GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

Jan 1958 PORTLAND, OREGON

GEOLOGICAL NEWS-LETTER
Official Publication of the
Geological Society of the Oregon Country
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State of Oregon
Dept. of Geology & Mineral Industries
1069 State Office Bldg.
Portland 1, Oregon

G E O L O G I C A L S O C I E T Y O F T H E O R E G O N C O U N T R Y

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1957 - 1958

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Dr. Ruth E. Hopson (1960)

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Editor:	Mr. Raymond L. Baldwin	4300 S.W. Laurelwood Drive	1	CY 2-1452
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Committee Chairmen

Program:	Mr. Albert J. Keen	Display:	Mr. Murray R. Miller
Field Trip:	Mr. Leo F. Simon	Research:	Mr. Rudolph Erickson
Library:	Mr. Rudolph Erickson	Service:	Miss Margaret L. Steere
Membership:	Mrs. Ruth Harrison	Museum:	Mr. Alonzo W. Hancock
Publicity:	Mr. H. Bruce Schminky	Public Relations:	Mr. Clarence D. Phillips
		Historian:	Mrs. William F. Clark

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

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Society Activities

(See "Calendar of the Month")

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at the Portland Chamber of Commerce, 824 S. W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday Jan. 10	Geological Scenery of Oregon - Dr. Ruth Hopson.
Sunday Jan. 12	Basement Trip - Leader, Leo Simon. Meet at N. E. 62nd Avenue just south of Sandy Blvd. at 1:30 P. M. - Leo has arranged that we will visit 3 basements to view agates, minerals and rocks. There will be a demonstration of agate cutting and polishing. Length of the trip about four hours.
Tuesday Jan. 21	7:00 to 10:00 P. M., Biology Bldg., Lewis & Clark College. Library study 7 to 8; laboratory work 8 to 9:30; refreshments 9:30 to 10.
Friday Jan. 24	"The Case History of an Alternate Hypothesis" A study of the Sacramento Mountains of New Mexico. Dr. John Eliot Allen--Portland State College.
Friday Feb. 14	The story of a River. A. W. (Lon) Hancock.
Tuesday Feb. 18	Library Night.
Friday Feb. 28	African Safari in 3--D Mr. John R. Leach. Mr. & Mrs. Leach recently completed a three months trip through Africa, hunting with a camera instead of a rifle. Their trip covered over 5000 miles by car and many more thousands of miles by plane.
Friday March 14	Annual Banquet and Business meeting at Mt. Tabor Presbyterian Church, S. E. 54th & Belmont, at 6:30 P. M. Mrs. Franklin M. Brown, 211 S. E. 53rd Avenue, BE 6-6658 - Chairman.

REPORT OF THE NOMINATING COMMITTEE

A nominating committee consisting of Rudolph Erickson, chairman, Mrs. Berrie Hancock, Mrs. Johanna Simon, Albert Keen and Norris B. Stone, report the following nominations for officers for the ensueing year.

President	Dr. James Stauffer
Vice President	Paul W. Howell
Secretary	Rose Hamilton
Treasurer	Emily Moltzner
Editor-News Letter	Leroy A. Palmer
Director - 1 year	Stephen W. Blore
Director - 3 year	Murray R. Miller

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AUDUBON SCREEN TOURS 1958 Season

Three screen tours are scheduled this season, the first Thursday January 9 by Bert Harwell, his subject "The forgotten Country". This will be given at Cleveland High School auditorium, S. E. 26th and Powell, at 8 o'clock. Adults 75 cents each lecture, or $2.00 for the series.

OMSI Picks New Leader

Norbert Leupold has been elected president of the Oregon Museum of Science and Industry. Leupold is vice president of Leupold & Stevens Instruments, Inc.

Other elected officers include Dr. Samuel L. Diack, board chairman; Lloyd Ruff, 1st vice president; James Kirwan, 2nd vice president; Rudolph Erickson, treasurer; and Dr. Francis Gilchrist, secretary. Re-elected to serve as Board members were Edward Miller, Dr. Ralph Macy and A. W. Hancock.

The museum board voted a two-front drive aimed at securing guarantors for a long-term bank loan so construction of the building may be resumed. The board hopes to complete the structure in time for the opening of the new Portland zoo, adjacent to the museum.

The new president commented on the rushing events of the age of science and said: "Fortunately for boys and girls of our area, we are a great deal ahead of the rest of the country in creating an educational center where youngsters may come to learn more about the world of science."

-Oregonian - 12-10-57

Please note from the above article that the G. S. O. C. membership is well represented in the officers at OMSI for the coming year.

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The GEOLOGICAL SOCIETY OF AMERICA meeting

The Cordilleran Section of the Geological Society of America will hold its 54th annual meeting Thursday, Friday and Saturday, March 27-29, 1958 on the campus of the University of Oregon, Eugene, Oregon.

Besides this meeting at Eugene, three field trips are planned for Thursday March 27th.

(1) Columbia Gorge field trip, leaving Portland at 8 a. m. and returning by 4 p. m. Leader - Dr. John E. Allen.

(2) Willamette Valley field trip, leaving Eugene at 8 a. m. and studying the stratigraphy and Pleistocene history of the Valley. Leader - Dr. Ira Allison.

(3) Coos Bay and Cape Arago field trip leaving Eugene at 8 a. m. to observe the stratigraphy of the Coast Range and classical Cape Arago sections. Leader - Dr. E. M. Baldwin.

All trips will be by chartered bus. A field guide book will be furnished each field trip member. The cost of the trips including transportation and guide books, should not exceed six dollars.

EARTH'S EARLY ATMOSPHERES AND THE ORIGIN OF LIFE

by Francis G. Gilchrist

I. THE SCENE OF THE ORIGIN OF LIFE

The Uniqueness of the Earth.

The earth is unique among the celestial bodies of which we have any knowledge in its fitness for life. If the earth were larger than it is it would have retained its original atmosphere of hydrogen and helium. Methane and ammonia which are stable in the presence of hydrogen, would also have been present. This is the state of Jupiter and Saturn today. If the earth were smaller it would have lost most or all of its present atmosphere, as have Mars and our moon. As it is, the earth has lost and is still losing its lighter gases, hydrogen and helium, but is retaining its heavier gases, nitrogen and oxygen. Venus, the twin sister of the earth is also retaining its heavier gases, in this case carbon dioxide.

If the earth were nearer the sun its surface would be too hot for liquid water. The carbon dioxide of the atmosphere would not have been dissolved and precipitated out as limestone. There could have been no life; hence no coal or oil, and no oxygen in the atmosphere. This is the plight of Venus, which possesses an atmosphere of carbon dioxide and has terrific dust storms. If the earth were farther from the sun it would be too cold for liquid water. Jupiter and Saturn are "rocks in a snowball." Even as it is, the earth has poles of perpetual snow and ice where life is rare. It has deserts so hot and dry that water and life cannot exist. But in between the snowfields and the deserts, and between the snow line on the mountains and the depths of the ocean, the earth has served as a delicately balanced home for life for a billion years or more.

Earth's Three Atmospheres.

Our earth has had at least three atmospheres. Its present atmosphere is largely the work of green plants.

1. Earth's original atmosphere, consisting of hydrogen and helium, and probably methane and ammonia (which were in equilibrium with the hydrogen), was of relatively short duration. The gravity of the earth was not sufficient to hold the molecules of these lighter gases. One by one their molecules attained the critical velocity of escape, 7 miles per second, and were lost into space.

2. The second atmosphere accumulated gradually through the degassing of the rocks. It consisted mainly of water vapor, carbon dioxide, nitrogen, and sulfurous gases; the same gases which escape from volcanoes and meteorites today. There was little or no free oxygen. Any which formed at high levels in the atmosphere through the photochemical dissociation of water vapor was quickly used up in the weathering of rocks of the oxidizing of iron or sulphur. There must have been a great deal of carbon dioxide, for there was as yet no fossil carbon in the form of graphite, coal, petroleum, or gas.

3. Earth's present atmosphere, consisting of nitrogen, oxygen, some water vapor, and a very little carbon dioxide, is largely the work of plants. Only the nitrogen of the

second atmosphere still remains. When the surface of the earth became cool enough, its water vapor condensed to form rivers, lakes, and oceans. Much of the carbon dioxide dissolved in the waters, and reacting with the bases present in the rocks, formed limestones and dolomites. Most of the carbon dioxide which still remained was consumed by green plants in their photosynthesis, and with the addition of water, became sugar and free oxygen. Thus the oxygen of today is almost entirely the work of plants. If it were not for plants, all of the oxygen of the atmosphere would be used up in two millenia.

II. THE STEPWISE ORIGIN OF LIFE

Life must have begun during the period of the second atmosphere or even toward the end of the first atmosphere when hydrogen, methane, and ammonia were still present. Life does not and could not originate today under the conditions of our present oxidizing atmosphere because oxygen is destructive of organic matter. Moreover, it was green plants which produced the oxygen of the present atmosphere.

Now a living organism, even the simplest possible living organism is an exceedingly complex mechanism with many exquisite adaptations. It is inconceivable that it could have come into existence in one supreme event. It must have arisen by a series of steps, each of them highly hypothetical and almost beyond imagining.

Step 1. The First Organic Chemicals; The Theory of a Primeval Broth.

The most characteristic chemicals of living things are organic chemicals; such as proteins, fats, carbohydrates, nucleic acids, and the various vitamins. They are all compounds of carbon with other life elements. They are exceedingly complex, yet so precise in their composition that they are the basis of the differences between parts of a living thing and between different living things. They are also rich in available energy, which they release when they break down into simpler compounds. With few exceptions organic chemicals are today produced only by living organisms; but the first organic chemicals must have originated before there was any organism.

The theory of a primeval broth, as proposed by Oparin, Horowitz, Urey, and others, is that organic chemicals accumulated in ancient seas or ponds when the atmosphere as yet contained hydrogen, methane, and ammonia; the energy for their synthesis being supplied by ultraviolet light and electric storms. There being no free oxygen or bacteria to destroy them, they collected until the seas (or ponds) became a dilute broth.

There is experimental evidence for this proposition. S. L. Miller, after circulating an atmosphere of hydrogen, methane, ammonia, and water vapor over an electric spark for a week, analyzed the resulting liquid and was able to demonstrate the presence of several amino acids, the "building blocks" from which proteins are made.

Step 2. The First Self-duplicating Chemicals; The Theory of the Protogene.

Living things grow and reproduce. Now, it appears that the only organic chemicals which have the capacity to duplicate themselves are the genes, the hereditary units of plants, animals, and even of viruses. It is a fair assumption that the first self-duplicating chemicals were similar compounds, the "protogenes".

A great deal of progess has recently been made in understanding the chemical nature of genes. They are huge, complicated molecules known as nucleic acids, Each molecule is a double chain of alternating sugar (pentose) and phosphate groups, with each sugar group bearing a side chain. The chains fit each other like a mold fits a pattern. To duplicate themselves the chains split apart; and then each chain attaches to itself the proper chemicals from the solution around it until it has built a new partner for itself. Thus there comes to exist two double chains where before there was one. Somewhere, somehow, in the primeval broth a simple form of protogene must spontaneously have come to be.

Now genes have another and exceedingly important property. When they duplicate themselves they sometimes make an error. Then they continue to reproduce not the old but the new, changed gene. This capacity to "mutate" is the physical basis of evolution. Life would not have gotten beyond the first protogene if it were not for this capacity. With the appearance of the gene we leave pure chemistry; for a gene is the product of its history, not just the result of a chemical equilibrium. It is an achievement of nature, the beneficiary of the mutations which have managed to survive. It has value, for if it is destroyed something is lost which nature struggled to achieve and which nature will never be able exactly to replace.

Step 3. The First Protein Bodies; The Theory of the Protovirus.

Living things have bodies composed mainly of proteins, by which they carry on their numerous and varied activities. Now genes (nucleic acids) have another remarkable property besides their abilities to self-duplicate and to mutate. They are able to synthesize proteins. They coat themselves with amino acids in an orderly arrangement. Suddenly the amino acids link themselves together to form a protein molecule. This then splits away, and the cycle begins again. Most important is the fact that the proteins which they produce are just as specific as the nucleic acid chains which produced them; and this specificity is the basis of the likenesses and differences of living bodies.

Much of what is known concerning genes and proteins is the result of recent studies on filterable viruses, the germs which are responsible for so many of the diseases of animals and plants, and even of bacteria. Viruses are too small to be seen under microscopes which use light, but they may be seen and photographed with the aid of electron microscopes. Now each virus consists of a core of nucleic acid (genes) and a jacket of protein. The protein "body" makes it possible for the virus to attach itself to and to enter a new host cell; for example, a bacterium; but it is only the nucleic acid which enters, and it alone brings about the production of new virus particles within the host cell. Fraenkel-Conrat of University of California has succeeded in separating the nucleic acid and protein of the virus of tomato mosaic disease, and then, after bringing the two solutions together again, he has obtained new viruses which are infective.

Viruses are not independently alive, for they reproduce only when they are within the living substance of another organism. The theory of the protovirus requires that the ancestral virus, nucleic acid plus its protein "body", multiplied within and at the expense of the organic substances of the dilute primeval broth.

Step 4. The First Enzyme Systems; The Theory of the Protocell.

Fully living things do not depend upon the organic materials already present in their

environment, but are able to build the organic chemicals which they need to form their genes and protein bodies. Viruses cannot do this. Now to synthesize organic compounds, using only inorganic substances as sources of substance and energy, requires not one but a series of chemical reactions, each of them catalyzed (controlled) by an enzyme. Each enzyme is a protein produced by a gene, and together the enzymes form a system.

Now, an organized sytem of enzymes capable of carrying on step by step a complex series of reactions is a structure; and the only place where structures of this sort are known to occur is within living cells. A cell is a system delimited from the outer unorganized environment by a cell membrane. Within the cell are the genes which reproduce themselves and which produce enzymes and other proteins. The enzymes are organized within the cell in the form of a microstructure capable of carrying on the synthesis of organic chemicals. In and around the genes and the enzyme microstructure is the liquid matrix in which the organic molecules accumulate and move freely about. This liquid of the cell is the functional successor of the hypothetic primeval broth.

Thus the first structure capable of carrying on the synthesis of organic chemicals from inorganic sources and conserving them within its own substance was a cell, no matter how simple. We shall call it the protocell. Just how it obtained energy for its building processes is a mystery. It does not seem likely that it used light, at least in a very effective way. It may have used energy-rich chemicals around volcanic vents.

Step 5. The Beginning of Photosynthesis; The First Green Plants.

Photosynthesis is the process by which green plants take in carbon dioxide and water, and with the energy which they derive from light, build up sugar and give off oxygen to their environment. The invention of efficient photosynthesis was one of the grand innovations of all time. Before photosynthesis the organisms at most were microscopic and insignificant, merely scums or incrustations. The discovery of photosynthesis launched life on its course of inhabiting and remodeling the surface of the earth. It has rebuilt the atmosphere, replacing most of the carbon dioxide with oxygen. It has altered the ocean, as is evident by the oozes which cover its bottom and the reefs which border its shores. It has transformed the surface of the land from barren wastes of rock to soils supporting forests. It has stored away the resources of coal, oil, and gas. One cannot exaggerate the significance of the innovation by which life, having tapped the energy of sunlight, turned the history of the earth from one of ceaseless tearing down, to one of building up.

The chemistry of photosynthesis is complex, although it is today well on the way toward elucidation. But the process of photosynthesis is far more than a problem of chemistry. The green chloroplasts which make it possible are microscopic or ultramicroscopic structures; true biological entities.

Step 6. The Beginning of Oxidative Metabolism; The First "Breathing Organisms."

Not until the green plants had supplied free oxygen to the water and to the air was the present vast development of plants and animals possible. It is only in the presence of oxygen that sugar can be burned completely and efficiently as fuel. How do organisms do this? In the chemical laboratory sugar can only be burned with

great heat and in strong alkaline or acid solution. Within the body of a plant or animal sugar is consumed at normal temperature and in neutral solution. The organism has "teams of enzymes" and co-enzymes organized structurally to carry on cycles of chemical activity. Strangely enough, these cycles are much the same whether in a yeast plant or in the muscle cells of a man. They are among the basic mechanisms of life.

III. THE TIME OF THE ORIGIN OF LIFE.

When in geological time did these great innovations, the grand steps in the origin of life take place? When did green plants begin their work of photosynthesis? When did the atmosphere become oxidizing and the great evolution of "breathing" plants and animals get under way?

There is no basis for dating the first four steps. They possibly took place before the most ancient rocks known to man were formed.

There is some evidence by which the fifth step, the beginning of photosynthesis may be dated. A recent paper describes certain sedimentary breccias of Finland which were formed in the early Archeozoic Age, two billion years ago. These appear to have been mechanically eroded, for they show no signs of chemical weathering. Moreover the iron in them is predominantly ferrous (reduced) iron. It is suggested that they were formed before green plants had begun to release oxygen into the atmosphere.

The rocks of the late Archeozoic Age, on the contrary, contain a great deal of carbon in the form of disseminated graphite, as much, it has been said, as there is carbon in all the coal fields of later date. These graphite grains may well be the remains of early photosynthetic microscopic plants which existed before the atmosphere became oxidizing; for if oxygen had been present it would have destroyed the carbon. (Keep in mind that the coal and oil of later date only escaped destruction by being formed in parts of the sea or in deep swamps where oxygen was lacking.) This would place the beginning of photosynthesis somewhere in the Archeozoic Age.

There is also evidence for dating the sixth step, the origin of oxidative metabolism. The vast iron deposits which are found in rocks of the first period of the Proterozoic Age (Huronian) are predominantly ferrous (reduced) iron. If they had been formed when free oxygen was present in the atmosphere they would have been the red ferric (oxidized) iron. The last period of the Proterozoic Age (Keweenawan), on the contrary, is notable for the presence of sediments which are colored red by the presence of ferric (oxidized) iron. Carbon particles are also largely lacking from these latter rocks. Both of these facts indicate the presence of free oxygen in the sea and air. We may therefore assume that sometime in the Proterozoic oxygen began to accumulate in the atmosphere, and the atmosphere for the first time became an oxidizing atmosphere. For the first time also "breathing" plants and animals were able to exist, and the grand-scale evolution of life as we know it to get under way.

NEWS OF MEMBERS

Bruce Schminky is home from the hospital and will be back on the job before we go to press.

We note in the December 12 issue of the First Presbyterian Church Spire, that Miss Mella White has been touring the southwest and visited the Presbyterian Mission at Ganada, Arizona.

From the annual Christmas Letter of Dr. and Mrs. Jones we learn they expect to spend the holidays in Hawaii, accompanied by their daughter Ardis and her family.

Christmas cards from our roving Ambassador of Goodwill, Orrin Stanley, were mailed Dec. 15 at Las Cruces, New Mexico.

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Luncheon Notes

Those members of the Geological Society who were down town that rainy Thursday December 20, and didnnot attend our luncheon, missed two real treats. Our hostess as has been her custom at this time of year, presented us with a large Christmas Cake, and to make it official it was topped with a water-worn pebble. Mrs. Jane Erickson cut the cake in very generous pieces, and President Palmer served it.

Our 5-minute speaker for the day was to have been Rudolph Erickson, but he graciously yielded to Mrs. Erickson whom he introduced as his Able Assistant. Mrs. Erickson's subject was the rather confusing title "Me and the Mule". This turned out to be a geological description of a trip she expects to make and what she expects to see riding to the bottom of Grand Canyon - and return. A very enjoyable trip for us around the table, at our luncheon in the Chamber of Commerce Building.

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OREGON ACADEMY OF SCIENCE

The 16th Annual Meeting of the Academy is to be held on the Portland State College campus, Portland on Saturday, February 22, 1958.

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Change of Address

Miss Jacquette E. Spaulding - 331 N.W. 19th Avenue, Portland 9, Oregon
Phone: CA 3-2846

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Saturday Mar. 1	Trip. A visit to Delano's Studios & Aerial Surveys, Western Mapping Co. at 1536 S.E. 11th Ave. near Clay. We will have aerial photography explained to us and see how some of these wonderful pictures were taken, and equipment used. Time 1:30 to 5:00 P. M.
Friday Mar. 14	Annual Banquet in the banquet room of Mt. Tabor Presbyterian Church, S.E. 54th & Belmont.
Tuesday Mar. 18	Library Night
Friday Mar. 28	Lecture. Leonard H. Delano, Bird's Eye View of some Northwest Geological features. Aerial Photography of mountains, glaciers & valleys.

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BANQUET NEWS

Mrs. Franklin M. Brown, Phone-BE 6-6658, the Banquet Chairman, says things are shaping up for the banquet. Speaker will be Mr. Kenneth N. Phillips. Toastmaster, Dr. Arthur C. Jones. Mr. Leo Simon in charge of ticket sales, phone - CA 3-0300. Time of the dinner 6:30, and price will be $2.35 each. Come and hear an interesting account of the trip Mr. & Mrs. Phillips made to Turkey last summer.

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NEWS OF MEMBERS

On the front page of Sunday Oregonian, January 5, under the heading "Women Scientists Fill Gap", appears the picture of our Miss Margaret Steere, with the following explanation. "Keeping mineral exhibits in order is part of job of Miss Margaret Steere who has been a geologist with Oregon State Department of Geology and Mineral Industries for the past ten years."

At our luncheon meeting Thursday, January 9, we welcomed back our roving Ambassador of Goodwill, Mr. Orrin E. Stanley, who related for us some of his experiences during his 4 month's trip which covered 15,000 miles by auto. We hope some time soon to have a chance to see some of the fine pictures he has taken on this trip.

December 1957

QUINTA MARA
Avenida Miranda
Guanare, Porguguesa
Venezuela, S.A.

SEASON'S GREETINGS FROM THE SARGENTS OF SOUTH AMERICA

Special holiday offer: Just send us a one-pound box of snow, icicles or cold air, and receive by return mail, post-paid, one hour's tropical sunshine--we have lots more than we need. Include one pine needle and we will send a bunch of frying bananas at no additional cost. But here is the news of the year for you free, tho we'd really appreciate a letter in exchange.

We left the good old U.S.A. the day after Christmas last year to search for a pot of gold in Venezuela. Sam is a foundation engineer for R.J. Tripton, Associated Engineers of Denver. He is working on a couple of dams--the Bocona and the Tucupido--being built across rivers of the same names. We lived in Caracas until moving to the town of Guanare in August. Caracas is a beautiful modern city with a June-like climate the year round, and with what are probably the highest prices in the world. There were many changes in our way of living there, but Caracas compared to Guanare, now seems like New York City. Guanare is a sleepy tropical town of 20,000 located at the base of the Andean foothills and on the fringe of the vast and extremely flat Llanos (plains) of the Orinoco. Although we are near the headwaters of the Orinoco, the elevation of Guanare is less than 500 feet. Guanare is said to be "very peaceful"--"indeed too peaceful". We have a nice modern house with a small swimming pool, so we don't have to live in a mud hut with a thatched roof--tho there are plenty of them near by. Shopping is poor, the bugs are bad and the heat is terrible. The thermometer stands in the mid-eighties day and night, with extremely high humidity. Sam enjoys his work, but finds himself occupied with many a Latin "Manana". John and Louise are well now, after measles in February and amoebic dysentery in August. They both swim fairly well, and ride bikes, and enjoy never having to put on a coat. They play with children of three other American families of our group, and also a number of amiable Spanish, Italian and Venezuelan children. They went to a Spanish language school in Caracas, but they are now doing their lessons by the Calvert System, with Mama as the teacher. As for Mary Jean -- the anticipated leisure for reading, writing letters, and learning to paint has not materialized. We have two maids--the prevailing rate here is only about 25 dollars per month. But with the search for groceries at many small shops nearly constant supervision of two maids, teaching of two grades, and the heat -- nuf said. But - no dishpan hands! We had plenty of language difficulties at first but we all speak Spanish now, after a fashion. Example of the first months - telling the maid to sweep the floor with the ONION, and mop it with the PORK CHOP. Who knows, - we might even be fluent by the time we leave. We expect to be here possibly two more years, depending on the progress of the work on the dams. We are hoping for a stateside vacation next summer or next Christmas. What we miss most: - peanut butter, prepared cereal for breakfast, lettuce -- and a Christmas tree.

FELICES PASCUAS Y PROSPERO ANO NUEVO
SAM, MARY, JEAN, JOHN AND LOUISE SARGENT

P.S. The Oregon country seems even better from here - please say "hello" to the G.S.O.C.ers.

The above Christmas Letter came to Rudolph Erickson from our former member, Mr. Sam Sargent, now in Venezuela.

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NOTICE: DUES ARE DUE!

TWO GESOCKERS IN ALASKA. II. KENAI, KATMAI AND KODIAK

By Ford and Alice Wilson

We anticipated seeing a lot of geology during our trip of June 30, 1957. After several postponements due to unfavorable weather, we boarded a DC-3 of Pacific Northern Airlines at International Airport, Anchorage, in mid-morning. This was a charter trip, sponsored by a local photo shop. Clear skies in the southwest suggested that photographic conditions ahead might be good

Our course was south across Turnagain Arm of Cook Inlet, then along the west side of Kenai Peninsula. For 50 miles or so, we looked down on an area of tundra containing countless small lakes and patches of spruce and other trees. The prevailing colors were greens, browns and blues in random pattern. The terrain became more hilly as we continued toward Homer. Across Cook Inlet, Mt. Redoubt and Iliamna Volcano showed their tops above low-lying clouds. To the east, the mountains forming the backbone of Kenai appeared cold and forbidding. Above Homer we studied the long, narrow spit which extends out into Kachemak Bay.

A few more miles and the plane turned southwestward across the inlet. Low clouds prevented good visibility as we reached Alaska Peninsula. Much of the Katmai area was also clouded in. We were told that this is the normal situation. We especially wanted to see the Valley of 10,000 Smokes, but could not. As we neared Mt. Katmai, visibility was much better. Several smoking volcanoes were seen, but our photographs did not do them justice. The plane passed close to hills and ridges composed of tan to red, somewhat stratified, volcanic ejecta. We had a good, but very brief, glimpse of Mt. Katmai's lake from a position above its jagged crater. It seemed to have a greenish blue color in contrast to the clear blue of Oregon's own Crater Lake.

We now flew down the valley of Katmai River. This stream, choked by huge quantities of volcanic ash, displayed an extremely intricate braided pattern. There were not just a few braids, but a maze of them extending entirely across the valley.

From the river mouth, we headed eastward and soon looked down on the green hills of Kodiak Island. We approached Kodiak from the east, passed the city, and landed at the Naval station. After being checked in by the Marine MPs, we were taken to Kodiak. After lunch, about half of the party embarked for a boat trip to see marine life along the island's east coast. The rest of us covered the town, taking photographs of some unusual building details. Among these were totems decorating store fronts and the bear of the Bank of Kodiak. Of unusual interest was the Russian Orthodox church with its two onion-shaped, green colored steeples.

Next came a trip south along the main island road for about 50 miles. Our conveyance was a loose-jointed and nearly springless school bus. The trip was leisurely with stops whenever anyone saw places or objects of interest. End of the road was at Narrow Cape with its nearby Ugak Island. The Tertiary marine sandstone of the point is fossiliferous, but it was impracticable to attempt any collecting. We did, however, take a sample of the volcanic ash which had been sent out by Mt. Katmai in 1912 and blanketed Kodiak Island. Later, a microscopical examination showed that the ash was composed entirely of very fresh looking glass shards.

Kodiak Island has much warmer weather than adjacent parts of Alaska. Heavy vegetation of the rain forest type occurs in the lower areas. Among flowers we noted many blue lupines, varicolored fireweed blossoms and cream colored Indian paint brushes. Leo Simon could never be coaxed away from such a place.

Back in Kodiak, the entire group assembled at the plane. The MP checked us out about 9:30 and we had an uneventful flight back to Anchorage.

Note 1. In 1922, the National Geographic Society published, in a book entitled "The Valley of Ten Thousand Smokes", the results of explorations by their expeditions in the Katmai area. There is an excellent description of conditions during and following the 1912 eruptions. This book is now almost a collector's item. It is interesting to note that activity in the valley is now nearly over and the smokes are reported to be very few in number.

