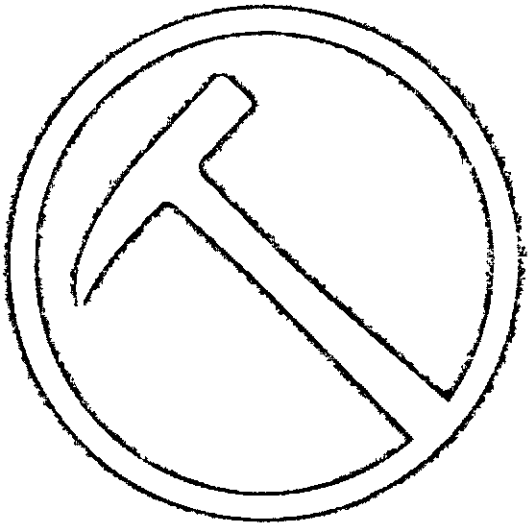
Jan. 1963



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

2020 S. E. SALMON STREET, PORTLAND, OREGON 97214

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Prineville, Ore.

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

ADMINISTRATION

SOCIETY OFFICERS

President	Mr. Irving G. Ewen	4128 N. E. 76th Avenue	Portland, Oregon - 97218		281-7098
Vice President	Mr. Fred E. Miller	3122 S. E. 73rd Avenue	Portland, Oregon - 97206		771-6154
Secretary	Miss Shirley O'Dell	4710 S. E. Stark Street	Portland, Oregon - 97215		234-2318
Treasurer	Mrs. Albert R. Kenney	4125 S. E. Gladstone St.	Portland, Oregon - 97202		775-5697
Directors 1 yr.	Mr. Jess R. Rentsch	1110 S. W. 11th Avenue	Portland, Oregon - 97205		223-2161
2 yr.	Dr. Ruth E. Hopson	4138 S. W. 4th Avenue	Portland, Oregon - 97201		222-1430
3 yr.	Miss Margaret Steere	2064 S. E. 72nd Avenue	Portland, Oregon - 97216		774-6382

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- Dr. Ruth E. Hopson
- Miss Margaret Steere

Past Pres - Mr. Leonard H. Delano
- Mr. Albert R. Kenney

GEOLOGICAL NEWS LETTER STAFF

Editor	Mr. William M. Freer	2405 S. E. Taylor Street	Portland, Oregon-97214	232-9601
Asst. Editor	Mr. John F. Mihelcic	13029 S. E. Ash Street	Portland, Oregon-97233	252-7572
Business Mgr.	Mr. Robert F. Wilbur	2020 S. E. Salmon Street	Portland, Oregon-97214	235-7284

ACTIVITIES CHAIRMEN

Luncheons	Mr. Leo F. Simon	7006 S. E. 21st Avenue	Portland, Oregon-97202	236-0549
Field Trips	Mr. C. T. L. Murphy	2027 N. E. Wasco Street	Portland, Oregon-97212	282-2027
Lectures				
Library Night	Mr. Murray R. Miller	1018 Promontory Avenue	Oregon City, Oregon	656-6724

OBJECTIVES OF THE SOCIETY

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

Persons desiring to become members should contact the Secretary.

Regular annual dues, single or family memberships, are $5 for residents of Multnomah and adjacent counties (Clackamas, Columbia, Hood River, and Washington Counties of Oregon; Clark and Skamania Counties of Washington). Single or family memberships are $3.50 for residents living outside of the above counties. Junior memberships are $2.00.

Payments should be made out to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

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

ACTIVITIES OF THE SOCIETY

See calendar of the month for details.

Luncheons:	Every Thursday noon
Field Trips:	Usually one field trip per month via private car caravan or chartered bus. Occasional two-day trips with overnight camping.
Lectures:	Illustrated talks on geology or related subjects. Two lecture meetings, the second and fourth Fridays, of each month.
Library Night:	The third Tuesday evening of each month.
Publication:	The Geological News Letter, published once each month, is the official publication of the Society.

Vol. 31, No. 1

G. S. O. C. CALENDAR FOR JANUARY 1965

Every Thursday

LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - Food items to suit many tastes may be purchased in the main cafeteria. Carry food selections past the Foothills Room to the Mountain Room (all on the same level) where the luncheon group is presided over by Mr. Leo F. Simon, Luncheons Chairman.

These informal gatherings provide GSCC'ers and guests an opportunity to examine rock and mineral specimens, discuss new publications, and occasionally hear short talks on geology and related (and sometimes totally unrelated) subjects. For more information telephone Mr. Simon at 233-0549.

8 January Friday

LECTURE - Public Service Building Auditorium (2nd Floor)
920 S. W. 6th Avenue, Portland, Oregon

7:30 P. M. - Mr. William Johnson, Principal Soil Correlator of the Western Region of the Soil Conservation Service will speak about "Soil". Mr. Johnson's talk is one of a series being presented by the Society on "Man and His Minerals".

10 January Sunday

JOINT FIELD TRIP - Nature Conservancy and G. S. O. C.

2:00 P. M. - Assemble at the Post Office in downtown Oregon City. From here the group will travel via private car caravan to the Mulino area to view "new erratics".

For more information telephone Mr. Murray R. Miller, Field Trip Leader at 656-6724.

19 January Tuesday

LIBRARY NIGHT - Lewis and Clark College in southwest Portland, Oregon

7:30 P. M. - Meet in Peebles Hall (biology building). Included in the program is a demonstration by Dr. James Stauffer on techniques in the making of thin sections. Also, Mr. Murray Miller plans to show slides on the installation of the GSOC plaque to Dr. Thomas Condon in 1954.

For more information and directions telephone Mr. Miller, Library Night Chairman at 656-6724.

22 January Friday

LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - (tentative) Mr. Hal Kelley, Ceramist with the United States Bureau of Mines branch at Albany, Oregon will speak about "Ceramic Clays". Mr. Kelley's talk is also one of the continuing series on "Man and His Minerals".

24 January Sunday

FIELD TRIP - Fossil tour via private car caravan to Rainier, Oregon

9:45 A. M. - Assemble in Scappoose, Oregon at the junction of U. S. Hwy. 30 and Vernonia Road. Bring the usual (including lunch, geology pick, collecting sacks, bumper cards, warm clothing, etc.)

10:00 A. M. - Trip Leader Margaret L. Steere will lead the group over back roads to fossil localities enroute to Rainier, Oregon.

2:00 P. M. - Latecomers may join the group at the home of Sam Mercer in Rainier, Oregon. For details see item in this issue of the G. S. O. C. News Letter entitled "Information for January Field Trip".
Additional information and directions may be obtained by telephoning Margaret Steere at 774-6382 or Truman Murphy (Trips Chmn.) at 282-2027.

ADVANCE CALENDAR FOR FEBRUARY 1965

Every Thurs. LUNCHEON - As usual at Y. M. C. A. (See January Calendar)

NEWS OF MEMBERS

DR. RUTH HOPSON, CLARENCE PHILLIPS and KENNETH PHILLIPS are serving on the Research Committee of the MAZAMAS.

MR. and MRS. MIHELCIC (JOHN and LIL) left January 15 to arrive by sea or air in Sydney, Australia mid February, with plans to leave Adelaide, Australia about mid March. Their next destination Naples the middle of April via Ceylon, India, Red Sea, Suez, Mediterranean. Tour Europe and England 6 to 8 weeks. Leave Rotterdam in June -- Atlantic Caribbean. Thence to Panama and Pacific Northwest, to arrive home in August. We'll miss them but are glad to think of them enjoying this marvelous journey.

* * * * * * * * * * * * *

THIRTIETH ANNUAL BANQUET

Mr. and Mrs. Paul E. Dunn have accepted the appointment by GSOC President Irv Ewen to be Co-chairmen of the forthcoming Annual Banquet. The Thirtieth Annual Banquet of the Society will be held on Friday 12 March 1965 beginning at 6:30 P. M. Reserve the date. Details to be published in the February issue of the GSO C News Letter.

Ed.

* * * * * * * * * * * * *

MEMBERSHIP ROSTER

name	street address	city, state, and zip No.	telephone
NEW MEMBERS			
NICHOLS, Mr. & Mrs. Alfred (Grace)	6304 S. E. Jack Road	Milwaukie, Oregon - 97222	654-8125
CHANGE OF ADDRESSES			
DeWITT, Mrs. Gail	Box 192	Prairie City, Oregon - 97869	
KIBLER, Mr. & Mrs. G. A.	3911 S. E. 182nd	Gresham, Oregon - 97030	665-6082
# SMITH, Mrs. Ben F.	2409 S. E. 51st, Apt. 5	Portland, Oregon - 97215	236-8387
WILSON, Mr. & Mrs. Ford E.	1235 W. Jan Street	Pasco, Washington -99301	

Charter Member

LLANO ESTACADO

By Dr. Edwin T. Hodge*

* Dr. Hodge is distinguished as the founder of our Society, was its first president, is a charter member and an honorary life member. He is serving as Visiting Lecturer at Texas Technological College for their Department of Geosciences. He plans to return to Portland about February 15.

We quote from his letter of October 10, 1964:

"Texas Tech is on the Llano Estacado and immediately surrounded by miles and miles of cotton and grain-sorghum farms. To the south are one oil field after another. The school has 14,000 students, ninety buildings and covers 2000 acres. This department of Geoscience covers the entire field from Meteorology, geophysics, seismology and all the fields in geology, with a specialist in each field. Lubbock has about ninety thousand people and is growing like mad. Below I will try to give you a lecture on the geology in this area."

LLANO ESTACADO - SEE FIGURES I to VII

Figure I - The Colorado Plateau and the southward extension of the Rockies, the Guadaloupe Mtns., were elevated. To the East were carried in Cretaceous (K) and (O) older time, the products of erosion of the front ranges.

IA - Uplift and warping of the K.

IB - Renewed erosion and deposition of the White River Group of beds by stream as clay and silt and by showers as volcanic ash. These beds are from 200 to 500 feet thick. They occur mostly in Montana and Wyoming and are one of the most prolific sources of Oligocene vertebrate fossils.

Figure II - During a very long erosion period and of crustal stability the surface was eroded down to the Flat Top Peneplane.

Figure III - Uplift and erosion destroyed much of the Flat Top Peneplane surface leaving only remnants. Erosion of the upturned edges of the K beds produced Hog Backs. Erosion of a subsequent valley and the upper edges of the White River Beds.

All contributing to the deposition of the Miocene Arikaree Group of beds. These have about the same age as the Nye formation of Oregon. They contain a great deal of sandy material, are the most extensive of the beds discussed here and attain a thickness of 2500 feet.

Figure IV - Another long period of crustal stability and erosion produced the Rocky Mountain Peneplane but did not destroy, in the hinterlands, all of the Flat Top Peneplane surface.

Figure VA - The first result of uplift and renewed erosion was the deposition of the Ogalalla Beds of Pliocene age (0) which are a little younger than the Astoria formation of Oregon.

The second result was the erosion of the softer beds at the foot of the Rockies, forming a subsequent lowland and the etching out of the cretaceous Hog Backs. This left part of the crystalline portion of the Rocky Mountain Peneplane as an upland bench.

The waters of the lowland escaped by canyons cut in the high plains surface of the

LLANO ESTACADO - cont'd.

Ogalalla Beds and down into the older ones. The high plains surface appears flat but actually slopes from about 1000 feet near Missouri City to about 5000 feet near Denver.

Figure VI - If from our space ship we look northward from Texas to Montana we would see the High Plains forming areas as in this sketch. The High Plains are cut through by the Platte (P) and Arkansas (A) rivers; recessed by the Red River (R) and the Colorado (C), of course not the Colorado that you are thinking of. The Red River forms the boundary between Texas and Oklahoma. On the west the Pecos (PE) forms a boundary and its master stream the Rio Grande is the south boundary.

South of the Red River this surface is divided into two parts by the Colorado River. The northern is known as the North Plains and the southern as the Llano Estacado or Staked Plains. The two parts form a surface area of about 35,000 square miles 300 miles north and south and 120 miles east and west.

Figure VII - This is a cross section of the southern areas in Texas and you will see that the underlying older rocks here are not mainly those described above but "basement rocks" in which the boys are constantly searching for and finding oil.

The section shows the Ogallala beds averaging about 300 feet thick. On its surface and averaging one to every square mile are playas or sink holes (S). Most of these are only a few feet but some are fifty feet deep. They receive water only from the rains in their vicinity and hold it only a few days, some sinking and much evaporating.

Over much of the surface is a "cap rock" or caliche (C). This is white and composed mostly of calcium and magnesium carbonates but some of it is silicified. It appears to have been formed on the successive surfaces by capillary water carrying to the surface the highly charged waters where the water evaporated, leaving the salts behind. Places where it is found in drilling suggest places where groundwater seepage continually furnished the capillary water.

Much of the Ogallalla is formed of sand and pebble beds, some in lenses.

No stream flows across this area and all is unconsolidated except where bound by caliche. The surface is covered by a brick red sandy dust. The caliche is a good road material and is extensively used for that purpose.

GROUND WATER

The Ogallala beds are the source of all the water used in this region. It serves many rather large cities or towns and the continuous stretch of farms for irrigation by means of pumping wells. Consequently it is of life and death interest to all of the people.

The rainfall is about twenty inches and most of this is lost in evaporation. In the northwest the outcrop is such that it could receive water from the slopes of the adjacent mountains. Much of the water, however, must be fossil water left in the beds as they were being deposited. Methods of recharge by wells have not been very successful. Altogether, the future of the water supply is bad but with the optimism of these people they are filling this country up at an astounding rate.

FLUORINE

The water is rich in mineral content, especially calcium and magnesium carbonates, but the thing it contains in the most unusual way is fluorine -- 1.2 to 4.0 parts per million. This turns the enamel of babies' first teeth black and this blackness is carried into the second teeth. On the other hand the fluorine waters produce fine structural teeth. So that one sees a college girl with a fine set of teeth that have numerous black spots on them. The spots cannot be removed. Children in homes that can afford it drink bottled water until they get their second teeth -- then they can drink this ground water safely.

METEORITE SHOWERS

Because the surface is flat and all of it is plowed and because it does not contain any large boulders the plowman is apt to notice any rock he turns up, especially if it is unlike

(cont. P. 6)

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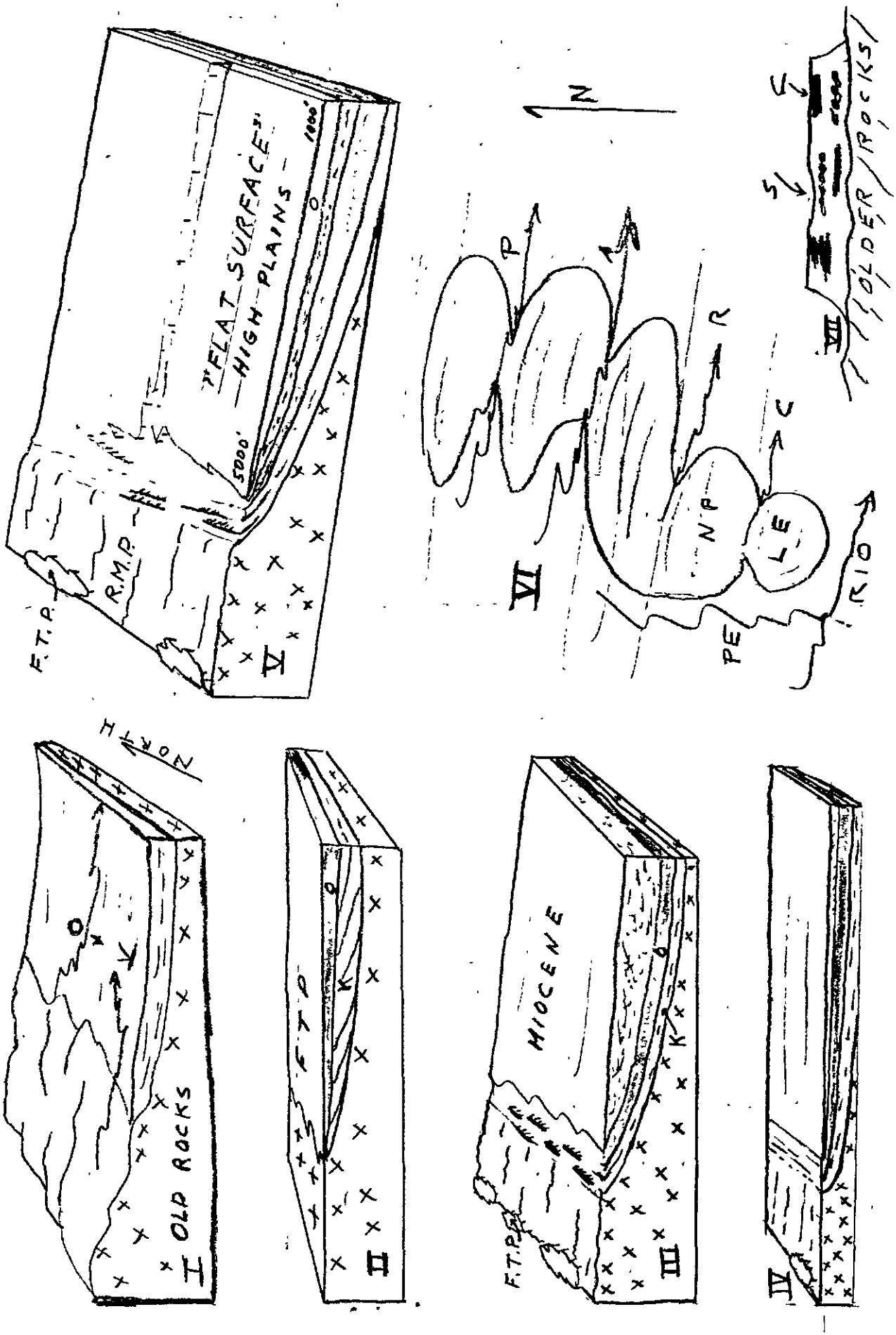
"FLAT SURFACE"
HIGH PLAINS
5000'
1000'
F.T.P.
R.M.P.
I
OLD ROCKS
NORTH
II
F.T.P.
III
MIOCENE
F.T.P.
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VII
FOLDED ROCKS

LLANO ESTACADO - cont'd.

any rock he ever saw elsewhere. These he remembers and talks about so that an unusual number of meteorites have been found here. They have found three showers -- that is where a large meteorite exploded and scattered over a large area several hundred fragments. At Odessa not far from here is a crater 600 feet in diameter surrounded by the fragments of a shower. Not too far away is a limestone uplift Sierra Madera -- where it looks as if a meteorite of large size plunged down and shattered the limestone formation and heated the waters therein so as to produce a sort of volcanic like explosion.

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YOUNG WOMEN SURVEY FLOOD

By Emily Moltzner

MISS DORIS MILLER, daughter of the FRED MILLERS of Portland, and MISS LINDA SHOCKEY of Cherryville, were asked by the Red Cross to inspect the damage to permanent residences along the north bank of the Sandy River in the Brightwood area. They started their trek on horseback but because of fallen logs and piles of debris, soon found it necessary to dismount and continue on foot through snow and rain. Much of the flooding was caused by rampaging Wildcat Creek where logs slid down a canyon and formed a dam some 50 ft. wide, 30 ft. high and 200 ft. long. Continuous heavy rain caused it to break and release a raging torrent of water which carried the logs down and against the bridge of the creek. The bridge held but Wildcat Creek formed a new channel some 100 ft. east of its former one. Many homes along the north side of the Sandy River were completely demolished. Others that had been high and dry were left isolated on islands. Much of the land was washed away, leaving perhaps only a half or quarter of the lot and constituting almost a total loss for the owner. Careless logging is responsible for much of the damage.

The girls found the morale of the residents excellent, many of them having moved into temporary living quarters and nearly all declaring their intention to stay in the area and rebuild.

MISS MILLER is majoring in Science Education at Oregon State University. MISS SHOCKEY teaches at Sandy High School. Both are mountain-climbing MAZAMAS and have the adventuresome spirit.

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INFORMATION FOR JANUARY FIELD TRIP

FIELD TRIP - Sam Mercer fossil collection, Rainier, Oregon.

Sunday, January 24 at 9:45 A. M. - Meet at north end of Scappoose at junction of U. S. 30 and Vernonia road. Bring your lunch, geologic pick, and collecting sacks for fossil hunt on route to Sam's museum. The trip will take us along the Scappoose-Vernonia road where we will stop at several localities and be joined by Sam Mercer, who has collected many fossils from this area. Lunch and rest stop along the way. The group is scheduled to arrive at the Mercer home at about 2:00.

For those who prefer to start out on the trip later, follow U. S. 30 from Portland directly to Rainier, continue through the business district, and turn left on Fernhill-Townsend road. Drive 2.3 miles keeping left (south) on Fernhill road to the Mercer home at foot of hill on right side of road, mail box number 619.

Note: Since parking area at the Mercer home may be limited, it is suggested that Geesockers join forces and use as few cars as possible.

If weather conditions such as snow or ice make the trip impossible, it will be re-scheduled at a later date. If in doubt call field-trip chairman Truman Murphy (282-2027) or trip leader Margaret Steere(774-6382).

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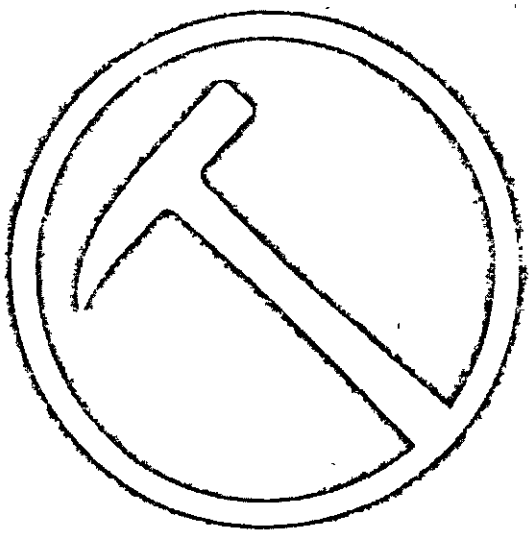
Feb. 1965



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G.S.O.C. CALENDAR FOR FEBRUARY 1965

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12:00 M. - These informal weekly gatherings are open to all interested GSOC'ers, guests, and visitors. There is no minimum charge on luncheons and reservations are not required. Publications, specimens, et cetera are circulated for examination and discussion. Frequently short talks are presented on topics of general interest.

Food items to suit a variety of tastes are available for purchase in the main cafeteria. Carry food selections past the "Foothills Room" to the "Mountain Room" where the luncheon is presided over by Mr. Leo F. Simon, Luncheons Chairman. Additional information may be obtained by telephoning Mr. Simon at 235-0549.

12 February Friday — LECTURE - Public Library, 801 S.W. 10th Avenue, Portland, Oregon

7:30 P.M. - Mr. Raymond E. "Andy" Corcoran, geologist with the State of Oregon Department of Geology and Mineral Industries will present an illustrated talk on "Bauxite". Mr. Corcoran's talk is the last in the current series being presented by the Society on "Man and His Minerals".

9:00 P.M. - Social hour and refreshments following the program.

16 February Tuesday — LIBRARY NIGHT - Lewis and Clark College in southwest Portland, Oregon

7:30 P.M. - Meet in Peebles Hall (biology building). Come out and browse through the Society's library collection and see the improvements made during the past few months.

Additional information and directions may be obtained by telephoning Mr. Murray R. Miller, Library Night Chairman or Mrs. Murray R. Miller, Society Librarian at 656-6724.

25 February Thursday — FIELD TRIP - Tour of Reynolds Aluminum Plant, Troutdale, Oregon

7:00 P.M. - Assemble at the plant on the north end of Sundial Road near Troutdale. Mr. Haight of the Reynolds Aluminum Company will conduct the tour. More details to be announced. This "lecture field trip" is intended to complement the talk by Andy Corcoran on 12 February about Bauxite.

Additional information and directions may be obtained by telephoning Mr. Charles Truman Lafayette Murphy, Field Trips Chairman at 282-2027.

26 February — ANNUAL MEETING & LECTURE - Public Library, Portland, Oregon

7:30 P.M. - Presentation of annual reports.

8:15 P.M. - "EXPLORING THE CWYHEE RIVER CANYON". . . an informal talk. With colored slides and movie, FLOYD B. "DEB" ROGERS and his friends take us in a rubber boat past multi-colored basalt cliffs. Hold your breath when they fall in the river; breathe again when you know they're safe, though wet. See pioneers' cabins looking as if their owners had just left, instead of 50 years ago. Watch the boaters screen dirt from a cave high up in a cliff as they search for artifacts.

9:15 P.M. - Social hour and refreshments following the program.

DON'T MISS THIS!

* * * * * * * * * * * * * *

NEWS OF MEMBERS
By Rowena Hoven

SHIRLEY O'DELL and the ROBERT GOLDSWORTHY family (members from Seattle) had a rendezvous with Santa Claus in British Columbia. Christmas dinner at Trader Vic's in Vancouver consisted of such items as suckling pig, roast duck and turkey. They went on to Squamish for the night and the next day took the train to Kelly Lake, traveling through beautiful snow-covered country and enjoying 25 degree weather at the lake and NO WIND. Shirley says it was truly delightful. Then for a change in pace, the same group spent the New Year's weekend on the Oregon coast at Waldport. How active can you be?

Cries of "court martial" filled the Mountain Room at the "Y" during the December 31st luncheon as an unusual, custom-made card was circulated. It conveyed Christmas greetings "from the land of vertical waters -- the land of fog, mist and mizzle", and was signed H_2O (as in HUGH H. OWEN). All that rain brought forth memories of Hugh on the GSCC trip to the Painted Hills last spring. He was wearing his mushroom-shaped boots, carrying an enormous umbrella in one hand and diligently wielding a g-pick with the other hand. We hope the scars from the 1964 raindrops will soon disappear, Hugh.

ORRIN STANLEY and his car are in the news again, but this time he was not driving it. During the recent cold weather, the car remained in the garage, without benefit of anit-freeze, and consequently everything in it and on it was frozen. However, when thawed the car had not suffered any damage and it is rolling again. It takes a determined 93-year-old driver and much loving care to pull a car through such an ordeal.

ISABELLE ALLISON was honored as Federal Woman of 1964 at a recent luncheon of the Portland Federal Council. She received a handsome plaque. As hydraulic engineering technician with the U.S. Army Engineers, North Pacific Division, she was cited for efficiency in collecting, coordinating and interpreting the complex hydraulic data underlying the operation of the Columbia River system of federal, multi-purpose dams. Congratulations, Isabelle.

JASPER HOLLAND, geologist with the Portland office of the U.S. Soil Conservation Service was the speaker at the January 14th luncheon. His talk was on the Hawaiian Islands and he illustrated it with his own colored slides, which included many geological features not ordinarily seen. His guests were MARVIN SHELDON and WILLIAM F. MILDNER of the Soil Conservation Service.

EMILY MOLTZNER reports she has received a detailed letter from GUY and MAY DODSON, who are wintering in Honolulu. They are interested in helping to organize a group in the Society to tour the islands while they are there (probably until April). If you would like a copy, call Emily at ALpine 4-2362.

MRS. J. C. STEVENS (RUTH) is convalescing rapidly after breaking a hip and a wrist early in December. She is now on crutches and is able to drive her car. We hope to see her and her husband (DR. JACK), at our forthcoming banquet. if not before.

DR. JOHN ALLEN, Professor of Geology at Portland State College, was the speaker at the January 11th meeting of the Oregon Archaeological Society, at which time he took the group on a visit to the past in Pakistan. Although Dr. Allen was with the Department of Geology at the University of Peshawar last year, he spent his weekends exploring a number of interesting archaeological sites. He took the group on a thrilling journey into antiquity as he projected his excellent slides and explained their historical background.

Vol. 31, No. 2

NEW ENERGY STORED UNDER THE SEA

By V. C. Newton, Jr. *

Many generations of Europeans have depended upon coal to supply heat for their homes and steam for their industries. Recently natural gas was discovered in northern Holland, and geological information obtained by deep drilling there indicates vast deposits of petroleum may lie beneath the floor of the North Sea. Similarly, in Oregon, where oil has never been found onshore, geologists point to the continental shelf with great hope.

It seems strange that these possibilities were not considered seriously before until the question is asked, "How can the deposits be produced?" Until fairly recently drilling in the ocean was not considered economic nor was the technology advanced enough to attempt the venture at any cost.

The first large-scale venture into ocean waters was undertaken in Louisiana in 1948 but did not get well underway until a decision was made by the U.S. Supreme Court in 1950 establishing a tentative offshore boundary for the state. Drilling 10 miles seaward from the coast of Louisiana was no great problem as water depth averaged only 40 feet. Platforms could be easily constructed over the drilling sites. In 1963, development had moved 70 miles into the Gulf, and water there was 200 feet deep. The policy in the Gulf Coast region was to build larger equipment with legs long enough to reach the ocean floor, but this was becoming increasingly more expensive.

Oil companies faced a different problem on the West Coast in California because of the much greater depth of water. The continental shelf along the Pacific shore is narrower and steeper than that in the Gulf of Mexico. Water depth 40 miles from shore in Louisiana averages 100 feet compared to a depth of 1,800 feet the same distance from shore on the Pacific Coast. In 1963, use of platforms in southern California was limited to within 3 or 4 miles of the coast even though it was known from seismic studies that rock types and geologic structures were very attractive as far as 20 miles out. It was apparent to the industry that vast areas of shelf land would be open to oil exploration if equipment could be devised to drill in deep water.

Research on new techniques for drilling in deep ocean waters was begun by a group of oil companies in 1953. The group consisted of Continental, Union, Superior, and Shell Oil Companies. The consortium called itself the "CUSS Group." Testing was done off the coast of southern California using small converted Navy ships. Core holes were drilled in 1,500 feet of water to depths of 3,000 feet. After analyzing data from the preliminary test drilling and conducting model studies, the group designed a heavy drilling ship. The ship was named "Cuss I" after the group.

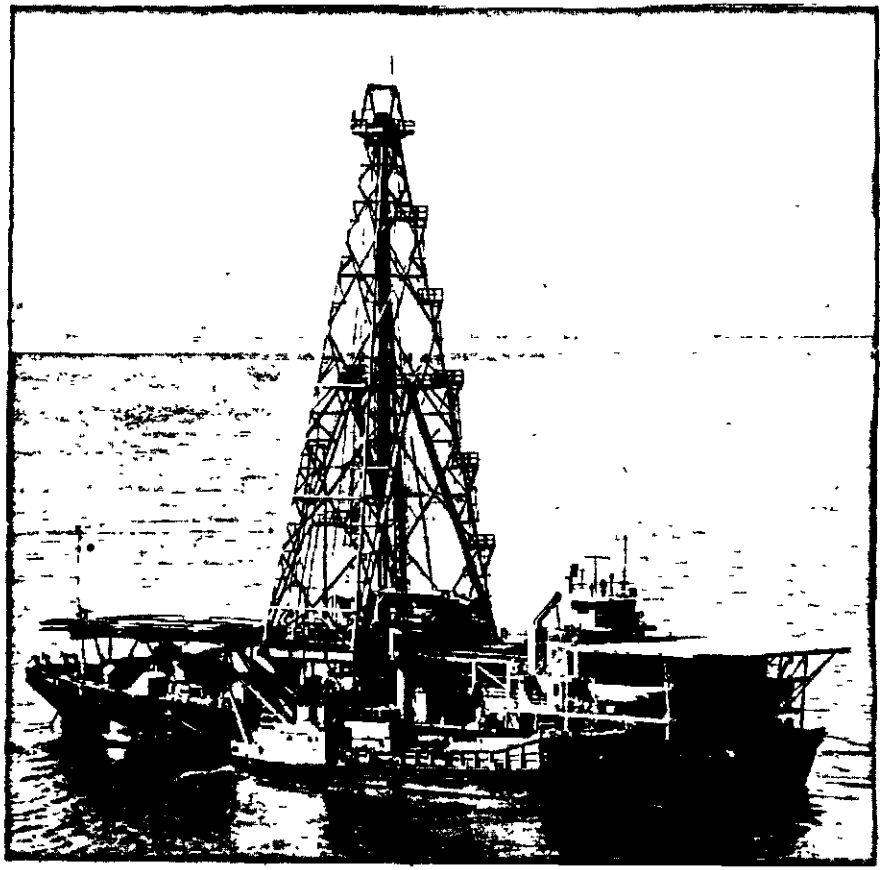
Mohole Project Begins New Era

"Cuss I" was contracted by the National Science Foundation in 1961 for work on the Mohole project. Operation of the new ship was checked in ocean waters near La Jolla, California, where water depth was 3,200 feet. Cores were successfully recovered from the ocean bottom with the equipment. The ship was then taken go Guadalupe Island, off the coast of Mexico, where drilling was done in 12,000 feet of water. Cores of the earth's inner basalt layer were seen by scientists for the first time after the "Cuss I" successfully drilled several holes, the deepest hole went 600 feet into the ocean bottom. The final Mohole drilling is planned to go 20,000 feet below the ocean floor.

Preliminary Mohole work was considered very successful by the NSF scientists, and to the oil industry this was the beginning of a new era of exploration. Millions of square miles of continental shelf lands were now within reach of the drill. In 1964, just 3 years after the Mohole work was begun, drilling was underway on submerged lands bordering every continent and off the coasts of England, Japan, Trinidad, and Sumatra.

Success of the drilling off Guadalupe Island was due in large part to use of four big outboard motors. Two were mounted at the front of the ship and two at the back. These motors enabled the "Cuss I" to hover over the drilling site in water which was too deep for anchoring. The outboard motors were electronically directed to react against waves and current.

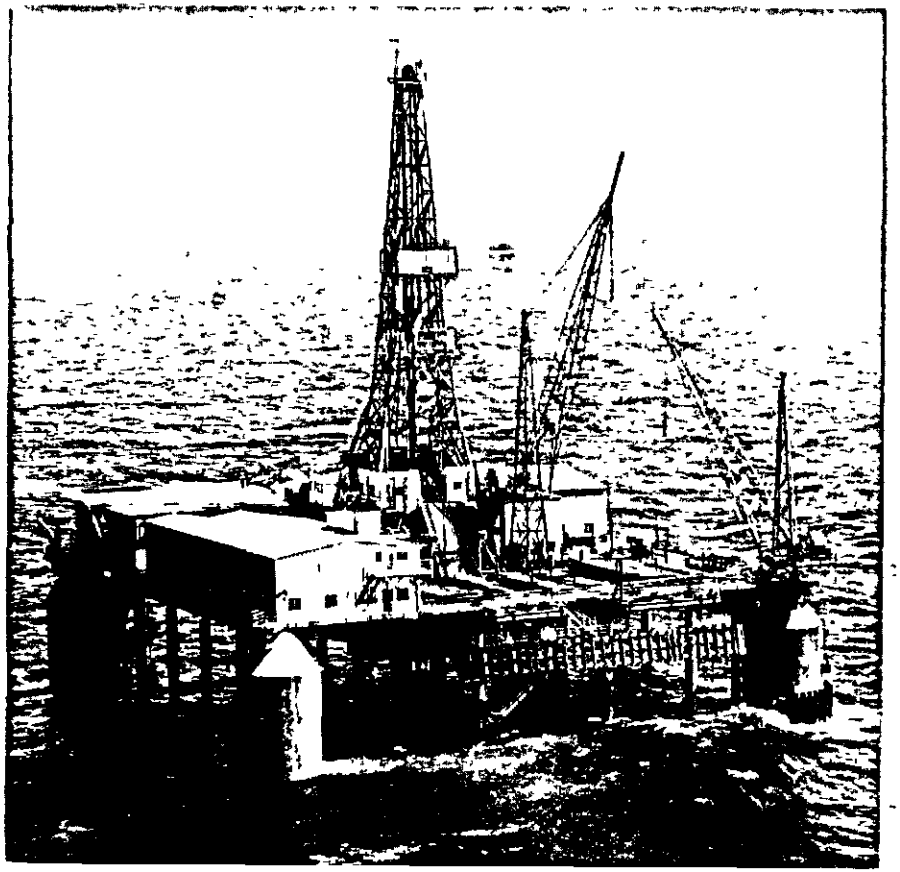
* (See footnote p. 10)



Drilling ship "Glomar II" owned by Global Marine, Inc. shown drilling in the Cook Inlet, Alaska.

(See figure 1, page 11 for explanatory diagram.)

Photo courtesy of Global Marine, Inc.



Floating platform "Blue Water No. 2" contracted by Shell Oil Company for drilling off the Oregon Coast in 1965.

(See figure 2, page 11 for explanatory diagram.)

Photo courtesy of Shell Oil Company.

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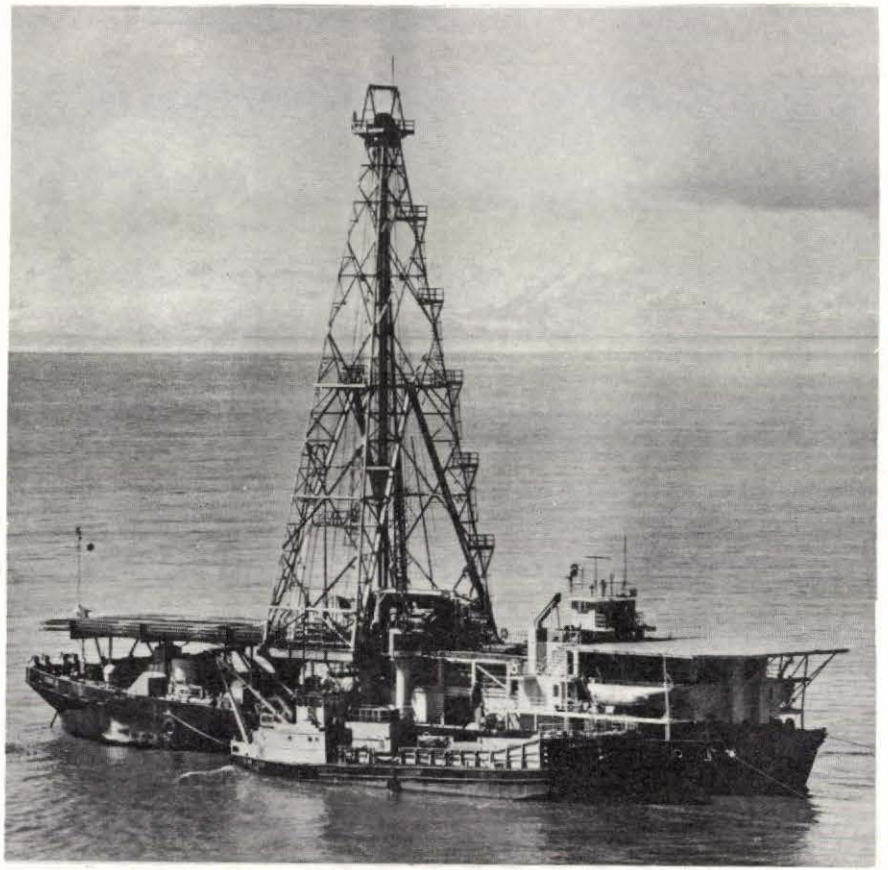

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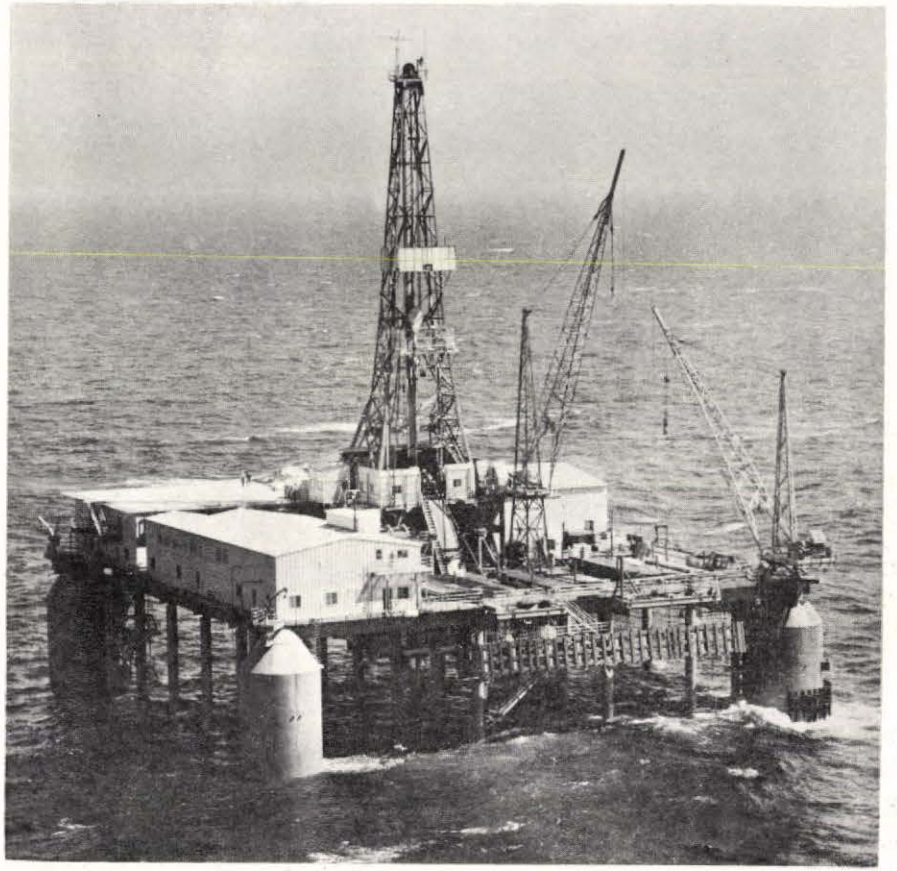

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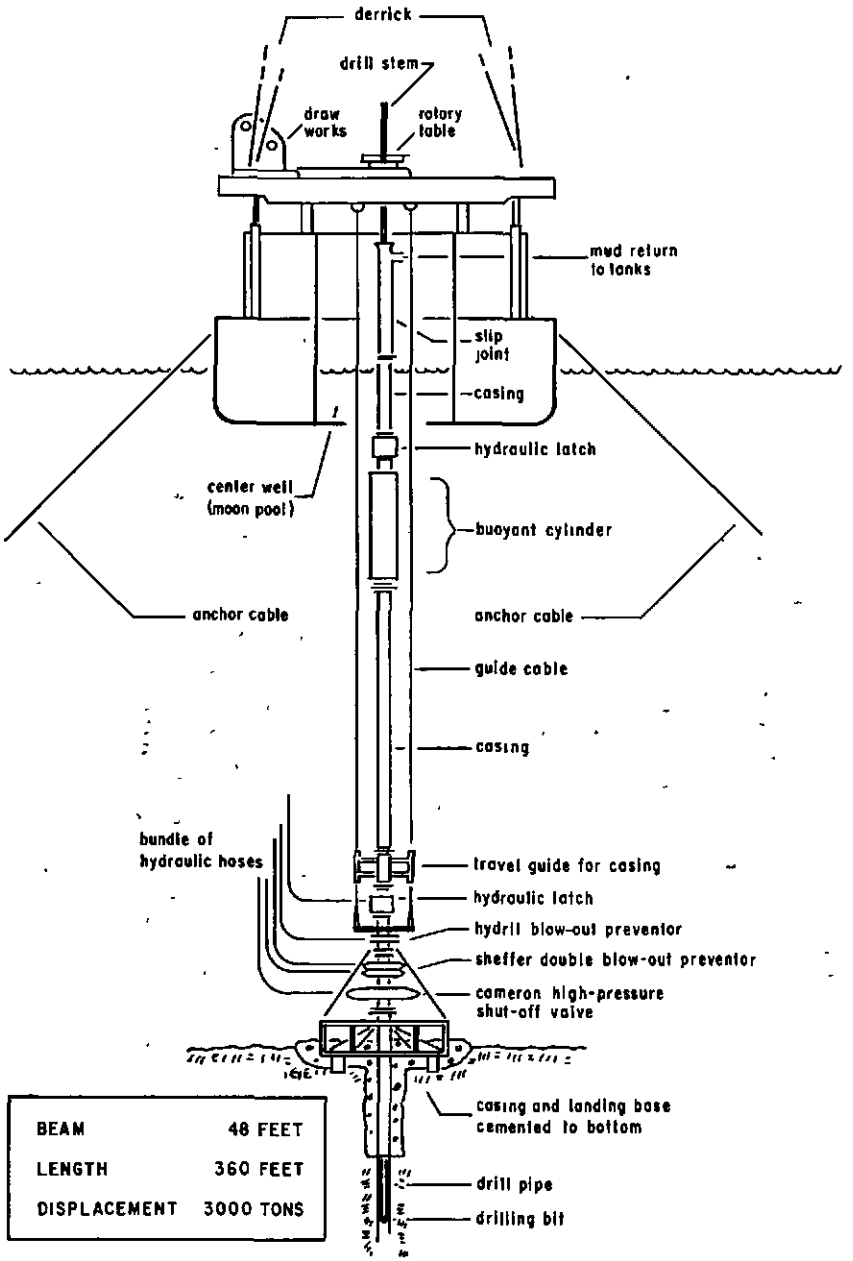

figure 1
drilling ship and underwater equipment

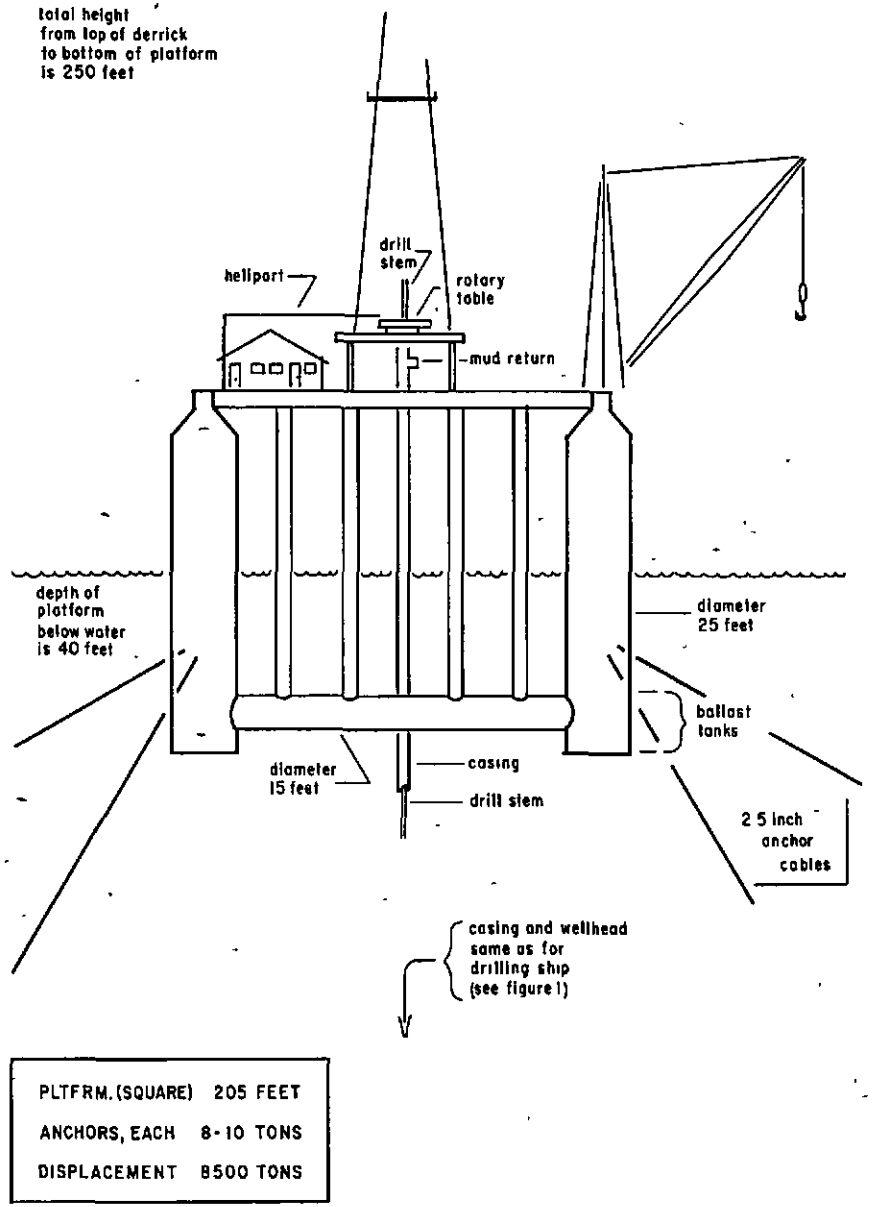

figure 2
semi-submersible drilling platform (blue water no. 2)

New Energy Stored under the Sea - cont'd.

