research tool which is only beginning to be appreciated. Rankama has performed a double service in defining the field, its scope and possibilities; and in assembling a large quantity of data on 81 of the 98 elements.

R. S. Mason

****

TALES FROM THE LUNCHEON TABLE

Why is a Ph.D?

The following might afford some food for thought among some of our more erudite members.

A generation or so ago one of the best known names in geology was that of Frederick Leslie Ransom (Ph.D.). Dr. Ransome was an outstanding geologist, a man of international reputation, and respected among those who knew him for his high character as much as for his professional attainments. Finally, "full of years and honors," he gave up active work and retired to Pasadena, California, where he took on some odd jobs, such as conducting a course at Cal-Tech, occasional consulting jobs, and acting as consulting geologist for the city.

During this time the city planned some public improvement but found that part of the land that it needed was occupied by mining claims so Dr. Ransome was engaged to make an examination of them to determine their value. His report was to the effect that they were absolutely worthless from a mining standpoint.

The claim owner readily admitted that there was no apparent value to the claims if judged by the outmoded methods by which Dr. Ransome and his colleagues worked but alleged, nevertheless, that they contained a large and valuable deposit of gold. This gold occurred in an unusual form which could not be detected by the usual fire assay but required his special secret process to detect its presence and recover it from the ore.

However, the city placed more reliance on Dr. Ransome's old-fashioned methods than on the claim owner's secret process and brought legal action to cancel title to the claims.

At the hearing of the case the claim owner elected to act as his own counsel. Dr. Ransome testified for the city as to the lack of value in the claims, during which testimony the city's attorney addressed him as "Dr. Ransome," and then the claim owner took him on cross-examination. The first question was "Dr. Ransome, you claim to be a mineralogist, do you?"

The witness smiled a little to himself, let his gaze wander out of the window and modestly admitted that he thought he could claim to be a mineralogist.

"And you also claim to be a geologist?"

Here the Pasadena attorney interposed "I think Dr. Ransome has qualified himself very thoroughly in this respect."

"Well," the claim owner retorted, "I'd like to know what a doctor knows about geology."

Leroy A. Palmer

****

New Junior Member:

Christopher K. Ray, Reed College Student. Summer address: Eastmeadow Road

MINING AND CIVILIZATION

Abstract of Talk April 22, 1955, by
Leroy A. Palmer

Unfortunately, from the standpoint of one interested in the mining industry, the public in general knows practically nothing about it and seems to care even less. Everyone is interested in agriculture because we recognize that we are dependent on it for food and clothing but the average person feels that he has no direct interest in mining or the men who carry it on. Has he?

When you go into your house at night you nonchalantly flip a switch on the wall. In an infinitesimal fraction of a second a light glows because a dozen or more metals or minerals, products of the mines, have cooperated at the touch of your finger, and without them you wouldn't have the light. When you pick up the handset of your telephone and automatically dial a number do you realize that more than a score of metals or minerals take part in making your connection?

Everything - luxury, comfort, or necessity - that enters into our daily lives is available to us only because it has had its contact with the products of the mines. It has been aptly said that civilization has progressed in accordance with man's mastery of the metals. Before he learned about metals the farmer's plow was the forked limb of a tree drawn by a bullock hitched to it by strips of rawhide cut with a sharp-edged shell from the skin of an animal killed by a spear which was a pointed stick with the point tempered by charring it in a fire.

Then man discovered that certain rocks, such as flint and obsidian, were very hard and broke with sharp edges so that they made better cutting tools than shells. Those men who picked up the pieces of these rocks or pried them from the outcrops were the first miners, as mining is "the extraction of minerals from the earth," and they became very adept at shaping their stone tools by laborious chipping and rubbing. This was the Stone Age which began before the dawn of history and whose end has been placed anywhere from 2500 to 1200 B.C.

Just when man first learned to use metal no one knows. Presumably copper was the first discovered and it came about when it was observed that sometimes some of the rocks in the fire pits used for cooking oozed out a peculiar substance that became solid when cold. Copper was used quite extensively as it could be hammered into shape or cast in clay moulds but it was not satisfactory as a tool as it was soft and would not hold a cutting edge. Then, again accidentally, bronze was discovered when the Stone Age metallurgist trying to recover copper sometimes got a product that was superior in that it was harder and took a good edge and still could be worked readily. He reasoned that this was due to a mixture of ores which he learned to control and thus bronze came into being.

This ushered in the Bronze Age which is supposed to have started as early as 2500 B.C. in southwest Asia and Egypt but did not become universal throughout the then known world until about 1200 B.C. This brought a great advance in civilization. Trade routes were established, towns became cities, such arts as spinning and weaving were developed, and it brought what is still considered the greatest invention in the history of mankind - the wheel. The people of the Bronze Age also indulged in "gadgets" for among the artifacts we find mirrors, razors, and --- dice.

With the wheel the horse became a draft animal and this led to the most formidable weapon yet, the war chariot, and in 1100 B.C. the Assyrians with their bronze weapons and war chariots overthrew the Babylonian Empire that Hammurabi had established a thousand years earlier.

The length of the Bronze Age was brief as compared with the preceding Stone Age but it marked great progress by mankind. It was during this period that Babylon and Egypt attained their greatest prosperity and the Jews reached their golden age in Palestine.

Then came the Iron Age, in which we are still living. The two ages overlap but we can fix the commencement of the Iron Age at approximately 1000 B.C. Iron ore was so abundant and the metal could be worked so easily that it displaced bronze and became, and still is, the most important metal.

The early iron workers learned to use charcoal to produce a high heat and a blast of air to increase it. The air was introduced by hand-operated bellows and it was not until 1340 A.D. that this primitive method, although somewhat improved, gave way to the blast furnace which embodied the same principle that is in use today.

From those days the influence of metals on civilization has been largely linked with the understanding and use of iron in its different forms and we are now in the third millenium of the Iron Age. With the blast furnace came cast iron, and a scarcity of wood for charcoal led to coke, which has done more than anything else to advance the art of ironmongery. During this period steel developed slowly. It was expensive and available only in small quantity until the middle of the 19th century when the Bessemer converter made it available in quantity at a reasonable price.

The steam engine, invented in the 18th century, was the forerunner of the "industrial revolution." With the steam engine connected to the wheel the locomotive was developed and modern transportation was born. There was still a need for faster communication of thought and finally Morse came up with the magnetic telegraph which ushered in the Electrical Age, really an era in the Iron Age. But the Electrical Age brought great demand for a heretofore little-used metal, copper, without which electrical development would have made but little progress.

The rest is well known, the telegraph was the first step, then followed the telephone, electric light, and the countless other things that have become so much parts of our daily lives that we take them as matters-of-course. Through two great wars we developed until it seemed as if we had seen everything until one day ten years ago there was a blinding flash and a terrific explosion and we plunged headlong into the Atomic Age.

Atomic energy calls for uranium and when AEC sent out its call miners and prospectors from all over the country swarmed over the Colorado Plateau region in the greatest mining rush in a hundred years, a rush which is increasing year by year.

Uranium will do many things for civilization other than destroy it. Already it is finding use in medicine, and atomic power plants are definitely on the way. Its possibilities are too great for anyone to guess where they may lead; locomotives, automobiles, then what?

Uranium is not the only metal that is receiving attention. Uses are being found for many that were practically unknown a few years ago; germanium, titanium, beryllium, zirconium, columbium to name a few. Each of these has its distinct use, something that it can do better than anything else.

No one can foretell what the future holds but we can predict safely that as our civilization progresses it will call for more and more metals and the miner will be in there doing his part to supply them.

****

NEW MEMBER

Elsey, Roger C.	3821 N.E. 71st Avenue	Zone 13	TR 9015

****

LUNCHEON NOTES
By
Leroy A. Palmer

April 14th Norris Stone spoke on potash from the standpoint of the agriculturist. It was, in effect, his third talk on fertilizers, the first being on earthworms and his second on phosphates. Prior to World War I the world was wholly dependent on Germany and France for its potash and during the war the price of this essential fertilizer increased from $50 to $450 per ton on the Portland market because of the shortage of supply. During this time the country did everything that it could to alleviate the shortage, one expedient being to harvest the kelp from the ocean beds, treat it, and extract the potash. Potash was also found to occur in some interior lake beds and there was some production from that source but in one case at least it was found that the product was toxic instead of beneficial, the reason being that the fertilizer was entirely lacking in boron, which is essential to efficient fertilizing. Another expedient resorted to was to rake the manure of the sheep corrals into windrows and burn it. This produced a residue containing 8 percent K_2O_3. Prior to World War I the United States took 350,000 tons of Germany's one million tons annual production but with the lesson of that period in mind this country sought to secure a source that would make it independant. This was found in the great Permian basin which is a shallow geosyncline extending eastward from the Rocky Mountains to the pre-Cambrian shield in Minnesota and South Dakota and the Ozark Mountains and Llano Burnet area in Central Texas. Northerly and southerly it stretches from the Pecos River in Texas 650 miles northerly into Nebraska. Within this area but lying at depth are vast saline deposits caused by the dessication of arms of the old Permian sea which were cut off as the main sea retreated from areas that it had occupied previously. These deposits include the great salt beds of Kansas and the more recently discovered potash deposits of Texas and New Mexico. This latter field has an exterior area of 40,000 square miles. The district around Carlsbad, New Mexico, is the richest and here in an area of 33 square miles there is available in excess of 100,000,000 tons, sufficient to make the United States independent of foreign sources for an indefinite period.

April 21st Hugh Miller gave an interesting account of a trip of several weeks duration by auto, rail, and bus in which the Millers succeeded in combining family visits, business and pleasure, and covered several thousand miles. From Portland they went via Bend to Reno where they observed some of the night spots at not too great expense. Thence by way of Beckwith Pass and the Feather River to California. Mr. Miller called attention to the much more favorable grade that the Western Pacific achieved in crossing the Sierras at Beckwith Pass than the Southern Pacific at Donner Pass. He mentioned the proposed Feather River project to store the water of the Feather River and distribute it as far south as the southern end of San Joaquin Valley. From California to Parker, Arizona, thence to Needles in southern California, whence they proceeded to Chicago by Santa Fe and to Detroit by Michigan Central. Detroit is the headquarters of the United Automobile Workers and 13,000

retired members of the union make their homes there where recreation centers and other conveniences are provided for their convenience and enjoyment. Mr. Miller then investigated the program on gerontology being carried on by the University of Michigan at Ann Arbor and then went via Chicago to Belvedere, Illinois, and another family visit, then back to Needles and Parker and various California points, including San Juan Capistrano where they fed the pigeons at five cents per spoonful of wheat, thence Santa Monica, Lompoc, Morro Bay, Hollister, Merced, Shasta Dam, Paradise, and home. Mr. Miller explained that Paradise, California, does not get its name from any resemblance, real or fancied, to the Garden of Eden, but because in the early days it was a gambling center and the original name was "Pair-o'- dice."

****

RHIPIDISTIA - Our Remote Ancestors

An extremely remote "uncle" of mammals and man still survives after at least 300,000,000 years.

Such is the Coelacanth, the ancient fish abundant as a fossil coeval with the earliest dinosaurs, two living specimens of which recently have been found in the Indian Ocean.

When discovery of the first living fish of this supposedly long-extinct group was announced a few years ago, the creature was widely described as a "missing link." This is far from true, says Dr. Errol White, British Museum geologist, in the annual report of the Smithsonian Institution issued in October 1954, but a new assessment of its importance can be made from the first scientific description of the fish which has now been published.

This, Dr. White says, places the creature as an aberrant member of a group of dinosaur-age fishes which were developing - or perhaps had inherited from more remote ancestors - rudimentary "lungs." This group, which was quite different from the sharks and true fishes, contained three divisions.

One, the so-called Rhipidistia, long since has become extinct, but it contained, says Dr. White, "a small progressive element which used their limblike fins and their ability to breathe air to scramble ashore when the pools in which they lived started to dry up in the hot seasons and to move overland to fresh waters. In the course of time they became more and more adapted to spending part of their life on land, their paired fins actually developing into true legs. When this stage was reached they were no longer fish but primitive Amphibia. From some of these evolved the scaly reptiles. . . .Still later a branch of reptiles gave rise to the mammals. Thus it will be realized that it was the Rhipidistia which were our remote ancestors.

The second air-breathing group of fish apparently lacked the ability to evolve further and became somewhat degenerate. They stayed in their drying-up pools and just used their lungs to tide themselves over until the next wet season. . . .Lungfishes are still to be found. . .in parts of Australia, Africa, and South America.

The third air-breathing group were the coelacanths. . . .They lacked one important feature of the other two - the ability to breathe air through their nostrils. . . .and could find shelter only in the sea.

Thus, Dr. White points out, the extant specimens may represent a "missing link" in one sense - they are very close to the original condition from which the land-dwelling back-boned animals arose. They may have preserved some of the primitive conditions which otherwise could not be determined. (From Smithsonian Institution)

CALENDAR FOR JULY

Luncheon Notice

Call Leo Simon, BE 0300 or EM 0549 evenings, for information about temporary location for month of July.

Friday July 8 — Library Hall, 7:00 p.m.
The speaker will be Arthur Piper, staff scientist with the U.S. Geological Survey. Mr. Piper throughout the course of years has made an intensive study of the water situation in the West, and he will speak on the subject, "Why Worry About Water."

Friday July 22 — Library Hall, 7:00 p.m.
Mrs. Kelsie Ramey Osborne, Executive Secretary of Old Oregon Trail, Inc., will speak on "Trailing Lewis and Clark." Mrs. Osborne has retraced the Lewis and Clark route. She will show photographs of the country as it appears now and tell the dramatic story of the Lewis and Clark expedition.

Sunday July 24 — Field Trip to Peterson Butte and Cascadia State Park.
Subject: Eocene marine fossils.
Leader: Dr. John Walsted.
Meet at the Lebanon High School at 10:00 a.m.
It is planned to visit the fossil locality at Peterson Butte, and to have lunch at Cascadia State Park. Bring your own lunch. The fossil hunting may be postponed until after lunch. Round trip driving distance about 230 miles.

Murray Miller, Trip Chairman.

* * * * *

No Library Nights Until September

* * * * *

IMPORTANT NOTICES

All contributions for the August issue of the Geological News Letter should be sent to Miss Emily Moltzner, 502 Board of Trade Building, Portland 4, Oregon, before July 22, as the editor will be out of town for nearly all of the month of July and there will be no one to forward contributions sent to his address.

Members please take notice: No News Letter after July issue if dues are not paid. Better hurry as new mailing list is in the making.

* * * * *

NEW MEMBERS

		Phone
Berenson, Dr. and Mrs. Bernard	3275 N.E. Stanton St., Zone 12	TR 1500

CHANGE OF ADDRESS

Trumbull, Mrs. Ellen James	2430 Pennsylvania Ave. N.W., Apt. 117 Washington 7, D.C.

****

MINERAL CARDS AGAIN AVAILABLE

A second printing of the GSOC Mineral Identification Cards has been received from the printer. The cards have been slightly revised but are compatible with the first printing and can be added to them. The cards may be obtained at the State Department of Geology and Mineral Industries, 1069 State Office Building, at a cost of $1.50 per hundred cards.

R. S. Mason

****

PERSONAL NOTES

Word has been received that Earl W. Minar, Chairman of the Display Committee, is in the Multnomah Hospital for an operation.

* * * * *

Orrin E. Stanley, Editor, when last seen was headed towards Pacific City, California, to take a short course in color-slide photography under the instruction by Helen C. Manzer, FPSA, ARPS, and Roland A. Wilson, a California artist. It is hoped that Orrin will learn something that will enable him to produce a higher type of color slides than he has been showing.

* * * * *

Norman W. Sipple was one of four Oregon science teachers who won a $200 fellowship to attend the 1955 west coast science teachers summer conference at San Jose State College August 12 to 26.

(Journal, June 17, 1955)

****

LUNCHEON NOTES

On June 16 our scheduled speaker was obliged to cancel out on us at a late hour, so our chairman was out on a limb, but our faithful minute man, Leo Simon, stepped into the breach (mixed metaphor - what?) with a very interesting talk on the June 12 field trip with the Salem Geological Society to the North Santiam country in the vicinity of the Detroit Dam.

On June 23 Miss Hastings, who attended as a guest of Miss Emily Marshall, entertained us with a brief account of a world tour which is still uncompleted. Miss Hastings started from Honolulu in November 1953 and spent Christmas in Kobe, Japan. This was no conventional tourist trip where one followed a guide every minute, but involved changes of steamers and several side trips. She spoke of seeing Mount Everest on her way through India and of visiting caves there, adorned by frescoes and carvings by Buddhist priests. En route on this leg of the trip they had stopped at Bandung, then of no particular importance but of interest now because of the recent historic conference there. From India to Cairo, with a trip up the Nile to Thebes and thence to the Holy Land. The trip across Europe started with Istambul and Athens, and finally to the United States and to Portland, from which she expects to reach her original destination within two years from the start of her eventful trip.

Leroy A. Palmer

****

METALS TO REMEMBER

Abstract of Lecture - May 13, 1955, by
Fay W. Libbey

On display was a collection of metals and ores that until recently were practically unknown but have now come into prominence as essential for many important uses.

Mr. Libbey's talk:

The epochs of man's progress have been marked by his learning the use of the metals and to blend them so as to create alloys that for certain uses are superior to any single metal. Recently there have been great advances in this respect as uses have been found - uses for which they were peculiarly adapted - for many metals which heretofore have been practically ignored.

Wars are destructive but they do stimulate invention and research and under their pressure greater progress is made than in a like period of peace. World War I impressed upon us the need of many metals which were then in short supply, notably molybdenum, tin, chromium, and nickel. It also emphasized the part that the airplane would play in the future and the development of the plane brought about a tremendous demand for aluminum. World War II emphasized our dependence on metals and alloys for national defense and showed the way to new uses for many metals for which there had been little demand theretofore. Outstanding among these are uranium and titanium.

Considering some of the metals individually we may look first at titanium. This metal, the qualities of which render it especially useful in jet engine construction, ranks ninth in quantity in the composition of the earth's crust; and of the structural metals only three, iron, magnesium, and aluminum, are more abundant. It has a melting point of 3272° F. The most important minerals are rutile, TiO_2, and ilmenite, $FeTiO_3$. While rutile is much higher in titanium, ilmenite is the more abundant ore in the United States.

The treatment of titanium ores is difficult. National Lead Company recovers the iron from ilmenite by smelting and then treats the titaniferous slag that is produced. Most titanium is recovered by the Kroll process in which titanium dioxide is treated with carbon and then chlorinated, forming a carbon tetrachloride compound, which is dripped through helium or argon gas and brought into contact with magnesium. The resultant products are titanium sponge and magnesium chloride.

It is only within the last five or six years that the outstanding qualities of titanium have been realized. It resists very high temperatures, withstands corrosion, and has a high strength-weight ratio.

Ilmenite occurs in the Oregon beach sands but not in sufficient quantities to be commercial. It is also recovered in Idaho in connection with the monazite dredging. When first produced the price of the metal was $7 per pound but this has been brought down to $3.95.

Lithium is another metal of increasing importance. It is the lightest metal known, having a specific gravity of only .585. This means that a cubic foot weighs 35 pounds as compared with 62.5 pounds for water and 168 pounds for aluminum, which we think of as a light metal. Two percent lithium in steel increases the strength of the steel alloy. It is very hygroscopic and a unique feature is its

ability to combine with gasses. One cubic foot of lithium hydride will release 2300 cubic feet of hydrogen. It is useful as an ingredient of greases which must withstand high temperatures, one such having been tested to 6230° F. The market price of lithium is $11 to $14 per pound. The principal sources are lepidolite, the lithia mica, and spodumene, another lithium silicate.

Cobalt is another of the new metals although the element was isolated more than 200 years ago and it has had some industrial uses for the past half century, but the recent expansion in the development of metals and alloys has broadened its field greatly. It has a specific gravity of 8.8 and melts at 2732° F.

National Lead Company has been producing cobalt and nickel in limited quantities as by-products of its smelting operations and recently a large deposit of copper-cobalt ore has been developed in Idaho, but difficulties at the refinery have prevented this property from attaining its expected production. Extensive deposits in Ontario have been known for a long time.

Some time after an alloy of tungsten and chromium had come into use for its hardness it was found that the addition of cobalt improved this quality greatly and made an alloy superior to the other. The extreme hardness thus attained made it especially adapted to such uses as high-speed cutting tools and tractor treads. It also makes a superior armor plate and has been found to make a better permanent magnet than any other substance. Because of its ability to withstand high temperatures it finds a place as a material for the vanes of steam turbines. Increased uses stimulated the consumption of cobalt which in 1954 reached 7¼ million pounds.

Next we are considering columbium and tantalum, two metals that are always found together in nature in ores of varying composition designated as the columbite-tantalite series. Both metals combine with iron and manganese in their ores and are frequently associated with radioactive minerals. Most of the ores are obtained from Africa and, during World War II, the demand was such that they were flown into this country. Some columbite-tantalite ore is mined in Bear Valley, Idaho. The demand for these ores is increasing as there are more uses found for high-grade alloys, an alloy of columbium with tungsten and chromium being found especially useful in jet planes.

Tantalum has great strength and is resistant to heat and acid. It finds a unique use in surgery as flesh will attach itself to this metal which is thus very effective in such work as the repair of shattered bones. The columbite-tantalite metals do not yield to any smelting process so they are recovered by reducing them to chlorides as the first step in extracting the metal.

The rapidly increasing demand for the "new" metals and their alloys with every evidence that it will grow even greater emphasizes the fact that we must put forth every effort toward development and research in order that we may maintain the leadership that we have achieved.

Leroy A. Palmer

****

ANNUAL PICNIC

Friday, August 12 - Mt. Tabor Park - 6:30 p.m.

Details in August News Letter - For information call Mrs. William Clark, FI 7096.

****

UP IN THE AIR

That's the way things are concerning the Geological News Letter and its editor - particularly the editor. Not that you care especially about the editor so long as the paper comes to you on time, as it didn't to many of you last month. It was discovered by the mailing staff that a shortage of the interesting insert about Dr. Condon made it necessary to delay the binding of the copies for the last part of the mailing list until frantic phone calls brought additional sheets from Mr. Carl F. Smith of Salem who had generously had them prepared at his own expense. Your editor had miscalculated the number of readers of the magazine. He begs forgiveness of those readers who missed some of the meetings on this account.

Then, influenced by an announcement of the commencement exercises at his college, Cornell of Iowa, he took a sudden notion to go back and see the place, and renew acquaintance with any of his friends who might be able to be there. The only way to make the trip in time was to fly, so, throwing caution to the winds he bought his first air transportation and had the time of his life. We are afraid that he will never be the same again. (And maybe that will be an improvement.)

There was still daylight for the trip over Oregon which looked much more attractive from the plane than through a windshield following a caravan along a dusty road. The level plateaus with their edges serrated by water courses, now mostly dry, made an interesting study in erosion.

A little later the lights of Boise imprinted a beautiful picture on the editor's memory which will long remain, but which, unfortunately, he has not the power to translate into words. But Boise was a mere splash compared with the glory of Denver from the air at night. Denver was bigger, brighter, and in every way more glorious to view.

At Denver a smaller plane was boarded, and a still smaller one was taken at Omaha, and at Cedar Rapids, Iowa, it was necessary to come down to earth and ride a Greyhound stage for the last fifteen miles to Mt. Vernon. The stage lacked one of the most attractive features of the planes — it had no stewardess.

Having lived in Mt. Vernon for ten years, working and going through college, the editor found many people and things that brought back memories of the years from 1886 to 1896. Some of the houses in which he had lived have been replaced by more modern buildings, some have been slightly modernized, and a few are unchanged except by the ravages of time. Some of his boyhood friends seem to have become wrinkled old men in appearance, but the old boyish bounce is in their voices if not in their steps. It was wonderful to meet and talk with them.