Note 2. The geology of Kodiak Island is described in U.S.G.S. Bulletin 880-C, "Kodiak and Adjacent Islands, Alaska", by Stephen R. Capps. 1937. It contains a geological map on a scale of 1 inch to approximately 4 miles.

Note 3. The areal geology of nearly all of Alaska is well shown on a very recently published map of the U. S. G. S. Priced at $2.00, it summarizes an enormous amount of field work, gives references to published reports and includes much unpublished information. Ask for "Geological Map of Alaska, 1957", scale 1 inch equals approximately 40 miles.

Note 4. Members of the Society who may desire diatoms from two, or perhaps three, Alaska localities in an amount sufficient to make up a microscope slide of each, and also a like amount of Katmai ash, may send to us (1045 Elm St., Apt. 665-32, Anchorage) a stamped reply envelope. Remember that airmail to Anchorage is as fast as in the states, but regular mail requires about two weeks or more. Maybe it comes up by dog sled!

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NEWS LETTER BINDING

All members who want their Newsletters bound, please get in touch with Raymond Baldwin as soon as possible so he may take them all to the bindery at one time. Take out all staples, include the index which appears in this issue of the Newsletter. Mark package with your own name. Hurry, hurry, hurry!
Price per book - 25¢.

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CHANGE OF ADDRESSES

Miss Almeda Smith	1723 S. W. Canby St.	Portland 19
Mrs. E. A. Kelham	4333 S. E. Madison St.	Portland 15
Mrs. May Dale	5723 N. E. Mallory St.	Portland 11
Mr. Frank J. Merryman	2405 S. W. Multnomah Blvd.	Portland 19

NEW MEMBERS

Mr. John Nielsen	2631 N. Mississippi Ave.	Portland 17

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AUDUBON SCREEN TOUR

Lecture - Dr. Pettingill, Jr., Monday, February 24th at Cleveland High School, Subject "Penguin Summer". 8:00 P.M. Admission 90¢, Students 40¢. 26th and Powell.

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OREGON ACADEMY OF SCIENCE

The 16th Annual Meeting of the Academy is to be held on the Portland State College campus, Portland, on Saturday, February 22, 1958.

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Tom Matthews was passing around cigars last Thursday -- it's a BOY! - Paul Edward.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

March 1958 - PORTLAND, OREGON

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G E O L O G I C A L S O C I E T Y O F T H E O R E G O N C O U N T R Y

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1957 - 1958

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		Historian:	Mrs. William F. Clark

Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. Ruth Harrison, 1879 S.W. 10th Avenue, Phone CA 3-0255. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at the Portland Chamber of Commerce, 824 S.W. Fifth Avenue, second floor. One dollar. You are welcome.

ANNUAL BANQUET

Friday Mar. 14 — Mt. Tabor Presbyterian Church, Southeast Belmont Street at 55th Avenue, 6:30 P.M. Tickets $2.35. For reservations call Mr. Leo Simon, CA3-0300. Kenneth N. Phillips, District Engineer for the U. S. Geological Survey, will be our principal speaker. Title of his talk, "A New Look at Some Ancient Lands."

Tuesday Mar. 18 — Library Night. 7:00 to 10:00 P.M. Biology Bldg. Lewis & Clark College. Library study 7:00 to 8:00. Laboratory work 8:00 to 9:30. Refreshments 9:30 to 10:00.

Friday Mar. 28 — Lecture. Leonard H. Delano, Bird's Eye View of Some Northwest Geological Features. Aerial Photography of mountains, glaciers and valleys.

Sunday Mar. 30 — Field Trip. Mr. Franklin Brown says we will visit two basements and see some outstanding collections. Meet at the Crater in Mt. Tabor Park at 1:30 P.M.

MEMBERSHIP RENEWALS

Mr. & Mrs. W. F. Paterson	310 Corbett Bldg., Portland 4	
Mr. & Mrs. Leonard M. Buoy	11501 S.E. Linwood Ave., Portland 22	OL4-8117

NEW MEMBERS

Mr. & Mrs. Byron E. Kelham, 604 Newcomer St., Richland, Wash.
Mr. J. E. Schreiber, Rt 2, Box 275, Oregon City
Mr. Dick Grahner, 9151 S.E. Pine, Portland 16, Oregon AL2-2016
Dr. Elizabeth H. Schirmer, 1737 S.W. Skyline Blvd., Portland 25 CA3-2029

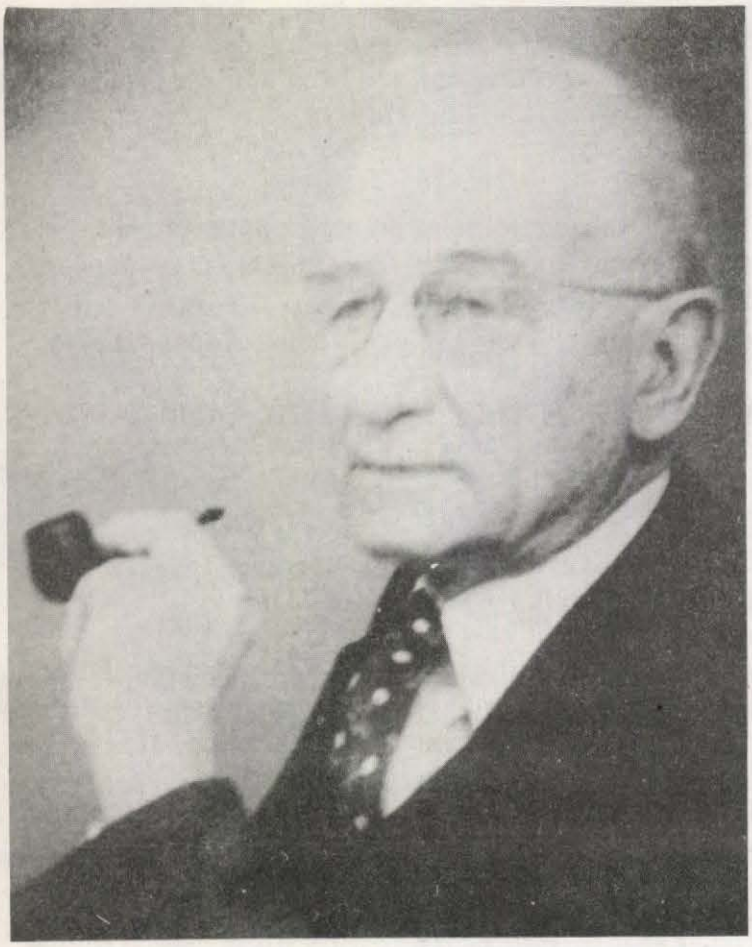
CHANGES OF ADDRESS

Mrs. Ruth Harrison	1881 S.W. 11th Ave, Apt 303, Portland 1	CA8-7810
Selma Hyman, M.D.	2311 N.W. Northrup St., Portland 10	
Miss Mary Davenport	309 West 15th St., Vancouver, Wash.	

CAMP HANCOCK

OMSI is now making preparations for their summer session at Camp Hancock, located in Clarno Basin of eastern Oregon. Boys and girls 12 to 17 years of age, and interested in nature studies will find this Camp a delightful place to spend two weeks this coming summer. Cost for two weeks session is $65.00, of which $10.00 is payable at time application is sent. For further information write Oregon Museum of Science and Industry, 4015 S.W. Canyon Road, Portland 1.

LEROY ATWOOD PALMER



Leroy A. Palmer, President of the Geological Society of the Oregon Country, died at Holladay Park Hospital Sunday, February 23. He had suffered a stroke on February 4. Funeral services in charge of the Masonic lodge were held at the Colonial Mortuary on February 26.

Mr. Palmer was born at Lockport, Illinois, June 10, 1879. He held various positions in the mineral industry from 1903 to 1909, and was a mining engineer for the U. S. Land Office, U. S. Forest Service, and U. S. Reclamation Service in western states and Alaska from 1909 to 1931. He then had an office in San Francisco as a consulting engineer. During and after World War II he was safety engineer at the Naval Supply depot at Oakland and at the Marine Supply depot at Barstow, California. He retired in 1947 and came to Portland to live.

Surviving are a son, Walter E. Palmer, Orinda, California; two daughters, Mrs. Phil Palmer Newman, San Francisco, and Mrs. Margaret Palmer Quintin, Honolulu; 11 grandchildren, and 4 great-grandchildren.

Mr. Palmer was a member of the Masonic lodge, the City Club, the American Institute of Mining, Metallurgical and Petroleum Engineers, the Professional Engineers of Oregon, and the Sons of the American Revolution.

Roy Palmer's unfailing courtesy and quiet good humor made him many friends among whom he will be greatly missed.

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EARL MARSHALL

We are sorry to report the death on February 8, of Earl Marshall, a former member of this Society.

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THE OLD VULTURE MINE, ARIZONA

By
Fay W. Libbey[1]

Introduction

My subject has to do with a mine which figured prominently in early Arizona history, but my main excuse for selecting it for this talk is to use it as an illustration of the disastrous effects major post-mineral faulting may have on a commercial mining operation.

Location

The mine is in Maricopa County, 16 miles southerly from Wickenburg the nearest town, and 50 miles northwest of Phoenix as shown on the index map. (Following Page). The name of the mine is derived from a low mountain range, called the Vulture Mountains, which the road from Wickenburg to the mine crosses at about the halfway point. A prominent feature of this range is Vulture Peak which sticks up against the skyline like the neck of a clam and is a striking landmark of the area. The altitude of this peak is 3500 feet; of the pass where the road crosses the range, 2700 feet; and of the mine, about 2000 feet.

The Hassayampa River figures prominently in the history of the Vulture and of the State. It runs southeasterly through Wickenburg and then turns southerly to its junction with the Gila. The river is about 10 miles southeast of the mine at its nearest point, Seymour, the site of one of the old Vulture stamp mills and a place-name on the old stage road between Vulture and Phoenix. In this part of its course the river bed is dry but there is a considerable flow of water at varying depths below the surface, and it comes to the surface about five miles above Seymour.

The mine is in a typical desert area with some low hills and several southerly trending dry washes. The Vulture outcrop was described as a toothlike quartz hill which stood up conspicuously above the surrounding terrain.

History

The Territory of Arizona was organized by Act of Congress on February 24, 1863. At this time the Apaches were a constant menace and prospecting was a hazardous occupation. There are many records of ambush and massacre of prospectors and miners by Indians in early-day Arizona.[2]

In October 1863 Henry Wickenburg, a prospector and scout, also a respected citizen, with two companions was prospecting between the Hassayampa River and the Big Horn Mountains and discovered a small isolated hill of quartz. They recognized it as gold bearing but two of them did not think it worth working on. Wickenburg, however, located it and in due course started mining. He built an arrastre on the river near what became the town of Wickenburg and hauled ore to the arrastre in a wagon. According to reports his ore ran from $80 to $100 a ton. In 1865 he built a 5-stamp mill to replace the arrastre. In 1867 he sold to an

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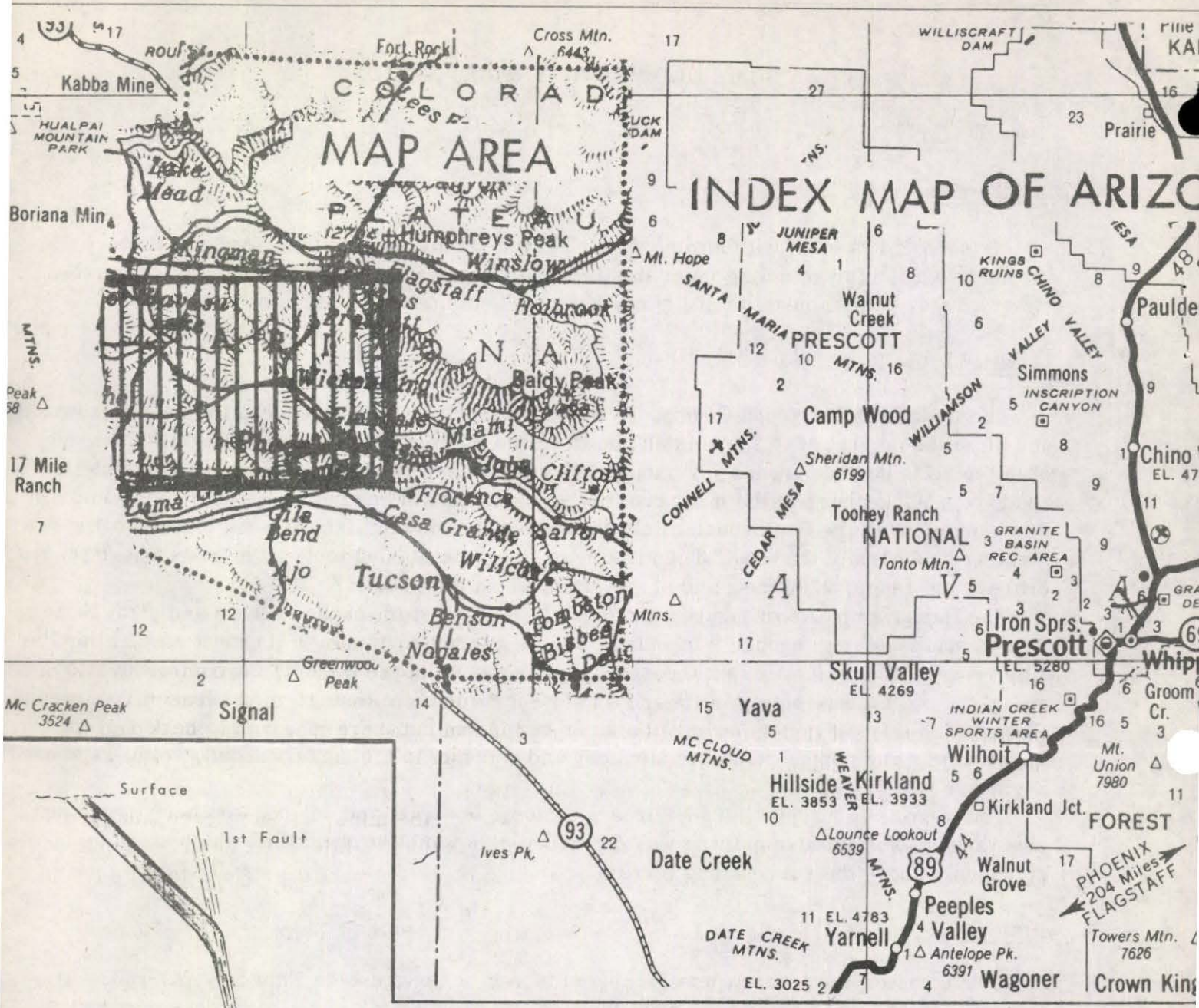
[1] From a talk given to the Geological Society of the Oregon Country, September 27, 1957. The author was employed at the mine from 1908 to 1916.

[2] Refer to final footnote.



SKETCH of CROSS SECTION on VULTURE VEIN

FIGURE 1

English company[3] which built a 40-stamp mill above the town. This mill treated a total in excess of 200,000 tons of Vulture ore, all hauled by mule teams.

At this time the Vulture surface area was in divided ownership and a second mill was built on the river at a point 15 miles below Wickenburg and 10 miles southeast of the mine. It became known as Smith's Mill. A third mill was built at Seymour 3 miles above Smith's Mill. The ore was treated in the simplest way known by amalgamation and concentration on bumping tables. The concentrates were not shipped but were stockpiled and when the cyanide process became known they were re-treated by cyanidation at a large profit. The ore at the mine was sorted and anything assaying less than $20 was piled up for future treatment. The mine became the best known in the Territory and for a time had the greatest production.

The railroad reached Phoenix in 1880 and Wickenburg was connected in 1893, so during the early period of activity at the Vulture the nearest supply point was Ehrenburg[4] on the Colorado River. The mills were hauled 168 miles from Ehrenburg by team across the desert and two mountain ranges. The 80-stamp mill (mentioned below) had a large Corliss compound steam engine as a prime mover in the mill with a flywheel 24 feet in diameter. It was divided into quarters (bolted together when installed) so that it could be transported by wagon.

In Mineral Resources of the United States for 1870 it is recorded that the Vulture Mine had been steadily worked since 1866 and had yielded about $300,000 per annum. It also mentioned that the cost of hauling the ore to the mills was very burdensome, and that plans were being drawn to lay a pipe line from the river to a new mill at the mine.

In 1879 a new company on the scene, the Arizona Central Mining Company, acquired all of the separate ownerships and built a new 80-stamp mill at the mine. This company also built a pumping plant on the river at Seymour and laid a 6-inch pipe line, 10 miles long, to the mine. Operations continued at the new mill for 7 or 8 years until the ore appeared to be depleted. The mine then closed down but was worked in a small way by leasers for several years.

The Vulture Mines Company was organized in 1908, and the mine was rejuvenated in the summer of that year. Underground work was begun after the mine was unwatered, and considerable repair work was done. About the first job was the establishment of an assay office and of course a large program of sampling was started and continued throughout the life of the operation.

At first, drinking water for the camp was hauled in barrels by team from Wickenburg. As soon as arrangements could be made a well was drilled east of the mine. Water was found in gravel at 400 feet, but the quantity was insufficient for all purposes and a second well was put down a little deeper. These wells provided sufficient water until a new mill was built in 1912, as mentioned later, when more water was needed. Then the second well was deepened to 1003 feet where an additional and satisfactory flow was found.

The old companies had followed the ore down on a 45-degree incline. At around 300 feet the dip appeared to steepen and became nearly vertical. The superintendent at that time reported[5] that the steepened vein was 47 feet wide and had a foot of blue clay on the hanging wall. This could have been a warning sign of major faulting, but seemingly the management did not recognize it.

The Vulture Mines Company management, after doing considerable reconnaissance sampling and exploratory work, including sinking the main shaft to the 750 level, became convinced that the apparent steepening of the vein and subsequent bottoming of the ore was due to faulting.

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[3] Wickenburg sold for $85,000 and received $16,000 as a first payment. Because of litigation he never received any of the balance.

[4] Then head of Colorado River navigation from the Gulf of California.

[5] Mineral Resources of the United States.

The faulted block was projected on the mine maps and an east drift was run on the 750 level. The hypothetical fault was proved valid and the faulted block found on that level about where it was thought to be. The fault had dropped the ore about 300 feet with a throw of about 400 feet to the east. Incidentally some of the striations found in the fault gouge indicated a throw to the east. Where cut on the 750 level, the vein was about 40 feet wide. There was a hanging-wall section about 30 feet wide and a footwall section about 5 feet wide separated by about 5 feet of barren schist. The average of assays showed about $20.00 ore but the footwall section was consistently higher grade and carried considerable free gold.

A new modern mill was now designed and built having a capacity of about 125 tons per day. Design included 20 heavy stamps (1650 pounds each) crushing in a cyanide solution using both inside and outside amalgamation; grinding pans for secondary crushing; Wilfley and Deister tables for recovery of concentrates; Dorr thickeners and an Oliver filter for recovery of gold solution; and Merrill zinc dust precipitation for recovery of gold in solution. A modern plant was built for retorting amalgam and melting gold bullion. The mill was not cleaned up at regular intervals so as not to invite robbery; the same held for bullion shipments, which were made at first by team of horses, and later by a Model T Ford. Responsibility for the bullion ceased of course when the bar was turned over to the Wells Fargo office in Wickenburg, always with a feeling of relief. It is perhaps noteworthy to mention that over a period of about five years during which shipments of gold bars were made at least once a month and sometimes twice a month, no attempt was ever made to hold up the conveyance, and there was no loss from this cause. (In pioneer times there were several holdups and robberies of Vulture bullion shipments.) There was, however, loss from "highgrading" by miners. How much this amounted to was impossible to estimate. It was an evil that was almost impossible to correct in the early days. During the period from 1908 to 1916 the mine produced approximately $1,900,000, [6] about two-thirds of which was in gold bullion and one-third in concentrates shipped to a smelter..

Returning to mine exploration, development and mining work were carried out on the 750 level and winzes were sunk to lower levels. On the 950 level a second big fault was intersected quite similar in all characteristics to the first as shown in Fig. 1. From there on the story was a sad one. As mining and exploration were carried on in upper levels, sinking was continued to the 1050 level. Crosscuts were run into the hanging wall and much drifting was done along the fault. A vertical winze was sunk 500 feet from the 1050 level. At about 475 feet in depth the winze ran into a large boulder of high-grade ore that filled the winze. It proved to be "drag" from the ore shoot in the fault and not the faulted block.

Crosscutting on the 1550 level failed to find the faulted block but did run into a rather large flat contact fault (Fig. 1) with granite on one side and schist on the other. An incline winze on a small quartz stringer was sunk from the 1550 to the 1650 but it was too small to be of economic value.

A consulting geologist was called in. He advised further lateral work besides extensive diamond drilling. All this was done without yielding anything encouraging. The mine was shut down in 1916. Since then at least two attempts have been made to find the ore. One of these efforts was by the United Verde Extension Mining Co. which made the dramatic discovery of a faulted block at Jerome, Arizona, and mined high-grade copper ore for a number of years. It was reported that U. V. X. sank a deep shaft east of the old mine but evidently found nothing encouraging.

Geology

The country rock at the mine is Pinal schist (pre-Cambrian) with dikes and masses of granitics especially on the west end. The east extension of the ore zone is covered on the surface with alluvial material and volcanic rocks, the source of which was probably Vulture Peak. The Vulture vein is a replacement body of quartz in the schist and strikes easterly, and dips 42 to 45 degrees N. The hanging wall is chloritic schist and the footwall is sericitic schist. The outcrop was more than 1000 feet

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[6] Records of production between 1864 and 1908 were meager. Published estimates for this period credit the mine with output up to $16 million.

long and was said to stick up in the air 100 feet above the surrounding desert. Most of the outcrop was mined in the early days and all that remained in 1908 was a low hill with two huge open pits from which old underground open stopes could be seen. These were the homes of thousands of bats which emerged each day at dusk in such a concentration as to form a black cloud in the sky.

The oxidized portion of the vein was iron stained and often contained small tabular crystals of wulfenite. In the unoxidized parts sulphides made up about 3 percent of the whole and consisted of pyrite, chalcopyrite, sphalerite, and galena. Native gold was not at all rare and was found at all horizons with no diminution with depth. Galena was especially rich in gold. Clean lead concentrates ran as much as $600.00 a ton in gold.

The western extension of the vein fingered out into granite on the surface. Granite was found on the west end of the 950 level, on the east end of the 1050, and on the 1550. Evidently the granite was not a favorable host rock for metallizing solutions.

All conditions for making a large profitable gold mine were present if major faults had not cut off the ore abruptly. The faults had no visible expression at the surface and the effects of faulting on the vein could not have been foreseen in advance of underground exploration.

Footnote (2) - see page 15.

One incident out of many similar ones told in "The Arizona Story" (Hastings House, Publishers, 1952, p.75) illustrates conditions facing people in pioneer Arizona mining days, and is abstracted here because the setting was in the Seymour-Smith Mill area where two of the early Vulture Mills was located.

On May 13, 1873, a band of Apache braves and squaws said to number 125 escaped from their reservation on the Verde River where they had been rounded up by General Crook about four months before. They headed for the mining camps of the Hassayampa and crossed the river about four miles above Smith's Mill where a 10-stamp mill had recently been built. They concealed themselved in the cliffs above the wagon road that connected Smith's Mill and Wickenburg. Soon a wagon hauled by two mules driven by Gus Swain, an employee at the mill, came along the road toward Wickenburg. The Indians killed Swain in their customary way and butchered the mules, as the Apacheswere especially fond of mule meat. Not long thereafter on the same day George Taylor, a son of the mill superintendent, came along on foot to inspect the flume that carried water to the mill. He suffered the same fate as Swain. Next morning a millman named McDonald started toward Wickenburg on horseback and he too was waylaid and murdered. Then apparently the Indians broke camp and moved into the rugged mountain country to the east. People in the mining camps had become careless about danger from Indians as they were supposed to be rounded up under military supervision on the reservation.

On the day following McDonald's murder, P.W. Smith, owner of the mill, returned from a trip to Wickenburg in a buggy and found the bodies. Word was immediately sent by messenger to the military post at Date Creek, 40 miles north of Wickenburg. A detachment of cavalry and Indian scouts arrived on the scene of the murders in due course and took up the trail of the Indians. The Date Creek contingent was joined on the trail by a scouting party from Camp McDowell on the Verde who had learned of the Apaches' escape from the reservation. The trail led to a secluded valley in the mountains where the Apaches evidently felt safe as they had made camp without posting guards. The soldiers attacked immediately and the end came rather promptly. All the Indians were killed by rifle fire.

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

The Cordilleran Section of the Geological Society of America will hold its 54th Annual Meeting at Eugene on campus of U of O, on March 27-29.

Audubon Screen Tour at Cleveland H.S. auditorium Apr. 17th. Wm Ferguson, High Horizons.

We have just learned Mrs. Ruth Prentiss has been on the sick list the past two weeks. We are hoping for a speedy recovery.

We are ready to bind your Newsletters -25¢ per volume. The Society has a few copies of bound volumes of former years @ $2.25 per vol. If interested see Ray Baldwin.

HAVE YOU PAID YOUR DUES! HAVE YOU SENT IN YOUR MARKED BALLOT!

SOME THOUGHTS ON THE SUBJECT OF UNIVERSAL LIFE

By Carl P. Richards

Examining each of the nine planets in the solar system, we find there is only one, the earth, which can support intelligent life. All the other planets, also the larger satellites, including our moon, have conditions prohibitive to life. These conditions are either chemical, such as poisonous atmosphere or a lack of oxygen and water; or thermal, too hot or too cold; or gravitational, too heavy or too light. So any visitors to earth must originate beyond our own system of planets.

The nearest star to the sun is Alpha Centauri, which is 4-1/3 light years, or 26 trillion miles distant. No telescope has yet been built, nor has any other method yet been found to ascertain whether there are any planets around it. That star, is, however, of the same spectral class as the sun and resembles it in size, temperature and other respects, and may therefore be regarded as having a family of planets similar to ours and, further, it is reasonable to expect that it may have at least one planet which is capable of supporting intelligent life.

But let us look further. There are over 100 billion stars in our galaxy, spread throughout an area which is 100,000 light years across, within which our sun is only an average member. It is a safe assumption that only about one in 10, or 10 billion of the stars in the galaxy, are similar to the sun and have, say, an average of 10 planets each, of which only one in each system is suited for intelligent life. That is, there are about 10 billion planets in the galaxy capable of supporting life.

Now consider the time factor. Evidence points to the age of the earth as being in the order of three billion years; but, of that time, only for some 100,000 years has there been life on it that can be termed intelligent. It has been found that the stars in the Milky Way are of many different ages, so, if there is life on 10 billion planets, it is fairly certain that only a small portion of them are at that age which supports intelligent life, which on earth has prevailed for only 1/30,000 of its time of existence. Taking this fraction as an average value, 1/30,000 of 10 billion suitable planets is 300,000, which, at this time, are supporting life as we know it here now. This looks like a lot of planets, but when we consider that there are 120 trillion cubic light-years in the galaxy, it works out that each of these planets has an average of 400 million cubic light years around it to serve as breathing space for the intelligent inhabitants it is supposed to have.

The solar system is situated 18,000 light years from the near rim of the galaxy and 82,000 from the far rim, so that it might be said that we are at an average distance of some 40,000 light years from other systems. Hence, assuming that there are beings of super-intelligence on some of those planets, who have the means of discerning what is happening on planet earth, they could only know of conditions which, on the average, existed some 40,000 years ago, since nothing travels faster than light.

The question may be asked whether it might be possible for there to be some other form of life than that with which we are familiar on earth. Life, for instance, which is not dependent on water and oxygen, but is of calcium or carbon, or of some other nature that is able to withstand cold or heat, vacua or pressures, or gravities in which it is impossible for life, as we know it, to exist. That there is any such kind of life anywhere in the universe is exceedingly unlikely, for this reason. Our great telescopes with their fine spectroscopes have plumbed the depths of space to the extent of some 1.4 billion light years, and have never found a different pattern of chemistry from that of the solar system, nor, for that matter, than that on the earth itself. Life and chemistry are absolutely inter-dependent, so that it is safe to say that the type of earth-life is also that of life wherever it exists--anywhere throughout the universe.