Underwater Techniques

Richfield Cil Corp. was the first firm to complete a producing well on the ocean bottom. The company installed a well-head by use of divers in 132 feet of water off the coast of Peru in 1960. The innovation of sea floor installations gave impetus to drilling in areas covered by more than 250 feet of water. Shell Cil Co. (CUSS Group disbanded in 1957) stressed deep water research and followed Richfield by only a few months with an ocean floor completion adjacent to the coast of Louisiana.

Shell's research organization jointly developed an undersea robot with Hughes Aircraft Co. in 1962. The robot uses a television camera for eyes and a sound-sensitive instrument with which it locates the underwater gear. Two small electrically driven propellers allow the "metal man" to swim to the well facilities. Bolts in the well-head equipment are arranged so the robot can connect valves and blow-out prevention equipment. The robot can operate in water as deep as 1,500 feet.

The Shell robot has been used successfully to work on wells in 250 feet of water off the coast at Santa Maria, California. This unique underwater tool no doubt led Shell to bid on the federal leases 30 miles seaward from Tillamook, Oregon, where the water is 1,500 feet deep.

Currently many ideas for underwater work are being studied. Divers have increased their range to depths of 400 feet by breathing an oxygen-helium mixture, and they hope to increase working time underwater by use of diving bells. Westinghouse, Reynolds Metals Co., and Litton Industries are conducting tests on small submarines for use in very deep water. Such craft will be designed to do limited work with hydraulically controlled arms (Oil and Gas Journal, Dec. 28, 1965).

Equipment Scheduled for Oregon in 1965

Union and Standard Oil Companies have jointly contracted a drilling ship, the "Wodeco III," owned by Western Offshore Drilling & Exploration Co., to drill along the Oregon coast in 1965. The ship did work in California for Standard last year. It is referred to as a "center-well" ship, meaning that drilling is done through a large hole in the middle of the vessel. Anchors are used to stabilize the ship while drilling. The outboard motor, automatic-positioning equipment is not available on the "Wodeco III," but this method of stabilizing is not needed except in water over 600 feet deep.

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* Petroleum Engineer, State of Oregon Department of Geology and Mineral Industries.

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MORE CERTIFICATES OF APPRECIATION -

In the December (1964) issue of the Geological News Letter (page 94, Vol. 30, No. 12) a "Certificate of Appreciation" was shown. This certificate was designed for the purpose of presenting to guest speakers. G.S.C.C. President Irv Ewen felt that a similar certificate might also be presented to field trip leaders. So, Bob Anderson was asked to make some minor changes in the original drawing replacing "was the guest speaker at the" with "was field trip leader for the" and substituting "Field Trips Chairman" for "Program Chairman". Both certificates will be printed on "Sno Parch", a high quality paper resembling parchment.

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GEOLOGY RELATED TO PLYWOOD

By Robert G. Slocum

Talk given at G S.C.C. luncheon January 21, 1965

If Leo* had asked me to tell you about the time the "PUSH" (the owner or manager) sent the crew up to the "SETTING" (logging area usually surrounding the spar tree) in the "CRUMBY" (a bus or large car), and the "BULLBUCK" (logging foreman) got into an argument with the "CAT SKINNER" (Caterpillar tractor driver), and the "WHISTLE PUNK" (signalman) as to whether it's cheaper to "GYPPO" (small logging operation) or "BALLOON LOG" (remove logs with Helium filled balloons), I'd have known exactly what to talk about. But, instead, he asked me to relate Geology to Plywood manufacturing. (*Leo refers to LEO SIMON, our luncheons chairman.)

1. The connection between the geological sciences and plywood manufacturing is very obscure unless one looks closely at the subject:

A. For instance -- a general statement true today is that trees are found in the mountains. To get to the mountains, many miles of roads and trails must be constructed and the logger must have an understanding of rocks and soils in order to build them successfully. Cuts and fills are made and rock pits dug -- all based on the knowledge of the geology of the area. (Incidentally, these roads and pits are a Happy Hunting Ground for the Geologist).

B. Climate has a definite effect on the geology of an area. Wind and rains cover and uncover the strata and weather the hardest rock to sand and soil -- even the moisture itself is of geologic significance. To the Logger, climate determines the type of trees he finds, their accessibility and their growth characteristics which are so important to him.

C. When the foliage is removed from a mountain during a logging operation it will erode rapidly, the soil will be lost and the streams polluted with silt and debris if not prevented. The logger is required, in most cases by statute, to mulch and fertilize the soil, clear the creeks and finally replant small trees so future generations will also have a crop to harvest.

These, briefly, are some of the connections between geology and Plywood.

2. Now, a brief history of Plywood:

A. It may surprise you to learn that Plywood originated not more than 10 miles from where you are now sitting (YMCA, SW 6th and Taylor). In 1905 the Portland Mfg. Co. of St. Johns, Oregon, produced the first Douglas Fir plywood for a display for the Lewis and Clark Exposition held in Portland that same year.

B. Nothing much happened to plywood between 1905 and 1920. In the following 10 years approximately 20 mills sprung up and the industry began.

C. It has grown tremendously, until today, the predicted output for 1965 is estimated at 12.3 billion sq. ft. To better picture this production, let's take just one of the 12 billion sq. ft. and stack it up. This stack would reach 185 miles into the sky--remembering if you will, that the astronauts who orbited the earth circled at approximately 115 miles.

3. What is Plywood?

A. Plywood is made of 3 or more thin sheets or veneers of wood that have been peeled or sliced from a log, then laid at right angles to each other and glued by various types of glue. The woods most commonly used in this area are Douglas Fir, Western Hemlock and Yellow Pine. Numerous other species such as Cedar, Noble Fir, White Fir, Western Larch, Alder and even Cottonwood are also used. Native hardwoods like Maple, Cherry, Walnut, Oak and others, and imported woods from all over the world are also utilized. However, the basic wood is the Northwest's own Douglas Fir.

Often I am asked as to how long we can go on using up these trees at the rapid rate figures indicate. I must answer that with today's complete utilization, modern methods and machinery, replacement of this natural resource, through tree farming and replantings and controls over pests and fire -- all mixed with good common sense -- our forests will last indefinitely.

(Note:) Mr. Slocum passed around samples of Plywood. Also a picture of the 1905 plant of the Portland Mfg. Co. at St. Johns.

SAM MERCER FOSSIL COLLECTION VISITED

Sixteen cars of GSOCers met at Scappoose at 9:45 A. M. Sunday, January 24, 1965. First. we visited a nearby gravel pit which is rich in quartzites. These vary greatly in color -- light and dark red, pink, yellow, cream and white. Here our leader, Margaret Steere, Geologist with the State of Oregon Department of Geology and Mineral Industries, showed us a geologic map of Western Oregon, which she told us everyone who is interested in geology should have, as with this map, one can drive all over Western Oregon and be able to tell just what formation he is driving over. Margaret told us that we would not be able to take the planned route into the hills, to look for fossils, because of snow last week, and mud this week, so we stayed on Highway 30.

We stopped about ten miles south of Rainier, and our leader told us that when we crossed the bridge at Tide Creek, we entered the Goble volcanic area, the oldest rocks in the area, of the late Eocene Age (40 million years). These rocks have a gritty appearance and are an explosive volcanic material shot up out of volcanoes and dropped down in the form of particles called tuff, or tuff breccia--very thick and massive.

Next, we stopped near Goble at a quarry along the highway, where zeolites were found, and some pyrite. Dr. Howell told me that zeolites are used in the purification of water.

Finally, we arrived at the museum of Sam Mercer, the 19-year-old son of Mr. and Mrs. Paul Mercer of Rainier. By this time we were a caravan of 18 cars and some 60 or 70 people. Sam, whose ambition is to become a paleontologist, is attending Lower Columbia College, and has been collecting fossils since he was eleven. He has over 900 wonderful specimens, mostly from the Vernonia area, including crinoids, marine and mammal fossils, and fossil leaves, flowers, nuts and cones; also a collection of fossil animal bones found at Fossil Lake. Last fall, on a hunting trip, between Scappoose and Pittsburg, Sam discovered an isopod, a rare crustacean fossil, 40 million years old, which a University of Florida geologist has named "Merceri" in his honor. No other such fossils have been found in the United States, though they are very common today. We are familiar with them as sow bugs, pill bugs, and sea roaches. Sam also received a letter from the Oregon Department of Geology and Mineral Industries, which stated in part:

"Your whole collection is really outstanding, and.... it should be brought to the attention of people interested in this subject."

The Mercers were very cordial, and invited us to come again, which I certainly hope to do.

This was the day I got a free lesson in geology.

Lillian White

Editor's note: Miss White is the shorthand reporter for the City of Portland in all its council proceedings.

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JOHN LEACH WRITES OF HISTORIC FLOOD

(With DICK FAGAN'S permission, we copy his story from his "mill ends", Oregon Journal Jan. 27, 1965)

"John R. Leach has a delightful woodland retreat at 6704 SE 122nd Ave. overlooking Johnson Creek, which he has seen flood many times. His home is on a bench some 25 feet above the creek so it is never in danger, but part of his property gets flooded from time to time. But he can always remind himself that his father was the one who saw the granddaddy of Western Oregon floods. In a recent letter he noted:

'My father, with his parents and one brother and one sister, drove down Foster Road with ox teams in the fall of 1852 (the road was grubbed out in 1851.) They settled on a homestead 4 miles downstream from Harrisburg, where they reared a family of 12.

'In 1861, when my father was almost 15, he took a skiff and rowed from Harrisburg on the Willamette to Coburg on the McKenzie, and Brownsville on the Calapooya Rivers, over fields and fences. That was a big flood to remember! It washed out the whole town of Champoeg.'

"One of those is enough. This last one was too much."

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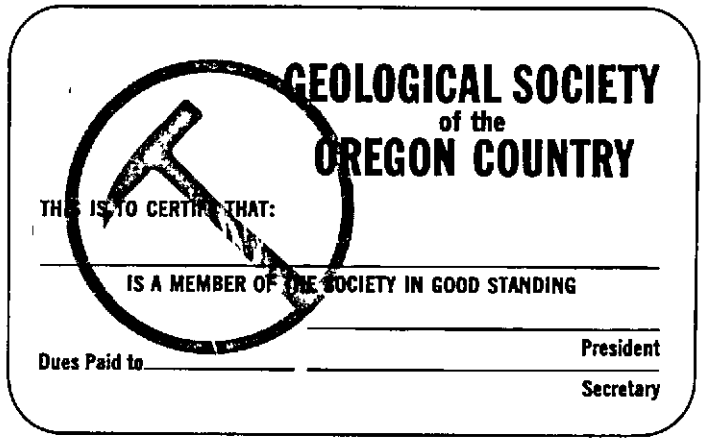
MEMBERSHIP CARDS



The membership card, reproduced above, is another example of Mr. Robert Boyd Anderson's accomplishments as Art Advisor to the Society. As mentioned in the July issue of the Geological News Letter (p. 46 of Vol. 30, No. 7) the Executive Committee authorized new cards to replenish the depleted supply.

Approximately four thousand five hundred cards have been printed. The image is printed in black on five different colors of lightweight cardstock, resulting in about 900 of each color. It is planned to issue a new color of card each year for five years until all colors have been used, and then repeat the cycle.

The color selected for the coming year is tan, a light brown. It was felt that this particular color was most compatible with the "Rota" brown being used on the cover of the News Letter.

The Executive Committee at its meeting on 22 January approved the request of GSOC President Irv Ewen to issue new membership cards to every person who is a member of the Society, which in the case of family memberships will now mean a card for both husband and wife.

* * * * * * * * * * * * *

MEMBERSHIP ROSTER

name	street address	city, state and ZIP no.	telephone
NEW MEMBERS			
CLARK, Mr. & Mrs. Ed.		Monument, Oregon	
ADDRESS CHANGE			
HELM, Gwenn	12825 S. W. Glenhaven St.	Portland, Oregon - 97225	644-8143
CORRECTION -(omitted from Annual Membership Roster published in August 1964)			
MASON, Mr. & Mrs. Ralph S.	3932 S. W. Idaho Terrace	Portland, Oregon - 97201	244-2106

* * * * * * * * * * *

NOMINATING COMMITTEE ANNOUNCES SLATE

The Nominating Committee reported to the Society at the regular lecture meeting held on Friday, 22 January 1965 and submitted as its choice the following candidates:

Officers of the Society

President	Mr. Fred E. Miller
Vice President	Mr. Jess R. Rentsch
Secretary	Mrs. Dorothy Waiste
Treasurer	Mrs. Reba Wilcox
Director	Mr. C. T. L. Murphy

Editor of the Official Publication

Editor	Mr. Irving G. Ewen*

The Nominating Committee, as appointed by G.S.O.C. President Irving Ewen, was composed of the following members, none of whom were Officers or Directors of the Society:

Nominating Committee

Chairman	Mr. William M. Freer
Members	Miss Clara L. Bartholomay
	Dr. Arthur C. Jones
	Mr. Ralph S. Mason
	Mr. H. Bruce Schminky

* Because of a possible technicality Irv Ewen's candidacy was withheld from the report of the Nominating Committee at the time it was submitted. The question raised by a Past President of the Society was: Could one person hold two positions simultaneously on the Executive Committee - that of Director, which Past Presidents automatically become, and that of Editor of the Geological News Letter (official publication of the Society)?

The answer is found in the Constitution and By Laws of the Society under Section 6 of Article IV entitled "Officers and Directors" which states:

> "The Editor of the official publication of the Society shall be nominated and elected at the same time and in the same manner as are the officers of the Society for a term of one year, but shall not be a member of the Executive Committee."

Therefore Irv's name was restored to the list of candidates approved and submitted by the Nominating Committee.

BY LAWS CHANGE SUBMITTED

The Executive Committee has in recent months, in addition to its regular duties, been reviewing the Constitution and By Laws of the Society. The purpose of the review has been twofold. First, to determine if the Society is presently organized and operating in accordance with this important document. Secondly, to determine if any changes were needed to update it.

Generally it was found that there was no significant conflict between the By Laws and the present operation of the Society. Several minor changes were suggested, but due to lack of time were not able to be discussed thoroughly.

However, two changes have been recommended to "modernize" the procedure in the receiving and disbursing of monies. The Executive Committee in accordance with the provisions of Article XII regarding amendments has amended the By Laws in this respect and submits the two changes to the membership for ratification.

The two sections of Article V entitled "Management and Duties of Officers" which were changed are reproduced below:

Section 2. -(prior to amending)

> All expenditures of money shall be authorized by the Executive Committee, and warrants for the payment of such expenditures shall be drawn on the Treasurer, and shall be signed by the President and Secretary, and checks shall be signed by such persons as may be authorized by the Executive Committee.

Section 2. -(as amended)

> All expenditures of money shall be made on the authorization of the Executive Committee. There shall be on record with the banks holding the Society's funds, the signatures of the President, Secretary, and Treasurer. The monies of the Society shall be disbursed by bank voucher bearing the signatures of the President and Treasurer and in the absence of either, the signature of the Secretary may be substituted for either one.
>
> The Executive Committee may make a blanket authorization for the fiscal year at the start of the fiscal year for the payment of routine monthly bills of printing and mailing of the News Letter and calendars and rentals of meeting quarters.

Section 6. -(prior to amending)

> The Treasurer shall receive all monies and deposit the same in the name of the Society. He shall pay all bills when certified and audited by the Secretary, and warrants for the payment of the same have been drawn on him by the President and Secretary.

Section 6. -(as amended)

> The Treasurer shall receive all monies and deposit the same to the name of the Society. He shall pay all bills when so authorized by the Executive Committee by means of Bank Voucher under the provision of Section 2 hereof.

Irving G. Ewen

* * * * * * * * * * * *

JANUARY LIBRARY NIGHT

The Murray Millers have worked hard at the reorganization of the library. The book shelves and covers have been refinished with the help of Mr. Rentsch, Dr. Gilchrist, Mr. Gavigan, Bob Wilbur, Dr. Howell, Geo. Lewis and T. Murphy. Mrs. Miller has been assisted with the re-arranging and cataloguing of the books by Mrs. Lewis, Johanna Simon and Gwen Helm. And it all looks very tidy.

At the last meeting, after a quiet hour for reading in the library, a double-header program was presented. Dr. Stauffer demonstrated the method of making peels from fossil woods for microscopic study. This easy and satisfactory method has largely replaced the laborious method of slicing and grinding thin sections suitable for use in a microscope. These Parlodion peels show the exact detail of cell structure which is necessary for positive identification. Later we viewed the peels, as well as some dyed sections of various species of recent wood under the microscope, with Dr. Stauffer's explanations making it intensely interesting.

The second half of the program, the selection and erection of the monument to Dr. Thomas Condon, was delightfully told by Ray Golden, with the assistance of colored slides taken by Murray Miller and Leo Simon. This monument, a Cretaceous Conglomerate boulder with a bronze plaque, was erected near Sheep Rock in 1954 by the Geological Society when Al Keen was president. Mr. Golden's humorous narration of the difficulties of selection and transportation of the 3-1/2 ton rock and placing it in position, was much appreciated.

After the program a short social period was enjoyed with coffee and cookies served by Mrs. Stauffer.

Jennie Walters

* * * * * * * * * * *

SOCIETY LIBRARY TO ACQUIRE NEW BOOKS

The Executive Committee recently approved the purchase of several new books on geology to be placed in the Society's Library. It is believed to be the first significant purchase of this type in some time.

Many titles of recent works in the field of geology were considered. However, since only a few books were to be purchased at this time, it was felt desirable to select titles covering a wide range of subjects. The selections made, all highly recommended, are listed below:

Polar Wanderings and Continental Drift Arthur C. Munyan	1963 SEPM Publication No. 10	$ 5.00
Marine Geology of the Pacific H. W. Menard	1964 Mc-Graw Hill	$12.50
Earthquake Country Robert Lacopi	1964 Lane Magazine & Book Company	$ 5.95
Dictionary of Geologic Terms	1962 (?) American Geological Institute	$ 7.50
Manual of Photogrammetric Interpretation		$15.00

The GSOC Library is housed in Peebles Hall (biology building) on the campus of Lewis and Clark College in southwest Portland. Books and publications are available for the use of the membership at the regular "Library Night" meeting on the third Tuesday of each month (see calendar of the month for details).

Irving G. Ewen

CARBORUNDUM PLANT TOUR

On November 16th the Carborundum Company welcomed 40 members of the Geological Society in a tour of their giant plant at Vancouver, Washington. Superintendent Charles Nolan made the necessary arrangements and the party was conducted in two groups by engineers John Anderson and Lawrence Sandstrom.

Using the raw products of quartz rock, silica sand, carbon sometimes in the form of briquettes, and sawdust, these minerals ground to a certain size and with a proper mix are fused in large 40 foot horizontal furnaces. The resultant product is Carborundum, one of the hardest commodoties known. Crushed to the size of a filbert this granular mass is now shipped to the company's plant at Niagara Falls where it is then processed into the abrasives and grinding wheels of industry.

The plant officials had thoughtfully arranged their schedule so that the visitors would see (1) a furnace being loaded with raw materials, (2) many in the smelting process, and (3) one being tapped for its finished mineral. Quartz rock from the Bristol mines at Grants Pass and from other sources near S pokane was being unloaded at the receiving depot, a car and a half consumed every day. The giant mixing machines, storage hoppers, conveyer belts, control machinery, was all in operation. Naturally everything in the plant was covered with 1/4 to 1/2 inch of carbon dust but the trippers had been warned to wear rough clothing and work shoes.

It was explained that the location of the plant here was due to the availability of low-cost electricity from the Bonneville system. The monthly electric bill is $40,000. The furnaces employ only a rather low voltage at start of the cooking but the amperage is terrific.

The plant employs 114 people and the work is steady. It operates around the clock; our tour was on the swing shift.

The leaders gave a very educational lecture on the science of the operation down to the atomic structure of the molecule. At the close of the two-hour escort choice specimens of Carborundum were presented to every member of the tour. Members considered this a valuable contribution to President Ewen's 1964 program of Man and His Minerals.

C. T. L. Murphy

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DUES DUE

Annual dues for membership in G. S. O. C. are now due and payable to the Treasurer, Mrs. Albert R. Kenney. Dues notices will be included with the letter ballot for the annual election being prepared by the Secretary, Miss Shirley M. O'Dell.

Society members wishing to mail in their dues early will find the schedule of dues rates for all classes of membership inside the front cover of the News Letter.

Checks should be made payable to the
Geological Society of the Oregon Country
and should be received prior to the Annual Meeting (26 February) by
Mrs. Albert R. Kenney, Treasurer
Geological Society of the Oregon Country
4125 S. E. Gladstone Street
Portland, Cregon - 97202

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NEW STATE PARK FOR OREGON

A new state park of 22 acres, gift of EDWARD, GEORGE and LESLIE LEE, has been accepted by the Oregon State Highway Commission, which is negotiating for an additional 78 acres. Located in the fossil beds south of Clarno (Wheeler County), it will be called Clarno State Park.

NEW ERRATIC SITE DISCOVERED

GSOCers and Nature Conservationists braved the rains and floods January 10th to inspect a big exposure of granitic rocks in a section of Oregon where granitic rocks have no legal right to be. Mr. Murray Miller of Oregon City, one of the best informed and most enthusiastic of the Society's erratic collectors, met the group at the Oregon City post office and conducted them to the heights above Mulino.

Here in an area of about an acre the bulldozers of a housing development had uncovered a collection of granite boulders ranging in size from a davenport down to mere scraps. There was no doubt in the minds of these trippers that these foreign invaders must have been rafted by ice or other floats to their resting place by prehistoric Columbia River floods. They now stand at an elevation of near 400 feet.

Petrologically these rocks had something of interest to offer. Pink feldspars predominated in that mineral and some were of impressive size. Biotite micas appeared in some specimens. The fracture of a large chunk revealed a beautiful xenolith about 16 inches in diameter. This was identified by Dr. Ruth Hopson who had brought some of her students for a lesson in the field.

A part of the fifteen-car caravan then moved on down the hill to view the ruins of Wagon Wheels Park on the Molalla River. It gave those of us who live on the heights an opportunity to see and feel the utter calamity that befell those who suffered the devastation of the Christmas flood.

C. T. L. Murphy

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THIRTIETH ANNUAL BANQUET NEWS

As previously announced, the Thirtieth Annual Banquet of the Society will be held on Friday, 12 March 1965 beginning at 6:30 P. M. This is the second year that Portland State College will host this annual event in the Ball Room of the College Center.

Of interest to those planning to attend is the announcement by GSCC President Irv Ewen of the Master of Ceremonies and Guest Speaker.

Mr. Ralph S. Mason, State Mining Engineer with the Department of Geology and Mineral Industries, will be Master of Ceremonies. Ralph is also a long time member of G. S. C. C.

Mr. Lewis Crutcher, A. I. A., a prominent architect in the Pacific Northwest will be guest speaker. Mr. Crutcher's illustrated talk entitled "Combatting Geological Delinquency" promises to be of high interest to all.

Paul and May Dunn, Annual Banquet Co-Chairmen, and their numerous committees have been working diligently to plan another memorable evening. It is planned to enclose a "flyer" with this issue, prepared by the publicity committee headed by "Aunt" Emily Moltzner, which will include full details.

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PHIL BROGAN HONORED

PHIL BROGAN, geologist and Oregonian columnist, well known for his articles in its Sunday issues, is also a volunteer weather observer and qualified astronomer. Most GSOCers have his delightfully readable book "East of the Cascades" on their library shelves. He was honored at the recent distinguished awards dinner of the Bend Junior Chamber of Commerce as Bend's outstanding citizen of 1964. PHIL and his gracious wife, LOUISE, always welcome GSOCers who drop in on them. Even when he's at his desk at the Bend Bulletin, where he's been a staff member 40 years, he's still courteous and takes time to give us information about the geologic wonders of his area. We've been privileged to have his leadership for field trips several times. We are most happy to congratulate him.

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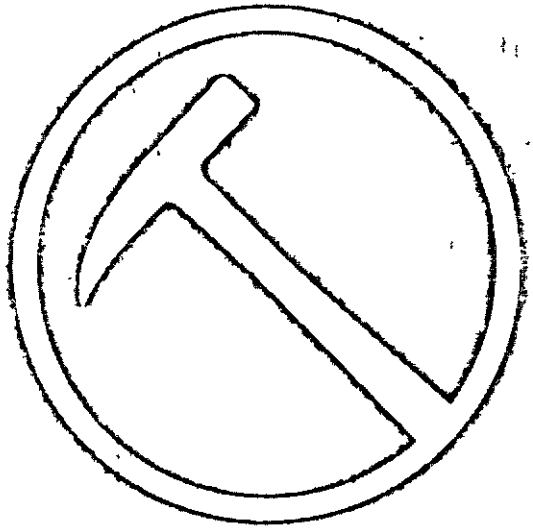
March 1965



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

ADMINISTRATION

SOCIETY OFFICERS

President	Mr. Irving G. Ewen	4128 N. E. 76th Avenue	Portland, Oregon - 97218	281-7098
Vice President	Mr. Fred E. Miller	3122 S. E. 73rd Avenue	Portland, Oregon - 97206	771-6154
Secretary	Miss Shirley O'Dell	4710 S. E. Stark Street	Portland, Oregon - 97215	234-2318
Treasurer	Mrs. Albert R. Kenney	4125 S. E. Gladstone St.	Portland, Oregon - 97202	775-5697
Directors 1 yr.	Mr. Jess R. Rentsch	1110 S. W. 11th Avenue	Portland, Oregon - 97205	223-2161
2 yr.	Dr. Ruth E. Hopson	4138 S. W. 4th Avenue	Portland, Oregon - 97201	222-1430
3 yr.	Miss Margaret Steere	2064 S. E. 72nd Avenue	Portland, Oregon - 97216	774-6382

EXECUTIVE COMMITTEE MEMBERS

President - Irving G. Ewen
Vice Pres - Mr. Fred R. Miller
Secretary - Miss Shirley O'Dell
Treasurer - Mrs. Albert Kenney

Directors - Mr. Jess R. Rentsch
- Dr. Ruth E. Hopson
- Miss Margaret Steere

Past Pres - Mr. Leonard H. Delano
- Mr. Albert R. Kenney

GEOLOGICAL NEWS LETTER STAFF

Editor	Mr. William M. Freer	2405 S. E. Taylor Street	Portland, Oregon-97214	232-9601
Asst. Editor	Mr. John F. Mihelcic	13029 S. E. Ash Street	Portland, Oregon-97233	252-7572
Business Mgr.	Mr. Robert F. Wilbur	2020 S. E. Salmon Street	Portland, Oregon-97214	235-7284

ACTIVITIES CHAIRMEN

Luncheons	Mr. Leo F. Simon	7006 S. E. 21st Avenue	Portland, Oregon-97202	236-0549
Field Trips	Mr. C. T. L. Murphy	2027 N. E. Wasco Street	Portland, Oregon-97212	282-2027
Lectures				
Library Night	Mr. Murray R. Miller	1018 Promontory Avenue	Oregon City, Oregon	656-6724

OBJECTIVES OF THE SOCIETY

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

Persons desiring to become members should contact the Secretary.

Regular annual dues, single or family memberships, are $5 for residents of Multnomah and adjacent counties (Clackamas, Columbia, Hood River, and Washington Counties of Oregon; Clark and Skamania Counties of Washington). Single or family memberships are $3.50 for residents living outside of the above counties. Junior memberships are $2.00.

Payments should be made out to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

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

ACTIVITIES OF THE SOCIETY

See calendar of the month for details.

Luncheons:	Every Thursday noon
Field Trips:	Usually one field trip per month via private car caravan or chartered bus. Occasional two-day trips with overnight camping.
Lectures:	Illustrated talks on geology or related subjects. Two lecture meetings, the second and fourth Fridays, of each month.
Library Night:	The third Tuesday evening of each month.
Publication:	The Geological News Letter, published once each month, is the official publication of the Society.

G.S.O.C. CALENDAR FOR MARCH 1965

Every Thursday — LUNCHEON - Y.M.C.A. - 831 S.W. 6th Avenue, Portland, Oregon

12:00 M. - All G.S.O.C. 'ers, guests, and visitors are welcome to these informal weekly gatherings. Reservations are not required and there is no minimum charge on luncheons. Geologic items of interest such as specimens, publications, et cetera are circulated for inspection and discussion. Occasionally short talks are heard on geology and related subjects.

Food items are available for purchase in the main cafeteria. Take food selections to the "mountain room" (past the "foothills room") adjacent to the main cafeteria. For more information telephone Mr. Leo F. Simon, Luncheons Chairman, at 236-0549.

12 March Friday — ANNUAL BANQUET - Portland State College Center Ballroom
S.W. Park Avenue at Montgomery Street

5:00 P.M. - Displays open for viewing adjacent to ballroom.

6:30 P.M. - Thirtieth Annual Banquet commences in the ballroom. Mr. Lewis Crutcher, A.I.A., will speak on "Combatting Geological Delinquency. Mr. Ralph Mason, State Mining Engineer, will officiate as Master of Ceremonies.

Tickets, at $2.50 per person, may be obtained from Mr. Leo F. Simon at all regular meetings of the Society or reserved by telephoning 236-0549. For additional information see the February 1965 issue of the Geological News Letter (page 20) or telephone Mr. and Mrs. Paul F. Dunn, general co-chairman, at 285-5008.

16 March Tuesday — LIBRARY NIGHT - Lewis & Clark College in Southwest Portland, Oregon

7:30 P.M. - Meet in Peebles Hall (biology building) on the campus. A quiet hour is observed for the purpose of browsing and reading.

8:30 P.M. - The program will include a presentation of slides taken by several members showing scenes from recent floods. Refreshments served after the program.
For more information and directions telephone Mr. Murray R. Miller, Library Night Chmn., or Mrs. Murray Miller, Society Librarian, 656-6724.

26 March Friday — LECTURE - Public Library, 801 S.W. 10th Avenue, Portland, Oregon

7:30 P.M. - Dr. John Eliot Allen, head of Dept. of Geology at Portland State College, will present an illustrated talk on a geologist's view of Pakistan.

Dr. Allen returned to Portland last fall after spending a year teaching at Peshawar University. Due to the popularity of his subject and presentation, it has been difficult to schedule a date for Dr. Allen until this time.

9:00 P.M. - Social Hour and refreshments following the program.

28 March Sunday — FIELD TRIP - Visit to Erratic Rock State Park and fossil localities.

10:00 A.M. - Group to assemble at Erratic State Park on Ore. State Hwy 18 about 7 or 8 miles southwest of McMinnville. Miss Margaret L. Steere, geologist with the State Dept. of Geology & Mineral Industries, will be Field Trip Leader. Bring usual recommended gear. For details see special item in March 1965 issue of Geological News Letter. For more information and directions phone Mr. C.T.L. Murphy, Field Trips Chairman, at 282-2027 or Miss Steere, Field Trip Leader, at 774-6382.

ADVANCE CALENDAR FOR APRIL 1965:

11 April Sunday — FIELD TRIP - Walking tour of the Lloyd Center

2:00 P.M. - Trip leader - Ralph S. Mason, State Mining Engineer w/State Dept. of Geology & Mineral Industries. Tour is holdover from previous year's theme of Past Pres. Irv Ewen on "Man and His Minerals". A special feature article is planned

MRS. AMZA (ELIZABETH) BARR - HONORARY LIFE FELLOW

The members of our Society, especially the older members who know Mrs. Barr personally, are happy that the Executive Committee elected her an Honorary Life Fellow for outstanding work in the Society. Illness prevented Mrs. Barr from attending the presentation; so a daughter, Mrs. Eleanore Jenkins, accepted the certificate for her mother from G. S. O. C. President Irving Ewen at the regular lecture meeting on Friday, 11 December 1964.

Mr. & Mrs. Barr were members of the Extension Center course in Geology taught by Dr. Edwin T. Hodge (founder of the G. S. O. C. in 1935). They helped in the many phases of development of the Society which has resulted in the stability we now enjoy. The Barrs helped encourage the growth of charter membership from 66 early bird enthusiasts to a total of 136 by the closing date in October of 1935.

Although Mr. Barr died in 1946, Mrs. Barr continued to give liberally of her time and talents in furthering the aims of the Society until 1963. At this time, due to ill health, she retired to the Baptist Home for the Aged. Just prior to Thanksgiving in 1964 she suffered a stroke and was confined to the nursing division of the Home. Although she is four score and seven years of age, she still maintains an interest in the Society.

In the early days of our Society Mrs. Barr worked as a court reporter and newspaper reporter, so naturally fell right in line when the Society needed her. Her service started with the first twice monthly mimeographed bulletin of May 23, 1935. Mrs. Barr has worked with unselfish, untiring interest in writing up notices; trips, meetings, and luncheon reports; and scientific articles from the nearly embryonic stages of G. S. O. C. She has chaired many, many committees and did an "A-One Job" in everything she undertook. She was a most efficient Historian from 1939 to 1943 and again in 1948; Secretary in 1938; and Vice President in 1943.

In later years, Mrs. Barr gave the Portland State College Library-Geology Department their first geology books. She gave U.S. Geological Survey Reports and geology books to the G. S. O. C. Library (now housed at Lewis and Clark College). Many Society members are proud owners of geological specimens given by Mrs. Barr.

We of the Society are pleased to honor Mrs. Barr as Honorary Life Member. Before too long, we hope to see her again meeting with us. Our good wishes to a great G. Socker!

Ruth Schminky

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NEWS OF MEMBERS

by Rowena Hoven

GSOC member JASPER HOLLAND, engineering-geologist with the technical service of the U. S. Soil Conservation, and JACK C. STEVENSON, a civil engineer in the same service, have been selected to give technical assistance to the Tunisian government in the planning and design of a proposed dam. They are scheduled to leave for Tunisia on April 1st. At the February 18th luncheon meeting, Mr. Holland presented two books to the GSOC library: Geology of Petroleum by A. I. Levorsen, and Principles of Petroleum Geology by William L. Russell.

Our Society was well represented at the annual show of the Agate and Mineral Society held at Omsi, February 6-13. JENNIE and GEORGE WALTERS displayed their beautiful fossil collection, ERNEST BLAKESLEE and SHIRLEY BISHOP had a fine exhibit, and LEO SIMON had an excellent group of minerals and metals.

Vice President FRED MILLER invited the Society members to attend the February 17th meeting of the Institute of Electrical and Electronics Engineers to view pictures taken in the Orient. Quite a turn-out responded to Fred's invitation, and it also developed that we were celebrating May Dunn's birthday. May was so busy working over time on plans for the annual banquet that she seemed to be ignoring the observance of her special day.

DR. ARTHUR JONES returned recently from a visit in the San Francisco-Berkeley area and brought greetings to the Society from his brother, DR. FRANCIS T. JONES. Dr. F. T. J. has an outstanding collection of meteorites. He is especially busy at this time, since in addition to judging local minerology exhibits, he is doing chemical microscopy work which has developed his interest in the structure of a variety of minerals, particularly of the crystal and quartz type. His special study at the moment is associated with jade and opal as he seeks new information on light refraction in the latter mineral.

Cont'd. P. 28

Vol. 31, No. 3

THE IRA WILLIAMS LIBRARY

February 1, 1965

Mr. Irving G. Ewen, President
Geological Society of the Oregon Country
Portland
Oregon

Dear Mr. Ewen:

My brothers and their wives, and my husband and I have for a long time been looking for a suitable location for the library of geological books and pamphlets belonging to my father, Ira A. Williams, Oregon geologist, now deceased.

We have decided that the books can be put to the best possible use in the Geological Society of Oregon Country library now in the Lewis & Clark College Peebles Hall, and we would like to make a gift of them to the Society. We hope you will accept them as a unit and keep the geological material together for one or two years. You may feel free to dispose of any books or pamphlets that do not seem appropriate in the library whenever you see fit.

We, Mr. and Mrs. George E. Lewis Jr., Mr. and Mrs. Lloyd B. Williams and Mr. and Mrs. David C. Williams, give this library to the Geological Society of the Oregon Country in loving memory of our father, Ira A. Williams.

Cordially,

Rhoda I. Lewis

Rhoda I. (Williams) Lewis

rl
cc: Mr. Murray R. Miller
Mr. Lloyd B. Williams
Mr. David C. Williams

. . . . thus came to the GSOC library at Lewis and Clark College its finest collection, and to the Society its most handsome acquisition; the personal working library of Ira A. Williams, geologist.

The library consists of 75 volumes of general scientific interest; 31 volumes of Journal of the American Ceramic Society and its Transactions; 17 volumes of the Transactions of Mining and Metalurgical Engineers; 5 volumes of Economic Geology; the 1906-1933 bound volumes of the Geological Society of America; 6 volumes of the Geological Survey of Georgia; the 1892-1913 bulletins of the Iowa Geological Survey; various Geological Surveys of Missouri, New Jersey, Ohio, Oklahoma, West Virginia, and Wisconsin; various Bureau of Mines Information Circulars; 1921-1931 bulletins of Bureau of Mines Mineral Resources; J. W. Powell, Survey of Rocky Mountain Region; J. W. Powell, Bureau of American Ethnology, 1892-1893, 1895, 1896; 1895-1899, 1915, 1930 Monographs of the Geological Survey; 1905-1932 Professional Papers of the U. S. Geological Survey; 1902-1934 unbound bulletins of the Geological Society of America Water Supply; and assorted maps and memorabilia.

The collection fills approximately forty linear feet of new shelving provided for it, and the Murray Millers and Rhoda Lewis are busy cataloging it. To keep the collection from straying, it is planned to put especially designed Ira Williams book-plates on inside of front covers.

Ira Williams Library, cont'd.

Ira Williams was born in Iowa in 1876 and took his B.S. and M.S. from Iowa State College. He did graduate work at Ohio State College, and was a fellow at Columbia, where he took his A.M. in 1904. From 1898 to 1903 he was an instructor of geology at Iowa State, and from 1903 to 1906 he was assistant professor of geology and mining. From 1906 to 1913 he was associate professor of ceramic engineering. At this point in his career, Ira Williams left Iowa and came to Oregon, where he became professor of ceramics at the Oregon School of Mines from 1913 to 1918. He was a geologist and ceramist for Oregon Bureau of Mines and Geology from 1913 to 1923, after which he became professor of ceramics at the University of Washington. During this time, and overlapping other duties, he was an assistant geologist of the Iowa Geological Survey, assistant geologist for the U.S. Geological Survey, and a consulting ceramist for the U.S. Bureau of Mines. He was a consulting geologist for the California Department of Public Works from 1930 on, and a consultant for the Corps of Engineers until his untimely death in 1934. Though your correspondent never knew Ira Williams, he can remember when the Portland District during the worst of the depression in the early 1930's, paid him a fee of one hundred dollars a day. At this time your correspondent was told that he was one of the six top geologists in the country.

With all this activity, Ira Williams was much away from home, but when he could, he took his children on summer camping trips with him--usually in connection with his work. He was a tall, slender, handsome man with a pleasing personality, and his children still remember with pleasure his rare and quiet sense of humor.

Before the St. Francis Dam failure on March 12, 1928--just thirty seven years ago at the time we will be having our banquet--the geological investigations for dam sites were much more perfunctory than they are now, but after this disaster, which cost many lives and did much damage, there came to be a much greater demand for much better geological appraisals of these sites. Never-the-less we were surprised to find out how many dam-site investigations--even before this unfortunate incident--had been made by Ira Williams. Some of these dams have long been built; some just recently, and some not yet started. A partial list includes Bull Run, Oak Grove, Ariel (now Merwin) and Yale on the Lewis River, Cushman Nos. 1 and 2, Mayfield, Bonneville, Big Eddy (The Dalles Dam), Hell's Canyon, Pelton, and many others.

Ira Williams contributed to many technical publications and he wrote numerous monographs, some of which are kept in the Oregon Collection at the Central Library. Among these are the Lava River Tunnel (near Bend), Some Little Known Scenic Pleasure Places in Oregon, Tree Casts on Mt. St. Helens, Limestone Deposits in Oregon, The Oregon Caves, and The Columbia River Gorge. He contributed geologic articles to the well-known periodical, Natural Science, and often to the publication of the old Oregon Bureau of Mines and Geology. He wrote extensively of the Cascades, which he loved, and in 1920 had a bill in Congress to extend the boundaries of Crater Lake National Park. He had the knack of writing delightfully of geology for the layman, and collaborated with others in things more technical.

Though Ira Williams died over thirty years ago, his memory is still very green, and will undoubtedly remain so for many years to come. Any geologist will prick up his ears at the mention of that name. Needles to say, the Society is fortunate to have as members his daughter Rhoda, and her husband, George E. Lewis, Jr., who are responsible for the selection of the repository of this very fine reference library of a famous geologist. We couldn't be more delighted at their choice, more grateful for their consideration!

William M. Freer

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PROSPECTING TO MINING

by John F. Mihelcic*

Prospecting preceded the discovery of ore deposits, which in turn, leads to the development of mines. Naturally, the day of the simple discovery of an important ore body is gone, for prospecting has become a highly specialized business in recent years, tho there was some magnetic prospecting done in Sweden during the 17th century -- it being confined to the use of a compass. The "Old Prospector" an important and colorful character of former years, is being superseded by a variety of geophysical methods, involving the magnetic and electro-magnetic, seismic, gravitational, earth resistivity, plus others that are being developed constantly. (Absite is a mineral that derived its name from the mode of its discovery -- air born scintillometer.

Geophysical instruments reveal information concerning the structure and position of the rocks beneath the earth's surface. The seismograph records the speed at which earth tremors (produced by exploding a charge at the surface) travel down thru the underlying rocks and back to the surface from some reflecting layer of rock. From this data, it is possible to calculate the depth of certain beds or structures. The gravity meter, used to measure the gravity at various points, reveals differences in gravity -- thus providing data that may be used to outline domes as well as other subsurface structures. The magnetometer measures variations in the earth's magnetic field, and thus reveals folds or hills of granite basement rocks that are buried beneath sedimentary rocks. The airplane is a valuable assist in exploration work that involves instrumentation, photography, mapping -- plus trained vision. For instance, the eye may perceive, and the camera record, from a plane, long faults that are not perceptible from the ground. Needless to say, that faults favor mineralization.

Prospecting is employed, not only in the location of new deposits, but is carried on in operating mines, to determine the extent and location of additional deposits in the mine area, both above and underground. I have been in mines, where diamond drilling was being carried on deep underground. Records are kept of the exact location of the drilled holes, and an analysis is made of the drill core to be correlated with the information of other drillings. The same principle is applied in the analysis of the sludge from the operation of rock and churn drills.

Thus, present day prospecting goes on from the point of the "Old Prospector" who did a pretty good job of locating the outcrops that were likely prospects. What a rugged individual that old timer was! He had to be in good health as well as being tough -- to say nothing of his 20-20 vision. He'd set out to "strike it rich", accompanied by his burro or horse carrying his grub and equipment. Literally, he belonged to the school of hard knocks -- applied and received. His lack of geology and mineralogy added to his burden and fortune. His luck wasn't always bad, for many of the noted mines of today were located by this wanderer. Certainly, as he gained knowledge from experience, he enhanced his chances of locating a deposit by the basic methods of panning, trenching and an understanding examination of the areas exposed by erosion. A case in point--the truly fabulous deposits at Broken Hill, Australia, were found by a station hand who prospected while on the job.

If you would like to enjoy a well written book, filled with such anecdotes, read "The Romance of Mining" by T.A. Rickard. Alaska and Australia have produced a number of fairly factual books, based on the experiences of prospectors for opal and gold. The most famous book on mining was written by Georg Agricola, 1560, by the title "De Re Metallica". This was the first scientific compilation of scientific studies of minerals, and the laws governing their occurrence.

The early prospector tried to find the lode that was responsible for his placer deposit. To that end, he kept an eye open for the more resistant outcrop that showed signs of discoloration - working from the lower float. If the lode is exposed with no appreciable erosion, there is no float to guide.

Hydraulic mining is a sophisticated placer operation, where erosion is man made, with powerful monitors directing streams of water against the embankment containing the desired ore. Recovery is by water and gravity. In all cases, the mining engineer has to decide whether hydraulic or some other method of mining is to be followed. Rock salt is mined underground

* Assistant Editor

Prospecting to Mining - cont'd.

by the room and pillar method, if the layer is thick enough. Otherwise, it may be a case of pumping water into the salt layer and returning the brine to the surface. Mines in hard rock, may drift out from the shaft and then stope up to the next level. Cars are loaded below by gravity, and the ore is drawn up the shaft to the surface. Should the ore become too lean to profitably continue this method, and if the ore above is present in quantity, it may be caved down and withdrawn from below and hauled to the surface. This has become a popular method. The most famous open pit operations are those on the Mesabi range in Minnesota and the western copper mines. At times the mining operation may start as an open pit and later convert to underground mining, as was the case in the Falcon-bridge operation at Sudbury, Ontario, Canada.

I can speak of hard rock mining alone, from personal experience. I got paid for doing it by the Copper Range Mining Company (Michigan). However, I have been underground several times--as a visitor-- in a variety of mines, finding no duplicates. All my observances of open pit mining have been from a point of vantage on the surface -- "no admittance" -- being strictly enforced. Going underground in the lead-zinc mines of Broken Hill, Australia lies in the future. This is a sketchy approach to a story beginning with the "Old Prospector" and continuing to a depleting venture called mining.