The college has grown. Several new buildings have been erected on the campus, and the college has acquired the two old hotels and many large residences for use as dormitories, besides building some new ones on the campus.

This issue of the News Letter might have been more interesting had the editor not glanced at a map in the Denver airport and noticed a nice straight line between that town and El Paso, Texas.

Now, El Paso, itself, has nothing to attract the editor whose grip was slashed there in 1899 and his pet revolver extracted. Funny place to carry

a revolver, but he was younger then than now. However, a college acquaintance lives near there and it seemed to be a very good time to renew a friendship, and to make new friends with the residents of Las Cruces and Mesilla, all of whom proved to be very charming. The proposed one-day's visit lengthened into four - each more enjoyable than the others before it.

Flying north from El Paso one sees the White Sands National Monument and traverses the extensive graben in which it lies. Ranges of jagged mountains are to the east and west, and the flat desert between them had little of interest from above.

The flight from Danver to Salt Lake City was a new thrill. White-capped mountains on either side, some muddy and some clear streams winding through canyons or across mountain meadows, rectangular fields, and others where contour farming was practiced made interesting patterns viewed from an altitude of 20,000 feet.

Summing up his experiences of his first long-distance trip by air, the editor is reminded of the soldier in the war with Spain who, by official order of his company commander, took his first bath since babyhood. After the ordeal was over he smilingly said: "Gosh! If I'd have known it was so much fun I'd have taken one years ago."

Orrin E. Stanley.

****

SILVER CREEK FALLS AREA MAPPED

The geology of the northern two-thirds of the Lyons quadrangle, Oregon, which includes the Silver Creek Falls area, has been recently mapped and described by two graduate students of the University of Oregon. The northern third was done by Perry N. Halstead and the central third by James L. Barlow, both as master's theses under Drs. Staples and Bressler of the Department of Geography and Geology at the University of Oregon. The portion of the Lyons quadrangle mapped joins with Harper's geology of the Molalla quadrangle to the north and with Thayer's geology of the North Santiam River to the south.

Carbon copies of the two theses have been purchased by the State Department of Geology and Mineral Industries, and anyone wishing to consult them is welcome to do so at 1069 State Office Building, Portland. Each thesis has about 80 typewritten pages and includes a geologic map, cross sections, and photographs. The maps and descriptive texts will be of special interest to those who attended the Silver Creek Falls field trip in April or who read Dr. Gilchrist's good review of the geology of the area in the June News Letter.

M. L. Steere

****

FORMER PORTLAND ZOO DIRECTOR WRITES

Arthur M. Greenhall, formerly director of the Portland Zoo, writes to Dr. and Mrs. Arthur M. Jones under the rather formidable date line: "34 Coblentz Avenue, St. Ann's, Port of Spain, Trinidad, B.W.I., March 6, 1955" mentioning a shortage of postage stamps on account of a London dock strike. He reports that Mrs. Greenhall, besides doing a lot of ceramic work with the excellent clay available there, is contributing a column to the local newspaper. He says he is making headway in building up the local museum and zoo besides teaching zoology and "holding forth" weekly in The Evening News. Also, Trinidad resembles Oregon scenery-wise as well as weather-wise; and, as in Portland, the greatest problem is in securing financial backing to get the necessary equipment. They still rate Portlander's as among their best friends.

TALES FROM THE LUNCHEON TABLE

That "Jackass Discovery"
A Story of 1885-86

At one of our luncheon meetings I told the story of the discovery of the Bunker Hill and Sullivan mine in the Coeur d' Alene district by a burro and it was suggested that this be submitted for publication in the News Letter. Prior to putting it into manuscript form it seemed advisable to get some verification of the story, which had come to me by word of mouth in various mining camps, and I found a most interesting account of early days in the Coeur d' Alene in "Silver Strike" by William Stoll, an attorney who lived through that period and took part in the famous lawsuit over the title to the Bunker Hill and Sullivan.

My story, as picked up at various times and pieced together, was that two prospectors got a storekeeper at Murray, Idaho, to grubstake them to an outfit which included a burro. After prospecting awhile without success they gave up the venture, returned to town and turned the burro loose. Deciding later to try again they outfitted themselves and, finding the burro wandering about loose, captured him and impressed him into their service. At one camp the burro got away during the night and after considerable search next day they found him standing on a ledge of rich galena ore. They located the ledge, which was the original discovery of the Bunker Hill and Sullivan. Subsequently, when it appeared that the discovery might be a valuable one, the storekeeper brought suit for an interest in the claims alleging the discovery was actually made by the burro, which was his, and consequently he was entitled to a share of any profit from the burro's activities. Maybe he also claimed that the beast was acting as his duly accredited agent. The court granted the storekeeper an interest in the claims and the burro received a life pension in a lush grass plot with a sign on the fence telling the story of the "Millionaire Burro."

Mr. Stoll's story is somewhat different although the account of the actual discovery does not vary so much. A carpenter named Kellogg persuaded a contractor, Peck, and a doctor, Cooper, to grubstake him and they furnished him with a meager outfit which included a burro. One night while Kellogg was in the hills the burro wandered from camp and next day in his search Kellogg located him by his braying, caught him, and started back to camp. On the way he sat down on a ledge to rest and light his pipe and discovered that the ledge was rich galena ore. Immediately he staked out two claims with himself, Peck, and Cooper as locators.

For some reason Kellogg felt that he had a grievance against Peck and Cooper and on his way back to Murray he decided to give them the double cross. Arriving he avoided his grubstakers and sought the town gambler to whom he told his story. The gambler outfitted Kellogg and three others and they returned to the scene of the discovery, tore down the original notices with the names of Peck and Cooper, and posted new ones in the names of the conspirators.

When Peck and Cooper learned of Kellogg's discovery and that they were not included in it, they concluded Kellogg was trying to defraud them and brought suit for an interest in the claims. By the time the case came to trial there was some appreciation of the value of the mine that was being opened up and some of the greatest lawyers of the day gathered around the counsel table. The jury found for the defendants but the judge set the verdict aside as not supported by the evidence and awarded Peck and Cooper one-half of Kellogg's interest.

Unfortunately for the burro he did not lead the life of Riley thereafter. After the novelty of the story wore off he made such a nuisance of himself by his continued braying that he was destroyed in a peculiarly brutal manner in order to silence him.

Leroy A. Palmer

****

WOMAN STRUCK BY METEORITE WISHES IT HADN'T HAPPENED*

Mrs. Ann Hodge's troubles only started when she was hit by a meteorite.

Tourists have driven her from her home. She still suffers from an injured hip. And she can't even claim undisputed ownership of the nine-inch celestial rock which ripped through the roof of her home on November 30, 1954, and struck her.

The 32-year old housewife said Thursday in a rare bit of understatement: "I wish it had never happened."

Mrs. Hodge said she was forced to move from her Sylacauga, Alabama, home to evade the horde of tourists that came to gaze at the meteorite. She added:

> "I got so tired of explaining over and over what had happened. I didn't mind in the beginning but they kept coming."

She now lives about 10 miles from Sylacauga in an out-of-the-way place where even the most persistent of tourists would find it difficult to locate her.

Mrs. Hodge said she hoped she could forget the night when the celestial object came crashing through the roof but she added:

> "I can still remember all about it as if it happened only yesterday. I had just lain down on the couch because of a headache. I had been there about 10 minutes when all of a sudden the thing crashed in."

She said she heard the noise of the unannounced rock and felt a sharp pain in her hip and hand. She was hospitalized five days. Her initial reaction was that it was a piece of an exploded aircraft. But later when it was learned that it was a meteorite and Mrs. Hodge was the first to be hit and live, a legal squabble developed.

Mrs. Hodge's ex-landlady, Mrs. Birdie Guy, contends the meteorite belongs to her since it was her house that it crashed through. Mrs. Hodge bases her claim on the fact it was her flesh it tore into. A suit to settle the matter, originally scheduled for June 13 but postponed, will probably come to trial in late August. Mrs. Hodge's attorney is keeping the meteorite now.

Meanwhile, Mrs. Hodge has received some 3,500 letters from people all over the world inquiring about the rock and her health. Her most recent are from Germany and Japan. One letter from California asked: "Will you accept a dollar or two for it? I'd like to have it for my boy. It would make him very happy. Although, as far as I'm concerned it isn't worth a cent."

---

*From Omaha World Herald, Friday, June 10, 1955.

****

SLIDES FROM THE CLARNO AND ELSEWHERE
Shown By
Thomas Bones, June 10, 1955

Those who didn't get to the Public Library the evening of June 10 certainly missed the boat. The program was in charge of our friend Thomas Bones, charter member and past president of the Agate and Mineral Society. It consisted of 120 colored slides - 90 of specimens from the Clarno and 30 from various other localities. The pictures demonstrated the perfection which Mr. Bones has achieved in the art of photography and one would be foolish to attempt to enhance them by any written description.

Of the 90 slides taken in the Clarno between Antelope and Fossil, a few depicted striking features of topography exemplifying geological conditions, which were pointed out by Mr. Bones as he gave a running description of the pictures. The remainder were of fossils, which ranged from seeds about the size of a pin head to sections of opalized wood. The tiny seeds appeared on the screen as about the size of cantaloups. One can imagine the infinite detail presented by such an enlargement in color.

The slides other than those from the Clarno showed a number of agates and opals of infinite variety, all of them much enlarged and bringing out the beautiful natural colors of the individual specimens.

If this resumé of an outstanding program seems inadequate to those who attended, it is because the writer realizes the futility of attempting to gild the lily. It is one of those things which must be seen to be appreciated.

Leroy A. Palmer

****

LUNCHEON TALKS

Ed Kelham, who was our speaker on June 2, talked on the fire clay industry in the vicinity of Troy, Idaho, which was established by his father in 1914 and grew to importance.

The deposit was found by accident while digging a cellar. It underlies a considerable area with an overburden of 15 to 25 feet of soil. It was formed by the weathering of an intrusion of Pliocene granite, and makes a very satisfactory grade of fire clay. There is also a considerable area of transported clay which has been finely disintegrated by natural processes, in the course of which it has been freed of quartz and mica so as to make it suitable for ceramic uses.

In the working of the deposit, most of the attention was given to the residual clay that was burned to firebrick, which was found to be efficient in resisting a temperature of 1400° C. (2550° F.). The principal customer was the Northern Pacific Railroad, which used the bricks as lining in the fireboxes of the locomotives, but this market has been practically lost by the change-over to Diesels.

Interesting samples were circulated, showing the crude clay, the firebrick, and some "cones," small tapered shapes of clay used as samples in testing heat-resistant properties.

In the discussion that followed, Mr. Libbey stated that research on the residual clays showed that proper treatment would remove the silica and mica, making a product suitable for ceramic or paper uses.

For our June 9th talk Dr. Adams gave us another of his interesting historical sketches, this time about Oregon City. The good doctor had observed, and helped make, Oregon City history since he arrived there in 1891, and his studies of the subject went back to the founding of the community in the early forties on the site of an Indian village.

At first the town was known as Willamette Falls because of the horseshoe-shaped miniature Niagara with a fall of 51 feet. The decade of the forties was eventful in Oregon City history. It was about this time that Dr. McLoughlin acquired the land on the east bank of the Willamette from Abernethy Island to the mouth of the Clackamas River, platted it, and named it Oregon City. There was no government then and, in fact, national boundaries were very indefinite. In 1842 a so-called legislative committee met and voted that that territory should attach itself to the United States rather than Great Britain, and in 1849 a similar committee organized the territory of Oregon, consisting of four counties and including practically all of what is now known as the Northwest north of California. Oregon City was designated as the capital of the new territory and retained this distinction until 1854, when the capital was moved to Salem.

In those days Oregon City had so many firsts that it was hard to keep track of all of them. In 1842 the first jail was built and the first case formally tried in court. Life being primitive, legal executions were by no means rare, but one was noteworthy when five Indians who had been rounded up by the Oregon Rangers were convicted of complicity in the Marcus Whitman massacre and hanged at Oregon City. The first post office in the state was established there in 1845, and in 1846 not only the first newspaper but one of Dr. Adams' predecessors set up the first dental office in Oregon. Eighteen forty-seven saw the first western novel, "The Prairie Flower," written by Sidney Moss, and in 1849 came the first college, a theological school, and a young ladies' seminary.

Oregon City continued its progressive course and in 1853 held the first State Fair. In 1856 the first paper mill was started, laying the foundation for what has become an important industry in the Northwest as described by Dr. Adams in his talk on July 1 last year.

The first long distance electric transmission line in the West was built from the hydroelectric plant on Abernethy Island to Portland, and in 1893 the second interurban electric line in the country was built from Oregon City to Portland.

Of particular interest was the discussion of the Willamette meteorite which was unearthed in 1902 three or four miles up-river from Oregon City. Its dimensions were approximately 10½ x 6½ x 4 feet and weight in excess of 15 tons. Analysis showed it to contain 91.5 percent metallic iron. It attracted widespread attention as an item of scientific interest and is now in the American Museum of Natural History in New York.

Leroy A. Palmer

****

CALENDAR FOR AUGUST

Luncheon Notice

Every Thursday noon beginning August 4th at Portland Chamber of Commerce, 824 S.W. 5th Avenue. Buffet $1.00.

* * * * *

Friday Aug.12 **ANNUAL PICNIC** -

When: August 12th at 6:30 p.m. Remember, there are no lights in the picnic area.

Where: Volcano of Mt. Tabor Park. Mr. Schminky has made all of the arrangements with the Park Department.

Entertainment: Two "outstanding attractions" are in the make. One by the GSOC Luncheon Players. The other is a repeat, by popular demand, of the "Clarno Hot Line." Dr. Jones will be there to lead the singing.

Food: Pot Luck - buffet. If Mrs. Barr, or one of her telephone committee, does not reach you, bring what you did last year - only more of it. Coffee, tea, and milk - rolls and butter will be supplied by the food committee.

Everybody: Bring plate, cup, and silver.

In case of rain: If there is some doubt about the weather, call Mrs. Baldwin, CY 2-1452 - Mrs. Barr, PR 4-2459 - Mrs. Clark, FI 7096.

Friday Aug.26 No meeting.

Field Trip for August, 1955

Saturday Sunday Aug. 27,28 Our August field trip will provide an opportunity to study the vulcanology and glaciology of the Mt. Adams region in Washington. An added attraction at this time of the year are the wild flowers of Bird Creek Meadows. Our leader, Dr. Francis Gilchrist of the Biology Department of Lewis and Clark College, is working hard to make this trip a success. We will camp at Bird Lake. This will be our meeting place at 1:00 p.m. Saturday for our first hike with Dr. Gilchrist. (See details on next page.)

The route is US 30 and a toll bridge on US 830. Go to White Salmon, then up the White Salmon River highway to Trout Lake. Next go north following signs to Bird Creek Meadows. Watch for GSOC signs. Round trip distance is about 250 miles.

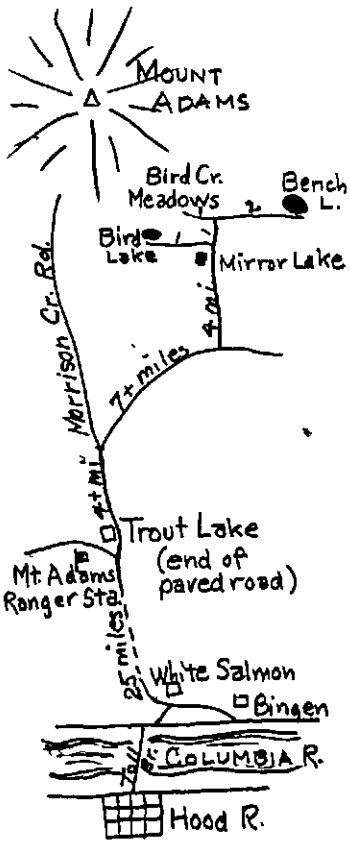
****

NEWS OF MEMBERS

Carl P. Richards of Salem was given the annual award for outstanding leadership and accomplishment in the field of amateur astronomy at the national convention of the Astronomical League in Seattle recently.

Both Mr. and Mrs. Richards attended the convention which was held at the University of Washington.

AUGUST FIELD TRIP TO MOUNT ADAMS



Weather permitting, our August 27th and 28th trip to Mount Adams should be a grand experience. Adams is second only to Rainier among the mountains of the Northwest in its altitude and mass. Yet it is remarkably easy of access. Trout Lake at the base of the mountain is less than one hundred miles from Portland over hard-topped roads. Our camping spot in the Bird Creek area is an additional seventeen miles over a reasonably good forest road. There will be GSOC signs to guide you.

We shall camp at Bird Lake. Given warm weather, Bird Lake is delightful swimming. It is one mile by trail, two miles by road from Bird Creek meadows. This is a late season, and the marvelous display of wild flowers should be at its best. Volcanic and glacial features are everywhere to be seen.

Some may wish to come a day early or stay through Monday. The planned program is brief:

Saturday, August 27th, 1:00 p.m. Meet at Bird Lake Camp. Take Bluff Lake trail to Bird Creek Meadows and return.

7:00 p.m. Camp fire. Talks on the geology and flora of Mt. Adams. Illustrated.

Sunday, August 28th, 9:00 a.m. Drive to Bird Creek Meadows. Hike along Hell-roaring Canyon Crest trail to snowfields and the moraine of Mazama Glacier. Bring lunch and canteen.

Besides camping equipment for eating and sleeping be sure to bring warm clothing, flashlight, dark glasses, sun lotion, and mosquito repellant (although the mosquito season will be nearly over). An alpenstock will be a help to those who may wish to venture beyond the paths. Don't forget your camera and field glasses. Trail maps and descriptive material will be provided.

FGG

****

NEWS NOTES

The membership list appearing in Volume III of the Proceedings of the Oregon Academy of Science contains seventeen names that appeared on the 1954 membership list of the Geological Society of the Oregon Country. That is about ten percent of the Academy membership.

E. L. Packard, Warren D. Smith, Ethel I. Sanborn, and Alonzo W. Hancock are GSOC'ers who have been given citations as outstanding Oregon Scientists by the Academy.

* * * * *

Hollis M. Dole was appointed Director of the Oregon Department of Geology and Mineral Industries on July 9, 1955. In August 1954 he was made Assistant Director and in November of the same year, at the retirement of F. W. Libbey, was appointed Acting Director.

****

ONCE IN A BLUE MOON*

By
J. Hugh Pruett
Astronomer, Oregon General Extension Division

"Once in a blue moon" used to mean "never"; now it seems to mean "hardly ever." Literature on the subject appears to be practically non-existent. At the University of Oregon library I made a careful index inspection a few years ago for the words "blue" and "moon" in all the many books on astronomy and meteorology, and in all the copies of the Monthly Weather Review from 1898 to 1942. Not a single reference to "blue moon" was found in any of these. In a scientific book published 95 years ago mention is made of a blue sun once seen in India. It was stated that "it appears to depend upon the presence of vesicular vapor in the atmosphere, the different media of which produce upon light in its passage, effects similar to those of mixed plates."

Also searched were Poole's Index to Periodical Literature, International index to Periodicals, and the Readers' Guide to Periodical Literature. Every one of these big books had numerous references to scientific articles on the moon in a wide variety of magazines. Only one lone reference to "blue moon" was encountered: Science, December 28, 1934, page 617. This proved to be a description of an observation of this disputed phenomenon on September 15, 1934, by Perez Simmons at Santa Barbara, California.

We often see references to names given the full moons of various months. These—starting usually with January—are Moon after Yule, Wolf Moon, Lenten Moon, Egg Moon, Milk Moon, Flower Moon, Hay Moon, Grain Moon, Fruit Moon, Harvest Moon (the best known), Hunter's Moon, and Moon before Yule.

But seven times in 19 years there are 13 full moons in a year. This gives 11 months with one full moon each and one with two. This second in a month, so I interpret it, was at one time called Blue Moon. It was considered unlucky and a real nuisance as it occurred at various times of the year and upset scheduling of church festivals. According to the figures above, "once in a blue moon" means about once in two or three years. The next such moon will occur next October when old Luna reaches this phase on both the first and the 30th of the month, Pacific Standard Time. But in the fine almanac of the Royal Astronomical Society of Canada neither one of these is labeled "blue moon." They are called Harvest Moon and Hunter's Moon.

If the expression refers to a moon which actually appears blue in color, then for most of us this probably means once in a lifetime—or even longer. That such phenomena are sometimes, although rarely, observed, seems fully established by an abundance of witnesses.

I had always been rather skeptical until the evening of July 28, 1944, when before my astonished eyes there hung in the southern sky a decidedly blue moon. My wife and two of my neighbors were equally amazed by the very unusual sight.

The moon, at the first-quarter phase that day—half moon—was first noticed shortly after sunset, when it was thinly veiled by a small patch of high cirrus clouds, which were tinted a beautiful orange red by the sun just below the horizon. We thought that the lunar blue might be the effect of contrast with the red of the clouds. But while we looked and wondered, the moon soon "floated" out into clear sky, and was just as blue as ever!

---

*Presented before the Oregon Academy of Science, February 26, 1955.

The blue was not uncertain and elusive, requiring close attention to discern the coloration. Not the least imagination was required. Normal eyes were impressed immediately with a very distinct blue so unnatural to our lunar neighbor.

Now our audience must not picture Luna as grieving behind a dense veil of indigo blue. Nothing of the sort. All the features usually seen on the half disk--"man in the moon," etc.,--were clearly visible, but the characteristic white of an early-twilight moon seemed to have been painted over with a thin, transparent blue lacquer.

This blue was discernible for fully 15 minutes, but as the sky became darker, the weird coloration gradually was lost in the yellow radiance of the night moon.

In the Science article referred to earlier in this paper, Mr. Simmons stated that the blue effect on the first-quarter moon was first noted eight minutes after sunset through a thin bank of cirro-cumulus clouds, begonia rose in color. The sky was spectrum blue and the moon sky blue. The colors were determined from a technical color chart.

Our local observation was discussed shortly afterwards in my weekly astronomical column used by newspapers in several western states. Accounts of previous observations by readers were requested. Within two or three weeks a large number of "testimonials" had been received, some of which are given in part here.

(From Spokane, Wash.): "When I read Harold Bell Wright's Winning of Barbara Worth, I thought his description of the blue moon was likely fiction. But later I too saw the same phenomenon in approximately the same place and probably under the same circumstances. One August night there was a high wind which filled the air with clouds of dust and sand. We could see the distant hills over the Mexican border with difficulty. About an hour before sunset the moon took on a bright, clear blue tinge and the air was filled with the same blue light. This lasted for only a few minutes."

(From Madison, Wisconsin): "I have twice seen a blue moon, in Venezuela in 1919 and in British Columbia in 1939. On both occasions it was midsummer and the blue appearance was that of the light-blue side of the blue band of the spectrum."

(From an army private): "Several months ago in the Aleutian Islands I observed a blue moon. It was a clear night in October or November, not late in the evening and the moon was about full. I wondered if it wasn't from volcanic action, blue dust in the sky. Several active volcanoes are in the vicinity, but I can't recall any disturbances at that time."

(From Hollyburn, B.C.): "In 1928 some friends and I sailed the yacht Red Riding Hood from Falmouth, England, to Belize, British Honduras. When we were five days out of Bridgetown, Barbados, we saw a green moon. It was early April. Being interested in painting, I paid considerable attention in an effort to account for what I thought was surely an illusion in the physical sense but definitely a fact from an artist's point of view. The moon was a clear pastel green. The sun had just dipped below the horizon. The sky was cloudless and the atmosphere was extremely clear. The deepening blues of night were showing in the east but were not yet apparent in the vicinity of the moon.