The basic quantities mentioned above are accepted throughout the scientific world on the strength of research carried out at many leading astronomical observatories, but some of the assumptions may be open to question. (Reprint from THE OBSERVER, Yakima, Wn. Dec 57)

GEOLOGICAL NEWS LETTER

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1957 - 1958

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Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. Ruth Harrison, 1879 S.W. 10th Avenue, Phone CA 3-0255. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at the Portland Chamber of Commerce, 824 S.W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday Apr. 11 — Diamond lecture. Mrs. Gladys B. Hannaford will lecture on the origin, sentiment, tradition and use of the diamond and its complete handling from the time it is mined until it becomes a faceted gemstone. She will have on display specimens of diamond bearing "blue ground", rough and polished stones, scale replicas of world famous diamonds and industrial diamonds used in abrasives and tools. An excellent short film on diamond mining will also be shown.

Tuesday April 15 — Library Night. 7:00 to 10:00 P.M. Biology Bldg. Lewis and Clark College. Library study 7:00 to 8:00. Laboratory work 8:00 to 9:30. Refreshments 9:30 to 10:00.

Friday April 25 — Program by three college students, two from Lewis & Clark, and one from Portland State. New Madrid Earthquake by Jan Elmore, Oregon Geysers by Jack Williams, and the topic by the Portland State student to be announced later.

Sunday April 27 — Field Trips. Tillamook and Bay Ocean, Oregon Coast Geology & Scenery. Leaders - Dr. Gilchrist and Dr. Stauffer.
Meeting place - Junction Barnes Road and Sunset Highway 8:00 A.M. approximately 200 mile trip. Lunch at Cape Lookout State Park. Bring cameras and Binoculars.

CAMP HANCOCK TO HAVE TWO WEEK-ENDS OF WORK

Some of the friends of Camp Hancock have organized a work-crew for purpose of laying concrete floor in the dining room at camp. This will be accomplished on the week-ends May 17-18 and May 24-25. Those wishing to help with the labor on any of these days will be very welcome. If you can go, please drop a card to Murray R. Miller, P.O. Box 465, Oregon City, Oregon.

NEWS OF MEMBERS

Mrs. Ruth Prentiss was still on the sick list at time of going to press.

Mr. Rudolph Erickson has been in hospital a few days for a check-up, but managed to get out in time for our Banquet.

LINDA MUNSON HONORED IN NATIONAL SCIENCE TALENT SEARCH

Miss Linda Munson, daughter of Mr. & Mrs. Harry C. Munson, a senior at Grant High School, is one of 260 senior students in the United States to receive Honorable Mention in the 17th annual Westinghouse science talent test, among 25,000 contestants. All receiving such awards are considered to have unusual potential scientific ability.

NEW MEMBER

Mr. J. R. Rentsch, St. Francis Hotel, Portland 5, Oregon CA 3-2161

CHANGE OF ADDRESS

Mrs. May Dale 117 N.W. Trinity Place Apt 25 (9) CA 8-0366
Phyllis Van Dermark 666 E. Main St., Apt 10 Hillsboro, Oregon

LUNCHEON NOTES

February 26 - our attendance has been picking up. We had 20 present. We were glad to have with us Mrs. Margaret Quintin from Honolulu and Mr. W. E. Palmer from Orinda, California, daughter and son of the late Mr. Leroy Palmer.

Tom Mathews was our 5-minute speaker and spoke on a recent trip to Kodiak Island. In spite of the reputation for foul weather in that vicinity during the ten days he was there, the weather was ideal. And though there are bears on the Island, he never ran across any of them except those in captivity.

Rudolph Erickson passed around a colored slide taken of a sign on Highway #18 at Belle View, a short distance out of McMinnville, and the sign read as follows:

OREGON GEOLOGY
GLACIAL ERRATIC

> The rock visible on the horizon to the north is a fine grained rock of sedimentary origin, a glacial erratic which was rafted by an iceberg from a source far up the Columbia River to this locality at a time when both the river and the Willamette Valley were flooded near the close of the ice age. Erratics, of which this is one of the largest of many found in the Willamette Valley, and so called because they were transported from their original resting place and are unrelated to any local rocks.

For years members of our Society have urged the State Highway Department to erect such a sign to draw attention of tourists to one of the geological wonders of the Willamette Valley. We feel the State should take over property around the rock and make it into a Park.

THAT'S OUR PHIL

(In the Peoples' Corner of the Oregonian, March 11, 1958, appeared the following, taken from the Bend Bulletin.)

> "Phil F. Brogan, associate editor of this newspaper was honored by the Oregon Academy of Sciences Saturday (Feb. 22) for his coverage of Oregon's geologic history for the Bend Bulletin and the Oregonian, for which he writes a Sunday piece.
>
> This is an honor. It is more of an honor than it sounds at first.
>
> For the Academy of Sciences is composed of scientists. And Scientists usually don't think too much of newspaper science writers.
>
> The newsmen have to describe the work of the scientist in language and terms the non-scientist can understand. Their job is to report the general idea, and not the minute details. Scientists quite often don't think too much of the results.
>
> So it was with more than the normal feeling of pride that we read that the award had gone to Phil Brogan. May he win many more of them in the future."

Ed. Note- We'd just like to tell the Bend Bulletin, that He is our Phil, too.

DAVIS RETIRES

Mr. Franklin L. Davis, civil engineer in Relocation Section, Portland District Corps of Engineers, is retiring as of March 31st. Our Mr. Davis was a former employee of Oregon State Public Utilities Commission, and City of Portland. He has played an important part in execution of contracts with railroads, highway departments and other utilities covering relocation tracks, highways and utility lines at The Dalles, Lookout Point, Detroit and other federal dams.

- Oregonian March 21, 1958

Talking with Franklin recently, he even hinted he might have more time now to attend our meetings. We wish him lots of enjoyment in his retirement. -- Editor's Note.

LANDSLIDE LAKES IN THE COAST RANGE OF OREGON

Ewart M. Baldwin

Valleys in the Coast Range above tidewater are characteristically steepwalled owing to rapid erosion during the Pleistocene and Recent. The abundant rainfall of this area, coupled with the steep slopes, has produced a condition favorable for landslides. Landslides are perhaps more common than is generally realized. Many of them have resulted in dams that have checked the streams for varying lengths of time. Where the beds are soft the hillside may exhibit wavy topography where the surficial material is more or less continuously moving. Such landslides are recognized by their hummocky surface, tilted trees, and small undrained depressions.

Some of the massive sandstone formations, in particular the Tyee formation, have moved in large blocks, not slowly but catastrophically. Such slides have formed several of our larger landslide lakes.

Many lakes have been reduced to marshes or alluvial flats within a few years owing to a combination of conditions that affect the length of time landslide lakes exist. An examination of the Coast Range lakes shows that there are two general types of lakes that have persisted for a considerable time, at least throughout historical times. The most common such lake is one formed near the head of a small stream, often from relatively soft landslide material, and usually maintained by a colony of beavers. Esmond Lake in the Roman Nose quadrangle, Elk (Gould) Lake and Wasson Lake in the Scottsburg quadrangle, and Lost Lake in the Tyee quadrangle are examples.

The second type of landslide lakes has a dam composed of large blocks of indurated material similar in resistance to erosion to that of bed rock, or as in Triangle lake, the outlet may be pushed over onto bed rock. In either instance the material at the outlet is indurated rock. These lakes are found on the larger streams and have existed for a much longer time than the smaller lakes cited above. Notable examples of such lakes are Triangle Lake in the Blachly quadrangle, Loon Lake in the Scottsburg quadrangle, and a filled lake in the Sitkum quadrangle herein referred to as "Ancient Lake Sitkum."

Wasson, Elk (Gould) and Lost lakes are all within a very few miles of the extreme head of small streams. Thus these streams never have serious floods. Beavers have taken over the maintenance of the outlets so that erosion is arrested even though the material in the dam is not particularly resistant to erosion. These streams carry very little sediment and are thus slow in filling their basins. In fact, old logs and stumps are the chief obstructions. At the present rate of erosion of the outlets and filling of the basins, these lakes should be in existence for many years.

The origin of Triangle Lake has been discussed by Baldwin (1951). A large block of Tyee sandstone, probably from the northern side of Lake Creek blocks the outlet and has forced Lake Creek against the south side of the valley onto bedrock. At the time the lake formed, water spread over the valley beyond Blachly and Horton filling many tributaries and forming many inlets. Most of the lake basin has been filled by alluvium so that a relatively small lake with a maximum depth of slightly less than 100 feet exists today. The rate of filling has been much faster than the erosion of the outlet and it is safe to predict that the lake will ultimately be filled.

Loon Lake is the largest of the landslide lakes. Large blocks of Tyee sandstone fell from the west valley wall of Lake Creek, a tributary of Mill Creek, forming a dam approximately 300 feet high in a narrow canyon. The very large blocks of sandstone are nearly as effective as solid bedrock in resisting erosion. The present lake is approximately two miles in length but the alluvial flat beneath Ash Valley goes southward for another six miles before bedrock reappears in the stream bed. It is difficult to say whether Loon Lake is younger than Triangle Lake but it is also reasonable to conclude that the lake will fill with sediments before the outlet is lowered appreciably.

Ancient Lake Sitkum occupies Brewster Valley along drainage of the East Fork of the Coquille River. Sitkum, a name which means "halfway" in Chinook jargon (MacArthur 1952), is aptly named for the small community is situated approximately halfway between Roseburg and Coos Bay on the old wagon road. This broad alluvial valley is situated in the heart of the Coast Range and surrounded by high cliffs of Tyee sandstone. Brummett Creek, a prominent tributary from the north joins the East Fork at Sitkum and shares the alluvial plain. The dam at the west end of the valley is composed of large blocks of Tyee sandstone that have slid northward upon a gentle dip slope that averages approximately 15 degrees. The dam may not have been emplaced as suddenly as that at Loon Lake for material on the slope south of the dam shows signs of continued movement. However, the large blocks in the river are similar to those at the outlet of Loon Lake and they form an effective dam. The alluviation extends for nearly five miles up the river and tributaries from the dam. Erosion and deposition in this drainage has been relatively rapid and it would not have taken any longer to fill this basin than that of either Loon or Triangle lakes, perhaps less. The basin was probably somewhat smaller than either of these lakes. It is possible that Lake Sitkum is somewhat younger but this is difficult to prove.

Lakes intermediate in type may have occurred many times during recent geological time, but little beyond alluvial deposits and remains of slides is there to show it. If the slides were of relatively unconsolidated material on the lower reaches of creeks subjected to floods, they would have lasted a very short time. Such a lake formed during the winter of 1955-56 on Camp Creek, a tributary of Mill Creek in the Scottsburg quadrangle, in the northern part of Section 4, T 23S., R 9W. This slide backed water upstream for nearly a mile and a half and to a depth of approximately 20 feet. The volume of water was considerably greater than that present in the smaller lakes mentioned above. Yet erosion of the relatively unconsolidated material in the outlet lowered the lake four or five feet during the high water of the spring floods and little remains of the lake today. The material and quantity of rock in the dam is similar to that holding back our smaller lakes. The difference is apparent though, for Camp Creek has a large drainage basin above this point and is subject to high water, too much in fact for beavers to keep in check.

Thus it is evident that for lakes to last many years, they must either have a resistant rock in the dam at the outlet or be on a small tributary where volume of water is small.

Although many landslides have occurred during the last few years, both the creeping and rapidly moving kinds, one may wonder if we are in danger of large slides such as those that formed the larger landslide lakes. It is difficult to estimate the age of Triangle, Loon and Sitkum Lakes, however, ages of a thousand or more years seem in order. Very few, if any, comparable slides have occurred within the last hundred years. Although Oregon is not noted for earthquakes within recent times, it is evident that we have had many in the past. Could it have been earthquakes that jarred the large blocks of rock loose that formed the large landslide lakes? If we should have an earthquake of even moderate intensity would our highways, railroads and communities be in danger of such slides? Perhaps we should examine the works of man to see if they increase the instability that is caused naturally by the streams undercutting their valley walls.

Baldwin, Ewart M., The origin of Triangle Lake, Lane County, Oregon: Abst., Proc. Oregon Acad. Sci., vol. 2, P. 97-98., 1951.

MacArthur, Lewis, Oregon geographic names: Binfort and Mort, Portland, Oregon 1952.

AUDUBON SCREEN TOUR -(APRIL 17TH)

Cleveland High School Auditorium, 8 P. M., April 17th. Speaker Wm Ferguson, subject, "High Horizons."

WESTWARD HO! THE TROUTDALE

In 1942 the writer, while still a student at the University of Washington, had the good fortune to make a study of and write a term paper on the geology of the Portland area. Of chief interest to the writer at that time and still to this date is the composition, stratigraphy, and areal extent of the Troutdale formation. In this interest the writer was and still is not alone. Noted geologists have studied and written about the formation, and anyone who lives in this area or carries on any form of geologic investigation here must sooner or later become involved with the Troutdale formation. For that reason many members of the Society will be interested in new evidence uncovered by the writer during some recent quarry investigation work for the Corps of Engineers.

Seven miles east of Long Beach, Washington is a sharp ridge called Bear River Ridge, named after a small river which heads near the Columbia River and flows northwestward into Shoalwater Bay. Bear River Ridge begins in the south near Knappton and trends in an arc northwestward to the Naselle River. Along the western side of this ridge there is a distinct sloping bench with a median elevation of 500 feet (Those interested consult the Fort Columbia 15' Quadrangle or the Long Island and Chinook 7-1/2' quadrangles). This bench is an old sea terrace cut in part on the diabase and basalt which form the heart of Bear River Ridge. In Section 5, T 10 N, R 10 W the timber and brush have been largely stripped off the terrace and two good gravelled roads traverse the cleared area. The northern road winds across the terrace and leads to old concrete bunkers of World War II age; the southern road leads to a large rock quarry operated by the State of Washington Highway Department. A broad powerline clearing traverses the area from southwest to northeast.

Along the upper part of the northern road well-rounded cobbles of quartzite and other siliceous material cover parts of the roadway and nearby scraped areas. Many of the quartzite cobbles are 4 inches or more in long diameter, and one measured 6 inches by 5 inches. A deep ditch exposure above the westernmost bunker near the power line disclosed that the original deposit was probably only a few feet thick and was composed largely of coarse sand and pebbles, through which are scattered the cobble-size constituents. Only about 5 per cent of the constituents are of cobble size, and these are almost entirely restricted to the hard, resistant quartzites and other siliceous material. The finer constituents are composed largely of basalt and other local rocks so completely decomposed that they can be cut through with the fingernail.

Although there are alternative explanations for the origin of the gravel deposit, the concentration of cobbles on the terrace definitely constitutes an ancient beach shingle. Examination of the quartzites shows that most of them are yellowish to pale brown on the surface and white or tan on the inside. A few are brick red on the outside but much lighter colored within. Some are striped with darker colors, and one particular type is tan with dark red spots like drops of blood. Two of the types noted establish without doubt that the Columbia River was the transporter of much of the terrace material, with possibly a little assistance from the shore currents. The state of decomposition of the non-siliceous rocks points to an alluvial stage appreciably older than the Spokane Flood alluviation and comparable to the Satsop-Mayger-Dodge Park-Pleasant Hill deposits. The climate for such weathering would have to be warm and moist, perhaps interglacial, but most likely late Pliocene. The age of the gravel deposit itself is undoubtedly Troutdale and the size of the constituents indicates that the Columbia River at that time had a strong current as far west as Astoria or farther. The gradient for transporting such coarse material would have to be several feet per mile, and a check on the known top elevations of Troutdale formation along the Columbia River indicates that it could have had a gradient of 5 feet per mile or steeper, even without considering possible later eastward tilting. A 5 feet per mile gradient is probably steep enough for a stream the size of the Columbia River to transport 6 inch gravel during flood stage.

The original elevation of the top of the Troutdale formation at Livingston Mountain north of Camas, Washington is at least 1200 feet. If a straight line gradient be drawn from this point westward along the Columbia River to the Bear River Ridge terrace, it should indicate the elevations

along the way at which Troutdale formation remnants can be found.

Many inferences relative to ocean current drift, possible northward ancestral channel for the Columbia River west of Fort Columbia, and epeirogenic movements of our northwest coastal region come to mind, but to include a discussion of them here would make this article unduly long. Anyway, the writer believes it proper to leave something unfinished to intrigue the minds and stimulate the activity of his fellow members.

Paul W. Howell

VANISHED LAKES OF THE GREAT BASIN
By Phil F. Brogan

Vanished lakes of the Great Basin, a giant arm of which reaches into Oregon from the south in the evening shadows of the Steens and Pueblo Mountains, have left in old shore lines and wave-cut terraces a fine record of the region's ancient weather.

Land-locked lakes of this sagebrush desert "are rain gauges that record the balance between rainfall and evaporation".

It was a pioneer geologist, Israel C. Russell, who first made this observation, more than 70 years ago. He noted that the balance was delicate at times, and that when precipitation exceeded evaporation, huge lakes came into existence. But when storm tracks changed and evaporation exceeded rainfall, lakes disappeared and dunes rolled over their arid basins, before prevailing winds.

If in the past few thousand years moisture had exceeded loss resulting from evaporation even by half an inch a year, lakes more than 400 feet deep would now be filling dry basins over which loom ramparts of Steens mountain, the high Harney rims and the Warner and Abert cliffs.

Russell in his horseback swing north into Oregon through the Great Basin in the early eighties found ample evidence that through the centuries moisture and evaporation were not in balance. This proof was provided by the terraces left by the lapping waters of ancient lakes still visible in sagebrush benches overlooking scores of old basins of the area.

In pluvial times, the lakes flooded the old fault block valleys. In eras of aridity, these lakes dwindled or disappeared. Largest of all the great lakes of the western region was Bonneville, ancestral to Great Salt Lake of the present. Bonneville reached a high water mark of about 1000 feet, and sent its overflow through a gap in Red Rock pass and into the Snake and Columbia drainage.

Not as well known as giant Lake Bonneville of the Pleistocene was another western Lake, Lahontan, named after Baron Lahontan, a French soldier who crossed western trails in the Great Basin in the Seventeenth century and wrote an account of his travels.

Lahontan had a jagged shoreline. The lake spread over approximately 8,400 square miles. An embayment of this shallow lake of the western rangelands spread into Oregon up the Quinn River valley, covering the Oregon-Nevada border area where the little town of McDermitt now stands.

It was in the Bonneville-Lahontan era that Oregon's big lakes, in fault basins under high rims, came into existence. At flood stage, some of the Oregon lakes were around 400 feet deep. One, which occupied the Warner Valley of the present and spread south into California, was nearly 100 miles long. High shore lines of this vanished lake, visible distinctly on the drive up the steep grade to Hart Mountain from the west, are some of the most spectacular of the region.

Incidentally, it has been suggested that the old Pleistocene body of water, of which the Warner and adjacent lakes of the present are shrunken remnants, be known as Russell Lake, in honor of

the pioneer geologist who studied the area in 1882.

Some of the fossil lakes of the region have already been given names, by Dr. Ira Allison of Oregon State College and others. Lakes ancestral to Summer and Abert Lakes of the present bear the names Winter, at one level, and Chewaucan. The huge lake that flooded the Silver Lake, Fossil Lake, Fort Rock Basin and Christmas Lakes of the present carry the name Fort Rock Lake. However, Lake Chewaucan cut deep terraces into flanking mountains of its area.

To the south in Nevada, lakes considered remnants of ancient Lahontan still exist. These include Pyramid and Walker Lakes in Nevada, Honery Lake in California and the Carson and Humboldt sinks.

Oregon's Fossil Lake, a body of water in name only except in moist years, has received more attention possibly than any other of the vanished lakes of the region. This is because of the fine Pleistocene fossils found in its bed in early days. They received the attention of Thomas Condon, patron geologist of the GSOC, in pioneer times.

Rich in fossil fauna, the basin has yielded black, sand blasted bones of camels and horses, elephants and giant beavers, flamingoes and even a sea-going salmon.

Winter snows are now dusted over the Great Basin lakes of Oregon--lakes that have played an important part in interpreting the ancient weather of the region.

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REVIEW OF PRINCIPLES OF STRATIGRAPHY

Principles of Stratigraphy by Carl O. Dunbar and John Rodgers, both of Yale University, is a first edition that was published in 1957. It is a general treatment and critical evaluation of the fundamentals of stratigraphy, a field in which there still exists considerable confusion in terminology and disagreement in the interpretation of observations. One of the chief values of this book is that it points out the many conflicts in the field and attempts to clarify issues and simplify terminology without being dogmatic. Thus the suggested breaks in the stratigraphic record known as unconformities are:

Nonconformity - stratified rock resting upon non-stratified either igneous or metamorphic rock.

Angular unconformity - two kinds of stratified rock separated by an angular discordance.

Disconformity - Strata are parallel but the contact between the two units is an uneven erosion surface.

Paraconformity - Contact between two units of strata is a simple bedding plane.

Similarly, suggested nomenclature for sedimentary rocks, largely based on schemes proposed by various students, gives more precise meaning to these structures. For example, rock with particles smaller than 4 microns, normally composed of clay minerals, is given the general term clayrock, which is further classified as claystone if non-fissile and clay shale if fissile. Standardization of names appears highly desirable but attempts to accomplish this have not met with general success. It is to be hoped that this book help to bring this about.

Particularly illuminating is the discussion of recent studies of contemporary marine and non-marine and mixed environments as keys to the interpretation of the stratigraphic record. For example, in an area of 5,000 square miles of the continental shelf off the coast of South Africa, "at intervals of 45 years an upwelling of deeper water brings abundant material to the surface that causes the dinoflagellate, Noctiluca, to increase to such proportions as to produce the so-called 'red tide'." Toxic substances are liberated that kill all animals in the area. However, diatoms are not affected, so the tests of these unicellular plants become the principle sediment. Fish ultimately return to the area only to be wiped out by the next cycle. It is suggested that such red tides may have been important in creating the environment in which the Miocene diatomite of California, with fossil fish prevalent in certain layers, was created.

Along with its descriptive material there are excellent accounts of the historical development of the important concepts in the field of stratigraphy. Thus we learn that Werner's doctrine that "all strata are presistent in rock type as far as they go and that each was deposited as a separate act in a universal ocean", a doctrine that was subsequently carried over to fossils, has been particularly difficult to eradicate. Hutton's principle of uniformitarianism, followed by Gressly's concept of facies, have only gradually superceded Werner's doctrine, especially in America where it was not until about 1930 that the facies concept finally became firmly established.

One of the principal ends of a study of stratigraphy is the attempt to find world-wide rhythmic time patterns in the record. Is there a natural basis for the classification of rocks into such time-stratigraphic units as systems, series and stages and the formulation of the corresponding geologic-time units, periods, epochs and ages? Are major breaks in the stratigraphic record, by which the above units are demarcated, synchronous over enough of the earth to give confidence in the validity of these units? The authors review the various theories that attempt to account for the supposed world-wide periodic diastrophism with its consequent eustatic shifts in sea level that are believed to form the basis for a natural subdivision of the stratigraphic record. However, none of these theories can be accepted nor can a positive answer be given to the above questions, partly because the paleogeography of the world is so poorly known. An alternative view favored by some geologists is to regard time-units as a "human construction", according to which "it is not essential what units are recognized or what boundaries are chosen, if only agreement can be reached." A framework of sections should be established by general agreement, if possible, close to the type regions of these units. These, extended by correlation as far as possible, would serve as objective standards for other areas. Ultimately the evolutionary sequences of fossil assemblages would become the basis for a time-stratigraphic system of classification.

One of the criticisms of the book might be that a great amount of pertinent data is omitted. However, in view of the vastness of the literature, the authors disclaim any attempt at comprehensive coverage. It appears to the reviewer that the treatment of some topics, such as glacial, lake and desert environments is inadequate and that other topics are treated too comprehensively. As a whole the text is fresh and stimulating and should have a salutary effect on the field of stratigraphy.

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- - CAMP ARAGO - NEW SUMMER SCIENCE CAMP - ATTRACTS GREAT INTEREST

Camp Hancock, for teen-age natural scientists, will now be supplemented by a family science camp to be held August 17-23 at the Marine Biology Station at Coos Bay. This will be our first venture into a family science camp. It is open only to families who are interested in spending an educational and recreational week under Museum auspices. The only costs will be a minimum charge for a cot in the dormitory and meals in the community kitchen. If you are interested in reserving a space for your family, please WRITE to the Museum. Capacity is limited. Applications for the teen-age Camp Hancock must be mailed by April 30th.

HAVE YOU PAID YOUR DUES?

We are ready to bind your Newsletters - 25 cents per volume. The Society has a few copies of bound volumes of former years at $2.25 per volume. If interested, see Ray Baldwin.

- - - - - - - - - - - - - - - - - -

Your retiring Editor of the Newsletter wants to thank the members for their fine cooperation he has received throughout the year. We are sure the new editor will receive the same help and cooperation from everyone.

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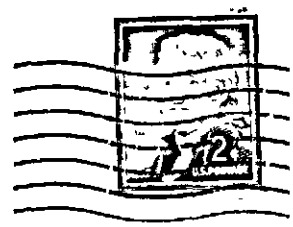
GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

May 1958 **PORTLAND, OREGON**



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Portland 1, Oregon

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

	Officers of the Executive Board 1958 - 1959			zone	
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	Dr. Francis G. Gilchrist	(1959)	Dr. Ruth Hopson (1960)
	Mr Murray R. Miller		(1961)

Staff of Geological Newsletter

Editor	Mr. Raymond L. Baldwin	4300 S.W. Laurelwood Drive	zone 25	CY 2-1452
Bus. Manager	Mr. Robert F. Wilbur	2020 S.E. Salmon St.	" 15	BE 5-7284

Committee Chairman

Program	Mrs. Victor Gregory	Display	Murray R. Miller
Field Trips	Franklin M. Brown	Research	Rudolph Erickson
Library	Mrs. Murray Miller	Service	Miss Margaret Steere
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Publicity	H. Bruce Schminky	Public Relations	Clarence D. Phillips
Social	Mrs. James Stauffer	Historian	Mrs. Murray R. Miller
Telephone	Mrs. Amza Barr		

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

Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S.E. 9th Ave., zone 2, Phone BE 4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for junior members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

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(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at the Portland Chamber of Commerce, 824 S.W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday May 9 — Kitimat to Key West and way stations. Orrin E. Stanley. Colored slides and the tail of the yellow cat. No speckled sheep.

Tuesday May 20 — Library Night - the annual spring picnic will be held at the picnic area near the swimming pool on the Lewis and Clark College Campus. Bring your own food and come around 6 o'clock. Coffee will be furnished. In case of rain we will eat in the geology lab. After the picnic there will be library study, sight seeing about the campus, etc. At 8 o'clock there will be a showing of several films.

Friday May 23 — The Cordillera Blanca. Dr. Fred Ayres of Reed College.

MAY FIELD TRIP

May 24 and 25 will be an overnight camp-out and field trip to Camp Hancock, near Clarno on the John Day River.

No facilities are available at the camp site other than water, so bring food and camping gear.

We will meet at the campsite at noon May 24 and the best route is Highway 30 east to Biggs, then south to Shaniko on Highway 97, and from there to Clarno on Highway 218. This avoids the possibility of running into a late snowstorm on the Mt. Hood road.

We will have an opportunity to learn some very interesting geology from Dr. Arthur Jones and Leo Hancock, our trip leaders. You will enjoy hearing them. Round trip is about 350 miles and about 4 hours drive each way.

NEW MEMBERS

Miss Katherine Kooken	7114 S.W. Brier Place,	Portland 1, Oregon	CH4-7125
Mr. & Mrs. Ellis White	514 Hillcrest Ave.,	Longview, Wash.	HA5-0597
Mr. William Albert Hughes	7933 S.E. 92nd Ave.,	Portland 66, Ore.	PR4-4078
Mr. J. R. Scranton	12316 S.E. Madison,	Portland 16, Ore.	AL4-8671
Mr. & Mrs. Norris Jensen	8709 S.W. 56th Ave.,	Portland 19, Ore.	CH4-2415

CHANGE OF ADDRESS

Mr. & Mrs. Raymond L. Baldwin, Change zone 1 to zone 25.

NEWS OF MEMBERS - following page

HAVE YOU PAID YOUR DUES?