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FEBRUARY LIBRARY NIGHT

After a quiet hour for browsing and reading in the library, we were amused and entertained by a surprise program . . . . a concert, no less! Murray Miller, "a graduate of Hancock College", had constructed a rock xylophone - he called it an organ - from ringing shale from the Indian Caves at Clarno. This instrument (?) has a range of two octaves, minus a tone or two. Murray said if anyone found a good G, or an A lying around, he would appreciate having it. Upon this "thing" he played with hammers of rock with amazing skill and dexterity. He was accompanied by Dr. Paul Howell and Truman Murphy on guitars. They also added their voices to the ensemble. Three Blind Mice, Farmer in the Dell, Old Black Joe and others were part of their "vast" repertoire. "Pretty long hair for such short hairs" quipped a member! Then Truman showed his skill by performing a solo on it . . and we THOUGHT we knew what he was playing. But we all had fun and enjoyed their gay contribution to the evening's pleasure.

The program for March Library Night was discussed and pictures of the winter floods in our state will be shown. Anyone having interesting slides of the floods is urged to bring them.

Two of the five new books to be purchased by the society have been added to the library: POLAR WANDERINGS AND CONTINENTAL DRIFT by Munyan and EARTHQUAKE COUNTRY by Lacopi. This helps to keep our library interesting and up-to-date.

Mrs. Stauffer again graciously served us cookies, tea and coffee during the social period.

Jennie Walters

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1964 GEOLOGICAL NEWS LETTER INDEX

The annual subject and author index for the year 1964 of the Geological News Letter has been compiled by Miss Margaret L. Steere, geologist with the State Department of Geology and Mineral Industries. The index. published as a two-sheet separate, is included with this (March 1965) issue of the News Letter and should be placed with Vol. 30.

Once again, we of the Society wish to express our thanks to Miss Steere for preparing this index as well as the last several indices.

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Vol. 31, No. 3

INVENTORY OF 1964

by William M. Freer*

This is our third annual inventory, and we feel that we may be in danger of starting a tradition. People should be very cautious about light-heartedly starting traditions, because maybe they'll wish they hadn't. Anyway, at the end of the year we still think that it is a good idea to evaluate our performance so that we can improve it for the coming year.

The NEWSLETTER jumped the gun and got off to a flying start in January when it came out with a new, modernized cover initiated by Irv Ewen and executed by staff artist Bob Anderson. Though some members didn't care for it at first, this was a distinctive and definite improvement; our old cover was dating us.

We began the new year auspiciously in March with a bang-up banquet, the largest and probably the best we have ever had, under the smooth direction of Paul and May Dunn. We were surprised but delighted to hear that they were going to do it again this year. The success of the banquet was due principally to their ability to organize many people working harmoniously together. Indications are that the scope of this year's banquet will even exceed last year's.

On his inauguration our new president, Irv Ewen, realized that it would be virtually impossible to improve the activities program developed by Al Kenney, so he decided to try to maintain it and to bend his own not inconsiderable talent for organization to house-cleaning, renovation, and gussying-up the Society in general.

Having previously improved the NEWSLETTER as its editor, Irv and Bob Anderson designed new membership cards with the same motif as the new NEWSLETTER cover, and the Society now has a ten year supply of these good-looking cards in five different colors. In case you haven't yet received yours, a detailed description of them with a reproduction is shown on page 15 of the February (1965) issue of the NEWSLETTER.

The new "Certificates of Appreciation" for guest speakers and field trip leaders are an attractive innovation developed by Irv and Bob. Printed on parchment -- well, it looks like parchment -- and signed by the program chairman and the president and embossed with the seal of the Society on a gold wafer, they make a handsome memento of the occasion for the recipient. They also give the Society a gracious tone that is desirable to have.

Badly needed new certificates for Fellows and Honorary Life Members are in the process of being designed, and a committee has been appointed to draw up a set of guide-lines for determining the qualifications for the selection of members for both of these honorary designations.

Improvement of our financial condition has been achieved by transferring excess funds from the checking account to the interest-bearing savings account, and our efficient treasurer, Laurette Kenney, has instituted a major improvement in her department in the form of a voucher system that works more smoothly than you can imagine. Orchids to Laurette for this and many other services rendered to the Society.

The records of the Secretary, Shirley O'Dell, show a very healthy increase in membership for 1964. At this time last year the Society had 245 memberships; this year we have gained 22 to give us a total of 267. This is encouraging, and altogether satisfactory.

The Thursday Luncheons at the YMCA under the direction of Leo Simon are popular and well attended, and have furnished some outstanding programs this year. This program is flourishing, and we are happy with it.

Likewise, we hear that the third Tuesday evening Library Nights at Lewis and Clark have been excellent. We are sorry we haven't been able to attend them this year, but the GSOC calendar is so busy that no one person can get to everything. Needless-to-say, this program couldn't be in more capable hands than Murray Miller's.

As for the library itself, it has never been in better shape. Refurbished in its new upstairs quarters in Peebles Hall, Mrs. Murray Miller keeps it in excellent condition. Of course, the most exciting thing at the library is the major acquisition of the Ira Williams collection, which is described in detail elsewhere in this issue. Approximately forty feet of new shelving was necessary to hold this fine addition to our library. Besides all this, five important new books purchased by the Society have been added. These were described on page 18 of the February (1965) issue of the NEWSLETTER.

* Editor

Inventory - cont'd.

The second and fourth Friday evening Library lectures at the Central Library, generally following the Society's theme of the year, "Man and His Minerals" have been uniformly good. Dr. Paul Howell was the program chairman for this function. The last lecture of the year, "Exploring the Owyhee River Canyon" by Floyd B. Rogers was most successful, and played to standing room only. This lecture was not in the series.

The field trip program, directed by Truman Murphy, maintained the same superb quality that has characterized this program through all the years that Truman has had it. Some of the trips, such as the ones to the Oregon Portland Cement plant at Oswego, the Carborundum plant at Vancouver, and the Reynolds Aluminum plant at Troutdale reflected the Man and His Minerals theme. The President's Annual Campout at the Rujada Forest Camp couldn't have been better, and the trip on the train to Vernonia gave unique variety. We are sorry to hear that Truman will not be Field Trip Chairman this next year. We will miss him in that spot.

We must make acknowledgements to Emily Moltzner for being a trouble-shooting freelancer without portfolio. Though she would accept no chairmanship, she has filled in whereever she was needed and done a terrific job in getting us excellent publicity. Besides these things she has brought us more new members than anyone else by far. She is our best promoter.

We would be sadly remiss if we did not acknowledge the fine support given us by the State Department of Geology and Mineral Industries. Without the support of the professionals we couldn't expect to amount to much as an organization, and we are sincerely grateful to Ralph Mason, and to Margaret Steere -- who is again compiling our yearly index -- and to Andy Corcoran. We must also express our appreciation to Dr. Paul Howell of the Corps of Engineers for his interest in us, and all the time and hard work exerted in our behalf.

We forgot to mention that the NEWSLETTER is now mailed under a postal permit for 1-1/2¢ a copy instead of a 4¢ stamp as formerly, which during the year saves the Society quite a lot of money.

Altogether, we seem to have, at the close of the year, more credits than debits. It has been a good year, and we have made significant gains. Irv Ewen and the officers of the Society should take pride in turning over to Fred Miller and the new officers a going concern in excellent shape.

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NEWS OF MEMBERS -

You read about it first in this column, but Doug Baker's column in the Oregon Journal also recently carried an item concerning HUGH OWEN'S famous custom-made Christmas card with the Oregon rain theme. His unique greeting brought forth many comments from his friends outside of Oregon.

SHIRLEY O'DELL left February 15th for another one of those exotic vacations -- this time to South America. She plans to be gone for a month. The rock formations are always more fascinating on the other side of the mountains, or in the next continent.

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TREASURER'S REPORT
1964-65

CHECKING ACCOUNTS:	MULT. BANK Withdrawals	U. S. NATIONAL BANK Deposits	Withdrawals	TOTAL	BALANCE
BALANCE BROUGHT FORWARD . . .					$1,216.54
RECEIPTS:					
Dues		$1,084.25		$1,084.25	
Banquet		490.00		490.00	
Sale of Trip Logs		46.00		46.00	
Sale of G. S. O. C. cards		4.80		4.80	
Subscription to Newsletter. . . .		2.50		2.50	
Memorial Collection (D. Jones) .		18.00		18.00	
Incl. in G. S. O. C. Ck, for Ore Bin.		.40		.40	
Refund from picnic expense money.		4.55		4.55	1,650.50
TOTAL					$2,867.04
TRANSFER OF FUNDS FROM MULT. BANK TO U. S. NATIONAL BANK	($803.54)	($803.54)			
DISBURSEMENTS:					
Bonding, Licenses, etc			$ 17.50	$ 17.50	
Honorariums - Certificates Speakers- Trip Leaders.			62.99	62.99	
Banquet	$402.20		119.22	521.42	
Newsletter incl. postage	4.95		778.53	783.48	
Publicity: Calendars incl. postage			48.78	48.78	
Treasurer's supplies incl. postage			9.32	9.32	
Secretary's supplies incl. postage	5.85		67.97	73. 82	
Spec. Publication Fund (Trip Logs)			50.25	50.25	
Social Committee: (Coffee hour, cards, flowers, luncheon guests			28.87	28.87	
Picnic (Actual cost $33. 92) (See receipts - Refund) (Paper & masking tape purchased this yr)			38.47	38.47	
Refunds: Overpayment of dues . . .			11.00	11.00	
Rehab. Institute of Oregon			18.00	18.00	
Memorial to Doris Jones					
Equipment purchased:					
Neck Mike			37.20	37.20	
Library Shelves			45.35	45.35	
File (Publicity)			3.50	3.50	
Treasurer's Brief Case.			5.48	5.48	
Books purchased:					
Manual of Photographic Interpretation (American Society of Photogrammetry)			12.00	12.00	
Marine Geology of the Pacific (Menard)			11.25	11.25	
Earthquake Country (Lacopi) . . .			5.06	5.06	
Trans to Savings Acct for interest .			600.00	600.00	
To cash for Ore Bin			.40	.40	$2,384.14
TOTALS	$413.00	$1,650.50	$1,971.14	$2,384.14	
BALANCE BROUGHT FORWARD. . .					482.90

Treasurer's Report, cont'd.

PORTLAND FEDERAL SAVINGS AND LOAN ASSOCIATION:
Savings Account No. 254-821

Balance brought forward	$1,257.41
Transferred from checking account to work for interest	600.00
	1,857.41
Interest accrued	69.29
	$1,926.70

TREASURER'S BOND RENEWED THIS YEAR. Trans-America Treasurer's Bond 39-618-024.
Effective period: 3/1/64 to 3/1/67

Respectfully submitted,

Laurette Kenney,
Treasurer

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SECRETARY'S REPORT
February 6, 1965

ELECTION RESULTS

At the current date the Secretary has received 97 marked ballots. No other candidates were nominated in the manner provided for in our By-Laws. The slate of nominees submitted by the nominating committee is elected as follows:

President	Mr. Fred E. Miller
Vice-President	Mr. Jess Rentsch
Secretary	Mr. Robert Waiste, Jr.
Treasurer	Mrs. Lloyd A. Wilcox
Director, 3 years	Mr. C. T. L. Murphy
Editor	Mr. Irving Ewen

MEMBERSHIP DATA

Our current membership data is as follows:

	Total Memberships	Total Members
Family memberships (not including children)	137	274
Single adult memberships	121	121
Junior members	9	9
Total	267	404

Total memberships last year		245
New members:		
Adult	37	
Junior	1	38
		283
Members Lost:		
Adult-Resigned	7	
-Didn't renew	5	
-Deceased	2	
Junior-Resigned	2	16
		267

Respectfully submitted,
Shirley M. O'Dell, Secretary

INFORMATION FOR MARCH FIELD TRIP

Society trippers will assemble at 10:00 A.M. on Sunday, 28 March 1965 at the Erratic Rock State Park signboard on Highway 18 about 7 or 8 miles west of McMinnville. Travelers may elect to use US 99W through McMinnville and a mile or so beyond to the intersection of State 18. This is the "old road."

But a new section of Hwy 18 has now been finished which by-passes McMinnville and crosses US 99W at the junction above mentioned. There is a well marked exit from US 99 about three miles west of Dundee. (Note in Dundee a fine new rock shop on your left.) This sign, No. 18, advertises roads to Salem, Dayton and other points. Stay on 18 all the way, passing to the south of McMinnville which is in view on your right, and crossing 99 on an underpass. From this junction continue on west for six miles to the State Highway marker which advertises Erratic Rock State Park. Here there is ample roadside parking.

At 10 o'clock the caravan will move west a part of a mile to the intersection of a country road on the right. A roadside stand is located here. Return east on this road which parallels the new highway, to the park entrance. Roadside parking will suffice. Here an asphalt-paved path leads up the hill to the erratic, somewhat less than half a mile. Take cameras but leave picks in the car.

This rock is a stupendous monolith, roughly 14 ft. by 17 ft. and deep as one's shoulders. Ice-rafted to this hilltop it now lies at an altitude of possibly 400 feet above sea level. Trip leader, Margaret Steere, will speak on the composition and probable origin of the rock. Use your cameras. Besides the rock some excellent views of the valley are available.

From this point the trippers will move as a caravan to a quarry near Buell, then south and east to a fossil location in the Eola Hills. From this place they will cross the Willamette either through Salem or Independence to a railroad cut where excellent marine casts are available in abundance.

Remember, members and guests, to display bumper cards (15¢ each) at all times, even when leaving home. In highway travel leave space between cars so that faster highway travel may move through the caravan. It is imperative that your car never proceed out of sight of the car following you. If he stops, you stop, and the whole caravan is brought to a halt. We have had instances of loss of part of a caravan with the violation of this basic rule.

Bring cameras, picks, lunches, hiking shoes, maybe rain gear, collection bags.

CTLM

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NEWS OF MEMBERS IN SCOUTING

Kip, 10-year-old son of Mr & Mrs. JIM RUNNING, has won the "Webelos" award, the highest honor given to Cub Scouts. This should be highly gratifying to Mr. Running, who is an assistant scoutmaster. Congratulations to all the Runnings as they share this honor.

Bob Wilbur's 12-year-old granddaughter Miss Susan Linder was Miss Cookie 1965 at the Junior Girl Scouts of San Diego annual cookie sale. Cur hearty congratulations, Miss Susan.

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ANNUAL BANQUET NEWS - NOTES FOR EXHIBITORS

Our Exhibits Committee for the Annual Banquet March 12 hopes to enlist participation of a greater percentage of the Society's membership than in previous banquets. The average member who has been with the Society any length of time becomes a-kin to the lowly pack-rat; - has some mighty interesting stuff cached away that most of us never see.

A single small specimen, even of unknown identity, may surpass in interest a bucket-full of large ones that would "knock your eyes out." So let's have them. Fossils, photos, crystals, ore-samples, meteorites, drill-cores, or what-have-you all meet on common ground in a geological display such as this. In the past exhibits some of the most interesting material could as well have been classed also as archeological.

Name of exhibitor should appear with the display. Brief information printed or typed on neat cards should add greatly to the interest in material exhibited. Containers used in transporting exhibits through the College Center Building should be well lined or tight enough to prevent leakage of grit on the floors. A Ball-Room floow is no place for sand (or carborundum)! Tables, thirty by seventy-two inches, will be topped with heavy paper and arranged in double rows back-to-back so as to limit all exhibits to a 30-inch depth. The seven-foot fabric screen full width of the room will be available for use in displaying photos, maps, etc.

Committee-men wearing GSOC identification badges will provide "curb-service" noon to six p. m. at the Montgomery St. entrance to College Center. Exhibits unloaded at that point will be taken to the Display room where they will be kept under observation until called for by the owner. Adjacent to the Banquet Room, it will be available at 3:00 p. m. (possibly earlier) for arrangement of displays by the owners. Every effort should be made to complete "setting up" in time for official opening of Display Room at five p. m. or as soon thereafter as possible.

R. F. Wilbur, Chairman
Exhibits Committee

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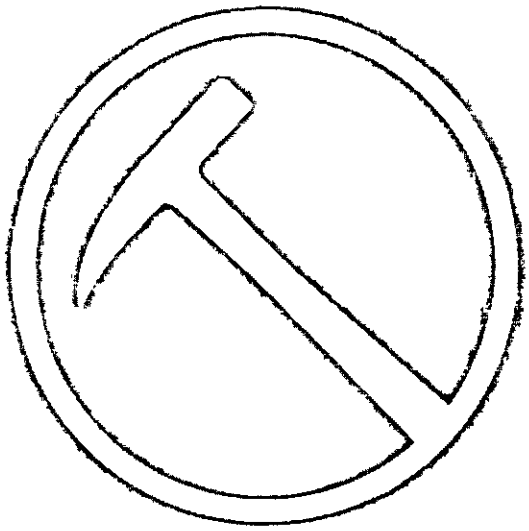
MEMBERSHIP ROSTER

name	street address	city, state & Zip No.	telephone
NEW MEMBERS			
ALLEN, Mrs. Ruth M.	636 S.E. Andover Place	Portland, Oregon-97202	234-8080
FOSTER, Mr. & Mrs. Gordon D.	Post Office Box 542	McCloud, California	964-2658
LYTLE, Mr. & Mrs. Marvin J.	5344 S.E. 34th Avenue	Portland, Oregon-97202	775-9334
RICH, Miss Dorothy C.	2572 N.W. Pettygrove Street	Portland, Oregon-972__	223-7675
SEAMAN, Mr. & Mrs. Cecil E.	3925 S.E. Grant Court	Portland, Oregon-97214	
(mailing address)	204 McKay Building 408 S.W. 3rd Avenue	Portland, Oregon-972__	228-3725
STEWART, Miss Emma Jo	431 S.E. 33rd Avenue	Portland, Oregon-97214	236-6903
STRONG, Mr. Archie K.	4307 S.W. Idaho Drive	Portland, Oregon-972__	244-9490
ADDRESS CHANGE			
COOPER, Mr. Norman A.	195-2nd St. Apt. #10	Lake Oswego, Ore. 97034	
FREED, Miss Hilda W.			
GAVIGAN, Mr. & Mrs. Lee	943 North Bryant Street	Portland, Oregon 97217	
GOUCHER, Miss Sharon Kay	Post Office Box 542	McCloud, California	
HELM, Mrs. Gwen	3242 S.E. Alder Court	Portland, Oregon 972__	236-6887

July 65



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

List of past Presidents

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

EXECUTIVE COMMITTEE

president	MILLER, Mr. Fred E.	3122 S. E. 73rd Avenue	Portland, Oregon - 97206	771-6154
vice president	RENTSCH, Mr. Jess R.	1110 S. W. 11th Avenue	Portland, Oregon - 97205	223-2161
secretary	WAISTE, Mrs. Robert	133 S. E. 27th Avenue	Portland, Oregon - 97214	235-4320
treasurer	WILCOX, Mrs. Lloyd A.	16650 Lake Forest Blvd.	Lake Grove, Oregon - 97034	636-6594
directors				
1 year	HOPSON, Dr. Ruth E.	4138 S. W. 4th Avenue	Portland, Oregon - 97201	222-1430
2 years	STEERE, Miss Margaret L.	2064 S. E. 72nd Avenue	Portland, Oregon - 97216	774-6382
3 years	MURPHY, Mr. C. Truman L.	2027 N. E. Wasco Street	Portland, Oregon - 97232	282-2027
past presidents				
1 year	DELANO, Mr. Leonard H.	1536 S. E. 11th Avenue	Portland, Oregon - 97214	236-2139
2 years	EWEN, Mr. Irving G.	4128 N. E. 76th Avenue	Portland, Oregon - 97218	281-7098

GEOLOGICAL NEWS LETTER STAFF

editor	EWEN, Mr. Irving G.	4128 N. E. 76th Avenue	Portland, Oregon - 97218	281-7098
business mgr.	WILBUR, Mr. Robert F.	2020 S. E. Salmon Street	Portland, Oregon - 97214	235-7284

ACTIVITIES CHAIRMEN

field trips	GAVIGAN, Mr. Lee T.	943 N. Bryant Street	Portland, Oregon - 97217	289-8041
lectures (acting)	HOWELL, Dr. Paul W.	9130 S. W. Borders St.	Portland, Oregon - 97223	244-5728
librarian	MILLER, Mrs. Murray R.	1018 Promontory Avenue	Oregon City, Oregon - 97045	656-6724
library night	MILLER, Mr. Murray R.	1018 Promontory Avenue	Oregon City Oregon - 97045	656-6724
luncheons	SIMON,. Mr. Leo F.	7006 S. E. 21st Avenue	Portland, Oregon - 97202	236-0549
membership	GILLIAM, Mrs. Elizabeth A.	1729 N. E. 17th Avenue	Portland, Oregon - 97212	284-8922
publications	MASON, Mr. Ralph S.	3932 S. W. Idaho Terr.	Portland, Oregon - 97221	244-2106
publicity	MOLTZNER, Mrs. Emily	7032 S. E. Stark Street	Portland, Oregon - 97216	254-2362
telephone	ZIMMER, Miss Hazel F.	805 S. E. 60th Avenue	Portland, Oregon - 97215	236-8319
	ZIMMER Miss Ruby M.	805 S. E. 60th Avenue	Portland, Oregon - 97215	236-8319

G. S. O. C. CALENDAR FOR APRIL 1965

Every Thursday — LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon
12:00 M. - G. S. O. C. members, guests, and visitors are invited to attend these weekly luncheon sessions. No reservations are required and no minimum charge is made. Food selections are available "a la carte" in the main cafeteria.

9 April — LECTURE - Public library, 801 S. W. 10th Avenue, Portland, Oregon
7:30 P. M. - Speaker and topic to be announced.

SPECIAL - Oregon Academy of Science Meeting in Portland, Oregon

9 April Friday — 8:45 A. M. - A Symposium on Engineering Geology will be presented in room 338 of the Portland State College Center.
10:00 A. M. - Field trip up the Columbia Gorge led by Dr. John Eliot Allen, Head of the Department of Geology at P. S. C. Tour leaves from Sheraton Hotel.
1.00 P. M. - Presentation of papers on geology and related subjects in room 338 of the Portland State College Center.

10 April Saturday — 9:00 A. M. - Presentation of additional papers on geology and related subjects in room 71 of State Hall at Portland State College.
9:00 A. M. - A Symposium on the Columbia River Gorge will be presented in the Ballroom of the Sheraton Hotel.
Events of the Annual Meeting of the Oregon Academy of Science are open to G. S. O. C. members, guests and visitors. For additional information phone Dr. Clinton D. Clarkson at Portland State College, 226-7271, ext. 245.

11 April Sunday — FIELD TRIP - Walking tour of the Lloyd Center.
1:45 P. M. - Assemble on the Multnomah Level of the Lloyd Center at the U. S. National Bank (west of Mannings Cafeteria).
2:00 P. M. - Trip leader is Mr. Ralph S. Mason, State Mining Engineer with the State of Oregon Department of Geology and Mineral Industries. Ralph will describe the source, processing, and placement of some of the many decorative rocks and minerals used in the store fronts. This tour, only slightly more strenuous than the "armchair" variety, is a holdover from the previous year and is in keeping with the theme of "Man and His Minerals".

20 April Tuesday — LIBRARY NIGHT - Lewis and Clark College in southwest Portland, Oregon
7:30 P. M. - Meet in Peebles Hall (biology building) on the campus. The first hour is reserved for browsing and reading.
8:30 P. M. - Program will include examination and discussion of fossils from Prineville-Mitchel area, a preview of what to look for and see on the forthcoming field trip in May. G. S. O. C. ers and guests are invited to bring their own fossils from this area. Refreshments following.

23 April Friday — LECTURE - Public library, 801 S. W. 10th Avenue, Portland, Oregon
7:30 P. M. - Speaker and topic to be announced.

25 April Sunday — FIELD TRIP - Nehalem River country via bus (reservations required).
7:45 A. M. (DAYLIGHT SAVING TIME!) Assemble at Portland State College at the Mill Street entrance (to State Hall) between Broadway and Park Avenues. Ample parking (free on Sundays) should be available nearby.
8:00 A. M. Bus departs for the first tour stop near the tunnel on the Sunset Highway. Here Trip Leader Dr. Paul W. Howell will explain the local geology.
For additional information and reservations telephone Mr. C. T. L. Murphy at 282-2027. (Also see "Information for April 25 Field Trip" in the A pril issue of the Geological News Letter.)

NEWS OF MEMBERS

by Rowena Hoven

The G. S. O. C. membership is keeping the transportation companies busy. Coming and going are:

AVA CROWE who enjoyed a leisurely Christmas cruise in the West Indies. She is now planning a South American freighter trip.

MARJORY FESSENDEN has returned from her six-months tour of duty in Mexico with a group of Lewis and Clark students. After unpacking her bags she started off again on a one-week trip to Grangeville, Idaho, to visit her mother and other members of her family. On this trip she was accompanied by GWEN HELM. Unfortunately the mining areas and other spots dear to the heart of a geologist were covered with snow, but at least they were able to gather valuable information for future trips.

BOB WILBUR, our busy business manager, missed the March 28 field trip as he was in Arkansas visiting his mother.

JENNIE and GEORGE WALTERS are busy deciding on their spring itinerary as they hope to get the first trip on the road some time in April.

SHIRLEY O'DELL has returned from her vacation in South America.

L. LISLE WALKER is a staff member on the Mazama Annual Publication Board. The Annual has two articles by William S. Wise, Geology Department, University of California (Santa Barbara). One is entitled "The Geologic History of Mt. Hood"and the other is "Guide to the Volcanic Rocks of the Cascade Range". Lisle is also Chairman of the Mazama Climbing Committee and DOROTHY RICH, one of our newer members, is Treasurer of the Commitee.

DR. RUTH HOPSON will be the speaker for the Audobon Society's annual banquet. Her talk will be "Reflections from a leisurely trip: a naturalist's view from my camp".

LEONARD H. DELANO, a past president of our Society, left on March 28 for Washington, D. C. to attend the joint convention of the American Society of Photogrammetry and the American Congress of Surveying and Mapping. He will serve as moderator at one of the technical sessions on mapping, photogrammetry and photo interpretation. Leonard has been very active in the local Columbia River Region Chapter of the American Society of Photogrammetry. He is a past president of this group and at present is the National Council member from this Chapter. Recently he was given the Ford Bartlett award for membership recruitment in the local Columbia River Region group.

MRS. LEE GAVIGAN who recently underwent surgery at Physicians and Surgeons Hospital is reported to be recovering nicely.

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CRUMBS FROM THE COOKIE TABLE

From the women: "I made heart-shaped cookies -- it's Valentine's Day" . . . . "How appropriate -- I bought napkins with hearts on them" . . . . "I must get your recipe for these; are they hard to make?" . . . . "Sorry I didn't have time to bake some but I think these are better than mine would be" . . . "Your tables are beautiful, especially the gold embossed tablecloths".

From the men: "Oh, fine! This is just what we've been needing for a long time" . . . . "The way to a man's heart is right here on these tables" . . . . (13-year old boy) "Which are the home-made ones?" . . . . "I like these called rocks; suggest geology" . . . . "My wife didn't make these -- I did. Is this permissible?" "I can't stay but may I buy some to take with me? I do enjoy these home-made cookies. I'm a bachelor". Don't crowd, girls!

From the refreshments chairman as she gathered up the meager collection: "Well! Guess we'll have to have a coffee hour to finance the coffee hour!"

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MISSOULA FLOOD IN ATHLETIC FIELD

by Irma Sullivan

Students, players and spectators who will use the new athletic field at Oregon City High School when completed will be in close contact with direct evidence of a very dramatic episode in the history of the Northwest. The clearing and excavating which have been in progress the past two or three years have uncovered some geologic deposits previously hidden by the vegetation.

Last fall, before the rains turned it into a soapy quagmire, Dr. Paul Howell, geologist for the Corps of Army Engineers, and Mr. Murray Miller of Oregon City made a brief survey of the field and observed several distinct deposits: 1) a chalky white deposit of volcanic ash; 2) very fine clay, gray to buff; 3) a very old soil deposit containing particles of mica; 4) a deposit of questionable origin with fragments of charred wood; and 5) Missoula flood silt containing glacial erratics.

Much research, including carbon testing of the charred wood, will have to be done before the origin of the first four deposits can be determined with any degree of accuracy. But the story of the Missoula Flood silt is the one that carries the drama. This great flood played a very effective part in shaping the contours of the Columbia Basin, including the lower Willamette valley. While there is still some controversy on the subject, more and more geologists are accepting the theory today. It was first presented by Dr. J. Harlan Bretz in 1923. He spent seven years in the field making a study of the forces which shaped the Columbia River valley, then returned in 1952 to further review his previous work. At that time he published a detailed report confirming his earlier findings.

While Dr. Bretz makes no attempt to place a definite time on the occurrence of the flood, he observes that the conditions would place it in the late Pleistocene or very early Recent period. During this time of the Continental glacier, the Cordillera ice sheet extended southward from Canada over the northern boundaries of Washington, Idaho, and Montana. From the main body of this sheet, a broad arm extended southward into eastern Washington, ending at a point just south of the present-day city of Spokane. Here its advance became stabilized by melting along the southern edge.

In western Montana, natural drainage from the mountain valleys led northwestward toward Lake Pend Oreille. Here the Bitterroot Mountains end abruptly, dropping thousands of feet into the Pend Oreille - Spokane Valley, which leads into the plateau lands of eastern Washington. And here the ice shield crowded against the mountain range, building up to cut off the drainage, and forcing the waters to back up into a huge lake. This Lake Missoula has been estimated to have been 2000 feet deep at the dam, and to have a volume of 500 cubic miles of water. Hydrostatic pressure and a warming climate weakened the dam to the point that it collapsed, allowing this immense volume of water to surge over the empty plateau of eastern Washington. Rushing toward the southwest, it was again funneled into the narrow Wallula Gap, near Walla Walla. As it then followed the Columbia toward the sea, it backed and overflowed into the various tributary streams, including the Willamette.

This damming and flooding is believed to have occurred seven times or more during the three or four advances and retreats of the continental glacier. As the water rushed onward it carried huge icebergs loaded with boulders plucked from the lands over which the glacier had traveled. These icebergs gradually melted, but not until some had been rafted as far up the Willamette as Eugene. Their final resting place is marked by deposits of granite, shist, and quartzite, all alien to the valley. The distance which they traveled before depositing their loads, and the size of some of the boulders carried, gives evidence of the immense volume and force of the water which carried them.

Glacial erratics found in the Willamette valley vary from the size of an automobile to m ere fragments. Those observed in the athletic field were approximately 8 to 10 inches in diameter or smaller. Many of the granitic specimens had been softened by decomposition so that the blade of the scrapers had cut into them. Many others were smoothly rounded quartzite. One of the granite pieces revealed crystals of iron pyrite inside when broken.

As the flooding water slowed and receded, deposits of sand and silt were left behind. More recent erosional forces have cut channels into these deposits, since the composition is generally quite loose.

Further evidence of the action of these flood waters in this area may be seen in the Camassia Natural Area at West Linn, where a small channeled scabland has been created.

MIHELCICS DOWN UNDER

Bill Freer recently received the following as an "aerogramme" from the Mihelcics from Melbourne in handwriting as elegent as the prose it conveys and as refreshing as the thought that prompted it.

Editor

Melbourne, Australia
March 6, 1965

Dear Bill

A note of greeting from "down under" to you and the Society. After flying high with stops at Pago Pago, Samoa where the virtues of wall-less thatched roofed homes were explained to us - at Nandi, Fiji where we saw the devastation of a hurricane which had preceded us by 12 hours and where the office roof of our hotel had departed with the gusts. Here we stewed in tropical heat and loved it. After 4 days, we rose above the clouds to come down at Auckland, New Zealand. The Pacific is blue - the clouds are fleecy white - and the atolls are fringed in turquoise with white lace - as seen from above.

New Zealand is quite rugged in outline horizontally and vertically. We flew down to Rotarua - had a taxi guide for a day's tour of hot springs - geysers - and mud springs. The Maoris are modern in speech, dress and manner of living. They may and do cook (under pressure) on steam vents in their back yards. Bathe in hot springs (cooled with cool water). Odor of sulfur abounds. Maori carvings have a similarity to totem pole carving.

Most of the rocky surface is scoria - tho at some distance may be seen a good sized rhyolite flow.

At the turn of the century, a volcano blew vast quantities of fine dust into the air - an ensuing rain dropped in on a village - burying it - as was Pompeii. It is being excavated - wine filled bottles and all.

Here we did a welcome service. The owner of the store had obtained a copy of Victors book on tumbling and was making up a tumbler. - we were able to identify his "gemstones" - flint - chert and a colored opal. - and offered timely suggestions as to tumbling proportions and techniques. We obtained paua shells - smaller but more brilliant than abalone when polished. Some clever applications of paua shells are seen at various stores.

The museum at Christchurch warmed our hearts. The mineral displays were instructive - very. One case was devoted to showing the difference between a rock and a mineral in a concise way. Even the least informed learned something - and there were many interested viewers.

This is but a sketchy review of part of our journey. More details when we get back.

Lil & John

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MOUNT RAINIER

Glorious apparition, it looms over Puget Sound --
Cne of God's mile-posts blacing, the doubtful to astound;
On clear days a revelation, it points toward the sky,
When hidden by haze a comfort--Rainier is standing by;

We know Rainier is towering though veiled by fog or storm;
We know that God is present though we cannot see His form.

By -- Franklin Epler

(From "Impatient Seas" poetry book.)

DR. ALLEN SPEAKS ON PAKISTAN

Pakistan, a land of ancient and conflicting cultures, was the topic of a lecture given by Dr. John Eliot Allen, Head of the Department of Geology at Portland State College, on March 26th at the Central Library. Dr. Allen, a past-president and a long-time member of the Geological Society, spent a year as head of the geology department at the University of Peshawar (p-shar') in West Pakistan. Being chosen for this position was a signal honor for both Dr. Allen and Portland State, since the preceding department heads had been from Cambridge and Harvard Universities.

Pakistan is a country divided into two widely separated sections. East Pakistan, the smaller of the two, lies at the mouth of the Ganges River and is largely delta country with a population density of over 1000 persons per square mile. West Pakistan is some 1500 miles distant toward the northwest and is a little larger than the state of Texas. The Indus River and its tributaries flow through what is otherwise a mountainous and desert country, but even here the population averages 145 persons per square mile.

On the north, the Himalaya Mountains rise as a barrier, and to the west is the Hindu Kush Range, through which passes the famed Khyber Pass. Peshawar, the sixth largest city of West Pakistan is located in this northwestern corner, and the University about half way between the city and the pass.

The first month or two in an Asian country is usually spent in getting over a "cultural shock". Dr. Allen found no exception to this. He did find that getting into the country as much as possible, from health and safety considerations, helped in understanding what is happening there.

Language poses a very serious problem in the educational progress. Three native languages are spoken, each in a different sector. The official language, taught in high school, is Urdu, and all college work is done in English. The language difficulty added problems in selecting students for college classes, since no communication at all was possible with many of the applicants.

The educationsl system is modeled after the English. However, the caste system, traditional in the minds of the people (though forbidden officially), made field work by the geology students very difficult to promote.

The people represent an amazing assortment of racial types - from very dark to very light, from short to tall, and possessing Grecian to Mongolian features. These people are all bound together by a common religion, Islam. The ancient history of the country is still visible, not only in the features and culture of the people, but in the ruins of ancient cities dating back to 3000 B. C., and artifacts from the Stone Age 200,000 years old. An art form, closely related to Grecian art is believed to have been brought into the country by Alexander the Great in 326 B. C. and remains as a part of the culture today.

Throughout history, this northwestern part of West Pakistan has been occupied by the Pathan (pe-tain') tribes who have never been completely subdued. Every home on the University Campus must be constantly protected by an armed guard against these tribesmen, whose chief means of livelihood consists of raiding villages, travelers, or anyone else who seems a likely victim. The Pakistani government now pays each tribal chieftain an annual subsidy to discourage this raiding, and they are gradually accepting schools, roads, electrification, and irrigation in exchange for their former practices. However, it is still unsafe for a traveler to leave the main highway without an armed guard and permission from the local tribe.

Most of the valley villages consist of mud huts so tightly spaced that one square mile may contain as many as 10,000 people. The economy is largely agricultural, with most of the work being done by man-power. Water buffaloes, donkeys, and Brahma cattle are used as beasts of burden, though trucks may be seen hauling sugar cane to the mills. A more common sight is a farmer plowing his field with a wooden plow.

Peshawar is a walled city, famous for its bazaars. These are one-family businesses, dealing in one product - cloth, brassware, copper, or shoes, and occupying a frontage of perhaps ten feet.

The diet consists largely of ground wheat made into tortilla-like cakes, or a heavy coarse bread, an inch thick and perhaps a foot across. Rice is also very common, as are

Pakistan - cont'd.

vegetables and fruit in season. Meat is very scarce and is rarely eaten by the ordinary person. The limited amount of arable land and the high population make any food a scarcity, and it is rationed closely. UNESCO, SEATO, and United States aid are helping in this respect by providing the means of modernizing the irrigation system and machinery for farming.

The Hindu Kush Mountains are extremely rugged with complex folds and overthrusts. The areas examined exposed strata from pre-Tertiary to Recent deposition. The tilted and up-thrust ridges attested to the violence of the creation of these mountains. Much of the area is inaccessable because of the tribes which occupy the country, and a telephoto lens sometimes provided the only means by which certain formations could be examined.

Few minerals are being produced, some iron prospecting is being conducted, and salt is removed from a deposit believed by Dr. Allen to be a salt sill or plug. The little coal which is mined is produced by hand labor at the rate of about 500 tons per day. Emeralds are taken from one region.

Dr. Allen's talk was richly illustrated with slides showing the people, cities, mountains, and valleys which make up this part of West Pakistan. The time passed so quickly that the pictures seemed far too few, and the lecture much too short. This was a most fascinating and rewarding evening.

Irma Sullivan

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DR. ALLEN PROPOSES URBAN GEOLOGY CENTER

"Project Auger" was the subject of a panel discussion on KGW-TV March 14. Moderator was E. DEAN ANDERSON, executive assistant to the president of Portland State College. Panel members were DR. JOHN ELIOT ALLEN, professor of geology at PSC, ROBERT BALDWIN, Multnomah County Planning Comm., WALTER WRIGHT, senior engineer of Shannon & Wilson, and LEWIS CRUTCHER, Portland architect.

The center would provide training for graduate geologists wanting to specialize, specifically, to initiate studies of the geological phases of engineering and structural problems in the Portland area. It would be the first such center in the United States.

Dr. Allen, our Society's 1946 president, is always a welcome speaker at our meetings. March 26th a capacity crowd heard his "Geologist's View of Pakistan".

Lewis Crutcher was guest speaker at our banquet and received a standing ovation.

Mr. Baldwin mentioned the assistance of a geologist on his staff. He is our tireless worker IRVING G. EWEN, a graduate of Portland State College. Also, our just retired president, a member of the board and editor of our News Letter. We are very proud of him and are certain he has a distinguished career ahead of him.

Emily Moltzner

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INFORMATION FOR APRIL 25 FIELD TRIP

The Nehalem River country will be the locale of the April 25th field excursion. This will be by Trailways bus. Departing Sun. morning 8 o'clock sharp (D. S. T.) from Mill St. entrance of Portland State College, trippers will journey out US 26, Sunset Hwy, making the first stop at the tunnel where the Keasey formation is exposed.

Continuing to the Vernonia road the tour descends Nehalem River to a rock quarry of Goble volcanics. Through the town of Vernonia and down the river about 5 miles an important stop is the Pittsburg Bluff.

Keasey formation is the next stop. Fishawk Falls, the result of a big dike intrusion, gets full treatment. The most remote visitation of the 200 mile tour is a big basalt sill of vertical platey structure up toward the southwestern environs of Astoria.

Dr. Paul Howell will be Trip Leader. Bus passage is by advance reservation and cost of passage is $3.00. Truman Murphy has fare receipts and will accept checks made out to C. T. L. Murphy. Checks made out to G. S. O. C. will not be accepted. First places will be awarded society members and guests.

Lunches, field gear, cameras, picks, hand lenses, collecting bags, are some of impedimenta recommended. - Rain gear if weather so indicates.

C. T. L. Murphy

SOCIETY VISITS REYNOLDS METALS COMPANY

Thursday, February 25, was a mild evening, the kind of weather that invites spring, crocuses, snowdrops, and one looks about to see if the Camellias are beginning to bloom. That night our Society was guest of the Reynolds Metals Company at their gigantic Aluminum Reduction Plant, Troutdale. Mr. Ralph L. Haight, personnel director, greeted sixty visitors, after which the party was divided into four groups and proceeded under the able direction of Engineers Milton E. Clarke, Jack Exall, David Gjendem and Howard F. Moe.

At this point I'm consulting the Company's brochure and other sources in order that this write-up may be better understood by the readers. Because of electrical influence surrounding the tour our watches were turned in at the engineering office . . .

Through the modern machine shop, complete with an array of lathes, shears, shapers and the like, we were conducted to the carbon plant where are produced the electrodes for the reduction process. 24 anodes are employed in every furnace and since they are largely consumed after 6-1/3 days of use, the carbon plant must turn out about 2400 anodes each day. These are replaced on the line at staggered intervals for the smelting process is continuous. We visited anode rodding rooms where these carbon terminals are secured to copper rods ready for use in the furnaces.

We were shown where the railroad cars of white alumina powder were unloaded, and the alumina carried in on conveyor belts to storage bins aloft. Bauxite is mined in Arkansas and Jamaica and is further refined in Arkansas and Texas, to alumina. And, not until we called in at storage rooms of scrap copper, magnesium, chrome oxide, boron and silicon did we realize that the output of the smelting process was largely one of alloyed metals instead of pure aluminum . . .

At last -- the potrooms, long as a couple of city blocks! This is what we came to see! There are eight identical rooms each with seventy electric reduction cells called "pots", a total of 560 pots, all cooking up a continuous batter of molten aluminum. It was a tremendous sight and as we walked along the sizzling units we realized that they were all operating with little attention. Occasionally an employee used a giant poker to break up some surface cake or to throw in a shovelful of white alumina. Or to lower by a few inches the rod of an anode that was burning off ahead of its 23 mates on that particular pot.

Large heavy-duty bus bars carry 4-1/2 to 5 volts of direct electric current to the electrodes but the amperage is in excess of 60,000 in each pot. Current is wired in series for each room.

After seeing these facilities one can understand the consternation facing the Company when, sometimes at low-water periods during the winter months, the Bonneville pool imposes a "brown-out" of interruptible current. Then whole pot lines must be shut off, with the attendant congealing of the mass, the cooling of the carbons, and the appalling job of getting the job started again when the supply of electricity becomes available.

Production is continuous and individual pots turn out about 1000 pounds of aluminum per day; this is siphoned off at 40-hour intervals into crucibles, minimum capacity of each being six thousand pounds. These crucibles are picked up by huge lift trucks and carried to the ingot station where there are two casting machines; we saw the red-hot liquid (pink) being poured into cast iron molds of 50 and 1,000 pound sizes. Through the storage room we noted many nested piles of quality ingots, some carefully wrapped in plastic . . . . 180 million pounds of aluminim is produced annually.

Here we would like to mention the "holding furnace". The capacity of this gasfired furnace is twenty thousand pounds, and it is used to alloy aluminum with such materials as magnesium, boron copper or silicon. Behind this furnace are molds for 5 lbs. to 30-pound ingots. We were cautioned against touching any of the ingots --- they are hot!!

The Tour Information folder reports that this Troutdale plant employs up to 800 persons, with a payroll in excess of 5 million dollars; the Company spends 3 million with local business firms; 4 million goes into freight (truck & rail) expenses, and that the electric bill for power is more than 3 million dollars annually. This plant pays out 1/2 million dollars annually in state and local taxes in Oregon.

We were impressed with the efficient operation in all phases, with astonishingly few people (on this swing shift) keeping the plant working. There was a noticeable absence of fumes, these being siphoned off into collectors. Gas escaping to the ceiling is caught in a scrubbing process.

Society Visits Reynolds Metals Company - cont'd

I understand that in the cycle of the science of aluminum recovery a field trip of four years ago was conducted by Mr. Andy Corcoran of the Oregon State Department of Geology and Mineral Industries; a busload of society members was escorted to the Oregon bauxite area south of Salem. It was showed here that Oregon has a reserve of the ore of aluminum. In his recent illustrated lecture the Society again heard Andy Corcoran tell of his experiences in the bauxite regions of Jamaica and Surinam and of the process of conversion of the bauxite ore into powdered alumina. Tonight it was our privilege to see the alumina converted into cast aluminum from which will be fabricated the countless tools of our every-day usage. Too, this brings to mind a Society luncheon of last spring when John Robinson of Robinson & Roberts, Tacoma, Washington, ground water geologists, spoke of his travels in Jamaica where he spent considerable time; he mentioned that Jamaica is the world's largest shipper of bauxite.

The Society is much indebted to Messrs. Ralph Haight, Milton Clarke, Jack Exall, David Gjendem and Howard Moe for a most educational experience. These men returned from their off-duty status to give us their time and knowledge. This completes another episode of the program of "Man and His Minerals."

Elizabeth Gilliam

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DRIFTING DOWN THE OWYHEE

On February 26, a full house of GSOCers and friends were treated to an evening of arm-chair adventure when Mr. Floyd Rogers showed slides and movies of a trip down a section of the Owyhee River. Drifting downstream in rubber rafts, he and three fellow firemen ran the rapids, photographed the scenery, explored caves, and managed, inadvertently, to set fire to the only tree along the whole route!

The river is quite wild, and dangerous in places, especially where it flows under a huge overhand without leaving headroom. One of the boats overturned here while trying to by-pass the rock, spilling valuable equipment into the bottom of the river and soaking the rest of the load into a soggy mess.

The caves are natural formations in the basaltic cliffs lining the river banks and had been used as dwelling places by early Indians, probably Shoshone. Some were near water level, and others were located far up the cliff. One was so high as to be virtually inaccessible, yet the entrance seemed to be partially walled up with neatly placed stone. In the short time they had to explore these caves, only a brief examination could be made, but their findings were most promising.

In the few spots where access to the river was possible from the uplands, Indian camp-sites were found. These were low mounds, made, apparently by the Indian's practice of discarding all trash just outside the front door, somewhat in the manner of some of our present-day campers. None of these mounds have been examined, so the treasures they may contain are still waiting to be discovered. It is hoped that the professionals in the field will be able to make their studies before it is spoiled by amateur collectors.

On some of these mounds the early settlers of the region built cabins. They are still standing with all their furnishings - clothing, dishes, and beds - just as though the owners had gone to town one Saturday night and forgot the way back home.

The scenery Mr. Rogers showed was truly magnificent with towering walls and eroded pinnacles. His enthusiasm and obvious enjoyment of the trip was quite contagious, and his slyly humorous comments were a delight to the entire audience. So many remained for cookies and coffee and further discussion that the social hour threatened to run over-time. It was, indeed, a most refreshing evening.

Irma Sullivan

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REPORTER REVIEWS BANQUET

When Emily Moltzner wants you to do something, you usually wind up doing it. She insisted that I write something about the annual banquet of the Geological Society of the Oregon Country.

I insisted that just about everyone must have been there, and thus they all knew about it first hand anyway and anything said would be redundant. She insisted. And so ----

First of all, it should be called the annual Thunderegg banquet, not because of the food but because of the surprising qualities of the society itself.