"The only explanation I could think of was that since the moon and sky appeared to be of equal values in terms of color--and consequently light--it might be possible under this condition to achieve some form of blending of the two colors resulting in green--which is no doubt physically impossible."

(From an army corporal): "I have three times since 1936 seen blue moons. My sight is perfect and I am definitely color-normal, as the army physical examinations show."

(From Monroe, Wash.): "I observed a blue moon about 1934. The moon was rising from behind the Cascade Mountains in front of which is a large mountain lake. It was very definitely blue. I figured it might be caused by the vapor over the lake."

(From W. T. Lathrop, Meteorologist, U.S. Weather Bureau, Retired.): "The occurrence was around 1932 to 1934 when I was in charge of the U.S. Weather Bureau work in Yellowstone National Park. My impression is that when the blue effect was first noticed, the moon was about 45 degrees high. There was at first a thin sheet of cloud over the sky, possibly cirrostratus. Later the clouds cleared away from the face of the moon and I had a clear-cut view. The sky carried a strong suggestion of blue, a pale, weird, steely blue. The time during which I was sure I was seeing a blue moon was probably around 45 minutes.

"If I were going to try to dope it out now, I think that before going into any study of diffraction or diffusion, I would run over the possibilities of its having been a polarization phenomenon. I never did figure out any satisfactory explanation at the time, nor since. There was some discussion of this blue moon with friends—but just as little as I could manage. The 'why' of the unusual is always asked, as you know, entailing a response that in this case I was unprepared to give. I never did like to create a fog around something about which I was expected to know."

Other correspondents at the time advanced various theories. A woman in Seattle wrote that she did not believe "once in a blue moon" referred to the moon at all, but to the mating season of certain deer in the Rocky Mountains. Once a year the deer take on a blue sheen called (first by the Indians) the "blue moon."

R. C. Stroud of Seattle offered this: "Psychology reveals the after-image to be the complementary color of any color which has strongly the color perception center of the eye. The cones seem to reverse their process, and after staring at an orange sky for awhile the eyes seem to see a blue cloud if they are turned on a white screen. The silvery moon acts as the white screen. The redder the sky, the more green would the after-image be in complement. This accounts for the chap whose moon was more green than blue."

A careful scientific study of the causes of blue moon was started nine years ago by Captain Fergus J. Wood shortly after discharge from military service in the Meteorological Section of the Air Corps. For the past five years he has been doing research work for the government at Johns Hopkins University and just this month is starting a new position as Science Editor of the Encyclopedia Americana. He is the son of the late Dr. L. A. Wood of the University of Oregon. What follows is from his paper, in some cases direct quotes.

"Only one case is on record of a blue moon observed in an industrial community where smoke pollution might be the cause. These particles are too large to produce the effect. At Port Arthur, Texas, blue moon was observed two nights in succession." . . ."No moving particles of blue cloud, either aqueous or in the nature of smoke, have been detected against the face of the moon in any reported occurrence. It has been witnessed several times without a cloud in the sky. Clearly, the phenomenon has no connection with the ordinary processes of atmospheric absorption and reflection."

After discarding several suggested explanations, Professor Wood states "the occurrence of the blue coloration is finally reduced as a general premise to a phenomenon of colloidal dimensions, resulting from the presence in the atmosphere of numberless infinitely minute, suspended particles, individually too small to be seen, yet together having a sensible effect on light rays transmitted through the atmosphere." (There is not time here for his full discussion.)

Although not excessive in age, I surely must be living on borrowed time for I have observed two blue moons, far beyond the number allotted to any one person. On November 8, 1948, a little over four years after my first sighting, I was waiting for a bus near the Lane Hotel in Eugene somewhat after sunset when on looking skyward I saw the first-quarter moon a distinct blue. The coloration was not quite as intense as on the earlier occasion. There were a few pink clouds near the moon, but none extended over its face. When the bus arrived, I called the driver's attention to the phenomenon. He then called my attention to all the automobile lights that were in sight. "They all look so green," he said. "I've been noticing them the past few minutes."

Our blue moon observation, written up by me in the Harvard magazine Sky and Telescope in 1946, seems to have made a slight impression abroad. A friend recently sent me for inspection a book on the moon published in England. In a paragraph discussing this phenomenon the author wrote, "Also a blue moon was seen in 1944 by J. H. Pruitt of the United States." Although the spelling of the name didn't follow the usual form given by my family, I suspect strongly he was referring to me.

****

LUNCHEON NOTES
APRIL-MAY 1955
By
Leroy A. Palmer

Our talk on April 28 was by Mrs. Arthur Jones who gave a very interesting sketch of Dr. Jones' "Uncle Marc," whom she identified as Marcus E. Jones, whose scientific attainments made him one of the outstanding figures of the last part of the 19th and early part of the 20th centuries, particularly with respect to his researches on desert flora. After graduating from Iowa College (now Grinnell University) with a master's degree, he turned toward the arid regions of the Southwest. Before leaving he was the recipient of much well-intentioned advice as to costume for the country but found it based on ignorance as profound as his own, for example he found that hobnails in heavy leather shoes could make his feet so hot in summer that he would have to sit down and let them cool off. (We wonder why Uncle Marc didn't follow the example of the stick lizards.) After this experience he found tennis shoes more practical and made other drastic changes in his clothing. Mr. Jones spent considerable parts of two years, 1897 and 1907, in a study of the plants of Death Valley, no small undertaking in those days. Meanwhile he had come to a realization of the relationship existing between plant life and geology which caused him to give much attention to the latter and, as an outcome to this study, he was engaged in 1890 by General William J. Palmer of Colorado Springs to study the geology of the route of a proposed railroad from Tuscon to Salt Lake City.

Mr. Jones was a very forthright man, firm in his convictions and outspoken in expressing them. It is not surprising that this latter trait aroused antagonism and as a result, in one quarter at least, he was unable to find anyone who would publish his writings so he was obliged to undertake this work himself. Mrs. Jones displayed several of his published works, one of the most interesting being a treatise on the geology of the Columbia River Basin.

Mr. Jones' later years were spent at Pomona College in California and in 1933, at the age of 81, he was involved in an auto accident in Pasadena which resulted in his death.

Leo Simon has carried the ball for us at several of our luncheon talks and on May 5th he was in his usual top form with something on Oregon trees, a subject in which Mrs. Simon and he developed an interest while on their wedding trip in 1918.

There are more than seventy different species of trees in Oregon, thirty-two of them conifers and forty, broadleaf. The conifers are the principal trees of commercial value and for years were practically the only ones so considered. More recently, with extensive research which has shown the diversity of uses for wood and wood products, practically all trees have found some commercial use. Those that can not be used for anything else can be converted into pulp.

Considering the conifers and moving inland from the coast, one encounters first the tideland spruce which is found only in proximity to the ocean. Then farther to the eastward is a belt of Sitka spruce and near the summit of the range on the west side we find the Engelman spruce. The Douglas fir also flourishes on the west side of the range but when one passes the crest he finds the pines, yellow and white, the latter being especially desirable for lumber.

Among the broadleaf trees those that are classed as evergreens, that is, that bear foliage the year around, are the live oak, chinquapin and wax myrtle. Fifteen species of oak have been identified on the Pacific Coast but only four of these have been found in Oregon.

Leo gave an interesting dissertation on some of the mistakes in attaching common names to the trees and wrong conceptions as to some of them. For example, he said that it is advertised that the Oregon myrtle grows in only two places in the world, Oregon and the Holy Land. The two are not the same, the tree found in the Holy Land being a different specie from the Oregon myrtle. There are in Oregon isolated occurrences of certain trees which are supposed to have existed when the continental border was far to the west of its present location and which died out as the sea transgressed eastward. One such remnant is the Port Orford cedar and another is the Sequoia sempervirens, the coast redwood.

May 12th Dr. Ruth Hopson spoke on "Research in the Three Sisters Area." A society, "Friends of the Three Sisters" has been incorporated for the purpose of promoting the welfare of the area, which is outstanding not only for its beautiful scenery but as a locale for study of many of the sciences and of wild life. The society is making an effort to establish a definite research program which the speaker explained to us. We also had the privilege of examining the thesis that she wrote for her PhD degree, two "ponderous tomes," one of text and one of illustrations, on "The Study of a Valley, the McKenzie River of Oregon." Dr. Hopson also circulated a paper by LeRoy E. Detting, "Relict Islands of Xeric Flora West of the Cascade Mountains in Oregon."

On May 19 we were again indebted to Dr. Hopson for our intellectual contribution through two guests whom she introduced, Roger Fox and Phyl Pyshing, seniors from Gresham High School. These two men presented an extensive collection of fossil flora collected on a field trip with other students in the vicinity of Scio in Linn County. A great variety was displayed, many of them very well preserved. Of course the real meat of the program came when the members gathered about the specimens for closer inspection and discussion with the collectors.

May 26th Bob Wilbur surprised and interested all of those present by explaining the many things for which a plant-quarantine inspector must be ever on the alert in order to prevent entry to this country of any organism that might get a foothold and prove detrimental to plant or animal life. Few, if any, of us realized before the many dangers and inconveniences that these conscientious men ward off. Bob's special peeve seemed to be against nematodes which try to hitchhike into this country on almost anything. A sample of celery root in a glass jar was displayed as showing one of the many things that could be a carrier. On one occasion someone in Ireland made a very small shipment of shamrock to a friend in this country, apparently very innocent until it was found that the small amount of earth clinging to the roots was infested with the vicious little worms. Ship stores, such as celery and potatoes, especially from England, Ireland, and Holland, are watched particularly for the golden nematode which seems to be especially prevalent in these countries. Even the sand ballast in ships and planes must be inspected. The sand itself is safe but if it is mixed with soil it may be dangerous. Preserved Chinese eggs, considered a delicacy by the Chinese of this country, are suspected as in processing they are covered with a layer of mud which may be infected.

Nematodes are by no means the only things for which the inspectors have a keen eye. Samples were displayed of monazite sand and lead concentrates, apparently harmless and so they are in themselves, but they come packed in bags tied with ropes of rice straw which has been found to be a carrier of the corn borer.

Soil is the worst carrier, and war materiel, especially vehicles such as trucks, tanks, half-tracks, sent back for repair or salvage, must be thoroughly cleaned of mud as it is in the soil that the danger lurks.

The talk was not only interesting but very enlightening as it is doubtful if any of those present had any idea of the scope of the work that the quarantine inspectors carry on or of its importance to all of us.

****

THE EDITOR GOES TO SCHOOL

It is difficult, if not impossible, to justify printing in a geological magazine the record of a vacation from editorial duties for the sole purpose of trying to make prize-winning color slides, so the easiest way out of the dilemma is to tell, briefly, the story of a delightful two weeks on the west coast of California from Monterey to Big Sur.

With my interest whetted to a thin edge by circulars describing a course in color-slide photography under the leadership of Helen Manzer, the top-ranking exhibitor in her class in the United States, I shed the editorial eye shade and drove to Pacific Grove which occupies the northwest corner of the lovely Monterey peninsula, and for two weeks made my headquarters in room no. 9 of "longhouse" no. 5, Asilomar, where I occupied a nine-by-nine room lavishly furnished with two iron cots, a chair, and a four-drawer bureau. One of the cots was reserved for sleeping, but on the other I placed one of the bureau drawers upside down for a typewriter stand and still had room to spread my belongings in an easy-to-get-at disarray.

Meals were served in a room capable of seating more than four-hundred people. Since everybody was served the same food for which the diners passed the kitchen

counter where expert Chinese loaded the plates about as fast as one could walk past, large groups could be fed expeditiously. The food was excellent, or if it wasn't, our appetites were, which adds up to the same result, and the absence of headaches and indigestion is evidence that the chef is an excellent dietician.

The dining hall, administration building, and chapel of the Asilomar (accent on the short "i") hotel and conference grounds are located on three sides of an open area. The third side is open to the west and a short walk leads to the Pacific Ocean. To the left of the path is a beach of white sand and to the right is a jagged low bluff of granite against which the waves are patiently beating to make more white sand, and to attract photographers who risk their lives on precarious perches from which they hope to record just the right splash for making a prize-winning shot. Uncounted rolls of color film were exposed daily by the group of thirty-one students.

From nine o'clock until noon Helen Manzer gave talks on various phases of color photography, illustrating them by her own slides, and in the afternoons field trips were made to other sites, such as the wharves in Monterey and nearby cliffs. On other days the morning lecture gave way to a ride to a more distant location such as Big Sur State Park, about 35 miles to the south, or to Point Lobos Reserve State Park, about 5 miles from Asilomar. The Point Lobos Reserve was a favorite location, and many of the group went there again and again, and it is safe to say that those who do not revisit that place later will wish that they could. The variety and abundance of wild flowers, the many interesting shapes of the Monterey cypress, the off-shore rocks with their cormorants, brown pelicans, gulls, and sea lions were the special prey of the owners of long-focus lenses up to 400 mm.

To conserve film (to a small degree) and to help the students get better pictures than they might if left to their own devices, the instructors bobbed about and peered through the view finders which were trained on "prize-winning" compositions, and in most cases an improvement was suggested, but once in a while the commendation: "That is excellent" brought joy to some aspiring heart.

At Big Sur (I believe it was) the cliffs are of sedimentary structure, but those farther north were of coarse granite, so hard that it seemed impossible that even the centuries of erosion could alter their shapes.

Nearly half of the students at this session were from other states than California, others being from New York, New Jersey, Pennsylvania, Texas, Ohio, Illinois, Iowa, and four from Oregon. There were nurses, teachers, home-makers, a retired carpenter, a printer, a retired vice president of Bordens', a doctor, and many other occupations represented, all probably actuated by the desire to record more beautifully than before, the beauties and wonders of nature.

The sessions on portraiture were interesting, especially the field work where everybody "shot" nearly everybody else. It may have been a wise provision of the instructor to place this session near the end of the course so that few, if any, of those who posed will be able to see, and seek revenge for, the results.

Samples of sand from the Asilomar beaches and a few fractured specimens of fossil leaves from Goshen are about all the geological results of this trip, and they will likely be allowed to disintegrate in the backyard rock pile.

Orrin E. Stanley

****

NEW MEMBERSHIP LIST COMING OUT SOON

Will you have a new telephone number?

OBITUARY

Tracy Wade, one of the charter members of our society, passed away July 16. Our sympathy is extended to his wife Gladus and his sister Mrs. Laura M. Butler.

****

REPORT OF PUBLICITY CHAIRMAN

To the President and Members of the
Geological Society of the Oregon Country:

Your society received 342½ column inches of newspaper publicity during the past year, divided as follows:

Oregonian (36 stories)	149¼
East Oregonian (2 stories)	101¼
Oregon Journal (29 stories)	55½
Bend Bulletin (2 stories)	20
Albany Democrat-Herald (1 story)	15
Journal of Lewis and Clark (1 story)	1½
Grand total (71 stories)	342½

Fifteen of these stories resulted from the setting of the plaque honoring Dr. Condon, as follows:

Oregonian (8 stories)	111½
East Oregonian (2 stories)	101¼
Oregon Journal (2 stories)	20½
Bend Bulletin (2 stories)	20
Albany Democrat-Herald (1 story)	15
Total (15 stories)	268¼

The Journal of Lewis and Clark (College) noted the field trip led by Dr. Stauffer and the moving of our library to the campus.

Respectfully yours,

/s/ H. B. Schminky
Publicity Chairman

****

NOW IS THE TIME

Yes, now is the time to call Mrs. Leo Simon, BE 0300 or EM 0549, if there is a change in your address or telephone number. Compilation of the new membership list is under way. Printing is scheduled for early autumn.

CALENDAR FOR SEPTEMBER 1955

Luncheon Notice

Every Thursday noon at Portland Chamber of Commerce, 824 S.W. 5th Avenue. Buffet $1.00

* * * * *

Friday Sept.9 — Library Hall, 7:00 p.m.
"Mi Vida," a 16-mm film with sound telling the story of the "Mi Vida" operation of the Utex Exploration Company, Moab, Utah, will be presented. This is a very large uranium development.

Friday Sept.23 — Library Hall, 7:00 p.m.
Carl L. Molin will present his scenic pictures with musical accompaniment. A rare treat for our society as nothing technical or geological will be mentioned.

Sunday Sept.25 — **Field Trip.**
Our leader, H. Bruce Schminky, will take us into the interesting area around Ariel and Yale dams on the Lewis River in Washington. Also the lake in a mountain at Battleground. We have not been in this area for a long time. Round trip about 150 miles.

Meet opposite Jantzen Beach at 8:45 A.M.

More details at the Friday meeting.

* * * * *

Ralph Mason, after two successive tests to determine the ability of luncheon groups to identify specimens of rocks, apparently decided that it was safer to go on vacation rather than attend the luncheon August 25th. We have heard before now that discretion is the better part of valor.

PERSONAL NOTES

May Bushby has asked us to express her thanks to all members of the case in the skit which was so entertainingly presented at the annual picnic in Mt. Tabor crater on August 12th. She especially mentioned Joan Erickson who spent much time and effort in "rounding up" the bovine specimens that appeared on the stage; and the Bruce Schminkys who generously opened their home for the rehearsals.

All who witnessed the play will doubtless wish to join the editor in thanking May for writing and managing the play.

* * * * *

Dr. J. C. Stevens outlines in the Oregonian of July 23, 1955, a simplified state legislature. This is not to be confused with a "simple" legislature, since there are many folks who feel that we have already gone farther than necessary in that direction. It is hoped that the proper authority will give consideration to the plan suggested by our fellow member.

* * * * *

THE BELLEVUE ERRATIC

President Clark received the following letter about the Bellevue erratic from the State Highway Department. He wishes to call attention to the fact that Rudolph Erickson did all the "spade work" on the acquisition of this site.

August 17, 1955

Dear Mr. Clark:

I am pleased to inform you that the Oregon State Highway Commission, at its meeting on August 11 and 12, approved the purchase of a small plot around the erratic stone, a trailway to it and the placing of an informational marker on the highway. This stone lies north of Highway Route 18 near Bellevue between McMinnville and Sheridan. The action was in accordance with your recent request.

The Commission is appreciative of your interest in these unusual matters of interest to the people of the State.

Very truly yours,

/s/ H. B. Glaisyer
Secretary

****

NEWS OF MEMBERS

A. W. Hancock, who has already won nationwide acclaim for his paleontological discoveries in the Clarno region was given space totaling nearly a page in the July 23 Oregonian and Oregon Journal of the same date. Photographs of Mr. Hancock and of Dr. J. Arnold Shotwell appear in both papers with extended accounts of the work of the two scientists.

* * * * *

Allyne F. (Jack) Pratt, first secretary of the Geological Society of the Oregon Country, died July 27, 1955. Jack attended the class in geology given by Dr. Edwin T. Hodge, which became the founders of the society. In 1936 he was elected to the board of directors. He was a leader of the Labor Day trip to the Ochoco mercury mines in 1935 and made several contributions to the News Letter. He dropped out of the group in 1938. Pratt worked in the department of Public Works for the City of Portland.

* * * * *

KELSIE RAMEY OSBORNE TELLS OF LEWIS AND CLARK

Those who were fortunate enough to hear Mrs. Osborne the evening of July 22 came away with grateful hearts - grateful to the two intrepid explorers and their band of soldiers who succeeded despite almost overpowering obstacles, as they drove a wedge in a wilderness.

In dramatic phrases and with photographs their struggles were brought before us. Over treacherous sand bars of the Missouri River, appropriately called "The Big Muddy," they toiled and strained till they reached its source in the Rocky Mountains. They were plagued by mosquitoes, ticks, and fleas. Shortages or complete lack of food necessitated their eating spoiled salmon, horse meat, and finally dogs. Many times they had no salt. As theyneared the coast a constant downpour of rain soaked and rotted their clothing till they were almost naked. Fear of hostile Indians was always with them.

When they were exhausted to the point of breaking, they came to a place about 4 miles from the site of Astoria where they built a shelter which they named Fort Clatsop. Here they observed Christmas day with a feast of spoiled elk meat, some roots, and rotten pounded fish. For a beverage they had pure cold water.

Sacajawea, their little Shoshone Indian woman guide, was allowed to accompany the explorers to the Pacific where a whale had been stranded. She was greatly excited over the 105 feet of its skeleton and the "Everywhere Saltwater," and never tired relating her experiences.

Only the highlights of Mrs. Osborne's book "Peaceful Conquest" were presented. As a member of the Lewis and Clark Sesquicentennial Committee for Oregon, she was assigned by Governor Patterson to retrace the route of their expedition. This she has done in a volume that should be in the library of everyone whose taste runs to adventure, as well as those who will esteem it for its historical value.

Mrs. Osborne is executive secretary of the Old Oregon Trail Association, author of a collection of poems "From Lyric Fire," and a composer and dramatic interpreter of folk poems of the Appalachian Mountains, of which she is a native.

Our society expresses its appreciation to her for an unusually instructive and entertaining evening.

Emily Moltzner

****

PETERSON BUTTE ATTRACTS GSOC

On July 24, 1955, about forty fossil hunters and friends met at Lebanon High School in Linn County for a one-day outing with Dr. John Walsted and his wife.

We traveled to Cascadia State Park where Mrs. Walsted opened a picnic basket full of home-made bread, turkey, salad, and cream fresh from the farm.

As soon after lunch as we got our fill of mineral water we left for Peterson Butte where we assembled at the base for a short hike to the marine fossil shell exposures.

Quoting from his Master's Thesis, Wayne M. Felts, 1936, "The western part of the (Lebanon) quadrangle is in Willamette valley proper, a lowland cut into early Tertiary sediments and subsequently floored with a series of Pleistocene and Recent alluvial deposits. The relatively smooth surfaces of these alluvial deposits are interrupted in places by steep-sided buttes such as Peterson Butte in the extreme southwest corner of the area. Some of these buttes are old basalts and diabasic volcanic rocks that have been intruded through the Tertiary sediments underlying the valley floor, and others are buttes of old sediments protected from erosion by cappings of basalt."

Enthusiastic digging produced many shallow-water pelecypods and gastropods from the marine sandstones, shales, and conglomerates, and considerable organic material such as stems of plants and one very fine specimen of a conifer cone which had been washed into the water. Mr. Felts in his thesis proposed to assign these beds tentatively to the Eugene horizon of the Oligocene epoch. He says, ". . .the outcrop on Peterson Butte represents deposits made close to the shore of the Oligocene sea which covered a large part of northwestern Oregon." These deposits were later cut by the gabbro intrusive mass which comprises the bulk of the butte.

Murray R. Miller

****

MAZAMAS

At all places along the 8-mile trail from Lake Wapta to Lake O'Hara where a weary hiker might be tempted to go astray there were white arrows bearing the neatly printed word "MAZAMAS" pointing onward and upward to the camp site of that group of mountain climbers on the Alpine Meadows. These signs irked a lady who felt that the wilderness should not be desecrated by the posting of "stomach medicine signs" as she worded it. She was somewhat mollified by being told that this group of out-door enthusiasts was as strongly opposed to such desecration as she could possibly be, but that the markers were necessary to guide late-comers to the camp.

Your editor had no need of the signs for he just sat on a big bay horse that followed a long pack train loaded with food and camping equipment for the group of about sixty healthy individuals from 12 to 82 years of age, and, believe it or not, was able to dismount without help at the end of the 3-hour ride. Although his memory is not what it should be, it sufficed to cause him to prefer walking down the trail two weeks later.

It is difficult to imagine a more beautiful site for the base of operations for mountain climbing, photographing, or for merely sitting in camp and watching the big, white clouds roll over the jagged peaks of the Canadian Rockies; or, tiring of looking up, observing the antics of plump ground squirrels getting up their courage to come close enough to snatch food from his fingers.