At Library meeting March 18th Mr. John Hammond had the lucky number which won the gorgeous camellia bush donated by Mr. and Mrs. Leo Simon.

Dr. Arthur Jones addressed the Parkrose Unitarian Fellowship meeting Sunday, March 29th. Wednesday evening, 8:00 p.m. at meeting of Approximate Club of Unitarian Church, Dr. Jones will speak on "The Faith of a Scientist."

Hollis M. Dole head of Oregon's Bureau of Mines and Geology recommended stockpiling of chrome ore to a Senate interior subcommittee in Washington, D. C. at its meeting recently.

Our president, Dr. James Stauffer, will supervise the University of Oregon's summer science camp Aug. 17 to 24 at Oregon's Marine Biology Station at Coos Bay under sponsorship of the Oregon Museum of Science and Industry.

Mrs. Jane Erickson (affectionately known as Jane) won first place for Lake Oswego Toastmistress Club, entitling her to compete with winners of five other clubs for further honors.

James Galt identified one of the series of early day pictures the Oregon Historical Society has been showing in the Sunday Oregonian, as the Elk Creek Hotel in Clatsop County where he was a guest in 1911.

Leo Simon is probably our most versatile member. He shines at geological club activities. His mushroom knowledge is astounding, as his knowledge of wild flowers and our own native fauna. March 1958-Practical Gardner.

GEOLOGY AND GEOGRAPHY SPLIT AT UNIVERSITY OF OREGON

The Department of Geography and Geology at the University of Oregon has been divided into two departments. Dr. Samuel Dicken, who has been head of the Department for the past ten years, will head the Department of Geography. Dr. Lloyd Staples, who has been a member of the teaching staff of the Department for many years will head the Department of Geology. The separation of the two departments was made to accommodate more efficiently the 800 students now enrolled in Geography and Geology. There are seven graduate students in Geography and twenty-five in geology.

In addition to Dr. Dicken, the Geography Department will be staffed by Dr. Forrest Pitts and Dr. Gene Martin, both of whom are assistant professors, and by an associate professor who will join the staff shortly. The Geology Department will be staffed by Dr. Ewart M. Baldwin, Dr. Ernest Lund, and Dr. Walter Youngquist, all associate professors, and James Stovall an assistant professor who will divide his time between the two departments.

Geology was first taught at the University in 1876 when Dr. Thomas Condon began lecturing there. A geology student's organization named in honor of Dr. Cc on has been in existence for 40 years on the campus.

(Taken from the Ore-Bin, March 1957)

- - - - - CAMP HANCOCK ALUMNI GOING PLACES

Two articles of interest to members appeared in recent issues of The Oregonian:

"Robert and Michael Brown, sons of Mr. & Mrs. Lloyd Ruff, were top winners in the senior physical & sr. physiographical divisions of the OMSI Fair state finals recently held at Gill's Coliseum in Corvallis.

"Arthur Boylston, sophomore at Cleveland High School, won first place in regional competition, for his display of human parasites at the state science fair sponsored by OMSI at Oregon State College."

CAMP HANCOCK

STOP LOOK AND LISTEN!!

Your help is very much needed May 17 and 18 at Camp Hancock. A work trip is being arranged to install additional facilities before the June classes start.

Materials are on hand for this project, however, all possible help will be needed in order to have everything ready in time. This is a very worthy cause and deserves our full support. Members of the Agate and Mineral Society are also arranging to assist.

No facilities are available at the camp other than water, so please arrange to bring your own food and camping equipment. Some rain clothes may also be useful, just in case. Also needed will be shovels, hammers and saws.

Murray Miller is in charge of this project and advises us to take Highway 30 east to Biggs, then Highway 97 to Shaniko, then Highway 218 to Antelope. Clarno is 15 miles east of Antelope, however, Mr. Miller will have signs up directing the way from Antelope to Camp Hancock.

It is not advisable to take the highway across Mt. Hood this time of year because of the possibility of late snow storms in the mountains.

If you can be of help on this project and we sincerely hope you can do so, please be there. There will be plenty of work to do but if we can judge from past trips we will also have plenty of fun.

Thank you,

Camp Hancock Committee

GSOC ANNUAL BANQUET

The twenty-third annual banquet of the Geological Society of the Oregon Country Friday evening, March 14, was an unusually happy occasion, due in large part to an enthusiastic master of ceremonies, Dr. Arthur C. Jones. Decorations consisted of simple bouquets of spring flowers, and the place cards were adorned by small pieces of copper ore. The program started with the song, A Hundred Million Years, after which Mr. Franklin Brown, chairman of the trips committee told about the trips already planned.

Dr. Jones introduced Mr. Phil Brogan, of Bend, Mr. Douglas Huegli, director of the Oregon Museum of Science and Industry, and Dr. Sam Diack, chairman of the board of directors. Charter members and all past presidents were introduced, and Dr. Jones noted the absence of Dr. Edwin T. Hodge, "father" of this organization, who was not present for the first time. He thanked Mrs. Franklin Brown who chairmanned the party, and Mrs. Ben F. Smith, who, as always, made the camellia corsages for the women at the head table. He then introduced the new president, Dr. James Stauffer, of Lewis and Clark College.

Dr. Stauffer told of having looked up the early records of the GSOC, found in the News-Bulletin, named the first officers and listed nineteen committees. He named several things he would like to achieve during his administration. One is to have a large erratic, now in the Dunthorpe area, moved to the OMSI site and marked with a suitable plaque. He would like a "family" camp established in the Coos Bay district in the month of August for the GSOC, and he would like a GSOC display of some sort for the June opening of OMSI. A color slide contest was held at Lewis and Clark College last year on one of the Library nights, and Dr. Stauffer suggested that such a contest be held again this year at Library Hall. Judging to be for color, composition, and geological interest. The new officers were introduced. The recently deceased Leroy A. Palmer, retiring president, had planned to be editor of the New-letter this year, and now it seems impossible to secure someone else for that work. Dr. Stauffer suggested three family groups, one every three months, to type out the material for the Bulletin and get it ready for the publishers. An effort will be made by the board of directors to get

(Over)

as much material as possible for two or three months ahead. He named his committee chairmen for the coming year. Dr. Jones presented him with our copy of Dr. Condon's Two Islands, and a gavel made of teak wood, remains of the beeswax ship now buried in sands at the coast.

The speaker was Kenneth N. Phillips, of the Geological Survey, who spent some time in Turkey last year on government business. His pictures were in color but on account of time limit he was not able to show all of them. His first picture was one of "spotted" sheep to show there really is such an animal, as Mr. O. E. Stanley once announced he saw along the bank of Rogue River. Mr. Phillips spoke briefly about the political history and something of the geology of Turkey before showing his very interesting pictures. Afterward he was presented with two files for his transparencies. A.W. Hancock followed with one of his delightful talks, about how he got started in his search for fossils, replying to requests. This was illustrated with some colored views of central Oregon fossil areas. Mr. Albert Keen then announced that a recording, arranged by Mrs. Jane Erickson, had been made and is for sale. Other songs were Hills of Oregon, written by Mr. Hancock, In the Clarno, by Mr. Keen, and Goodbye, Rock Hunters, Goodbye. Altogether, a never to be forgotten evening.

TRILLIUM DISPLAY

The forbidding clouds and rain failed to interfere Saturday, March 29, with the success of the Geological Society of the Oregon Country's benefit for the Oregon Museum of Science and Industry at the home of Raymond L. Baldwin on Laurelwood Drive, near Beaverton. He has a large display of trilliums, right now at the height of their bloom. Fifty-six persons attended, and the gratifying sum of $90.50 was realized. This included some contributions made at the regular Gee-socker meeting Friday, March 28. In addition to the three-petaled trilliums, Mr. Baldwin pointed out one having four petals.

The occasion might be called a "silver tea" to get funds for the Museum and its projects. Mr. Douglas C. Huegli, director of the Museum gave OMSI a prominent place in the Baldwin home. No program, but the occasion was successful socially as well as financially. Those who poured included Mrs. Francis Gilchrist and Miss Ruby Zimmer. The table centerpiece was a beautiful bouquet of pink camellias-Rose of Dawn, provided by Miss Zimmer.

March 14, 1958

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

Your society received a total of 75-1/2 inches of newspaper space for publicity during the past year, divided as follows:

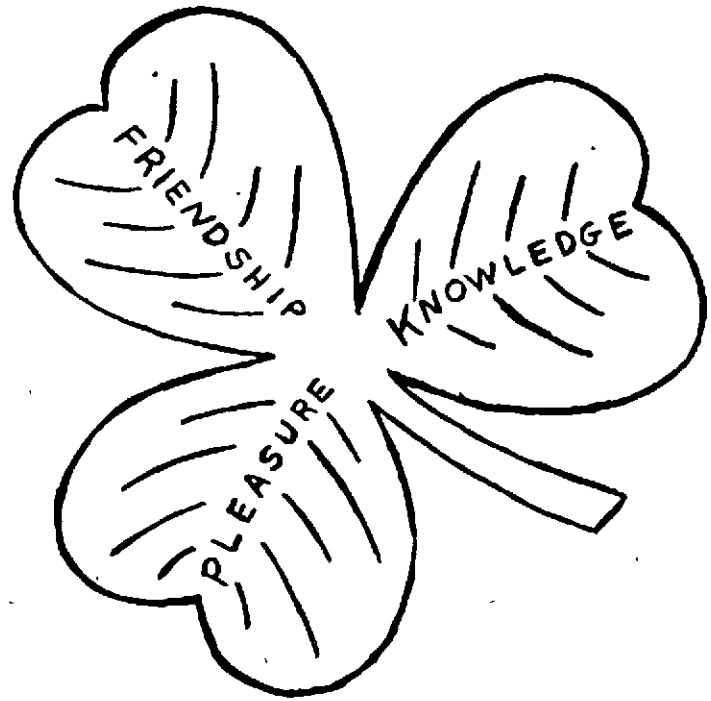
The Oregon Journal. . . . . .41 inches
The Oregonian. . . . . 34-1/2 inches

Respectfully submitted by,

H. B. Schminky
Publicity Chairman

HAVE YOU PAID YOUR DUES?

TWENTY – THIRD ANNUAL BANQUET



Geological Society

of the

Oregon Country

MARCH 14, 1958

A HUNDRED MILLION

(Clementine)

In a cavern, in a cavern,
Back a hundred million years
Brontosaur and Stegosaurus
Gnashed their teeth and shed their tears

CHORUS:

Hundred million, hundred million.
Hundred million years ago,
Largest reptiles show their spring styles
Here's their bones, it must be so.

Laid their eggs on desert sand,
Thought their race would never cease.
Ancient yeggs, sold breakfast eggs for
Just about two-bits apiece.

Into innards of a Rhino
Up a rocky canyon wall,
Climbed a score of dusty rock hounds
Now we have no doubt at all.

In the lees of ancient seas, the
Trilobite was in the pink,
Picked a fight with ammonite, no
More salt water does he drink.

Dr. Beck told us to peck
In the shale for Ginkgo leaves
Offered us four bits reward, but
He was laughing up his sleeve.

"GOODBYE, ROCK HUNTERS, 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

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

MENU

DINNER NO. 1

SLABS OF SHALE WITH AGGLOMERATE
MUD FLOW
OR
LATERITE

OOLITIC HEMATITE
DIATOMACEOUS EARTH GREEN TOURMALINE CRYSTALS
GARNETIFEROUS GNEISS
FLOOD WATER OR GROUND WATER
* * * * *

DINNER NO. 2

TURKEY WITH DRESSING
GIBLET GRAVY
OR
SALMON LOAF
CRANBERRY SALAD
MASHED POTATOES STRING BEANS
CHERRY PIE
COFFEE OR TEA

PROGRAM

Twenty-third annual Banquet

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Dr. Arthur C. Jones
Master of Ceremonies

"A HUNDRED MILLION"..... Everyone

DINNER

"OUR SOCIETY"..... Dr. James Stauffer

INTERMISSION

"HILLS OF OREGON"..... Everyone

"LET's TALK TURKEY"..... Mr. Kenneth N. Phillips

"IN THE CLARNO"..... Everyone

TREASURE HUNT..... Presented by Jane Erickson

"GOODBYE, ROCK HUNTERS, GOODBYE"..... Everyone

BANQUET COMMITTEE

TICKETS:
Mr. & Mrs. Leo F. Simon

GIFTS:
Mr. & Mrs. H. Bruce Schminky

CAMELLIA CORSAGES:
Mrs. Ben F. Smith

INTERPRETER: (menu)
Mrs. James Stauffer

PHOTOGRAPHY:
Mr. Orrin E. Stanley

PIANIST:
Mrs. A. W. Hancock

HOSPITALITY:
Dr. & Mrs. Francis G. Gilchrist

HOSTESSES:

Miss Joanne Aungst
Mrs. Leslie Davis
Mrs. Ray Golden
Mrs. Elwin Lilly
Miss Alice Schminky

DECORATIONS:

Mrs. Stephen Blore
Mrs. Franklin Brown
Mrs. William Clark
Mrs. Hayward Pierce

OFFICERS

	1957	1958
PRESIDENT	Mr. Leroy A. Palmer	Dr. James Stauffer
VICE - PRESIDENT	Dr. James Stauffer	Mr. Paul W. Howell
SECRETARY	Miss Rose Hamilton	Miss Rose Hamilton
TREASURER	Mrs. Emily Moltzner	Mrs. Emily Moltzner

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Dr. John Eliot Allen	Mr. Stephen W. Blore
Mr. Franklin M. Brown	Dr. Francis G. Gilchris
Mr. William F. Clark	Dr. Ruth E. Hopson
Dr. Francis G. Gilchrist	Mr. Murray R. Miller
Dr. Ruth E. Hopson	

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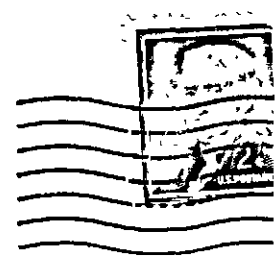

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1958-1959

			Zone	
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Vice Pres:	Paul W Howell	Box 1884, Troutdale, Oregon		MO 5-3033
Secretary:	Miss Rose Hamilton	5412 S. E. Powell Blvd.	6	PR 5-9762
Treasurer:	Mrs. Emily Moltzner	7032 S. E. Stark St.	16	CA 2-2420

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STAFF OF GEOLOGICAL NEWSLETTER

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Bus. Manager:	Mr. Robert F. Wilbur	2020 S. E. Salmon St.	" 15	BE 5-7284

COMMITTEE CHAIRMAN

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CALENDAR

Buffet luncheon every Thursday noon at the Portland Chamber of Commerce, 824 SW Fifth Avenue, second floor. One dollar. You are welcome.

Friday June 13 — Room B, Public Library, 7:30 P.M.
The Surface of the Basalt Series in the Pasco Basin. This will deal with the Ringold Formation and its contact with the Columbia River Lavas. This was one of the most interesting papers given at the recent meetings of the Geological Society of America in Eugene. By Randall E. Brown

Tuesday June 17 — Library Night, Biology building, Lewis and Clark College, 7:30 - 9:30
Following an hour of library browsing there will be a discussion of color photography by Franklin Brown.

Friday June 27 — Room B, Public Library, 7:30 P.M.
Painted Canyon, a 40-minute color film dealing with Bryce, Zion and Grand Canyon. It will be preceeded by a brief summary of the stratigraphy and historical geology of these national parks.

TRIPS

Sunday June 15 — Assemble at 8:30 A.M. opposite Jantzen Knitting Mill on Evergreen Hiway.
Take right hand turn after crossing Interstate Bridge.
Leaders - Dr. John Allen and Paul Howell, leaders. Study geology along north side of North Columbia River, and Beacon Rock area.

Fri-Sat-Sun July 4-5-6 -Three Sisters Area and Century Drive.
Meeting place and Camp Ground is at the east edge of Sparks Lake Meadow. To the rear of camp will be White Bachelor, and on the western skyline the majestic Three Sisters.
Leaders of trip - Phil Brogan and Dr. Stauffer.

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Membership list is in preparation. The list of members of the Society is to be published soon, and in order that this new roster may be as complete as possible, please check your membership card to see that your dues are paid to the end of our fiscal year, February 28, 1959. If not, please send your check to secretary Rose Hamilton, 5412 S.E. Powell Blvd., Portland 6, making dues payable to the Society. If your address or phone number has been changed since the list was published last year, it would be appreciated if you would notify the Secretary so that corrections can be made. This will be last issue of the Newsletter you will receive unless your dues are paid.

NEWS OF MEMBERS

Tuesday evening, April 29, Dr. Ruth E. Hopson, science instructor at Portland State College, showed motion pictures she had taken as a part of her intensive study of plant life of the McKenzie River area, at the Hostess House of the Oregonian.

Fay Libbey and Tom Matthews attended the Northwest Regional Conference A. I. M E. at Spokane, April 17-18 and 19.

Please note new telephone number of our secretary, Rose Hamilton. - PR 5-9762.

On May 28th at First Unitarian Church Kenneth Phillips showed pictures taken on his last summer's trip to Turkey.

NEW MEMBERS

Howard P. Sherwood Star Route West, Box 91 Tillamook, Oregon Phone VI 2-4606
Mr. & Mrs. Theodore Johnston Moro, Oregon Phone JO 5-3586
Mr. & Mrs. Albert R. Kenney Box 156, Star Route West Tillamook, Ore Phone VI 2-6930

We neglected to give Mrs. Barr credit for writing up the articles on the Annual Banquet, and the Museum Tea at the Baldwin home on March 29.

Mrs. Emily Moltzner and Franklin Davis furnished most of the news regarding our members last month. Mrs. Moltzner has now joined our editorial staff as a regular reporter, and any news of our members will be appreciated.

Bob Wilbur's brother LeRoy of Little Rock, Arkansas, and Howard of Lincoln, Nebraska, and their wives were here to greet their father on April 24th, his 90th birthday, and to visit several days with Bob and his mother.

LUNCHEON MEETING MAY 15

When we finally assembled for luncheon, 22 were present. A delegation of about 50 women were having a meeting in our usual room, so we had the smaller room at head of the stairs. Bruce and Delano were the wise ones as they came late and avoided that crowd. Mr. & Mrs. Paterson had a guest as did Ralph Mason. Several rock specimens were passed around the table. Al Keen had just returned from a trip to southwestern parts, and was surprised when informed he was our five-minute speaker. He said he and Mrs. Keen had been on a 3 weeks trip, attending National Gem and Mineral Show at Dallas, Texas. They took first place and received a trophy for their display of Mineral Crystals. Enroute they visited Salt Lake City, Moab, Albuquerque, Amarillo, Carlsbad Caverns, El Paso, Petrified Forest, Meteorite Crater, and the Meteorite Museum, Kingman and Winnemucca, and so home. They covered 5265 miles on this trip.

Some time ago Jane Erickson was our five-minute speaker at a luncheon, taking as her topic "The Mule and I", covering a trip she hoped to take later on from the rim of Grand Canyon to the river below. Too bad she could not have been present on the 15th and heard Al Keen's graphic description of his trip down and back on the mule Keno. Al said the view was awe-inspiring especially going around some of the switch backs at such a short angle that the mule's head would be over the side of the trail, and the view of the Colorado River thousands of feet below, through the V of the mule's ears, was to say the least breath-taking. A wonderful experience, and a fine opportunity to study geologic ages.

Bruce passed around a card received from the Simons, who have been touring California with Lotus and her husband. The card was sent from the Treashers at Corte Madera, signed by all and wishing they could be at the luncheon with us.

In the April 1958 American Historical Review, Dr. Kenneth Scott Latourette reviewed the following two volumes by Philip Carrington. Vol I, the Early Christian Church, and Vol. 2, the Second Christian Century.

ROCK 'N' ROLL MISSOURI STYLE, - BY Jan Elmore

New Madrid, Missouri in 1811, was a frontier trading post and river port on the Mississippi. It boasted a population of 800 and was a favored meeting place of trappers, traders, and river pirates. It was a peaceful town except for tavern brawls, street fights and so forth. Among other civic improvements New Madrid was said to have had a fine graveyard

New Madrid was about to become famous. It was to be the center of the strongest earthquake in the recorded history of the North American continent, and one of the strongest in the recorded history of the world.

The first shocks were felt in the early morning of December 16, 1811, at 2:15 and just after daylight. People were thrown from their beds, furniture was tossed about By the end of the second shock every man made structure in town had collapsed. Trees were uprooted, river banks caved in, islands in the river disappeared - and new ones appeared A dull roar "like a distant tornado" or "fire being blown by bellows" passed from the southwest to the northeast. The Mississippi ran backward in its course.

But the most terrifying phenomena were the earth waves. The ground rolled in waves "like the surf" from a few inches to almost three feet in height. These waves split into fissures two inches to sixty feet long and a few inches to twenty feet wide, from which water and sand shot twenty feet into the air with a loud roar. Was it any wonder that the populace believed that the Day of Judgement had come and that the roar of the quake was Gabriel's trumpet?

Shocks were felt in Richmond, Raleigh, Washington, D. C., Columbia, South Carolina, Portsmouth, Norfolk, Charleston, Savannah and over parts of Ohio, Michigan and Indiana. Earthwaves occurred in Kentucky and Tennessee. It is supposed that much of this activity was due to adjacent faults made active by the initial shocks at New Madrid.

The shocks were constant but diminished in strength until January 23, 1812 when a shock equal to the first two occurred. The people had all they could take. It is reported that dozens began a march overland to get out of the territory. They had no idea of the extent of the quake.

Two weeks of relative calm followed. All reports, incidentally, come from the diary of Jared Brooks who set up a group pf pendulums in Louisville to record the shocks. He reports that not an hour went by without motion of some kind.

The worst shock occurred on February 7, 1812, Fissures opened beneath the river causing great whirlpools. Several boats were reported lost. More earth waves rolled, splitting into fissures, some of which were seven hundred feet long and thirty feet wide. One fissure was discovered which was five miles long.

The shocks dwindled, becoming medium heavy in mid-March. The earth was in constant motion for over a year following the first shocks. Jared Brooks recorded 1874 separate shocks in the three month period from December 16 to March 15.

In all, an area of one million square miles was affected. One half of the United States felt the vibrations. As was mentioned before, many of these were probably due to activity set off in faults adjacent to the New Madrid area.

The centrum of the quake was apparently a NE-Sw fault fifteen miles west of the Mississippi River on a line with New Madrid and extending to a point a few miles north of Parkin, Arkansas.

The area of total destruction extended from the New Madrid to a point west of Cairo on the north to the latitude of Memphis on the south - over one hundred miles. The area of partial destruction stretched northeast to beyond the Wabash, south to the mouth of the Arkansas. It is not definitely known how far west, but in all, Fuller estimates that areas one and two covered from thirty thousand to sixty thousand square miles, Ponds, lakes and springs were ruined. They became muddy and full of chemicals, especially hydrogen sulfide. The latter is presumed to have come from a disturbance of underlying deposits of decaying vegetation.

Areas of "sunk lands" were created in Western Tennessee, S. E. Missouri and N. E. Arkansas. Near Piney River, Tennessee twenty acres of land sank so far that the tops of the trees were level with the surrounding earth. The site of New Madrid sank fifteen feet and was eventually inundated. Sand sloughs - broad shallow troughs of extruded sand a mile or more wide and three to five feet deep with ridges-covered a large area. Along the river swamps were created. Areas along stream and river banks were depressed fifteen to twenty feet and filled with three to five feet of water. Broad, shallow lakes were created in depressions in the bottom lands or in depressed channels. The most famous of these lakes is Reelfoot Lake in Tennessee which is twenty miles long and five miles wide.

There were also areas of uplift. Tiptonville Dome, lifted by previous earthquakes, was raised fifteen to twenty feet. Little River Dome was formed and lifted five to ten feet. In addition there were many small uplifts such as the new sand bars in the river. Sand blows, small circular sand craters eight to fifteen feet across and three to six inches high were formed in linear strings across the low alluvial beds. Some ranged up to one hundred feet across. These were formed when sand and water were blown into the air. Sand scatters, thin sheets of sand covering large surfaces, were formed on the higher and lower bottoms when sand and water were extruded "peacefully".

Landslides occurred on all or nearly all the nearby ridges. The most common phenomenum was fissuring. There were types of fissures, the simple cracks and the compound fissures. The large fissures were all compound fissures which were actually small, narrow downfaulted blocks.

It is estimated that one hundred and fifty thousand acres of forest were destroyed by uprooting, drowning and burying young trees in sand. The loss of human life was small, principally because the area was sparsely populated and because there were no large buildings to fall on anyone. Only one person was killed by a collapsing building. One woman dropped dead of sheer fright. Boatmen were drowned when the river went on its rampages. Some persons who tried to flee overland died of pneumonia and exposure.

As to the causes, the New Madrid earthquake was not volcanic nor was it in any way connected with vulcanism. It was of deep-seated origin, perhaps involving faulting in paleozoic rocks, disturbing the soft alluvial lands above. Fuller believes that the quake was due to the steady processes of downwarping of the entire basin. The sunk lands, Fuller believes, were caused by lateral movement of underlying quicksands The small local sinks were due to flowage of underlying quicksand into the river and to extrusion. Some faulting was due to "creep" of the quicksand as well as actual displacement. Later insetting of alluvial material due to possible underlying faults created the domes.

One curious factor in connection with the quakes is the low barometric reading at the time of all eight serious shocks. This might be due to the fact that it was winter. It is quite a coincidence, then, that none of the serious shocks occurred during the frequent periods of high barometric pressure.

As for the future there is good evidence that the crust is in unstable equilibrium at the present time. Indian legends and geologic phenomena attest to the fact that other serious quakes had occurred in the region previous to the 1811 shocks. Fuller believes that the 1811 quake was but one of a series. Further disturbances are to be expected.

Partial Bibliography

Kroll, Henry H., Fury in the Earth. An interesting novel based on the earthquake. Probably not too much factual material, but good reading. May be obtained in the Multnomah County Library.

Van Every, Dale, The Trembling Earth. Also a novel based on the earthquake. More historically accurate in regard to quake phenomena. A good love story too, ladies. In Multnomah County Library.

Fuller, Myron L. The New Madrid Earthquake. U.S. Geological Survey Bulletin 494. Washington, D.C. Govt. Printing Office, 1912.

McGee, W.J., A Fossil Earthquake. Bull. Geological Society of America, Vol. 4, 1892, pp. 411-413.

McMurtie, H., Louisville and its Environs. Louisville, S. Penn., 1819. The appendix is an extract from the diary of Jared Brooks.

FISHING FOR FOSSILS*

Fishermen who have become bored with the normal methods of angling might find fishing with picks, shovels, crowbars, wedges, and blasting powder a pleasant diversion. Sounds impossible, but that is what is being done by two gold miners, David F. and D. C. Haddenham near Lander, Wyoming.

Calcite cliffs, nearly a mile long, stand out in bold relief in a fossil district near the fatherson operation. To the trained geologist, the various layers represent different stages of time. The field itself is one of these strata and is 10 to 14 inches thick. There is some confusion as to how it was formed. Some believe that southwestern Wyoming was once a large, tropical body of water called Lake Gosiute, and that during the Eocene Epoch, the fish the Haddenhams are finding today were embedded in the fine silt. Where there are great numbers of them, the theory is that they were caught in times of flooding rivers. The fish were dumped into the deltas of these rivers, along with the silt, so rapidly, they were covered with debris before they could swim to safety.

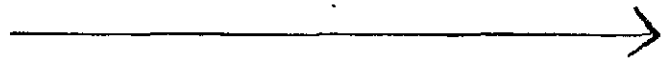
All of this took place between 35 million and 50 million years ago. Since then, layer upon layer of earth and silt has covered them and turned to rock. Today, this oddity of nature is not only a tourist curiosity, but is furnishing some of the most perfect specimens of fossil fish and plants in the world. The removed items have been placed in museums throughout the world, and many even appear in famous private collections.

To get to the specimens, it is necessary to blast through a 35-foot layer of calcite and slate. About 100 square feet of the specimen layer is exposed at a time. Mother Nature has provided seams that run across the stratum at about 2-foot intervals, thus making it easy to lift large slabs as one piece. To remove the calcite coating, specimens must be painstakingly and tediously scraped. Because of this coating which produces a rosin-like substance, many specimens are not discernable to the untrained observer and can be easily overlooked.