An outsider might logically suspect that the annual banquet of the Geological Society of the Oregon Country would be a rather dull and drab affair, composed of a group of geologists slowly eroding each other away with shop talk.

But, like the thunderegg, once you break in, there are many surprises. You find that the membership ranges from the very young to the very old. That geology interests doctors, lawyers, engineers, school teachers, home makers, stenographers, students, accountants, clerks -- even geologists and newspaper men. You find that there are many hidden and glittering talents -- speakers, musicians, botanists, writers, historians, humorists, singers, biologists, poets, painters. In fact, you find the whole range of the best in human endeavors.

And the talk at the dinner may possibly be on rocks or fossils, but it might also be on international politics, pop art, the Dead Sea scrolls, or the chances of the Yankees grabbing another pennant this year.

The periodic table shows the earth made of a surprising number of different elements. The GSOC banquet tables show a society made up of even more surprising elements.

And, as Truman Murphy would say, some of them haven't even been identified yet.

That's what makes it so darned interesting.

Dick Fagan

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ACKNOWLEDGMENTS AND APPRECIATION FOR PUBLICITY

MRS. ERVIN ABRAHAM, Rainier, Oregon for SAM MERCER story in Rainier Review and The Oregonian, October 1964 (our introduction to him.)

Clarke Publishing Co.: TED HAUSAUER, City News Dept.

The Oregon Journal: ED. O'MEARA, city editor; DICK FAGAN, associate editor and "mill ends" columnist; staff writers MARTIN CLARK, ERICK GORANSON and JIM RUNNING.

The Oregonian: PAUL LAARTZ, city editor; staff writer CHARLES K. HANNA: VELMA CLYDE, club editor.

Radio KPFM: GEORGE BOSTON, announcer "Music Out of the Night".

Group Services Central Library: MRS. HELENGRANT WEAVER and MRS. EMILY WIGGINS, posting our calendar of events and informing inquirers.

Portland Book Co., downtown store, 412 SW 3rd Ave., display of books on geologic and allied subjects by MARILYN MATTHEWS.

Pictures: JAMES VINCENT, The Oregon Journal, and GSOC members FRED E. MILLER and LEONARD DELANO.

My committee consisted of: MRS. JOHN ELIOT ALLEN, MRS. OSCAR BERG, IRVING G. EWEN, DICK FAGAN, DR. ARTHUR C. JONES, MRS. ELIZABETH GILLIAM, MRS. LOUIS OBERSON and CECIL SEAMAN.

Emily Moltzner, Publicity Chairman
30th Annual Banquet

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THIRTIETH ANNUAL BANQUET

Geological Society
of the
Oregon Country

photography by
Delano Photographics
except as noted

Lillian Miller, Irving Ewen, and Banquet Co-chairman May Dunn examine oyster shells old and new. (Photo by Fred Miller.)

Retiring Pres. Irv Ewen presents two traditional symbols of office, the gavel and Thomas Condon's book "The Two Islands" to new Pres. Fred Miller.

Incoming President Fred Miller with big pick, a new symbol of office.

Retiring Pres. Irving Ewen with guest speaker Lewis Crutcher, AIA, and master of ceremonies Ralph Mason.

Guest speaker Lewis Crutcher, AIA, explains some methods used in "Combatting Geological Delinquency".

Divertissement - a not-so-serious portrayal of a wedding with Jack McCourtney as best man, William Freer as groom, Frank Merryman as preacher, and Bob Anderson as "the bride".

The Flintstones - an "instrumental" trio composed of Murray Miller on the rock organ with Paul Howell and Truman Murphy as guitarists.

FROM THE PRESIDENT'S VIEWPOINT

The four dimensional world of geological geometry, as the theme for the year ahead, is intended to encompass all of the facets. From the planes that bound the micro-crystals to the length and breadth and depth and time involved in the macro-concepts of continental formation, it is planned to examine the field from many angles.

To the devoted efforts of those who have preceded us we are deeply indebted, for they have set an impressive precedent. If we are to realize and successfully pursue the courses already suggested for the future, we will need the help and support of all of you. Please get in touch with one of the officers or committee chairmen, and tell us what you would like to do. Our success will depend on each of you.

Fred Miller

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MEMBERSHIP ROSTER

NEW MEMBERS

BARRY, Mr. & Mrs. Lewis A.	1722 S. W. Vista Avenue	Portland, Oregon-97201	223-9837
KNIGHT, Mrs. Helene V.	3808 N. Massachusetts Ave	Portland, Oregon-97227	282-8597
MERCER*, Mr. Sam	Route 1, Box 619	Rainier, Oregon	556-8204
NOSLER, Mr. Douglas C.	Route 1, Box 06	Brush Prairie, Washington	892-4776
O'BLISK, Mrs. Adelaide M.	112 N. W. Maywood Drive	Portland, Oregon-97210	223-8705
SMETHURST, Mr. & Mrs. Rolland	7606 S. E. Strawberry	Milwaukie, Oregon-97222	656-1248
WASHBURN, Mr. & Mrs. N. Brice	2905 S. W. 209th Avenue	Aloha, Oregon-97006	644-7609

REINSTATED MEMBERS

SCHARPF, Mrs. Dorothy E.	7655 S. E. 17th Avenue	Portland, Oregon-97202

ADDRESS CHANGES

ELDER, George V. & A. Verner	Post Office Box 14	Dillon, Montana-59725
HAUMANN, Mr. & Mrs. George	Post Office Box 37	Arch Cape, Oregon
MOFFIT, Mr. & Mrs. Donald C.	Alsea Route	Waldport, Oregon-97394
PRIDEAUX, Elizabeth J.	12640 S. W. Riverside Drive	Portland, Oregon-97219

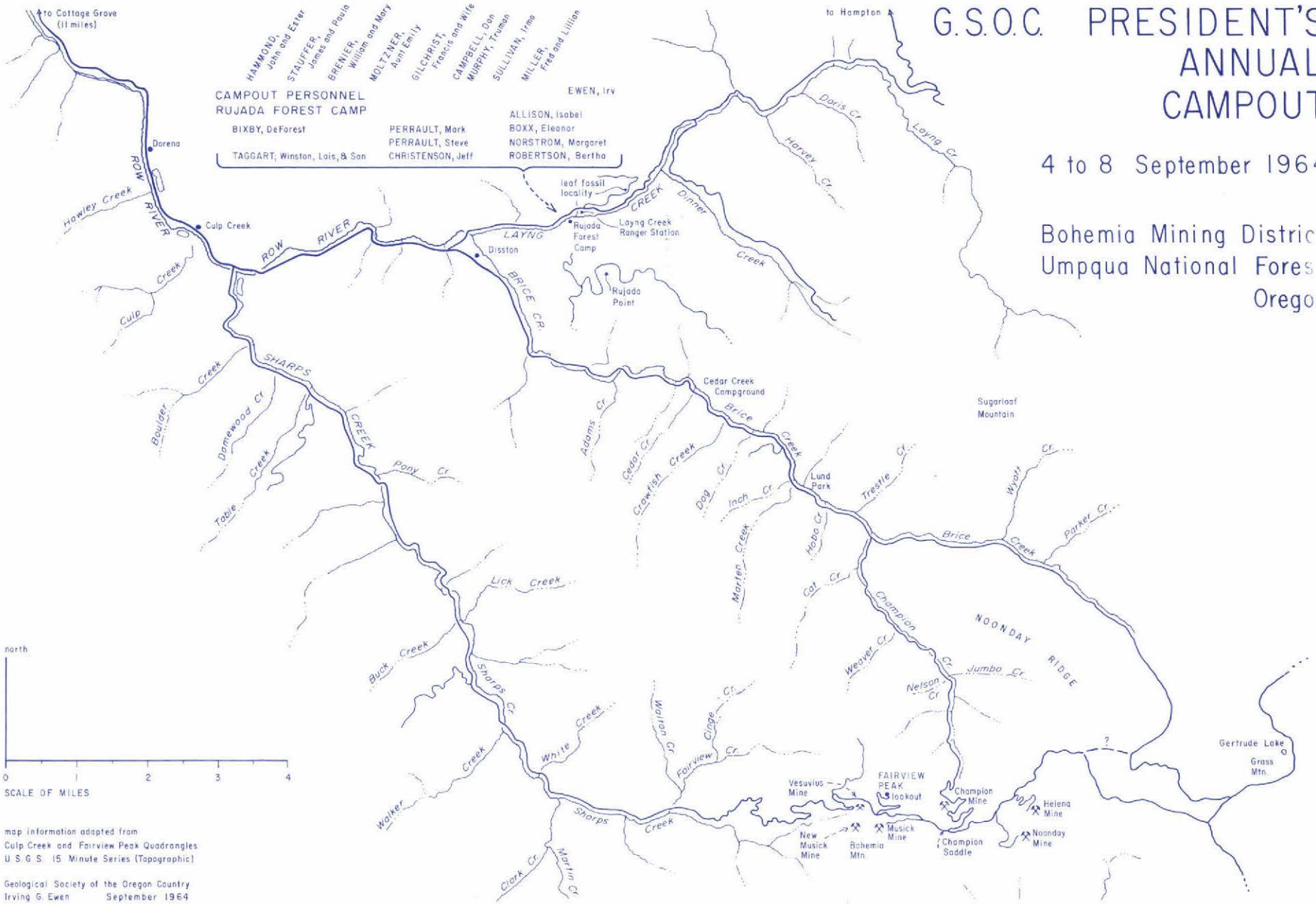
RESIGNATIONS

DORFMAN,* Miss Diantha

WILSON,** Mr. & Mrs. Ford E.

* Junior Member

** Past President


to Cottage Grove (11 miles)
to Hampton
HAMMOND, John and Ester
STAUFFER, James and Paula
BRENNER, William and Mary
MOLTZNER, Aunt Emily
GILCHRIST, Francis and Wife
CAMPBELL, Don
MURPHY, Truman
SULLIVAN, Irma
MILLER, Fred and Lillian
EWEN, Irv
CAMPOUT PERSONNEL
RUJADA FOREST CAMP
BIXBY, DeForest
TAGGART, Winston, Lois, & Son
PERRAULT, Mark
PERRAULT, Steve
CHRISTENSON, Jeff
ALLISON, Isabel
BOXX, Eleanor
NORSTROM, Margaret
ROBERTSON, Bertha
G.S.O.C. PRESIDENT'S ANNUAL CAMPOUT
4 to 8 September 1964
Bohemia Mining District
Umpqua National Forest
Oregon
Dorena
Hawley Creek
ROW RIVER
Culp Creek
Culp Creek
Boulder Creek
Damewood Cr
Table Creek
SHARPS CREEK
Pony Cr
Lick Creek
Buck Creek
Sharps Cr
White Creek
Walker Creek
Sharps Creek
Clark Cr
Martin Cr
Morton Cr
Fairview Cr
Cinge Cr
leaf fossil locality
Rujada Forest Camp
Layng Creek Ranger Station
Rujada Point
Disston
LAYNG CREEK
BRICE CR.
Dinner Creek
Doris Cr
Harvey Cr
Layng Cr
Adams Cr
Cedar Cr
Crawfish Creek
Cedar Creek Campground
Brice Creek
Dog Cr
Inch Cr
Marten Creek
Hobo Cr
Lund Park
Trestle Cr
Sugarloaf Mountain
Wyatt Cr
Parker Cr
Brice Creek
Cat Cr
Champion Cr
Weaver Cr
Jumbo Cr
Nelson Cr
NOONDAY RIDGE
Vesuvius Mine
FAIRVIEW PEAK lookout
Champion Mine
Helena Mine
New Musick Mine
Bohemia Mtn.
Musick Mine
Champion Saddle
Noonday Mine
Gertrude Lake
Grass Mtn.
north
0 1 2 3 4
SCALE OF MILES
map information adapted from
Culp Creek and Fairview Peak Quadrangles
U.S.G.S. 15 Minute Series (Topographic)
Geological Society of the Oregon Country
Irving G. Ewen September 1964

ANNUAL BANQUET COMMITTEES

General Co-Chairmen	Paul E. Dunn May R. Dunn
Decorations	Hugh Owen
Entertainment	C.T.L. Murphy
Exhibits	Robert F. Wilbur
Gifts	Ralph S. Mason
Hospitality	Lillian Miller
Music	
Pianist	Berrie Hancock
Guitarist and Co-Leader of Singing	Paul W. Howell
Co-Leader of Singing	Arthur C. Jones
Photography	
Programs	May R. Dunn Irving G. Ewen
Sound Equipment	Murray R. Miller
Telephone	Johanna Simon
Ticket Sales	Leo F. Simon

PROGRAM NOTES

GENERAL

President	Irving G. Ewen
Toastmaster	Ralph S. Mason
Songleaders	Arthur C. Jones Paul W. Howell
Pianist	Berrie Hancock
Incoming President	Fred E. Miller
Guest Speaker	Lewis Crutcher

ENTERTAINMENT

Singing

Song Leader	Paul W. Howell
Pianist	Berrie Hancock

Cast

Frank Merryman	Robert B. Anderson
Paulette Howell	Paul E. Dunn
Celia Howell	William M. Freer
Michele Mason	Gwen Helm
Karla Zapf	Jack McCourtney
Irma Sullivan	Lillian Miller
Elizabeth Gilliam	

Instrumental Trio

Rock Organ	Murray R. Miller
Guitar	Paul W. Howell
Guitar	Truman Murphy

Caller — Truman Murphy

PROGRAM

DINNER

Welcome	President
Serving of entree	Caterers
Song "In the Clarno"	Songleaders, Pianist

INSTALLATION and AWARDS

Introduction of Toastmaster	President
Introduction of guests	Toastmaster
Installation of Executive Committee	
Retiring President's message	
Incoming President's message	
Honors and awards	President
Song	Songleaders,
"Land of the Fossil Hunters"	Pianist

(Intermission - 20 minutes)
Viewing of displays

PRINCIPAL ADDRESS — Guest Speaker
"Combatting Geological Delinquency"

(Intermission - 10 minutes)

ENTERTAINMENT

Community singing	Songleaders, Pianist
Divertissement	Cast
The Flintstones	Instrumental Trio
Grand March	Caller

ACKNOWLEDGEMENTS

Men's Formal Wear
Courtesy of — Cromwell Tailors

Oyster Shells
Courtesy of — Dan & Louis Oyster Bar
Rose City Oyster Company
Tilla-Point Oyster and Seafood Farm

Programs

Cover Design	Robert Boyd Anderson
Menu Geologica	Margaret L. Steere

CONTRACTED SERVICES

Catering	Portland State College Food Service
Engraving	Klein Jewelers
Plating	Victory Plating
Printing	
Programs	Photo-Lith Co.
Tickets	

"IN THE CLARNO"

Tune - "Clementine"

In the Clarno, in the Clarno,
Sixty million years ago,
Waved the palm trees in their splendor
Knowing neither ice nor snow.

Chorus*

To this land of calm and beauty
Came the breath of Nature's wrath.
Ashes from a fiery mountain
Covered all within its path.

Chorus*

Years of wind and rain and sunshine
Have uncovered them at last,
Bringing forth to those who seek them
Records of that ancient past.

Chorus*

*Chorus

Come the Geesocks, come the Geesocks,
Braving wind, or rain, or tan.
You can hear their merry laughter,
It's the Clarno Caravan.

- Albert Keen

MENU

SALAD

Molded Isopod Fragments
(Molded Fruit Salad)

ENTREE

Mastodon Teriyaki
(Beefsteak Teriyaki), or
Grilled Crossopterygian
(Grilled Halibut)

with

Epidote Crystals (Green Beans)
Whipped Asbestos (Whipped Potatoes)

and

Volcanic Bombs with Butter
(Rolls with Butter)

BEVERAGES

Limonitic Geyser Waters
(Coffee or Tea)

or

Mastodon Milk
(Milk)

DESSERT

Wedge of Thunderegg (Apple Pie) or Chilled Pumice Froth (Ice Cream)

SOCIETY ADMINISTRATION

1964	1965
EXECUTIVE COMMITTEE	
PRESIDENT	
Irving G. Ewen	Fred E. Miller
VICE PRESIDENT	
Fred E. Miller	Jess R. Rentsch
SECRETARY	
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Laurette Kenney	Reba Wilcox
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Jess R. Rentsch	Ruth E. Hopson
DIRECTOR, 2 YEARS	
Ruth E. Hopson	Margaret L. Steere
DIRECTOR, 3 YEARS	
Margaret L. Steere	C. Truman L. Murphy
PAST PRESIDENT, 1 YEAR	
Leonard H. Delano	Albert R. Kenney
PAST PRESIDENT, 2 YEARS	
Albert R. Kenney	Irving G. Ewen
OFFICIAL PUBLICATION -- GEOLOGICAL NEWS LETTER	
EDITOR	
William M. Freer	Irving G. Ewen

"LAND OF THE FOSSIL HUNTERS"

Tune - "Land of the Empire Builders"

Land of the ancient fossils
Land of forgotten seas
Covered by old volcanoes
Remnants of tropic trees.
Home of the three-toed horses
Camel and Oreodon.
Hail to thee, Land of Condon
Our Oregon.

Land of the fossil hunters
Land of the John Day beds
Laden with ancient camels,
Turtles, and rhino heads.
Eocene horses buried
Under a setting sun.
Hail to thee, land of fossils
Our Oregon.

Land of the fossil hunters,
Land of volcanoes old
Building a book of wonders
Which to our eyes unfold.
Marvels of all creation,
Process that's never done.
Hail to thee, land of fossils,
Our Oregon.

- Arthur and Doris Jones

"FINAL UPLIFT"

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.

PAST PRESIDENTS

1935	HODGE, Dr. Edwin T.
1936	PHILLIPS, Mr. Clarence D.
1937	VANCE, Mr. Albert D.
1938	TREASHER, Mr. Ray
1939	PIPER, Mr. Arthur
1940	STEVENS, Dr. J. C.
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1944	BATES, Mr. Erasmus N.
1945	HANCOCK, Mr. Alonzo W.
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1947	JONES, Dr. Arthur C.
1948	LIBBEY, Mr. Fay Wilmot
1949	SIMON, Mr. Leo F.
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1953	BALDWIN, Mr. Raymond L.
1954	KEEN, Mr. Albert J.
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1956	GILCHRIST, Dr. Francis G.
1957	PALMER, Mr. Leroy Atwood
1958	STAUFFER, Dr. James
1959	HOWELL, Dr. Paul W.
1960	BROWN, Mr. Franklin M.
	WILBUR, Mr. Robert F.
1961	HAMMOND, Dr. John
1962	DELANO, Mr. Leonard H.
1963	KENNEY, Mr. Albert Richard
1964	EWEN, Mr. Irving Gilbert

Geological Society of the Oregon Country

30th

ANNUAL BANQUET

MARCH 12, 1965

PORTLAND STATE COLLEGE CENTER

COVER

Once again, Bob Anderson has used his time and talent to design a cover that is distinctly different from the conventional style.

The sketch is intended to portray the everyday importance of geology which serves to stress the theme of the past year on "Man and His Minerals."

CENTER SPREAD

The map reproduced here is of a part of the Bohemia Mining District east of Cottage Grove, Oregon. The map shows some of the points of interest visited during the G.S.O.C. President's Annual Campout during Labor Day weekend of September 1964.

This area was chosen because of its historical interest, accessibility, and proximity to the Portland area. It was felt that visiting some of the famous mines of the area would help emphasize the importance of "Man and His Minerals."

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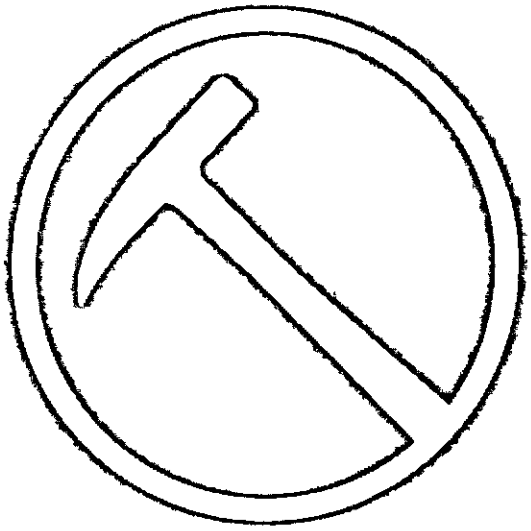
MAN AND HIS MINERALS

May 1965



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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	ZIMMER Miss Ruby M.	805 S. E. 60th Avenue	Portland, Oregon - 97215	236-8319

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G. S. O. C. CALENDAR FOR MAY 1965 - DAYLIGHT SAVING TIME

Every Thursday	LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon. 12:00 M. - G. S. O. C. members, guests and visitors are invited to attend these weekly luncheon sessions. No reservations are required and no minimum charge is made. Food selections are available "a la carte" in the main cafeteria.
14 May Friday	LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon. 7:30 p. m. - Mr. James W. Bingham, Groundwater Branch, U. S. Geological Survey, Tacoma, Washington will speak on "Geology of the Columbia Basin of Central Washington", with emphasis on the structure and stratigraphy of the Columbia River Basalts, the Ringold Formation and the Glacial Meltwater Deposits.
16 May Sunday	FIELD TRIP - Scappoose and Pittsburg Bluff Formations. 9:00 a. m. - Assemble in front of High School at Scappoose, Oregon. Trip leaders: Miss Margaret Steere and Mr. Sam Mercer. We will travel up Scappoose Creek along the Crown- Zellerbach logging road through oligocene fossil deposits, including the isopod locality.
18 May Tuesday	LIBRARY NIGHT PICNIC - Lewis and Clark College. 6:00 p. m. - Meet at the usual spot by the swimming pool. Potluck and bring your own table service. Coffee will be provided.
28 May Friday	LECTURE - "White Wonder", the story of salt. A film story arranged by Mr. W. W. Morrison and highlighted by Dr. Paul Howell's explanatory comments. 7:30 p. m.
29 May Saturday	FIELD TRIP - Primarily an archaeological expedition with Emory Strong as leader, author of the book "Stone Age on the Columbia River". Stops will be made to view petroglyphs, pictographs, the location of Indian campsites, and an ancient Indian quarry near Maryhill. (See item in May News Letter) 8:00 a. m. - Meet in the Safeway store parking area on the Oregon side of the Interstate bridge. Bring lunch and cameras, as well as the usual gear.
30 May Sunday	FIELD TRIP - Mineralogy trip in the Wind River watershed with Mr. Robert Reaney (past President of the Camas Mineral Club) as leader and accompanied by Professor Robert Sellers, instructor in geology and student at Pullman, Washington 8:00 a. m. - Meet at the Wind River suspension bridge about 4 miles north of Carson, Washington, on highway 8-C. Bring lunch. (See item in May News Letter)
19-26 June Saturday through Saturday	PRESIDENT'S ANNUAL CAMPOUT in the Suplee-Izee area at the head of Crooked River approximately 85 miles east of Prineville. See report on the recent exploratory scouting trip in this issue of the News Letter. Arrangement details will be published in the June News Letter, but save these dates for an "out of this world" geological adventure.

* * * * * * * * * *

Trips Scheduled for Memorial Day Weekend

Lee Gavigan, Field Trips Chairman, is organizing two outstanding Memorial Day weekend trips on the Washington side of the Columbia Gorge.

Trip No. 1 will be on Saturday, May 29th, and will be primarily an archaeological trip with Mr. Emory Strong as the leader. He is the author of the book "Stone Age on the Columbia River", and is a well known authority on the Indian culture and history in this area. He has served as President of the Oregon Archaeological Society and also as Vice President of the Geological Society. The group will meet at 8:00 a. m. at the Safeway store parking area on the Oregon side of the Interstate bridge. We will stop at the many points of interest along the river to view petroglyphs, pictographs, the location of the Indian camp sites, and eventually the ancient quarry near Maryhill where the Indians mined the raw materials used in making arrow points and other items. The last stop will be at the Maryhill Museum where there is an outstanding display of Indian artifacts.

Trip No. 2 will be on Sunday, May 30th, with Mr. Robert Reaney as leader. He is past President of the Camas Mineral Club. He will take us on a mineralogy trip in the Wind River watershed, and he will be accompanied by Professor Robert Sellers, instructor in geology and student at Pullman, Washington. GSOC members will meet at 8:00 a. m. at the Wind River suspension bridge, approximately 4 miles north of Carson, Washington, on highway 8-C.

Although it will be convenient to drive back to Portland for Saturday night and then meet again at the suspension bridge, some members may prefer to camp out on Saturday night, if the weather is pleasant. This will be left to the discretion of the individual members.

These two trips will be unusual and profitable and should prove to be of great interest. For additional information phone Lee Gavigan at 289-8041, or Rowena Hoven, 234-9005.

* * * * * * * * * * * *

SCOUTING THE PRESIDENT'S CAMPOUT

By Dr. Paul W. Howell

Early this year President Miller got together with your Trip Chairman, Lee Gavigan, to discuss possible areas for this year's President's Campout. After sounding out some of the more nomadic Geesockers, including yours truly, it was decided to try out the Suplee-Izee area at the head of Crooked River in eastern Oregon. Last weekend (April 17-18) the scouting party, consisting of Gavigan, Truman Murphy and the writer, headed out into the wild gray yonder to see what might be in store for the campers when they rally 'round June 19 to 26.

We are happy to report that this year's Campout should be the best ever. We've geologized this Oregon country for quite some time, but believe we have never before seen so much interesting geology in as short a time as we did on this scouting trip. We saw formations and geology extending from the Recent back to the early Carboniferous. We collected fossils, rocks, jasper in several colors, chert, agate, and exotic metamorphic rock cobblestones weathered from ancient conglomerates.

In an hour's time we collected fossil remains of ammonites, belemites, brachiopods, fusilinids, and crinoids, mostly from the steeply folded early Mesozoic rocks. We learned how Spotted Ridge got its name and we will be glad to tell you all about it 'round the campfire in June. We saw folds and faults and unconformities so frequently and at so many places that we could almost feel the earth squirming beneath us. We followed a "basalt" rimrock for miles and miles, only to find out that it was a dark gray welded tuff with white angular pumice fragments in it as big as your hand.

We saw remnants of a broad erosion surface, extending from horizon to horizon, and for me it was a dream come true when I stood on one of those remnants and saw surrounding me hundreds of quartzite cobbles. These were in many colors: yellow, red, brown, blue, banded, striped, - variations without end. Some were boulders as big as 12 inches in diameter, indicating the presence there of ancient, vigorous streams. The streams have long since disappeared and the land so changed that it is difficult to believe the streams ever were there. Where did the quartzite cobbles come from and what about the streams that carried them there? Those are the $64 questions. If you come to the Campout, perhaps you can have a part in solving this riddle.

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FIELD TRIP OF MARCH 28, 1965

BEING AN ACCOUNT OF A TRIP IN THE FIELD TO STUDY SUCH DIVERSE ACTIVITIES AS THE STATE OF ERRATICS IN ERRATIC STATE PARK AND THE VARIETY OF FOSSILS AT VARIOUS EXPOSURES OF SEDIMENTS IN THE WILLAMETTE VALLEY.

We formed a circle round the ancient rock
And gravely listened to our Leader talk.
"Please try," she said, "to open up your mind,
And carry it ten thousand years behind
The time that we are standing on this knoll.
When o'er this valley flood did waters roll.
Borne on their crest were massive bergs of ice
Upon whose flanks rode boulders formed of gneiss;
Of quartz; of schist; pre-Cambrian argillite;
Such as the one that landed on this site.
Imagine if you can, the mighty force
Of glacial ice sheets gouging from their source
These relics from the ages that have passed
So long ago that now their days are classed
In eons of immeasurable time!"

She paused for breath, and while we waited there,
I felt an icy movement in the air!
As if the wind had only lately rolled
Across Canadian glaciers stark and cold!
It grabbed the rain and threw it in my face!
My thoughts went leaping madly to keep pace!
"What's this?" I asked myself, my mouth gaped wide,
"The wind and rain are even on her side?
What mysterious power does this woman wield,
To make the force of nature bow, and yield
Itself to lending her a hand?" I know
That in so far as her suggestions go,
It's safer to bring fancy back to earth
And contemplate benignly if it's worth
The extra effort one must make to rhyme?

I was sitting quietly in my car, just as I always do, waiting for something to happen, when Truman came up to me and said, "You write up this trip for the News Letter!"

What do you do in a case like that? Me? I nearly flipped! I thought the guy would never ask! Ha!

FAMOUS ERRATIC VISITED

Seventeen cars and some forty odd people assembled March 28th at the rendezvous west of McMinnville and immediately took off on a quick run to Erratic State Park. The park is reached by a short walk up an asphalt path to the top of a little spur jutting our from the northern rim of Yamhill Valley. When you first see the rock you realize that you really aren't "first seeing" it. Back down at the bottom of the hill, you saw it too, but then it looked like a ramshackle old building leaning lazily up the hill.

Well, anyway, we formed a circle round the ancient rock, and we did listen while Margaret Steere, our trip leader, gave us a quick geological sketch of its history. It is composed of Argillite, a highly compacted siltstone of pre-Cambrian age. It was gouged from its bed in Canada by glacial action and carried by glacier until it reached the waters

MARCH FIELD TRIP - cont'd.

of the Missoula Flood (or one of the many floods now proposed to be grouped under this name). It was then ice-rafted to its location here.

This flood was caused by the release of waters impounded behind an ice dam in Idaho or Montana some 15,000 years or so ago. It must have been an awesome thing to see.

Constriction of the Columbia Gorge north of Portland backed the flood waters up the Willamette River Valley as far as Eugene and into this huge backwater floated many ice bergs carrying loads of rock.

Erratic Rock rests at an elevation of 306 feet. An interesting discussion developed concerning the full depth of the flood waters at this point through a relationship of the size of the block of ice required to sustain the rock and the depth of water needed to float such a block of ice. Like I said, it was an interesting discussion.

Truman measured the rock and found its dimensions to be roughly 17 ft. by 14 ft. by 5 ft., which ccincided perfectly with the measurements he made two weeks before. Oddly enough, they, in turn, agreed with the measurements he had taken a month previously. What deductions can be made from this I do not know, nor does Lee Gavigan, who passed along this piece of information.

Erratic Rock is resting on basalt. There are beautiful miniature crystals of zeolite in the cracks of the basalt which can easily be seen with the aid of a lens.

The rest of the day was spent in visiting various fossil localities in the area between Amity and Salem. All of the sites visited were in marine sediments laid down in the Oligocene epoch. Strangely enough, the fossils tended to increase both in number and in variety with each succeeding locale. Each site, however, had other points of interest aside from the number of fossils found.

The second stop of our caravan was at a private quarry near Amity. Here a dike of basalt breaks through the sediments and spreads out across the top. Columnar basalt is quarried here in lengths of from 4 to 20 feet and sold to the State and County for use as rip-rap.

I asked Margaret just how it was known that this was really a dike, and not a surface flow that had filled a ravine in an older erosional surface. She had the answer, all right, but it was phrased in terms too technical to be treated in a text such as this. Translation of the foregoing, "I forgot what she said!"

Fossils were few here although the largest clamshell of the whole trip was found at this quarry. It was a two-footed monster tentatively identified as a Bucyrus Erie.

The next scheduled stop was at another quarry where the feature attraction was to be ice crystals in vugs. In as much as we were still being followed by that spectacular display of arctic weather conjured up by Margaret to illustrate her lecture at Erratic Rock, no one felt inclined to deliberately look for ice, even in vugs, so this stop was bypassed and we headed for the Lunch stop at Maud Williamson State Park.

One building in the Park quickly attracted a number of our party, and investigation disclosed that it was not a Penny Arcade (as it sounded from outside) but a cook house, and the tinkling of coins in the slot came from shivering GSOC'rs, each warming up at an electric "fireplace".

We were joined here by our President, Fred Miller, and his wife, Lillian, who brought with them sunshine enough to fill the rest of the day. They both arrived together (I mean the Millers and the sunshine) so I reckon they must have brought the sunshine with them.

If I were a Botanist, I would tell you of the many beautiful wild flowers that were in full bloom all over the park, but since I know nothing of their proper names and the common names of only Trillium and Johnny-jump-up, I will not mention the many beautiful wild flowers that were in full bloom all over the park.

Instead, please follow me as we make our way to the first stop of the afternoon, a highway cut near the top of a divide in the Eola Hills. Boy, what an exposure! Forty odd people strung out along the roadside. Diligently delving, daintily digging! Assuming positions! And such positions! Such exposure! Such derriere! Such a time! Such a view! Oh yes, a few fossils were found too.

Some place around here we had a mild bit of a mix-up when a car in our caravan cut out for a service station, and fourteen cars followed it down the wrong road. It really

MARCH FIELD TRIP - cont'd.

wasn't so serious but it did point up another ingredient for a successful trip. Namely, a full tank in the morning.

Our next stop was at the Leo Buyserie farm where we found the best preserved fossils of all. They were highly mineralized. Calcified, I heard someone say. Among the clams, class Pelecypoda, we found Pitar, Solen, Spisula, and Yolida. Gastrapoda, the snail, was well represented by Bruclarkia, Calyptraea, and Turritella.

Don Barr found a Spisula, replaced by calcite, and entirely surrounded by crystals of calcite radiating outward like spokes of a wheel. A truly remarkable specimen.

For that there technical type talk, I am indebted to Margaret Steere and to Jennie Walters, an amateur Paleonwhatchamacallit who has a beautiful collection of these critters, some of which she had on display at our annual banquet in March.

For Rowena Hoven, a well directed blow smashed open one mineralized block exposing several fine specimens of the various poda. Shortly thereafter, a not so well directed blow smashed the back of her hand exposing several fine specimens of various shades of blue! A perilous pastime, this pebble pounding in a pasture!

It was here that we received a bonus, not listed on the trip sheet. Several pieces of granite, grading in size from a handful to some too large to lift, were found scattered about the hillside. The first one noticed was picked up by Jess Rentsch. What else can they be but Erratics? Another link in the story of the Missoula flood?

Leaving the farm, we traveled south to Independence, crossed the Willamette River and turned north to a railroad cut near Roberts where we found fossils abundant though not so well preserved.

Suddenly it was five o'clock, and according to our trip sheet, the end of the expedition. So we officially disbanded and made our separate journeys home.

It was a wonderfully successful trip for which we all thank Margaret.

And thank you all for listening.

Lloyd Wilcox

* * * * * * * * * * *

MIHELCICS BACK UP FROM DOWN UNDER

From the Hotel Metropol, St. Gallen, Schweix (Switzerland to us) came this interesting message to the Geological Society from the roving Mihelcics. Their last letter in April (1965) issue of the News-Letter was from Melbourne, Australia.

Dear Bill:

The trek continues exciting -- to us -- and each day brings us new sights and new ideas.

We got off the ship at Suez in the morning -- sped to Cairo in modern Mercedes busses. Had lunch at the Nile Hilton. Then to the Museum of Antiquities with its glittering array of King Tut's burial artifacts, many of gold. He was eighteen years old -- not an old man as I thot.

Six miles to the pyramids (three) and the Sphinx. Just as impressive as we thought they would be. The fly in the ointment -- guides and hawkers all tried to extract all the money possible from the tourists while they were available. Lots of desert and some irrigated land. Rejoined ship at Said.

Got off at Naples and took a crack train for Rome -- a truly wonderful city, with unheated hotel rooms. The Vatican was worth the trip. Crowds of people of all faiths. The museum has preserved the history of ages almost lost.

Florence gave us the opportunity to talk with the cultured Italian owners of a large gallery of sculptures, old and new. Carrara marble for the old or large items and alabaster for the small ones.

The journey to Pisa leads thru dolomite and marble mountains with many quarries. The Carrara quarry is about twenty-five miles distant. We were fortunate that our guide at Pisa was a young architect. He had worked five years as a sculptor and was surprised to know that alabaster wasn't marble. His interest was aroused, and after the tour he took us to the shop where the sculptors were at work. The chief sculptor asked him if we knew why metal formed in the marble. Fortunately we could tell.

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NEWS OF MEMBERS

By Rowena Hoven

HOLLIS DOLE, Oregon State Geologist, was the speaker at the regular weekly luncheon of the Portland Chamber of Commerce members' forum on April 19. His topic was "Oregon Offshore Oil Exploration - 1965".

The Jackson Foundation has announced the award of a $1,000 scholarship at the University of Portland to Carolyn J. Fagan, daughter of Oregon Journal columnist and editorial writer and GSOC member RICHARD (DICK) and MRS. FAGAN. She will graduate from St. Mary's Academy in June and plans to become a teacher. Congratulations Carolyn J.

DICK FAGAN is one of two individuals who will head a Multnomah County Youth Commission committee on public relations, working with panels and film makers of documentaries. The appointments were announced recently at a meeting of the Commission.

GWEN GAVIGAN is home after a "tour of duty" in the hospital and is working her way back to good health.

JESS RENTSCH reports an item of interest which he discovered during a recent Sunday drive near Dayton. He found a colony of pack-rats and much to his surprise observed that they are old hands at building high-rise dwellings. In the hedgerows he saw pyramid-shaped nests six feet high that the rats had constructed from sticks and debris scattered by the December flood. He says it is an awesome sight to see animals acting like people.

GSOC members are still traveling. We are glad to welcome home GUY and MAY DODSON who recently returned from their extended trip to Hawaii. HUGH OWEN is on a convention trip to Toronto. It has been reported that IRV EWEN is inspecting the geological wonders of Hawaii. And why haven't we heard from BOB WILBUR? It is time to come home, Bob.

* * * * * * * * * *

MEMBERSHIP ROSTER

NEW MEMBERS

KUHNS, Mr. and Mrs. John C.	2980 S. Glenmorrie Drive	Lake Oswego, Oregon-97034	636-1067
MANDEVILLE, John (age 11)	2980 S. Glenmorrie Drive	Lake Oswego, Oregon-97034	636-1067

CORRECTION

NOSLER,
Mr. and Mrs. Douglas C.

RETURNED HOME

DODSON, Mr. and Mrs. Guy R.	Space 13E, 1400 NW Electric Avenue	Beaverton, Oregon-97005	644-1609

ADDRESS CHANGES & TELEPHONE CHANGES

FESSENDEN, Miss Marjorie A.	404 SW Edgecliff Road	Portland, Oregon-97219	636-8369
HODGE, Dr. E.T.			228-2248

Vol. 31, No. 5

30TH ANNUAL BANQUET CO-CHAIRMEN THANK-YOU

In addition to our personal thank-you letters, we would like to take this opportunity, through our Society News Letter, to express again our thanks to all of the Committee Chairmen who carried out their particular duties to near perfection. They were creative, hard working, and diligently followed through on plans once they were outlined. The co-operation also shown by all the committee members, and many officers and members who were not officially on a committee, was very heartwarming. All this contributed toward the great success of the banquet.

The work sessions were fun, too. Won't some of you who did not help this year please volunteer your services for next year? I know that our President, Mr. Fred Miller, and his banquet chairman, when appointed, will appreciate early active enlistment of those willing to serve on a committee.

Our sincere appreciation to every one of you.

May and Paul Dunn

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RECOGNIZING - -

Petite Irma Sullivan joined our Society last year. Mrs. Sullivan is of Scotch, Irish and German ancestry and was born in Omaha, Nebraska. She taught a one-room school of the eight grades for several years (just like the 20-mule team stories), then taught the 6, 7 and 8th grades for four years, all in Nebraska.

Chamber of Commerce photographs and advertising enticed her to Oregon in 1956, when she located in the Mt. Pleasant area on the hilltop above Oregon City; she teaches the 4th grade at Jennings Lodge, Oregon City. Mrs. Sullivan's family consists of two married daughters, four grandchildren, and a son who is completing his 4th year in the Navy.

Her hobbies are, in this order: Her first love is clay sculpturing of small figurines, the tallest being about 13 inches, and particularly intriguing is the nude figure of a relaxed sitting woman. Photography interests her, and definitely science, for by her books you will know her, however, it is noted that other subjects are given her attention. Another of her talents is oil painting of landscapes. Working in her yard relaxes her -- geology and nature are pertinent reasons why Mrs. Sullivan has become an ardent Oregonian. She was first introduced to geology through a course by our Dr. Ruth Hopson, "Geology of Oregon."

This attractive energetic teacher has taken over the added activities of Secretary of the Oregon Chapter of The Nature Conservancy, and writing up the lectures for our Society as may be noted in our April News Letter. And, how she ever accomplishes this, I'll never know, but she is working for her Master's Degree.

- Elizabeth Gilliam

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WARNER & KLAMATH MOUNTAINS

Leonard Delano's well illustrated talk, presented to the Society at its regular lecture meeting on the 23rd of April, will be reported in the June issue of the News Letter. If possible, it is planned to include some illustrative material to accompany his feature length article.

-- editor

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SOUTH AMERICA

A most interesting and highly amusing talk on South America was given at the lecture meeting of the Society, on Friday, April 9. Mr. Charles Schultz, Geologist for the Oregon State Highway Department, showed slides of some of the beautiful buildings and statues in a few of the larger cities of Peru, Chile, Argentina, and Uruguay, as well as views of the majestic and picturesque Andes Mountains where he had worked. Mr. Schultz was for a time employed by the American Smelting and Refining Company at their mine in Quiruvilca, Peru. While he skipped lightly over description of the actual mining operation, we learned from other sources that his work in maintaining the 45 miles of tunnel which made up the mine was performed under somewhat less than favorable conditions.

Copper and silver ore taken from the mine at an altitude of 14,000 feet was carried seven miles in an overhead tramway to a lower camp for smelting. Employees of the company lived at this camp which was at about 10,000 feet. Travel to and from the mine was over roads so precarious that more lives were lost here than in the mine itself. From this camp, the partially reduced metal was trucked to a still lower camp for further refining.

The extremely rugged mountains, described as "basalt with few intrusives", are constantly in motion. Earthquakes occur frequently, and the normal weathering and aging activities produce hazardous conditions for building and maintaining roads and railways. Nevertheless, Mr. Schultz highly recommended travel over the Transandean Highway or Railway, at least once.

A few miles from the mine are the remains of gold diggings which had been operated by the Incas. Scattered throughout the country are other ruins reminiscent of Inca civilization, including temples, and an irrigation system which had been perfectly engineered, even by today's standards.

Mr. Schultz is a graduate of the University of Texas School of Mines and has worked in several branches of the mining industry. His experience in tunnel work made him a valuable man on the Sunset Tunnel project which has recently been completed. His apparent enjoyment of life and amusement over the ways of the world make him a very entertaining speaker. We are indebted to him, and to Dr. Paul Howell, our program chairman, for this fine evening.

Irma Sullivan

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HUGH OWEN'S JOURNEY JARRED

Word has been received locally that Hugh Owen, a member of our Society, was injured in a train wreck on 17 April enroute to Toronto, Canada. Hugh, formerly Senior Planner with the City of Portland Planning Commission, was on his way to Toronto to attend a planners' convention.

He is recovering from injuries, which include one cracked vertebra and one crushed vertebra, in Sunnybrook Hospital located on Bayview Avenue in Toronto, Ontario, Canada.

After leaving Sunnybrook Hospital, where he expects to remain until the middle of May, he will continue convalescing at the home of his brother, Mr. Norman Owen, at 117 Gibbons Street in Oshawa, Ontario.

Editor

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MIHELCICS BACK UP FROM DOWN UNDER - cont'd.

Lil charmed the lot and they started offering her marble specimens. We settled for two pieces -- green marble and alabaster. The story of this venture is long, so we'll save it.

Snow and rain in Switzerland. We did acquire a choice specimen of Vivianite -- an ex-Paris museum piece that the lone Swiss dealer had obtained in exchange.

Good luck --

Lil and John

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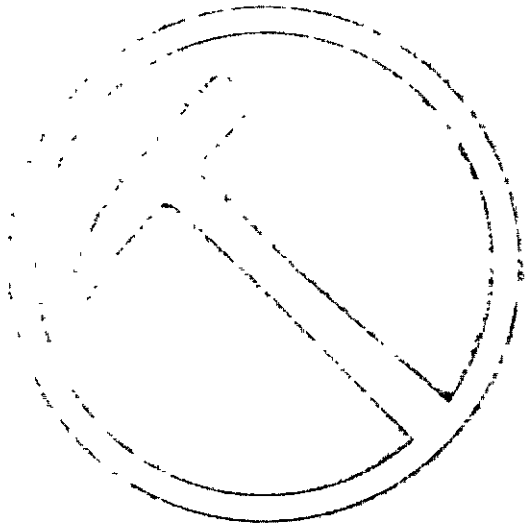
June 1965



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G. S. O. C. CALENDAR FOR JUNE 1965

NOTE: All scheduled events commence on Daylight Saving Time.

Every Thursday — LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - GSOC'ers, guests and visitors are invited to attend these informal luncheon gatherings. Food selections to suit many tastes are available for purchase in the main cafeteria. Reservations are not necessary and there is no minimum charge.

The group meets in the "mountain room" (beyond the "foothills room") and is presided over by Mr. Leo F. Simon, Luncheons chairman. Geologic items of interest are circulated for inspection and discussion and occasionally short ("five minute") talks are heard. For additional information telephone Mr. Simon at 236-0549.

11 June Friday — LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P.M. - Speaker and topic to be announced.

15 June Tuesday — LIBRARY NIGHT - Not scheduled during the summer months.

19 June Saturday thru 26 June Saturday — PRESIDENT'S ANNUAL CAMPOUT - Suplee - Izee area of Central Oregon

The campout will be held at Delintment Lake. Arrival time is optional since the group will remain headquartered at the lake during the official one-week campout from 19 thru 26 June. The camp will remain operational thru the weekend of 4 July for those wishing to remain longer or who are unable to attend during the first week.

GSOC'ers participating are reminded to bring the usual camping equipment including rain gear in the event of inclement weather. Due to the high elevation (over 5,000 feet) cool evenings and nights may be expected, so warm clothing and sleeping gear should be included. Also, containers for transporting water from a spring about a mile away should be brought in the event the local supply at the lake is overtaxed.

Last minute food supplies may be purchased enroute at Paulina which is about 33 miles from the camp area. Gasoline (Union 76) is available for about fifty cents per gallon. Drivers should fill up at this point as the next nearest service station is at Burns, Oregon about 40 miles beyond Delintment Lake.

Dr. Paul Howell, Campout Trip Leader, has prepared a road log (to be included with the June issue of the News Letter) which will be helpful in reaching the camp area from Prineville, Oregon. Additional information may be obtained by telephoning Mr. Lee Gavigan, Field Trips Chairman, at 289-8041.

25 June Friday — LECTURE - Cancelled due to the President's Campout

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ADVANCE CALENDAR FOR JULY 1965

late July — FIELD TRIP (tentative) to S. W. area of Warm Springs Indian Reservation.

NEWS OF MEMBERS
by Rowena Hoven

MRS. DAN GRISWOLD was exhibit chairman for the 14th annual open house of the Genealogical Forum of Portland which was held in the Meier & Frank auditorium May 10 - 12. The theme of the show was "Maps and Migrations" and many unusual displays were assembled.