Lake McArthur, 2 miles distant over a rugged path, still had sheets of ice on its surface, and Linda Lake furnished trout to those who were skilled in catching them. A crystal cave high on the side of the mountain west of Lake O'Hara yielded specimens to any who cared to make the comparatively easy climb to dig them out.

All was lovely for the first week. The days were sunny and the nights crisp with a bit of frost one morning. The editor's legs got back some of their earlier strength, his appetite kept up to the requirement of cleaning his plate at each meal, and he even got something of a kick out of emerging from his sleeping bag and dressing in temperatures in the low thirties; but when it came to washing his face and shaving with water verging on freezing, he was forced to admit that it was more disagreeable than filling a bowl with steaming Bull Run water in a warm room.

And then there were showers. Water seeped through his tiny "air force" tent, ran down to the northeast corner and soaked into his spare clothing, taken along to put on when what he was wearing got wet in a shower. That was manifestly unfair; and there came a time when there was not a long enough interval between showers to dry anything.

To illustrate just how bad things did get, the editor was driven to the extremity of donning his overcoat and mittens and actually sawing wood to keep warm; and sawing wood never had been one of his favorite pastimes. However, it was better than slowly congealing.

At last, the camp manager took pity on his white locks and made arrangements for him to sleep in the log cabin of the Alpine Club of Canada, where there were mattresses on the cots, and a big fireplace to sit by before bedtime.

The 4-hour hike down the trail was less tiresome than the 3-hour ride up, and a comfortable bed at Lake Wapta Lodge erased all fatigue so that the 2-day bus ride back to Portland was really enjoyed.

It is only fair to say that none of the discomforts of the camp were blamable upon the Mazamas. They had not coerced the editor into making the trip, and it is difficult to imagine a more competently operated camp. The food all had to be purchased in Canada, but the way the cook prepared it for the table, one might have thought she was using her accustomed supplies. The climbing parties moved on schedule and the climbers reported wonderful views from the peaks.

There was a spirit of good fellowship around the evening campfires, and even though the crowning of the king took place in a steady, and rather heavy drizzle, everybody had fun.

One bit of advice from the editor to any who are planning on a treck into the wilderness: Be sure to take along the cap to the air mattress valve. It will be useful, though small.

Orrin E. Stanley

****

ABSTRACT OF LUNCHEON TALKS - August 1955

Our August meeting, first since June 30, was well attended - 19 - all members, being present. Speaker of the day was Howard Rose who gave a brief but very enlightening talk of a trip with Mrs. Rose to Florida, Cuba, and the Isle of Pines.

Howard said, among other things, that while Florida is not generally regarded as a mining state mining is nevertheless one of its principal industries next to catering to tourists. One interesting mineral product is coquina, a limestone which is formed of shells and coral so closely cemented that it is quarried and makes a very satisfactory building stone. A large area is underlaid by coral which is covered by a thin layer of muddy soil. At first sight this appears impassable but when one drives on it he finds that the muddy layer is only about an inch thick and beneath it is the solid coral which makes an excellent roadbed.

The most valuable mineral is phosphate rock, in the production of which Florida leads the country. The phosphate operations are on a large scale and he mentioned especially the immense piles of rejects that were left after processing the crude ore for the market.

The remarks on the Isle of Pines were particularly interesting as so little is heard of this small spot in the Antilles. It is roughly circular in shape with a diameter of 50 to 60 miles. It has great possibilities but is vastly undeveloped, there being only two telephones on the entire island so that almost all communication must be by messenger. The only mineral resource is marble of which there are immense deposits of excellent quality. The only development of these has been by the island government which has employed convict labor. This has created a prejudice in this country so that attempts by private capital to develop the marble and market it with free labor have been unsuccessful because it has been wrongly assumed that the marble offered on the market here was the product of convict labor.

Citrus fruits on the Isle of Pines are of outstanding quality and size but the market is limited and while there is a great surplus no one seems to think of processing it. The climate is unusually pleasant.

The speaker on August 11 was Al Keen who told us of his visit to the International Gem and Mineral Show in San Francisco which was sponsored by the San Francisco Gem and Mineral Society in cooperation with the California Federation of Gem and Mineral Societies. Al gave us a brief talk on the exhibit as a whole, which was very extensive, but spoke principally on artificial emeralds, of which a 300-carat specimen was on display.

The process of making emeralds was perfected quite recently by a San Francisco chemist after 25 years of research. The inventor, if such he may be called, has preferred to keep the process a strict secret rather than patent it. He works by himself in a small laboratory and "grows" about 7000 carats a year, of which about one-fourth are of gem quality. The best crystals are obtained after a development of 13 months. Constituents are beryllium oxide, aluminum oxide, silica "and other chemicals." Hardness is 7½ - 8 and specific gravity 2.6 to 2.8. Optical qualities are the same as for the natural stone but the artificial will withstand a much higher degree of heat. Another difference is that the natural stone forms in six-sided crystals whereas the artificial crystals have twelve sides. A sample of a cluster of crystals was passed around the table for inspection.

Following Al's talk Ralph Mason sprung a surprise on the group by passing around ten numbered specimens of common (?) rocks for identification. Each person was provided with a sheet of paper and requested to write his identification of each specimen. More about this later.

Our August 18 talk was by Mrs. Gregory who told of her geological field trip with a group from the University of Oregon under the leadership of Lloyd Staples. The trip started June 13 and lasted four weeks.

The first part was in the Coos Bay region with headquarters established at the Marine Biological station five miles south of Coos Bay. Here Mrs. Gregory and the one other woman in the party found themselves assigned to K.P. duty which we would say was very unchivalrous on the part of the men.

The first field job was an alidade survey of a line two miles long in rugged and wooded country which required a day and a half of exhausting work. Then the party was set to mapping the geology of six to seven miles of coastline with Brunton compasses. The work was strenuous as it called for being in the field from 7:00 a.m. to 6:00 p.m., then working on notes sometimes until the wee sma' hours.

After two and a half weeks in the Coos Bay area the party moved to Eastern Oregon where camp was set up at an abandoned gold mine in Mormon Basin south of Baker. Here more mapping was carried on and the party had the opportunity to observe some hydraulic mining and some dredging.

Mrs. Gregory displayed several small vials of concentrates panned from the beach sands and one sample showing a sizeable color of gold from Mormon Basin. The whole account was very well told and made some of us wish we had been along, others reflecting on the hours, terrain, etc., glad we were not.

Following Mrs. Gregory, Ralph Mason made a sad report on the results of his quiz on rocks of the preceding meeting and passed around ten more. Let us draw the mantle of charity over the rest of the meeting.

Leroy A. Palmer

****

ANNOUNCING
The Publication of
EVOLUTION AND GEOGRAPHY: An Essay on HISTORICAL BIOGEOGRAPHY
with Special Reference to Mammals
By
George Gaylord Simpson
Curator of Fossil Mammals and Birds, The American Museum of Natural History
Professor of Vertebrate Paleontology, Columbia University

This essay is the published form of the Condon Lectures delivered by Dr. Simpson for the Oregon State System of Higher Education at the University of Oregon, Oregon State College, and Portland State College in January 1953. The essay is 64 pages in length and extensively illustrated. The list price is $1.00. This publication carries out with great success the function of the Condon Lectures, ". . . to interpret the results of significant scientific research to the nonspecialist."

The following is a list of previous publications in the series:

(1) The Ancient Volcanoes of Oregon, by Howel Williams, Chairman, Department of Geological Sciences, University of California. Jan. 1948. $1.25.

(2) Malaysia--Crossroads of the Orient, by Fay Cooper Cole, Emeritus Chairman, Department of Anthropology, University of Chicago. April 1948. 75 cents.

(3) The Ancient Forests of Oregon, by Ralph W. Chaney, Professor of Paleontology, University of California, Dec. 1948. (temporarily out of print)

(4) The China That Is To Be, by Kenneth Scott Latourette, D. Willis James, Professor of Missions and Oriental History and Fellow of Berkeley College, Yale University, March 1949. 75 cents.

(5) The Pacific Island Peoples in the Postwar World, by Felix M. Keesing, Executive Head, Dept. of Sociology and Anthropology, Stanford University, March 1950. 75 cents.

(6) Pacific Coast Earthquakes, by Perry Byerly, Professor of Seismology, University of California, May 1952. 75 cents.

(7) The Near East and the Foundations for Civilization, by Robert J. Braidwood, Associate Professor of Old World Prehistory, The Oriental Institute, Dec. 1952. $1.00.

* * * * *

There should be added to the above list the publication by Dr. Ralph Buschbaum on oceanography entitled The Life of the Sea. Also, Dr. Oppenheimer's publication on The Constitution of Matter, which should be available some time in December.

Orders should be placed with the Mailing Department, 107 Friendly Hall, State System of Higher Education, Eugene, Oregon.

****

EXHIBIT OF SCARAB BEETLES

A colorful new exhibit of some of the world's largest insects - scarab beetles - was shown in the Smithsonian's Natural History Building. The scarabs, says O.L. Cartwright, U.S. National Museum specialist on beetles, represent one of the largest insect families, with over 20,000 species. They are famous the world over for their size and color. For centuries they have been a part of Egyptian design and symbolism.

The specimens displayed in the exhibit were shown on a modern background utilizing bright colors in a geometrical pattern in a vertical, lighted case. All of them were from the Western Hemisphere and were chosen to show the very large size attained by some species, the extreme development of horns in the males of some, and the brilliant colors. Three of the four largest scarabs in the world were shown. One of these (known to entomologists as Dynastes hercules) sometimes reaches a length of 6 inches; the other two - elephant beetles from Central America and northern South America - are as large as a man's fist and are the heaviest in body weight of all living insects. The largest scarab from the United States, found from New York to Florida, was also shown.

Many species of scarab beetles show extreme development of horns and protuberances on head and thorax which excite wonder and amazement of those seeing them for the first time. Of the showy, colorful kinds, the brilliant, shining, metallic species of the genus Plusiotis, large scarabs from the Tropics, are considered the world's most beautiful beetles. One species, almost an inch long, is brilliant, glittering gold in color. Another, of even larger size, is shiny metallic silver. All specimens are just as they are found in the mountain jungles of Panama and Costa Rica. (From the Smithsonian Institution.)

****

MEMBERSHIP LIST - G.S.O.C.
September 1955
Compiled by Mrs. Leo F. Simon, Secretary

	Name	Address	Zone	Telephone
	Abramovic, Mr. & Mrs. Emil	7730 S.W. Macadam	1	CH 4-7245
+	Adams, Dr. & Mrs. W. Claude	2614 N.E. Bryce	12	AT 1-8747
	Bach, Miss Alwina	7607 N. Fowler Avenue	17	BU 9-1796
	Baker, Mrs. Lois Inman	541 West 16th St., Eugene, Oregon		5-5870
	Baldwin, Dr. & Mrs. Ewart M.	2058 Harris St., Eugene, Oregon		
"+	Baldwin, Mr. & Mrs. Raymond L.,	4300 S.W. Laurelwood Drive	1	CY 2-1452
+	Barr, Mrs. Amza	4830 S.E. 62nd Avenue	6	PR 4-2459
"	Bates, Mr. & Mrs. E. Newton	94 Cloud View Rd., Sausalito, Calif.		
	Berenson, Dr. & Mrs. Bernard	3557 S.E. Ankeny St.	15	BE 6-8722
	Berg, Mrs. Oscar	3909 S.W. Troy	19	CH 4-3782
	Boyd, Mr. & Mrs. C. A.	434 Riverside Blvd., Bend, Oregon		1013 W
	Brogan, Mr. & Mrs. Phil	1426 Harmon Blvd., Bend, Oregon		266-J
	Brown, Mr. & Mrs. G. Blaine	2521 19th Ave., Forest Grove, Oregon		FG 1284
	Bruckert, Mr. & Mrs. Walter E.,	P.O. Box 421, Wasco, Oregon		Dalles 477
	Bryan, Mr. & Mrs. R. L.	6309 S.W. 32nd Avenue		CH 4-1058
	Buck, Mr. & Mrs. Shirley	2705 S.E. River Rd. (Willamette Manor)		OL 4-6581, Ext. 413
	Buffham, Mr. & Mrs. Merton E.	6621 N.E. 23rd Avenue	11	AT 2-5248
	Buoy, Mr. & Mrs. Leonard M.	2445 - 150th S.W., Seattle, Wash.,	66	
	Bushby, Mr. & Mrs. Edward D.	2626 S.W.Ravensview Drive	1	CA 8-3021
	Butler, Mr. Donald L.	831 S.W. 6th Avenue	5	CA 3-6161
	Butler, Mrs. Mary Glenn	4404 S.E. Hill Rd., Milwaukie, Oregon		OL 4-2854
	Carpenter, Mr. & Mrs. Chas.B	2504 N.E. Dunkley Street	12	AT 7-7475
	Calef, Mr. & Mrs. M. H.	2405 N.E. 41st Avenue	13	AT 1-3642
	Campbell, Donald R.	2505 N. Emerson	11	BU 9-5728
	Campbell, Robert M.	1700 S.E. 6th Avenue	2	BE 2-4633
	Clark, Mr. & Mrs. Wm. F.	3613 S.E. 9th Avenue	2	BE 4-7096
	Clayton, Mr. & Mrs. Robert	1534 S.E. 41st Avenue	15	BE 2-8548
	Cleghorn, Mr. & Mrs. John C.	219 High St., Klamath Falls, Oregon		K.F. 5424
	Coats, Miss Ruth Emily	3846 Skyline Road, Carlsbad, California		
	Davis, Mr. Bradley Moore	2814 S.W. Labbe Avenue	1	CA 2-2150
+	Davis, Mr. & Mrs. Franklin L.	7114 S.W. Corbett Avenue	1	CH 4-8975
	Davis, Mr. & Mrs. Leslie C.	7704 S.E. Taylor Street	16	AL 3-6723
	DeLano, Mr. & Mrs. Leonard H.	1536 S.E. 11th Avenue	14	BE 6-2139
	DeWitt, Mr. & Mrs. Gail T.	Bates, Oregon		
	Dryden, Miss Averil	931 N.W. 20th Avenue	9	CA 2-2992
	Duckwall, Mr. & Mrs. John C.	811 Oak St., Hood River, Oregon		3562
	Elder, George V.	6922 S.E. Brooklyn Street	6	
	Elliott, Mrs. Everett	1530 N. 99W, McMinnville, Oregon		16142
	Elsey, Roger C.	3821 N.E. 71st Avenue	13	AT 7-9015
	Ericksen, Mr. & Mrs. Toralf R.,	3395 S.E. 9th Avenue	2	BE 6-0701
	Erickson, Mr. & Mrs. Rudolph	249 S.W. Glenmorrie Drive, Oswego, Oregon	Zone 2	NE 6-1873
	Ewen, Irving G.	242 N. 15th Avenue, Corvallis, Oregon Delta Sigma Phi		PLaza 3-7471

+ Charter Member
" Fellow-Past President

Name	Address	Zone	Telephone
Fenton, Dr. & Mrs. Ralph A.	13100 S.W. Riverside Drive Oswego, Oregon	1	NE 6-4364
Fischer, Mr. & Mrs. Virlis L.	420 N.W. Skyline Blvd.	1	CA 7-4639
Fink, Mr. & Mrs. V. Carl	7025 N. Oatman Avenue	3	BU 9-0188
Fowler, Miss Myrtice E.	6116 N.E. Cleveland Avenue	11	AT 4-6385
Galt, Mr. James	1135 S.W. Montgomery St.	1	CA 3-4601
Gilchrist, Dr. & Mrs. Francis	0644 S.W. Palatine Hill Road	1	NE 6-4792
Golden, Mr. & Mrs. Ray S.	3223 S.E. 19th Avenue	2	BE 4-3921
Gooch, Mrs. Ruth Grey	8637 S.E. Alder St.	16	AL 3-6897
Gordon, Mr. & Mrs. Ted, Sr.	4710 Sunnyside Road, Salem, Oregon		
Gregory, Dr. & Mrs. Victor	3621 S.E. Ankeny St.	15	BE 4-3137
Griffith, Mr. & Mrs. Norman N.	1969 S.W. Park Ave., Apt. 815	1	CA 2-4866
Haggerty, Mr. & Mrs. E. W.	S.W. Fielding Rd., Oswego, Oregon		NE 6-4020
Hamilton, Miss Rose	5412 S.E. Powell Blvd.	6	BE 6-8215
Hammill, Mr. & Mrs. Kenneth C.	9124 N.E. Broadway	20	AL 3-7749
°"+Hancock, Mr. & Mrs. Alonzo W.	2720 S.E. 84th Avenue	16	PR 1-5285
Hansen, Mr. Edmund M.	6816 S.E. Long St.	6	
Harnisch, Mr. & Mrs. Carl A.	Rte. 2, Box 335, Albany, Oregon		WA 8-3059
Harrison, Mrs. Ruth	1879 S.W. 10th Ave., Apt. 12	1	CA 3-0255
Haselton, Mr. & Mrs. G.	1107 S.W. 20th Ave.	5	CA 3-8453
Haumann, Mr. & Mrs. George	36 N.E. Meikle Place	15	BE 5-5485
Hazelhurst, Mr. & Mrs. G.C.	818 N.E. Floral Place	13	BE 4-8063
Henderson, Mr. & Mrs. Dwight J.,	838 S.E. Peacock Lane	15	BE 2-0814
Henley, Miss Ada	2015 S.E. Pine St.	15	BE 2-1475
°"+Hodge, Dr. & Mrs. Edwin T.	2915 N.W. Luray Terrace	10	CA 3-8345
Hopson, Dr. Ruth E.	4709 N. Willamette Blvd.	3	BU 9-3441
°Hughes, Miss Mary Margaret	3060 S.E. Stark St. Mt. St. Joseph Home	15	BE 2-1784
James, Mr. & Mrs. Don W.	7257 S.W. 53rd Avenue	19	CH 4-4401
James, Mrs. Mildred P.	135 S.E. 52nd Avenue	15	BE 2-5456
+Jennison, Mr. & Mrs. Harri L.	1561 S.E. Linn St.	2	BE 4-2701
+Johnson, Mr. & Mrs. E. Cleveland,	12311 S.E. Stark St.	16	AL 3-1024
"+Jones, Dr. & Mrs. Arthur C.	3300 S.W. Heather Lane	1	CA 3-3955
"Keen, Mr. & Mrs. Albert J.	2715 N.E. 41st Avenue	13	AT 1-0229
Kelham, Mr. & Mrs. Edward A.	14018 S.E. Linden Lane	22	OL 4-2196
Kellmer, Mr. & Mrs. Earl B.	6105 N.E. Rodney Avenue	11	AT 4-1093
Kern, Mr. & Mrs. Emery R.	164 S.E. Kelly St., Gresham, Ore.		GR 3633
Kerr, Miss Marguerite	5518 N. Williams Avenue	11	AT 4-8626
Kille, Mrs. Mable A.	3840 S.W. Tunnelwood Road	1	CA 7-6230
Klatt, Joseph F.	7315 S.E. 52nd Avenue	6	
Kurtichanof, Mr. & Mrs. L.E.	8014 S.E. 35th Avenue	2	PR 1-5416
Lange, Mrs. Nellie V.	1534 S.E. 56th Avenue	15	BE 6-7202
Latourette, Mr. Kenneth Scott	409 Prospect St., New Haven, Conn.	11	
Laurence, Mr. & Mrs. T. Herbert,	1808 S.E. 35th Place	15	BE 2-5294
Lawrence, Dr. & Mrs. Donald B.	2420-34th Ave., S., Minneapolis, Minn.		
Leonard, Mr. Laurie	6309 S.W. 32 Avenue	19	CH 4-1058
"Libbey, Mr. F. W.	2269 N.W. Everett St.	10	CA 7-2145
Lilly, Mr. & Mrs. Elwin	2170 N.E. Hancock St.	12	AT 4-1433

°Honorary Member.

Name	Address	Zone	Telephone
Lindeman, Mr. & Mrs. B. J.	2531 S.E. Vineyard Way Milwaukie, Oregon		OL 4-5841
Lloyd, Mr. & Mrs. L. G.	01139 S.W. Palatine Hill Road		NE 6-4493
Lytle, Mr. & Mrs. Marvin J.	5344 S.E. 34th Avenue	2	BE 4-5152
Marshall, Miss Emily L.	3471 S.W. Patton Road	1	CA 3-6720
Mattern, Dr. & Mrs. Alfred	402 Morgan Bldg.	5	CA 8-0425
Miller, Mr. & Mrs. Hugh	Rte. 1, Summit Drive, Lake Grove, Ore.,		NE 6-2245
Miller, Mr. & Mrs. Murray R.	1018 Promontory Avenue, Box 465 Oregon City, Oregon		OC 6724
Miller, Dr. & Mrs. Wilmer J.	Serology Laboratory, Univ. of California, Davis, Calif.		
Minar, Mr. & Mrs. Earl W.	2126 E. Burnside St.	15	BE 6-4787
Mix, Miss Adeline E.	1609 S.W. 10th Ave., Apt. 303	1	CA 3-9320
Moltzner, Mrs. Emily	7032 S.E. Stark St.	16	CA 2-2420
Mueller, Mr. Godfrey	7117 S.E. Harold St.	16	PR 4-4724
Munson, Mr. & Mrs. Harry C.	4072 N.E. 32nd Avenue	12	AT 7-6856
Nelson, Miss Clara A.	9529 N. Edison St.	3	AV 6-0869
Nestlen, Mr. & Mrs. Fred H.	11136 S.W. 64th Avenue	1	CH 4-3846
Neuberger, Mr. & Mrs. Carl	1535 S.E. Henry St.	2	BE 2-9810
Newlands, Mr. & Mrs. Lawrence F.,	11808 S.W. Riverwood Road	1	NE 6-4882
North, Mr. & Mrs. Harold F.	1304 S.E. 88th Avenue	16	AL 3-8150
Oakes, Mr. Alva	218 N.W. Flanders St.	9	CA 7-5123
+ Oberson, Mr. & Mrs. Louis E.	3569 N.E. Stanton St.	13	AT 7-3685
Oberteuffer, Mr. & Mrs. Wm. H.	1128 S.W. Englewood Drive, Oswego, Oregon		CH 4-7619
Ohmart, Mr. Reynolds W.	783 N. Capital, Salem, Oregon		
Owen, Mrs. Lillian F.	5933 S.E. Lafayette St.	6	PR 4-9729
Palmer, Mr. Leroy A.	1209 S.W. 6th Avenue	4	CA 7-9347
Palmer, Mr. & Mrs. Thomas E.	1670 S.W. Sunset Blvd.	1	CH 4-8254
"+ Phillips, Mr. & Mrs. Clarence D.	1485 S.W. Cardinell Drive	1	CA 3-3312
"+ Phillips, Mr. & Mrs. Kenneth N.	4124 S.E. Woodward St.	2	BE 5-1052
Pierce, Mr. & Mrs. Hayward	7236 S.E. Salmon St.	16	AL 3-8046
+ Poppleton, Miss Grace	12640 S.W. Riverside Drive	1	CH 4-7222
Ramsey, Mr. C. W.	Goldendale, Washington		6221
+ Reichen, Mr. & Mrs. Sam	8131 S.E. Crystal Springs	6	PR 1-8775
+ Reimers, Mr. & Mrs. Fred	6535 S.E. Clinton St.	6	PR 1-9188
+ Richards, Mr. & Mrs. Carl P.	530 N. 19th St., Salem, Oregon		3-4315
Rosa, Miss Kate L.	807 S.W. 14th Avenue	5	CA 3-0297
Rose, Mr. & Mrs. Howard E.	1628 N. Columbia Blvd.	3	BU 5-3665
Sargent, Mr. & Mrs. Samuel	908 Loughlin St., The Dalles, Oregon		
Sato, Mr. Joe	714 N. Killingsworth Ave., Apt. 3, Zone 11		
"+ Schminky, Mr. & Mrs. H. Bruce	1030 S.E. 54th Avenue	15	BE 6-3903
Schull, Mr. & Mrs. Bert R.	418 N. Holland St.	11	BU 5-2755
"+ Simon, Mr. & Mrs. Leo F.	7006 S.E. 21st Avenue	2	BE 6-0549
Sipple, Mr. & Mrs. Norman W.	Rte. 3, Box 144, Sherwood, Oregon		
Smith, Miss Almeda	8201 S.W. Canyon Lane	1	CY 2-2315
+ Smith, Mr. & Mrs. Ben F.	1350 S.E. Flavel	2	BE 2-1565
Stafford, Mrs. Alonzo H.	Rte. 2, Ellensburg, Washington		
° Stanley, Mr. Orrin E.	2601 S.E. 49th Avenue	6	BE 5-1250