Other than the fish, palm leaves, from 6 to 8 feet in length and from 3 to 4 feet wide, have been uncovered. The occurrence of these confirms the geological theory that the climate was tropical and quite unlike the blizzard-ridden mountains of Wyoming today. This theory was further substantiated in 1890 when an alligator was found. It was discovered in thirteen pieces and when assembled, formed a 13-foot-long specimen. Several Gar-pike, ranging in size from 4 to 6 feet, have been disentombed, as have birds of about the size of the domestic chicken and resembling the snipe or plover in general conformation. In addition, specimens of sunfish, rasp tongues, deep sea bass, chubs, pickerel and herring have been found, not to mention mollusca, crustaceans, birds, turtles, mammals, and many varieties of insects. This sign points to the tourist attraction:

WONDERFUL - WYOMING

FOSSIL FISH DEPOSITS



Believed to be one of the largest deposits of fossilized fish in the world from which are taken many rare specimens every year.

The formation is tertiary and the geological age of these specimens is about forty million years. Evidence of operations may be seen in the working line near the top of the breaks on either side of the railroad. Fish are being mined from these deposits continually; tourists may visit the workings, at the breaks or at the paleontological studio located here. Tourists and visitors always welcome.

Wyoming also encompasses some of the most extensive fossil beds of dinosaur and early mammal skeletons in the world.

The "Oregon Trail" passed through this immediate vicinity.

WELCOME TO LINCOLN COUNTY

*Reprinted from Compressed Air Magazine, March 1958.

OREGON'S ONLY CONTINUOUS GEYSER

How would you enjoy living in a town that has a municipal hot and cold water supply? The small community of Lakeview, which is the county seat of sprawling Lake County, bordering the California boundary in south-central Oregon, is a community in the state that boasts of its constant hot and cold water supply and also Oregon's only continuous geyser.

Some thousands of years ago the country near Lakeview was a peneplained area with only slightly sloping proturbances dotting the landscape. At that time the land was level and the country was peaceful and tranquil, but within a few thousand years the entire area was shaken with violent earthquakes as volcanoes spewed forth lava in abundant quantities. After the lava had cooled and solidified, movements of the earth again reached a climax and in its fury it produced the high mountainous regions which surround Lakeview today. Erosion of the land and mountains has caused them to seem ever higher and some of the peaks today reach a height of 8,000 feet.

One scenic result of this extreme diastrophism, or earth movement, was the formation of Abert Rim, one of the longest natural fault rims in the world. It is nearly 40 miles in length and its precipitous vertical cliffs reach a height of almost 600 feet.

Underneath the newly formed mountains is a large batholith, which is probably a remnant of the years of vulcanism, and even today the extremely high temperatures of the structure causes much of the water in Lake county to be boiling hot.

The hot water ponds surrounding Lakeview have long been known and perhaps the Indians even made use of the boiling pots and warm pools before Col. John Fremont opened the area to white settlers. The settlers certainly were aware of them, and some are known to have driven swine into the hottest pools to kill them.

The only continuous geyser in Oregon came to life in 1933, when Carl Williams was drilling for a cold water well about one mile north of Lakeview. Williams inadvertingly struck a hot artesian water supply that is still flowing today. The geyser has been appropriately named Old Perpetual and it spews forth a 20-inch stream of 200 degree water and steam 60 feet in the air every 10 seconds, for a period of 5 seconds. Water from this man-made improvement on the natural phenomena is used to furnish all the heat and hot water at Hunter's Lodge, a hospitable sportsman's hotel one mile north of Lakeview on the Fremont highway.

Even more recently, in December 1956, a larger man-made geyser was drilled by Mr. Charles Crump who lives only a few miles from the small southeast Oregon community of Adel. Adel is located approximately 40 miles due east of Lakeview. The crump geyser erupts about every 7 hours and spews hot water for nearly 5 minutes at a time. The period of time between each eruption increased from four hours in 1956, to seven hours in 1958.

The entire area of Lake county is sporadically covered with small hot springs and warm water pools, and is the only county in Oregon that can boast of its own continuous man-made geyser.

By: Jack M. Williams

FIELD TRIPS - 1957 - 1958

April 28 1957	Highland Buttes	Dr. Gilchrist
May 26	Chehalem Mountains Gaston & Scoggins Creek	Dr Stauffer
June 22-23	Peter Iredale Park and Saddle Mt.	Leo Simon
July 28	Swift Creek Dam on Lewis River	Franklin Brown
Aug. 17-18	Bird Creek Meadows, Mt. Adams Region	Leo Simon
Sept. 15	Sandy River	Paul Howell
Oct. 19-20	Two separate trips. Geology of Portland area.	Bruce Schminky and Trip Committee
Nov. 10	Oregon Portland Cement Plant at Oswego	Laurence Newland
No December trip		
1958		
Jan 12	Three basements visited.	
March 1	Delano Studios and Aerial Surveys.	

-- CAMP HANCOCK AND OMSI* NEED YOUR CONTRIBUTION

It has occurred to us that out-of-town members may not know about our members helping these two meritorious organizations, as requests have been made only at our regular Friday night meetings. There have been coffee hours and a trillium party, with excellent results.

If you'd like to help, please mail your check to Mrs. Emily Moltzner, Treasurer, 7032 S. E. Stark St., Portland 16, Oregon. Any amount acceptable.

* OMSI means Oregon Museum of Science and Industry.

Camp Hancock is the summer camp for boys in the Clarno fossil beds.

ACADEMY OF SCIENCE HONORS EIGHT G. S. O. C. MEMBERS

When the Oregon Academy of Science recently gave a citation to G. S O. C. member, Phil Brogan, geologist and editor of Bend, Oregon, for his outstanding contribution to the science of the Northwest, this marked the eighth member of the Geological Society to be so honored.

The first member receiving the Academy's citation was Dr. E. L. Packard, for many years professor of geology and paleontology at Oregon State College and a charter member of G. S. O C. This was in 1949. The following year, Dr. Warren D. Smith, now deceased, professor geography and geology at the University of Oregon, was among those chosen.

In 1952, Dr. Ethel Sanborn, just before her death that same year, received a citation for her great contribution as a teacher and publisher on the subject of paleobotany.

Among the three persons chosen in 1954 to receive this distinguished citation was our own Alonza W. Hancock. Lon's contributions to geology and its related subjects have been so varied in their scope and far reaching in their effects, it is easy to see why the Academy chose him for the award.

The following year, 1955, Mr. F. W. Libbey, geologist and mining engineer, for many years the head of our State Department of Geology, was honored by the citation.

In 1956, the Academy recognized the long record of service and achievement in geology of Dr. Edwin T. Hodge, to whom we shall ever be grateful for his part in promoting the organization of the Geological Society.

Dr. Edwin E. Osgood, A. M., M. D., Assistant Professor of Medicine and Head of Experimental Medicine, University of Oregon Medical School, co-author of "Atlas and Hematology" and a long-time G. S. O C. member, was next honored in 1957.

The Geological Society can well be proud of the creditable record and recogni tion given by the Academy of Science to its outstanding and gifted members.

J. Erickson.

CHICO FORMATION IN OREGON GETS NEW NAME

Trending southeast across Jackson County, Oregon, and Siskiyou County, California, is a long narrow belt of intermittent outcrops of late Cretaceous marine sediments containing a variety of ammonites and other mollusks. The northern end of this belt crops out in the valley of Grave Creek northeast of Grants Pass, Oregon. The sediments are again exposed in patches along the west side of Bear Creek Valley near Medford and Ashland, with a prominent outcrop on U. S. Highway 99 nea Siskiyou Pass. In California, a thick section of the formation is well exposed near Hornbrook, just south of the Oregon border, and lesser outcrops occur near Yreka.

These fossiliferous rocks have for many years been included in the Chico formation, whose type locality is about 140 miles to the south on Chi co Creek in the Sacramento Valley, California. Recent studies, however, by Wells (1956) and Peck, Imlay, and Popenoe (1956) have shown that these Late Cretaceous rocks are in part younger and in part older than the typical Chico formation. Consequently, due to their remote position and almost entirely different age and fauna, these rocks have been given a formation name of their own; because of the excellent exposures near Hornbrook, California, the name "Hornbrook formation" has been adopted

The Hornbrock formation is at least 2,500 feet thick. It is composed largely of coarse, well-indurated sandstones near the base, grading upward into siltstones and mudstones. It includes six distinctive members and at least one unconformity. Ammonites serve as the chief age indicators. In Oregon, the Hornbrook formation is represented by the lower members (Cenomanian and

Turonian age) which are mainly coarse fossiliferous sandstones having a reddish-brown color at weathered outcrops. The most characteristic fossil, and probably the one most familiar to fossil collectors, is the odd-shaped pelecypod Trigonia.

Results of the studies by the authors mentioned above are contained in the following published reports:

Wells, F G., 1956, Geology of the Medford quadrangle, Oregon-California: U.S. Geol. Survey Map GQ 89, 1956.

Peck, D. L., Imlay, R. W., and Popenoe, W. P., 1956, Upper Cretaceous rocks of parts of southwestern Oregon and northern California: Am. Assoc. Petroleum Geol. Bull., vol. 40, no. 8. Aug. 1956.

M. L. Steere

The following is quoted from a letter from Jack Wolfe. Dept of Paleontology, University of California, Berkeley, California, sent to Rudy Erickson regarding a Gastropod picked up by Mrs. Erickson on their recent trip to Lincoln Beach.

"That gastropod of yours is of considerable interest. You were certainly correct in deciding that the species is unrecorded from that locality, and what's more, the species is unrecorded from the Astoria formation. As near as we can figure out, the specimen is very close to, if not identical to, Eudolium oregonense Dall, a species only known from the Coos conglomerate. It should be stated, however, that Dr. Durham feels that some of the fossils in the Coos cgl. are redeposited, probably from the Astoria fm. of that region. Your specimen is important, not only in adding another species to the Astoria fauna, but possibly also in showing the presence of an Astoria species in the Coos."

Dr. Durham states that he would be more than happy to receive material from the Molalla fauna As I told you, he is still not certain of the age of that fauna.

GEOLOGICAL SURVEY

MF-137 Leadpoint quadrangle, Stevens County, Wash by R. G Yates and J. F. Robertson. 1958. Lat 48°52'30" to 49°, long 117°30' to 117°37'30". Contour interval, 40 feet. 36 by 37-1/2 inches.

Leadpoint quadrangle is an area of mildly metamorphosed lower Paleozoic sedimentary rocks, intruded by igneous rocks of Mesozoic and Tertiary age. The sedimentary rocks are compressed into northeastward trending folds and are broken by high-angle faults. Many of the lead-zinc deposits of the Northport mining district are within the mapped area.

Nestucca River, Oregon. 1955. Plan and profile of Nestucca River from vicinity of Hebo to mile 23.2 and tributaries and dam site. Scale, 1:24,000 (1 inch = 2000 feet), contour interval 20 feet on land and 5 feet on water surface. Vertical scale of profile 1 inch = 80 feet 22 by 28 inches. 2 sheets (1 plan and 1 profile). Price, 30¢ per sheet.

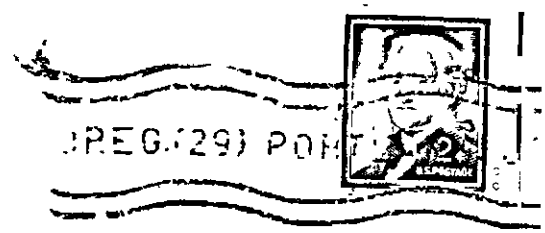
South Fork Coos River, Oregon. 1955. Plan and profile of South Fork Coos River from vicinity of Dellwood to mile 22, Williams River to mile 10 and tributaries and dam site. Scale 1:24,000 (1 inch = 2000 feet); contour interval 20 feet on land, 5 feet on water surface. Vertical scale of profile, 1 inch = 80 feet. 22 by 28 inches. 2 sheets (1 plan and 1 profile) Price 30¢ per sheet.

Trask River, Oregon. 1955. Plan and profile of Trask River from vicinity of Gold Creek to mile 11.6 and tributaries. Scale 1.24.000 (1 inch = 2000 feet); contour interval, 20 feet on land and 5 feet on water surface. Vertical scale of profile, 1 inch = 40 feet. 22 by 28 inches. 1 sheet. Price 30¢.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

July 1958 **PORTLAND, OREGON**



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Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S. E. 9th Avenue, Zone 2, Phone: BE4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Room B, Public Library, 7:30 P.M.

Friday July 11 — Preview of Mt. Rainier. Leo Simon and others. If you have colored slides of Mt. Rainier bring a few of the best ones along. This will provide some orientation for the August trip to Rainier.

Tuesday July 15 — Library Night. Biology building, Lewis and Clark College, 7:30 - 9:30 P.M. Following the library hour there will be a continuation of the discussion of color photography begun by Franklin Brown in June.

Sunday July 20 — Field trip. Rudolph Erickson and Franklin Brown, leaders. Alder Flats and way points. Meet at Fish Creek Bridge on Clackamas River Road, at 10:A.M.

Room B, Public Library, 7:30 P.M.

Friday July 25 — Willamette Valley Fossil Woods. An illustrated talk on the anatomy of fossil woods found throughout the Willamette Valley. This will be an amplification of a shorter talk on the same subject given before the Oregon Academy of Science last February. By Wallace B. Eubanks of the State of Oregon Timber Inventory and Appraisal.

Thursday Aug. 7 — Annual Picnic. Little Volcano, Mt. Tabor Park, 6:30 P.M. Note the change to Thursday from the second Friday, as on previous years, as other groups hold square dancing in the Park on Friday nights. Mrs. Catherine Clark, chairman of the Picnic Committee, assures us that arrangements are being made to give us a fine evening's entertainment.

The food committee suggests that everyone bring the same as last year. Also bring your own plate, cup and knife, fork and spoon. Rolls, butter, coffee, tea, cream and sugar will be furnished. The committee will have a few extra plates, etc. in case you forget. If there are any questions call one of the following:

Mrs. Barr	PR 4-2459	Mrs. Brown	BE 6-6658
Mrs. Clark	BE 4-7096	Mrs. Stauffer	NE 6-3825

No library meeting or Lecture meeting in August.

NEWS OF MEMBERS

President Eisenhower fills compact post. Kenneth N. Phillips, Portland district engineer for the U.S. Geological Survey, has been designated U.S. representative of the Klamath River Compact Commission, the Associated Press reported from Washington, D. C. on June 6. Mr. Phillips was named by President Eisenhower to the commission which has jurisdiction over the compact between Oregon and California.

Mrs. Ruth Harrison left June 16 for Philadelphia to visit her son there. She will then join her sister in Long Beach, Calif. to make her home and will continue teaching in one of the junior high schools there. Our members will miss her and wish her well in her former home city.

CHANGE OF ADDRESS

Frank J. Merryman from 2405 S.W. Multnomah Blvd. to 9318 SW Second Ave, Portland 19, Ore.

On the yellow page, Dr. Stauffer's telephone number should be NE 6-3825.

Over Memorial Day holiday, the Schminky family had an auto trip to Walla Walla, Lewiston, and the Palouse Falls. Bruce says these Falls are a "must" when making a trip in that vicinity.

Over the same holidays, the Simon family retraced their trip of a few weeks ago to make a study of the flora of northern California and Southwestern Oregon.

Dr. John Allen and Ralph Mason led a trip for Portland State College to Fossil, Clarno, Lava Butte and Bend. Over 100 were on this trip, and did it rain on Memorial Day afternoon.

SCENIC TRIPS INTO THE PACIFIC NORTHWEST'S GEOLOGIC PAST - - -

General Extension Division's Department of Educational Radio and Television has selected for its first venture into Summer telecourses a subject which residents of the Pacific Northwest should find timely and interesting.

Your guide and instructor for these SCENIC TRIPS INTO THE NORTHWEST'S GEOLOGIC PAST will be Dr. John Eliot Allen, professor of geology at Portland State College, and one of the nation's well-known and widely-published geologists. Dr. Allen's television lectures, reflecting his own native zeal for the Northwest and its many potentialities, should bring the viewer a new awareness and appreciation of the region's geological and scenic attractions. Participation in the telecourse study program should also bring the viewer a sound beginner's knowledge of geology, and a new respect for the contributions of this vital science to man's welfare and enjoyment.

Dr. Allen's series of 13 lectures will be broadcast by Station KGW-TV (Channel 8) beginning June 29 and continuing through Sept. 21. Broadcast time will be 12:30 to 1:00 P. M. each Sunday during the 13-week period.

Included in the lectures will be the fascinating stories behind the formation of such features as the Columbia Basin and the Columbia River Gorge, the Coast Ranges and the Puget-Willamette Trough, The High Cascade Volcanoes, The High Lava Plains and Basin Ranges, and others.

Giving academic background for deeper appreciation and enjoyment of the Northwest's scenic and geological resources will be study of such topics as:

* The geologic calendar of the processes and events which have shaped the land surfaces of the Pacific Northwest.

* Rocks and minerals as clues to the geologic history of an area.

*The shape of hills and valleys and the story they tell.

The course is available for three hours of college credit to those who register, complete home study assignments, and pass a final examination. Anyone of sufficient maturity to do the work may enroll. Arrangements for completion of assignments and the examination are flexible and should enable many to participate on a credit basis.

If you do not wish to register for credit, but would like to follow the course for your own betterment, you may purchase the same Viewer's Guide and textbook combination used by the registered students. The newly-designed guide, used in conjunction with the standard text, will give the non-credit participant a wide choice of study and investigational activities. Cost of the guide and text combination is $2.25.

Registration for credit must be completed by July 13, the Monday following the third lecture on television. The enrollment fee is $27.00, the uniform charge for a three-credit course as established by the State System of Higher Education. The Viewer's Guide will be sent free of charge to all who register. The designated textbook is an additional $1.25 and may be purchased by mail along with your registration or in person at the Portland State College Bookstore.

Credit registration forms and information, as well as study materials for the non-registered viewer, may be obtained by completing and mailing the Telecourse Coupon on the reverse side of this folder. More specific information regarding the course may be obtained by calling the General Extension Division, CA 2-3201.

- - A FIELD TRIP TO THE TILLAMOOK AND BAY OCEAN AREA, APRIL 27, 1958

By T. Herbert Lawrence

The area covered by this trip was the central portions of Washington and Tillamook Counties adjacent to U. S. Highway 26 and Oregon State Highway 6, as well as Cape Lookout, Oceanside and Bay Ocean. Inasmuch as we started from the junction of Sunset Highway and Barnes Road, we were in the northern half of the Tualatin section of the broad, level to gently sloping Willamette Valley. It was the first major physiographic feature seen by members and guests of the Geological Society after the Tualatin Mountains (West Hills) before caravaning farther west. It was followed by the Coast Range Mountains, the Coastal Plain, the Pacific beaches and the Pacific Ocean.

Our first stop was made at a road cut where the highway enters the foothills of the Coast Range a short ways beyond Banks. Dr. Stauffer asked us to recall how level much of the country we had just traversed was. Several reasons were suggested for this flatness. It was then explained how it became an alluviated plain. During the Eocene and Oligocene Epochs northwestern Oregon was from time covered by the waters of ancient seas in which thick accumulations of various types of sediments and lavas were built. Some of these were seen later along the Wilson River highway. In mid-Miocene times the Columbia River Lavas were extruded, covering great areas of eastern, central and northwestern Oregon. These were then folded along with the older formations to produce the outstanding structural features found in the above mentioned areas, such as the numerous anticlines, synclines and faults east of the Cascades, the Cascades geanticline, the Willamette Valley syncline and the Coast Range geanticline. An exposure of Columbia River lava was examined at an outcrop at this stop. They have the same characteristic dense, black colored texture of Columbia River basalts found elsewhere. In a few places they have a pillow structure, rather than the columnar or brickbat form usually found. Beautiful examples of spheroidal weathering, resulting from the rounding off of large blocks created by vertical and horizontal jointing, and residual boulders that resulted from this weathering were noted at the base of the cliff. On the upper surfaces of the basalts in places deep lateritic weathering has occurred. It is at these places that colitic and other ferruginous bauxite deposits of Washington County are found. As the synclines formed Pliocene sediments began to accumulate throughout the Willamette Valley. They now lie below younger formations and only in the Portland area has deep erosion exposed them (the Troutdale Formation). The accumulations of Pliocene and Pleistocene sediments near Beaverton is at least a thousand feet thick. After the Pliocene, in the Pleistocene Epoch during the last or Wisconsin stage of glaciation, a very thick sheet of glacial ice covered Canada, northern U. S., and the higher elevations of the Rocky and Cascade Mountains. This geologic event resulted in lowering mean sea level. This in turn gave the streams draining into the seas new base level and immediately they started rapidly to degrade their channels deeper. As a consequence their tributaries also cut their valleys wider and deeper. However, after the Wisconsin stage of glaciation had passed, the sea returned to its former level, resulting in the flooding of the Willamette valley and the subsequent deposition of gravels, sands and silts, variously known as the Portland sands and gravels, the Willamette silts and the Tualatin silts. In the Portland area these were built up to the top of the waters of the lake or sound because of the great transporting power of the Columbia River but elsewhere in the valley the streams were able to only partially fill the basins. To explain the present height of these deposits Baldwin and Lowry postulate broad uplift of around four hundred feet. As this progressed the Columbia and Willamette cut the broad terraces in the Portland sands and gravels now so conspicuous in Portland and Vancouver.

The second stop was a wayside near a pleasing waterfall located a few miles beyond the 1,500 foot summit pass of the Coast Ranges. Dr. Gilchrist reviewed and explained the geological formations here. The same late Miocene and Pliocene regional diastrophism mentioned above also upthrust this area, in fact even more so because the oldest of these old sea bottom formations may be readily seen, namely the Tillamook volcanic series which consists of lower Eocene basalts interbedded with tuffs and breccias. The definite pillow structure of these lavas indicates that they were extruded in water. The strong dipping of these rocks was evident across the road from the wayside and at many points along the Wilson River Highway. The successively younger formations of the old sea bottom are not all exposed or present at the wayside. Nevertheless they are found elsewhere in both Washington and Tillamook Counties. The next formation,

the Cowlitz of upper Eocene, unconformably overlies the Tillamook volcanics. In Washington county this formation, a sedimentary one consisting of conglomerates, shales and sandstones, is primarily exposed on the eastern side of the old lavas while in Tillamook county these sediments and others are on the western side. Because of their great similarity lithologically the shales and sandstones of the Keasey Formation are difficult to distinguish from those of the Cowlitz. They are, however, of upper Eocene and lower Oligocene age and overlie the Cowlitz sediments in Tillamook County. In Washington County they outcrop along Gales Creek northwest of Forest Grove. Also of Oligocene age are the tuffaceous sandstones, siltstones and shales of the Pittsburg Bluff (Lincoln) and Scappoose (Blakely) formations. In Washington County they are probably best seen toward the headwaters of the two forks of Dairy Creek. Those in Tillamook County lie above the Keasey shales. The final formation of the group is the Astoria Formation of mid-Miocene age. It consists of sandstones and shales and is exposed with the older sediments of Tillamook County. They are closely associated in places with the Columbia River basalts, also of mid-Miocene age, which make up many of the headlands.

Just to the east of the city of Tillamook another stop was made. Dr. Stauffer again described the probable events that occurred during the Wisconsin Stage of glaciation of the Pleistocene Epoch. Wisconsin glaciation depressed sea level and the rivers emptying into the ocean widened and deepened their valleys considerably below present sea level. This coincided with the deepening of the Willamette and Tualatin valleys by their respective streams. With the melting of Wisconsin ice, sea level rose and flooded the enlarged river valleys along the coast as well as the valleys of the Columbia, Willamette and Tualatin rivers. Alluviation has partially filled these valleys, the cities of Portland and Tillamook both resting on this pleistocene fill. Just south of the new east approach to the city a terrace around fifteen or so feet higher than the lower flat area was noted, and it was suggested that this is an erosional remnant of a higher fill which is believed to correlate with the present Portland, Willamette and Tualatin terraces. Differences in heights of these terraces may be due partly to differential amounts of alluviation and partly to differences in post-pleistocene uplift. The higher terrace at Tillamook may be an erosional remnant left after a eustatic (world wide) drop of sea level or the elevation of the region. The proper elucidation of marine terraces is one of the most vexatious problems of geology.

The lunch stop was made at Cape Lookout State Park. While there weren't any official explanations made, most of the members visited the picturesque beach anyhow. Although there were a great many interesting things, those of geology were the conglomerate bed on the cliff side of the headland of the Cape. The pebbles and cobbles were well rounded indicating they had been well worn by water before becoming cemented. In proportion to the clasts the matrix was very thin, and they probably are cemented by an impure clay and calcium carbonate. The predominence of dark colored clasts probably indicates they are of basic igneous rock origin. On the beach below them the cobbles of loose gravel were also largely dark. As far as the writer knows, no choice agates were found. Nevertheless, some of older dark cobbles were quite amygdaloidal and some had attractive zeolites. A few pieces of quartz were also to be seen, as well as marl with abundant shells of bivalves.

Much of the same may be said of the official stop, which was Arch Cape near Oceanside. But apparently the enthusiasm of members over a tunnel in the headland caused them to forget the geology of it. That geology is quite unique. Its name implies the most conspicuous aspect of it. Namely, an arch has been worn by the action of the ocean waves in one of the larger detached rocks below the high steep face of the headland. Doubtless they were once a part of the headland itself. Dr. Stauffer called the writer's attention to a fracture plane of a gravity fault also in the headland. It is very pronounced, and the relative displacement of it may be judged from the pillow structure seen in the foot wall on the ocean side and those in the hanging wall.

Both Arch Cape and Cape Lookout are lava flows of Columbia River basalts. As stated above they are associated with the Astoria formation along the coast in this part of Tillamook County. The sediments aren't too conspicuous in this locality, so no effort was made to study them. From Oceanside we went to what once was Bay Ocean. This narrow spit now has been breached by severe storms in recent years. In its heyday it was a very famous resort beach. The soft, smooth sands of yesterday are no longer, except for a large dune on the northern half of the breached spit. Now it is only hard, rough gravel and driftwood. The geological reasons for the building up of these spits, as there are several along Oregon's coast, were discussed, and some of possible reasons for their destruction were mentioned, but no definite conclusions were reached.

Our final stop was the Pioneer Museum in Tillamook. This is very interesting museum, because its exhibits cover so many fields of science. Those of the earth sciences included a very large and beautiful transparent quartz crystal and several attractive agate specimens. With the closing of the museum, we wished each other farewell and reluctantly returned to Portland.

T. Herbert Laurence

1. 1945 Libby, F.W.; Lowry, W.D.; and Mason, R.S.
"Ferruginous Bauxite Deposits in Northwestern Oregon"
Oregon Dept. of Geology and Mineral Industries, Bulletin No. 29

2. 1945 Warren, W.C.; Norbisrath, Hans; and Grivetti, R.M.
"Geology of Northwestern Oregon, ETC. ETC."
U.S. Geological Survey - Oil and Gas Investigation, Prelim. Map No. 42

Headlight-Herald, Tillamook
Thursday, May 1, 1958

GEOLOGICAL SOCIETY VISITS COUNTY

Sunday, April 27, some 50 members and friends of the Geological Society of the Oregon Country took a field trip into Tillamook county, stopping at several places along the Wilson river to view lava formations. Lunch time found them in Cape Lookout State Park where the many conveniences were appreciated. Then followed a visit to Oceanside for more geology, plus a look at the sealions sleeping on the rocks, next to Bay Ocean where Milvoy (Bill) Robosky gave a brief resume of the happenings there and reminisced about the swank hotel, natatorium and business establishments in the heyday of the little resort. He also called attention to a thick layer of peat exposed at low tide.

The group had time for only a short visit to Tillamook's Pioneer Museum where they were extremely interested in the beautiful displays of wildlife as well as the pioneer relics.

Mr. and Mrs. Eyrle Bills had a short visit with the Bruce Schminky family of Portland. Mrs. Schminky is Mrs. Bill's sister.

Leaders of the trip were Dr. Francis Gilchrist, head of the Biology department of Lewis & Clark College, and Dr. James Stauffer, professor of geology and related subjects. Chairman of field trips committee this year is Franklin Brown, Portland.