RALPH MASON of the State Department of Geology and Mineral Industries had an article in the April Ore-Bin on the materials (rocks, that is) used in the construction of Lloyd Center. This was the theme of a recent "field trip" which he conducted through the Center recently for the Society members.

The May 11th issue of the Oregon Journal contained an interesting article about MRS. ALONZO HANCOCK (BERRIE), complete with photograph, and featured the part she has played as mother and cook at the Oregon Museum of Science and Industry's annual sessions at Camp Hancock for students 12 through 17 years. Mrs. Hancock reminisced concerning the early days at the camp and the developments during the many sessions since the first one conducted by her husband in 1951. Mrs. Hancock is also secretary for the Northwest Mineralogical Society and is historian for three other organizations. In addition she plays the piano for a combo -- in fact, she has played for dances for 54 years. The article was a fine tribute to our Berrie.

From Lewis and Clark College comes news that DR. CORNELIUS SABIN, Department of Speech Arts, has been named to a full professorship at the school.

* * * * * * * * * * *

We are saddened to report that on May 4th, Diamond Gottlieb (Mrs. Edward F.) daughter of members Mr. and Mrs. Murray R. Miller, passed away after a long illness. Besides her parents she leaves her husband and three small daughters. We extend our deepest sympathy.

* * * * * * * * * * *

MEMBERSHIP ROSTER

name	street address	city, state and Zip No.	telephone
NEW MEMBERS			
ELLIOTT, Mrs. Lyla L.	1530 N. 99W	McMinnville, Oregon 97128	472-7256
GRIFFITH, Mr. & Mrs. Norman N.	1733 S. W. Westwood Drive	Portland, Oregon 97201	246-1369
ADDRESS CHANGE			
CLARK, Mrs. William F.	3375 S. E. 8th Avenue	Portland, Oregon 97202	234-7096
OAKES, Mr. Alva	1134 S. W. 12th Avenue	Portland, Oregon 97205	
RENTSCH, Mr. J. R.	412 Roseland Hotel 1318 S. W. Alder Street	Portland, Oregon 97205	227-3454
TRAVIS, Mr. and Mrs. H. F.	2021 N. E. 74th Avenue	Portland, Oregon 97213	252-8888

RESIGNED: Davenport, Miss Mary Leach, Mr. & Mrs. John Reichen, Mrs. Sam

KLAMATH AND WARNER MOUNTAINS GEOMORPHOLOGY AS SEEN IN AN AERIAL SURVEY

by Leonard Delano

In 1964 our firm, Delano Photographics, did an aerial photo survey of the Klamath and Warner Mountain areas in northern California and southern Oregon. The area was more than 5,000 square miles over rugged terrain with which we became very familiar before the contract was completed. We reviewed some of the highlights of these interesting and complex physiographic provinces to the GSOCers April 23.

The Warner Mountains is a fault block range in the Modoc Plateau. About 90 miles long in a north-south direction, the northern end is a horst or vertically elevated fault block bounded by battered scarps on both sides. The southern section is a tilted fault block with the great scarp on the east side.

It is believed that the Warner Mountains surface was once part of the tableland which surrounds it. The volcanic rocks composing the Warners extend principally through Oligocene, Miocene and Pliocene. The uplift is believed to have taken place at the end of the Pliocene and beginning of the Pleistocene. As the Warner range rose, Surprise Valley, Goose Lake and other grabens were depressed downward.

Bounded at the north near the Oregon border by Goose Lake on the west and Upper Lake in the Surprise Valley on the east, it extends into Oregon and merges into a high plateau between Abert Lake and Warner Valley in Lake County. It merges in a similar manner at the south end just east of Madeline Plains in Lassen County.

Numerous fault blocks composing the Warners were uplifted individually in different behavior as deformation proceeded. The lake grabens are said to still be sinking. Hinds says, lack of accumulation of erosional detritis at bases of the range is indication that this still is going on. Otherwise alluvial fans would be forming.

Abrupt rise from the lake shores on the east to the higher peaks is more than 4000 feet and the peaks range from about 8000 to 11,000 feet AMSL. You can readily see that scale in a vertical aerial mapping photo would have some matching problems from photo to photo with such elevation variance.

Blocks rise in steps bounded by faults, particularly noticeable on the east side. Fandango valley is a major embayment which penetrates deeply into the range. The Upper, Middle and Lower Lakes of Surprise Valley are playa beds, but do not dry up simultaneously.

To the west of the Warners and Goose Lake is a series of diagonal faults in the Modoc Plateau and evidenced on the photo shown. Moisture and erosional accumulation in the fault cuts have permitted trees and vegetation to start and grow. The Modoc Plateau lies between the Warners and the Cascades. Main part of Modoc Plateau was built principally in Pleistocene time. Youngest flows Recent in last few hundreds of years.

As Plateau was being formed in the Miocene by eruption of Modoc lavas it was broken by numerous faults. These have been greatly eroded since. Hinds refers to the Modoc Plateau as part of the Columbia Plateau, the great volcanic field which covers so much area in Oregon, Washington and Idaho.

"Evolution of the California Landscape" by Norman Hinds and the USGS. Alturas quadrangle are helpful references on the above area.

Between the Modoc Plateau and the Klamath Province is the Cascade Range Province which has its southern extremity in the Mt. Lassen - Mt. Brokeoff area. This volcanic province has Recent flows of the last few hundred years, a contrast to the Klamaths to the west. Glass Mountain and Little Glass Mountain are interesting examples of obsidian and rhyolite flows. A large block of this province was covered by our aerial photo flights.

The Klamath Mountains province which lies both in Oregon and California is complex and rugged, with ruggedness accented by drainage transverse to the lithic and structural

Klamath & Warner Mountains
Geomorphology As Seen In An Aerial Survey

grain. The Klamath river, originating in the northeast, cuts through the entire mountain complex in a southwest trend, then swings to the northwest through the Coast Range province to come out in northern Humboldt County.

Its rocks are old and Paleozoic to Middle Late Jurassic and the topography has been developed by a long and complicated series of uplifts, erosion and repeated uplifting. Its geology is more closely allied to the Sierra Nevada than the Coast Range.

Peaks range from 6000 to 9000 feet. Accordant ridges are conspicuous features -- mostly below 6000 feet and evidence of the old Klamath peneplain. Glaciation is general in the higher mountains. Intrusion by many mafic and ultramafic bodies occurs in both the Klamath and Coast Range provinces.

Our main sources of reference are William P. Irwin, USGS, whose work was published in 1960 by California Division of Mines and Joseph S. Diller, USGS, whose work in the late 1800's is still a classic reference. Diller and others of his day did not have the benefit of aerial photos in their studies.

Irwin and associates outline the Klamath Mountains as comprised of four concentric arcuate belts that are concave to the east. From east to west the belts are:

1. Eastern Paleozoic belt
2. Central Metamorphic belt
3. Western Paleozoic & Triassic belt
4. Western Jurassic belt

In the Eastern Paleozoic Belt some principle formations are Copley Greenstone - Middle Devonian or older. Bragdon Formation, which overlies the Copley and is Mississipian and is interbedded shale sandstone, siltstone and conglomerate. Kennett Formation, thin bedded shale, sandstone chert and limestone.

Central Metamorphic Belt includes rocks principally quartz-mica schists and hornblende and chlorite schists. Oldest rocks in the Klamaths are the Abrams formation in upper Coffee Creek area Salmon Formation from upper Salmon River exposures commonly the Salmon overlies the Abrams and includes schists and inter-layered marble and quartzite.

Western Paleozoic and Triassic belt includes mildly metamorphosed shales, sandstones, cherts, greenstones and limestones. Extension into Oregon includes the Applegate group.

Western Jurassic belt includes Galice formation of middle late Jurassic age and mica schists and greenschists are the metamorphic equivalents of Galice formation.

Of the long series of changes which took place in the formation of the Klamath complex, Diller's breakdown by stages was as follows:

Klamath stage, an uplift at end of the Eocene which initiated erosion, which reduced the Miocene land surface to a gentle relief, almost a peneplain; Post-Klamath faulting and raising above sea level; Bellspring stage of erosion; Post Bellspring uplift; Sherwood stage of erosion and redevelopment of peneplain; Post Sherwood uplift; Differential uplift; Garberville stage of valley cutting and erosion; Hay Fork Stage involving filling in of valleys; Post Hayfork uplift; Continental Border stage of rapid erosion and three additional stages in which the terrain was raised by a series of uplifts.

In Klamath Mountains province of California granitic rocks are widely distributed and are found within all of the principle areas of stratified rocks of pre-Cretaceous age.

Granitic rocks is a general term covering a range from diorite to granodiorite and are plutonic crystalline rocks, says Irwin. True granite occurs at relatively few places. Granitic rocks are exposed over many hundred of square miles in the Klamath Mountains province.

Ironside Mountain batholith is elongated and is largest single area of granitic rocks exposed in the Klamath Mountains province.

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Exposed intrusives of the Salmon Mountains, with Scott Bar Mountains to right, Preston Peak and Lookout Mountain on horizon to left. (copyright Delano Photographics)

Glaciated valley of the Trinity Alps. Granitic intrusives exposed by erosion, they are example of some of rugged character of Klamaths. Saphire and Emerald lakes are at upper end of valley. (copyright Delano Photographics)

Klamath & Warner Mountains
Geomorphology As Seen In An Aerial Survey

Wooley Creek batholith refers to the area of granitic rock that covers much of the Marble Mountain wilderness area in southwestern Siskiyou county. This batholith consists largely of quartz diorite that is rich in hornblende and biotite.

Hornbrook formation at Oregon-California boundary lies on stripped and eroded surface of quartz diorite batholith. Shasta Bally batholith southwest of Redding is another granitic area.

Ultramafic rocks plentiful in Klamath Mountains Province, Peridotite is prevailing of this rock, but dunite also prominent. Most of ultramafic rock has been altered to serpentine and is thus referred to by most persons.

One of prominent and interesting features of the landscape shown by our photos was the Marble Mountains with their exposure of marble at the top. According to Irwin and associates the rocks consist chiefly of thin-bedded amphibolite and chlorite schists, quartzite and marble and appear to constitute a section that is more than 10,000 feet thick.

The marble is thin-bedded and granular and is exposed for much of a distance of five miles along the north trending ridge. Strata along the ridge generally dip eastward at low angles and along the southern part of the ridge forms a dip slope exposure more than a mile wide. West face of Marble Mountains is steep.

Other intrusive bodies shown by photos stood out prominently in contrast to the surrounding areas covered by vegetation. Of course, one of the most dramatic granitic exposures is the Trinity Alps. This is not to be confused with the Trinity Mountains themselves, which are farther to the east and can be seen from Redding. The Trinity Alps are north of Weaverville.

The boundary between the Coast Ranges province and Klamath Mountains is a high angle reverse fault that for much of its length is nearly parallel to the San Andreas fault. The southern boundary of the Klamath Mountains province is a transverse fault that is aligned with major transverse faults in the Sacramento valley and Coast Ranges.

Adjoining the Klamath Mountains to the west is the north-northwest trending Franciscan Formation which extends through the Coast Range province and is so named because it is similar to the rocks of the formation on the San Francisco peninsula. The younger rocks of this formation include graywacke, chert and greenstone and shales.

Fascinating reading are the geographical names of the gold mining areas of northern Siskiyou county, Lassen county and other areas in northern California and Josephine county of Oregon. Nearly all gold deposits in northwest California are in the Klamath Mountains province and it ranks second only to Sierra Nevada in California gold production.

Other minerals of value have been quicksilver, copper sulfides, manganese and limestone. In recent years limestone has grown more important, as have gravels, crushed rock and some natural gas. Our firm has made topographic maps of some of these areas.

Minerals having a value of approximately 150 million have been produced from the Klamath mountain area since the middle 1800s.

Dramatic traverse of the Klamath Province is made by the winding Klamath River which begins in the upper Shasta Valley area and after winding southward, it heads for the sea and is affected by the northwest lithic structures of the coast area in its direction. Small communities such as Happy Camp, Orleans, Scotts Bar, and others were swept by waters of the Klamath and its tributaries which had no direction to go but up and out in the deep canyons during the December 1964 floods.

In addition to last year's aerial survey of the Klamath and Warner Mountains areas, our firm has previously photographed extensively in Del Norte and Humboldt counties. While these have many rugged features, they are generally more gentle than the Klamaths. Access to the latter is difficult, but obviously the older rocks offer great mineral potential.

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ASBESTOS

E. Lillian Mihelcic

Asbestos is unique among the minerals of the world in that it alone possesses a fibrous structure that readily lends itself to spinning and weaving. This quality was recognized in the most ancient times, for tradition relates that the Chinese and Egyptians were well aware of its possibilities and used cloth and mats made of asbestos.

Later, the Romans developed the art of spinning and weaving of asbestos to the point that they produced cloth that had a fine sheen and long fibered texture. This material was recognized as being uninflammable and the crematoriums of the families used it as shroud cloth. The sacred fires were confined with asbestos and were fed oil by asbestos wicks. The source of the asbestos was the Island of Cyprus which is still yielding a fair quality mineral.

The owners of asbestos table cloths in early history, among them Charlamagne, frequently mystified their lesser informed guests by throwing the table cloth into the fire and then recovering it, a cleaner and whiter cloth. These references in history would indicate that asbestos was not plentiful and that truly utilitarian articles were not made of it.

Salamanders were considered a symbol of fire and were said to be impervious to fire and it was but natural that Marco Polo upon being shown some cloths that were fire resistant should not readily believe the story that they were made of the skins of salamanders but continued to search for the actual facts. His report was so accurate that it almost could be considered a description of the modern Italian method of working asbestos rather than the technique of the ancient Tartars.

Very little was done with the mineral for several centuries altho about 1700 a scientific book was printed on asbestos paper with the assumption that it would be indestructible. Efforts were made to print bank notes on asbestos but these would be water absorbent and of such slight tensile strength that the idea was by-passed.

When scientists were directed toward finding uses for asbestos by the enormous finds of excellent material in Canada they rapidly discovered possibilities for this unique mineral. From 1870 on the area about Thetford, Quebec, has produced at least 75% of the world's supply of asbestos. At least 200 varieties of articles are made from it.

The mining of asbestos in the United States did not get off to a good start until after 1900. The two best known deposits are at Sall Mountain, Georgia, and near Globe, Arizona. However, these do not compare with those of Canada.

There is much more to asbestos than its historical past. In the first place asbestos is not a particular mineral but rather a term that is applied to a group of minerals that are fibrous, fire resistant and poor conductors of electricity and heat.

To be commercially valuable, the fibers must be readily separable and have sufficient strength and pliability to be spun into a thread or else be able to be used as insulation or packing. Medium length fibers find particular usage in brake linings.

The two major groups of asbestos minerals are the serpentine group and the amphibole group. In the serpentine group we find picrolite and chrysotile which are of the same chemical make-up as the mineral serpentine. The amphibole asbestos minerals generally include amosite, crocidolite, tremolite, actinolite and anthophyllite.

About 90% of the world's supply of asbestos comes from chrysotile which is formed in serpentine that has been altered from peridotite or dunite. The fibers are called cross fibers if they form across the veins, slip fibers if they run obliquely and mass-fiber if they form an aggregate of intermingled or radiated fibers. While serpentine may occur without chrysotile, chrysotile does not appear without being enclosed by serpentine. The beds of serpentine may also form in magnesian limestone.

The most important varieties of amphibole are amosite and crocidolite, which are found in slates, schists and banded ironstones. These minerals form a belt in the Transvaal and Cape Provinces of South Africa and this deposit is considered the greatest mass of asbestos in the world. Both chrysotile and anthophyllite are mined in the United States (chrysotile near Globe, Arizona, and anthophyllite at Sall Mountain, Georgia).

The gem tiger's eye is a quartz pseudomorph after crocidolite which retains the fibrous structure of the original mineral and in consequence it is highly chatoyant when cut into a cabochon. The color variation runs from a yellow-brown to blue-green, to a red and at

Asbestos -

times an admixture of all colors. Griqualand is the chief source.

Many of us have asbestos specimens from the Canadian deposits which lie about 75 miles south of Quebec, in the Thetford region. The Thetford mines are apt to yield a greenish-white fiber; Black a brownish; and the Coleraine a deep brown. At times a brilliant red hematite stain appears.

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WRITE YOUR SENATORS - WRITE YOUR CONGRESSMEN - WRITE

Shellfish Sanitation Branch
Division of Environmental Engineering and Food Protection
Department of Health, Education and Public Welfare
Washington, D. C.

The Federal Government, if I understand correctly, is transferring its $1,250,000.00 research laboratory from Purdy, Washington. The people of Tillamook County are interested in bringing this million-dollar unit to their county in the interest of the oyster industry. My interest is in the preservation of all mollusks.

Tillamook is a large, shallow bay with many flats which invite clams. The Federal Government is seeking a bay that is varying in salinity and pollution and has ready access to producing commercial shellfish grounds. Tillamook Bay meets these three requirements.

Tillamook County has five bays which contain nearly 50% of the total tide lands in the State of Oregon. Tillamook Bay produces 85% of Oregon's oyster crop. Every specie of Pacific Coast Clams can be found in one of the five bays.

If we keep the flats clean, the ocean will seed them. Perpetuate this natural source of food.

--- LAURETTE W. KENNEY -

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MAY LIBRARY NIGHT

Around thirty Geesockers finally arrived at Lewis and Clark College for the last Library Night of the academic year. A delicious pot-luck dinner was enjoyed in the beautiful picnic area near the swimming pool, where a pair of wild ducks entertained us. Dr. and Mrs. Stauffer cleaned off and arranged the tables and brewed a huge pot of coffee for us. Truman Murphy dedicated a beautiful cake to Johanna Simon, and we all sang Happy Birthday to honor her. After the meal we strolled through part of the grounds, conducted by Leo Simon, who named and explained the handsome plantings. Then we assembled in our regular meeting room in the Biology Building for a program.

President Fred Miller showed the colored slides he had taken on the recent GSOC bus trip, much to our delight and amusement. Pictures of caravans always provoke a lot of laughter.

Chairman Murray Miller explained the project he and Mrs. Miller have carried on since 1962. They have measured the movement of the sand dunes south of Reedsport near Ten Mile Creek. He explained in detail the different types of dunes that are found there which are damming the creeks to form the lakes, and the method he devised to accurately measure their movement. Since 1962 they have moved inland ten feet ..... and will last till "dunes day", according to our club wit, Lloyd Wilcox. Murray then showed fine colored slides which graphically illustrated what he had explained. The Millers will add the study of algae on the dunes to their project next year.

Lee Gavigan has appointed Clara Bartholomay and Jennie Walters to assemble a small library on pertinent subjects for the President's Camp-out. Several books from the GSOC library were selected, which will be added to from other sources.

So our Library Nights for the academic year ended on a very happy note and will be resumed again in September.

Jennie Walters

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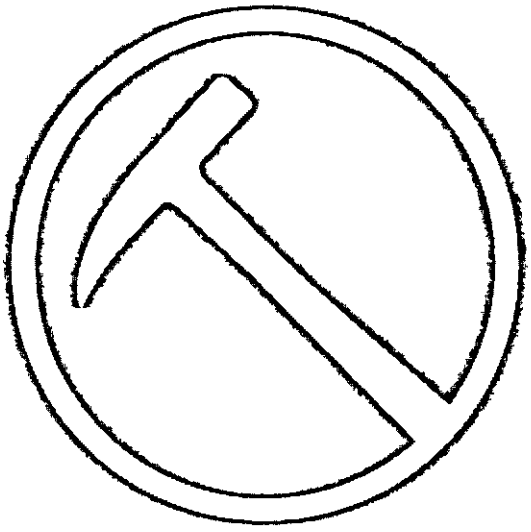
We are enclosing copy of Campout Road Log with this issue (June 1965) of Geological News Letter. Additional copies will be available at later date for nominal fee.

July 1965



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G. S. O. C. CALENDAR FOR JULY 1965

All times indicated are Pacific Daylight Saving Time.

Every Thursday — LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - Reservations are not needed (nor is there a minimum charge) to attend these weekly informal luncheons. GSOC'ers, guests, and visitors will find food selections to suit a variety of palates available in the main cafeteria.

The group convenes in the "mountain room" (a short distance beyond the "foothills room") under the chairmanship of Mr. Leo F. Simon. More information may be obtained by telephoning Mr. Simon at 236-0549.

9 July Friday — LECTURE - Central Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - GSOC'er Jack Pollard will talk about the "Oligocene Bad Lands of the White River, South Dakota", illustrated with his own color slides. Jack's high-class photography and sprightly narrative assures us of a thrilling evening.

20 July Tuesday — LIBRARY NIGHT - Not scheduled during the summer months.

23 July Friday — LECTURE - Central Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - Dr. Norman Smale, Director of the Planetarium at the Oregon Museum of Science and Industry, will take us with him into space with his talk about "Life in the Solar System". Don't miss this.

24-25 July Weekend — FIELD TRIP (tentative) - S. W. area of Warm Springs Indian Reservation.

Assembly point, departure time, and other information to be announced when details have been worked out by Mr. Lee Gavigan, Field Trips Chairman.

ADVANCE CALENDAR FOR AUGUST 1965

Every Thursday — LUNCHEONS - As usual at the Y. M. C. A. For details, see July Calendar.

13 August Friday — ANNUAL PICNIC - To be held in the cinder cone at Mt. Tabor Park.

17 August Tuesday — LIBRARY NIGHT - Not scheduled during the summer months.

27 August Friday — LECTURE - None scheduled during August.

FIELD TRIP - To be announced.

NEWS OF MEMBERS

HUGH OWEN (AND CAST) is home again and is recuperating from a back injury he received while on a train bound for Toronto. He is counting the weeks until he can shed the cast, and in the meantime he is not exactly enjoying our warm weather.

JESS RENTSCH is spending two months on the Atlantic coast, visiting such wonderful places as New York and Washington, D. C. Bob Wilbur received a card from him postmarked from the latter place.

JOHANNA AND LEO SIMON returned from the President's Campout by way of Moro where they visited with MR. AND MRS. THEODORE JOHNSTON.

DR. JOHN ALLEN (Portland State College Geology Department) is involved in a summer seminar at Santa Barbara State College.

MARJORIE FESSENDEN (Lewis and Clark College) is on safari again. She is with a group of students from the college and this time they are "doing" Hawaii.

PHIL BROGAN was given the Northwest governors' scientist award at the sixth annual Science Youth Congress banquet because his "interpretation of science to the layman has increased scientific literacy in the Northwest."

The Oregon Journal recently published an article by CHARLES P. KEYSER, for many years superintendent of Portland parks. The article gave a detailed history of the Portland Rose Show.

MRS. AUDREY BARRY, third and fourth grade teacher at Couch School in Portland, was elected President of the Portland Grade School Teachers Association for 1965-66.

DAVID FORD has returned with an M. A. degree from the University of Cincinnati. He also acquired a wife while attending the university.

IRV EWEN and ELMER SOPER assisted DR. RUTH HOPSON during the spring term at Portland State in her Geology of Oregon classes.

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CAMPOUT ROAD LOG

A lack of space in last month's (June 1965) issue of the News Letter prevented mentioning details regarding the Campout Road Log. This pamphlet entitled "GEOLOGICAL GUIDEBOOK FOR CENTRAL OREGON, Prineville - Pauline - Suplee - Delintment Lake" was enclosed with the News Letter. It was felt that this would be a handy guide for GSOC'ers making the journey to attend the third annual GSOC President's Campout.

This publication was a cooperative effort of several GSOC'ers, coordinated by Mr. Ralph S. Mason, Chairman of the Special Publications Committee. Information was compiled by Dr. Paul W. Howell, photos were taken by GSOC President Fred E. Miller, and strip maps were prepared by Ralph Mason and Irv Ewen.

Additional copies will be available for the nominal sum of twenty five cents.

Editor

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NEHALEM FIELD TRIP OF APRIL 25, 1965

Bright and early on that Sunday of the changeover to Daylight Saving Time, three busloads, one made up of students from Portland State College and around 120 people in all, took off to the hills. Dr. Paul Howell, our leader, commented about the ground over which we rolled on our way to Canyon Road. It consists of deep terraces of sand and gravel deposited by the Missoula Flood. Upon leaving the terraces we ascended the Tualatin Mtns. by way of Tanner Creek Canyon which was cut in the Columbia River Basalt by stream erosion. Near the top of the canyon we passed the site of the old Sylvan Brick Co. with its wide exposure of Portland Hills Silt and clay. Nearby and receding into a trace of morning mist lay the summit area of an ancient volcano, one of four known to exist in the West Portland area. The best known is Mount Sylvania. From the crest of the Tualatin Mtns. we descended to the floor of Tualatin Valley which is underlain by Pleistocene and Pliocene sediments. We rose from the valley and presently, looking across to the Coast Range, were able to see clearly the geologic setting of an ancient drama.

> During most of the period from late Eocene until the end of Oligocene time, some 30 to 50 million years ago, northwest Oregon was covered by an arm of the sea in which molluscs and other marine invertebrates were exceedingly numerous. Streams eroding the adjacent lands brought in mud, sand, and volcanic ash which settled in layers on the floor of the sea, and as the floor gradually subsided, thousands of feet of sediments accumulated. Shells of the animals living on the sea bottom or washed up along the margins were thus buried and preserved as fossils in the sedimentary rocks.
>
> Some time after the close of the Oligocene period, the land was uplifted permanently from the sea and the sedimentary rocks were warped into gentle folds and then deeply eroded. Today these tilted fossil-bearing strata are exposed in steep banks along streams and in road cuts and quarries. *

Our first stop was at Sunset Tunnel where Keasey formation appears on both sides of the crest to an estimated thickness of 1800 feet. The shale in this formation is being excavated and used as a light-weight aggregate for cement blocks. Weathering has caused the shale to disintegrate in exposed areas but nice fossils are to be found in fresh cuts. One find here was a crab within a concretion. Pelecypods found here are nemocardium, macoma, yoldia, and nuculana. Gastropods are natica, turritella, and cancellaria.

Entering the coast watershed, we followed the descending waters of the young Nehalem which here is a small creek. Our next stop was at Rocky Point quarry. This is a small basalt quarry west of the Nehalem River and on the west side of the Timber-Vernonia road. A Longview Tree Farm sign is on the opposite side of the road and the quarry is about 1/8 mile off to the west. At the base of the formation lie early Eocene Tillamook Volcanics. An interesting feature is a layer of conglomerate sandwiched between two basaltic flows, part of which is pillow lava. Pillow lava is extruded under water so its presence here indicates that this quarry area was once probably the margin of the sea, and that even at that time, fifty million years ago, land streams were bringing gravels to the ocean. Cowlitz formation lies on top of a conglomerate bed which in turn overlies the uppermost basalt flow. Fossils here include numerous pelecypods and an occasional shark tooth. Several ladies in the party were delighted by the discovery of a fuscia-flowered gooseberry in bloom at the bottom of the quarry.

A refreshing stop was made at Vernonia. There was a great deal of eating and coffee drinking done on this trip. We left Vernonia at 11 a.m. and turned west onto the Keasey Road. About 4 miles up the road we stopped at a road cut and dug briefly for gastropods, foraminifera, crabs, and dentalium, more or less successfully. After returning to Vernonia, we took the road to Mist, following the Nehalem River. Dr. Howell explained why the river took such a serpentining route. It is a pirate river, rising on the landward side of the Coast Range. It should have flowed into the Willamette valley drainage system, but there are good geologic reasons why it did not. The Coast Range, or at least this part of it,

* State of Oregon, Department of Geology and Mineral Industries -- Fossil Localities of the Sunset Highway Area, Oregon, by Margaret L. Steere.

Nehalem Field Trip - cont'd.

is in its third cycle of erosion. The first uplift occurred in post-Columbia basalt time after which the area was reduced to a landscape of rather gentle relief. Soft sediments and hard basalt alike were beveled off. At that time the main streams must have flowed in general east and west directions, derived from the original uplift slopes. Post-beveling uplift, probably in late Pliocene time rejuvenated the drainage and now selective erosion began to take effect. Those streams eroding headward along soft sediments, lying between the hard Columbia River basalt on one side and resistant Tillamook volcanic series on the other, soon undercut and captured the east-west streams and joined them together into the system we now know as the Nehalem River. The land we see today is wooded, with scattered farms upon which cattle graze. Many living fossils (equisetum) grow along the ditches. We were obliged to pass up an area of crinoid fossils on the other side of the river. The busses could not cross the bridge. We crossed into Clatsop County -- through Cowlitz shales -- on through Mist, into the area of the rain forest. Saddle Mountain, composed largely of flow breccia and cut by interesting dikes, appeared ahead. (To the hiker, the meadows of this mountain reveal a Persian carpet of color in the latter part of June. Over 260 different varieties of wild flowers are to be found there.)

Lunch was greatly enjoyed at Fishhawk Falls. The day and the place were perfectly beautiful. The sunshine and flowers were enjoyed by all. At this point a thick dike of Miocene basalt thrusts up at an angle of 64 degrees and very effectively interrupts the waters of Fishhawk Creek, which here plunge over the lip of the dike and descend as a torrent to the valley floor a hundred feet below. From here on into the Klatskanine River drainage system we travelled through elk country that is closed to hunting. Here one may very well feel swallowed up by the forest primeval. Spruce and hemlock trees grow densely with giant alder along the bottoms.

At our next stop, up a north side tributary of the Klatskanine and only about 13 miles from Astoria, we were treated to a striking sight -- a relic of Miocene upheaval. A spate of molten magma had intruded a horizontal fracture in the crust of the earth and had swelled to a thick sill. Uncovered by erosion, the 150-foot tall cliff of vertical platy basalt loomed above us, its edges slowly giving way to erosion. The plates, an inch to three inches in thickness, were of varying length -- up to several feet. This formation crops out here and there along Hwy. 202 almot to Olney.

Our last stop was at the Pittsburgh Bluff formation just down river from Vernonia. Pelecypods and gastropods are to be found here. We travelled back by the old road from Vernonia to Buxton, and from Buxton back into Portland in time for dinner. It was a very successful trip -- full of interest and in lovely weather.

Anyone wishing to enlarge their information on this area further should read Truman Murphy's account of the previous trip written up in the June 1961 Geological News Letter.

Dorothy Barr

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Vol. 31, No. 7

YAKIMA BASALT

The history and stratigraphy of the Yakima Basalt of southeastern Washington was the subject of a discourse by James W. Bingham, Groundwater Geologist of the Water Resource Division, U.S. Geological Survey of Tacoma, Washington. Mr. Bingham is a graduate of the University of Minnesota, and arrived in Tacoma about six years ago. For the past five years he has been working on a groundwater study of the Columbia Basin Irrigation Project area. Most of his talk was based on two reports recently prepared for U.S. Geological Survey publication. One report is in press and the other is on the way for Survey Director's approval.

The Yakima Basalt covers that portion of Washington bounded, roughly by the Rocky Mountains, the Spokane and Columbia Rivers, and the east slope of the Cascade Mountains.

During the Miocene period the climate of this area was mild and humid. The high Cascades had not yet risen to block off the Pacific storms and rainfall. From the highlands to the east streams poured out over the wide plain forming a broad alluvial fan. Over this area flowed the basaltic lavas, reaching a depth of over 10,000 feet in the Rattlesnake Hills and nearly 5000 feet in the vicinity of Odessa.

The extrusion of these flows continued intermittently into the Pliocene with long intervals between many flows. Weathered horizons appear today between flows indicating development of soil and plant growth.

The upper part of the formation contains four distinct members which have been identified and named. They are distinguished by jointing patterns, weathering, grain size, and other characteristics.

The Frenchman Springs, which is the lowermost member, lies above a layer of Vantage Sandstone. It is sparsely porthyritic with variable column and grain size. Two to four flows are known.

Above the Frenchman Springs is the Roza Member. This is a coarse-grained, porphyritic lava, forming large columns. There are two flows, the lower one continuous for 175 miles from Pullman to Yakima.

The Priest Rapids Member consists of four distinct flows of coarse-grained non-porphyritic lava which has formed large columns.

The uppermost member of this group is the Saddle Mountains member, and is the only one with olivine present. It varies from one to four flows, has formed small columns, and is hackly when broken.

Even as these lavas were being extruded across the surface of the earth the streams continued to flow toward the sea. In places the lava flows cut across the route of the streams, blocking the water and forming lakes. Between the flows of Frenchman Springs and Roza members such a lake formed leaving a deposit known as the Squaw Creek Diatomite Beds. Also above the Roza member, another such formation is known as the Quincy Diatomite Bed.

Overlying the Yakima Basalt west of the Columbia River is the Ellensburg Formation. In the Pasco Basin, the Ringold formation is a lacustrine deposit of sand and clay. Also present are eolian beds, as well as conglomerates composed of gravel deposited by the Columbia River. Some speculation occurred at this point concerning the possibility of a relationship between these deposits and those which appear in the Supplee-Izee area of eastern Oregon, since they both contain water-worn quartzites and jasper.

Of particular interest is a fossil mammoth found in a deposit which appears to be of much older origin than the period in which this animal is supposed to have lived. (We doubt if the gentleman seated behind us had the correct solution to the puzzle when he suggested that the animal probably fell down a well.)

Many of the features of this area are the result of folding which occurred near the end of the period of extrusion and subsidence. These features include (among others) the Beezley Hills monocline, the Frenchman Hills anticline, and the Horse Heaven Hills anticline. Some faulting is apparent in these features.

Yakima Basalt - cont'd.

Coincident with the outpouring of the Yakima Basalt, the land in eastern Washington subsided. Later the Cascades rose, cutting off the flow of moisture from the Pacific. With the resulting dry climate, a layer of calcium carbonate formed on the land surface, known today as "caliche". (We wonder how this correlates with the famous caliche mud on the LBJ Ranch in Texas). Over this layer of caliche, silt, sand and gravel were later deposited by the glacial meltwaters of the Pleistocene. Mr. Bingham briefly discussed his version of the origin of the clastic dikes which occur in the fine grained facies of the glacial meltwater deposits. He proposed that during the intervals between the periods of flooding, the soil dried deeply, forming cracks much as we see happening today during periods of drouth. Into these cracks the wind drifted sand, and the next flood washed more sediments over them. As this process was repeated the cracks repeatedly followed those which had occurred during the previous dry period, and thus formed the thick bedded dikes.

Other points of interest in the area were discussed, including Moses Lake, which is an ancient meandering channel cut across the main scarps formed by the flood waters of the interglacial periods, and probably developed between the stages of highest flood. It has been estimated that the amount of water required to cut this channel would have exceded today's flow of the Columbia River by five or six times.

Mr. Bingham discussed many other features of the area in a most interesting and scholarly manner. His talk was well supplemented with maps of the area, and it seems that the only logical follow-up to this intriguing lecture is a field trip to at least one of the many fascinating localities. Are you listening, Mr. Lee Gavigan?

Irma Sullivan

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* temporary address
** junior member

ODE TO ISOPODS

Beneath the peaty clods of Pittsburg Bluff Formation
Await the isopods in fear of trepidation
Of being found by Gesocks.
Long sealed within the rocks, they dread emancipation
Except when Mercer knocks and elevates their station.
(Who wants to be called a sowbug, anyhow?)
Why then did they appear when Leo Simon came?
What was it they could hear? The answer's very plain.
The isopod becomes exceedingly prolific
When spoken to by ones with language scientific.

A. G. Sock

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SCAPPOOSE-PITTSBURG BLUFF FIELD TRIP

On May 16th, a bright Sunday morning after a night of rain, a good number of Geesockers assembled at Scappoose for a pleasant caravan led by Margaret Steere and Sam Mercer. At nine a. m. we filed up Scappoose Creek to our first stop at Bonnie Falls near the junction of Fall Creek and Scappoose Creek. After a short walk thru beautiful woods we found exposed on the steep banks of the creek a lens of marine fossils of late Oligocene or possibly early Miocene time, from the last advance of the sea into this area. A few fossils were collected and we wandered back to the parking area, enjoying the lush growth and fragrant air. Soon after leaving there we entered the Crown Zellerbach logging road and stopped to examine a coal bed in the Pittsburg Bluff formation.

Sam Mercer then guided us to the locality where he found the isopod that has been officially named for him. On top of the isopod bed is a bed full of leaf impressions. Not many isopods were found at this time, but several fine leaf impressions were taken out. It was reported that later, after the caravan disbanded, some of the party returned to this area and Leo Simon was lucky in finding several of the isopods, as well as petrified resin (Amber) in the coal seam.

Between showers we lunched at a picnic area, then back to the logging road and on to a faintly marked trail where we climbed up the hill and on to an old logging railroad grade. Here huge concretions full of marine fossils were exposed and some had rolled down onto the grade. Here we had a field day and many large sections full of fossils were obtained.

The last stop was to view an interesting geological feature of channel scour deposition. Except for our first stop at Bonnie Falls we had been in the Pittsburg Bluff formation of Oligocene time.

So our happy day ended and we were all most grateful to Margaret and Sam for their generous contributions to our knowledge and pleasure.

(Paleowhatchamacallit) Jennie Walters

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MOONSTONE LORE

E. Lillian Mihelcic

The moonstone is one of the most attractive of the feldspar gems. Its beautiful blue flame sets it apart as a thing alive and it is a fit companion piece to the lesser known feldspar, sunstone. It is no wonder that legends should have grown about its particular assumed properties. Its inherent beauty and the halo of mythology assured it a position with the pearl as the gem of the month of June.

To those who find pleasure tracing its sign of the zodiac thru the astrological calendar that the Babylonians have bequeathed us, the moonstone will be found to dominate the sign of Cancer, or that period that extends from June twenty-first to July twenty-second.

Most of the myths and traditions of the moonstone have grown up from the fact that the strange blue moon-like ray seems to float thru the confines of the stone, as an astral spirit. To most of the ancients it portrayed good fortune in several fields. As the stone varies in appearance with its locality so does the power assigned to it vary.

For instance, the North American Indians attached great powers for good fortune to the stone and it was frequently used in the form of amulets. To insure a continuation of its beneficent power after life, it was often buried with the owner.

In certain sections, the moonstone protects the sailor. It further protects against watery ailments. Other curative powers are assigned to it, each varying with the location.

That the romantic side of life was not neglected, is the natural implication in the very name "moonstone". What could be more conducive to romance than the hypnotic influence of the moon? The moon's influence was made perpetual, so the primitive lover believed, when he presented the stone to his lady-love. Under its power, he became resistless, particularly true if presented when the moon was increasing.

Another quite common attribute of moonstone in legendary life was the capacity to impart great shrewdness to the possessor. The power to foretell the future was enhanced with the decreasing light of the moon.

Since many of our fine moonstones originate in the Orient, it is but natural that many of these legends started there, and for that matter still persist to the extent that they are a part and parcel of the daily life of many Orientals. Certain sections of Europe, the western portion in particular, yield a wealth of myths closely interwoven in the life and pattern of the people.

As to our sophisticated Americans of the age, why, we speak of the legendary powers of the moonstone as something that is "supposed" to be. Incidentally, who can accurately separate fact from fiction?

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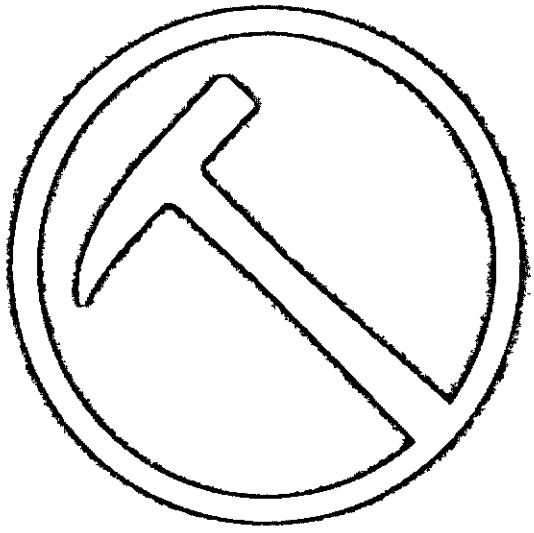
Aug. 1965



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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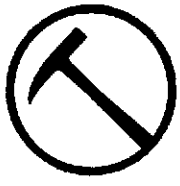

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1247 Powell Lane
Prineville, Ore.

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	ZIMMER Miss Ruby M.	805 S. E. 60th Avenue	Portland, Oregon - 97215	236-8319

G. S. O. C. CALENDAR FOR AUGUST 1965

Please note that all meeting times shown are Pacific Daylight Savings Time.

Every Thursday — LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - GSOC'ers, guests, and visitors are invited to partake of the mid-day repast on Thursdays in the Mountain Room (beyond the "Foothills Room"). A variety of food selections to suit many tastes, (even the calorie-conscious) is available in the main cafeteria at moderate prices.

These informal weekly gatherings offer an opportunity to peruse the most recent (and sometimes very ancient) geologic publications, examine specimens, and hear occasional "five-minute" talks on geology or related topics.

13 August Friday — ANNUAL PICNIC - In the throat of the cinder cone at Mt. Tabor Park.

6:30 P. M. - Pot-luck supper. Bring a main dish, a salad, or a dessert. Also, table service (silverware, plates, et cetera) for your group. Rolls, butter, and beverages will be supplied.

7:30 P. M. - Program for the evening will include a community sing-along.

For additional information (or to volunteer services and talents) telephone Mr. and Mrs. Donald D. Barr (Don and Dorothy) at 246-2785.

17 August Tuesday — LIBRARY NIGHT - Not scheduled during the summer months.

27 August Friday — LECTURE - None scheduled during August.

FIELD TRIP - (tentative) "Lunar area" of central Oregon. Details to be announced.

ADVANCE CALENDAR FOR SEPTEMBER 1965

Every Thursday — LUNCHEONS - As usual at the Y. M. C. A.

10 September Friday — LECTURE - Mr. Robert E. Lee of the Georgia Pacific Company will speak on "The Story of the American Quintana Roo Expedition".

21 September Tuesday — LIBRARY NIGHT - Lewis & Clark College Campus in southwest Portland. Details to be announced.

24 September Friday — LECTURE - "The Deepstar Program" is the title of the talk to be given by Mr. Robert P. Taber of the Westinghouse Company.

FIELD TRIP - Details to be announced.

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NEWS OF MEMBERS
by Rowena Hoven

AVA CROWE has returned from a busy convention trip to Hawaii. While in Honolulu she spent an afternoon with MARJORIE FESSENDEN. They both agreed that the islands are everything they had anticipated.

ELIZA STEVENS, a long-time member of the Society who is now confined to her home, would appreciate visits and phone calls from members she knew in former years. Her address is 3934 S.E. Boise Street and her phone number is 774-0439. It is always a pleasure to renew old acquaintances.

DR. FRANCIS JONES, charter member of the Society and brother of DR. ARTHUR JONES, attended the July 22nd luncheon at the YMCA and reported briefly on the research work he is doing on jade and quartz crystals.

MAY DUNN has returned from an exciting two weeks at Yellowstone Park. The trip got off to a rousing start when the plane was unable to land at West Yellowstone because of hail and thunder storms, so Butte, Montana was the first stop. Then it was 157 miles by cab along the new highway passing the earthquake area, which gave her an opportunity to see the new Quake Lake. At West Yellowstone she took the "tour" for four days, and thereafter she visited a friend and continued to explore the park on her own. She observed a variety of wildlife including three grizzlies, saw the obsidian cliffs, and walked up Devil's Slide. It was all an exciting adventure and May kept busy every minute.

BILL FREER is home again after a short stay in the Portland Osteopathic Hospital.

BRUCE SCHMINKY and CLAIR PENSE are very much involved in the work preliminary to the meeting of the American Congress on Surveying and Mapping to be held at the Hilton Hotel, August 4 through 7.

For lack of a more appropriate place to list LOST AND FOUND articles, this is to notify all junior members that a pair of hiking shoes (complete with socks) turned up without an occupant on the July 24th trip in the Mt. Jefferson area. The size is unknown but they measure about 6" in length (if that helps). "Prince Charming" may retrieve same by calling Rowena Hoven, 234-9005.

The latest card from JESS RENTSCH was postmarked from Maryland. How can an individual stay away from Oregon for such a long time without getting homesick?

* * * * * * * * * *

NEW MEMBERS — MEMBERSHIP ROSTER

name	street address	city, state and zip No.	telephone
BURKE, Mr. & Mrs. Melvin H.	1930 S. W. Spring St.	Portland, Oregon - 97201	223-0419
HIGDON, Mr. & Mrs. Francis A.	406 S.E. 89th Avenue	Portland, Oregon - 97216	254-8255
McLAUGHLIN, Mr. & Mrs. Gene K.	5234 N. Oberlin St.	Portland, Oregon - 97203	285-6274
MILLER, Mr. & Mrs. Arthur H.	11061 S.E. Wood Avenue	Portland, Oregon - 97222	654-5550
RITLAND, Mr. & Mrs. Richard M.	College Station	Berrien Springs, Mich. - 49104	473-6942

CHANGE OF ADDRESSES:

SEAMAN, Mr. & Mrs. Cecil E.	3925 SE Grant Ct. City 97214
CLARK, Mr. & Mrs. Edward R.	632 S.W. Hall St., Apt 103, City 97210
SCHULL, Mr. & Mrs. Bert R.	6209 E. Hawthorne, Tucson, Arizona 85711
FOSTER, Mr. & Mrs. Gordon D.	Rt. 1, Box 169 - Talent, Ore. 95740

Vol. 31, No. 8

STRUCTURAL GEOLOGY OF THE SUPLEE AREA

By Mark Perrault

Third Annual GSOC President's Campout
Suplee-Izee area of Central Oregon
19 June through 26 June 1965

Deciphering the structural geology of the Suplee area is complicated by several factors. The formations involved are mainly of sedimentary nature and poorly resistant to erosion, so outcrops are poor. Landslides and weathering have, in many places, obscured details. Deformational forces have operated throughout most of geologic history here, and this repetition has formed structures of the most complicated types. Geologically many of the rocks are old, and it is to be expected that they be greatly altered in both composition and position.