Name	Address	Zone	Telephone
Stauffer, Dr. & Mrs. James	717 - 8th St., Oswego, Oregon		NE 6-3825
Steele, Mr. & Mrs. Glenn	Garden Home, Oregon		
Steere, Miss Margaret L.	2064 S.E. 72nd Avenue	16	PR 4-6382
Steller, Mr. Neil	1504 N.E. 30th Avenue	13	AT 1-0051
Sterrett, Mr. Chester	3320 S.W. 100th Avenue	1	CY 2-1357
"+ Stevens, Dr. & Mrs. J. C.	Ione Plaza, 1717 S.W. Park Ave.	1	CA 2-3180
" Stone, Mr. & Mrs. Norris B.	16450 Glenmorrie Drive, Oswego, Oregon,		NE 6-1154
+ Strong, Mrs. F. H.	2755 N.E. 51st Avenue	13	AT 1-8278
+ Teeters, Miss Glenna M.	3107 N.E. 32nd Avenue	12	AT 1-6205
Touring, Mr. R. M.	2570 Kincaid St., Eugene, Oregon		
Travis, Mr. & Mrs. H. F.	2427 N.E. Skidmore St.	11	AT 1-2274
Triol, Miss Ella	West Linn, Oregon		
+ Underwood, Dr. Herbert L.	5226 S.W. Memefee Drive	1	CA 7-4692
Van Dermark, Miss Phyllis	9000 S.W. Garden Home Road	1	CH 4-3830
+ Wade, Mrs. Tracy	3326 N.E. 25th Avenue	12	AT 7-6060
Walsted, Mr. & Mrs. John P.	264 East Ash St., Lebanon, Oregon		
Weber, Dr. & Mrs. D.E.	138 S.E. 80th Avenue	16	AL 3-8175
White, Miss Mella C.	7114 S.W. Brier Place	1	CH 4-7125
Whitmer, Dr. John H.	217 S. Wyoming Ave., Buffalo, Wyoming		
Wilbur, Mr. Robert F.	2020 S.E. Salmon St.,	15	BE 5-7284
Wiles, Mr. & Mrs. Elwood H.	425 S.E. 32nd Avenue	15	BE 4-2800
Williamson, Dr. & Mrs. K. J.	15316 S.E. Woodland Way	22	OL 4-2557
" Wilson, Mr. & Mrs. Ford E	2924 Mountain Avenue, El Paso, Texas		
Wirth, Mr. & Mrs. Wilkes B.	8520 N. John Avenue	3	AV 6-1741
Zimmer, Miss Hazel F.	805 S.E. 60th Avenue	15	BE 6-8319
Zimmer, Miss Ruby M.	805 S.E. 60th Avenue	15	BE 6-8319

Junior Members

Davenport, Mary	Rte. 6, Box 353, Vancouver, Washington		
Davis, Greg	Alpha Kappa Lambda, P.O. Box 1333, Stanford, Calif.		
Duckwall, Fred	811 Oak St., Hood River, Oregon		3562
Ray, Christopher K.	Reed College, Portland, Ore.	2	PR 1-1112
Robinson, Frederick A.	7056 N. Seward Avenue	3	BU 9-1041
Walker, Richard	3526 S.W. Nevada Court	1	CH 4-5563

News Letter Only

New York Public Library	Reference Dept., 5th Ave. & 42nd St., New York 18, New York	
Poff, Mr. Ronald J.	13210 S.E. Foster Road	66
Trumbull, Mrs. James H.	2430 Pennsylvania Ave., N.W., Apt. 117 Washington 25, D.C.	

****

CALENDAR FOR OCTOBER 1955

Luncheon Notice

Every Thursday noon at Portland Chamber of Commerce, 824 S.W. 5th Ave. Buffet $1.00.

* * * * *

Friday Oct.14 — Library Hall, 7:00 p.m.
Ralph Mason, Geologist, State Department of Geology and Mineral Industries, will speak on the subject: "Glaciers - Coming and Going."

Sunday Oct.16 — Field Trip: Geology, Paleontology, and Autumn Foliage.
Co-leaders: Leo Simon and Dr. James Stauffer of Lewis and Clark College.

Meet at 8:45 a.m. at the west end of the St. Johns bridge. A stop will be made at the west end of the Longview bridge for a geological study of the Goodat Quarry (St. Helens quadrangle). Second stop will be at the Clatskanie City Park for lunch. Third stop at Mist fossil location for paleontology. The drive home will be by Vernonia for autumn foliage.

Round trip distance is about 160 miles.

Murray Miller, Trip Chairman.

Tuesday Oct.18 — Basement of the Biology Building, Lewis and Clark College.
The first Library Night of the Fall season.
Everyone is urged to come and enjoy an evening of browsing and discussion. There will be some kind of a program followed by refreshments.

Members having borrowed books are urged to return them.

To get to Lewis and Clark College drive out Barbour Blvd. to the Terwilliger crossing just before reaching the Fred Meyer store. Turn right here, go around the circle, cross Barbour Blvd. and follow the signs to the College. On the campus, signs will be placed to guide you to the Biology Building.

Friday Oct.28 — Library Hall, 7:00 p.m.
Dr. Francis Gilchrist, Lewis and Clark College, has chosen for his subject: "Northern Rockies of Canada and Montana." This lecture will be illustrated by slides showing some of the geology and scenery of that high country.

****

NEW MEMBERS

Becker, Mr. and Mrs. Henry G.	7612 S.E. 32nd Avenue, Zone 2	PR 1-2988

* * * * *

Due to a mistake the name of Miss Eliza Stevens was omitted from the membership list. I am very sorry for such carelessness and hope she will excuse the oversight.

Mrs. Leo F. Simon, Secretary

Stevens, Miss Eliza	3934 S.E. Boise Street, Zone 2	PR 4-1439

OBITUARY

Dr. J. Hugh Pruett

Readers of the News Letter will be saddened to learn of the death of Dr. J. Hugh Pruett on September 25 at Eugene, Oregon. Many of our members have sent him records of meteor observations which he, as Pacific director of the American Meteor Society co-ordinated and charted for furthering the knowledge of these phenomena. He was a very generous contributor to the News Letter.

After graduation from Linfield College in 1911 Dr. Pruett taught in public schools in McMinnville, Forest Grove, and Walla Walla before going to the University of Oregon as assistant professor of physics. He was a member of the Society for Research of Meteorites, American Meteor Society, and Astronomical Society of Canada.

****

CHANGE OF PHONE NUMBER

Jones, Dr. and Mrs. Arthur 3300 S.W. Heather Lane, Zone 1, CA 2-3100

****

PERSONAL NOTES

Clarence Phillips, the second president of the Geological Society of the Oregon Country was elected treasurer of the Oregon State Bar Association at the convention of the association in Baker, Saturday, September 24. Mr. Phillips was graduated from Willamette University in 1925. He has served as assistant district attorney of Jackson County and as a member of the board of bar examiners.

* * * * *

Dr. Kenneth Scott Latourette, professor emeritus of mission and Oriental history at Yale university spoke at the Congregational church in Oregon City last month. The lecture was sponsored by the Oregon City public library. Dr. Latourette has recently completed the manuscript on the "History of Expansion of World YMCA in the Past 100 Years." The book is scheduled to be published next year.

* * * * *

Dr. Arthur C. Jones was elected a vice president of the American Congress of Physical Medicine and Rehabilitation at the recent meeting of the congress in Detroit, Michigan. Dr. Jones is chief of physical medicine at the University of Oregon medical school hospitals and clinics. During the meeting Dr. Jones presented a paper entitled "The Relationships of the Psychiatrist Within the Medical Profession."

* * * * *

LeRoy Palmer is chairman of a City Club committee to study and report on "Trans-river Transportation in Portland." It is understood that the report will soon be submitted to the club.

****

ORGANIZATION OF THE GEOLOGIC DIVISION, U.S. Geological Survey[1]

By
Ellen James Trumbull

The U.S. Geological Survey is a part of the U.S. Department of the Interior. It includes four divisions - Geologic Division, Conservation Division, Water Resources Division, and Topographic Division.

The Geologic Division investigates the geology of the United States, its territories and possessions, and some foreign areas. It determines the distribution, lithic nature, paleontology, structure, and interrelations of geologic formations; and the distribution, classification, and reserves of deposits of mineral resources. It conducts research in basic geology and geological processes - paleontology, geochemistry, geophysics, and petrology - and prepares for publication geologic maps and reports on the results of its investigations. For programming and administrative purposes the Division is separated into ten branches, which are grouped and described as follows:

A. Branches directly concerned with the occurrence of minerals and mineral fuels within the United States:

Mineral Deposits Branch: Carries on the field work necessary to determine the distribution and volume of metallic and nonmetallic minerals. Performs research on ore-forming processes and regional studies aimed toward the prediction of future mineral provinces.

Fuels Branch: Performs geologic surveys and investigations to determine the national reserves of coal and to aid the discovery of new sources of oil and gas and related mineral fuels.

B. Branches concerned with general-purpose mapping and systematic field observations of special phenomena:

Engineering Geology Branch: Performs engineering geological surveys of areas where heavy construction is or might be planned. Determines location, quantity and quality of construction raw materials. Undertakes research on physical and engineering properties of rocks and geologic processes that have engineering significance.

General Geology Branch: Performs research involving geologic mapping and systematic observations in specialized aspects of geology such as geomorphology, volcanology, structural geology, Pleistocene stratigraphy, and soils geology.

C. Branches concerned with Alaskan, foreign, and territorial work:

Alaskan Branch: Carries out a comprehensive program of geologic studies in Alaska, combining minerals, mineral fuels, and general economic resource investigations and systematic geologic mapping and research.

Foreign Geology Branch: Has technical responsibility for geologic work done by the Geological Survey under Federal auspices outside the United States, its territories and possessions, occupied areas, and the Trust Territories of the Pacific. Trains limited number of foreign students in geology.

---

[1] Publication authorized by the Director, U.S. Geological Survey.

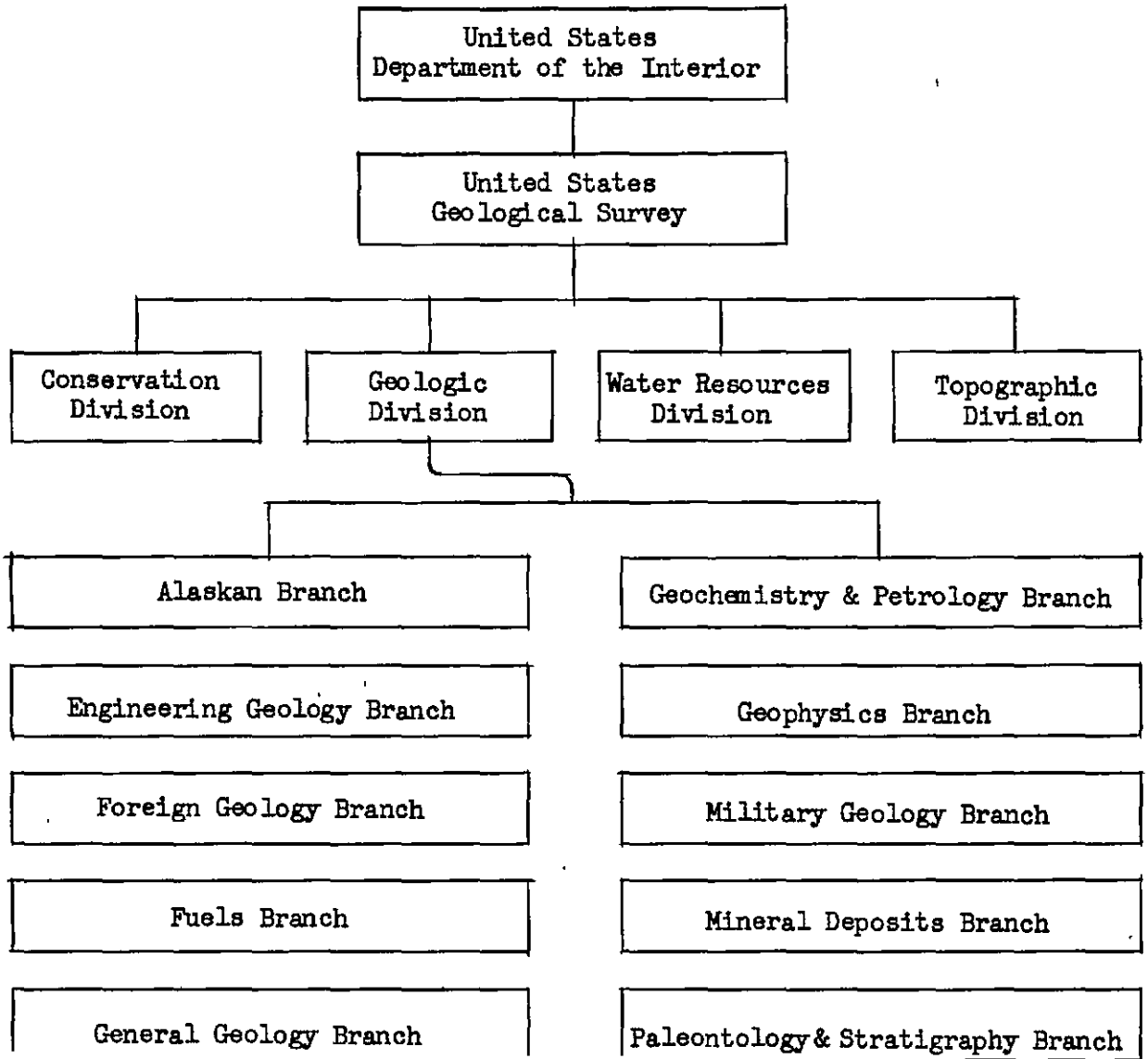
Military Geology Branch: Carries on detailed geologic mapping of islands of the Western Pacific, permafrost investigations in Alaska, and special field work in other areas. Prepares terrain intelligence reports on foreign areas for the United States Army, mostly using published source materials.

D. Branches concerned with basic research and consulting services:

Paleontology and Stratigraphy Branch: Conducts research in stratigraphy, paleontology, paleoecology, and sedimentary processes. Performs consulting services in these fields for units of the Geological Survey and the Federal Government at large.

Geochemistry and Petrology Branch: Conducts research in geochemistry and petrology in the genesis and paragenesis, classification and synthesis of minerals and rocks. Prepares chemical and mineralogic analyses of rocks, ores, and minerals for units of the Geological Survey and the Federal Government at large.

Geophysics Branch: Performs surveys of the earth's magnetism, gravity, electrical resistivity, and other geophysical properties of value in the interpretation of geologic data. Conducts research on new techniques and instruments that may be adapted to geophysical prospecting.



SUNSET TUNNEL AREA STUDIED

A new interpretation of the relation of the Eocene and Oligocene beds in the Sunset Tunnel area is described by Robert J. Deacon in his Master's Thesis completed in 1953 at Oregon State College. The thesis is entitled "A revision of upper Eocene and lower Oligocene stratigraphic units in the upper Nehalem River basin, northwest Oregon."

Mr. Deacon's study of this problem developed from the confusion in the literature regarding an accurate definition of the Keasey formation. Formerly the lower part of the Keasey was considered to be of Eocene age and was included with the Cowlitz formation on geologic maps because of its lithologic similarity. Deacon made detailed studies of the stratigraphic sections along Sunset Highway and along Rock Creek near Keasey Station and was able to determine the true base of the Keasey formation. In doing so he recognized an intermediate formation between the Cowlitz and Keasey which he named the Nehalem formation.

The Nehalem formation as described by Deacon is a variable sequence of sandstones, tuffaceous siltstones, mudstones, and one local basalt flow, the whole totaling 500 to 600 feet in thickness. These beds were formally considered to be in the lower part of the Keasey formation. Type locality for the Nehalem beds is on Rock Creek about half a mile downstream from Keasey Station. On Sunset Highway the formation crops out about 2 miles west of the tunnel, but contacts with underlying Cowlitz and overlying Keasey beds are concealed. Foraminifera collected from various horizons in the Nehalem formation indicate an upper Eocene to lower Oligocene age for the strata.

The Nehalem formation is apparently something like a nondescript filling in a sandwich. It is distinguished in the field largely by its occurrence between two easily recognizable formations, namely the Cowlitz concretionary sandstones of Eocene age and the fossiliferous Keasey siltstones of Oligocene age.

It might be added here that a new name for the Cowlitz formation in northwest Oregon is proposed by Mr. Deacon who feels that although the fossil evidence allows a correlation with the type Cowlitz in Washington, the dissimilar lithology calls for a different formation name. The new name applied by Deacon in preference to Cowlitz is Rocky Point formation, and the type locality is on Rock Creek in the vicinity of Keasey Station. The Rocky Point formation also crops out for some distance along Sunset Highway west of the exposures of the Nehalem formation.

The Geological Society has long been acquainted with the sediments and fossils in the region of Sunset Tunnel. At the time Sunset Highway was being constructed many field trips were made to this area to collect fossils and study the formations exposed in the new excavations. Thus this thesis will no doubt be of interest to many. A copy of it has been deposited in the library at the State Department of Geology and Mineral Industries at 1069 State Office Building where any one wishing to consult it is welcome to do so.

M. L. Steere

****

ABSTRACTS OF LUNCHEON TALKS
August-September 1955
By
Leroy A. Palmer

On August 25th our old reliable Rudolph Erickson provided the intellectual part of the luncheon program. Instead of choosing a geological subject he switched the locale of his discourse from earth to the heavens and gave us a most interesting talk on work that has been carried on by California Institute of Technology in cooperation with the National Geographic Society at Palomar Observatory, following this with some facts taken from Gamow's Birth and Death of the Sun.

The joint project of Cal-Tech and National Geographic was a recently completed mapping of the heavens on a far greater scale than ever before attempted. The portion intensively studied was from Latitude 27° S. to the North Pole and the results have been published in a portfolio of 1750 plates which illustrate about 25 times as much space as ever before presented. This research revealed countless galaxies never known before, varying in size from 15,000 to 6,000,000 light years, the former really too small for consideration. The program was completed in a small part of the time that would have been required had it not been for the aid of the Schmidt telescope. The latter is a small instrument compared with the 200-inch Palomar telescope but is very useful in making a preliminary survey of an area to be studied because it has a lens that gives a wide angle of vision and at the same time very clear definition. The inventor was a very eccentric German-Swede who refused to work definite hours or for a definite salary but who did have to have an alcoholic binge about once every three months.

In discussing some of the phases of Dr. Gamow's book Rudolph told us that at the surface the sun has a mild temperature of 6000° C. (10,800° F.) but this increases to 20,000,000° C. at the center where the sun has a density six times that of quicksilver. The sun is cooling and as it cools it shrinks and its density is increased. When this cooling is completed its diameter will be less than that of the earth and one cubic centimeter of its mass will weigh approximately 40 tons. Any apprehension that this prediction might have aroused was allayed by the further information that this point of cooling and shrinkage would not be reached until another 10 billion years had passed.

Rudolph bandied about the expression "light years" so glibly that your scribe was prompted to get out his slide rule and log. tables to find out how much a light year really is. If you are interested it is just about 5.9 trillion miles and if you wish to know what that looks like write down 59 and put 11 zeros after it.

Leo Simon, who has been acting as chairman-pro tem, was obliged to be absent on August 31 and at his request Leroy Palmer took his place. Likewise our speaker for that date flunked out on us but through a fortunate circumstance this vacancy was filled in a most satisfactory manner. Mrs. Jones brought as her guest her husband's uncle, also "Dr. Arthur," a brother of the "Uncle Marc" who was the subject of Mrs. Jones' talk on April 28. Without formally taking over as speaker Dr. Jones became the center of discussion and questioning and we heard much of interest concerning the work that he has carried on, particularly with respect to a trip on which he accompanied his brother on a geological reconnaissance of a proposed railroad from Utah to the Pacific Coast. Almost all of the work was in the desert, with no roads, and long before the days of automobiles. There were of course many inconveniences and some real hardships attending such an expedition but also much of interest and, as Dr. Jones expressed it, the hardships were more interesting in retrospect than at the time they were being undergone.

There being no speaker scheduled for our September 8th meeting Ralph Mason took over with another quiz. This was of a different kind and less technical, consisting of 10 more or less familiar objects of which No. 1 was a common or garden variety of screw eye. No. 10, a miner's candlestick vintage 1903, was a sticker for most of those present but not for your chairman-pro tem as he had carried one, less ornate than exhibit No. 10, in 1904 on the 800-level of the Grizzly Mine in the Wasatch Mountains of Utah. Next to the candlestick the tough one was a generator for a Coleman lantern.

The quiz provoked considerable merriment and provided better marks than the other two that Ralph had propounded, so some of us have hopes.

September 15th we were pleased to welcome our former president, Ford Wilson, and Mrs. Wilson on their vacation trip from their home in El Paso, Texas. Ford took over for the 5-minute talk, as he did a year ago, and told us that he has been transferred from White Sands to Fort Bliss which cuts his drive to work from 30 to 3 miles. Fort Bliss is the main training station for guided missles and anti-aircraft defense and is very noisy because the skies are occupied practically all of the time by B 36's and B 52's. The Wilsons have affiliated with the El Paso "Rock Hounds," an organization similar to our Agate and Mineral Society, but they passed up the local geological society because they found it was dominated by one individual. The talk was on mineralogy in which Ford told us that he had found a very prolific field and had succeeded in building up an extensive collection, including several uranium ores from New Mexico and Arizona.

Several specimens of particularly clear and well-formed quartz crystals from Corpus Christi and one of orthoclase from Oro Grande were circulated and the speaker described several rare minerals that he has encountered, such as murdockite, a lead, copper oxide; callahanite, copper aluminum silicate; spangolite, copper sulphate; legrandite, zinc arsenate; indarite, a boron mineral. It was pleasant to have the Wilsons with us again and we hope we shall not have to wait another year for their next visit.

Prior to the talk Hollis Dole circulated several specimens of uranium ore from the recent discovery in the vicinity of Lakeview.

Not having any regularly scheduled speaker for our September 22nd meeting Ray Baldwin acted very ably as a pinch hitter with a description of the vacation trip that the family took to Banff and Lake Louise and many other interesting points en route.

Leaving Portland July 29th they traveled by way of Vancouver and Blewitt Pass to Wenatchee where they visited the Ohme Rock Gardens and thence up the Okanogen Valley, famous for its pears and apples, and by a devious route to Rossland and Trail, British Columbia, from which point to Banff, visiting en route the two springs that are the original source of the Columbia River. The stay at Banff was enlivened by the fact that they arrived during the celebration of the 50th anniversary of the admission of Alberta to the Dominion as a province although it involved some inconvenience in securing accomodations. Return was made by way of Glacier National Park, thence by Colfax and Dayton, Washington, to home at Portland.