---- ANOTHER CAMP HANCOCK BOY MAKES GOOD

Jim Haight, one of Lon Hancock's boys just graduated from Baker High with some honors traceable to his camp training and experience. First, he won a Bosch & Lomb science scholarship. Second, won an interschool essay contest writing on the subject of the four seasons in Eastern Oregon Sagebrush Country in terms of the geology, weathering and erosion, plant and animal life in each season and the reflection and record left in fossil form of the former life of the region. The writing was a good reflection of the inspirational talks given the personnel at camp by our own poetic Lon Hancock.

Jim is the Grand Nephew of one of our long-time members, Mrs. H.F. Travis. The grandson of Judge Clint Haight, a student at U of O under Dr. Condon. Clint has been active in the search and development of Grant County minerals since his college days and made it his second vocation to the publishing of The Blue Mountain Eagle. Jim's dad has sparkplugged the hunt for Uranium about Baker, based on his own geological work in U of O, and is a member of the State Legislature and a member of the State Geological Commission.

All of Jim's family deeply appreciate the extension of his rich background thru the contacts and experiences in Camp Hancock and can recognize the poetic influence of Lon Hancock's talks on interpretation of nature past and present as acted or recorded in the John Day Fossil beds of Eastern Oregon.

PROGRAMS MARCH 1957 THROUGH FEBRUARY 1958

March 22, 1957	Lecture - "Dr. John Evans, U.S. Geologist in the Washington and Oregon Territories." Dr. Irwin Lange, Portland State College
April 12, 1957	"An Amateur Geologist Flies the Lewis and Clark Trail", Dr. Arthur C. Jones
April 26, 1957	"Geophysical History of the Coast Range" Dr. James Stauffer, Lewis and Clark College
May 10, 1957	"Minerals in Oregon's Future" Ralph S. Mason, State of Oregon Department of Geology and Mineral Industries
May 24, 1957	"Physiography of Western Oregon." Paul Howell, U.S. Army Corps of Engineers
June 14, 1957	Archaelogical Travelogue--Mexico and Haiti. Dr. and Mrs. J. C. Stevens
June 28, 1957	"Minerals You Should Know" Leo F. Simon
July 12, 1957	Two films - "Portrait of the Earth" - Hycon Aerial Surveys "The Eighth Sea" - St. Lawrence Waterway - Caterpillar Tractor Co.
July 26, 1957	"Fifteen Thousand Miles in an Hour". -Colored Slides by Orrin E. Stanley
Sept 13, 1957	"Salt of the Earth" - Leroy Palmer
Sept 27, 1957	"Arizona Gold Mining Experiences" - Fay W. Libbey.
Oct. 11, 1957	"Our Silicate World". Introduction. Two movies from North American Phillips Co. "The Ultimate Structure" and "Terre Incognita." Paul Howell, U.S. Army Corps of Engineers.
Oct 25, 1957	Part 2 - "Our Silicate World". General Geochemistry, Paul Howell, U.S. Army Corps of Engineers.
Nov. 8, 1957	Part 3 - "Our Silicate World". Geochemis try of the Silicates. Paul Howell, U.S. Army Corps of Engineers
Dec. 13, 1957	"Geophysical Features of the Willamette Valley" Dr. James Stauffer, Lewis and Clark College.
Jan. 10, 1958	"Geological Scenery of Oregon" Dr. Ruth E. Hopson, Portland State College.
Jan. 24, 1958	"The Case History of an Alternate Hypothesis." Dr. John Eliot Allen, Portland State College.
Feb. 14, 1958	"The Story of a River". Alonzo W. Hancock
Feb. 28, 1958	"African Safari in 3-D". Mr. and Mrs. John Leach

I would like to thank all those who helped with information regarding programs, especially

Dr. Ruth Hopson and Emily Moltzner, who arranged some of the programs and Mr. Lew Lloyd, who was a member of the program committee. And a special thanks, both personally and on behalf of the Geological Society to all those who gave so generously of their time and talents in putting on programs for us.

Al Kern,
Program Chairman

February 28, 1958

Report of the Secretary from Feb. 28, 1957 to Feb. 28, 1958.

The Geological Society of the Oregon Country has as of this date the following Memberships:

Regular Annual Memberships	189
Junior Memberships	110
	199
As 112 regular Memberships include Mr. & Mrs. Total individuals are	311

We have three Honorary Life Members as follows:
Dr. Edwin T. Hodge
Mr. Alonzo W. Hancock
Mr. Orrin E. Stanley

We have 24 Charter Members.
There were 30 new memberships since Feb. 28, 1957.
There are 2 News Letter subscriptions.
The Executive Committee held 6 meetings.

One special meeting for amendment of By-Laws.

Respectfully submitted,
Rose Hamilton, Secretary.

COPY

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY
March 1, 1957 to Feb. 28, 1958

SUMMARY OF RECEIPTS AND DISBURSEMENTS

RECEIPTS

Balance in U. S. National Bank Checking Account 2/28/57	$1,186.83
Membership Dues	860.00
Annual Banquet	305.60
Book Fund	29.02
Bumper Cards	1.35
TOTAL BALANCE AND RECEIPTS	$2,382.80

DISBURSEMENTS

Membership Dues - Checks Returned	$ 10.00	
News Letter	601.98	
Annual Banquet	346.43	
Stationery and Printing	31.60	
Postage	18.00	
Book Fund	25.10	
Repairs to Multigraph	76.12	
Flowers	4.50	
Annual Picnic	11.70	
Forest Park Committee of 50 - Dues	2.00	
Library Expense	1.90	
Treasurer's Bond	5.00	
Retiring President's Geological Pick	3.25	
TOTAL DISBURSEMENTS		$1,137.58

(SUMMARY OF RCPTS & DISBURSEMENTS (cont.)

BALANCE ON HAND 2/28/58		$1,245.22
Dues	$ 42.50	
Book Fund	2.15	
Undeposited receipts on hand	$ 44 65	

Respectfully submitted,

Emily Moltzner, Treasurer

Balance in Savings Account at Portland Federal Savings & Loan - $212.30

THE ORIGIN OF THE ESKIMO

The origin of the Eskimo can be traced almost with certainty to the late Mesolithic (middle stone) age of Europe and Asia. The Eskimos thus became the first American people whose culture, on the basis of actual archeological comparisons, can be traced to a specific time and place in the Old World.

This is the conclusion of Dr. Henry B. Collins, Eskimo specialist of the Smithsonian Institution's Bureau of American Ethnology, after a close study of artifacts from this period, including those in European museums.

The culture of most of Eurasia during this period was characterized by microliths, finely flaked small stone tools--knives, scrapers, projectile blades, and the like. Their production involved great patience and skilled workmanship. Very similar implements are found in the American Arctic in early Eskimo and pre-Eskimo habitation sites. The likenesses to Mesolithic and early Neolithic artifacts recently uncovered near Lake Baikal and along the upper Lena River in Siberia are particularly strong. This is the most likely homeland for the earliest migrants into the North American Arctic. They were not Eskimos according to the present pattern, but in all probability were closely related to their ancestors.

Says Dr. Collins, whose research was assisted by a grant from the American Philosophical Society of Philadelphia:

"The microlithic elements that are most characteristic of the Mesolithic, the so-called geometrics--crescents, narrow triangles, etc.--occur in identical form in areas as far apart as England and Ceylon and in intervening areas of western Europe, Scandinavia, Africa, the Middle East, and India. The distribution of these particular forms is strictly Old World; they have not been found in the American Arctic or anywhere in the New World. There are, however, specific resemblances in other implement types--burins (specialized cutting tools), microblades, and cores. General resemblances are seen in the small size of the implements--microlithic in both areas--and the use of "backed" blades, which have one edge dulled and thickened like a penknife.

"In Scandinavia we have additional striking similarity to early Eskimo--flint side blades on projectiles and knives. In India and Ceylon, it was noted, there was the same preponderance of microblades as at early sites in the American Arctic. Edge flakes in the India and Ceylon collections, struck from the edge of a bifaced blade, were identical with those from Southampton Island in Hudson Bay. Flakes of this kind recur as important features of the Mesolithic and early Neolithic of Mongolia. The Mongolian collections also contain enormous numbers of microblades identical with early Eskimo types. It is only in Mongolia that we find such blades comparable in quantity and form to those from various Arctic sites.

"Of even greater importance to our problem are materials from the region of Lake Baikal and the upper Lena River excavated mostly by the Soviet archeologist, Dr. A. P. Okladnikov. The Siberian remains contain a number of implement types specifically like those from early Eskimo and pre-Eskimo sites in Arctic America: Microblades, end-of-blade Scrapers, polyhedral cores, backed blades, oval bifaced side blades, rectangular side blades chipped on one or both sides, small triangular end blades, straight-based lanceolate end blades chipped only on the margins of the under surface, burins, bone arrowheads slotted at both ends, adz blades, and pottery with check-stamp and other incised surface ornamentation.

"The close resemblance of specific implement types indicate a firm relationship between pre-Eskimo and early Eskimo cultures and the Mesolithic-early Neolithic cultures of Eurasia. Inner Asia thus appears as the region from which the basic elements of Eskimo culture were derived in contrast to eastern Asia, which was the source of later elements."

Smithsonian Institution.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

Aug. 1958 **PORTLAND, OREGON**

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Portland 1, Oregon

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

OFFICERS OF THE EXECUTIVE BOARD
1958-1959

			Zone	
President:	Dr. James Stauffer	717 - 8th St., Oswego		BE 1-3825
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Bus. Manager:	Mr. Robert F. Wilbur	2020 S. E. Salmon St.	" 15	BE 5-7284

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Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S. E. 9th Avenue, Zone 2, Phone: BE4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

As the luncheon room at Chamber of Commerce will be closed during August, it is not certain whether we, as a group, will have meetings during that time. However, if suitable arrangements can be made, those who attend regularly will be notified of a meeting place.

Next regular luncheon meeting at Chamber of Commerce will be Sept. 4. Come out and let's start the Fall season off with a bang!

There will be no lecture meeting during August. Our next regular meeting will be September 12.

Next regular Library meeting will be September 16.

ANNUAL PICNIC

Thursday Aug. 7

Annual Picnic at Little Volcano, Mt. Tabor Park 6:30 P.M. Note change to Thursday from the second Friday, as on previous years. Other groups hold square dancing in the Park on Friday nights.

Mrs. Clark tells us that we were in error in stating she is "General Chairman" of the Committee, and that she is chairman only of the Food Committee. She suggests that everyone bring the same as last year, and also bring your own dishes- plate, cup, knife, fork and spoon. Rolls, butter, coffee, tea, cream and sugar will be furnished. The committee will have a few extra dishes in case you forget. If there are any questions, call one of the following:

Mrs. Barr	PR 4-2459	Mrs. Brown	BE 6-6658
Mrs. Clark	BE 4-7096	Mrs. Stauffer	NE 6-3825

Rumors regarding program by the entertainment committee have drifted our way, but Sputnik seems to have broken the connection. Anyway, come out and let's have a big evening together of good food and good fellowship.

FIELD TRIP TO MT. RAINIER

Saturday-Sunday, August 16-17

We shall set up our camp by noon Saturday at the Sunshine Point Campsite which is just 3/10 of a mile beyond the Nisqually entrance to Mt. Rainier Park. Cabins are available just outside the Park entrance, less than one mile away. We shall start our trek up to Longmire and Paradise at one o'clock. In the evening there will be a camp-fire at Sunshine Point.

Sunday morning we shall take the newly opened Stevens Canyon Road. The return trip may be made by way of Ohanapecosh and the Cowlitz River. The distance to Nisqually is about 160 miles.

Maps of Rainier and lists of available accommodations may be obtained in Portland at Visitors' Information Center. For further information about the trip call Simon BE 6-0549, or Gilchrist NE 6-4792.

NEWS OF MEMBERS

We regret to report the deaths during the past month of four of our members.

Mrs. Flora A. Reimers, wife of Fred Reimers, and a charter member - funeral service held July 2, at Edward Holman Funeral Parlors.

Chester K. Sterrett, Manager of the Industrial Division of the Portland Chamber of Commerce, died Saturday, July 19.

As we were going to press we received notice of the death of David L. Shank who died Sunday, July 20.

Word was also received of the death of Robert Lenwood Bryan, who died July 21. Mr. Bryan belonged to the International Order of Operating Engineers since 1923. For the last five years he worked as an engineer at Providence Hospital, and before that he had been Chief Engineer for the Portland Housing Authority.

The Geological Society of the Oregon Country extends sympathy to the bereaved families.

NEWS OF MEMBERS - cont.

Our apologies to Al Keen for an error in July issue page 47, stating that Al Kern was responsible for the fine series of programs put on by the Society last year.

June 25, the American Society of Civil Engineers honored John Cyprian Stevens, Portland engineer and past president of this Society at a dinner meeting. Samuel B. Morris, western regional vice president of the society, paid tribute to Stevens, first president of the Oregon Museum of Science and Industry, in the course of dedicating the J. C. Stevens Hall of Hydromechanics in the new building.

Stevens, a winner of the Society's Norman Medal and founder of the J. C. Stevens Award to encourage study of hydraulics, "has superbly combined hydraulic research with engineering practice," Morris said. "Few American engineers have given as much to modern hydraulic literature on the basis of personal research, mathematical deductions, and prototype testing."

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

FOSSIL LOCALITIES OF THE EUGENE AREA, OREGON

Where to find fossils in the Eugene area? Miss Margaret L. Steere has answered this question in the June 1958 issue of the Ore-Bin. The introduction to her fine article reads as follows:

"The Eugene area became known for its fossils through Dr. Thomas Condon, first professor of Geology at the University of Oregon, who began collecting there about 80 years ago. Since that time many species of fossils have been discovered and identified, and both the University of Oregon and Oregon State College have important collections in their museums.

Typical fossils of the Eugene area are sea shells and leaf imprints. They occur in inter-fingering marine and terrestrial strata that were deposited from late Eocene to late Oligocene time (30 to 50 million years ago.) These fossiliferous beds now crop out in the hills of the Eugene area and all dip gently eastward as the results of regional folding. In the valleys of the Willamette River and its tributaries these rocks are almost entirely buried under a horizontal blanket of Pleistocene and Recent alluvium.

Eleven localities where fossils can be found in the Eugene area are shown on the accompanying map. Localities 1 through 7 have marine fossils and localities 8 through 11 have leaf fossils. Following a review of the geologic history, these localities are described and some of the fossils listed and illustrated. A bibliography is added for persons who wish to know more about the geology and paleontology of the region."

BALDWIN MADE FULL PROFESSOR

We are very pleased to announce that Dr. Ewart Baldwin, long-time member of GSOC, was made full Professor of Geology in the Department of Geology at the University of Oregon on July 1. He received his Bachelor's and Master's degrees in 1938 and 39 from Washington State College and his Doctorate degree from Cornell University in 1943. He was with the State Department of Geology and Mineral Industries in Portland for several years and in 1947 joined the staff at the University of Oregon. We understand that his recently completed textbook on the geology of Oregon is now in press and will soon be available.

SPECIAL GSOC FIELD TRIP
August 24, 1958

A research trip into the Molalla region is being arranged. Several exploration parties are to investigate the various contact areas exposed and attempt to date them. This is expected to be a very interesting and scientific application of field geology. We hope to have Dr. Ewart Baldwin from the University of Oregon with us to correlate our fingings. Among the group leaders will be Dr. Francis Gilchrist and Rudolph Erickson. Meet at main crossroads in Molalla at 9 A.M. Bring your lunch, water, rock hammers and any other necessary equipment. Approximately 125 miles round trip from Portland.

Franklin Brown

CORRECTION!! -- DR. STAUFFER'S TELEPHONE NUMBER SHOULD BE NE 6-3825.

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IMPRESSIONS FROM FALL CREEK CAMP-THREE SISTERS TRIP

hen I remarked to BOBBIE BROWN, "I suppose you're going to be a geologist when you grow up", he answered, "Oh, no. I'm going to be a conchologist and an entomologist, 'cause I'm afraid there won't be any geology left by the time I'm a man."

DICKIE, his older brother, disagreed by saying, "I think you're wrong about geology giving out 'cause Daddy and Mother wouldn't be so interested in it if it weren't going to last a long time." (Bobbie and Dickie are the sons of Mr. and Mrs. Franklin Brown)

As ROSE HAMILTON passed our tent I asked, "Where are you going with those two hams?" she snorted disgustedly, "Hams? This is what the pesky mosquitos have done to my hands!"

PHIL BROGAN, JR., answering the many questions of the novices..... LEO SIMON identifying the birds and flowers..... DR. STAUFFER saying, "Oh, it's really an easy climb to the crater of Mt. Talapus."..... DR. GILCHRIST suggesting that the men folks prove their devotion by climbing to the summit of Mt. Talapus and carrying down a volcanic bomb from which to fashion a "lava-lier" for their ladies. (A pendant ornament for necklace)..... At the campfire Sunday, JESS RENTSCH enumerating the geological marvels seen on the trip to Wickiup Plain, Le Conte crater, Rock Mesa and the volcanic plug..... MR. AND MRS. KELLMER bringing us a vivid picture of their visit to Paricutin, the Mexican volcano that erupted in a farmer's cornfield..... DR. JOHN MERKLE of Flint (Michigan) Jr. College giving an outline of his ecological and botanical studies in the Three Sisters wilderness area for Oregon State College.

"Music hath charms" when it comes from the guitar or ukelele of RUTH PRENTISS and the recorders of BONNIE STAUFFER and KATHLEEN OREM..... Suggestive of the Orient's veiled ladies: the ZIMMER GIRLS, MAUDE COOKE AND EMILY MOLTZNER, whose draped hats gave the laugh to the frustrated insects..... DELIGHTS FOR THE NOSTRILS -- the scent of balsam in the pines, the tantalizing smell of bacon frying and the pungent smoke of campfires ..... BEAUTY TO HEAL THE WORK-WORN SPIRIT -- the morning sun on the summit of Broken Top, the blue-blue sky with cottony clouds dancing across it, the shimmering water of Fall Creek murmuring past our camp, the myriad stars in the Milky Way.

********** Emily Moltzner.

ANOTHER GEOLOGICAL FIRST FOR OREGON

For the first time in the 54-year history of the Cordilleran Section of the Geological Society of America, the annual meeting was held in Oregon, at Eugene, on March 27 to 29, 1958. For Dr. Lloyd L. Staples, who invited the 420 participants from all parts of the western United States, it was in the nature of a celebration of the re-establishment of a separate Department of Geology at the University of Oregon, which since 1932 had been consolidated with Geography.

A program of 100 papers (one of the largest in recent years) was presented on such varied subjects as seismology, submarine geology, paleontology, engineering geology, economic geology, stratigraphy, mineralogy, structural geology, geomorphology, glaciology, petrology, geophysics, geochemistry and areal geology. Nine of the papers were on subjects in the Pacific Northwest, although only two were specifically on Oregon: "Possible correlation of Rattlesnake and Danforth formations of Eastern Oregon," by Ian Campbell, J. E. Conel, J. J. W. Rogers and J. M. Whitfield (which is believed to represent a great nuée ardente ignimbrite covering much of eastern Oregon), and "Faulting in central Lake County, Oregon" by Fred A. Donath (two sets of Recent faults, striking N. 35° W. and N. 25° E.)

Twenty graduates from the University Department of Geology were present at an impromptu luncheon; the oldest graduate was Claire Holdredge, although Ian Campbell ran him a close second. Lloyd Staples brought out the original photograph album of the Condon Club (circa 1918-1924), and Claire said that this alone was worth the trip north!

ANOTHER GEOLOGICAL FIRST FOR OREGON - cont.

The Annual Dinner featured a talk by Ian Campbell on "Industrial Minerals, Research, and Mineral Policy", which, in spite of the title, turned out to be a glimpse into the future when we will be mining granite for most of our mineral supplies, when fresh water will be derived from the ocean by atomic power, and the inexhaustable reserves of minute amounts of the elements in the sea will be utilized. "It would be far more important", he said, "for the government to finance a drill hole 10 miles deep than to try to send a rocket to the moon - and a lot cheaper and more productive of important information. We know less about the earth 10 miles down than we know about the far nebulas."

Three field trips were scheduled for the members on Thusrday before the meetings: Columbia River Gorge, led by John Eliot Allen; Coos Bay, led by Ewart M. Baldwin; and Willamette Valley, led by Ira Allison. The guide book for these field excursions is still on sale at the Portland State College Bookstore for 60 cents.

J. E. A.

CORIBA CLUB

A new student geology organization, the "Coriba Club" was organized at Portland State College in April, with 14 members who elected Donald Dodds as president. Before school let out, the club had already gone on three field trips and had had several other meetings. Unfortunately, since P. S. C. does not yet offer senior courses in geology, all but five of the members are transferring to Oregon and Oregon State this fall in order to complete their degrees; five plan to go to Oregon and five to Oregon State. Dr. Allen is the advisor. One feature of the club is that besides having a satisfactory scholastic record, each new member must present a formal paper on a geological subject to the group before initiation.

J. E. A.

- - - - DR. JONES MIXES POTENT POTION

No one on the May trip to Camp Hancock suspected what was in store for the group. Least of all did any imagine what magical powers were possessed by our own good Dr. Jones. Fortunate indeed were all to escape relatively unharmed from the wrath of the terrible beast.

The morning of Saturday, May 24, dawned uneventfully. People at camp arose about 5:30, ate breakfast, rested for a half hour or so and at 7 o'clock set to work mixing concrete for the dining hall floor. This job occupied most of the morning and the result was sore muscles, blistered hands and the laying of a large slab of cement. After such an ordeal who was ready for the hike to the mammal and nut beds? Well, everybody, or nearly everybody. Led by Dr. Jones and Lon Hancock, the group slowly climbed upward toward the mammal beds, stopping here and there to pick up interesting rock specimens or to note some significant geological feature. Finally the destination was reached and everyone sat down for a rest and for a discussion of the beds. Lon led off, telling us about the history of the discovery of the first fossils and the subsequent development of the diggings. It appears that these are the richest and in fact the only Eocene beds west of the Rockies to yield such an outstanding array of the animal life of that epoch. Many hundreds of bones have been removed; many remain to be uncovered, all of which will provide material for study for many years to come. After Lon's interesting talk Dr. Jones took over to describe the various kinds of animals that lived during Eocene times. Among these were diminutive horses, small hornless rhinos, tiny cameloids, the first oreodons, squirrel-like rodents, bats and small primates, creodonts which were the carnivores of those times, condylarths, ponderous amblypods, chalicotheres, entelodonts (giant pigs), dogs, cats and titanotheres. Titanotheres! Related to rhinos and horses these were huge beasts, some with large nasal horns. Early Eocene forms were about the size of a big hog but by the end of that epoch large horned forms, bulkier than living rhinos, were roaming western North America. One of the best known of these was Brontotherium. Brontotherium! Thunder Beast! Hardly had Dr. Jones uttered the name when a low ominous growl was heard in the distance. "Brontotherium!" repeated Dr. Jones. The growl grew closer and louder, "Run for your lives", yelled Lon, "follow me to the shelter of some rocks over this way,"

DR. JONES MIXES POTENT POTION - continued

and he began running at top speed, followed by the terrified group. It was too late. Before the halfway mark had been reached the rumble of the beast was shaking the whole earth and then he (or she?) began pelting us with large, white thunder eggs the size of cannonballs. Fortunately, a large juniper tree loomed up a short distance ahead and in no time at all everyone was huddled beneath its branches which provided a measure of relief from the brontotherian eggs. After some time it became apparent to the beast that we had escaped its clutches and it gradually moved on rumbling and roaring as it did so. A sorry looking group, soaked and battered emerged from the juniper's hospitable arms. Sorry looking but undaunted. "On to the nut beds!" was the cry, and on to the nut beds it was, through the mud and over the rocks, picking up and wondering at the thunder eggs as we proceeded. The Clarno nut beds are world famous and have been visited by some of the leading paleobotanists of the world; in fact these beds furnish the greatest variety and the best preserved nuts found anywhere else in the world. Unfortunately, due to lack of time we were able to find only a few specimens.

Back in Camp Hancock we found that this area had also been visited by Brontotherium. Actual measurement of the eggs by Murray Miller indicated a diameter of 1-1/8 inches. We still feel that those we experienced were the size of cannonballs.

The next morning was a repetition of the preceeding one. Back to the job of finishing the dining hall floor. Muscles became sorer, blisters bigger and back aches more painful but the concrete slab was completed. Thus one of the purposes of the trip was accomplished. In the afternoon we journeyed to one of the Eocene leaf localities where proof of the semi-tropical nature of the Eocene of Oregon was abundant. Instead of alder, oak and maple, the predominant hardwoods of the present, here is a record of plants now found in warmer areas of the earth, such as avacado, nectandra and cinnamomium, all of which are members of the Laurel Family to which our Oregon myrtle also belongs. Found here also are Meliosoma, fig, sycamore and cycad. From this locality we hiked a short distance to the equisetum beds where we secured excellent stem molds of equisetum (modern species known as horsetails or scouring rushes). Formerly thought to be Calamites (a fossil member of the plant group known as Sphenopsida that is restricted to late Paleozoic times) these are now considered to be equisetum, a genus of plants that can be traced back through the Cenozoic and Mesozoic to the late Paleozoic.

Climbing to the top of a hill we were taken in by the great panorama of the present and the past. There was the great anticlinal arch of Eocene volcanic rocks; there were the John Day lake sediments of Oligocene-Miocene times; there were the multi-layered Columbia River Lavas; there was the canyon of the John River cut in the last few million years. What a story! What a scene! What a region! What a marvelous week-end in spite of all our troubles.

J. Stauffer

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EXPEDITION TO NOVIA SCOTIA

Stephen W. Blore

In August of 1952, the Blores drove from Washington, D. C. to Boston. They put themselves and their car on the overnight steamer and landed next morning at Yarmouth on the southern tip of Novia Scotia. They drove to Digby and put up at the Digby Pines Hotel, a Canadian Pacific Hotel on the Bay of Fundy at the Digby Gut which is the widened mouth of the Annapolis River. The next several days were spent exploring Nova Scotia and collecting minerals.

Nova Scotia is for the most part a peninsula running southwest and northeast. It is joined at its upper end by an east-west isthmus to New Brunswick. The peninsula forms the southeast boundary of the Bay of Fundy of high tide fame. At the upper end of the bay is the Minas Basin where the tides reach sixty feet. Docks thirty or forty feet high are common and even so, at low tide, the boats rest on the mud and the water is half a mile away.

The peninsula is a northern continuation of the worn down remnants of the metamorphic folded rocks of the old Appalachians. The folds are believed to be Carboniferous or older. The peninsula has central ridge of intrusive granitic rock known as the South Mountain.

EXPEDITION TO NOVA SCOTIA - CONT.

A parallel ridge of basalt bounds the northeast of the peninsula and is known as the North Mountain. This ridge appears to be a thick sill in nearly horizontal sedimentary deposits. The deposits are said to be Triassic. They have apparently been eroded away to expose the sill and also between the two ridges to form the elongated Annapolis valley ending at the southwest of the peninsula in the Digby gut and Saint Mary's Bay. The southeast coast is low lying although rocky, but the shore along the Bay of Fundy is for the most part rimmed by cliffs a hundred or more feet in height formed from the basalt sill of the North Mountain. The cliffs are not just precipitous; they are under cut by the waves so that they overhang. The basalt is not columnar but the jointing is nearly at right angles and is on a large scale. When rock falls occur the pieces run as big as a two story house. The beach is completely covered at high tide so that the waves beat directly against the cliffs.

These cliffs are renowned for their zeolites and allied minerals. At Port George, a settlement about two-thirds of the way up the peninsula and too small to show on the map, a little stream flows into the bay and the cliffs are worn away so that it is possible to climb down to the beach. About a mile northeast, a large fresh rock fall could be plainly seen from Port George. We checked with the natives. The tide would be out at noon. We could walk up the beach, stay on the rockpile until the tide came in and again went out and then walk back. We made the trip. It was rugged. The average size of the grains of sand on the beach was about the size of an office desk. The rock at the site of the rock fall was barren of zeolites. We sat on the rockpile in the sun for four or five hours.