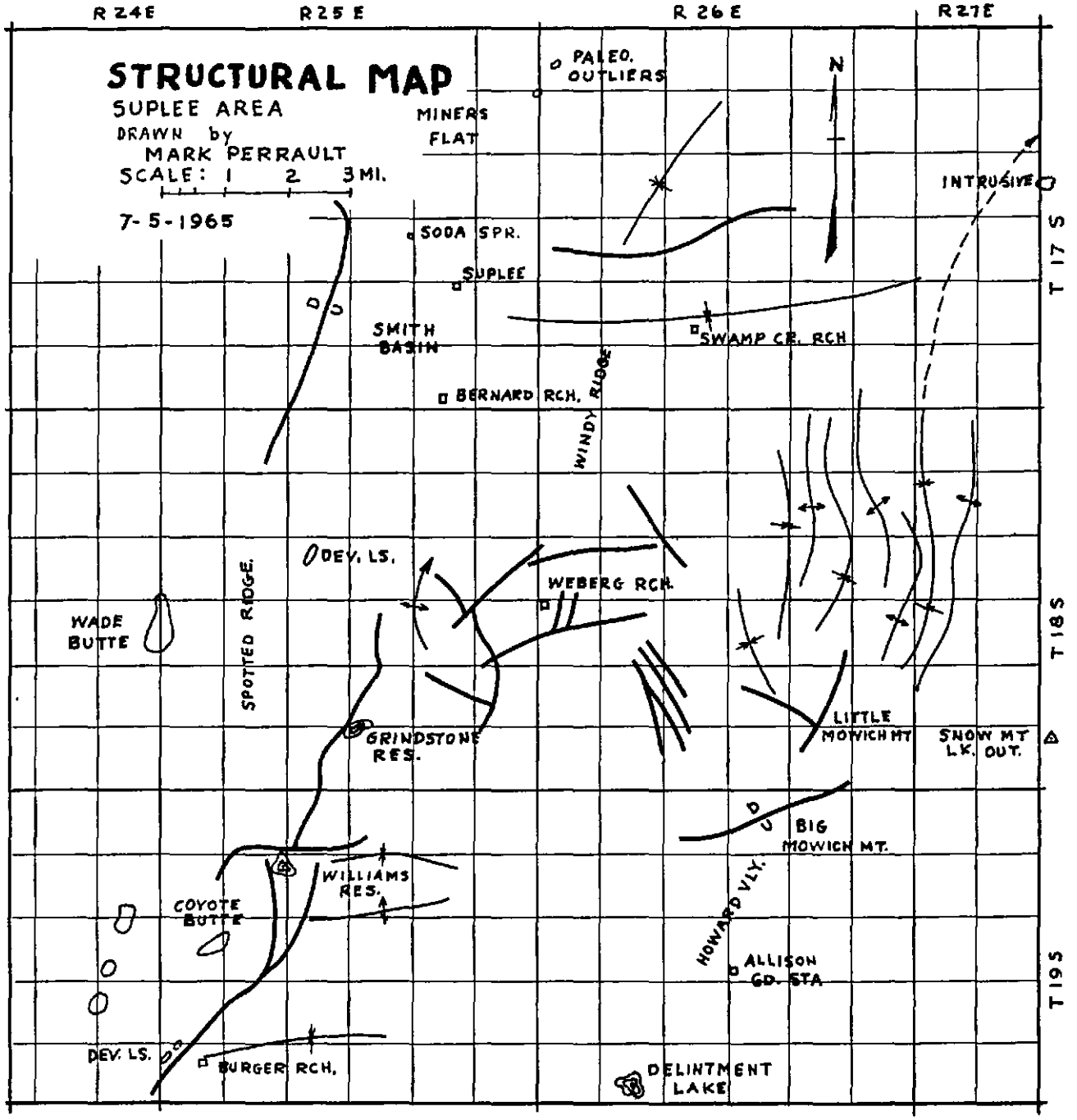
In general, four significant structural patterns are seen (see structural map on page 72). First, the Paleozoic rocks were folded and faulted with a slightly northeast structural trend. Second, the Triassic rocks were folded, independently, in a north-south trend. Third, the Jurassic rocks were folded with an east-west trend. Lastly, the area was capped with a thin layer of Tertiary volcanics which were later gently flexed, and locally faulted. These since have been nearly completely stripped away.

The oldest rocks in this area (these are the oldest found in Oregon) are limestone, Devonian in age, which occur in two small outcrops. One locality is near Burger Ranch and the other is northeast of Spotted Ridge. The area has been severely folded and faulted numerous times, but these events can not be directly associated with the presence of these old rocks. These very competent limestones, which probably represent the cores of folds, resisted the thrusts of younger formations against them throughout all deformations. The structural strike is northerly and the dip steep. The fact that these Devonian outcrops exist in their present state is proof of much larger bodies below the surface.

Mississippian and Pennsylvanian sandstones and conglomerates are found in the Coyote Butte and Spotted Ridge areas. The base of these rocks is not exposed. After the early marine portion of the Coffee Creek formation, a flora of land plants flourished which suggests a general uprising and emergence from the sea. Pennsylvanian deposits are unconformable upon the Mississippian, but diastrophism, if any, was mild during these two periods.

Permian marine deposits rest unconformably upon the lower Pennsylvanian sediments. Late Pennsylvanian and early Permian probably were times of little crustal movement, at most, a gentle warping. The composition of the deposits, high silica and much chert, do indicate volcanic products were available in the seas. Volcanism is not known in the west prior to Permian times. The first great area-wide crustal movements were effected after the deposition of the Coyote Butte Formation and near the end of Permian times. Intense pressures operating in an east-west direction caused sharp folding and faulting. The resultant slightly northeast structural trends with their steep dip slopes are found in all the Paleozoic rocks of the Suplee area. Many complex faults are also found. Some of these faults may have occured contemporaneously with the original folding, others may have been formed with late crustal movements. Certainly the deformation of Triassic rocks had a great effect upon all rocks deposited up to that time.

The close of the Paleozoic Era must have left the area one of great variance in relief. Seas must have existed in places, also prominent highlands. Massive sandstone, coarse conglomerates, and prominent uncomformities indicate the area was again being planed off. Triassic deposits must have covered a great area and thickness. During this deposition crustal movement was of a regional nature, a regional raising or lowering, as seen in the nature of the deposits. After the accumulation of the Triassic rocks came the second great regional deformation. Unconformities indicate this deformation was independent of the Paleozoic phase. As a result, the Triassic deposits, now found south of Little Mowich Mountain in an area just southerly and easterly of the Paleozoic Outliers immediately around Suplee,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STRUCTURAL MAP
SUPLEE AREA
DRAWN by
MARK PERRAULT
SCALE: 1 2 3 MI.
7-5-1965
PALEO. OUTLIERS
MINERS FLAT
N
INTRUSIVE
SODA SPR.
SUPLEE
SMITH BASIN
SWAMP CR. RCH
BERNARD RCH.
WINDY RIDGE
T 17 S
DEV. LS.
WEBERG RCH.
WADE BUTTE
SPOTTED RIDGE
T 18 S
GRINDSTONE RES.
LITTLE MOWICH MT
SNOW MT LK. OUT.
BIG MOWICH MT.
WILLIAMS RES.
COYOTE BUTTE
HOWARD VLY.
ALLISON GD. STA
T 19 S
DEV. LS.
BURGER RCH.
DELINTMENT LAKE
FAULTS
ANTICLINES
SYNCLINES
NORMAL FAULT
REVERSE FAULT
THRUST FAULT
OVERTURNED
SYNCLINE
ANTICLINE
FOLDS
PLUNGE OF FOLDS

STRUCTURAL GEOLOGY OF THE SUPLEE AREA - cont'd.

and around the northerly outcrop of Devonian limestone west of Bernard Ranch, show nearly vertical dips and a northerly structural trend. They are intensely faulted and folded. Stress applied in an east-west direction was generally similar to that of the Paleozoic deformation. These stresses could easily have affected the Paleozoic rocks as previously stated. Steepened dips, overturned folds, normal faulting, and possibly thrust faulting may have resulted.

Jurassic sediments many thousands of feet thick overlie, with prominent unconformity, the Triassic. In turn the Cretaceous above is unconformable upon the Jurassic sediments. Volcanic activity was present during this deposition as well as long periods of non deposition, an indication of crustal instability. Near the end of this period stresses operating widely divergent from those previous caused the east-west trending folds now seen in the Jurassic rocks which are found along the Swamp Creek syncline, east of Burger Ranch, east of Williams and Grindstone Reservoirs, and west of Little Mowich Mountain. Thrust faulting even as late as Pleistocene times must be considered a possibility, judging from the present position of Jurassic beds. Crustal movements here probably were part of the widespread Nevadan Orogeny of Jurassic times.

Small outcrops of Cretaceous rocks are found in the Miners Flat and Soda Springs areas. Mostly these are masked by landslides. Cretaceous rocks of varying kinds are also found in other areas of Oregon, indicating these were once widespread deposits. Laramide Orogeny was responsible for regional uplift to the east. The resulting steepened stream gradients hastened erosion and removal not only of these, but of all other deposits.

Exactly what the land surface in this area was, what areas were covered, and what crustal movements took place in Mid-Tertiary times may never be known. The outpouring of Columbia River lavas completely covered the area, with possibly a few high points excepted. Mascall Formation of late Miocene Age is found in scattered areas. The violent "Rattlesnake" volcanic episode of Pliocene times blanketed the area with a thin layer of tuffs and ignimbrites. The area, though not level, was nevertheless masked completely by this Rattlesnake Formation.

Late Pliocene and Pleistocene times must have occasioned much local diastrophism. The competent volcanics now found only as hill tops must have been severly faulted and broken up as well as much of the sediments below, and stream grades must have been greatly steepened. The great erosions of Pleistocene times were thus able to operate at maximum efficiency in their removal of vast amounts of material. The present surface of low rolling hills and scarps is the result of this last erosional episode.

LARGE SCALE DETAILED GEOLOGICAL MAPS ARE AVAILABLE FROM G.S.A.O.C.

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FROM THE PRESIDENT'S VIEWPOINT

Third Annual GSOC President's Campout
Suplee-Izee area of Central Oregon
19 June through 26 June 1965

The President's Campout was an outstanding success because of the united efforts of devoted GSOC'ers, their friends and associates. Field Trip Chairman Lee Gavigan proposed the locale, and with the enthusiastic support of Truman Murphy and Paul Howell, scouted as far as the roads could be negotiated to crystallize the plans. Paul then authored a Trip Log, and with others compiled a topographic map showing the geology of the area. To this map H. J. "Bud" Buddenhagen added the latest tectonic and fossil information with 34 points of special geological interest. Meanwhile Publications Chairman Ralph Mason mortared together the strip maps (Irv Ewen)and aerial photos (Fred Miller) to produce an exceptional Trip Log with the Mason trowelling.

While all were rehabilitating their camping gear, Jenny Walters and Clara Bartholamay gathered an appropriate choice of books for the Field Library, and George Walters accumulated first aid materials for all contingencies. This forethought saved us from any lameness in mind or body. George practiced the preventive kind of First Aid with tick talks and snake rattling.

Outstanding leadership marked all of the activities. Paul Howell and Bud Buddenhagen were the recognized authorities, ably supported by Ruth Hopson, Margaret Steere, Leo Simon, Mark Perrault and Truman Murphy. Public Relations Entrepreneur Lloyd Wilcox protected us from irate ranchers. Every evening around the Council Fire Truman capably mastered the variety of programs.

Mr. C. E. Weissenfluh, Snow Mountain District Forest Ranger, deserves special mention for his warm welcome and his prompt solution of the logistics problems facing the "tender-rubber-tired-feet" from the paved highways, in addition to his presentation of "the development of sustained yield in the forests".

We were indebted to Emily Moltzner and her supporting Publicity Committee for the turnout of nearly 100; and we enthusiastically await the News-Letter reports from the several Campout authors.

To all of these, and the many others who also gave unstintingly of their time and ability, the Geological Society and your President are tremendously grateful. Thank you for your contributions to GSOC traditions of friendly helpfulness. And wasn't it fun just being there?

Fred E. Miller, President

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"THE SPRUCE BOG -- AN ESSAY ON ECOLOGY"

Those of us who enjoy all forms of nature (don't we all?) were especially entranced by this film presented by Dr. Francis Gilchrist on Friday evening, May 28, at the Central Library. The film portrayed the sequence of plant succession from water to forest.

As Dr. Gilchrist pointed out, we are all dependent upon plants for survival upon this planet because of the oxygen which they produce. Plants are of supreme importance to geologists for their aid in reducing rocks to soil and the humus which they add by the process of decay.

At the beginning of this sequence a lake or pond is formed over an impervious layer of rock, clay or other matter. The lake might be formed by a beaver dam, a lava flow, or any other means by which the escapement of water is prevented.

As the water collects land plants are drowned out and replaced by new water plants. Insect life appears, and perhaps fish and other water animals. Semi-aquatic plants take root in the grassy fringes, and as they die and decay an acid condition is created.

In this acid condition sphagnum moss grows in large mats, spreading outward over the water in large floating rafts supported by pockets of air held within their structure. Into this floating mass larger plants take root and flourish, building the ring of soil farther and farther into the pond. Woody shrubs appear next in the outer fringes, creeping forward as the soil is build to fit their needs. Soon the seeds of the surrounding black spruce trees take root, and by a combination of seeding and layering eventually absorb the bog into the mature forest.

Vol. 31, No. 8

CAMP HAPPENINGS

By George Dahlin

Third Annual GSOC President's Campout
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19 June through 26 June 1965

Dear Folks,

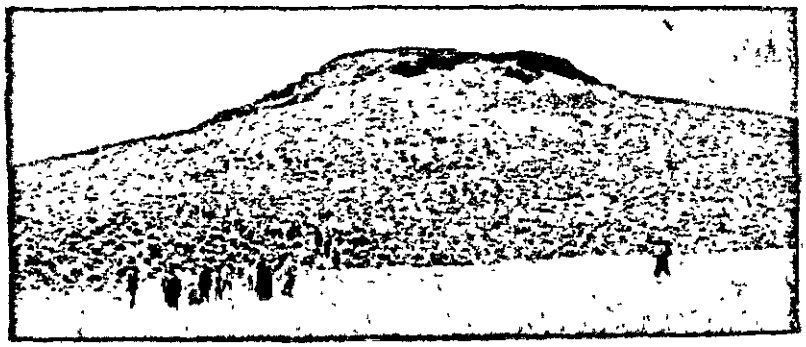
I know you could never guess what kind of trip I have been on this time, so I will say that I have been learning some things about being a geologist. As near as I can figure out a geologist is a kind of an antique collector, only he isn't interested in old dishes and chairs or old butter churns or such stuff. What he collects is old dead fish and clams, but they have to be dead so long they have turned into stone. You will probably think I am making this up, so I had better tell you how I got mixed up in it in the first place.

One Friday night early in June I wandered into the library downtown in Portland just to kill some time, and I happened to see that some kind of a meeting was going on in a room just off the main lobby. This looked like as good a place as any to spend a little time, so I just barged in and sat down, and nobody tried to stop me. Whoever they are they are planning a big camping trip up in the Ochoco Forest at a place called Delintment Lake, and it seems they have lined up some very special things to see, such as a place full of geology they talked about. I have never seen anything like that, and besides it has been a long time since I have been camping, so I get the idea I would like to go on a trip like this.

When the meeting is over I noticed some ladies seated at a desk near the door, so I went over and asked them what kind of a club this is. It has a long name - something about the Oregon Country - and its members have a big camping trip once a year, and this is what they have been talking about. I figured that since this is a trip to a lake they are all going fishing, but the ladies say no that isn't it. They are going up there to look at some real old rocks. I think they are kidding but they go right on and say there are some rocks there that are five thousand feet high and full of clams, and one time this was the bottom of the ocean. According to them these rocks are at least 200 million years old. Now I know they are pulling my leg, and I don't want them to think I believe such stuff. So I said I suppose Baron Munchausen belongs to this club. They said they never heard of him. so I said they seem to do pretty well without him. They didn't get mad at this, and didn't seem to know what I am talking about, so I figured I had better be careful or I would get into a row. So I said I had once known the Baron many years ago, and he was a very great scientist, and he would certainly have joined their club if he lived around Portland. By now I figure that maybe this thing is on the level so I ask about non-members going on their trip. It seems that anybody is welcome, but they suggest that if I plan to go I should buy one of the very special maps everybody will have with them. So I bought one of these, and also another little book they had, which shows how to get to the lake, and what to see along the road. So that is how I happened to go on the trip.

I started on the trip on June 19, which is the first day of the camp-out as they call it. The little book I bought is supposed to tell about things to see from Prineville to the lake, but mostly I don't know what it is all about. There are only a couple things that I will remember about the trip - one of these is Suplee. I have often been in towns that did not have a postoffice building, but Suplee is the first postoffice building I ever saw that didn't have any town around it. Also, I will remember that last hill going down to Allison Guard Station. I will bet it would be hard to find another stretch of road that has wrecked so many tires per mile in such a short time as this did. To me it will always be known as Puncture Hill.

I finally made it into Delintment Lake, and here was a place that was having a population explosion. There were tents, and campers and trailers all over the place. Anyone, who didn't know that these people were all here to look at some old rocks would think for sure there was a gold rush on. It took some looking to find a place to pitch a tent, but I finally found a place that was within walking distance of a table, the pump and all the other conveniences.



GSOC'ERS ASCEND DEVONIAN LIMESTONE RAMPARTS

ATOP THE (PROPOSED) BIRDSONG FORMATION

THROUGH SWAMP AND SAGE FROM CARAVAN TO OUTCROP

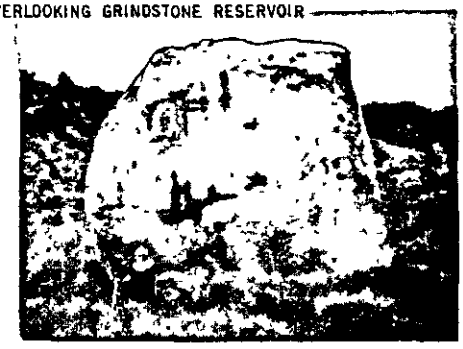
THIRD ANNUAL
G S O C
PRESIDENT'S
CAMPOUT

JUNE 1965

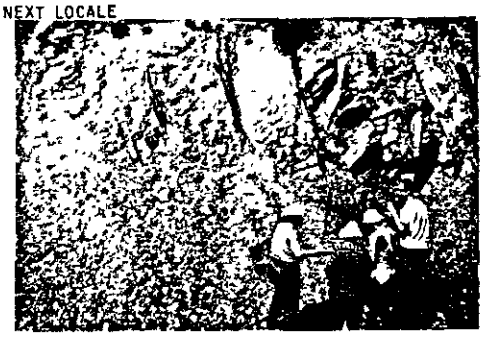
H J "BUD" BUDDENHAGEN POINTS OUT EXPOSURES OVERLOOKING GRINDSTONE RESERVOIR

"BUD" PROGNOSTICATES THE NEXT LOCALE

ROADSIDE EXPOSURE OF NICELY FOSSILS

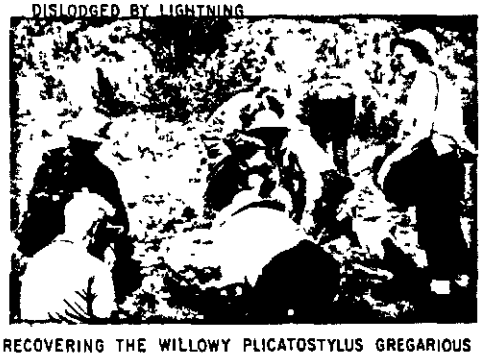


EFFIE HALL MEASURES BOULDER DISLODGED BY LIGHTNING



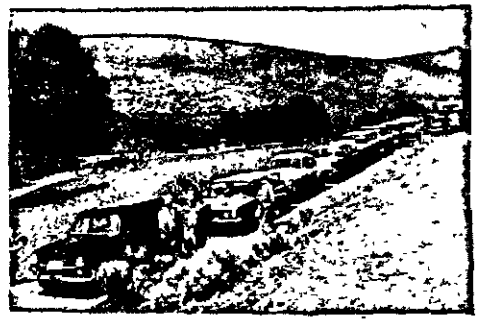
STEEPLY-DIPPING TRIASSIC SANDSTONES SOUTH OF SUPLEE

AMMONITE FOUND BY BERTHA ROBERTSON AT WM'S RESERVOIR



RECOVERING THE WILLOWY PLICATOSTYLUS GREGARIOUS

WILLIAM'S RESERVOIR BORROW PIT EXPOSED SPARSELY FOSSILIFEROUS JURASSIC LIMESTONE



WEATHERED TRIASSIC LUNCH STOP

Vol. 31, No. 8

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By George Dahlin

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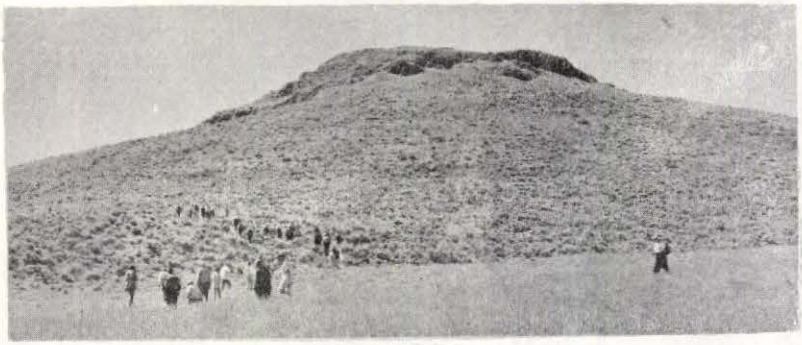
I know you could never guess what kind of trip I have been on this time, so I will say that I have been learning some things about being a geologist. As near as I can figure out a geologist is a kind of an antique collector, only he isn't interested in old dishes and chairs or old butter churns or such stuff. What he collects is old dead fish and clams, but they have to be dead so long they have turned into stone. You will probably think I am making this up, so I had better tell you how I got mixed up in it in the first place.

One Friday night early in June I wandered into the library downtown in Portland just to kill some time, and I happened to see that some kind of a meeting was going on in a room just off the main lobby. This looked like as good a place as any to spend a little time, so I just barged in and sat down, and nobody tried to stop me. Whoever they are they are planning a big camping trip up in the Ochoco Forest at a place called Delintment Lake, and it seems they have lined up some very special things to see, such as a place full of geology they talked about. I have never seen anything like that, and besides it has been a long time since I have been camping, so I get the idea I would like to go on a trip like this.

When the meeting is over I noticed some ladies seated at a desk near the door, so I went over and asked them what kind of a club this is. It has a long name - something about the Oregon Country - and its members have a big camping trip once a year, and this is what they have been talking about. I figured that since this is a trip to a lake they are all going fishing, but the ladies say no that isn't it. They are going up there to look at some real old rocks. I think they are kidding but they go right on and say there are some rocks there that are five thousand feet high and full of clams, and one time this was the bottom of the ocean. According to them these rocks are at least 200 million years old. Now I know they are pulling my leg, and I don't want them to think I believe such stuff. So I said I suppose Baron Munchausen belongs to this club. They said they never heard of him. so I said they seem to do pretty well without him. They didn't get mad at this, and didn't seem to know what I am talking about, so I figured I had better be careful or I would get into a row. So I said I had once known the Baron many years ago, and he was a very great scientist, and he would certainly have joined their club if he lived around Portland. By now I figure that maybe this thing is on the level so I ask about non-members going on their trip. It seems that anybody is welcome, but they suggest that if I plan to go I should buy one of the very special maps everybody will have with them. So I bought one of these, and also another little book they had, which shows how to get to the lake, and what to see along the road. So that is how I happened to go on the trip.

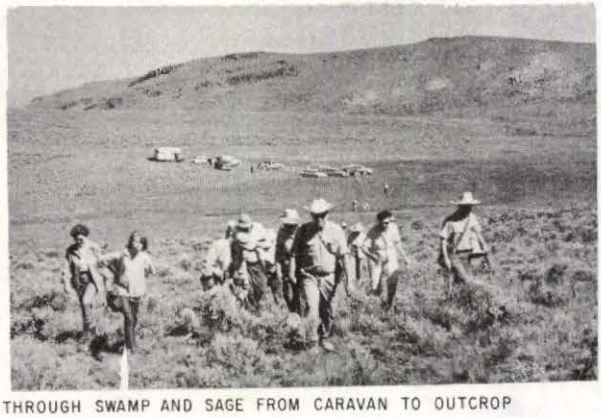
I started on the trip on June 19, which is the first day of the camp-out as they call it. The little book I bought is supposed to tell about things to see from Prineville to the lake, but mostly I don't know what it is all about. There are only a couple things that I will remember about the trip - one of these is Suplee. I have often been in towns that did not have a postoffice building, but Suplee is the first postoffice building I ever saw that didn't have any town around it. Also, I will remember that last hill going down to Allison Guard Station. I will bet it would be hard to find another stretch of road that has wrecked so many tires per mile in such a short time as this did. To me it will always be known as Puncture Hill.

I finally made it into Delintment Lake, and here was a place that was having a population explosion. There were tents, and campers and trailers all over the place. Anyone who didn't know that these people were all here to look at some old rocks would think for sure there was a gold rush on. It took some looking to find a place to pitch a tent, but I finally found a place that was within walking distance of a table, the pump and all the other conveniences.



GSOC'ERS ASCEND DEVONIAN LIMESTONE RAMPARTS

ATOP THE (PROPOSED) BIRDSONG FORMATION



THROUGH SWAMP AND SAGE FROM CARAVAN TO OUTCROP

THIRD ANNUAL
G. S. O. C.
PRESIDENT'S
CAMPOUT

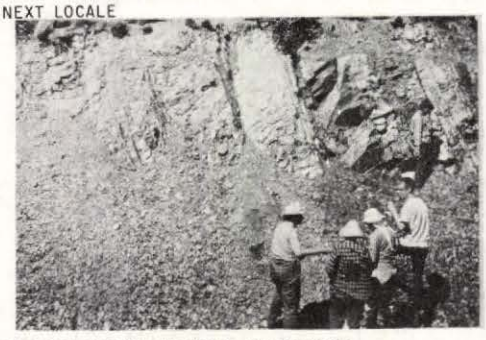
JUNE 1965

H. J. "BUD" BUDDENHAGEN POINTS OUT EXPOSURES OVERLOOKING GRINDSTONE RESERVOIR

"BUD" PROGNOSTICATES THE NEXT LOCALE

ROADSIDE EXPOSURE OF NICELY FOSSILS

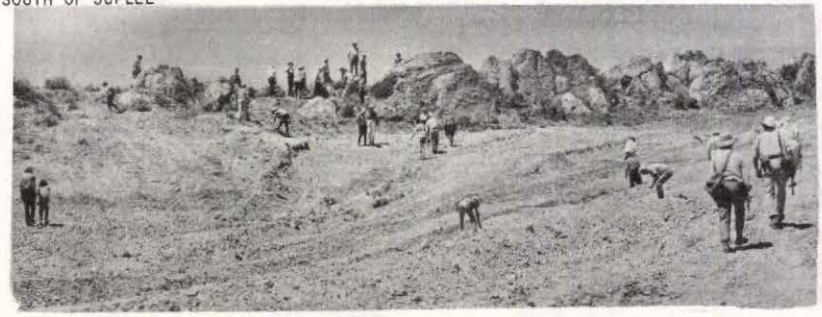
EFFIE HALL MEASURES BOULDER DISLODGED BY LIGHTNING



STEEPLY-DIPPING TRIASSIC SANDSTONES SOUTH OF SUPLEE

AMMONITE FOUND BY BERTHA ROBERTSON AT WM'S. RESERVOIR

RECOVERING THE WILLOWY PLICATOSTYLUS GREGARIOUS



WILLIAM'S RESERVOIR BORROW PIT EXPOSED SPARSELY FOSSILIFEROUS JURASSIC LIMESTONE

WEATHERED TRIASSIC LUNCH STOP

Vol. 31, No. 8

CAMP VISITORS

PALEOZOIC LIMESTONE OUTLIER OFFERS A CHALLENGE TO GEOLOGICAL HISTORIANS

LEADERS LEE GAVIGAN AND PAUL HOWELL CRYSTALLIZE PLANS

FIRST AIDER GEORGE WALTERS PATCHED UP G.S.O.C. PRES. MILLER

GUITAR QUARTET LED THE EVENING FESTIVITIES

GEORGE AND LLOYD OPERATE TESTING LAB

KILLDEER'S HOME

PAUL HOWELL PICKS PENNSYLVANIAN COYOTE BUTTE CRINOID EXAMPLE FROM GEOL. SERIES

CLARA BARTHOLOMAY AND JENNY WALTERS DISCUSS BEST CHOICE OF FIELD LIBRARY BOOKS

"JUST A SONG AT TWILIGHT"

CAMP HAPPENINGS - cont'd.

About sundown that evening I heard a commotion which seemed to be in the middle of the camp, so I went over that way to see what this is all about. I find the campers all sitting in a big circle, and there is a camp fire in the middle of this circle. I figure this must be something like an Indian powwow, and they are about to make some big medicine. Instead of tomtom beaters there are three or four guitar players, which suits me fine because I am not very fond of tomtom music anyhow. The leader of the guitar band seems also to be in charge of the meeting, and he keeps everybody busy singing old songs, but after a few rounds of this he stops the music and introduces one of his guitar players as the man who will be in charge of the field trips. Everybody seemed to know this fellow, so I don't understand why it was necessary to introduce him. It seems that this fellow had his plans all made as he introduced another fellow he called Bud, and said that this Bud would lead the trips for the first two days. Bud is a retired oil prospector for a big oil company, but right now he is doing some special work up here for the state. He is supposed to have a lecture for us, but all he said was that since we came up here to look at some old rocks he will show us some old rocks. We also hear a short speech by the fellow, who is to be the camp doctor. He didn't sound very hopeful about our chances of getting out of this place alive, what with rattlesnakes, that climb up in the sagebrush, and ticks hanging by whatever ticks hang by ready to latch on to us and load us full of Devonian itch or Jurassic scab or whatnot. But doc says there is no use to worry about these two when there is also scorpions all over the place. Now I begin to understand why there are no people in Suplee. It seems this doctor is a special kind of surgeon, who does nothing more but operate for woodticks and snakebite, and all the tools he has with him is a razor blade and a snakebite kit. He said nothing about what he can do if a scorpion stings you, so I guess that is why he said there is no use worry about the other two. He does a sales pitch for some snakebite insurance he is selling at only twenty-five cents down and pay the balance when you get bit, and then he winds up by saying he will do the best he can for us. I think we would have been safer if we had an old Indian medicine man along. Anyway he could entertain us on our way to the happy hunting grounds. I bought some of that insurance the doc was selling, but I think it was just a swindle, as I never got any receipt nor have I ever seen any policy. I bet more people get stung by fellows like him than by all those scorpions. Doc's speech kind of broke up the party, except there was a signup of all of those who dared to take a chance on going out in the morning to look at the old rocks.

It seemed like nobody got scared out as there was quite a gang ready to go in the morning. I even took a chance, and we all rode up to a hill that this Bud called a Devonian outcrop, but it didn't look like any five thousand feet high to me. This is supposed to be the oldest kind of rocks known in Oregon, and sure enough there was some kind of clams in it just like the ladies said there was. We spent the whole day driving up and down and around, but I wouldn't know for sure if we saw a lot of different things or just different sides of this same rock. The way the roads twist around over the hills up there you wouldn't have much trouble getting lost.

That night there is another powwow celebrating the safe return of everybody, and more guitar playing and singing. The chief forester from Allison Guard Station fills us in on forestry managment of a big tree farm like this. He is very hospitable and invites everybody up to the guard station to take a bath, but, as it turned out, this was too big an order for the bath house, and it broke down under the strain.

There were some strange goings on around the camp, like the sudden appearance of three drums of gasoline, which up to now had been no trouble to get - if you wanted to drive to Paulina or Burns. Seems like credit cards or checks were no good at this station, and there were no business signs up to show who was running the station - strictly a cash and carry deal. Then I heard someone complaining about how his sleep was broken up late in the night - he thought - by somebody pulling in to camp and unloading a boat. Said they made a lot of racket about it, but he was too tired to see what was going on. Well there weren't any new boats around, but there were three new drums of gas so I guess this fellow never heard of a midnight requisition, like they used to have so many of in the army. And one night we were entertained at a frog concert. This started out like it might be

CAMP HAPPENINGS - cont'd.

something like an old time snipe hunt, and I was a little suspicious about it at first. The idea was you were to go along the lake shore and listen until you heard a frog singing then turn on your flashlight and locate him. Well I was following directions and when I heard a frog sing I turned the light on him, but I guess I located the wrong frog. The one I saw didn't look at all like he felt very good. His eyes were bugged out, and his sides were bulged and it looked like part of what should have been inside of him was now on the outside, and besides he looked kind of green. Just about then he makes a sound like brrrup, brrrup. I can remember some times when I have made that same kind of a sound and I wasn't singing either, so I know this was not a very healthy frog. It seemed rather strange that of all the happy singing frogs around I should pick one who was in such bad health.

That same night we also did some star gazing, and somebody discovered a satellite, that is it was a satellite until its red and green lights commenced blinking and its exhaust began to roar. My star map didn't seem to work at all, which was no surprise when it turned out to be one intended for use in the fall.

There was the night when the discovery of a new type of pine was announced - the bow-legged pine; and in addition to the singing the poets recited their inspirations. It seemed most of these were insults hurled at the master of ceremonies, but he seemed to thrive under the barrage.

The Wednesday night meeting of the singing and poetry society was short lived. The rains began to fall, and when the leader tried a couple of chords on his faithful thumb fiddle, it gave forth a sad spluung like the pluckings from some taught rubberbands, and his usual clear tenor was also slightly waterlogged and had a slurpy, tone like one of those water whistles that were around when I was a kid. Without a word he sacked his fiddle and disappeared. The meeting did not adjourn - it just dissolved. The Thursday session was blown out, and the Friday meeting finally froze out. It started real good, but the icy wind started blowing and soon it was a scuffle with everybody trying to get their backsides up to the fire. Then somebody tossed some pine boughs on the fire and smoked everybody out so that ended that. It seemed pretty cruel at the time, but I guess somebody knew what they were doing for with all that scuffling to get to the fire someone would have wound up with the hotfoot.

It felt as though winter was about to close in on the lake, and my equipment was not suitable for snow and ice, so I decided to break camp and get away while I still could.

I have added a few things to my possessions - some chips of jasper from over near Paulina; a bit of magnetite, which does strange things to a compass; a thin section of rock with some very faintly etched marks that I tell myself once was a brachiopod or something. And I also have that map. I have tacked it to the wall, and when someone asks me what is is for I first make sure that he knows less about this geology than I do. And that kind is hard to find. But once I find such a person I tell him that this is a very special map I take with me when I have time to go out in the field with such fellows as Doc Howell and this Bud, and we are doing some secret work up there in the Ochoco. And if I amasked what the numbers on the map are for I say those are a secret code, which tell us where there are Pennsylvanians and Mississippians, and maybe even some Jurassics; but I can't tell him any more until we are sure ourselves. We are like Sgt. Friday. We want to know the facts.

* * * * * * * * * * * * * *

ANNUAL MEMBERSHIP ROSTER

The Annual Membership Roster has been compiled by the Secretary, Mrs. Robert Waiste, and is in the process of being printed. However, it will not be included with the August issue of the GSOC News Letter as in the past. The size of this issue, devoted mainly to the Third Annual GSOC President's Campout, makes it necessary to delay distribution of the roster until September.

Editor

WHITE WONDER

The May 28th meeting of the Society was Film Night. Two excellent films were presented, the first by Mr. Wally Morrison, Staff Engineer for the Morton Salt Company, and the second by our own Dr. Francis Gilchrist, a Fellow of the Society.

Mr. Morrison introduced the topic of salt with some very interesting remarks, then showed the film "White Wonder", produced by the Morton Salt Company.

Salt has played an important role in history. Boundary disputes have arisen because of the location of deposits, and our word "salary" is derived from the word "salt". At one time and place salt was used to pay for work done, so, to be worth one's salt is to be worth the salary received.

Most of us think of salt as important only for seasoning our meat and potatoes, or for sprinkling on the tail of a bird when we want to catch it. Few of us ever realize that most of our clothing, plastic wares, metals and paint products depend upon salt for their production. In all, sixteen major industries use salt in the manufacture of their products. Only 3% of the 13 million tons produced in the United States annually is processed for table use. The rest is used by agriculture and industry.

Salt beds occur in many parts of the world. Some are surface features resulting from the natural evaporation of sea water, as in the Great Salt Lake area. Other deposits occur deep underground in domes as large as a mile wide and three to four miles high. These beds are always accompanied by oil and sulfur and are usually found during deep oil well drilling. The reason for this association is unknown. One hundred fifty are known to exist in the state of Louisiana, and others occur in other Gulf States and Wyoming, as well as beneath the cities of Detroit and Cleveland.

In Iran these columns of salt have worked their way to the surface and stand exposed as sheer cliffs from which occasionally great chunks break off like icebergs from the face of a glacier.

Three methods are used in obtaining salt for commercial use. One is by solar evaporation. Sea water is pumped into open vats and allowed to evaporate naturally. This takes less than a year at Salt Lake City, but almost twice that time along the Pacific Coast.

The second method is by mining in almost the same manner that coal is mined. Huge tunnels are carved out of the underground deposit, leaving supporting pillars measuring 80 by 100 feet. Dynamite is used to loosen the salt from the walls, then it is loaded mechanically into the cars. Some of this salt goes directly to industry for use, while that which is to be used for other purposes is refined.

The third method is hydraulic mining or "mining by pipeline". A shaft is driven into the salt bed through which hot water is forced. At some distance from this another pipe is inserted and the brine pumped out into settling tanks. Natural evaporation is speeded up and the final drying is done in heated tumblers and kilns. One half of the salt produced in the U. S. is obtained in this manner.

In assembling my notes for this report I found I had several miscellaneous items left over, some of which I never knew before:

- The pull of gravity varies over a salt dome because salt is less dense than other parts of the earth.
- There is little appreciable difference in the cost of producing salt by the different methods.
- Salt mixed with cooking oil will remove marks made by hot dishes from table tops.
- Salt is extremely heavy and extremely cheap, which creates problems in marketing.
- To a chemist salt is sodium chloride.
- Through electrolytic processes 21 chemicals may be derived from salt.
- No market has been developed for the minerals removed during the refining process, but one company found it unwise to claim medicinal properties for it.
- Ancient peoples called salt the fifth element.
- There are 100 grades and kinds of salt on the market.
- Salt is sued to soften hard water.
- It is mixed with earth to stabilize roadbeds during construction.
- The maximum depth for any salt mine is 4000 feet.
- The presence of salt underground may be detected by salt licks used by animals, or by salt springs.

-- Irma Sullivan

Sept. 1965

THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

AIMS AND 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 activities.

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

MEMBERSHIP QUALIFICATIONS

A member shall be a person at least twenty-one years of age who is interested in and supports the aims and objectives of the Society and who has been recommended by the membership committee.

A regular membership comprises: (a) a single person, or (b) a husband and wife with children under eighteen years of age.

A junior member shall be a person at least eighteen, but not over twenty-one years of age with like qualifications and recommendation. The age limitation may be waived when the person is a regularly enrolled full-time student of a college or university who is carrying on studies towards a degree. Waiver of age classification shall not exceed four years.

Each paid membership receives one subscription to the Geological News Letter, official publication of the Society.

Persons desiring to become members should contact the membership chairman or any officer of the Society.

DUES SCHEDULE

Annual dues for regular memberships are $5.00 for residents of Multnomah and adjacent counties (Clackamas, Columbia, Hood River, and Washington Counties of Oregon; Clark and Skamania Counties of Washington). For residents outside of the above counties, dues are $3.50.

Annual dues for junior members are $2.50

Payments should be made out to the Geological Society of the Oregon Country.

ACTIVITIES

See calendar of the month for details.

LUNCHEONS	Every Thursday noon.
FIELD TRIPS	Usually one field trip per month via private car caravan or chartered bus. Occasional two-day trips with overnight camping.
LECTURES	Illustrated talks on geology or related subjects. Two lecture meetings each month, the second and fourth Fridays.
LIBRARY NIGHT	The third Tuesday evening of each month.
PUBLICATION	The Geological News Letter, published once each month, is the official publication of the Society.

R

G. S. O. C. CALENDAR FOR SEPTEMBER 1965

Please note that all meeting times shown are Pacific Daylight Savings Time.

Every Thursday

LUNCHEON - Y. M. C. A., 813 S. W. 6th Avenue, Portland, Oregon

12:00 M. - These informal gatherings offer GSOC'ers, guests, and visitors an opportunity to peruse the most recent (and occasionally very old) geologic publications, examine specimens, and hear occasional "five-minute" talks on geology or related subjects of interest.

A variety of food selections to suit many tastes (even the calorie conscious) is available in the main cafeteria. Take food selections, a tray full or a trifle, past the "foothills room" to the "mountain room" where the group meets.

10 September Friday

LECTURE - Central Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - "THE AMERICAN QUINTANA ROO EXPEDITION". Interpreted, this means: EXPLORING THE MAYAN JUNGLE with MR. ROBERT O. LEE, Director of Public Relations and Advertising for Georgia-Pacific Corporation. Mr. Lee will join scientists as they venture where no civilized man has yet set foot. Lured by legends of two undiscovered Mayan cities, they will be endangered by wild animals, huge poisonous snakes, scorpions, giant tarantulas, and innumerable bugs. Sit comfortably and safely as you view Mr. Lee's color slides, maps, and charts about preparations for this journey.

9:00 P. M. - Social hour and refreshments following the program.

21 September Tuesday

LIBRARY NIGHT - Lewis and Clark College in southwest Portland, Oregon

7:30 P. M. - Group meets in Peebles Hall (biology building) on the campus. The first hour is reserved for browsing and reading.

8:30 P. M. - Program will include showing of slides from summer field trips. GSOC'ers are invited to bring selected pictures from Society outings or private excursions.

Social hour and refreshments following the program. For information or directions telephone the Library Night Chairman, Mr. Murray Miller at 656-6724.

24 September Friday

LECTURE - Central Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - "THE DEEPSTAR PROGRAM." The Speaker, MR. ROBERT E. TABER, Manager of Systems Engineering of Westinghouse Electric Corporation, Marine Division at Sunnyvale, California, will discuss "THE WHY, WHERE, AND HOW OF EXPLOITING THE OCEAN". This is among related programs of Westinghouse concerning exploratory vehicles developed and manufactured over the past several years searching the ocean for minerals, food, and possibly living space. Illustrated with color slides and a movie of the ocean bottom off the coast of southern California. Question period follows.

9:00 P. M. - Social hour and refreshments following the program.

FIELD TRIP - To be announced.

NEWS OF MEMBERS
by Rowena Hoven

ORRIN STANLEY recently observed his 93rd birthday and 38 Society members gathered at the regular Thursday luncheon to help him celebrate the event. During the festivities, Les Ordeman, staff photographer for the Oregon Journal, arrived to take a picture, which subsequently appeared in the Journal. Congratulations and best wishes, Mr. Stanley.

CELIA HOWELL and Gordon E. Croxton were married on August 14th at the Friends Church in Tigard. Celia is the daughter of DR. AND MRS. PAUL HOWELL. Gordon is in the Air Force and she is a student at Oregon State University. They will live in Corvallis.

Carmel Mission Basilica in Carmel, California, was the setting for the August 7th marriage of MICHELE MASON and Richard Marten Tetley. Michele is the daughter of MR. AND MRS. RALPH MASON. The Tetleys will live in Ann Arbor, Michigan, where he has a fellowship at the University of Michigan to work on his doctorate in plant physiology. Michele will attend graduate library school there. Our best wishes to the Croxtons and Tetleys.

LEO and JOHANNA SIMON have just returned from a meandering 5-weeks trip which took them through Washington to Lewiston, Idaho, and thence over the Lolo Pass trail blazed by Lewis and Clark into Missoula and Butte. They drove through Wyoming and South Dakota, "cornered" Minnesota and eventually arrived in Iowa where they traveled through mile after mile of corn and soya bean fields. They spent several days with their daughter and her family in Ames, Iowa. They experienced all the joys of motoring, including car trouble, but returned with the car loaded with interesting specimens. LEO reached home just in time to lead a group from the Portland Men's Garden Club to Bird Creek Meadows on August 22nd.

ELIZABETH GILLIAM attended the regatta in Astoria on August 28th and 29th.

GEORGE AND JENNIE WALTERS have returned from a dreamy trip in the Canadian Rockies, which included the Yoho National Park. They are now busy fixing up a display for the annual show of the American Federation of Mineralogical societies held at Yakima on September 4, 5 and 6.

The October 1st marriage of Dr. Freeda O. Hartzfeld, Dean of Women at Lewis and Clark College, and DR. ARTHUR JONES was announced on August 13th at a coffee hour given by President and Mrs. John R. Howard, Dr. and Mrs. Morgan S. Odell and Opal Scott.

DR. and MRS. JOHN ELIOT ALLEN have returned from the University of California, Santa Barbara. John will head the Dept. of Earth Sciences at Portland State College this year.

* * * * * * * * * * * *

MEMBERSHIP ROSTER

NEW MEMBERS

name	street address	city, state and Zip No.	telephone
FAGAN, Mr. and Mrs. Mike	4850 Eastern Lane, #302	Suitland, Maryland - 20023	
#SMITH, Mrs. Ben	8338 S.E. Ash Street	Portland, Oregon - 97216	252-7311
#REIMERS,	P.O. Box 885	Pendleton,	

THE SUPLEE AREA FOSSIL HUNT

by Jennie Walters

Third Annual GSOC President's Campout
Suplee-Izee area of Central Oregon
19 June through 26 June 1965

For the GSOC members interested in fossils, the opportunity of finding them in the oldest formations in the state was most intriguing. We had a field day, thanks to Mr. Buddenhagen, Dr. Howell, Margaret Steere, and others who guided us and explained the different formations cropping out in the Suplee area. All of the fossils found have not yet been identified, nor are we sure that we have heard about all of them. They will take many hours of study and research before they can be properly classified.

Around the Devonian outcrop, the oldest and unnamed, many different species of coral were found. In spite of diligent searching in nearby rocks, the elusive trilobite, which was so desired, remained in hiding. Some brachiopods and beautiful specimens of coral etched out of the limestone by weathering were found by Clara Bartholomay, Gwen Helm, and others. Mr. Buddenhagen, who is mapping the geology of the Suplee country, requested the loan of key specimens from some of the formations for identification in Washington. As he pointed out, fossils in this region of complex geology are extremely important in deciphering the stratigraphic record. Consequently GSOCers were proud to loan or donate specimens that would help further his work.

Besides the ever-present coral, several interesting and rather puzzling fossils were found in the Coffee Creek Formation of Mississippian age at the base of Spotted Ridge. Several chunks of float, full of broken shells, were picked up along the roadside. In this same formation the gigantic brachiopods were so firmly cemented together it was impossible to get out a perfect specimen.

The Spotted Ridge Formation, Pennsylvanian, which overlies the Coffee Creek Formation, is nonmarine, and a search was made for plant fossils, but only a few fragments were found.

A variety of corals, brachiopods, and fusilinids occurs in the Coyote Butte Formation of Permian age.

The Triassic formation, unnamed, near the Suplee Post Office was very productive. Belemnites, several species of brachiopods, gastropods, crinoid stems, ammonites, and an unusual coral were found in this vicinity. Two belemnites found here by Twyla Fields were sent to Mr. Buddenhagen.

The Jurassic formations were rich in fossils. Many beautiful ammonite impressions were found in the Lower Jurassic Nicely shale, most of them rather small, but George Walters dug out pieces of a large one which had been fractured. It seemed to be a totally different species than the small ones, having large coils with spines. Probably the largest ammonite, estimated about two feet in diameter before being broken, was found by Lee Gavigan at Williams Reservoir. Lee turned his specimen over to Mr. Buddenhagen, who thinks that the rocks exposed there may be of earliest Jurassic age. Several other ammonites were found at that location, one nice one by Bertha Robertson. But the highlight of the Jurassic fossils was found in the Robertson Formation, the Plicatostylus gregarious (Lupher and Packard) to which Margaret Steere guided us. In spite of the threat of rattlesnakes, brave GSOCers climbed through the barbed-wire fence (we had permission) and went to work on the huge boulders which had rolled down from the cliffs above and contained masses of these strange reef-making clams, firmly cemented together. These extinct rudistoid pelecypods have one much-elongated valve extending from several inches to a foot, and the other small valve caps the long one -- a very strange-looking clam! There was great excitement some years ago,

Suplee Area Fossil Hunt - cont'd.

when Dr. Packard and Dr. Lupher discovered them in Oregon.