****

THE ISOGYRE

The homodromes and antidromes
Did swing and switch across the sphere.
Askew were all the skiadromes,
No bisectrix was near.

"Beware the Isogyre, my son!
The curves that light, the bars that lash!
Beware the Isotaque, and shun
The Optic Normal Flash!"

He took his petro-mike in hand,
Long time the Melotope he sought.
So wrested he with X, Y, Z
And sat a while in thought.

And, as in optic thought he sat,
The Isogyre, with bars of flame,
Came swinging through the lattice net,
Converging as it came!

One, two! One, two! And through and through
The polar beam went nicol-knack!
The light dispersed, colors reversed,
He had it in the sack!

"And hast thou tamed the Isogyre?
Come to my arms, my brilliant boy!
Oh, exam day! Hurrah!! An 'A'!"
He chortled in his joy.

The antidromes and homodromes
Did swing and switch across the sphere.
Askew were all the skiadromes,
No bisectrix was near.

JEA 1934
(Apologies to Lewis Carroll)

****

MI VIDA

Public Library, September 9, 1955

Our meeting at the Library September 9th featured the film "Mi Vida" procured at the expense of much toil and mental anguish on the part of our program chairman.

Mi Vida is the name of the uranium mine which formed the nucleus of Mr. Charles Steen's holdings in the Moab district in Utah. The mine was discovered in 1952 and opened up to exploration and development a vast new territory theretofore not considered promising. The pictures, in color, showed the surrounding country, giving some idea of the geology, the mine workings, surface and underground, equipment, and treating plant.

It is interesting to note that Mr. Steen is not a prospector of the bewhiskered, burro-punching type but a trained geologist with a background of field experience

before he took up the search for uranium on his own account. He backed his own judgment against the opinions of others as to the area in which he should carry on his search and as a result opened up an entirely new and rich district, securing an immense personal fortune after he had used all of his personal funds and reached the limit of his borrowing.

Leroy A. Palmer

****

THE EARTH GOD CREATED

Public Library, September 23, 1955

Our meeting at the Library on September 23rd was conducted by Mr. Charles Moline of Oregon City who presented an outstanding series of colored slides on "The Earth God Created." The photography was perfect and the choice of subjects and locations could not have been bettered so that the meeting will be long remembered by those who were fortunate enough to attend. Mr. Moline accompanied the pictures with a running description interspersed with appropriate music.

The pictures started in Oregon with scenes along the coast and then moved to Crater Lake which we viewed from many angles, all of them well chosen. Thence we were taken to the wonders of Yosemite National Park, saw the big trees, 2000 or more years old, Bridal Veil Falls, higher even than Multnomah, Half Dome and El Capitan with their tops thousands of feet above the valley directly below.

From Yosemite we traversed the divide of the Sierra Nevadas into a land of marked contrast, the desert with its sparse and gnarled vegetation, its rocks eroded into weird and spectacular shapes by the winds and then to what appeared to be a winter scene with the ground covered by snow as far as one could see, but which we learned was in the White Sands National Monument in New Mexico with its gleaming white gypsum sands causing the illusion.

Next we were taken to the natural bridges and to Bryce Canyon in Utah where it would not be difficult to imagine that we were looking at man-made structures instead of the awe-inspiring results of aeons of erosion.

From this desert country we went back to more verdant scenes as we followed down from Mt. Rainier to Mt. Hood, the gorgeous flowers of the mountain meadows, the wonderful sunsets behind the mountains of the Coast Range, the bleached and tortured skeletons of once beautiful trees that had been isolated from their fellows and exposed to the blasts of the sand-laden winds.

It was fitting that this trip which brought all of us so close to the Great Architect of the Universe should close with a series of placid pastorals beside a quiet lake accompanied by the Robert Shaw chorale, "The Lord's Prayer."

Leroy A. Palmer

****

COOPERATION REQUESTED

Your scribe is well aware that the abstracts of the luncheon talks that he prepares for the News Letter may not always meet with the approval of the speaker or of some of the listeners. This could be due to failure of his not too facile pencil to follow the speaker or to the fact that frequently a talk is so interesting that it is difficult to condense it without leaving out something which the speaker or some of the members may feel should be included.

Perhaps it would be a good idea for the speaker to prepare a resumé of his talk and deliver it to the reporter and thus ensure that when printed it will express his ideas properly. Such resumé should be of such length as to take up one-half to one page in the News Letter, say 300 to 500 words.

****

PUEBLO BONITO

Pueblo Bonito, a long-ruined Indian "apartment house" nearly 1,000 years old and now protected as a national monument in northwestern New Mexico, represents a meeting and union of two quite distinct aboriginal cultures - one ultra-conservative, the other highly progressive.

The two peoples responsible for this alliance appear to have lived together on peaceful terms for about a century. Then, probably because of poor farming conditions, the progressives departed, leaving the conservatives behind. The community soon deteriorated and eventually fell into ruin.

This is the conclusion of Neil M. Judd, Smithsonian Institution associate in archeology, whose extensive report on what is probably the most celebrated of Pueblo ruins has just been published by the Smithsonian. Mr. Judd excavated part of the site for the National Geographic Society and has since been engaged with an analysis of his archeological findings.

The complex community, Mr. Judd says, originated in the ninth or early tenth centuries as a cluster of rudely constructed stone houses. Then, perhaps in the second quarter of the eleventh century, the local population of old-fashioned Indian farmers was suddenly increased by a group of immigrants from the north.

These immigrants appear to have been a quite superior people. They took over management of the community without destroying the old inhabitants. They had advanced and progressing architectural ideas and they completely surrounded the old village in their first program of construction. Twice thereafter they unhesitatingly razed their own and neighboring houses to make way for successive alterations. They increased the impregnability of the pueblo and added third and fourth stories to some of the terraced dwellings after having abandoned plans that would have doubled its ground area.

"Differences between the two people are apparent in many ways," Mr. Judd says. Each had its preferences in architecture. Each had its favorite shapes for kitchen utensils, for food bowls, and water-storage jars.

"Old Bonitian houses were built of sandstone slabs as wide as the wall was thick. Quantities of mud were required to bed the slabs evenly. In contrast, Late Bonitian architecture consists of a core of rubble and adobe faced on both sides by neatly laid stonework."

The later building style underwent three distinct phases, each an improvement over its predecessor, Judd points out.

But the conservative original settlers were the ones who stayed to the end. The eleventh-century immigrants maintained a higher standard of living but when the character of the soil available for agriculture had deteriorated to a point where this standard could not be maintained, they left for greener pastures. What eventually became of them, or of conservative Old Bonitians, remains unknown. (From the Smithsonian Institution.)

****

CALENDAR FOR NOVEMBER - 1955

Luncheon Notice

Every Thursday noon at Portland Chamber of Commerce, 824 S.W. 5th Avenue. Buffet $1.00.

There will be **NO LUNCHEON** on Thanksgiving Day, November 24.

* * * * *

Friday Nov. 11 — Library Hall, 7:00 p.m.
Miss Hazel R. Newhouse, Teacher of Geography at Gresham Union High School and at Portland Extension Center will speak on "Geography and Geology of the Mediterranean." She will illustrate her talk with pictures she took on her last summer's trip around the Mediterranean Sea.

There will be **NO LECTURE MEETING** on Friday, November 25.

Field Trip

Tuesday Nov. 8 — Field Trip, 8:00 p.m.
Electric Steel Foundry, 2141 N.W. 25th Avenue. (Turn right from Vaughn Street.) This will be a chance to see Steel Pouring and Sand Moulding. President Clark will be the leader. The party will be divided into small groups and guides familiar with the work will explain the operations.

****

NOMINATING COMMITTEE

President Wm. F. Clark has announced the appointment of the nominating committee as follows: Chairman, Norris B. Stone, who will be either helped or hampered in the selection of candidates for the officers for next year by Rudolph Erickson, Marvin J. Lytle, Orrin E. Stanley, and Margaret L. Steere.

****

NEW MEMBERS - October 1955

			Telephone
Brown, Mr. & Mrs. Franklin M.	211 S.E. 53 Avenue	Zone 15	BE 6-6658
Spak, Mr. & Mrs. Edward	24 Holgate Moorage	2	

CHANGE OF ADDRESS

Wolfe, Jack A. — Dunster G-55, Harvard University, Cambridge 38, Massachusetts.

Miller, Dr. & Mrs. Wilmer J. — 530 East 9th St., Davis, California.

****

ABSTRACT OF LUNCHEON TALKS - OCTOBER 1955

We had tough luck with our "five-minute speakers" during October but at two of the meetings we were fortunate in having competent pinch hitters available.

At the October 13 meeting we had as a "near guest" our member, Mrs. Ted Gordon of Salem, who took over ex tempore and filled the gap in a most interesting manner.

Mrs. Gordon confirmed some remarks made previously by Mrs. Jones as to the very poor presentation of the collection of minerals and fossils in the Horner Museum but most of her talk had to do with some of the field work she had done during the summer with Dr. Roland Brown, paleobotanist of the U.S. Geological Survey, our good friend who talked to us at our luncheon meeting on July 29 of last year. Mrs. Gordon's reminiscences gave us an interesting sidelight on the personality of this eminent scientist who says he doesn't care what his enemies call him as long as his friends call him "Brownie."

Dr. Brown is a man of intense application and inexhaustible energy. After working untiringly in the field from early morning he scorned the suggestion at lunch, with a sandwich in one hand and a specimen in the other, that the party should take a rest before resuming work. After hours of the most meticulous study of one bed, such that it would appear that no slightest detail could have been overlooked, he made a return trip for a further review of the subject. Mrs. Gordon circulated a copy of Dr. Brown's recently published "Composition of Scientific Words," which was in course of preparation when he talked to us last year and which he outlined to us at that time.

Then again on the 20th, H. F. Travis stepped into the breach with an account of a recent trip, mostly in California, over Highway 89. Starting his narrative at the famous gold mining town, Grass Valley, he led us on through the mountains to Quincy, with a description of the scenery and geology along the way. From Quincy by way of Truckee Pass to the town of Truckee, on the Great Basin side of the divide, thence westward through the granites that mark the backbone of the Sierra Nevada and the more recent lava flows and, still following Highway 89, to Lassen Volcanic National Park. The area in and adjacent to the park shows many evidences of the eruptions that have occurred within the present generation, such as ash beds, cinders, and hot springs, and being toward the end of the more spectacular portions of the scenery formed a fitting place to turn back to Highway 97 and thence on to good old Oregon.

Leroy A. Palmer.

****

ITEMS OF INTEREST

At the lecture meeting in Library Hall, Friday evening, October 28, Lon Hancock, in telling about the work with the young folks at Camp Hancock, stressed the fact that a permanent roof for the kitchen and dining area would be desirable. President Clark mentioned that a box on the rostrum would be open for gifts to this fund, and when the "loot" was counted after the meeting it was found that $26.00 had been contributed to the worthy cause.

* * * * *

Clarence D. Phillips has been elected vice president of the Mazama Club, and Margaret Oberteuffer is one of the club's new directors.

****

THE GEOLOGY OF MOUNT ADAMS

Field Trip by the Geological Society of the Oregon Country
August 27 - 28, 1955

By
T. Herbert Laurence

Mount Adams is often called the "Forgotten Mountain." Maybe that was why Field Trip Chairman, Murray Miller, and Leader, Dr. Francis Gilchrist, selected it for the August field trip. Actually, it is called that because it is still one of the few mountains, bulwarked in primitive areas, which hasn't suffered too much commercial depredation. Nevertheless, what has never been fully explored and studied scientifically can hardly be termed forgotten. Most of the other major Cascade volcanoes have been explored and studied and the results recorded in published articles. Thus Mount Rainier and Mount Baker have been described by Coombs (1);* Mount St. Helens by Verhoogen (2); the Three Sisters, Mount Mazama (Crater Lake), and Mount Thielsen by H. Williams (3); Mount Jefferson and Mount Hood by Hodge (4); and also Mount Hood by I. Williams (5). But the only publication on Mount Adams is a summary of a lecture by Fowler (6), and it is primarily a discourse on the sulphur deposit that is found on the summit of the mountain. Yet this mountain has features even more interesting and scientific than some of the others. Even a short visit to the area will enable one to see such features as: beautiful flowery mountain meadows, cascading waterfalls, lakes with shimmering reflections, a canyon of a Pleistocene glacier (Hellroaring Canyon), the Ridge of Wonders, acres of perfect tree casts, lava and ice caves of all sizes, glistening glaciers, volcanic necks and monoliths, and many immense and comparatively recent lava flows.

To explore and study these features the Geological Society of the Oregon Country and guests went to Mount Adams on August 27 and 28, 1955. For some to view a landscape of exceptional beauty such as a snowcapped mountain, a flowery meadow, progression of the clouds, or a transitory sunset is sufficient reward for traveling many miles. Yet for others of us these marvelous works of Nature do even more; they excite our curiosity. Questions such as these flash across the mind: Are these beautiful flowers in their normal habitat? When and how did these massive rocks and crags originate? What forces are reshaping and modifying them today? Geology is behind them all whether we are aware of it or not. In fact, geology does more than just explain the existence of a mountain or canyon; it also establishes the conditions under which the flowers, trees, even man himself exists.

The writer is quite sure Dr. Gilchrist and his associates had this in mind when they took us on hikes in the Bird Lake and Bird Creek Meadows area to as far as the glacial moraine of Mazama Glacier and gave us an illustrated evening campfire lecture to study and discuss the flora and glacial and volcanic features of Mount Adams. For our greater understanding of our subject Dr. Gilchrist prepared a map of the mountain showing the snowfields and glaciers, and also a chart indicating the life zones found on it. There are four such zones on Mount Adams, namely: 1) the Transition Zone, where we live (man's habitat) beginning at sea level and rising to an elevation of 3,000 feet on the cold sides and 4,000 feet on the warm sides. 2) The Canadian Zone, in which the snow covers the ground approximately half of the year, runs from 3,000 to 5,000 feet on the cold slopes, and 4,000 to 6,000 feet on the warm ones. 3) The Hudsonian Zone, where the snows remain on the ground ten months out of the year, in turn goes from 5,000 to 6,000 feet on the cold slopes, and from 6,000 to 7,000 on the warm slopes. The top of this zone is timber line for Mount Adams. 4) The Arctic-Alpine or Arctic Tundra Zone, where the snow and ice are permanent, starting at 6,000 feet on the cold

---

*See bibliography at end of article.

slopes and 7,000 feet on the warm ones, reaches upwards to the summit, which according to a recent revision by the U.S. Geological Survey, is 12,326 feet for Mount Adams. Each zone has a rather definite boundary, and the flora of each zone is likewise more or less definite as to species. However, there is some overlapping of the lower zone species into the upper zone and vice versa.

Inasmuch as Bird Lake, Bird Creek Meadows, and their environs are between 5,000 and 8,000 feet in elevation, they are in the Canadian, Hudsonian, and Arctic-Alpine zones. Hence, the flora found in them is principally of those zones, with some overlapping of the Transition Zone species into the Canadian Zone. More than sixty different species of flowers were found in these zones, and many of them grow so closely crowded that they blanket the entire meadow or hillside. The most common are the pale blue asters, the brilliant blue lupines, the deep purple gentians, pink pentstemon, and scarlet Indian paint brushes. Bird Lake and Bird Creek Meadows are truly a wonderland of floral beauty and a very inspiring sight that will be long remembered.

But flowers are more than just blossoms, as a waterfall is more than a stream out of adjustment, or a mountain peak is more than a mere pile of rocks. In observing them we become aware of the entire landscape and the cognizance of geologic time. These beautiful flowery meadows were not always here. The dying volcano left only areas of desolate and bleak ashy pumice and stony drab lavas. These in time were covered by sheets of ice of an intense cold climate. Even today ice and glaciers cover the upper part of the mountain. It was only after the ice had receded that vegetation started to grow, and very slowly at first. But as epochs of time passed by more and more vegetation grew until we have our mountain meadows of today.

We studied and discussed those glaciers which were seen from a vantage point near the moraine of Mazama Glacier. Those which were hidden from our view by the bulk of the mountain were shown to us on colored slides that Dr. Gilchrist had taken previously. Dr. Ruth Hopson detailed for us some of the more technical aspects of them, such as bergschrunds and crevasses. Mazama Glacier, while it is one of nine on the mountain, is ideally located for study, because of its proximity to Bird Creek Meadows. It is a relatively large two-pronged glacier lying on a 40-degree slope of a broad shoulder of the mountain. The névé region is on the lee side of an avalanche cliff. There is a good example of a bergschrund near the head of the glacier and several crevasses beyond the bergschrund. As explained by Dr. Hopson, the névé region is usually a sheltered ravine just below the top of a mountain. Névé is first snow; then as the snow accumulates it becomes compressed and gradually turns to ice which, in turn, makes the glacier. This snow and ice at first rest against the cliff. The ice due to its great weight, because of its thickness, moves away from the rock and leaves a crevice that is called a "bergschrund." Tension that develops in the ice of the glacier as it passes over irregularities of its canyon floor produces the crevasses. These are always below the bergschrunds. Other crevasses are produced by the faster movement of the center of the glacier pulling away from the slower moving sides. Crevasses also differ from bergschrunds in that they may open and close as the ice moves.

The next glacier beyond Mazama Glacier and farther to the east is Klickitat Glacier. The size of Klickitat Glacier is very deceiving, because its narrower upper portion is essentially a series of ice falls, and as such it is very highly crevassed. But this aspect gives it a unique beauty all its own. Since its snout is more or less covered with debris, its lower elevation is seldom noticed. In reality it is more than two miles long.

A very picturesque maroon-colored rock, locally called "The Castle," rises between Klickitat Glacier and Rusk Glacier. From our viewpoint Rusk Glacier is the last one seen. It appears to lie almost on top of the mountain, because of its great distance, but is actually on the east slope somewhat to the northeast. Since it is so far away, its characteristics are not very visible, but they are of interest, because they are not so typical of mountain glaciers as those of Mazama and Klickitat glaciers. Probably its most outstanding feature is that it flows down a narrow couloir. It has been suggested that the bed of this glacier may have been a lava flow channel which hardened on the surface only, while the still molten lava on the inside continued to flow on out, and that subsequently the top broke in. The Klickitat Glacier is also greatly crevassed. From the summit of Mount Adams the climber can look down on a sheer half mile of glaciers, which spread out fanlike on the lower slopes.

Contrary to the popular conception the summit of Mount Adams is not a round cone, which is associated with most volcanoes, but a ridge of nearly a mile long and about two-thirds of a mile wide. On this ridge there are three summits, which are: the South Peak, that is only about 500 feet below the actual summit; the Middle Peak, that is the highest and the true summit; and the North Peak, that is over on the far side of the mountain.

Mount Adams stands approximately 40 miles north of the Columbia River and slightly to the east of the main ridge of the Cascade Range. Like other major Cascade volcanoes, it rises on a so-called platform or plateau formed by the Cascade Mountains themselves. Although the Cascades in their own right possess such bold relief as to be very scenic, their lesser peaks and ridges stand so equal in height that, viewed from the distance, they merge and coalesce to form what appears to be an immense platform. A truer picture of Mount Adams and its surrounding region is gained by climbing Mount Adams or at least one of the higher secondary peaks, such as Sleeping Beauty. From such a summit the significance of the mass and height of the mountain and the bewildering array of minor peaks and ridges is possible. All the features of the Cascades are revealed in true perspective and full detail. Thus it is seen that the Cascades are in reality an erosion surface with a relief of approximately 5,000 feet. On this surface the lavas of Mount Adams poured out to another 7,000 feet for a total of what now is 12,326 feet above sea level. This causes the mountain to stand out and tower up more than a vertical mile above the surrounding region.

Mount Adams has much in common with the other major Cascade volcanoes. Although it has not been studied in petrologic and mineralogic detail like many of the others, it is believed to be similar. In our study of Mount St. Helens last year we found that the oldest rocks were sandstones and mudstones that were considered tentatively to be of Eocene age. Doubtless they also occur here, because at that time there wasn't any Cascade Range. Columbia River basalts of the Miocene age are found in the canyons of streams to the east of Mount Adams. Therefore, it seems logical to assume that they extend beneath and form a constituent part of the region on which Mount Adams stands. Then in late Miocene the Keechelus andesite lavas were laid down over most of the present area of the Washington Cascade Mountains. Although these andesites were not singled out or specifically discussed on this field trip, the writer knows from previous trips with other organizations that they are found in the Mount Adams region. Since the andesites may be seen resting on the basalts in certain areas, there seems to be no question that they are the younger rock. Most of them are composed of rather complex products, which include pumice, tuff, and infiltrated lavas all cemented into a hard rock along with some clay and gravel. Also there are unconsolidated beds of lapilli, scoria, and large boulders, as well as dense lava flows. They all have the characteristic color of andesite being light to dark gray and pink. A light-colored, coarsely crystalline rock called granodiorite

has intruded the Mount Adams region. It can be seen in some of the deeper river canyons, where the magma has stoped and pushed aside the older rocks. The writer is not certain as to the exact location of this intrusive, but believes it was on the southwest side of the mountain, probably near the Williams Mine northeast of Grand Meadow. Fowler says there are granites on this side. Fowler also states that in a region southwest of Mount Adams there are granites. These granites are supposed to contain deposits of gold, silver, copper, and vanadium. Probably he was referring to the Williams Mine, but the writer doesn't know for sure.

Now that we have some idea of the basement rocks of Mount Adams, let us turn our attention to the volcano itself. The building of Mount Adams was first preceded by the uplifting of the Cascades. The present Cascade Mountains are said to have begun their uplift in the Pliocene. As they slowly arose, erosion cut deeply into them. How much had been done before Mount Adams came into existence is not known. Upon tracing the lowest lavas around Mount Adams upward, we find that it was erupted on a topography that was quite rugged. It is generally assumed that mountain building usually "triggers" volcanic eruptions. Thus, one may say that Mount Adams began its career at this time -- the Pliocene, or at least the latter part of it. This seems to coincide with beginnings of the other major Cascade volcanoes. More than likely Mount Adams was erupting simultaneously with some of them, but there is no definite indication of the exact time of the very first eruption. It probably blazed on and off for many thousands of years, possibly even into recent times, as some of its lavas are so recent that they don't show any erosion or have any growth of vegetation on them. However, Mount Adams differs from the other major Cascade volcanoes, except Mount Baker, in that it has very little pyroclastic material. It is composed mainly of dense lava flows.

The cone doubtlessly was as much as 1,000 feet higher than it is now, but has been worn down by explosions or ice or both. The lavas often find it easier to break through the flanks of the mountain and form satellite cones around the perimeter of the mountain, such as: South Butte on the south; Little Mount Adams and Goat Butte on the east; and Red Butte on the north. Inasmuch as Mount Adams has three summits, it is believed that the volcano was dormant for certain periods, and then broke out anew.

The summit of Mount Adams is similar to that of Mount Baker in that they both have extensive sulphur deposits in their craters. According to Fowler, the sulphur deposit on Mount Adams covers more than 70 acres of the crater. Besides the outcrops, test holes were also made and sulphur was found to exist beneath the ice. Both light and porous, and compact and crystalline forms occur which average 50 to 60 percent pure. Associated with the sulphur are also alum minerals and gypsum. They all have their origin in the volcanic gases that are still issuing from vents in and around the margins of the snow and ice of the crater.

The lavas on Mount Adams are quite similar to those on other major Cascade volcanoes. Both ropy (pahoehoe) and blocky (aa) are abundant. On the lower elevations they are dark colored but not very vesicular. They are probably pyroxene andesites. Several huge masses of porphyritic rock were seen, and the phenocrysts are possibly plagioclase feldspar. Those in the Bird Creek Meadows area were studied a little, but no definite conclusions were reached. It is believed that they are andesitic since they are much more commonly porphyritic in texture than basalts, in spite of their very jet-black color. The structure of some of them in certain places is also unique. They exhibit a regular system of joints, of five- or six-sided columns much like the Columbia River basalts. On the higher elevations the rocks become more and more glassy. Many of those on the summit are scoriaceous along with tuffs and breccias.