On the return trip it was a case of scrambling over the rocks covered with wet slippery sea weed. We did find some water worn natrolite on the beach. In the face of the cliff far out of reach were marvelous large crystals and clusters. Where the waves hit and where we could reach, the zeolites were badly weathered. At eight that night we crawled up the cliff at Port George.

At Cape Blomidon near the upper end of the Bay, large geodes lined with dark purple amethyst crystals occur in the basalt. We were not able to find anyone who would show us the exact locations. The drug stores, grocery stores, etc. all had pieces for sale and that is how we collected.

Near Windsor at the upper end of the peninsula, large deposits of gypsum occur and are mined in open pits with steam shovels. The gypsum largely comes to the United States for use in gypsum board. Selenite crystals of many kinds are available on the dumps including interesting rosettes, satin spar and plates. We were free to take all we wanted.

We were told of a garnet ledge near the lower end of the peninsula. It proved elusive. We traveled back and forth over the network of excellent dirt roads talking to blacksmiths, farmers, store keepers and anyone we met. We stopped a Scotsman on a bicycle. We described garnets. He seemed to get the idea and gave us explicit directions how to reach the deposit. It was at the end of an abandoned washed out road along the bay coast. We were to park in a certain farm yard and walk in. His last words were "is there any money in it?" We assured him no.

His directions were entirely correct. We found an abandoned gold mine. The whole bay shore for a mile or more was a gray shist carved into fantastic shapes by wind and waves. There were hundreds of tons of this shist containing unusual crystals, arsenopyrite. We finally found the granite ledge on Cheggogin Point in a silica mine in the metamorphic rock. The owner of the land invited us in for tea and gave us a nice hard specimen of massive garnet with external crystal faces. (The tide was in and the ledge was under twenty feet of water.)

Our steamer sailed that night for Boston, and we were on it.

LECTURES AND OTHER ITEMS OF INTEREST TO MEMBERS OF GSOC - Your editor has embarked upon the task of compiling notes on past programs of the Society. In his hunt thru early issues of Newsletter he has come across some interesting facts some of our members might also find interesting. The two pages following start off our report. From time to time these pages will be attached to Newsletter for those who might wish to remove and save them.

We have in this report tried to list various places we have met for lectures and luncheon meetings. In the early days our regular meeting nights were not 2nd and 4th Fridays, but 2nd and 4th Thursdays.

LECTURES AND OTHER THINGS OF INTEREST

Date	Speaker	Subject	References in Newsletter
5/2/35	Dr. E. T. Hodge	History of Columbia River	Vol. 1, No. 1
5/16/35	C. I Grimm	The Problems in Locating and Constructing Bonneville Dam	Vol. 1, No. 1
6/6/35	Dr. Warren D Smith	Crater Lake	Vol. 1, No. 4, P. 34
6/27/35		Business Meeting of Society	
7/11/35	C. P. Holdredge	Oil Possibilities of Oregon & Wash.	Vol. 1, No. 9, P. 5 2-13-5-6
7/18/35	Dr. Hodge, presiding	Business Meeting at Home of Dr. Hodge	Vol. 1, P. 4-No 9
7/25/35	Raymond M. Miller	Phosphates and Aluminum Resources of the Northwest	Vol. 11, pp. 3-4
8/8/35	Dr. Hodge	Geology of Oregon-Wash. Shoreline	Vol. 1, No. 12, P. 2
8/22/35	Dr. Packard	Retracing Dr. Condon's Geological Trail	Vol. 1, No. 12, P. 7
9/12/35	Dr. Farrell Barnes	How Mountains are Made	Vol. 1, No. 13, P. 2
9/26/35	Dr. Hodge	Geology of Warm Springs and Hay Creek Area	Vol. 1, No. 14, P. 5
10/10/35	C. Fowler	Geology of Mt Adams Country	Vol. 2, No. 1, P. 2-5
10/24/35	Dr. Hodge	Mines & Minerals of Oregon	Vol. 1, No 18, P 1-3
11/14/35	Dr. J C. Stevens	The Story of Silt	Vol. 1, No. 17, P. 3
11/23/35	Dr. Ralph Chaney	The Fossil Forests Banquet-Memorial Hall, O S. C.	Vol. 2 3-5
12/12/35	Kenneth N. Phillips	The Rivers of Oregon	Vol. 2, No. 2, P 7-15
1/9/36	Dr. Allison	Willamette Sound	Vol. 2, No. 4, P 5-6
1/23/36	Dr. W. D. Wilkinson	The Crystaline World and the World of Crystals	
2/13/36	Dr. S M Mayfield	Caves and Cave Dwellers	
2/27/36	? Speaker-L. A McNary (Ill-could not attend)	Annual Business Meeting & Banquet (Our First Banquet) Nortonia Hotel Toastmaster - K N. Phillips Two-reel movies, The Recent Eruption of Mauna Lea Shown by Mr. Renton	Vol 2, No. 5, P 6-8 Vol. 2, No 7, P 5-6

Meetings - Auditorium of Public Service Bldg., 5th & Taylor
Constitution Adopted 4/18/35
Thursday Luncheons - Restaurant of Sovereign Hotel, Broadway & Madison

2.- LECTURES - Continued

3/12/36	Arthur Piper	Harney Basin (meeting in public library)	Vol. 2, No. 8, p 9-12
3/26/36	Geological Pictures	1. The Earth's Rocky Crust 2. The Work of Rivers 3. Ground Water 4. Volcanoe in Action 5. Singing Waters	Vol. 2, No. 7, p 2
4/10/36	(Back in Auditorium of Public Service Bldg. meeting on Fridays)		
	E. L. Wells	Oregon Climate	Vol. 2, No. 10, p 2-3
	Friday Night Meetings		
4/24/36	Dr. Thomas Thayer	The Central and Northern Cascades	Vol. 2, No. 11, 7-9
4/29/36	No Meeting Account Field Trip Madras and Vicinity		
	Thursday Luncheons - Rathskeller, 722 S. W. Taylor St.		
5/15/36	Dr. Ethel Sanborn	The Ancient Forests of Oregon	Vol. 2, No. 20, 3-8
6/12/36	Dr. E. W. Lazelle	Gems	Vol. 2, No. 12, p 11
6/26/36	Dr. Lewis McArthur	Topographic Maps	
7/16/36	Ray Treasher	Geology of Mt. St. Helens	Vol. 2, No 15 p 12-15
7/24/36	Claire Holdredge	Diamond Mining in Africa	Vol. 2, No 16, p 8-10
8/14/36	F. P. Keen	Climate During Last 800 Years, as Shown by Tree Rings (No meeting - Keen called east)	
8/21/36	A. V. Goddard	Astronomical Field Night - at his residence 1310 N. E. 49th Ave.	
8/28/36		No Meeting	
9/11/36	Dr. Arthur C. Jones	The Uses of Minerals in Medicine	Vol. 2, No 18, p 3-11
9/25/36	Donald K. McKay	Geology of the Great Smoky Natl. Park	
10/1/36		Luncheon, Hilaire's Restaurant 622 S. W. Washington St.	
10/9/36	A. W. Hancock	Observations on Upper Deschutes	
10/23/36	F. P. Keen	Tree Rings as Indication of Periods of Precipitation	Vol. 3, No 8, p84-85
11/13/36	Robert Layfield	Saddle Mountain and Vicinity	Vol. 2, No 13, p 7 Vol. 2, No 24, 4-10
11/27/36	J. C. Stevens	The Colorado River Basin	
12/11/36	Dr. L. S. Cressman	Indian Writing & Their Interpretation	Vol. 3, No 6, p 60-61
12/25/36	No Meeting		

GEOLOGICAL NEWS LETTER

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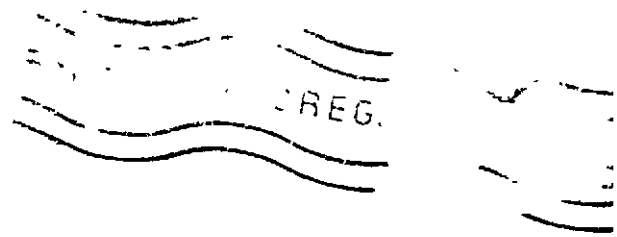
Sept 1958 PORTLAND, OREGON



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Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S. E. 9th Avenue, Zone 2, Phone: BE4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at Portland Chamber of Commerce, 824 S. W. Fifth Avenue, second floor One dollar. You are welcome. Sept 4 at 12 o'clock.

Friday Sept. 12 — Dr. Lange of Portland State College will speak on Oregon Meteorites.

Tuesday Sept. 16 — Library night

Friday Sept. 26 — Talk on Steens Mountain. Speaker to be announced.

TRIPS

- - SEPTEMBER FIELD TRIP

Meet at Boiler Bay Wayside Park on Highway 101 South of Taft on Sept. 14, at 10:00 a. m. We will see some very interesting geological formations and ocean scenery. We will arrive at Fogarty Creek State Park in time for lunch.

Attach your G. S. O. C. car bumper cards so you may be identified in the caravan.

Round trip about 200 miles. Bring your lunch and camera. Trip leaders Leo Simon and Franklin Brown

MR. TED GORDON, SR.

We learned too late to get in the last Newsletter of the death of Mr. Ted Gordon, who died June 5 of a heart attack. Sympathy of the Society is extended to the bereaved family.

CORRECTIONS !

DR. STAUFFER'S TELEPHONE NUMBER SHOULD BE NE 6-3825.

MISS ROSE HAMILTON'S NUMBER IS PR 5-9762.

NEWS OF OUR MEMBERS

Just as we were about to send out a search party to see if we could find our roving Ambassador of Goodwill, Orrin E. Stanley, we were delighted to have him appear at our Thursday luncheon August 14th. He had just returned from a 7500 mile auto trip, having attended the sixty-second reunion of his class at Cornell, Iowa. He spent some time at LaCruces, New Mexico, and Phoenix, Arizona.

We recently had a note from the Ford Wilsons' at Anchorage in which they told us something of a trip they had taken over the Fourth, and more details will be forthcoming in a later report. They said the weather in Anchorage is cool, cloudy and rainy, in sharp contrast to the heat and sunshine of last year. It is predicted that this winter will be rough, with lots of cold and snow.

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The new publications of the Geological Survey, June 1958, has the following regarding topographic maps for Oregon. New or Resurveyed Maps:

Blue River	- (1955)	Laurelwood	- (1956)
Cannon Beach	- (1955)	Mission Bottom	- (1957)
Harl Butte	- (1954)	Reedsport	- (1956)
Hecata Head	- (1956)	Carlton	- (1957)

Revised Maps:

Cape Foulweather - (1939-57)
Valsetz - (1939-56)
Yaquina - (1939-57)

Peoples Corner of The Oregonian, August 9th, was an article by Dr. Claude Adams asking for the completion of two songs which he used to hear during boyhood days at Springfield, Missouri.

I wonder how many of those watching TV Saturday evenings, tune in to Channel 6 at 8:30 and view the Borax Program, Death Valley Days? Those who tuned in August 9 enjoyed a treat as they saw enacted the Great Diamond Hoax. Here financiers not only of San Francisco but of New York and London, were fleeced out of nearly a million dollars by two slick operators who had salted a diamond mine. In our Newsletter, Vol. 22, No. 12, P. 123-124, in Tales of Luncheon Table, the late Mr. Leroy A. Palmer gave the assembled group a resume' of Paul Averitt's article, "Diamond Fraud Exposed", in October 1956 issue of Geo. Times.

NEW MEMBERS

Mr. and Mrs. William G. Pyle	4255 S. E. 88th Ave.,	Portland 66, Oregon
Mr. and Mrs. George Fite	3610 N. E. 115th St.,	Portland 20, Ore. AL3-3469

OMSI SCIENCE CAMPS

The Oregon Museum of Science and Industry, although busily engaged in getting established in its new quarters next to the Portland Zoo, managed to once again sponsor three two-week sessions at Camp Hancock near Clarno. The facilities of the camp were strained with a record enrollment of 120 campers plus staff members. This year each application was screened to make sure that only those students actively interested in science would attend. Most of the students came from schools in the Portland area but many schools scattered across the State were also represented. A few campers came from neighboring States. Woodrow Wilson High had the honor of being represented by the greatest number of students from any school in the State.

To staff a science camp with adequate personnel requires a lot of hard work and Lloyd Ruff rendered yeoman service in rounding up counselors versed in the earth sciences. The success of his efforts can be judged from the following list of people who volunteered their services this year: Miss Hanna Larsen, Ralph Mason, Al Kenney, Ewart Baldwin, Mrs. Pat Helser, John Allen, Ernest Lund, Paul Howell, Miss Eileen Dekker, and Lloyd Ruff. Al Kenney is deserving of special recognition since he put in a solid three weeks at camp. Even scientists must eat, and Mrs. Lon Hancock turned out vast quantities of food in the newly floored mess hall. Assisting her were: Miss Joan Oswalt, Mrs. J. O. Nelson, Mrs Murray Miller, Mrs. Grace McClain, Mrs. Jones, Mrs. Azalia Dow, Mrs. Burton Combs, and Mrs. Sunderland Scientists needed occasional medical attention at camp, and a full complement of doctors was always on hand to patch and probe. Medical staff members included: Drs. Berenson, Bump, Tinker, Warrington, Nada, and Marshall.

Two stalwarts at camp were Murray Miller and Reynolds Ohmart, who did everything that needed doing anytime, anywhere. The camp Director was Mike O'Callaghan of the Museum staff, who proved to be a genius in organizing unscheduled work details designed to smooth camp routine and the roadbed simultaneously.

In a trailer just back of the cook house at the mouth of Girls Gulch lived the guiding light of the entire camp. Lon Hancock, soft-spoken hunter of the Clarno mammals during the blistering days, held court under the awning of his trailer shelter each evening. The high point of each camper's stay at camp came on the day he was allowed to go up to the mammal beds with Lon. The privilege was tied in with the camper's tour of duty on KP and some campers even took on extra duty just to get to spend more time with Lon.

In quite a different setting the Museum also sponsored a second science camp during the summer. Camp Arago, at the Marine Biology Station at Charleston, held a one-week session August 18 to 23 for families interested in marine biology. Dr. James Stauffer of Lewis and Clark College did the professional honors. A total of 37 adults and children signed up for an exposure to one of the most interesting sections of the Oregon Coast.

R. S. Mason

CAMP HANCOCK FIELD AND WORK TRIP
May 24 and 25, 1958

First we went to my uncle's house. He took a long time to pack up. Then we went to see my aunt at where she worked. Then we started to look for a place to eat supper. We went to Robin's for a hamburger but we had to wait for a long time. After we ate we started our trip to Camp Hancock in eastern Oregon. So we started out. We went a long time and we saw Mt. Hood close up. The flowers were very pretty. We started up over old Hood. It got cold but I did not care. I liked it, it felt good. First we went on a big dusty road. Then we hit the forest country. Then all of a sudden we ran out of trees! Then we went in the desert. Clouds were closing us in. We heard thunder and lightning. We saw some Jack Rabbits run in front of our car. We saw Mt. Hood in back of us. We saw some smoke in front of us. It looked like Indians. We drove four or five miles and we saw what was making the smoke, it was a saw mill out in the desert, it was out there where were no trees at all, that was funny. Then we came into a little town called Maupin, we had to stop for gas in the little town. It was nine-thirty P. M. Then we started on. The lightning was still going heavy. Then we saw a stop sign at an intersection, we stopped and we went a little and saw a police car ready for a trap. We kept on driving, then we saw more and more cars and soon we found out why. There was a road from the town of The Dalles. It came into the road that we were on. The lightning was still going, pretty soon we came to another little town, we saw a gray house that had a big red window frame. We still kept going, finally we came to the road that led to the camp, we got there and set up camp. We got there at eleven-thirty, we started to unpack the stuff. I held the flashlight while they unpacked. We still saw the lightning. We set up the tent and put everything in order and went to bed. The next day it sprinkled a little bit, we got a look at things at the camp, we saw Berry Hall. We saw some other buildings, we saw the biological lab. then two boys came to camp, they were former students. They found a white line Sphinx moth on our car, we were cooking breakfast then. We talked awhile before we ate. After breakfast we started to plan the day. We planned what we were to do. We were going to start work on the floor of Berry Hall, but I went for a hike with Mrs. Miller. The ones who planned the day were Mr. Miller, Mr. Merryman, my Dad and Uncle Jess. Mrs. Miller and I had about a two mile hike, we hiked about three hours. We found many fossils of bones and leaves. I found a fragment of wood. We found many other rocks. There were many plants. Then we got to the top of the hill where I found some breccscha (Breccia) it looked like rocks plastered together. We then looked at camp, it looked little for we were high. We waited ten or fifteen minutes to see if a car would come along the road but we didn't see any so we started back and about a third of the way down we stopped under a juniper. We were hungry so I got out some candy and we ate it. We started down again. It was hot and the hike was rough. Mrs. Miller told me that there were scorpiens and rattlesnakes in that country. We got down in the valley on the road and we saw a Jack rabbit run in front of us. We heard a lot of meadow larks around, then we came to camp. One or two cars had arrived at camp while we were gone. I was hungry so I asked what time I could eat. Then I got to eat. After all of us ate we talked about animals in the past that used to live there. Then I went over to Mrs. Miller's tent. We talked about what we did in the morning. Then I had some lemonaid with her. Right then in the afternoon it was so hot we had to sit in the shade most of the time. It felt to me like it was over one hundred degrees. Then I went and looked at and tried to catch the little Golden mantel ground squirrels. Then Uncle Jess took pictures of the little squirrels. Then it was time for supper. After supper we talked about the next day and how to improve it. Then we started to bed early for we had a lot of work to do the next day. The next day it was sunny when we got up but it was a little bit cold. There was dew all over everything. I got dressed after Uncle Jess and Daddy got dressed and out of the tent and started breakfast. After breakfast I said good morning to everyone and then I went to help Daddy and Uncle Jess with breakfast. After breakfast I went to brush my teeth in alkali water then I went to see Mr. Robosky chop shakes. After I watched him I went to talk to Mrs. Miller, then I heard the call "work"! The cement mixer was running. Then I started to sift the sand for the cement. There was a lot of commotion and noise. Daddy ran the big wheelbarrow, I was working very hard. Mr. Oaks was working very hard, he gave very good advice. He told us how to fix the sifting screen and how to sift the sand. All of us worked about two or three hours. Then Mrs. Stauffer served all of us some lemonade and I got to pass it out to the people who were working at the camp. After we got done we went on a hike to see the mammal bed. Mr. Hancock took us, we came to a place where

there was a prehistoric animal dug up. Then we asked Mr. Hancock to tell us a story. After he got half way through it started to hail, believe it or not hail stones were one and eighth of an inch in diameter. It really started to hail then and they hurt so we ran for cover but all we had to hide under was a little juniper tree, then it started to rain, we were all soaked from head to toe after the hail storm. So we decided to head for camp but went to the nut bed instead. The mud really packed up on our shoes so we had to stop to rest awhile. Then we finally reached the nut beds. When we got there the water had washed down through the red dirt and it made the hill bleed. Then we started to look for nuts. I found a nut and it was the only nut found. It was a little prehistoric cocoanut, it was as big as the hail, then right under it was a fossil bone. My luck was good that day. Then we started for camp My Dad took a picture of some of us and the mud on our shoes, we could hardly walk. The sun was shining then and it dried some of our clothes. But we were still real wet. There was green, yellow, red and brown mud. Then we went over a hill made of mud. When we went over the hill we saw camp, it looked wet. When we got there we told the ones who did not go about our experience, the ones at camp told us that the same thing happened there. When we got to our shelter we found a little stream of water running past it. Everything was wet that wasn't under shelter of some kind. Then all of us had a rest until supper time. We were all tired. After supper Mr. Hancock invited all of us to a campfire. It was cold that night. We sang some old GESOC songs then we talked the day over. After we had the camp fire we all went to bed The next morning we all got up early. We started to work after breakfast. We worked until about 10 o'clock. Then we went on a hike up a hill, it was right next to the one Mrs. Miller and I climbed to the day before. We found a lot of fossils on the way up to where we were going with Dr. Jones that day. Then when we got to the top we had a lecture about formations then we all started down from the hill. On the way down we saw the nut beds and black butte in the distance. Then we went to the ecuesseedem (equisetum) beds. Ecuesseedem means in latin horsetail. We found many fossils of them in the little banks of rock. Then Dr. Jones showed us the tick and told us why it is dangerous to get bitten with one. They will give you Tick or spotted fever which is very bad to get. Then we looked for more rocks and horse-tails. We went back to camp for unch. After lunch we started to pack, it took about an hour to pack up our stuff. Then we said goodbye and we started home. It all looked the same as when we came up to the camp. When we were half way to Portland I found a wood tick on my arm. We finally got it out with mithiolate, then we started on again. We got in Portland a few hours after. We all went home and rested and that was the end of the trip to Camp Hancock. I sure hope I can go to Camp Hancock when I am 12 years old.

Dick Brown, Age 10 years

-- ALONG THE CLACKAMAS

On Sunday, July 20, about thirty members and guests of the Society met at Fish Creek Bridge on the Clackamas River for an expedition led by Rudolph Erickson and Franklin Brown to view the Bull Creek and Eagle Creek formations.

Before starting the caravan, Mr. Erickson gave an outline of the history of the formations which were to be seen on the trip. Several stops were made to view these geological formations. The chief interest was in noting the way in which the Eagle Creek sedimentary deposits, of either oligocene or miocene age, were overlain by the Columbia River basalts of the miocene, which, in turn, is capped by the Rhododendron materials of the pliocene period.

The lunch stop at Alder Flats offered many glimpses into the past. There was quite a descent from the highway, along apparent old land slides, to the Flats on the river bank. Not only was this ground moss-covered, but moss extended high up into many of the very old trees.

After lunch Mr. Erickson selected and read excerpts from Sheets' writings of the geology of that region. A walk along the river bank to a bluff and a climb down to the river showed samples of the Bull Creek material. This formation was named and placed in the eocene period by geologists from the University of Oregon. Specimens of charcoal and some coal of the Bull Creek series were noticed in this formation.

A stop was made to view some andesite cliffs on the way to Austin Hot Springs. at the Hot Springs the continuous flow of a stream of hot water from underground gives evidence of an uncooled disturbance in that region.

The Clackamas River contains many things to see. Its rising high banks and deepening river bed gives an excellent display of the doings of the past ages.

- - - - Hayward Peirce

RARE FIND OF BRACHIOSAURUS BONES

The largest known dinosaur limb bone has just been added to the collections of the Smithsonian Institution. It was found in Montrose County, Colorado, by Mr. D. E. Jones, a lumber yard owner in Delta, Colorado, who has presented the bone to the Smithsonian.

Seven feet one inch long, it is the upper bone of the forelimb, the humerus, of a Brachiosaurus, perhaps the largest of all the dinosaurs. This animal lived in late Jurassic times, about 135 million years ago. While it is difficult to reconstruct the size and appearance of an animal from a single bone, Dr. Peter P. Vaughn of the Smithsonian's U.S. National Museum estimates that the creature in life possibly weighed about 55 tons. Thus, it was undoubtedly among the largest land animals that ever lived (some whales today are larger).

Brachiosaurus material is rare. A complete skeleton was obtained by German collectors before the first world war in Tanganyika, East Africa, the only other place from which this form is known. However, this specimen, now in a Berlin museum, could not have matched the dimensions of the animal that possessed the giant limb bone found in Colorado.

Brachiosaurus, with its very long neck, could easily have looked over the roof of a three-story building. It was almost certainly, says Dr. Vaughn, a dweller in swamps, and in all probability passed its life immersed in water from which only the head and neck protruded.

The body must have been buoyed up by water, for even such great bones could hardly have supported the enormously heavy body on dry land. The real giants among animals have always been aquatic or semi-aquatic creatures because of this requirement. Further evidence of this mode of life can be seen in the fact that the front limb of Brachiosaurus was longer than its hind limb--unusual among dinosaurs--and that Brachiosaurus breathed through a snorkel-like nostril raised on an eminence on the top of its head. It may have remained totally immersed in swamp water except for this nostril.

For all its terrible size, Brachiosaurus was a vegetarian, as clearly shown by its teeth, which were completely unadapted for any other diet.

Living in the days of giant animals, this one certainly was among the largest.

Smithsonian Institution

GEMS AND MINERALS

"Gems and Minerals," the most recent exhibit hall to be modernized by the Smithsonian Institution, will be opened to the public Friday, August 1, in the Natural History Building, of the U.S. National Museum.

Exhibits include the most extensive collection of gems on display in this country, and a large and representative sampling of specimens from the Nation's mineral collection, which is the world's finest.

Nearly every variety of gem is represented. Many are of enormous size. Among them are a 316-carat star sapphire, a 66-carat alexandrite, and a 310-carat peridot. The last two are the largest gems ever cut from these stones. Also displayed is the Shephard diamond, a very rare flawless canary-yellow gem weighing 18.3 carats.

Among the gems is a set of pearls consisting of a necklace, choker, and earrings given by the Iman of Muscat to the U.S. Government. Also shown are the original gold nugget which set off the California gold rush, discovered at Sutter's Mill in 1848 by James Marshall, and the world's largest flawless crystal ball, a perfect sphere almost 13 inches in diameter and weighing 106-3/4 pounds.

The mineral section of the new hall contains examples of all the principal species of minerals, selected and lighted to make a vivid display of their natural beauty and color. Their forms, particularly those of the crystal clusters, are suggestive of modern sculpture. Featured among them is a large greenish specimen of smithsonite, a carbonate of zinc named for

its discoverer, James Smithson, the Englishman who founded the Smithsonian.

Other features of this section include a spectacular display of fluorescent minerals, which show intense colors when exposed to ultra-violet light, a cave containing a group of yard-long gypsum crystals, and a cluster of amethyst crystals weighing several hundred pounds.

Preparation of the new hall was under the scientific supervision of Curators George Switzer and Paul E. Desautels. Design and construction were by the exhibits staff of the Smithsonian Institution under the supervision of Exhibits Specialist Rolland O. Hower.

Working drawings and architectural specifications for the hall were produced by the Office of Design and Construction, Public Buildings Service, General Services Administration.

Smithsonian Institution.

POSSIBLE CORRELATION OF RATTLESNAKE AND DANFORTH FORMATIONS OF EASTERN OREGON *

By

Ian Campbell, J. E. Conel, J. J. W. Rogers, and J. M. Whitfield

Merriam, Stock, and Moody in 1925, while describing a rhyolite flow as a prominent, ledge-forming member of the Pliocene Rattlesnake formation in the John Day Basin, also pointed to its massive character and to the absence of flow lines. Wilkinson, in 1950, described this unit as an ignimbrite. In the Harney Basin, more than 50 miles to the southeast, Park, in 1939, described a rhyolitic tuff breccia as the most distinctive and widespread member of the Pliocene Danforth formation. Recent field work strongly suggests the lithologic and stratigraphic identity of these rhyolites and thus provides a direct correlation of the Danforth and Rattlesnake formations. This Rattlesnake-Danforth rhyolitic tuff breccia exhibits shard textures and collapse structures; it contains in most places angular fragments and blocks of pumice, ranging up to 1 foot in size; with it a more massive and often strikingly spherulitic rhyolite is commonly, although not everywhere, associated. The tuff breccia may once have covered some 5000 square miles and may have involved as much as 20 cubic miles of siliceous lava.

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* Abstract of paper presented at Geological Society of America Annual Meeting, Eugene, Oregon, March 28, 1958.

NEW GEOLOGIC NAMES FOR OREGON LISTED

At least 65 new geologic names for rock units (formations) in Oregon have been added to the literature during the past 20 years. These are listed in the U. S. Geological Survey's recent Bulletin 1056-A, "Geologic names of North America introduced in 1936-1955," which is a supplement to "Lexicon of geologic names of the United States," by M. Grace Wilmarth, published by the Survey in 1938. The new supplementary list contains more than 5,000 North American geologic names that have appeared in print for the first time since 1935. Besides the name of the geologic formation or rock unit, the age and general location are also given. This is followed by the source of the published description. Geesockers can be proud that the News Letter was one of the sources consulted and that it supplied several new names. Those noted were the "Nehalem formation," introduced by Robert Deacon in 1955, and the "Snipes formation," introduced by Ray Treasher in 1937.