Clams and snails of many species were abundant in the Bernard Formation of Upper Cretaceous age. But the beautiful, deeply corrigated pelecypod, Trigonia, was hunted in vain. Mr. Andy Bernard had some fine molds and casts of it in his garden, which we admired. But since that ranch was "off bounds" we could not hunt for it there. Tiny smooth ammonites, less than half an inch in diameter, showing sutures and the iridescent mother of pearl were found among the Cretaceous fossils.

All in all, it was a most rewarding trip for fossil hunters.

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WARM SPRINGS FIELD TRIP TO BALD PETER LOOKOUT

July 24- 25, 1965

As the hour of 8:00 a. m. Saturday, July 24th, drew near and some 20 vehicles converged on the appointed rendezvous at the Warm Springs Indian Reservation, every one knew that this was to be a gloriously warm day. These folks didn't know, however, that they had a special treat in store for them. At approximately 8:00 a. m. the group was briefed by Mr. Don Gorman, Geology Instructor at Portland State College's Summer Session -- teaching Geology the rest of the year at Bradley University, Peoria -- and would be our Trip Leader for this week-end as to the basic geology and formations to be visited during the trip.

Mr. Gorman was well prepared for his duties as Trip Leader, having thoroughly scouted the area. His briefing was most interesting and well presented.

Also accompanying the tour and briefing the group on tribal council regulations and procedures was Mr. Guntner Heeren, Head Forester for the Warm Springs Agency. Mr. Heeren also provided much information regarding the Reservation and the Confederated Tribes on the Reservation.

After the briefing period, the tour proceeded to Highway 26 and on down to the Deschutes River. From there the tour followed the Deschutes up over the ridge and west to Seekseequo Creek, stopping briefly at several locations to look at erosion areas and other formations. Soon after the caravan left any semblance of paved or graveled roads we noticed the cars were keeping farther apart -- you guessed it -- DUST! However, the country was beautiful and soon we stopped at White Water River for lunch. This particular day it was clear and delightfully cold. After much eating, bathing of feet, etc., the caravan proceeded on toBald Peter Butte. This 12 miles was quite dusty, but very, very beautiful. From the summit one had a spectacular view of Mt. Jefferson and some of its glaciers. The wild flowers were beautiful and plentiful.

Upon the return to the Agency headquarters the caravan again stopped at White Water River for a rest period. The final stop was made at the Hoodoo location -- part of the Madras formation. The Hoodoo location consists of eroded material shaped like toadstools or mushrooms. A very interesting formation.

The geological descriptions furnished by Don Gorman were very interesting and detailed; and I am sure everyone on the trip was impressed. His explanation of the relationship of the various formations such as Clarno, John Day, Columbia River Basalt, Madras and Glacial Deposits was well presented. Mr. Gorman made the trip a huge success and we all thank him very much.

Mr. Heeren also added much to the trip, and we also thank him for his efforts.

If you were not present on this field trip you missed a real treat! It may be a long time before the opportunity again becomes available to make this tour.

The Geological Society wishes also to thank the Warm Springs Tribal Council and Mr. Clayton Earl, Acting Administrator for this opportunity.

We were tired and dusty, but felt well rewarded. Lee Gavigan, our Field Trip Chairman, again planned and arranged a wonderful field trip for us. Thanks, Lee.

Bob Waiste

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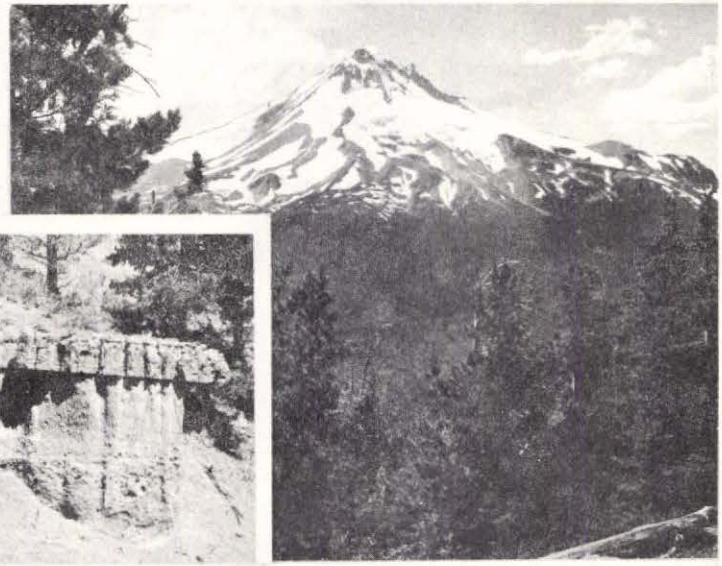
First stop on the Geologic tour of the Warm Springs Reservation
August 24-25, 1965

Don Gorman views geologic history from Bald Peter

Pyroclastics in situ along Seekseequa Creek



Mt. Jefferson from Bald Peter

GSOC'ers examine water deposited, cemented pyroclastics at Warm Springs

Lucky Friday the 13th for picnicking GSOC'ers in Mt. Tabor Cinder Cone with Chairmen Don and Dorothy Barr

STELLA F. KEEN

The many friends of Stella Keen, wife of Albert Keen, were deeply saddened to learn of her death. She had been in ill health for a number of years, but her beautiful dedicated life, her undeviating devotion to stimulating young students, and her sweet smile will long be remembered by her friends.

Mrs. Keen was born in Sayre, Pennsylvania, October 14, 1900. She is survived by her husband, Albert Keen; a daughter, Mrs. David Schmidt; a brother, Clair Van Ripper; and four grandchildren. Funeral services were held Wednesday, August 25, at 11:30 a.m. in Finley's Morninglight Chapel, with private vault commitment. Reverend Bruce W. Clatterbrook, Calvary Presbyterian Church, officiated.

Stella and Albert became G.S.O.C. members in 1950, and many "Old Timers" remember the hospitality they extended to many of us during friendly G.S.O.C. Get-togethers. Stella's sweet smile and her great love for Nature Study enriched our lives.

I knew Stella during her Vanport teaching days. She was truly a dedicated teacher, a person who enriched the lives of all who knew her. She was a key to a richer life, and a storehouse of deep strength, faith, and wisdom.

Ruth Schminky

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ANNUAL PICNIC AGAIN POPULAR

Notwithstanding the absence of many members on vacation, a goodly number picked our picnic for reminiscing at the cinder cone of Mt. Tabor. Here culinary talents were evidenced by the large assortment of hot dishes, salads and desserts. All disappeared quickly after the assault of hungry GESOCers.

As soon as the tables were cleared President Fred Miller extended greetings and made announcements. Emily Moltzner introduced guests and new members who were welcomed with applause. Given special mention was Mrs. Amza Barr, charter member who for many years headed the telephone committee and did considerable writing for our News Letter. Lee Gavigan, field trips chairman, reported plans for September field trips.

With Truman Murphy accompanying on his guitar we sang vociferously (though not always harmoniously) until it was dark enough to show a movie. This, titled "The Universe", took us to the uncharted boundaries of space till we grew dizzy trying to comprehend the magnificent handiwork of our Creator. This film was made by the National Film Board of Canada and loaned to us by the Oregon Museum of Science and Industry.

Donald D. Barr, who, with his wife, co-chairmanned the event, expressed appreciation to their committee: Miss Clara Bartholomay, Mrs. Fred Miller, Mrs. Claire Stahl, Mr. and Mrs. George Walters, Mr. and Mrs. Lloyd Wilcox, Misses Hazel and Ruby Zimmer, and any he may have overlooked. We noticed the Barrs' young daughter, Heather, and son, Alan, among those helping.

As we walked slowly away, we looked up through the tall fir trees to the star-sprinkled sky, then down to the lights of our city below. We were happy, yet somewhat sad as we realized that another picnic was over.

Emily Moltzner.

Note: See picnic picture appearing on page 85. - editor

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ARCHEOLOGICAL FIELD TRIP

An account of the excursion up the Columbia River led by Emory Strong, author of the book "Stone Age on the Columbia".

On Saturday, May 29th, 32 cars and something over 80 people gathered promptly at 8:00 a.m. on the Oregon side of the Interstate Bridge for an archaeological expedition along the Washington side of the Columbia River gorge. Our leader, Emory Strong, is a well known authority on the archaeology of this area and author of the book, "Stone Age on the Columbia River". After introductions had been made, Emory, armed only with his hard hat, bravely started us out on our big adventure.

The first stop was at Wagonwheel Park at the edge of Camas, where the Highway 830 bridge crosses the Washougal River. This is known as Site Cl 16 and is the location of an ancient Indian village. These were semi-subterranean type houses and there were 11 house pits, 25' in diameter and 2' to 4' deep. The village was located on both sides of the river and was probably less than 1000 years old. We observed the structure of the site and the depth of the midden, which was about 30", and noticed how pot-holing can ruin a site.

A brief stop was made at Beacon Rock and then we were on our way to Garrison Eddy, another old village site just below Bonneville dam. We left the cars and walked along the river bank. The old portage roads that went around the Cascades could be plainly seen through the woods. There was also once a portage on the other side of the river and they were eventually consolidated by the Oregon-Washington Navigation Company. The engine located at the Union Depot was used on the Oregon side. Garrison Eddy received its name because formerly a garrison of soldiers was stationed here to protect the portage. After a short walk we arrived at one large boulder covered with simple dot and circle designs and shallow pits. This design is a common one and is found at many other spots along the river, as well as in other places in the world. After much speculation and many photographs, we returned to the cars.

Approximately five miles above The Dalles we stopped at Horsethief State Park for lunch. This beautiful park is being developed by the State of Washington and Andy Carrol, the park ranger, reported that although it was opened in April, 1964, all of the park boundaries have not been marked as yet. While the weather was warm and sunny, the wind had reached tornado proportions so hats, scarves and potato chips were soon airborne. After the lunch stop we walked to the edge of the river to view the small island which is all that remains of Wakemap Mound. This former village site covered about two acres but it is now practically submerged by the lake behind The Dalles dam. This is the start of the Long Narrows or great rapids of the river, which was formerly the big barrier to navigation. This area was the popular meeting place for the Indians of many tribes from east and west, north and south. During flood season it was an ideal place to spear salmon, and along with the fishing there was much trading, gambling and other festivities. The large population that gathered here, and the fact that it was occupied by the Indians over a period of many years, made the Long Narrows a rich archaeological area. The stratified site at Wakemap was excavated by the joint efforts of the University of Washington and the Oregon Archaeological Society and many unusual and beautifully crafted artifacts were found during a three-year period.

From Wakemap we walked down the railroad tracks toward The Dalles and soon realized that we were in petroglyph country, the most outstanding example being the enormous face of Tsagaglalal (She Who Watches). This petroglyph, painted with red ochre, is situated on a cliff overlooking the Wishram village site on the Long Narrows. The face is characteristic of Columbia River art and it was carved on many of the artifacts found along the river. As we progressed, each one was impressed by the personality of Tsagaglalal and it was a moving experience to make her acquaintance. She appears to be timeless and one feels a kinship with her as though she belonged to us as well as to the culture that preceded us, and through her we began to identify ourselves with that former civilization.

(cont.'d.)

Archeological Field Trip - cont'd.

The walk along the railroad tracks continued for approximately half a mile to the Congdon site, another very old village and burial site. Some of the finest art work was found here, including the amulet on the dust jacket of Mr. Strong's book. The surface hunters were rewarded by one fine arrow point and one drilled bangle. From this point also we were able to see the Maybe site, another spot rich in artifacts.

On the return trip up the tracks, a splinter group followed the trail along the cliffs to observe additional pictures on the rocks, including one fine lizard pictograph. Rock slide burials have been dug out here. The group also stopped at the Atlatl Valley site and saw the remains of cremation pits. This is where many so-called atlatl weights were found.

The next stop was scheduled for the Maryhill Museum, but we had to pause briefly at the "Spearfish" marker high on the cliffs overlooking the Columbia. Here we tried to absorb the view--looking across to the mouth of the John Day river, Miller Island, the place where Celilo Falls formerly flourished, Wishram, the cemetery on the Oregon side of the river where Chief Tommy Thompson is buried. While we looked in silence we speculated on its appearance 150 years ago and suddenly the trucks, trailers and tourists were focused out of our field of vision and the river and its banks became alive with the people of that other century, traveling by boat and horse and on foot.

Approximately 15 miles above The Dalles we stopped at Maryhill Museum where Mr. Clifford Dolph is the director. Because of the lack of time, most members of the group briefly cruised through the first and second floors, examining the art work and items of historical interest and reading again the story of Sam Hill and his great dream. However, most of the time was spent in the basement where the Indian artifacts are beautifully displayed and labeled. This is an outstanding collection of items retrieved from the area and either owned by the museum or on indefinite loan by private individuals. We noted the many additions and improvements that are being made continuously by the museum staff.

Reluctantly we left the museum and drove on about two miles down to the river and through the little town of Maryhill. Then we climbed part way up the hillside again to an ancient quarry site where the Indians dug deep pits to get material for their arrow points and other tools in the "Wascoite" seam. This was an old lake bed and the seam, possibly the same, also reappears about three miles upstream and also across the river near Rufus. There were Indian mines at these places also. We saw the pillow lava where the flow spilled into the old lake. Wascoite is silicified lake bed, formed after being covered with lava. Here we said our "thank yous" to Mr. and Mrs. Strong and most of the group started for home, but some of us could not resist another visit to Sam Hill's Stonehenge at the top of the hill.

Whatever the varied interests of the large group that shared the day's trip, each one went home with an enormous feeling for the "sweep of history", and a deeper understanding of the heritage possessed by we favored inhabitants of the Northwest as Mr. Strong opened the door for us and we glimpsed the outstanding civilization and culture that flourished here.

Rowena Hoven

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WIND RIVER FIELD TRIP
30 May 1965

The Third Annual GSOC President's Campout was behind me. I entered my home and made a bee-line to my bathtub to soak and wash off that which the kids at Camp Hancock dubbed "Clarno Crud", but to fit this occasion it could be called "Devonian Dust". While soaking off that paste of suntan lotion and dust, I dreamed fondly of another tub of hot water--the hot springs at Wieberg ranch. Never was a metal horse trough put to a better use. Up to our necks in near-hot water, we peered out to see the horses in the field bathing in the overflow and then rolling in the dust making a healthy paste on their beautiful coats. They were frolicking with the abandonment as we, the Geologickers, were. No -- I must let my thoughts drift no longer. I must get my chore done. I rubbed on another layer of soap and leaned back to soak and to compose the accounting of the Wind River trip which was assigned to me.

It was a beautiful trip. It was in the vicinity of my beloved Star Mountain. My mountain. I thought longingly of the day the Indian gods generously parted the clouds and let my husband and myself into their never-never land to scout this fantasy world of flowered meadows, Indian ritual chambers, etc.--a courtesy they then refused the Geesockers later on the scheduled trip. But, on this Wind River trip the Indian gods repented and not only opened the gates to Wind River but by a special messenger, opened their library of the past to the Geesockers. Its messenger? Dr. Arthur K. Harris of Camas, Washington.

A few of the Geesockers had stayed at White Salmon overnight after their archeological trip the day before, and then rose early to travel leisurely west to the meeting place on Wind River. The Columbia gorge was beautiful. Never had I seen it in early morning with the sun in the east highlighting the Coriba to the west. Breathtaking. Wild flowers were abundant with blue being the predominant color--Ceanothus, batchelor buttons, alfalfa and such.

Our fourteen-car caravan met at Suspension Bridge. Adversity having hit the family of our trip leader making it impossible for him to come, we proceeded on our own to ferret out the geology. As we climbed elevation, we first went through the dark, dank remaining remnants of a once-virgin forest. It was good to see the cedar, a tree that is rapidly falling to the saws of the shingle and shake industry. Our first stop was at Miller creek where we searched its cobble path to see what we could find and to watch an Ouzel carry food to her young. A truck drove up and stopped. It was Dr. Harris, his wife and daughter. On learning of our plight, he said that he knew the area well and would be happy to show us fossil locations. Yes, in his hand the Indian spirits placed the key to the library of the past. We proceeded to the Ridge Road and then followed it. We stopped at a spot where a fossil log was exposed. It was unquestionably a conifer. All took a specimen piece--with May Dunn finding one well agatized. We then proceeded to a point where bad road would not permit us to drive further. We were a little short of the Point 3670 Lookout. Dr. Harris moved out of the cab of his truck, and with the rapidity of a youth, slung over his shoulder a pack board. If ever a packboard told a story, this one did. It recorded many trips with the Boy Scouts. (Dr. Harris has been with the Scout organization for over thirty years). The dominating entry was the trip to the World Jamboree in Austria in 1951. As we strode along Dr. Harris told us of his interest in rhododendrons and his work in hybridizing this flower. We also learned that he is a charter member of the Agate and Mineral Society. We stopped at a point just about 200 feet short of the lookout. Here in the bank, just about fifteen feet underneath what appeared to be all top soil, were layers of tufaceous ash which told beautifully the story of the past. Fossil leaves of deciduous trees were in profusion.

Dr. Harris said he did not know, but felt that the age was recent. I, the rankest of amateurs, looked at Mount St. Helens across the valley--she could have spewed ash on her last eruption to lock in this story. My eyes traveled then to the fifteen feet or so of top soil and down to this layered tuffaceous ash containing the fossil record. It all seemed so logical ("Geo-logical") and simple. This would be an easy story to write.

Wind River Field Trip - cont'd.

We started to pull out blocks of this material--all containing a sasafras, alder, live oak, poplar leaf and conifer-needle record. In several blocks were found a rather broad conifer-like specimen. Leo Simon expressed a hope that a good enough specimen could be brought out that would establish it to be a fern. We had to give up -- it apparently was a conifer.

Mr. Donald Koenig of Clackamas, a 4-H leader teaching Geology and a guest on this trip, dug out a large block containing a perfect and detailed story of the time. Metasequoia was noted in his specimen and was also appearing in several other specimens. I held my own and thought it looked familiar. I remembered another which I had collected at Pentacoste Ranch in the Clarno. How much the two specimens looked alike, even to the hue of the ash. But Metasequoia spelled the end to my nice, easy story. I was going to have to seek out information on the area and information on the area proved sparse. I gathered that some thought it was the Oligocene equivalent of the Eugene or perhaps later pliopleistocene of the new Cascadian volcanic series. It was on a final conference, and that with Dr. Paul Howell at the Campout, that I learned my answer. His answer was simple and positive, "It has now been established that the Wind River area is upper Oligocene and John Day equivalent". I remembered my two specimens of Metasequoia--they were of the same age.

After a complete and satisfying day we moved out. Enroute I noticed the clearing of a logging show. I was astounded--I could not believe my eyes. In the center of the clearing stood a mechanized spar pole--a Judas tree. The logging industry's namesake of our Biblical betrayer of men, had succumbed to the times.

Laurette W. Kenney

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INFORMATION FOR SEPTEMBER 1965 FIELD TRIP

The GSOC Field Trip for September will be to Silver Star Mountain via private car caravan with Leo F. Simon as Leader. Reserve Sunday the 26th for what should be a very pleasant trip, as well as enlightening.

Assembly point will be at Battle Ground Lake, outside the town of Battle Ground, Washington at 9:00 A.M. (Daylight Saving Time). Participants should be equipped with lunches, geology picks, cameras, hiking shoes, etc. AND rain gear in the event of inclement weather.

Further information or directions may be obtained by telephoning the Field Trips Chairman, Mr. Lee T. Gavigan at 289-8041 or the Field Trip Leader, Mr. Leo F. Simon at 236-0549.

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INFORMATION FOR OCTOBER 1965 FIELD TRIP

The October Field Trip will be to Mary's Peak area near Corvallis, Oregon on Sunday, the 17th. This trip, led by Dr. Ray Broderson, will also be by private car caravan. Dr. Broderson is with the Department of Geology at Oregon College of Education in Monmouth, Oregon. He needs no introduction to the many GSOC'ers who recall his enlightening lecture on "Schlieren", 12 June 1964.

Details to be announced.

Lee T. Gavigan
Field Trips Chairman

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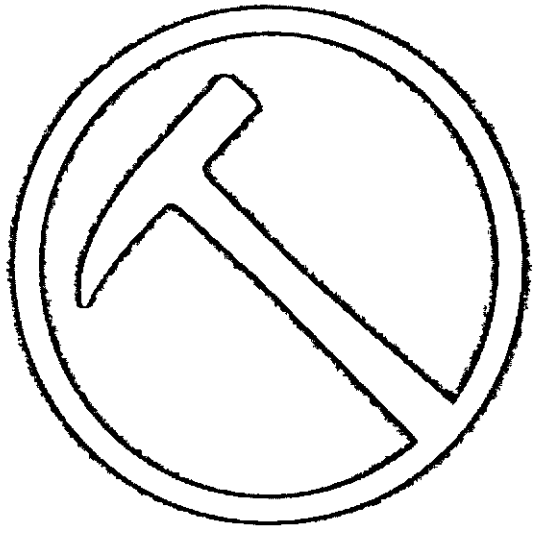
Oct. 1965



THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

AIMS AND 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 activities.

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

MEMBERSHIP QUALIFICATIONS

A member shall be a person at least twenty-one years of age who is interested in and supports the aims and objectives of the Society and who has been recommended by the membership committee.

A regular membership comprises: (a) a single person, or (b) a husband and wife with children under eighteen years of age.

A junior member shall be a person at least eighteen, but not over twenty-one years of age with like qualifications and recommendation. The age limitation may be waived when the person is a regularly enrolled full-time student of a college or university who is carrying on studies towards a degree. Waiver of age classification shall not exceed four years.

Each paid membership receives one subscription to the Geological News Letter, official publication of the Society.

Persons desiring to become members should contact the membership chairman or any officer of the Society.

DUES SCHEDULE

Annual dues for regular memberships are $5.00 for residents of Multnomah and adjacent counties (Clackamas, Columbia, Hood River, and Washington Counties of Oregon; Clark and Skamania Counties of Washington). For residents outside of the above counties, dues are $3.50.

Annual dues for junior members are $2.50

Payments should be made out to the Geological Society of the Oregon Country.

ACTIVITIES

See calendar of the month for details.

LUNCHEONS	Every Thursday noon.
FIELD TRIPS	Usually one field trip per month via private car caravan or chartered bus. Occasional two-day trips with overnight camping.
LECTURES	Illustrated talks on geology or related subjects. Two lecture meetings each month, the second and fourth Fridays.
LIBRARY NIGHT	The third Tuesday evening of each month.
PUBLICATION	The Geological News Letter, published once each month, is the official publication of the Society.

G. S. O. C. CALENDAR FOR OCTOBER 1965

Please note that all scheduled times shown are Pacific Daylight Savings Time (through Sunday, 31 October).

Every Thursday — LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - This once-a-week mid-day get-to-gether is presided over by Mr. Leo F. Simon in the Mountain Room adjacent to the main cafeteria. GSOC'ers, guests, and visitors are provided an opportunity to examine specimens, discuss publications, and hear occasional short talks on geology and related subjects.

A varied selection of food items at moderate prices are available ala carte. For more information telephone Mr. Simon at 236-0549.

8 October Friday — LECTURE - Public Library, 801 S. W. 10th Ave., Portland, Oregon

7:30 P. M. - Dr. Gordon B. Leitch will present an illustrated talk about "Adventures on the Canadian Pre-Cambrian Shield."

17 October Sunday — FIELD TRIP - Monmouth and vicinity via private car caravan.

9:00 A. M. - Assembly point will be the Administration Building on the campus of Oregon College of Education at Monmouth, Oregon. The city of Monmouth is located on U. S. Highway 99W via Tigard, Newberg, McMinnville, etc., but can be reached more rapidly by driving south on Interstate Highway 5 (Baldock Freeway) as far as Salem, west on State Highway 22 to Rickreall, then south on 99 W.

Field trip leader will be Dr. Ray Broderson from the Department of Geology at OCE. This trip will not include Mary's Peak as previously announced (page 90 of the September GSOC Newsletter). Itinerary will include Roberts, Rickreall, Dallas, Falls City, Kings Valley, and Coffin Butte. Stops will be made to examine outcrops of Illahe, Spencer, Yamhill, Tyee, and Siletz formations.

Field trip participants are advised to bring the usual - including lunches, geology picks, cameras, bumper cards, and rain gear (just in case!). For more information or directions telephone the Field Trips Chairman, Mr. Lee T. Gavigan, at 289-8041.

19 October Tuesday — LIBRARY NIGHT - Lewis & Clark College in S. W. Portland, Oregon

7:30 P. M. - Meeting will be held in the biology building (Peebles Hall) on the campus. A "quiet hour" is observed for browsing and reading. Some books may be checked out for further study at home.

8:30 P. M. - Program to be announced.

Social hour and refreshments following the program. For information and directions telephone Mr. and Mrs. Murray R. Miller, Library Night Chairman and Librarian, at 656-6724.

22 October Friday — LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - Mr. Ty A. Kearney will present an illustrated talk to tell us "Why We're Going Back to Death Valley".

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ADVANCE CALENDAR FOR NOVEMBER 1965

12 November Friday — LECTURE - John Mihelcic will speak on "South Seas and Minerals"

NEWS OF MEMBERS
by Rowena Hoven

MURRAY MILLER has received national recognition for his work in the Camassia conservancy program. He was awarded the Gold Leaf Service Award in Nature Conservancy by the National Nature Conservancy Society. This was one of ten such awards given in the United States in 1965.

JENNIE and GEORGE WALTERS came home with outstanding honors for the display they entered at the convention of the American and Northwest Federations of Mineralogy societies which was held in Yakima on Labor Day weekend. They received the Blue Ribbon in the Novice Division for invertebrate fossils and the Purple Rosette for the best fossil case in the Novice Division. Congratulations all around to these national award winners.

HUGH OWEN has accomplished the impossible -- he climbed his first mountain. The weekend of September 18th he accompanied a group of Mazamas on a climb of the South Sister. Departing at 3:30 a.m., they had a beautiful trip through the forest, reaching timberline about daybreak, and then it was all uphill until they reached the top about 11 a.m. Hugh's triumph is even more remarkable when one recalls that it has been just five months since he sustained a broken neck in a train accident.

LEO SIMON was "written up" in the Sunday (September 26th) issue of the Oregonian. The two-page feature in the Garden Section not only enumerated Leo's many activities, hobbies and society affiliations and offices but also gave a short biographical sketch. It makes very impressive reading.

EFFIE and GEORGE HALL have returned from a month-long trip with their trailer along the Olympic Peninsula. After enjoying the President's camp-out at Delintment Lake, coming home didn't appeal to them so they just continued to travel.

PAUL DUNN has just returned from a month's trip to South America and now he talks familiarly about such places as Quito, Guayaquil and Esmeraldas. He was particularly impressed by the variations in the countryside as part of the time he was in the warm, moist flatlands at 1,000 feet (banana country) and then at Quito the elevation was over 9,000 feet. This is grain, cattle and sheep land. It is necessary to plow the hillsides by hand as it is impossible to use work animals. However, there is no erosion on these hand-cultivated lands as they are so friable that the water just soaks in. He has promised to give a report on his trip at the September 30th luncheon.

Unfortunately the accident list has claimed some of our members. MRS. FRANCIS GILCHRIST is recovering from a cracked vertebra; MRS. JAMES STAUFFER fell down the stairs; and MRS. RUDIE ERICKSON broke her collarbone. They are all making a good recovery.

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MEMBERSHIP ROSTER

name	street address	city, state and zip No.	telephone
ADDRESS CHANGES			
FAGAN, Mr. & Mrs. Mike	4850 Eastern Lane, #302	Suitland, Maryland 20023	
# SMITH, Mrs. Ben	8338 S.E. Ash Street	Portland, Oregon 97216	252-7311
# REIMERS, Mr. Fred	P.O. Box 885	Pendleton, Oregon 97801	

QUINTANA ROO

On November 5, 1965, ten American scientists will leave the United States to explore a portion of the Yucatan Peninsula heretofore untouched by civilized man. Plans for this archeological expedition were revealed Friday night, Sept. 10, before the Geological Society by Mr. Robert O. Lee, mountaineer, explorer, public relations man, and leader of the expedition. Upon Mr. Lee rests the responsibility of getting the ten Americans and twelve native helpers safely through the jungle and aboard a ship which will be waiting for them on the Carribean coast near the island of Cozumel.

The area to be explored is in the northern part of Quintana Roo, a primitive area which makes up approximately the eastern half of the Yucatan Peninsula in Mexico. The specific objectives are two ancient Mayan cities which have been spotted from the air. They appear to be large cities and are expected to rival Chichen Itza in size. Since they have never before been explored, the possibilities of discovery staggers the imagination.

The land over which they will travel is fairly level, with an altitude of about 30 feet. The peninsula is made up entirely of limestone with only about two feet of overburden, from which springs the dense jungle growth. The trees attain a height of 60 to 70 feet, many of them thorny and poisonous. Travel will be on foot and each man will bear a pack of about 45 lbs. of food, supplies, and water to last for the six weeks of expected travel. There are no streams or lakes in the area, but occasional cenotes occur. These cenotes are wells formed by the collapse of underground caves which form in the limestone. The water which they contain is fresh and usable but there is no way of locating them except by accident, so they are not a dependable source.

While hacking their way through the jungle each man will have to be constantly prepared for the many dangers which exist in the form of poisonous snakes, insects, and plants, as well as jaguars and unfriendly natives. The area is known to contain more poisonous snakes and insects than any other place in the world. In addition to pit vipers, cottonmouth, and coral snakes, there is one which is reported to have the ability to hurl itself from the limb of a tree and strike its victim from a distance of more than 60 feet.

Frances Murphy, staff writer for the Oregonian, will be a member of the expedition. A veteran of 16 trips to the Peninsula, Frances speaks the Mayan language fluently and will be invaluable in this capacity. In addition he is a graduate archeologist. Those of us who follow his newspaper columns will be looking forward to his reports on the expedition.

The many guests who attended the meeting for the express purpose of hearing Mr. Lee were not disappointed. A very personable gentleman, he also displayed a talent for photography with some superb slides of various mountain peaks he has scaled, as well as views of Chichen Itza and other Mayan ruins. He is a graduate of the University of Washington and Stanford University. At the present, and since 1956 he has been employed by the Georgia-Pacific Corporation as Director of Public Relations and Advertising. He is a member of several National and International Public Relations Societies, the City of Portland Art Commission, and has participated in many exploring expeditions. Others are in the offing, including the 1966 Vinson Massif Expedition to Antarctica.

The Quintana Roo expedition is being sponsored by four American colleges -- University of Oregon, Oregon State University, University of Washington, and San Jose College. Also collaborating are the St. Louis Zoo, the CEDAM, a Mexican organization which sponsors such expeditions. Practically all branches of the Natural Sciences will be represented, as well as archeology and anthropology.

We thank you, Mr. Robert Lee, for a very interesting and intriguing talk, and our thanks go, also, to the lecture chairman for providing such a fine evening of informative entertainment.

Irma Sullivan

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CHART OF THE STRATIGRAPHY AND PALEONTOLOGY OF PRE-TERTIARY ROCKS OF THE SUPLEE AREA, OREGON*

ERA	PERIOD	APPROX. AGE	NAME OF FORMATION	TYPE LOCALITY	DESCRIPTION	TYPICAL FOSSILS
MESOZOIC	CRETACEOUS (Upper)	90 million years	"Bernard Formation" of Dickinson & Vigrass. "Chico Formation" of Washburne. (Buddenhagen loc. 5)	Andrew Bernard Ranch, SE¼ sec. 11, T. 17 S., R. 25 E.	Sandstone and conglom. about 1,000' thick deposited in shallow sea. Last invasion of sea in eastern Oregon.	Trigonia, oysters, and other pelecypods, gastropods, small ammonites.
		UNCONFORMITY: Folding, uplift, and deep erosion in Late Jurassic and Early Cretaceous time.				
	JURASSIC (Upper)		(Lonesome & Trowbridge Formations of Lupher)	East of Snow Mt. in Izee area.	Not present in Suplee area	
	(Middle)	150 million years	Snowshoe Formation		Marine beds totalling 3,000' in thickness:	
			"Show Member" of D. and V.	Sec. 24, T. 17 S., R. 26 E.	Soft, dark-gray shale.	Fossils few.
			"Basey Member" of D. and V. (Bud. loc. 7A)	N.E. corner T 18 S., R. 25 E.	Sandstone and lava flows.	Fossils few.
			Warm Springs Member	Sec. 19, T. 18 S., R. 26 E. on east side of Warm Springs Creek.	Silty shale and mudstone.	Abundant Posidonia and ammonites.
			Weberg Member (Bud. loc. 9)	Same as above.	Sandy limestone and sandstone. Shallow sea.	Ammonites, pelecypods, brachiopods, belemnites, reptile vertebrae.
		UNCONFORMITY: Warping and erosion.				
	(Lower)	180 million years	Mowich Group (Bud. loc. 11)	East-west trending outcrops in secs. 26, 27, 28, & 29, T. 18 S., R. 26 E., along South Fork of Beaver Creek near Robertson Ranch.	Marine beds totalling 2,000' in thickness:	
			Hyde Formation		Tuff and sandstone.	Fossils rare.
			Nicely Formation (Mowich Spring loc.)		Black shale.	Abundant ammonites; pelecys. & brachs.
			Suplee Formation		Sandstone grading to limestone. Shallow	Large pecten (Weyla) & other pelecypods.
			Robertson Formation. (Bud. locs. 10&13)	Same as above	Basal conglom. (eroded from Triassic). Sandstone & Plicat. reef.	Plicatostylus gregarious, ammonites, pelecypods.
			Unnamed (Bud. loc. 25)	Williams Reservoir.	Limestone and marl.	Ammonites.
		UNCONFORMITY: Folding faulting, and erosion.				
	TRIASSIC (Upper)	200 million years	"Begg" and "Brisbois" Formations of Dickinson and Vigrass. "Bailey Formation" of Nesbit. (Buddenhagen loc. 6)	Begg Creek, T 17 S., R. 26 E. Brisbois Creek, T. 17 S., R. 27 E.	Tightly folded conformable sequence of marine sed. rocks eroded from Paleozoic Highland and deposited in shallow sea. 12,500' thick.	Begg: fossils rare. Brisbois: belemnites, brachiopods, corals, pelecypods, ammonites.
		UNCONFORMITY: Folding, rock alteration, and erosion Late Permian to Middle Triassic time.				
PALEOZOIC	PERMIAN	260 million years	Coyote Butte Formation (Buddenhagen locs 26, 16, and 17)	NE¼ sec. 18, T. 19 S., R. 25 E. on north flank of fold overturned to south.	Marine deposits of light gray limestone. Crops out in ridges and knobs. Fairly shallow sea.	Fusulinids (Schwagerina), crinoid stems, corals brachiopods, trilobite fragments.
		UNCONFORMITY: Folding and erosion, invasion of sea.				
	PENNSYLVANIAN	300 million years	Spotted Ridge Formation (Buddenhagen loc. 228)	Sec. 20 & 29, T. 18 S., R. 25 E. west of Spotted Ridge.	Sandstone, mudstone conglom. and chert. Partly nonmarine.	Fossil plants: Calomites and ferns.
		UNCONFORMITY: Uplift and erosion. Part of land above sea level during Pennsylvanian Period.				
	MISSISSIPPIAN	330 million years	Coffee Creek Formation (Buddenhagen loc. 22)	Center sec. 30, T. 18 S., R. 25 E.	Marine limestone.	Corals, brachiopods (Gigantella & Striatifera).
		UNCONFORMITY: Probable folding, faulting, and erosion.				
	DEVONIAN (Middle)	375 million years	Unnamed (Buddenhagen loc. 20)	Two small outcrops: Sec. 16, T. 18 S., R. 25 E. Sec. 30, T. 19 S., R. 25 E.	Marine limestone, sandstone, and chert. Oldest rocks known in Oregon.	Stromataporoids, Corals, Brachiopods

*Compiled by M. L. Steere from references in accompanying bibliography.

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by Margaret L. Steere*

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Suplee-Izee area of Central Oregon
19 June through 26 June 1965

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

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SEPTEMBER LIBRARY NIGHT

A good-sized crowd of GSOCers attended the first Library Night, after the summer recess, at Lewis & Clark College. The usual hour for reading and browsing was observed, followed by a program of color slides taken by members during the Annual President's Campout in the Suplee area of Central Oregon in June. Dr. Paul Howell displayed profiles of the land forms of this area of Oregon which he had spent many hours preparing.

Members were welcomed by Murray Miller, Chairman, who then introduced Lee Gavigan, Fred Miller, George Walters, Effie Hall, Dr. Gilchrist and Lloyd Wilcox who showed a total of about 250 slides. These gave a very fine picture of the area and activities that took place during the campout. The remarks that flew back and forth during the showing caused gales of laughter... and some of the slides needed no remarks!

It was a most entertaining evening, which was followed by refreshments. We missed Mrs. Stauffer, our gracious hostess who is usually with us, but was unable to attend because of illness.

Jennie Walters

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Nov. 1965

THE GEOLOGICAL NEWS LETTER

Official Publication of the Geological Society of the Oregon Country

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G. S. O. C. CALENDAR FOR NOVEMBER 1965

Every Thursday

LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - GSOC'ers, guests, and visitors are invited to participate in this once-a-week mid-day repast. The group assembles in the Mountain Room (beyond the Foothills Room) adjacent to the main cafeteria. In an informal atmosphere geological specimens and publications are circulated for examination and discussion. Also short talks on geology and related subjects are presented on occasion.

Complete lunches or food items ala carte are available at moderate prices. Purchase a tray full or a trifle as circumstances warrant. To obtain additional information telephone Mr. Leo F. Simon, Luncheons Chairman, at 236-0549.

12 November Friday

LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - Mr. John Mihelcic will present an illustrated talk about "South Seas and Minerals". John and his wife Lillian have recently returned from an extended tour "down under" (see GSOC News Letter of April 1965, P. 36, and May 1965, P. 49).

16 November Tuesday

LIBRARY NIGHT - Lewis and Clark College in SW Portland, Oregon

7:30 P. M. - The evening begins with a "quiet hour" on the upper floor of Peebles Hall (biology building) to permit reading and browsing in the GSOC Library Collection. Some books may be borrowed for home study.

8:30 P. M. - "Geology of the Columbia River Gorge" is the title of the program designed to provide background for the Sunday, 21 November Field Trip. Members are invited to participate in the program by providing slides (limit of 12) on geologic and other scientific points of interest. Dr. Francis G. Gilchrist will be program co-ordinator.

Refreshments and social hour following the program. To obtain additional information and/or directions telephone Mr. and Mrs. Murray R. Miller, Library Night Chairman and Librarian, at 656-6724.

21 November Sunday

FIELD TRIP - Bus tour to the Columbia River Gorge.

Prepaid Reservations Only! Cost is $3. 50 per person.

7:45 A. M. - Assemble on the north side of State Hall at Portland State College (S. W. Mill Street between Broadway and Park Avenues).

8:00 A. M. - Chartered bus will depart for the Gorge Area. Mr. Lloyd A. Wilcox, Field Trip Leader, will be pointing out the geologic points of interest enroute. Tour route will be east (up the Gorge) on the Oregon side and return by way of the Washington side. Estimated time of return is between 5:00 P. M. and 6:00 P. M.

For more detailed information see article entitled "Information for November Field Trip by Bus" in this month's GSOC News Letter. To arrange for reservations telephone Mr. Lloyd A. Wilcox at 656-6594.

26 November Friday

LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - Speaker and topic to be announced.

NEWS OF MEMBERS
by Rowena Hoven

BERRIE HANCOCK was notified recently that she has been selected to appear in Whose Who in American Women. We are very proud, Berrie.

GWEN HELM is in Hawaii, supposedly on a vacation, but knowing Gwen as we do, she is probably knocking herself out collecting rocks, viewing volcanoes, observing the comet, and testing the temperature of the ocean water at least four times a day.

It should have been mentioned last month, but MR. AND MRS. JOHN MIHELCIC recently completed an 8-month trip around the world. We will be looking forward to hearing about their adventures from time to time. (See current GSOC Calendar, page 97, regarding first lecture meeting on 12 November. Editor)

EMILY MOLTZNER spent a week in Los Angeles visiting friends.

JESSE RENTSCH has returned after spending four months on the East coast where he visited with his son and daughter, brothers and sisters. Most of the time he was in Washington, D.C. and Connecticut. He admitted that Oregon looked pretty good to him after that length of time.

BOB WILBUR is still meandering after his trip to Yellowstone Park. He is including a visit with his mother in the Midwest as part of the tour.

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Vol. 31, No. 11

THE LLOYD CENTER COLLECTION OF FINE STONES

By Ralph S. Mason*

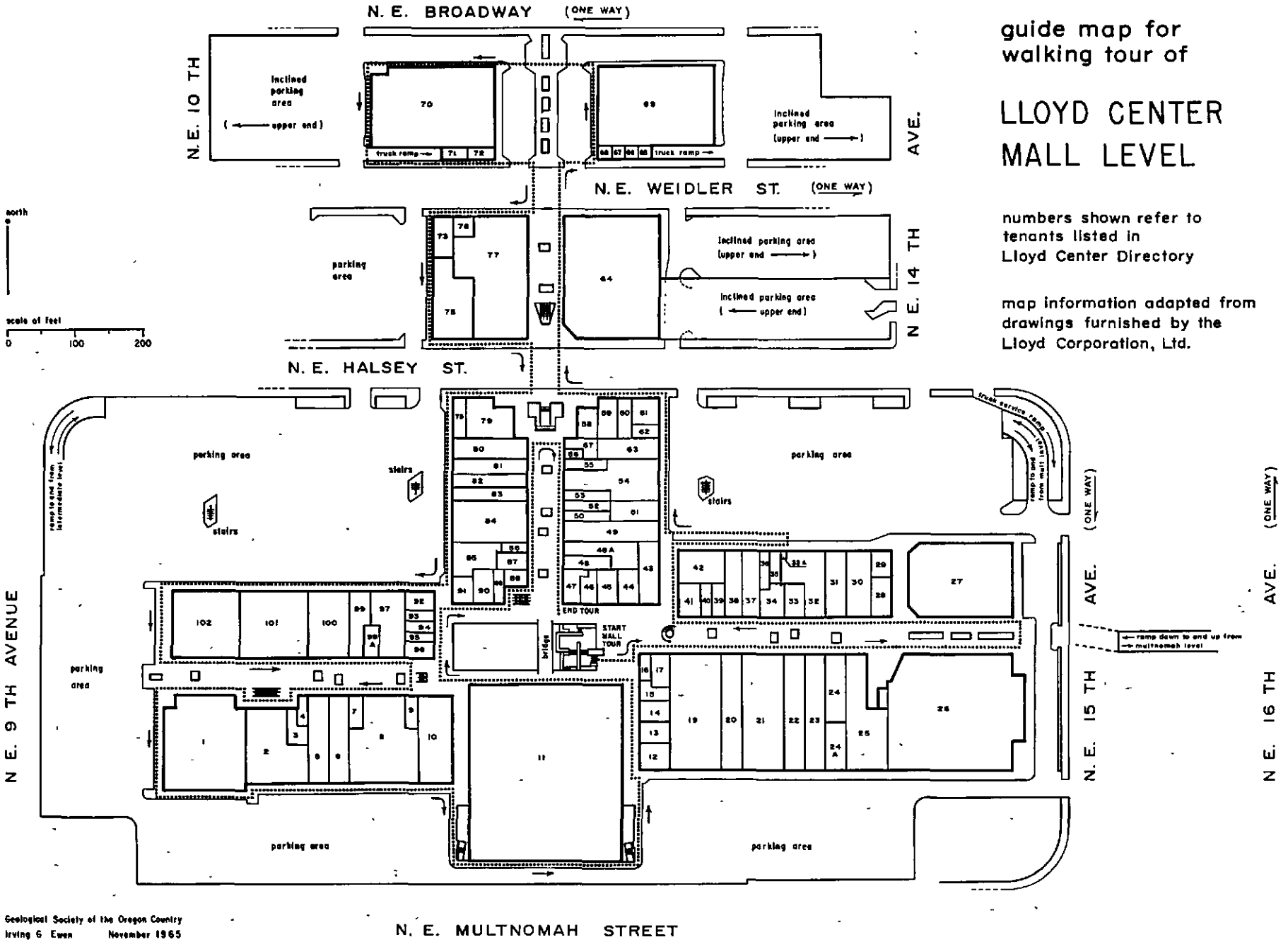
The Lloyd Shopping Center on Portland's east side offers exceptional opportunities for observing the use of rocks and minerals in an architecturally exhilarating environment. In the space of a few hours it is possible to cover most of the Center and to see the wide variety of ornamental building materials gathered from all over the world. Although some of the rocks are used in "standard" fashion, there are many interesting examples of novel applications of either new materials used normally or "old" products used in new ways. The following notes and the two diagrams are intended to point out some of the more interesting and unusual things to see at the Center - items that are all too easily overlooked by the determined shopper intent only on the interiors rather than the exteriors of the over one hundred shops at Lloyd's. The dashed route appearing on the floor plans of the Center has been added for the benefit of those wishing to make a self-conducted tour of the project. This same route was taken by the GSOCers on Sunday, 11 April 1965 when the first official GSOC field trip of Lloyd Center was held. The comments which follow are arranged in the same order as the trip route shown. Key numbers appearing on the maps and in the descriptions below are the same as those used on the Lloyd Center folders to identify the various tenants.

Start the tour at the U.S. National Bank (24) on the west end of the Multnomah Level. The bank is faced with white sand-lime stack-bonded brick and finished with pre-cast concrete units. Sand-lime bricks, unlike red clay bricks, are processed in a steam autoclave under low pressure which induces cementation. Best's Apparal (23) uses Vermont marble facings, Granning & Treece (20) employs exposed aggregate with quartz, and Wide Travel (19) has a wall made of andesite flagging set in concrete. The Title & Trust (16) front is laid up with the familiar Arizona Sandstone in conventional courses, while on the facing side of the alley the walls of Richard Edwin (12) are panelled with Italian Travertine obtained from a quarry located 60 miles from Rome and active from Roman times. Around the corner Dean Witter & Co. (11) has highly polished black marble sheets with white calcite veining, and Florence Thurman (8) a combination of one-inch and four-inch ceramic tile plus red brick paving. Tiles are used extensively throughout the Center in a wide variety of colors and an endless combination of patterns. Ceramic tiles make good wall coverings since they are durable, easily cleaned, have a limitless variety of colors and surfaces, can be replaced readily when damaged, and add only slightly to the overall thickness of a wall.