Thus it is seen that Mount Adams offers a wonderful challenge to the student who is keenly interested in vulcanology. This interest can also be extended to the surrounding region, because immense lava beds have covered much of the older surface. In many places these lavas have flowed around trees of an ancient forest and made perfect impressions of the bark and casts of hundreds of tree trunks. In other places they flowed in such large streams that the exterior sides, which were exposed to the air, cooled quickly and solidified while the still hot and molten interior flowed on out leaving galleries which the heat and frost of weathering eventually broke open to form caves. There are several caves of various sizes and shapes, the best known ones being Trout Lake Ice Caves. Part of the original surface mentioned above remains in the Ridge of Wonders. It is aptly named, because there are many odd and fascinating things there. Most outstanding are the volcanic bombs that are scattered all over it, and the forest of stunted, contorted, and weatherbeaten trees.

Here, as abundantly elsewhere on the mountain, are rocks showing evidence of glacial scoring in the form of glacial striae or scratches. One such glacier doubtlessly occupied Hellroaring Canyon. The "U"-shaped valley substantiates this assumption. On the valley floor are dikes which the glacier broke but didn't succeed in removing. Most of the crystal clear lakes on Mount Adams are the aftermath of glacial recession and erosion. An erosive sculpturing of the rocks on the shores of one of them reminds the writer of a humorous tidbit that took place on one of our hikes. Dr. Gilchrist was jestingly asked: "Are there any 'abominable snow men' on Mount Adams?" The writer is quite sure that if Dr. Gilchrist had seen the giant footprint on the shores of Goose Lake he would have answered in the emphatic affirmative.

Bibliography

1. Coombs, Howard A.
   1936 The geology of Mount Rainier National Park: Washington Univ. Pub. in Geology, vol. 3, no. 2.

   1939 Mount Baker, a Cascade volcano: Geol. Soc. Am. Bull. 50, pp. 1493-1509.

2. Verhoogen, Jean
   1937 Mount St. Helens, a recent Cascade volcano: California Univ., Dept. Geol. Sci., Bull 24, no. 9.

3. Williams, Howel
   1933 Mount Thielsen, a dissected Cascade volcano: California Univ., Dept. Geol. Sci., Bull. 23, no. 6

   1941 Calderas and their origin: California Univ., Dept. Geol. Sci., Bull 25, no. 6.

   1944 Volcanoes of the Three Sisters region, Oregon Cascades: California Univ., Dept. Geol. Sci., Bull. 27, no. 3.

   1948 The ancient volcanoes of Oregon (2d ed., 1953), Oregon State System of Higher Education, Eugene, Oregon.

4. Hodge, Edwin T.
   1925 Geology of Mount Jefferson (Oregon): Mazama, vol. 7, no. 2, pp. 25-58.

   1935 Mount Hood: Geological Soc. Oregon Country, News Letter, vol. 1, no. 13, pp. 3-4.

5. Williams, Ira
1920 Geology of Mount Hood: Oregon Out of Doors (Mazamas), vol. 1, no. 1, pp. 32-52.

6. Fowler, Claude S.
1936 The geology of the Mount Adams country: Geological Soc. Oregon Country, News Letter, vol. 2, no. 1, pp. 2-5.

****

TALES FROM THE LUNCHEON TABLE

Calico Johnny and the Preacher

Calico, picturesque silver mining camp of the Mohave Desert, was in its heyday during the 'eighties of the last century. It was during this period that the Reverend Obadiah Baldwin felt that here was an excellent opportunity to do some work in the Lord's vineyard so betook himself thither in the hope of carrying the gospel to those who were less enlightened than he. At Calico he was received with a good-natured tolerance and even with some encouragement but he soon realized that most of his hoped for parishioners were far more interested in mundane than in heavenly affairs.

Among his new found friends was a young man of pleasing personality who bore the local sobriquet of "Calico Johnny." Johnny toiled not, neither did he spin but he had an ingratiating manner and while his raiment was hardly comparable with that of Solomon in all his glory it was somewhat of an approach in a community where to dress up was to put on a clean suit of jeans.

It was Johnny's policy not to overlook any bets so he cultivated the reverend gentleman and so learned that he had some savings of several hundred dollars which he planned on using as a nest egg to build a church when his work was really progressing favorably. The idea of a preacher, who should be as poor as the proverbial church mouse, having such a sum in real money struck Johnny as being all out of order and he set his agile wits to work to devise some scheme to correct so inconsistent a situation.

So it happened that one day he called on the preacher, his expressive features portraying the distress he appeared to be suffering. He had, so he said, sad news from his home in the east. His widowed mother was seriously ill, needed hospital care and perhaps an operation. He had sent her all of the money that he could but she needed much more. His only assets were a group of mining claims, undeveloped but he had inside information, imparted confidentially, which testified as to their high potential value. Ordinarily he would not think of parting with them but he was willing to sacrifice them because of his mother's acute need and, because of his friendship for the parson, he was offering the latter the first opportunity at the bargain. It was a coincidence that the sum that he named was just about the equivalent to the preacher's savings and the deal was made.

Time passed on and then Johnny heard rumors that disturbed him mightily. A rich strike had been made on adjoining ground and there was evidence that the shoot would rake into the ground that he had sold to the preacher. This wasn't at all according to plan. Finally a contrite Johnny appeared before the preacher with the usual plausible story. He confessed that in his anxiety to get money for his mother's relief he might have overestimated the value of the claims that he had sold and feared that they might prove a losing venture to his friend. He would like to buy them back but could not as he had long since sent the money to

his mother. However, he had a larger group in the far eastern section of the district which he was sure was even more valuable than he had supposed the first group to be, and, to ease his conscience and save his friend from possible loss, he was willing to trade the two groups even, thus giving the preacher the larger group for the group originally sold him. Johnny was persuasive and the parson was naive so again the two made a deal.

Time passed and as the work progressed the rich strike that Johnny had expected to show up in the claims that he had gotten back played out, but he was philosophical about it. He was still ahead the original sale price. And then Fate lowered the boom.

Borax, a little known and theretofore quite rare mineral, was discovered in East Calico and the parson's new group of claims was in the heart of the discovery! This time even Johnny's fertile brain could not devise a way out so, his confidence in himself badly shaken, he followed the example of the Arabs. As for the preacher, it was not long before the representative of a rich company appeared on the scene and made a spot cash deal for a sum that enabled him to build his church and still leave far more than his original investment.

The Reverend Obadiah was a charitable soul, reluctant to believe evil of anyone, so we wonder if it was a glimmer of suspicion that caused him, when he preached the sermon at the dedication of the new church, to choose his text from Psalms 57:6.

L. A. Palmer

****

TRIP TO LEWIS RIVER AND THE LAVA TUNNEL

September 25, 1955
H. B. Schminky, Leader

Mile 0.0- Parking area at shopping center opposite Jantzen Beach.

Fifteen cars were assembled at 8:45.

Before leaving, attention was called to features to be seen on the way to the first stop. It was pointed out that our starting point was on the most recent deposits of the Columbia River. When the Interstate Bridge was built, the shore line of Haden Island was near the end of the bridge. Then a sand bar began forming along the island, and a sandy beach several hundred feet wide was built into the river. This sand is now covered with a jungle of trees, and seems to have a good chance of becoming a permanent land mass.

Next we were told that after leaving Vancouver, we would cross and climb terraces carved by the Columbia in tearing away the material it had deposited during the Pleistocene floods.

The caravan left at 9:00 A.M. and proceeded north to Vancouver on Highway 99.

Mile 2.0- Turned right at Orchards junction.

Mile 4.8- Stopped to view and discuss the terrace formations. A study of the Camas, La Center, and Portland quadrangle maps shows evidence of a generally flat surface, having an elevation of about 300 feet, extending from the Boring hills to a line between Camas and Woodland. As the ice age waned, the Columbia received less and less sand and gravel at its source in the glacial moraines,

but it still received enough water to begin the task of removing the material that filled its channel.

As the river began clearing the Portland-Vancouver area, it probably had many channels. Our stop was in one that was nearly 100 feet deep, that extends from Camas to Vancouver, but was abandoned for the present channel. LaCamas Creek flows east in this valley and Burnt Bridge Creek flows westward at the area we were viewing. It was noted that the south bank of this valley made an abrupt bluff, but to the north and east the rise is gradual, in a series of broad benches, until the 300-foot level is reached at Brush Prairie. The ridge dividing this valley from the river is about 300 feet high. It drops to the river in a distance of a mile and a half, with several narrow but well-defined terraces. On the Portland side, the rise from the river to the 300-foot level is again more gradual, and the terraces are not always well defined. Some of this bench land is so flat as to cause drainage problems, and right at our stop was a swampy area to prove this.

Before leaving, the group was told to observe that here and there, isolated buttes rose above the general flat areas. These were active volcanoes about the same time that the cone on Mt. Tabor was formed. These features are very easily picked out on the topographic maps.

Two cars were added to the caravan here, and we proceeded past Orchards to

Mile 7.3- Where we turned left on the road to Battle Ground.

Mile 13.1- We passed through Brush Prairie, on the 300-foot level. Continued to

Mile 17.2- Where we turned right into the main street and then a left turn put us on the road to Yale. Elevation here is still about 300 feet.

On leaving Battle Ground we entered a region of much volcanic activity. Most of the rock is classed as andesite and is Miocene to Oligocene in age. But there must be some material which would be as young as our Boring lavas. The La Center and Yacolt topographic sheets show that the volcanoes of this area tend to retain their individual identity even when in close clusters. What may be a shield type mountain, rises to an elevation of nearly 600 feet, just east of the town of Battle Ground. We then continued to

Mile 19.9- Where we turned off to the left of the highway on the road into the Battle Ground Lake resort area.

Mile 20.2 Parked here to view lake set in a small caldera. The surface of the water has an elevation of 480 feet and the rim around it rises to about 520 feet. It was pointed out that the lake appears to be on the east flank of a higher butte which rises to an elevation of some 620 feet. Here, in an area of about 3 square miles, is a cluster of more or less distinct cones, the lava from which seems to have caused the East Fork of Lewis River to make a tortuous swing around to the north and west. It might be noted, in passing, that to the west of here, the East Fork of Lewis River cuts its channel along the north edge of the 300-foot level of the gravels deposited by the Columbia on one side, and washes the southerly edge of the lava flows on the other. (See the La Center and Yacolt quadrangle sheets.) We continued on road through park to main highway at

Mile 20.5- Where we turned to the left, and at

Mile 22.4- Passed the community of Heisson. At

Mile 22.6- We stopped to look back at the group of volcanoes around Battle Ground Lake to the south and west.

To the north, attention was called to the high east and west ridge that lay along the north side of the East Fork of Lewis River. This is made up of flows from Yacolt Mountain, and we were told that we would see these lavas exposed in the road cuts after we crossed the river. (See Yacolt quadrangle.)

Mile 23.3 Crossed the bridge across the East Fork of Lewis River, turned left, and parked.

Here the river is cutting through one of the flows from Yacolt Mountain. Well-developed pot holes, with the grinding stones on their bottoms, are to be seen below the bridge. Leaf fossils are found in an interbedded tuff downstream, and coal appears upstream from the bridge.

From here the road runs westerly along the ridge viewed from mile 22.6 and the group was told to notice the lavas exposed in the cuts as we traveled to the next stop.

Mile 28.4- We came to highway from La Center, turned right, and stopped on tavern parking lot at Fargher Lake. The tavern was closed, so it was possible to make the group concentrate on the problem of the lake (also dry). Here, at an elevation of 620 feet, was an old peat bog covering some 1,000 acres, which has been drained and turned into rich farm land. Not so many years ago bulb raising was a specialty; today we smelled mint in the air.

This old lake bed is surrounded on all sides by low buttes, from 800 to 1100 feet in elevation, which have an intricate pattern of dividing draws between them. The area which was enclosed filled with water, which was gradually displaced by silt and probably volcanic ash washing in from the surrounding hills. Then, as the water became more shallow, the peat began to grow.

At some point in its history, the lake may have had two outlets; one to the north into Cedar Creek and then into Lewis River, and one to the south (which it still uses) into Rock Creek and then into the East Fork of Lewis River. The spot from which we were observing the lake bottom was on a low ridge that made the dam on the south side of the valley.

While the volcanic origin of the lake was being discussed, a lady from a nearby store declared, in most positive terms, that the lake was a beaver dam. Leo Simon took up the role of peace maker. (See the La Center and Yacolt sheets.)

Mile 32.9- We were told to keep noticing the rock outcrops along the road as we traveled to Amboy; and then to notice the broad flat valley of Chelatchie Creek as it flows through Chelatchie Prairie which we entered at

Mile 33.8- Here we were in an area that holds a very intriguing story on stream capture and diversion, if it was completely interpreted. We were in the Cedar Creek drainage area. This stream heads to the southwest of Tum Tum Mountain, then flows southwesterly to Yacolt, where it swings to the northwest until it passes Amboy, and then flows westerly to join with Lewis River. At Yacolt it is less than half a mile from Yacolt Creek, which flows southerly to the East Fork of Lewis River. Chelatchie Creek heads at Tum Tum Mountain and joins Cedar Creek at Amboy. All the major branches of Chelatchie Creek head within a mile of Lewis

River, where their divides have a general elevation of about 600 feet. During the time of maximum glacial outwash at the headwaters of Lewis River, its channel was filled to an elevation of at least 600 feet, and for a time this material spilled into the Chelatchie valley and leveled its bottom.

In passing, one might remark that the Yacolt pass is only 700 feet. Could the Lewis River have flowed over into its East Fork? Another point for speculation is, did Tum Tum Mountain and the other isolated hills to the west in the Chelatchie valley, erupt before or after the filling? If before, they are steptoe buttes. (See Yacolt quadrangle.)

Mile 40.4- We crossed Lewis River, whose valley at this point is drowned by the waters of Lake Merwin. The canyon walls are lava rock.

Mile 41.1- Here we turned right on the road to the new Yale dam.

Mile 43.7- Parked along the northwesterly shore of the lake above the dam. The road into the dam, in part at least, is over the old glacial fill. The dam was built from this material. Mt. St. Helens formed a perfect backdrop for the view up the lake. At our back was a lava butte. This and the other hills to the north and west are certainly steptoes, standing out above the valley fill. At our left was a low dam that was built across one of the old high channels of Lewis River to keep the new lake from flowing out through it.

Mile 45.2- Back to the main highway and turned right. Road cuts continue to show volcanic material as we crossed the divide into Speelyai Creek valley.

Mile 47.4 We crossed Speelyai Creek. About 100 yards back from the bridge, on the uphill side of the road, is an old borrow pit that was used for road fill. This is all glacial outwash material. It is here that an old rotten granitic type rock yields doubly terminated quartz crystals. This was to have been a stop, but was passed because of hunger. Some stopped on the way home and found crystals.

Speelyai Creek occupies the old Lewis River channel. At the time of maximum filling, Lewis River spilled into the valley of Siouxon Creek on its south, and never regained its old course. (See Yacolt and Mt. St. Helens quads.)

Mile 48.3- We came to the main highway from Woodland and turned right to Cougar. The road cuts show much glacial outwash material and, where it has been relocated to be above the waters of the new lake, old lavas - some of which probably came from Mt. St. Helens. No stops were made, but the views of this new lake were very beautiful.

Mile 55.9- Here the newly relocated road crossed the Pandemonium Creek washout at such a high elevation that this once spectacular canyon is scarcely noticed. No stop was made.

Mile 57.8- Time was now 12:45 P.M., and everyone was glad to turn out at the old Ole Peterson picnic ground for lunch. Everyone was told to be ready to leave for the lava tunnel by 1:30. Most of the group ate their lunches down at the river.

(To be concluded in the December issue.)

****

CALENDAR FOR DECEMBER 1955

Luncheon Notice

Every Thursday noon at Portland Chamber of Commerce, 824 S.W. 5th Avenue. Buffet $1.00

Meetings

Friday Dec. 9 — Library Hall, 7:00 P.M.
Miss Hazel R. Newhouse, Teacher of Geography at Gresham Union High School and at Portland Extension Center, will speak on Geography and Geology of the Mediterranean. She will illustrate her talk with pictures she took on her last summer's trip around the Mediterranean Sea.

Friday Dec.23 — NO MEETING.

Friday Jan.13 1956 — Library Hall, 7:00 P.M.
Our own Past President, A. W. Hancock, who has recently become nationally recognized on account of recent fossil discoveries in the Clarno region will discuss Recent Developments in the Clarno Fossil Beds.

* * * * *

NO FIELD TRIP IN DECEMBER

* * * * *

LIBRARY NIGHT

Library night will be held on the second Tuesday of the month, December 13th, instead of the usual third Tuesday.

Place: Biology Building, Lewis and Clark College campus. Follow the signs to the building.

Time: Eight to ten P.M.

Program: Book Review by Mr. Robert Wilbur.
Demonstration of maps.
Library browsing.
Refreshments.

* * * * *

NEW MEMBERS - November 1955

			Phone
Coffyn, Mr. and Mrs. C. L.	1706 N.E. 53 Avenue	Zone 13	AT 2-9514

CHANGE OF ADDRESS

Minar, Mr. and Mrs. Earl	1332 S.E. Rex	2	BE 6-4787
Berg, Mrs. Oscar	221 U.S. Court House		

****

NEW GEOLOGICAL PUBLICATIONS

Geologic Map of Marys Peak and Alsea Quadrangles, Oregon

The U.S. Geological Survey has published a new geologic map of the Marys Peak and Alsea quadrangles in west-central Oregon, Secretary of the Interior Douglas McKay announced.

Prepared with the cooperation of the Oregon Department of Geology and Mineral Industries, the new map makes available the results of a broad regional stratigraphic study in the Oregon Coast Range and provides data to evaluate the oil and gas possibilities of this region. Published on a scale of 1:62,500, it covers an area of about 420 square miles. It is joined on the west by the Geological Survey's Oil and Gas Investigations series Preliminary Map 88, and on the east by Map OM 150. The newly mapped area is a part of the Oregon Coast Range where a thick sequence of volcanic rocks and Eocene sandstone cut by numerous igneous intrusive bodies is exposed.

The map is printed on a topographic base and shows the surface distribution of sedimentary, volcanic, and igneous rocks together with known fossil localities, quarries, and test wells. Two cross sections show the geologic structure of the area. A correlation chart indicates the use of stratigraphic names in the Marys Peak-Alsea area, as compared with those in adjacent areas. A short text describes the geology and oil and gas possibilities.

"Geology of the Marys Peak and Alsea quadrangles, Oregon," by Ewart M. Baldwin, has been issued as Map OM 162 of the Oil and Gas Investigations series. It is printed on a single sheet measuring about 33 by 44 inches. Copies may be purchased at 50 cents each from the Distribution Section, Denver Federal Center, Denver, Colorado.

* * * * *

Mineral Resources of the Navajo Reservation in New Mexico (exclusive of uranium, coal, oil, gas, and water), by John Eliot Allen, New Mexico Institute of Mining and Technology, Campus Station, Socorro, New Mexico, Bulletin 44, $1.00, map sheet, 1955.

The investigation "indicated the presence and location of a number of rock and mineral deposits of present or potential economic value . . . . Most of these deposits require further detailed sampling, testing, drilling, exploration, and marketing studies before their utility and value can be determined to the point where exploitation can be justified." (From Mining Engineering, November, 1955).

****

GILSONITE FOUND

Phil F. Brogan in an article in the Sunday Oregonian of November 13, 1955, tells of the finding of gilsonite in a mass of agate by A. W. Hancock when working in the Clarno region last summer, and follows with information about a larger discovery by Captain Sam Gilson, and the processing of this mineral into a $10,000,000 business.

****

THE NORTHERN ROCKIES

An Illustrated Talk, Friday Night, October 28, 1955
Given By
Francis G. Gilchrist

During August this year Mrs. Gilchrist and I took a trip which a good many of our Society have taken: through Glacier National Park, Montana, and on north through the Canadian Rocky Mountain parks. We saw whatever we could see of the plants, animals, and geology; we read the guide books; and, as do most travelers today, we came back with colored slides. Our talk Friday night concerned mainly the geology which we encountered.

The geology of the Northern Rockies can best be told under three headings: (1) the rocks, (2) the structure, and (3) the landscape. The rocks are mostly those which were laid down under Proterozoic and Paleozoic seas from three-fourths to one-fourth of a billion years ago. The mountainous structure is the result of folding and faulting which took place after the Cretaceous Period, some sixty to fifty million years ago. The landscape with its present rugged relief was developed during the Age of Ice (Pleistocene) from a million years ago to the present.

The Rocks

The story begins about 700,000,000 years ago when a great inland sea covered what is now the region of the Northern Rockies. To the east there was an already ancient land mass, the heartland of the North American continent. To the west was a volcanic archipelago, comparable perhaps to the East Indies, which was undergoing erosion and spreading its sediments over the inland sea. Thus were laid down the sediments now known as the Belt Series of the Proterozoic Era.

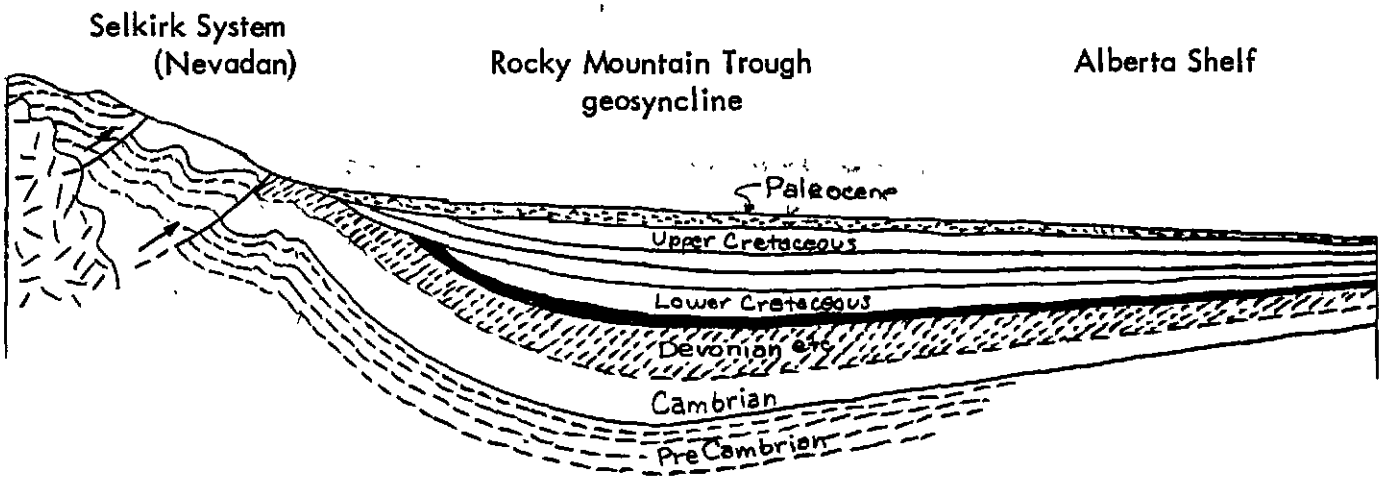
Today these Beltian limestones, argillites, and quartzites form the mountains of Glacier Park. They are exposed also at the base of some of the ranges of Banff and Jasper Parks. The Proterozoic must have been an age of soft-bodied plants and animals, for very few fossils remain. In Glacier Park there are beds of fossil limestone which were produced by unicellular algae; and there are occasional worm burrows. That the sea was shallow much of the time is evidenced by the abundance of ripple marks and mud cracks in the argillitic rocks.