Manning's Coffee Cafe (6) is faced with exposed aggregate of quartzite cobbles from the Spokane, Washington, area. Some of the interior room dividers are constructed of used brick and pre-cast terrazzo slabs form the floor. The west wall of Meier & Frank's (5) is surfaced with red-fired common brick with weathered joints. Brick is the oldest manufactured building material in the world. Its continuing popularity is due in part to the minute imperfections which make each individual brick slightly different from its neighbors, thus giving eye appeal at close range, plus the subtle shading imparted to large wall areas by the slight differences in color of the brick when viewed from a distance. A further variable is introduced in the manner in which the joints are mortared, there being at least half a dozen standard treatments currently in use. On top of this, brick walls can be varied by the way in which the courses are laid, and finally modern brick come in a number of sizes and a great many colors and surfact textures. The north wall of Meier & Frank's Multnomah Level is covered with Emerald Pearl "granite" (actually larvikite, a type of syenite). The stone is a lustrous black with highlights of flashing blues and greens produced by refraction of light from the large feldspar crystals. White marble from Georgia is used for the entrances, making a strong contrast with dark walls.

Going up the stairs to the Mall Level a rose quartz has been used for the exposed aggregate on the stairwell walls. The exact geographic location of the Center is shown on a bronze plaque which gives the latitude and longitude down to the last second of arc (45° 31' 58.15", 122° 39' 7.75"). Also of interest in the immediate area is the rectangular pool

* State Mining Engineer with State of Oregon, Department of Geology and Mineral Industries.



guide map for walking tour of

LLOYD CENTER MALL LEVEL

numbers shown refer to tenants listed in Lloyd Center Directory

map information adapted from drawings furnished by the Lloyd Corporation, Ltd.

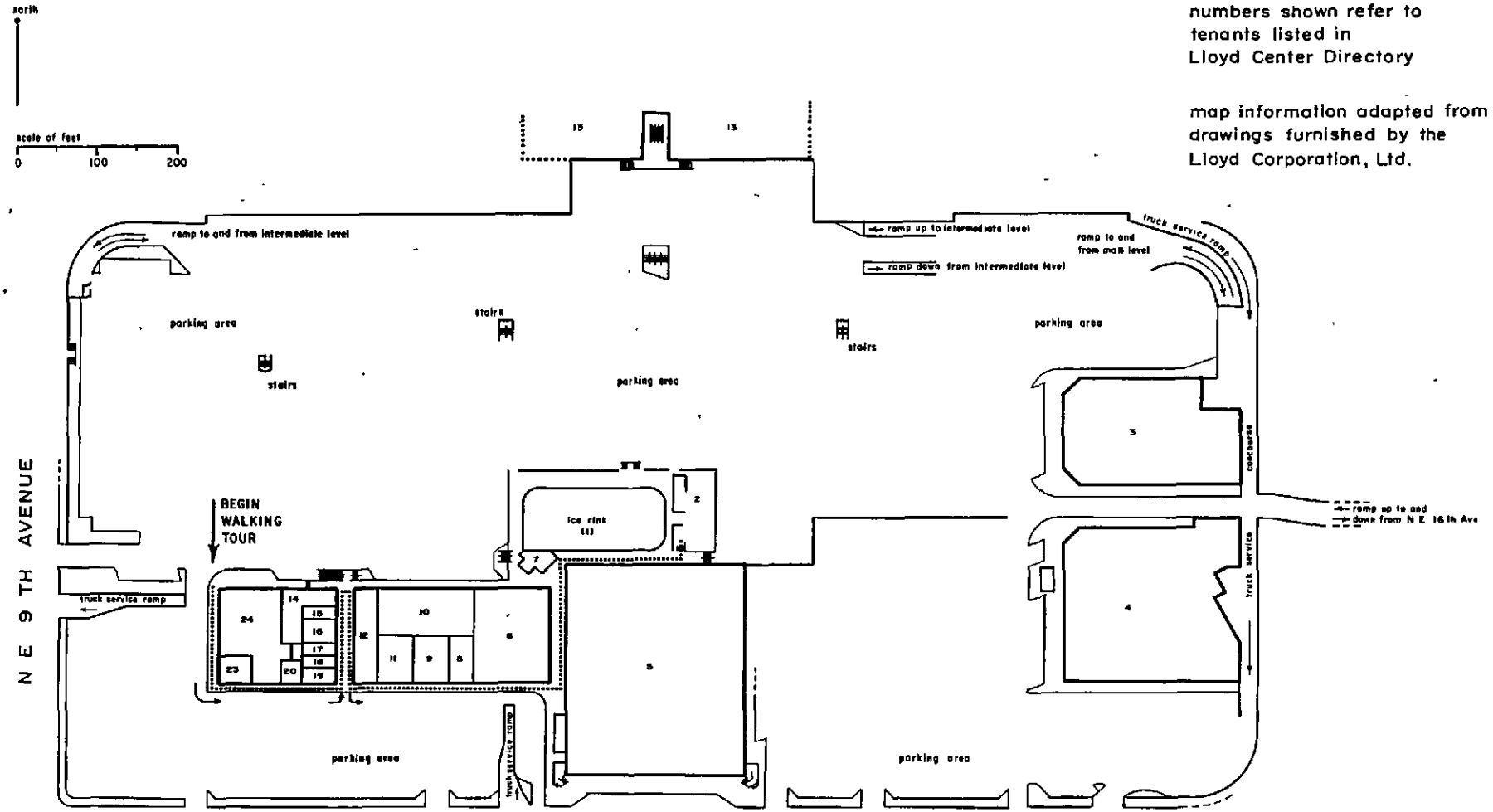
Geological Society of the Oregon Country
Irving G Ewen November 1965

guide map for walking tour of

LLOYD CENTER MULTNOMAH LEVEL

numbers shown refer to tenants listed in Lloyd Center Directory

map information adapted from drawings furnished by the Lloyd Corporation, Ltd.



Geological Society of the Oregon Country
Irving G. Ewen November 1965

Lloyd Center Collection of Fine Stones -

with a design on the bottom formed by seeding colored river gravels into a concrete panel. The Mall Level tour starts at Van Duyn's (16) and its delicious looking one-inch ceramic tiles which look like so many caramels. In case you would like to match them sometime, they are from Venice, Italy, and are called "Quamagra." Heading east along the south side of the East Mall, terrazzo appears on the floors at Leed's (20), Zukor's (21), and Kinney Shoes (22). Terrazzo, invented in Italy, is a floor surface composed of crushed rock placed in a matrix of concrete and then ground to a smooth surface. Marble chips are commonly employed as aggregate. The next three stores all use tiles: The Fabric House (23) has ceramic tile, the Alpine Hut (24) has a figured tile lintel in contrast to slate veneer flooring, and Foreman & Clark (25) makes use of quarry tile.

The J. C. Penney store (26) and Woolworth's (27) are faced with brick with weather-struck joints. Woolworth's also uses pre-cast panels on the Mall Level. Exposed aggregate is produced in several ways: by placing the aggregate on a bed of dry sand and backing it up with concrete - the dry sand falling away when the panel is raised, by acid etching the surface of the panel, and by brisk brooming before the concrete has fully set. Some architects prefer the latter method, claiming that it imparts a more distinctive appearance than the other methods. Close examination of the various exposed aggregate panels to be seen on the tour will usually reveal the precise method employed. Take a good look at the exposed aggregate at the Lloyd Center Pharmacy (30) and try your luck. Zale's (28) is covered with brecciated marble.

The House of Nine (34) is surfaced with six-inch ceramic tiles, each bearing the figure "9." Gabbro and pre-case units are used for the lower trim. Mario's (41) is veneered with Arizona Sandstone, and the Pancake Corner (42) with used brick. Whether the "used" brick are actually second hand or not is becoming increasingly difficult to determine now that "used" brick are being manufactured from new brick - and sold at a premium price. McCall Oil (60) employs thin slate slabs, laid flat against the wall. Across Halsey Street, J. J. Newberry (64) makes use of granite, pre-cast units and one-inch tile for its exterior walls. Crossing Halsey and Weidler Streets, notice the six-inch quarry tile in the cross-walk. Quarry tile wears like cast iron and is extensively used in homes for entry ways and hearths.

Tradewell (69) with its stack-bonded brick walls emphasizes once again the amazing versatility of brick. Safeway (70) also uses brick but adds two-inch ceramic tile for contrast on its north wall. Nielsen's (72) imported verde antique, a high quality form of serpentine, from Italy for its wall covering. Anybody looking at a large wall such as that at Pay 'n Save (77) or the First National Bank (75), which are covered with thousands of one-inch ceramic tile, may have wondered how long it took to put each of them in place. The job is quite formidable but not quite as bad as it looks - the tiles come in sheets and are pressed into the mortar en masse. Goldberg's (79) combines red and green slate veneer with colored glass panels to create an unusual effect. Sanford's (82) is the only store in the Center to use a pink gneiss, a metamorphic rock having flattened and stretched veinlets of mineral running through it. The Hippopotomus (85) has the "worst" brick in the Center. For years brickmakers discarded the over-fired brick which came from the firing ports of their kilns. Today such brick is eagerly sought after for its unusual color and warped and cracked appearance. Unfortunately modern brick kilns, particularly the tunnel kilns, produce very few over-fired brick.

Four-inch squares of Cold Springs Granite from Minnesota grace the front at Fahey Brockman (101). The Squares are exposed about 1/2 inch and are spaced about 3/4 inch apart in pre-cast 25-inch-square panels. Next door at Nordstrom's (102) everybody gapes at the thousands of marbles (yep, regular glass marbles) set in a plaster matrix. The regular spacing was achieved by using a steel plate with countersunk holes to position the marbles. The Blouse Tree (97A) and Riggs Pharmacy (96) are both faced with exposed aggregate. Oregon Typewriter (93) and Stevens & Son (2) use travertine, Chandler's (10) has walls laid up with rather large river cobbles, while Best's (1) combines white limestone with 6" x 12" ceramic tile and red brick.

Lloyd Center Collection of Fine Stones -

Over on the east side of Meier & Frank's, Hol'n One Donut Shop (13) is faced with sandstone, and next door Culbertson's Leathers (14) is laid up with brick set in slump mortar. Across the central court Florsheim Shoes (91) has an entryway paved with terrazzo featuring white Italian river cobbles ground flat and set in a jet black matrix. Paris Hats (88) is veneered with white marble, and the Casual Village (87) has silicified rhyolite rubble from Kah-Nee-Ta Hot Springs, Wasco County, Oregon.

The Christian Supply Center (48) contains one of the pleasant surprises to be found at Lloyd's. Up over the door there is a ceramic panel prepared by Bennett Welch. The 12" x 12" tiles were hand cast, fired, and glazed and then assembled to form a three dimensional abstract panel.

The above descriptions have applied to the shop fronts and walls throughout the Center. Almost unnoticed, but never-the-less present are the vertical divider strips between each tenant. They are composed of black granite from the Andes Mountains of South America and were selected because the stone would not distract the eye from the adjacent fronts.

This just about winds up the tour. In addition to the examples enumerated above, the visitor making the tour should be reminded that behind, above, and below much of the decorative material used in the Center there are thousands of cubic yards of sand and gravel and cement which give the vast structure its strength and form and a firm foundation upon which to rest.

ROCK WITCHING
or
DON'T TAKE MY WORD FOR IT -- TRY IT SOMETIME

by Irma Sullivan

All you strictly scientific-minded, dyed-in-the-wool skeptics may skip this story. Just pass on by, you won't believe anything you read here anyway. A few months ago, I wouldn't have, either, but after this summer I'll nod knowingly at stories I hear about clairsentience, poltergeists, or water-witching -- especially water-witching. Or perhaps more specifically, rock witching.

I'll wager not many of you have even heard of rock-witching -- or maybe more properly it should be called mineral-witching. Well, I've not only heard about it, I've seen it, and I've even done it! Let me tell you about it.

This summer while visiting relatives near Springfield, Nebraska, I was told that I just must visit the Sass Brothers' Rock Shop. I was not awfully eager because time was growing short, and, frankly, a rock shop is a rock shop -- unless you're looking for something in particular, which I wasn't. But the family was so insistent, that I let my sister - who is also a very serious-minded, level-headed woman, just as skeptical of obvious phenomenon as I -- accompany me to the store.

Now the Sass Brothers are very upright, solid citizens in the community. They are business men, in no way to be suspected of hanky-panky, or sleight-of-hand, or any other form of hocus-pocus. In a small town that would be very bad for business. Hardware is their business, but one half of their store and two back rooms contain the most striking display of minerals -- some in huge crystal forms -- fossils, and Indian artificats I have ever seen in that part of the country. All had been found in that area, or other parts of the Mississippi Valley. Truly, a most fabulous collection!

After we had admired the display for some time, and I had ordered a tiger-eye pendant made up to my personal specifications, Mr. Sass casually dropped the comment that he "witched" for many of the specimens on display, and then dug them out by hand. While Sis and I stood in disbelief, he calmly took his "wand" from someplace overhead and gave us a demonstration. At one end of a long piece of doweling rod, about a quarter of in inch through, was taped a quartz crystal - just heavy enough to feel from the opposite end, but not heavy enough to bend the rod. Holding the rod firmly at the far end, he passed the crystal over some of the display. Nothing happened. Then slowly he moved it over some quartz crystals and the weighted end of the rod began bobbing up and down like a hen pecking corn. Faster and faster it went, until it was swinging in wide circles, around and around.

Remembering my father's claim to the ability to dowse for water, I wondered if I had inherited any of his magic, but when I reached for the wand I was put off with "Just wait -- and watch." And watch I did.

For a few seconds the crystal-tipped rod continued to swing in circles, then began to slow down, until it was again just bobbing up and down, almost in a straight line, gradually decreasing in motion. Then suddenly it gave itself a little shake, and came to life again, this time revolving in the opposite direction! I was so excited over this, that I didn't notice when it turned clockwise and when counter, but I do remember Mr. Sass saying that it did exactly the same thing every time. When it began to slow again he passed it to me.

In my hands, the rod was quiet over the quartz crystals, but I did feel a slight pull, very similar to that of a very weak magnet. However, it was not enough to make me want to get out my shovel and start digging! But when I moved over some agate -- that was a different story! There was action aplenty.

So now I know. I am a believer. It does seem logical that certain minerals should have an attraction toward each other -- but how come the difference at the of a long wooden stick? For that matter, why are oil, sulfur, and salt found together in those domes? H-m-m? And I'll bet there are a lot of other questions you can't answer, either!

But I can find agate with a witching wand!

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Vol. 31, No. 11

GLOSSARY FOR GEOLOGIC TERMS

A "CLARA"fication of Terms
by Miss Bartholomay

Third Annual GSCC President's Campout
Suplee-Izee area of Central Oregon
19 June through 26 June 1965

This glossary has been compiled and published as an aid to the Serious Amateur Student of Geology (?). This certainly does not prohibit its use by any member of that group known as the "Professionals" who may be momentarily at a loss - for what we wouldn't know, since any loss not helped by this list would be a gain!

Chert	That which certain ones of us keep on hand in order to give you the "chert off their back".
Fault	An occurrence which some will find with this compilation.
Fissils	Visible remnants of past life that did not exist. Found by many GSOC'rs in widely separated formations of many ages, they seem to be most prevalent in the Delintment Lake Area of the Suplee Region of the OCHOCCS. Here, several exposures may be seen laying above the Rattlesnake Formation and usually athwart the base of a large pine tree.
Fissil Cow	Unlike Fossil Horses and such, there are udderly no indications of this animule in any of the known fossil locales in Oregon.
Fivea minifer	Too large to be a foraminifer. These fissils were profusely diffused throughout the sediments of the Pittsburg Bluff Formation. Close examination with a lens disclosed a remarkable similarity to grains of sand.
Fracture	Apt to happen to the aplomb of aforementioned "Serious Amateur Student of Geology" when he reads this. Might even likewise with the "Profs".
Fussilinid	A fossil eagerly sought in the Suplee Area, primarily to light the tribal lites when found.
Menonites	A fissil related to the fossil Ammonite. Several broken pieces were supposed to have been unearthed in the Triassic shales of the Suplee Area. Also a few Presbyterians.
Paleo-whatcha-ma-callit	A fissilologist. They hunt them, find them, label them, and add them to lists like this.
Tribal lite	A small buglike fissil ancestor fo the crab which was the object of a diligent search in the Devonian outcrops of the Suplee area.
Vocabulary	Yours is now nearing the Ultimate!

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INFORMATION FOR NOVEMBER FIELD TRIP BY BUS

The November field trip scheduled for Sunday, the 21st, will be a bus tour of that part of the Gorge between the Bridge of the Gods and Hood River Bridge. We will go up the Oregon side, cross over the Bridge, and come back down the Washington side. It will be the same Geology you have always seen in the Gorge but we hope to present it to you from a little different view, sort of a new look at some old rocks. After a good look at some photogenic lavas, and a few minutes with the Eagle Creek formation, we will spend some time contemplating a cliff full of Geologic goodies.

I think it's pretty Slick. 'N' Sides that, we will run over to Underwood Mountain for a closer look at its lavas. Right here we hope to add a line to the published lore of the Gorge by extending the eastern most exposure of the Eagle Creek formation from the western foot of Dog Mountain to the western slopes of Underwood Mountain!

On the western foot of Dog Mountain we will stop (time permitting) to hack some agate out of the vesicles of Coriba that lay in close proximity to the Eagle Creek (once) ash.

Be sure to bring your camera, rock hammer, collecting bag, lunch and rain clothes for just in case.

All seats will be secured by C. I. A. (Cash In Advance) reservations, so get your tickets early. Contact Lloyd A. Wilcox, home phone 636-6594 for tickets or information. All tickets will be handled on a first come, first served basis and any reservations over and above a bus load will be accepted contingent on receiving enough more to warrant the charter of a second bus. Or a third.

Price of tickets is $3. 50 each. We leave at 8:00 A. M. SHARP from the corner of S. W. Park and Mill streets in the Portland State College Complex. We will return about 5:00 or 6:00 P. M.

Come, climb aboard the bus, and leave the driving to us!

Sleepless night I lay afretting 'bout the somber news we're getting,
And there's one bleak fact I think we all should know.
All my wakeful thoughts it's haunting, mercilessly taunting,
How the gold in old Fort Knox is running low.

Viet Cong and red Chinese, and the warring Congolese,
And the cold war, too, is getting mighty old.
But the news that really chills me, numbs my soul and nearly kills me
Is to hear about that dwindling stock of gold.

I think naught of the Rhodesians, Cypriots or Indonesians,
Nor the mobs that pelt our embassies with rocks.
I ignore the news I hear of that fuss about Kashmir,
But I can't forget the gold in old Fort Knox.

And I ponder every day o'er the words of L B J,
That we all must do our part to stem the flow.
If we curb our urge to roam, spend our dollars here at home
We can save those stocks at Knox that are so low.

So with resolute decision I assume this firm position
Far away from foreign shores I pledge to stay.
I accept your approbation with a bit of hesitation,
For I hadn't planned on going anyway.

George R. Dahlin

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G. S. O. C. CALENDAR FOR DECEMBER 1965

Every Thursday

LUNCHEON - Y. M. C. A., 831 S. W. 6th Avenue, Portland, Oregon

12:00 M. - Once each week GSOC'ers, guests, and visitors meet informally in the Mountain Room adjacent to the main cafeteria. In addition to partaking of the mid-day repast an opportunity is provided to review and discuss the latest geologic publications, examine specimens, or hear occasional short talks on geology and related subjects.

Hot and cold food items at moderate prices are available in the main cafeteria. More information may be obtained by telephoning Mr. Leo F. Simon, Luncheons Chairman, at 236-0549.

10 December Friday

LECTURE - Public Library, 801 S. W. 10th Avenue, Portland, Oregon

7:30 P. M. - "Geologic Scenes from the National Monuments and Parks of the Southwestern United States" is the title of the illustrated talk to be given by Mr. Leo F. Simon. Leo has served the Society in so many capacities (president, director, chairman of numerous committees and activities, et cetera) that he really needs no introduction to most GSOC'ers. Come hear Leo tell of experiences, geology, history, et all as he dons the cap of lecturer for the evening.

11 December Saturday

FIELD TRIP - Portland's Water Supply System via private car caravan

8:30 A. M. - Assembly point will be at 1900 North Interstate Avenue in the parking lot adjacent to the City's Water Bureau Building.

Mr. Theodore "Ted" Suderburg, Superintendent of the Water Bureau, will explain the metering operation located here. Later, Mr. H. Nick Clapp, Engineer with the Water Bureau, assisted by Mr. Julias Thorne will lead a guided tour. Itinerary will include the water-shed, dams, et cetera.

Participants are advised to bring the usual - including lunch, camera, geology pick (?), and rainwear in the event of inclement weather. Jack Pollard is co-ordinator of this trip. More information may be obtained by telephoning Mr. Pollard at 246-6329 or Mr. Lee T. Gavigan, Field Trips Chairman, at 289-8041.

21 December Tuesday

LIBRARY NIGHT - Not scheduled due to the Holiday Season.

24 December Friday

LECTURE - Not scheduled due to the Holiday Season. Merry Christmas!

ADVANCE G. S. O. C. CALENDAR FOR JANUARY 1966

Every Thursday

LUNCHEON - As usual. See December 1965 Calendar for details.

14 January Friday

LECTURE - "Photogrammetric Maps and Aerial Surveys" is the title of the illustrated talk to be given by Mr. Leonard H. Delano. Leonard's talk will include emphasis on some of the fields of interest to geologists.

16 January Sunday

FIELD TRIP - Tour and Open House at Delano Photographics. This event will complement the lecture by Mr. Delano on 14 January.

18 January Tuesday

LIBRARY NIGHT - The program will be a continuation of "Geology of the Columbia River Gorge" presented on 16 November 1965. Dr. Francis Gilchrist will continue as co-ordinator (see November News Letter for details).

NEWS OF MEMBERS
by Rowena Hoven

After ascending the South Sister, HUGH OWEN declared he had climbed one mountain and that would end his career as a mountaineer. However, he has discovered (like smoking) it is not easy to quit. His latest conquest was Clallie Butte.

Several of our hardy members have been in the hospital recently. DR. JOHN HAMMOND had back surgery.

BRUCE SCHMINKY is recovering from surgery, and we hope he is home by this time.

EMILY MOLTZNER has left the hospital and we are looking forward to seeing her again soon.

JESS RENTSCH was enjoying an excursion on Sauvies Island a couple of weeks ago and suddenly found himself the victim of another driver. JESS is suffering from back injuries and his car is suffering from total demoliton.

LEO SIMON spoke on the geology of Oregon at a recent meeting of the Tualatin Valley Gem and Mineral Society in Forest Grove.

HUGH OWEN will be giving a course in city planning for the layman at the adult evening school at Lewis and Clark College. The first class will be the evening of January 6.

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NOMINATING COMMITTEE

GSOC President Fred E. Miller recently announced the appointment of a nominating committee to provide a slate of candidates for the Annual Election to be held early next year.

Chairman . . . . . Mr. Albert J. Keen

Members . . . . . Miss Clara Bartholomay
Dr. Francis G. Gilchrist
Mr. Ralph S. Mason
Miss Shirley C'Dell

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Vol. 31, No. 12

SILVER STAR FROM THE TRIP LEADER'S VIEWPOINT

By Leo F. Simon

Field Trip to Silver Star Mountain in
Skamania County of Southwest Washington
Sunday, 26 September 1965

On this cloudy morning 65 GSOC'ers and friends assembled at Battle Ground Lake, 21 miles north of Vancouver, Washington. This small lake is located in the top of a hill (looks like a miniature Crater Lake) about 504 feet above sea level in what appears to be Cascan or Boring lavas.

From here we drove north through Heisson, then east along the East Fork of the Lewis River to the Sunset Guard Station in the Gifford Pinchot National Forest, near the base of Silver Star Mountain. Here we were welcomed by the genial Mr. Kelly Coon, District Ranger, and his assistants. He immediately warned us of the great danger of fire in this dry season, and recounted the history of the Yacolt burn, a part of the great Columbia River burn of 1902, and the years following. This fire was started, it is said, by a boy burning a yellow jacket (wasp) nest in the fall of 1902 which resulted in the burning of over 100,000 acres of forest and destroying over 2 billion board feet of timber. Many lives were lost in this holocaust as the flames engulfed some of the settlements. There were reoccurring fires until 1929 in which much of the new growth was destroyed. A great number of fires were started by carelessness of logging operations and burning of slashings.

After giving the geologic history of the region (See article, "Geology of Silver Star Mountain", P. 110) illustrated with some sketches I had prepared, Mr. Coon led us to the old mining area of many years ago where approximately 150 miners had prospected for gold and copper. This was Copper City on Copper Creek and as no paying mines were ever developed, there is no evidence left of this mining camp even though this activity lasted for some years.

After a short walk and descending the creek bank we lit our lamps and Mr. Coon led us into a drift or tunnel about 400 feet long blasted into solid rock. Walking through water part of the way some members obtained copper mineral specimens from the roof of the tunnel. This was the first solid rock tunnel I had ever entered so felt very safe even though the tunnel was excavated more than 60 years ago. During one of the large forest fires several people were surrounded by the flames and took refuge in this tunnel thus saving their lives.

Some small hematite crystal veins were also found along the creek.

We then drove up the steep and rocky road toward the top of the mountain. At the 4 mile post we parked and ate lunch in our cars as the weather was very foggy and cold. Still shrouded in clouds after lunch and with a difficult road ahead, Mr. Coon had us consolidate transportation and ride one more mile up the road in several pickup trucks, jeep, and cars.

Some hiked over to Sturgeon Rock which is a high columnar outcrop (andesite?) of about 3100 feet elevation. Along this road some pieces of petrified wood were found, which looked coniferous, and a piece of what seemed to be palm wood. This material must have weathered out of the Eagle Creek formation. A few Indian arrowheads were also picked up.

Some hiked over to the Indian Pits while a few braved the Silver Star lookout tower still in the clouds.

The top of Silver Mountain is 4390 feet above sea level. For brief moments the clouds parted and we saw some of the surrounding mountains. A few weeks prior we had scouted this trip on a beautiful clear sunny day. The view was breathtaking as there were 1000 foot cliffs to the north and the snow-capped mountains were visible even beyond Mt. St. Helens and Mt. Rainier; to the east rugged terrain and eastern Washington; westward the farm lands and villages; and to the south across the Columbia River, farm lands and the snow caps of Mt. Hood, Mt. Jefferson, and the Three Sisters.

Silver Star - cont'd.

After returning to the cars and the Guard Station, we thanked Mr. Coon for his great service to us and drove down to the bridge over the Lewis River near Heisson where we viewed the Pot Holes in the River. These were cut by the swift and swirling waters carrying rocks. Some were cut into petrified trees in the river bed (Eagle Creek formation). A few leaves and limbs were collected.

The mileage from Vancouver, Washington to Battle Ground is 17 miles, to Battle Ground Lake 4 miles, to Sunset Guard Station 44 miles, and to the top of Silver Star Mountain 6 miles. (A total of 71 miles one-way from Vancouver to the top of Silver Star.)

So ended our second attempt in three years to see Silver Star in clear weather. Better luck next time.

GEOLOGY OF SILVER STAR MOUNTAIN

By Leo F. Simon

Field Trip to Silver Star Mountain in
Skamania County of Southwest Washington
Sunday, 26 September 1965

The interpretation of areal geology and physiography of this area is from the work of Wayne M. Felts entitled, "A Granodiorite Stock in the Cascade Mountains of Southwestern Washington" 1938.

The rocks are placed in three divisions as follows:

One - The oldest formation is the Eagle Creek (Warrendale, by E. T. Hodge) of probable Oligocene to Lower Miocene age, consisting of volcanic tuffs and breccias, bajada conglomerates, and minor amounts of intercalated andesitic lava flows near the top of the formation. The Eagle Creek formation here consists of cream colored vitric tuffs which usually weather to a yellow or white colored soil. Varicolored tuffs usually green or red are also found, as are some greenish and purplish breccias.

"The tuffs may pass through the complete range of color within a distance of 25 feet along a strike. The lack of assortment and usual lack of bedding of any regular nature within these tuffs suggest a subaerial mode of accumulation. At many places, however, the tuffs and breccias have been reworked by streams and the bedding shows, in these cases, that accumulation was governed by fluviatile and occasionally lacustrine conditions." (Hydrothermal action altered some of the tuffs.)

Two - Skamania andesites. "The Eagle Creek beds are overlain by a thick series of andesites among which are intercalated minor amounts of breccias and other pyroclastic material. At some localities the andesites interfinger with the tuffs" suggesting at least partial contemporaneity or overlapping of the deposition of tuffs with the extrusion of the andesites (2500 feet in thickness). These andesites compose the bulk of the country rock into which the granodiorite stock was intruded and are the most widespread of the formations within the area. They are in the form of rather thin and extensive flows that were probably extruded in a very fluid form. Locally these flows may have rather high initial dips, a fact that complicates quantitative determination of the later folding. In the lower two-thirds of the series the flows are mildly folded, the maximum dips recorded being about 35°. This figure rarely exceeds ten degrees, the steeper dips being noted in only a few places near the contact with the intrusive rocks. The upper third or about 800 feet of these flows, exposed only on the upper portion of Silver Star Mountain is nearly flat lying, and were formed after the intrusion, the maximum dips recorded being 2° in a westerly direction. This upper portion has also suffered less alteration than the lower partially propylitized andesites. The lavas support most of the steep cliffs within the area, also most of the higher peaks such as Bluff and Silver Star Mountains as well as most of the higher portions of the divides. They are the most conspicuous and the best exposed rocks in the area and over wide areas in adjacent portions of Skamania County. For this reason the name Skamania is proposed for this series

Geology of Silver Star Mtn. - cont'd.

of andesites. No definite age has been assigned to this series of lavas, but are probably the equivalent of the widespread Keechelus series so prevalent in the Cascades a few tens of miles to the north (on Mt. Rainier) as an example (Lower Tertiary (Eocene)).

Lavas later than the andesites of the Skamania series occur as intracanyon flows in the canyon of the Lewis River four miles west of the area and in the canyon of the Wind River a few miles to the east. These in the Lewis River near Sunset Guard Station have been trenched by the River in a narrow gorge exposing old andesitic and diorite stream gravels cemented together by the andesites of later flows. The age of these intracanyon flows is probably Pleistocene age.

Three - Silver Star granodiorite. "The third lithologic unit within the area is a stock of granodiorite with subordinate amounts of augite diorite and quartz diorite near the borders of the mass. The stock is an elongated body about 10 miles long, and varying in width from one and one-half to two and two and one-half miles. Its long axis trends north 20^{o} east." Granodiorite was observed in Dougan Creek. "This stock cuts the Eagle Creek formation and lower portions of the Skamania andesites and has produced contact metamorphic phases in both formations and sending small dikes and stringers of granodiorite and aplite into the tuffs and andesites." The upper third of andesites does not seem to be intruded. There are swarms of zenoliths near the contacts. These inclusions are quite thoroughly metamorphosed usually to hornfels. The granodiorite is strongly jointed on Little Baldy.

Petrology. In the Eagle Creek formation some of the tuffs have been subjected to hydrothermal solutions and entirely replaced by silica forming very resistant quartz rock in which are preserved the shards structure of the tuffs. Good outcrops of this occur in the low saddle of Bluff Mountain, just south of Little Baldy. "The andesites of the lower portion of the series characteristically gray or greenish gray in color, nearly always porphyritic, the phenocrysts being striated grayish white feldspar." Epidote, and other minerals frequently develop in the joint cracks. The diabasic ground mass of plagioclase laths, granular augite, and anhedral magnetite, together with varying amount of chlorite and similar minerals develop from ferro-magnesium constituents. Tourmaline and sericite are also formed. The upper division of Skamania andesites are fresher and contain a few quartz and carbonate veins, some of the vesicules are filled with chalcedony or dolomite, also chloritized. Some of the granodiorite contains pink orthoclose, clear quartz, black to greenish biotite and hornblende crystals. Tourmaline is found at the mouth of Summit creek.

"An analysis of the rocks showed as follows:

$$SiO_2 - AL_2O_3 - FeO - Fe_2O_3 - TiO_2 - MnO - CaO - MgO - K_2O - Na_2O - P_2O_5$$

The primary copper minerals are Chalcopyrite, a little bornite, and probably a little tetrahedrite. The secondary are chalcocite and covellite in the enriched sulphide zone, and malachite, brochantite, and chrysocolla." Mining proved unprofitable.

References

Felts, Wayne M. "A Granodiorite Stock in the Cascade Mountains of Southwestern Washington". Reprinted from Ohio Journal of Science, Vol. XXXXIX, No. 6, November 1939.

Howe, Ralph H. "Mineralization in the Silver Star Area Skamania County, Washington" abstracted from University of Cincinnati Thesis, 1938.

REFLECTIONS OF A TRIP TO SILVER STAR

By Addie C. Lindley

Field Trip to Silver Star Mountain in
Skamania County of Southwest Washington
Sunday, 26 September 1965

The sky was overcast when we left Portland, probably similar to earlier trips that had been taken to the same area. However, the survey party that made the jaunt the week before had reported perfect weather. This should prove something - that we should go a week early or try, try, try again. All kidding aside, the day was well spent.

Ours was the first car to arrive at Battleground Lake, the assembly point. Although I didn't know it at the time, we were preceded by the Johnston's (Mr. and Mrs. Theodore) from Moro, Oregon who had spent the night in their trailer. Also, another far away member, Leonard Wilkinson from Prineville, Oregon joined the group which ultimately numbered about 65.

The color enroute was beautiful, even though some evidence of fire damage was visible. The District Ranger, Mr. Kelly Koon, told us that this area had suffered from forest fires in 1902, 1927, and 1929.

Leaving the Sunset Guard Station we crossed the East Fork of the Lewis River and came to the site of Copper City. At the present time it is difficult to visualize that this was once a community of over 150 people.

Downriver a short distance a few members ventured into a mine tunnel. This mine, like many others in the area, did not pay off in ore. However, it did come in handy as a shelter during one of the forest fires. It was necessary to wade through shallow water for a short distance into the tunnel. Quite a bit of driftwood was present which would indicate that the tunnel is filled with water when the river is at flood stage. Copper coloring was visible on the walls and ceiling. I was told that only a small amount of copper was necessary to produce a lot of color.

The color of the fall foliage continued as we proceeded up Silver Star Mountain. Particularly prominent were the vine maple and alder. I've never seen such splendid richly-colored foliage.

At the lookout atop Silver Star the overcast was so bad that we couldn't see the cars parked a short distance below. Trip leader Leo Simon mentioned again the good weather of the previous week when it was possible to see across the Columbia River to the mouth of the Sandy River and to the north to Mt. St. Helens and Mt. Rainier.

From the summit of Silver Star we jounced down to Sturgeon Rock while another part of the group headed for the Indian Pits.

On the way back to Vancouver we stopped along the East Fork of the Lewis River to examine the numerous round holes in the rock along the banks and in the bed of the river. I was told that these were pot holes and were caused by the centrifugal action of water and pebbles. However, it is believed that the holes were places where trees once stood and were later surrounded by molten lavas. Limb casts have been found here which would lend support to this theory.

At this time I was beginning to feel weary and very hungry and wanted to go home to dream and try to return another day.

AN AUTUMN RECONNAISSANCE

It was a "misty, moisty morning, but lovely was the weather" when we arrived at our destination on this reconnaissance trip along the Lewis River. Led by our Able Trip Leader, Lee Gavigan, six of us GSOCers drove to the vicinity of Ridgefield, Washington to explore an area of high land near the mouth of the river, opposite the town of St. Helens. From aerial photographs and topographic maps Dr. Paul Howell had suspected that this could be an extension of Columbia River Basalt relating to Warrior Rock on Sauvies Island and the quarry at St. Helens. Our trip proved this to be true.

Before the morning fog lifted we left our rendezvous near the Interstate Bridge and drove north to the Ridgefield exit. About two miles from the Freeway we stopped at a gravel pit to examine some sand and gravel deposits which are believed to be younger than the Troutdale. The "gravel" here (much of it just under cobblestone size) was most interesting. Colorful banded quartzites, agate, "petrified" wood, jasper, chert, -- almost anything you can name-- kept us fascinated. We all confessed to feeling like children gathering pretty pebbles at the beach.

The land which we wished to explore is owned by Mr. Aubrey Morgan, a warmly personable Welchman, and his charming wife, an American girl from New Jersey. A bevy of Welch Corgies greeted us as we arrived, and accompanied us into the house for a cup of coffee. Mr. and Mrs. Morgan graciously showed us their lovely home, built in 1850 and modernized without losing any of the charm of the early style.

The road down the Lewis River followed the ridge of a dike built to protect the low meadows from overflow. However, Mr. Morgan related that during the Christmas flood the dike was breached, and the swirling waters lifted chunks of basalt from 25 feet below the surface of the land. Some still lay scattered across the field. Sleek, young, black cattle grazed in the fields, or wandered to the top of the dike where they stood placidly watching us approach, reluctant to move until the last possible moment.

The sun had come out warmly by the time we reached Gee Creek, and extra jackets were relegated to the back seat. On the opposite bank lay the site of an old quarry. The deep water and the width of the creek discouraged any thoughts of crossing for a closer inspection, but the evidences of quarrying were unmistakable. It is believed that stone for the building of streets in Portland during its early days was obtained at this site. The wisdom of transporting stone this distance was discussed, along with some political aspects of such an event. It seems an interesting topic for further historical research.

Backtracking a short distance, we crossed the "Middle Lands", the area which had originally inspired this trip. Highly eroded and dissected, the formations, rose in steep-sided ridges and valleys, creating a miniature mountainous terrain. Sharp peaks of brickbat lava were topped by ancient oaks and Douglas fir. The overall area is given an altitude of 40 feet on the maps, and the vegetation is typical. There seemed to be a pattern to the long ridges and valleys, but more detailed observations will have to made to determine the direction and trend.

Mr. and Mrs. Emory Strong kept their eyes open and alert for signs of Indian campsites or activities. Several working stones were found along the bank of Gee Creek, proving only what was already known -- that Indians had once lived in the area. At one point great excitement prevailed momentarily when, high on the top of a lava flow overlooking the stream, worn places in the rock were found which resembled grooves cut by Indians while sharpening their tools. Closer observation, however, revealed the grooves to have been made by cables used in building a near-by dike. This ridge had all the characteristics of a scabland, and several vertical tubes were found in the surface, indicating that the upper portion of the flow had been removed. While most of the plants had dried up, some sedums were found, and Mr. Morgan told us that this was a carpet of blue in the spring when the Camassia blooms. A few stray blossoms of coreopsis also remained.

Mr. Morgan is justifiably proud of his farm, which he described as containing 1500 acres within 100 miles of downtown Portland, including lowlands for tilling, upland with harvestable timber, and a house over 100 years old. Pressures from outside urging him to sell have made him doubly conscious of his favorable location.

The day spent here was much too short. It was filled with good company, good talk, and unbelievably lovely weather. Who could ask for more?

Irma Sullivan

CANADIAN SHIELD

On October 8, Dr. Gordon B. Leach, Portland physician and surgeon, shared with us reminiscences of some of his experiences along the Churchill River in Eastern Canada. The expedition was made in 1920, for the purpose of delivering treaty money to the Indians who lived in the area. Dr. Leach accompanied the party as a newsman and expert canoeman.

The Churchill River begins in western Saskatchewan and flows meanderingly through a series of lakes gouged out by the Continental Glaciers, across Manitoba to Hudson Bay. Centering around Hudson Bay, from Greenland to the Great Lakes, from the St. Lawrence River to the Great Slave Lake is the area known as the Canadian Shield. This area of approximately 3 million square miles is the largest pre-Cambrian area in the world. It is composed of granites, gneiss, some sedimentary and volcanic rocks, with a soil mantle as thin as one to three inches in depth. Most of the rocks show much structural change. Few fossils are present but extremely high mineralization occurs. Much of the area is in the region of permafrost which has discouraged extensive study.

At the time of Dr. Leach's visit stunted vegetation and rocky terrain gave the flat country a desolate appearance, and from today's population maps it is doubtful that much change has taken place.

Irma Sullivan

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THE SOUTH SEAS WITH THE MIHELCICS

Having just recently returned from a trip around the world, Mr. and Mrs. John Mihelcic gave a very interesting program on "South Seas and Minerals" at the November 12 meeting. The area covered included Australia, New Zealand, New Guinea, and Samoa. Scenes from these islands included flowers, trees, animals, homes of some of the original natives, and a visit to a mine. Mr. Mihelcic also exhibited some beautiful specimens of mineral crystals, which are a part of a collection he has been making since 1930.

The Mihelcics have been members of our society a little over a year, and have contributed several very entertaining and informative lectures to our program, besides writing articles for the News Letter. We hope we continue to hear from them, and continue the round-the-world trip.

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WHAT'S NEW IN PUBLICATIONS

Christmas shopping for a geonick? Augmenting your library? Looking for a wall covering? Here are some recently published items that may be just what you are looking for. All of them will go out of print fairly quickly, so if you want them send for them soon.

1. Articles on Recent Volcanism in Oregon. State of Oregon Department of Geology and Mineral Industries Miscellaneous Paper 10. The price is $1.00. This is a collection of seven reports on recent volcanism that were originally published in the ORE BIN. The reprint collection is enclosed in a 7-1/2 by10-1/2 inch envelope.

2. Geologic Map of North America. Published by the U.S. Geological Survey. A cooperative work by Canada, U.S., and Mexico. The map is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is $5.00. This large map is about 80 inches high and 60 inches wide. Nearly a hundred different color patterns show the distribution of the various types and ages of rocks. A very handsome map.

M. L. S.

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DEEP-SEA EXPLORATION

For over 4000 years man has been concerned with the sea as a source of food and as an avenue of travel. Most of this time he thought it much smaller than it really is, and had very little knowledge of conditions below the surface. Only recently has man begun to plumb the depths and in the past twenty years has done more exploring below the surface than in all previously recorded history.

Since the perfection of the aqualung in 1950 man has been able to observe the underwater world to depths of 180 feet, and with a special helmet can go to 600 feet. More recently Jacques-Yves Cousteau's invention of a diving saucer has made it possible for three men to skim the ocean floor 1000 feet down and collect specimens while observing and photographing deep-sea life.

Films of this device in action were shown at the GSCC meeting, September 24th, by Mr. Robert Taber of the Westinghouse Corporation. Mr. Taber also showed slides of equipment developed by Westinghouse as an outgrowth of the Polaris weapon system, and of some of the industrial equipment used and being developed at Sunnyvale, California.

Many of these specialized tools are being used in the DEEPSTAR 4000 program. DEEPSTAR is a circular submarine designed to carry three men down to 4000 feet to explore the ocean bottom in a safe, dry enclosure, and is more flexible and maneuverable than anything developed to date. Eventually, the program is aimed to carry man to 20,000 feet and allow him to explore for 24 hours.

Limits of the knowledges man hopes to gain from this deep sea exploration are unknown to date. Many minerals are known to exist on the ocean floor, as well as an undisturbed history of our planet. Beyond this the possibilities seem unlimited.

Mr. Taber is presently Manager of Systems Engineering for the Marine Division of Westinghouse at Sunnyvale. He is a graduate of the Carnegie Institute of Technology and the University of Delaware. He was recently a speaker at a meeting of the Institute of Electrical and Electronics Engineers in Portland.

Irma Sullivan

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NOVEMBER LIBRARY NIGHT

After a not-so-quiet hour of browsing (much visiting going on), a good crowd of GSOCers and a few guests was called to order by Chairman Murray Miller. Dr. Gilchrist was introduced, and assisted by Dr. Stauffer, Dr. Howell and others, presented one of the most interesting Library programs we have had this year. The geology of the Columbia River, from Portland, east to near The Dalles, was discussed in preparation for the GSOC bus trip, Nov. 21. Dr. Gilchrist had drawn profiles of the north bank and panoramas of the river and labeled all of the outstanding features. These were coordinated with color slides; aerial views taken by Fred Miller and ground views by Hugh Owen, Leo Simon and others.

Dr. Gilchrist gave a short history of the Cascades in this area, explaining the different kinds of volcanism, anticlines and synclines, slumping and landslides. Also a history of the gorge, which is geologically considered to be a young gorge. He pointed out that the ancestral river is believed to have flowed south of the present gorge in the vicinity of where Mt. Hood now stands. We are hoping to continue the study of the geology of the river farther east at a later Library program.

Following the program a pleasant social hour was enjoyed and Lloyd Wilcox, trip leader, and Fred Miller were busy selling bus tickets and trip logs.

Because of the busy season, no library night will be scheduled for December.

Jennie Walters

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MEMBERSHIP ROSTER

Cumulative list of changes
since 1 September 1965

name	street address	city, state, & ZIP code number	telephone
NEW MEMBERS			
AYRES, Dr. & Mrs. Fred D.	7122 S.E. 36th Avenue	Portland, Oregon - 97202	771-9384
COOK, Mr. & Mrs. Richard A.	2006 S.W. Sunset Blvd.	Portland, Oregon - 97201	244-5026
GOOSMAN, Mrs. Elizabeth Jean	434 S.E. 45th Avenue	Portland, Oregon - 97215	236-9525
HAMMOND, Dr. & Mrs. Paul E.	1305 S.W. Upland Drive	Portland, Oregon - 97201	228-0416
LINDLEY, Mrs. Addie C.	3740 S.E. 122nd Avenue	Portland, Oregon - 97236	774-9641
SCHMIDT, Mr. & Mrs. Arthur W.	9945 N.E. Shaver Street	Portland, Oregon - 97220	254-2797
SODERBERG, Mrs. Margaret	2015 S.E. Harney Street	Portland, Oregon - 97202	235-3821
THOMS, Mrs. (?) Meredith E.	2030 N.W. Flanders Street	Portland, Oregon - 97209	227-6973
ADDRESS AND/OR TELEPHONE CHANGES			
ALLEN, Dr. & Mrs. John Eliot	1717 S.W. Park Avenue Ione Plaza, Apt. 610	Portland, Oregon - 97201	223-4260
CLARK, Mr. & Mrs. Edward R.	Number 284	Monument, Oregon - 97864	
COX, Miss Beryl C.	12630 S.E. Main Street	Portland, Oregon - 97233	
FAGAN, Mr. & Mrs. Mike	4850 Eastern Lane Apartment No. 302	Suitland, Maryland - 20023	
FITE, Mr. & Mrs. George	1301 National Avenue Space No. 19	Chula Vista, California - 92010	
GRUBAUGH, Mr. Philip L.	11920 S.W. Park Way	Portland, Oregon - 97225	644-2371
HALL,* Mr. & Mrs. George T.	7429 S.W. Capitol Hwy. c/o Mr. Jack Pollard	Portland, Oregon	
PRENTISS, Mrs. Ruth Eliot	2004 N.E. 17th Avenue	Portland, Oregon - 97212	
REIMERS, Mr. Fred	Post Office Box 885	Pendleton, Oregon - 97801	
TRAVIS, Mr. & Mrs. H.F.	1825 Sallal Road	Woodburn, Oregon - 97071	

DECEASED

KEEN, Mrs. Albert J. (Stella)
SMITH, Mrs. Ben F.