An excellent place to see the sedimentary strata of the Beltian Series is Many Glacier Hotel. There a horizontal dike may be seen cutting vertically across the shoulder of Mt. Wilbur, and a black sill of intruded diorite crosses the mountains horizontally between limestone strata of the Siyeh formation. Younger sediments must have once covered the Beltian rocks of Glacier Park, but these have long since been removed by erosion.

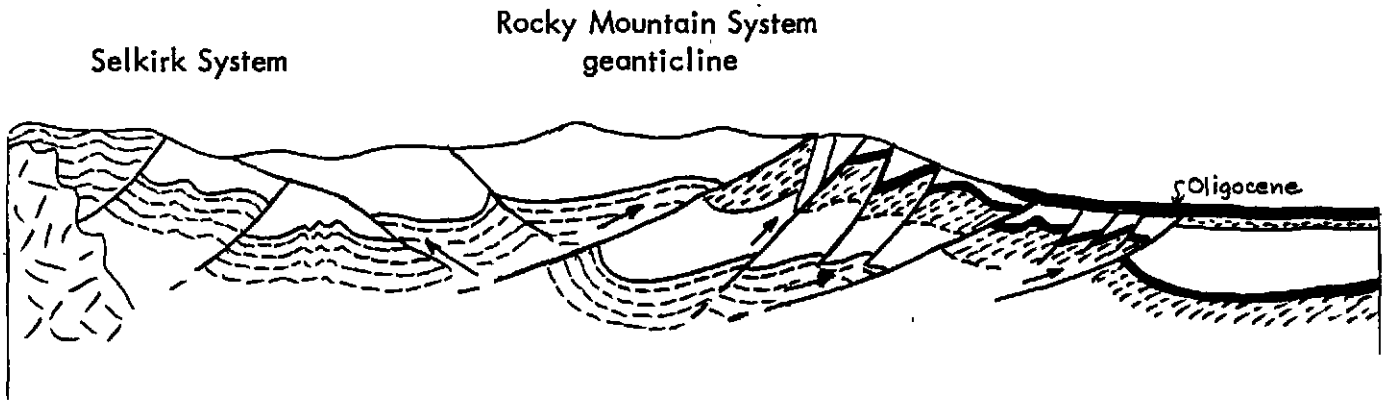
In Banff and Yoho Parks in the Canadian Rockies the mountains are mainly Paleozoic in age (see diagram). The great peaks to the west are Cambrian, a period dominated by armored invertebrates. It was around Field, B.C., that Walcott made his remarkable discoveries of the abundant life of the Cambrian seas: trilobites, crustacea, delicate worms, and even jellyfish. The Peaks around Banff are Devonian, the age of ancient fishes.

GEOLOGICAL HISTORY OF THE CANADIAN ROCKIES

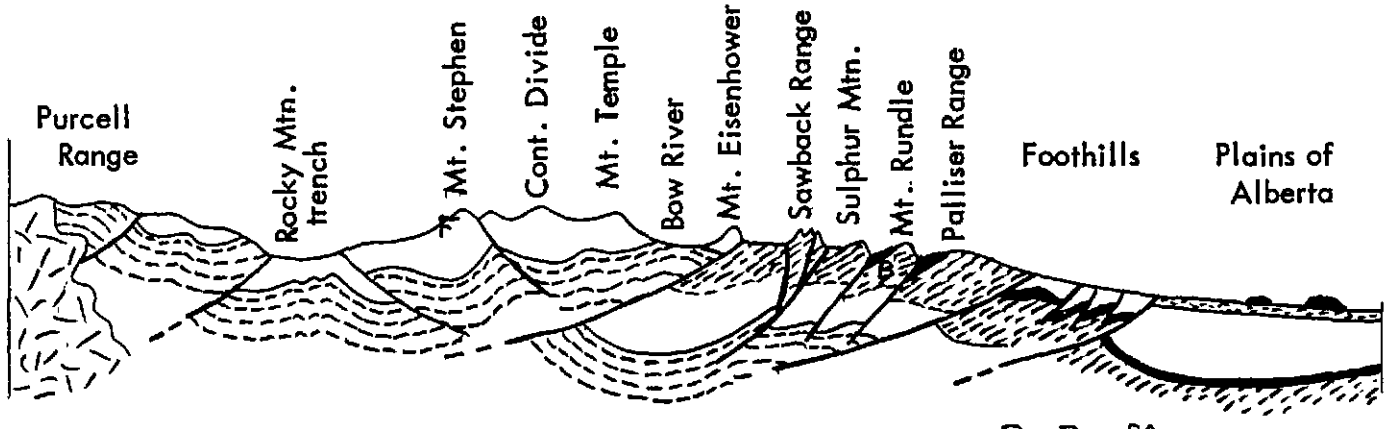
Before the Laramide Orogeny



After the Laramide Orogeny



Present Aspect



Modified from Eardley, 1951, fig. 175.

FGG

The Structure

A physiographic diagram of western Canada will show the Northern Rockies as a broad mountainous band extending for hundreds of miles in a NW-SE direction. They are bounded on the west by a broad valley, the so-called Rocky Mountain trench. This is a remarkable and most puzzling structure. Four rivers drain it. At the south end the Kootenay River flows southward. Its central portion is occupied by the headwaters of the Columbia and its northern tributary the Canoe River. Still farther north the Frazer River flows northward. These rivers have been in the news lately, for there has been talk at Ottawa of damming the Kootenay and Columbia rivers and causing their waters to flow north into the Frazer. This would retain in Canada a great deal of the water which now flows southward into Washington and Oregon in the Columbia River.

West of the Rocky Mountain trench there is a series of ranges: the Purcell, the Selkirk, and the Monashee, which trend roughly north and south and which are truncated at their northern end by the trench. Thus we have two distinct mountain systems, the Selkirk system to the west and the Rocky Mountain system to the east, with the great Rocky Mountain trench between them.

The Selkirk system is the older. It had its origin about 120,000,000 years ago in the Nevadan orogeny, the same orogeny that gave rise to the Sierra Nevadas, the Klamaths, the Wallowas, and the Coastal Mountains of British Columbia. The intense folding which then took place was followed by intrusion of magmas and the emplacement of great granitic batholiths. Batholiths do not occur in the Rocky Mountain system.

The Nevadan orogeny and rise of the Selkirks was followed by the long Cretaceous period, during which sediments from the Selkirks were carried eastward and deposited in a slowly subsiding trough or geosyncline which then occupied the area now occupied by the Rockies. Indeed sediments were carried even farther eastward onto the Alberta plain where they buried the skeletons of great dinosaurs that roamed the plains and wallowed in the swamps. At other times a sea invaded the trough so that marine shells are found.

At the end of the Cretaceous period, say about 60,000,000 years ago, earth forces from the west again became active, and another orogeny, the Laramide, took place. The great Rocky Mountain geosyncline, which had become weakened by heavy sediments, began to buckle upward into folds that overturned toward the east. That is, the geosyncline became a geanticline. In the course of time, probably during the early Eocene, the folds broke into faults which were overthrust toward the east.

Glacier National Park is the result of a great overthrust fault, the Lewis overthrust. Proterozoic sediments of the Belt series, a half billion or more years old, were shoved eastward over Cretaceous sediments from 120 to 60 million years old. Subsequent erosion has removed the Cretaceous rocks which must have originally overlaid the Beltian rocks. Chief Mountain is a remnant of Proterozoic rock sitting on top of Cretaceous rock, a mountain literally without roots.

The NW-SE trending mountain ranges of Banff Park are a series of tilted and imbricated blocks, each of them thrust eastward over the next block to the east (see diagram). The Bow River and other streams cut across these great ranges. How did this come about? The streams were there before the mountains had risen; that is, they were antecedent.

The Landscape

The final molding of the landscape took place but yesterday, geologically speaking. Several times during the past one million years snow has collected in the northern Rockies to great depths and after being compressed into ice has moved slowly into the great valleys. The last glaciation still lingers in the great ice fields which cap the ranges. The Columbia Icefield between Banff and Jasper parks is said to be 130 square miles in extent. The traveler can only see the margin of the icefield along the tops of the ridges, or note the great tongues of glacial ice which flow out through the cols between the peaks.

The youthfulness of the topography is seen in the rugged mountains, the moraines, the numerous lakes, waterfalls, and narrow gorges. The Northern Rockies are indeed a photographer's paradise. Besides the exquisite scenery to be seen on every hand, there is the wild life. Squirrels, marmots, bears, deer, elk, mountain sheep, mountain goats, and moose are to be seen, and are tame enough to be watched and to have their pictures taken. What a thrill to be in a protected area where man and nature are at peace! In August, also, flowers were everywhere in bloom, and the changing forest added never-ending interest to the trip.

The final scenes were pictures of Mount Edith Cavell and Mt. Robson, both in the Jasper area. They served as a summary. Formed of sediments laid down in a great continental sea in Cambrian and Pre-Cambriam time; elevated to mountainous height during the great Laramide orogeny which followed the Cretaceous Period; they are now carved and are still being carved by ice and water into their present imposing form.

Bibliography

Dyson, J. L.
1949 The Geological Story of Glacier National Park. Glacier Natural History Association, Bulletin 3.

MacKay, B. R.
1952 Geology of the National Parks of Canada in the Rockies and Selkirks. Department of Resources and Development, Ottawa, Canada.

Eardley, A. J.
1951 Structural Geology of North America. Harper and Brothers, 624 pp.

Topographic maps of Glacier National Park, Montana, and of Banff, Jasper, Yoho, and Kootenay Parks, Canada.

****

TRIP TO LEWIS RIVER AND THE LAVA TUNNEL
(Continued from November Issue)

By
H. B. Schminky, Leader

The old trail to the lava cave from river level, which is about 600 feet in elevation, to the top of the bluff, at 1100 feet, has been destroyed by logging operations. A very steep logging road now takes off to the north of the picnic area and brings one to the top of the bluff about 100 yards west of the old trail.

It was suggested that all who did not wish to make the climb might find it interesting to study the rocks to be found in the glacial material which was exposed by this logging road, and a log slide from the top of the bluff.

The party was well strung out before the top was reached, but all who started got there.

The lava flow that contains the tunnel stopped at the top of the hill at the point where the road goes. One of the first things observed was a tree well, about 2 feet in diameter and about 10 feet deep. Beyond this we found the mold of a fallen tree that was about three feet in diameter, and was partly bridged by lava. Bark and charcoal marks were still visible.

Those on the trip might like this quotation from the trip of September 29, 1940, when we made the first visit to this region: "This flow is of very recent origin. Some members of the party hazarded a guess that it is less than two hundred years old. Very little vegetation is growing on the field and what trees there are, are very small and scrubby."

It was quite different now. The trees may still be called scrubby, but they are no longer few or small. The features of the flow are now only visible for short distances from the trail. The trail itself is dim from lack of use.

This flow is one of the most recent from Mount St. Helens, and must be about four miles in length and a mile and a half in width. It was the pahoehoe, or ropy, type of flow. While the surface had cooled rapidly, the interior had remained hot and liquid. Because the flow was down a slope that dropped 400 to 500 feet in a mile, the liquid interior had to keep forcing its way downward. The pressure caused the cold surface to be lifted in big bubbles or long pressure ridges parallel to the line of flow. Cracks formed in these ridges and the rock was raised and pushed apart. We did not see any place where the hot lava had come up through these cracks. These cracks did not close after they were formed, but sometimes one side dropped below the other. The bubbles, on the other hand, very often collapsed completely, leaving deep depressions.

But the surface gradually hardened to such a depth that the liquid material could no longer lift it. The hot lava was flowing now as if it were in a pipe, and as long as new lava fed into the pipe, and as long as the hot material could force its way out at the bottom, the pipe flowed full. But when the supply stopped and the lower end of the pipe remained open, the liquid drained out and a lava tube was left within the flow. That was the origin of the cave we were about to visit. The entrance is about one and a half miles north of the river, at an elevation of 1,351 feet.

In this case the roof of the tube collapsed and we climbed down into the tunnel on big blocks of the roof material. Once away from the debris of the cave-in we walked on the top of the last of the lava that cooled before it could drain out completely. On the walls of the tube were recorded the receding levels of the flow. Sometimes frozen stone waves were seen along the edges of the flow. In some places the floor of the cave showed the ropy texture that we had seen on the outer surface before we entered the tube.

The roof of the tube showed where the softened rock had started to form drops that never fell. As we went along we would cross over piles of blocks that had fallen from the roof but did not break through to the surface of the ground. Lone blocks were plentiful but could be walked around.

The length of the tube that can be traversed has been estimated as much as five-eigths of a mile, with two small outlets through the roof. It winds about much as a stream, and it is very possible that it did follow in the channel of a mountain brook. We traveled about 1,000 feet and returned the way we entered.

Before we turned back, a piece of tree that had been carried along with the lava was completely charred and left buried in solid rock and told its story in the mute imprint of the charcoal in a cavity in the wall.

We arrived back at our cars about 5:30 p.m., and found every one that did not have drivers on the cave trip had returned to Portland.

The lava tunnel is in the NE¼ section 19, T. 7 N., R. 5 E. (See Mount St. Helens sheet).

Those interested in this area should look up the write-ups on other trips in the News Letter on library browse nights.

See:

"Trip to Lewis River Canyon," C. P. Holdredge, vol. 1, no. 10, p. 6.

"Vancouver Trip," C. P. Holdredge and A. D. Vance, vol. 2, no. 7, p. 6.

"East Fork of Lewis River," Joe Wimmer, vol. 2, no. 13, p. 2.

"Trip to the Lewis River Region," A. D. Vance, vol. 6, no. 20, p. 177.

"Log of Proposed Trip," A. D. Vance, vol. 11, no. 17, p. 117.

"One Hour," H. Mildred Stockwell, vol. 11, no. 18, p. 124.

****

GOLDEN WEDDING

Mr. and Mrs. Gage Haselton celebrated their golden wedding at their home at 1107 S.W. 20th Avenue Monday evening, October 10th. Their daughter, Mrs. E. J. R. Rossiter and two grandchildren were with them. Mr. Haselton is a retired Southern Pacific civil engineer, a charter member of Professional Engineers of Oregon and a Life Member of the American Society of Civil Engineers. Mrs. Haselton is a charter member of the American Association of University Women, the YWCA, Rockwood Bible Club, and the Wellesley Club. They are long-time members of the Geological Society of the Oregon Country. We hope that we shall be able to record their diamond wedding anniversary in 1980.

LUNCHEON TALKS - November 1955

By

Leroy A. Palmer

October 27th Marvin Lytle told us of conditions that he encountered three years ago in Germany where he spent some time as consultant in an effort to straighten out some of the old land titles that relate back, in some cases, as far as the Middle Ages.

After an interesting side trip from Amsterdam to The Hague to get a visa problem straightened out he proceeded to Munich and reported to the Ministry of Agriculture where he was shown and told many interesting things about almost everything but the matter for which he had traveled almost halfway around the world.

Finally it developed that his advice was desired in connection with a large number of very small agricultural tracts located in different German states. Originally these had been laid out adjacent to a number of small towns with the purpose of apportioning the land on an equitable basis among the inhabitants. Apportionment was not only on the basis of size but also on the desirability for cultivation and the general plan was of long narrow plots radiating from a central area. Some of the titles originated centuries ago and have been modified by sale or devise so that the final results are far from simple and the individual tracts so small as to be incomprehensible to a person accustomed to farming in this country. A typical tract was cited as being six feet wide and 1200 feet long (such a tract would contain one-sixth of an acre). The tracts are intensively cultivated except for a narrow strip on each side which designates the boundary. There are no fences. Rather surprisingly there does not seem to be serious difficulty in maintaining title to the different lots after all of this time. The method used is similar to our Torrens title system.

At our November 10th meeting we had as a guest Miss Mildred Ericson of Minneapolis, graduate as a science major from the University of Minnesota. Miss Ericson spent some time in teaching and then resigned from such work to devote her time to writing and photography, her mission being to present scientific subjects in such form as to be interesting to the layman and also show him wherein these scientific developments are of practical importance in the daily lives of all of us. She gave us a brief description of the Minnesota Geological Society, an organization of several hundred members, and described their activities.

Mr. George Elder took over as the five-minute speaker with a talk on experiences he had at about the turn of the century with some very unusual geological phenomena in western Wyoming that formed natural labyrinths.

While on a Government survey party they lost their horses, 33 of them, and found that they had wandered into one of these mazes. This particular labyrinth covered an area of about 120 acres and was taken up by giant "toadstools," as Mr. Elder described them. These toadstools rise from a level sandstone floor, each on a "stem" from 8 to 12 feet in diameter and of an average height of 18 feet. Surmounting the stem is a table-like top 50 to 60 feet in diameter, also level, and in each case almost perfectly round. While the toadstools were distinct from one another many were so close that a person could jump across the intervening space.. Mr. Elder accounted for the peculiar formation as the result of wind erosion as there was no evidence of the work of water in the vicinity.

The speaker also told of a similar occurrence on Hoodoo Trail west of Yellowstone National Park. Here one can go through the labyrinth in half to three quarters of a mile by following a deer trail, but if he tries to find his own way he is very liable to get into trouble as some side passages would lead one half a mile and then come to a dead end. Again, at Beaverhead Canyon, he got into a gorge 600 to 700 feet deep with near perpendicular walls but so narrow at the bottom that he could touch the walls with his elbows while standing with his hands on his hips.

****

ELECTRIC STEEL FOUNDRY

Field Trip - November 8, 1955

By

Leroy A. Palmer

Once a man from a Middle Western city took his wife on a summer Cook's tour of Europe. On his return he was telling a neighbor about it and the neighbor remarked "I suppose while you were in Paris you took in the Louvre?" "Oh sure" was the reply, "we did the Louvre from soup to nuts. We spent a whole day there." And that's the way your scribe feels about any description of the Electric Steel Foundry based on one evening's visit.

The turnout was unusually large and included a number of nonmembers who rode in on the coat tails of the Gesockers. There was no way of making an accurate count but it was estimated that 70 to 80 made the tour. The guides were courteous and competent and the very informative trip was enjoyed by all who participated.

Electric Steel makes castings of all shapes and sizes and of almost anything. And here is where our worthy president comes in as it is his job to make the patterns, and all of us marveled at the high manual and mechanical skill that went into turning out the intricate designs required. One could almost liken it to sculpture and it should be remembered that all of this must be done with the highest degree of accuracy.

The completed pattern is placed in a box and sand, mixed to the proper constituency with a suitable binder, poured around it and rammed hard. It is necessary that the mold shall be in two parts so that after the sand has set the upper part may be lifted off and the pattern removed, leaving the space into which the metal is to be poured. It is obvious that great skill is necessary in placing some of the intricate patterns in the molds so that they can be removed after the sand has set. The molds are square or oblong on the outside and it was interesting to speculate while viewing that regular exterior what kind of a complex design would emerge when the mold was opened. Our guide showed us how a stud link chain was cast by putting ends of two finished links into a mold and casting the connecting link between them.

Practically all of the steel alloys are used and when a casting is ordered a certain alloy is specified. The raw material is steel scrap and this must be analyzed as received so that different lots may be blended properly to meet the specifications of a particular job. Mr. Whitney, the chief chemist, conducted us through the laboratory and explained the different processes used, according to circumstances, gave us a demonstration of the spectroscope and took us to the testing laboratory where the castings are tested for strength.

We saw the furnaces and watched while a great overhead traveling crane dumped a charge of scrap into one of them. Next the electrodes, three of them made of

carbon a foot in diameter and several feet long, carrying a high voltage were lowered into the furnace. First all was quiet, then as the current "bit" into the charge there was a loud crackling that developed into a steady roar as the electrodes sank into the molten metal.

When the "heat" was completed, that is the scrap completely reduced to liquid form, the furnace was tilted and the charge poured into a great ladle brought up by the crane. This was taken away and the molten metal poured into the molds that had been prepared for it but as our party could not be in two places at once we missed that part of the operation.

The enormous electric crane, which effortlessly carried big steel ladles containing tons of molten metal, gave an example of "sending a man to do a boy's job" when the operator sent the heavy beam carrying the big chain with its large hook about 40 feet along the overhead track. He then sent the hook across the 20-foot passageway and lowered it nearly to the floor where a workman set a cup of hot coffee on the top of the block holding the hook; then the hook with its precious burden carried it back, across, and up to the operator "with the greatest of ease."

This is the best your scribe can do on this Cook's tour of an operation that would require many times the time spent on it to get an adequate conception of its many phases. Our thanks are due to the Electric Steel Foundry for its hospitality and to our president for making this interesting trip possible, particularly as we understand that considerable diplomacy was necessary before permission was obtained.

****

TALES from the LUNCHEON TABLE

CHICKEN BILL and the LITTLE PITTSBURGH

In the early days of Leadville, Colorado, one Henry A. W. (Haw) Tabor ran a freight line from Denver to the mines, one of his customers being Daniels and Fisher whose "general store" of those days, when Denver itself was little more than a mining camp, has grown into the swankiest department store in the western metropolis. D. and F., as they have long been known, realizing the possibilities of the booming camp, commissioned Tabor to pick up some ground for them if he found some that looked likely.

Now in Leadville there was a character commonly known as "Chicken Bill." Bill lived by his wits and always had a good thing in the way of a claim and was willing to part with it at a bargain price. Hearing that Tabor was looking for some ground he took him to his group that he called the Little Pittsburgh. They took some samples that showed up very well so they closed the deal on the spot and Tabor paid for the claims out of his own pocket.

But Chicken Bill was one of those souls who couldn't stand prosperity and, with Tabor's money in his jeans, he started celebrating in the traditional manner and while "under the influence" boasted that he had salted the ground on Tabor. This information got back to Daniels and Fisher so when Tabor went to them to close the deal they refused to take the claims off his hands.

Apparently Tabor was stuck but he reflected "Well I've got me a mine so I might as well find out what's in it" and started deepening one of the shallow

shafts. The rest is history. He sank only a short distance when he hit lead, one of the richest in Leadville, and the Little Pittsburgh became one of the richest mines in one of the richest districts that the country has ever known. Tabor was ever one to take a chance. He took on many other ventures and all prospered. He seemed to have a Midas touch and soon became one of the richest men in the state at a time when millionaires were a dime a dozen. He coveted a seat in the United States Senate and he got it.

But "Haw" couldn't stand prosperity either. With riches and prestige the faithful but plain wife who had been with him during his rise became outmoded and was set aside for a glamour girl who was known by the picturesque cognomen of "Baby Doe." The marriage to Baby Doe took place in Washington with great pomp and extravagance, many notables, including the President, attending. The invitations were individually engraved on plates of silver and when a baby girl was born she was christened Silver Dollar.

King Solomon wrote wisely when he said "Pride goeth before a fall," and if ever he was right it was in the case of Haw Tabor. His tenure in the Senate was short and not so long after came the "silver panic" of the nineties and the one-time silver king found himself in straitened circumstances. Finally the man who had dictated political appointments was glad to accept the appointment as postmaster of Denver. He died impoverished but it is pleasing to note that the pampered wife who married him when he was riding the crest remained loyal through adversity and stayed with him to the end.

L.A.P.

****

THE OIL MAN SAYS:

Dig me a hole not wide but deep

Down where the dinosaurs sleep;

And the icthyosaurs with eyes all crossed

Dull the bits 'cause their privacy's lost.

Dig me a hole in the Oligocene

Where the rocks are near a boil.

Then dig a hole in the Eocene;

Mama's sewing machine needs some oil.

From Standard Oiler, October 1955.

INDEX TO NEWS LETTER - VOLUME 21, 1955

SUBJECT INDEX

* * * * * * * *

AUTHOR INDEX