Bulletin 1956-A may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price is $1.00

M. L. S.

Date 1937-	Speaker	Subject	References in Newsletter
1/8/37	James Kelley	Geology of Central Oregon	Vol 3 2. p 7-11
1/22	Dr. W. D. Wilkinson	Tertiary Igneous Rocks of the Dayville Quadrangle	
2/12	Dr. David B. Charleton	Mineral Waters of Oregon and Elsewhere	
2/26	2nd Annual Banquet-Congress Hotel-Toastmaster, Dr. Arthur C. Jones Speaker-Frank I. Jones-Pictures taken Valley of 10,000 Smokes -Vol 3, No 6 p 54-56		
3/12	Mr. Eldon Brickell	Movie reels 1. Geological Work of Ice 2. Mountain Building 3. Volcanoes in action	
3/26	Dr. Donald B. Laurence	The submerged forest of Columbia Gorge Vol 3-No 8, p 78-83	
4/9	Claire P. Holdredge	Complete Geological Picture of Bonneville Dam	Vol 3, No 11, p 117-120
4/23	Union Oil Movie	1. Tree of life 2. Petroleum Geology	
5/14	Ben S. Morrow	The Geology of Bear Creek dam section as determined by the Ira A. Williams report	
5/15	Corvallis-Prof. Anderson - Vertebrate Fossils of the Grand Canyon		
5/28	Dr. H. C. Dake	Fluorescent Mineral and Gem Minerals	
6/11	No meeting - Rose show		
6/25	Dr. E. T. Hodge	Bonneville Industry	
7/9	Clarence Phillips Bruce Schminky	Society pictures	
7/23	Hugh Matier of Union Oil with illustrated lecture		
Aug 12?			
Aug 26		Annual Picnic	
9/10	Dr. E. L. Packard	Pleistocene Marinealian Life of Oregon	Vol 3 No 21-p 223-224
9/24	Ray Treasher	Late History of Columbia Gorge as reflected by the so-called Satsop beds	Vol 3, No. 20 p 216-220
8/8	Dr. E. W. Lazell	Limestones of Oregon and Washington	
8/22	Carl Richards Kenneth Phillips A. J. Gilardi	Illustrated lectures, Geology of Glaciers of the Oregon Country	Vol 3, No 22 p 236-240
11/12	Prof. M. E. Opler	Indian Cultures of the Northwest	
11/26	Dr. Francis T. Jones	The Microscope in Geology	

4 - LECTURES - cont.

12/10	Albert Mooner	Pictures, John Day, Eastern Oregon and Rocky Mt. View	
12/24		No Meeting - Christmas Week	
1/14/38	Dr. Warren D. Smith	The Geomorphology of Oregon or the Evolution of Oregon's Facial Expression	
1/28/38	Arthur M. Piper	Features of Geologic Materials with relation to the occurence of Ground Water	
2/11/38	Dr. Edwin T. Hodge	The origin of Grand Coulee and the Washington scablands	Vol. 4, No 15 pp 175-176
2/25/38	Phil Brogan	Business meeting (Third Annual) and Banquet at Reed College, chairman, Clarence D. Phillips. Great News stories of Ancient Oregon Toastmaster, Arthur M. Piper	Vol. 4, No 5, pp 53-56 and 58-59
3/3/38	Luncheon at Hilaire's	Restaurant	
3/11/38	Arthur M. Swartley	A mining Engineer looks at Geology	
3/25	A. W. Hancock	The Geological Book of John Day Country	Vol 4, No. 9, p 90-96
4/8/38	Morris E. Opler	Ancient Indian Cultures of Central America	Vol 4, No. 22, p 252-255
4/22	Dr. C. B. McCullough	Pictures taken in Central America	Vol 4, No 10 p 102-105
5/13	Dr. Ethel I. Sanborn	Proper method to use in collecting Paleobotanical specimens	Vol 4, No 12, P 128-132
5/19	L'Abbe French Dinners	Roosevelt Hotel	
5/27	Earl K. Nixon	Impressions of Mining the South American Jungles	Vol. 4, No. 14, p 153-161
6/10	Rose Festival	No meeting	
6/24	James Stovall	Wallowa Mountains	
7/8 7/22	Dr. Laurence Gould	Experiences in Antartic Movies - story of Sulfur	
8/12		First Annual Picnic - Mt. Tabor Park	
8/26	Pictures 1. Story of Asbestos 2. From Mountain to Cement Sack		
9/9/	John Eliot Allen	Chromite Deposits in Oregon	Vol 4, No 24, P 277
9/23	Dr. Warren D. Smith-Discussion on Geology on Wallowa Mts. and Lloyd Ruff		Vol 4, No 21, p 240-241
10/14	Edward L. Wells	Forecasting the Weather	Vol 4, No 19, p 211-214
10/21	Dr. Robert Nelson (Joint meeting with Agate & Mineral Society)	Exploration for Oil in East Indies	Vol 4, No 20, p 223

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Society Objectives

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

Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S.E. 9th Avenue, Zone 2, Phone: BE4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties. $2.50 for others; and $2 for Junior Members. Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

Society Activities
(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at Portland Chamber of Commerce, 824 S W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday Oct. 10 — Meeting Room B, Public Library, 7:30 p. m.
Courtesy of Bell Telephone Co. we will have a film "Strange Case of the Cosmic Rays"

Tuesday Oct. 21 — Library Night. 8:00 p. m. Lewis & Clark College
Study - Invertebrate Fossils

Friday Oct. 24 — Meeting.- 7:30 pm. Oregon Museum of Science & Industry, 4015 S. W. Canyon Rd. - - - - This will be OUR night at the Museum. We shall see all the exhibits, - the Plastic Lady, the Planetarium, etc. There will be a charge of 50¢ per person. Come and bring your friends. Refreshments will be served. Those desiring transportation, please get in touch with our program chairman, Mrs. Gregory - BE 4-3137.

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FIELD TRIP-October

Sunday, October 5, or if bad weather Sunday, October 12, we will meet at Multnomah Falls parking area on the new highway at 8 a. m. From there we will go through the Hood River valley on the Mt. Hood loop highway. Along the way around Mt. Hood we will see some interesting effects of glaciation and learn more about the upland flora and we also hope to see some beautiful fall color displays. Please bring your lunch, camera and GSOC bumper cards. Round trip about 200 miles. Trip leaders, Leo Simon and Franklin Brown.

CORRECTIONS

See Yellow pages of your bulletin. . . .
DR. STAUFFER'S TELEPHONE NUMBER IS NE 6-3825
MISS ROSE HAMILTON'S NUMBER IS PR 5-9762
PAUL HOWELL'S NEW ADDRESS IS 9130 S. W. Borders, City 23, CH 4-5728.

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NEWS OF MEMBERS

Mrs. Bert Schull went to the hospital in early June for surgery and is now at home recuperating.

The following item is taken from The Oregonian August 28, 1958:

"Portland Doctor Elected to National Presidency"

"A Portlander, Dr. Arthur Carhart Jones, 3300 S W Heather Lane, is the new president of the American Congress of Physical Medicine and Rehabilitation, a national organization composed of doctors of medicine interested in the specialty of physical medicine and rehabilitation. Dr. Jones was elected at the group's annual meeting in Philadelphia, succeeding Dr. Donald L. Rose, Kansas City, Kansas."

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Dr. Jessie Laird Brodie is the new president of the American Medical Women's Assn., a national organization of women who belong to the American Medical Assn. She is also a vice-president of the Oregon United Nations Assn.

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Lake Chelan Region

The article entitled, "Skyscraper Country" in the August Sunset magazine has on pages 46 and 47 a four-section panoramic photograph. The photos were taken by D. G. Hitchcock, son-in-law of Dr. and Mrs. Arthur C. Jones.

Dr. Ruth Hopson gave a report on Sub-alpine timber at the recent convention of the Federation of Western Outdoor Clubs at Camp Meriwether near Cloverdale, Oregon.

Mr. & Mrs. Albert Keen attended the Northwest Federation of Mineralogical Societies annual Gem & Mineral Show and Convention at Pasco Washington over the Labor Day week-end. They came home with the following trophies.

Al was elected Vice President of the Northwest Federation. They rec'd the following trophies:

Blue ribbon - crystals, master division
Blue ribbon - mixed minerals, master division
Cup - best mineral display in the show.

Our congratulations to both Al and Stella.

Mr. and Mrs. Leo Simon also attended the show, but did not display this time. After the show, they continued into Idaho to do some geologizing

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The following articlestaken from the August Ore-Bin. -The lead article by Ralph Mason entitled, "Oregon Mineral Production Reaches New High in 1957", which showed $42,480,000, almost double the 1950 figure.

Margaret L. Steere is completing investigations for her bulletin on western Oregon fossil localities, and with the assistance of Mrs. Lillian F. Owen is compiling the third supplement (1951-1955) to Bibliography of Geology and Mineral Resources of Oregon.

Dr. Ewart Baldwin will sample Eocene sections along the North Umpqua River and in the Dallas and Valsetz quadrangles.

On Sunday, Sept. 14, Ralph Mason took part in Dr. John Allen's TV program, Scenic Resources of Pacific Northwest, Channel 8, at 12:30. At 1:00 o'clock on same channel Lon Hancock took part in a discussion of the objectives of Science education.

CORRECTIONS

For those making a file of Lectures and other things of interest, please make following corrections:

On page 3, August 26, instead of Annual Picnic, that should read First Annual Picnic
On page 4, August 12, where it now reads First Annual Picnic, make it Second A. P.

LUNCHEON NOTES

It seemedquite like old times at our luncheon on Sept. 11, when we had 25 in attendance. Miss Ada Henley and Mrs. Baldwin were present for the first time in many months.

Paul Howell had as his guests Mr. D. A. Williamson and Mrs. Williamson, who joined the Society.

Irving Ewen had as his guests Mr. Jack Holst, Multnomah County Planning Comm. and Mrs. Loris Killian, State Dept. of Geology.

Miss Rose Hamilton had as her guests her sister, Mrs. Rose, and her niece Mrs. Dorothy Rush.

Several specimens were passed around the table, and Mr. Rentsch told of a recent trip he had made to Greenhorn Mountain area, accompanied by Ray Golden. They were looking for a cave, which had been described in a newspaper clipping of years ago, which Rudy Erickson had passed around at a luncheon some months ago. Our explorers decided the cave had been misplaced.

The State Division of Mines and Geology, Olympia, Washington, announces the publication of Bulletin No. 44 by George B. Rigg, "Peat Resources of Washington".

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October 1958

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LECTURES AND OTHER THINGS OF INTEREST

Date	Speaker	Subject	References in Newsletter
10/28/38	Mr. & Mrs Chester Wheeler	An Amateur Geologist Vacation	Vol. 5 No. 4-p 31-33
11/4/38	Dr. Edwin T. Hodge	Mt. Multnomah (Meeting with Oregon Agate & Mineral Society)	
11/25	No Meeting	Thanksgiving	
12/9/38	Thomas A. Carney.	A Geological Fantasy	Vol. 5, No. 3 p. 27-28
12/23	No Meeting	Christmas Holidays	
1/13/39	Dr. Ira S. Allison	Glacial Drainage problems of Columbia Plateau	
1/27	Kenneth N. Phillips	Pictures of National Parks	
2/10	Dr. Kunz for Dr. J. Hugh Pruett		
2/24	Annual meeting, election of Officers		
3/3	4th Annual Banquet, Reed College Commons Dr. Warren D. Smith	Crooked Trails (Toastmaster, Clarence Phillips)	Vol 5, No 7, 60-64
3/24	Thomas A. Carney & E. H. Rockwell Also Harold B. Say	Colored slides of polished rock sections (Joint meeting Agate & Mineral Society) Movies - The New Oregon Trail	
4/14	Lt. W. M. Scaife	Maps and what underlies them	
4/28	J. C. Stevens	Silt and Civilization	
5/12	Union Oil Company	Movies - Petroleum Geology	Vol 5, No 11 p. 98-101
5/26	Capt. B. B. Talley	Mapping with Aerial Photographs	
6/2	Harry G. Johnson	The World of the Moon	Vol 5, 12-p 112-116
6/23	Dr. Laurence M. Gould	Ice - the most interesting thing in the world (Joint meeting with Mazamas)	
7/14	Dr. Donald B. Lawrence	Vegetation as a clue to recent Geological Events on Mt. St Helens	
7/28	Arthur M. Piper	Interpretation of Topographical Maps with special reference to Land Forms.	
8/11	Dr. & Mrs. Claude Adams	Third Annual Picnic	
8/25	Dr. Louis J. Wolf	A surgeon with Peary in the Arctic	
9/8	Earl A Nixon	Strategic Minerals as defined by the War Dept.	Vol 6, No 4, p 27-28 Vol 6, No 5, p 33-36

HP

9/22/1939	Frank Kochis	The Willamette River Basin Project	
10/13	Alfred Monner	A picture trip thru Central Oregon and Steens Mt. section	
10/27	Dr. Courtland Booth	Hunting Fluorescence in Mexico	
11/10	Frederick G. Leasure	Geological Formations of British East Africa	
11/24	F. W. Libbey	Gold in Oregon with particular reference to Dredging	Vol 6, No 8 p 57-64
12/8	Thos. A. Carney	Vacationing in Land of the Cliff Dwellers	
12/22	No meeting -	Christmas Holidays	
1/2/40	Dr. E. T. Hodge	Geomorphology of European Battlefields	Vol 6, No 6 p 42-47
1/26	Dr. A. H. Kunz	Chemical Aspects of Fluorescence in Minerals	
2/9	Dr. L. S. Cressman	Early Man in Oregon	Vol 6, No 21 185-186
2/23	Annual Business meeting	Carl Richards, chairman, Entertainment comm.	
	J. Martin Weber - Movies -	Adventure Bound Work of the Atmosphere	Vol 6, No 10 p 77-78
3/8	Fifth Annual Banquet -	Dr. Geo. F. Beck Fossil Woods Toastmaster - Dr. Adolph Weinzirl	Vol 6, No 7 p 51-53
3/22	Leslie L. Motz	The role of the Assayer This lecture & the one on April 12 held in 303 YMCA (We are now having luncheons at L'Abbe restaurant)	
4/12	S. H. Williston	Quicksilver - Volatile in Nature, and in Economics	
4/26	Ray Atkinson	Oregon - colored moving pictures Touring western United States in Kodachrome	Vol 6, No 9 P 67
5/10	Claire P. Holdredge	Geological Wanderings in Colombia	
5/24	Dr. Hodge, C. Holdredge A. M. Piper & Wayne Lowell	Symposium - Geology of Grand Coulee	Vol 6, No 13 P 107-110
6/14			
6/28	Prof. J H Jonte	Death Valley in Color	Vol 8, No 11 81-84 Vol 6, No 14 118-120
7/12	James A. Loder	A Nation in Color	Vol 6, No 14 120-121
7/26	Visit with the Hancocks		
7/11	Luncheons at the Orange Lantern - 4th floor, Central Bldg , 10th & Alder		
8/9	Fourth Annual Picnic		
8/23	Dr. Max Demorest	Crystal Structure of Ice and Snow on Mt Rainier	

GEOLOGICAL NEWS LETTER

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Persons desiring to become members should contact the Membership Chairman, Mrs. William F. Clark, 3613 S. E. 9th Avenue, Zone 2, Phone: BE4-7096. Regular annual dues (single or family memberships) are $5 for residents of Multnomah and adjacent counties $2.50 for others; and $2 for Junior Members Make remittances payable to the GEOLOGICAL SOCIETY OF THE OREGON COUNTRY.

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(See "Calendar of the Month")

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

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

Library Night: Once a month. Lewis and Clark College.

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

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

CALENDAR

Buffet luncheon every Thursday noon at Portland Chamber of Commerce, 824 S. W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday Nov. 14	Mr. Orme Cheatham will give an interesting talk on Shells. He will try to answer your questions or identify any specimens you would care to bring Also he is willing to trade.
Tuesday Nov. 18	Library Night. 8:00 p. m. Lewis & Clark College. Continue the study of Invertebrate Fossils.
Friday Nov. 28	No meeting. Thanksgiving week-end.

FIELD TRIP -NOV.

Meet at Trailways Bus Depot, S. W. Fifth and Salmon at 7:30 A. M. Sunday, November 16, 1958. We then take a Chartered Bus to Eugene where we will tour the Geology Department of the University of Oregon with Dr. Ewart Baldwin as our leader. Dr. Shotwell will show us through the Geology museum. Dr. Stauffer will comment on points of geological interest as we travel. Bring your lunch. Round trip cost per person about $3. 50. Call Dr. Stauffer NE6-3825 or Franklin Brown Be6-6658 for reservations.

NEWS OF MEMBERS

MRS. LOIS PALMBERG - We report, with regret, the death on September 15th of Mrs. Lois Palmberg of Klamath Falls, Oregon. Mrs. Palmberg was the daughter of Fred Reimers. Sympathy of the Society is extended to Mr. Reimers.

EDWARD WILBUR - As we were going to press, we received the information that Mr. Edward Wilbur had passed away on October 26th. Mr. Wilbur is the father of Mr. Robert Wilbur, our Business Manager. We wish to express the sympathy of the Society to the bereaved family.

Mrs. Hugh R. Harcourt, daughter of Mr. and Mrs. Clarence D. Phillips, and her husband Dr. Harcourt were special guests at a Fellowship dinner at First Presbyterian Church on October 1. Dr. Harcourt was a special speaker, discussing Theological Education and his experiences while studying in Edinburgh and in Copenhagen the past two years.

Dr. Harcourt received his Doctor of Philosophy degree from the University of Edinburgh on July 5th.

- First Presbyterian Church Spire.

WEDDING BELLS

Wedding bells rang on May 29th, when Miss Phyllis VanDermark became the bride of Mr. John Long. Mr. and Mrs. Long live at 229 South 8th Street, Hillsboro. Phone Midway 1053. Our congratulations and best wishes.

Mrs. Emily Moltzner reports that Miss Fannie Turner, Public Stenographer from Seattle, was a guest of Miss Ada Henley at our luncheon October 2.

In J.K Gill's Fifth Avenue window recently in connection with Evelyn Sibley Lampman's new book "Rock Hounds", illustrated by Arnold Spilka, there was a very interesting display of fossils from the Clarno supplied by several of the young folks who have been to Camp Hancock. The book, published by Doubleday, , is for children 8 to 13 years, or anyone in the elementary stage of rockhounding or geology. Mrs. Lampman is the widow of Herbert Lampman, naturalist, who was a son of the late Ben Hur Lampman, for many years on editorial staff of The Oregonian. She lives at 6810 S E. Yamhill St. , Portland.

NEWS OF MEMBERS - cont.

We have been missing Mrs. May R. Dale lately. Reason? She's Vice-president and director of the Portland Chapter of Oregon United Nations Assn. and was chairman of the Displays Committee for the all-day celebration of United Nations Day, October 24, at the Public Auditorium, co-sponsored by the Portland City Council. These displays reflected the cultural and economic interdependence of many nations and drew a large crowd. where friendliness and good will emanated.

Congratulations, May.

Mr. Louis Oberson, teacher at Roosevelt High School, Portland, was named president of the Pacific Northwest region, Men's Garden Clubs of America, Saturday, October 11, at a dinner held in Salem. He succeeds J. Earl Cook, of Salem More than 125 guests attended the dinner where the officers were installed by Paul Leach, Seattle, national director.

Mr. Oberson was also selected as Oregon's "Gardener of the Year" in the 100 question examination answered by the Ever-Ready Garden Company in which 800 garden clubs from 44 states competed. As a trophy he won a beautifully engraved flower bowl; also a power lawn mover, a portable radio, and a year's supply of garden products.

Mrs. Oberson is currently editing The Alameda P. T A. monthly Newsletter

On October 16th at a meeting of Portland section, Institute of Radio Engineers, held in Multnomah College auditorium, 1022 S. W. Salmon St., Stephen W. Blore discussed patents and their importance and value to engineers.

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On October 9-11 Bruce Schminky attended Western Regional Conference American Congress of Surveying and Mapping, at Monterey, California.

GSOC surely hit the Oregonian Jackpot Sunday, October 5th, with several members of our society pictured on the front page in connection with the finding of the Mammoth Tusk on Canyon Road near the Museum of Science and Industry.

- - - In Phil Brogan's weekly article in the same Oregonian, entitled "Landslide Forming Bridge of the Gods Set at 700 Years", the dating of the Bridge at that time is the result of studies by Dr. Don Lawrence. We are featuring this article of Phil's in this issue.

GREG'S GOSSIP

Those of us who have been following W L. Gregory's sport column in the Oregonian noted how much he had to say about his trip to Norman, Oklahoma to see the football game between Oklahoma and University of Oregon. The following item particularly caught our eye -

"And another thing we liked about the Oklahoma state highways: Signs from one of the state departments explaining geologically the different types of rock along the highway. Very interesting and an evidence of somebody's thoughtfulness. "

Our Oregon Highway Dept. has been doing a fine work along this line, but we do feel there are many more geological features which could very well be pointed out to motorists. Perhaps our Society should be pointing out some of these points of interest to the Highway Department.

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The week-end of October 25, Mr. and Mrs. Leo Simon were in Burns and Frenchglen, eastern Oregon, where Leo was one of the speakers at a celebration of the 50th anniversary of the Founders of Malheur National Migratory Bird Refuge. Plaques were dedicated to the memory of Dr. Finley and Dr. Stanley Jewett.

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The new publications of the Geological Survey, August 1958, has the following regarding topographic maps for Oregon.

Reprinted Maps. Oregon: Abbott Butte (1944)
Empire (1942)

LANDSLIDE FORMING BRIDGE OF THE GODS SET AT 700 YEARS

(Oregonian, 10/5/58)
By Phil F. Brogan -

The faint tick of the radiocarbon clock has revealed the age of the great landslide dam that formed the legendary Bridge of the Gods over the Columbia River.

The Mazama research committee has announced that the landslide that formed the dam occurred about 700 years ago, drowning forests along the river's edge.

It was a piece of wood from a drowned tree, processed in the University of Michigan radiocarbon dating laboratory, that provided a date for the dam from which grew the legend of the Bridge of the Gods. Two samples from different parts of the submerged forest in the Columbia were used. Both provided the same approximate date--700 years.

Botany Savant Makes Study

The study was made by D. B. Lawrence, who started the research work in the Bridge of the Gods area in 1934 and is now professor of botany at the University of Minnesota.

Studies by Prof. Lawrence revealed that the "bridge" had really been just a very natural landslide dam, created when a great mass of earth and rocks slipped from the cliffs at the base of Table Mountain immediately north of the river. That slide of 700 years ago formed a long narrow lake.

Not until after Prof. Lawrence completed his studies on the site was the radiocarbon method of dating ancient objects developed. This dating is possible because a known proportion of radioactivity is built into carbon compounds during photo-synthesis. This is deposited in wood of a living tree during its growth. Since the radio-activity diminishes at a known rate from year to year, it is possible to determine the age, within certain limits, when the tree grew.

A polished section of the ancient wood from the submerged forest in the Columbia has been placed on display by Thoronton T. Munger, retired federal forester, in the "world's largest log cabin," the old forestry building at NW 28th Ave. and Upshur St., Portland.

Dam Too High for Fish

From the time of Lewis and Clark, the drowned trees, some as much as 25 feet tall and arrayed by the thousands along the river banks, were subjects of endless controversy. They even stimulated the Rev. F. H. Balch of Hood River to write in 1890 Oregon's first historic novel, "The Bridge of the Gods."

One of the reasons for the special interest in the date of the great Cascade landslide is that Indians reported from their orally kept histories that before the advent of the landslide, which provided them a way across the river on foot, the Celilo Falls, now flooded by The Dalles Dam, were too high for salmon to jump over. As a result, the Indian legend indicated, the Columbia River valley above Celilo was an inhospitable land, capable of supporting only a few nomadic Indians.

Indians said the dam was created "20 old squaws ago." Whites interpreted that as 20 generations ago.

"Without the wood of the drowned forest and modern electronic technology, the age of these events could never have been told," Prof Lawrence said.

SPARKS LAKE FIELD TRIP - -

July 3-6, 1958 -

Under leadership of Dr. James Stauffer and Phil Brogan, Jr. approximately 45 "Geesockers" enjoyed a week-end trip to the south base of South Sister peak in the Cascades. Those who could do so made a 4-day trip of it. Our "Chief Scout" Ray Golden had preceded the group and chosen the campsite on Fall Creek at the north end of Sparks Lake Meadows. This is on the Century Drive about 30 miles west of Bend.

Dr. Howell Williams, with the Department of Geological Sciences, University of Southern California has stated "there has been more volcanic activity in the Three Sisters region during the past few thousand years than in any other part of the Cascade Range." We were destined to see striking evidence in support of this statement during our few days in this area.

Sparks Lake Field Trip-cont

Dr. Stauffer led both trips on "The Fourth". The morning's hike took in first the rugged face of Devil's Hill on Century Drive about a mile west of camp. What an appropriate name for this jagged flow of black dacite obsidian. Considered by Dr. Williams to be perhaps no more than a thousand years old, it has the appearance of having but yesterday issued from a vent at the base of South Sister. The outer crust, cooling as it advanced, developed mammoth blocks that finally came to rest in a jumbled-up mass which today serves as the north boundary of Devil's Lake public campground. Some of these massive blocks have been broken loose from the face of the flow, possibly by the prying action of ice, and now lay prostrate within the campgrounds; cracked in all directions with the conchoidal fracturing typical of the obsidians.

We had but to cross the highway to start the 600-foot climb of Talapus Butte, a basaltic cinder-cone with a deep crater now heavily timbered. Steep and with no trail it required careful maneuvering to avoid slipping and the dislodging of boulders to endanger climbers below. Volcanic "bombs" were found in large numbers at the rim. Ranging in size from a handful to a bucketful these one time hot gobs of viscous lava were usually found in somewhat rounded shape Others had not cooled sufficiently and had flattened out in landing. Like that first flap-jack you flip in the air! Descent was as difficult as the climb, especially for the "bomb-squad" with their load of specimens.

The afternoon trip was thru scrub pine and fir about a mile upstream to the gorgeous waterfall which gives Fall Creek its name. At that point the creek plunges over a ledge of basalt that flowed from Cayuse Cone on the S. W. flank of Broken Top peak. Our campsite was at the southern extremity of this flow. This lava is described by Dr. Williams as being one of the youngest of the basalts, -of too recent origin to show evidence of scouring by glaciers.

Phil Brogan, Jr , formerly of Bend but more recently geologist with the U. S. Geological Survey and with private oil-development interests led the trip to Le Conte Crater on July 5. These were "old stamping-grounds" for Phil and he graciously consented to "pinch-hit" for his father who could not be with us on this trip.

We drove to the end of a dirt road west of Devil's Lake then hiked several miles across Wickiup Plain to the rim of the crater. Most of the snow-cover had melted off so recently that vegetation was just beginning to make its appearance. The 750-foot climb to the rim was up an almost treeless slope entirely void of snow. Soil-cover was largely of small chunks of pumice blasted from the crater in an explosive-type of eruption. That first glimpse thru the trees at the rim into the crater itself was a real thrill. A snow-lined bowl of perhaps 100 feet in depth and several hundred yards across. From a small blue lake in the center radiated blue sheets of melted snow and ice like the spokes from the hub of a wheel.

What a hey-day for the photographers! South Sister and the jagged obsidian flow of Rock Mesa lay in full view to the east. In panorama to the south appeared the glaciated remains of Broken Top and snow-clad Bachelor Butte whose "volcanic activity began during the Ice-Age and has continued to the present millenium".

On breaking camp the morning of July 6 a portion of the group returning home by way of Bend accepted the invitation of our good members Mr. and Mrs. Phil G. Brogan to have a picnic lunch at their home. Following this enjoyable feature of the trip, Phil guided them to a pumice formation in layers of pink and grey on the Tumalo River. In the Madras formation, this is described as "welded dacite tuff laid down by glowing avalanches discharged from a parasitic vent high on the N. E. flank of Broken Top".

Cooperation and lots of time devoted to planning by our Trip Committee and assistants, together with special dispensation by the Weather Bureau, has made of this trip what will be one of the highlights of the year's activity. I feel greatly indebted to the following publications of Dr. Howell Williams for information on the points of interest referred to in this article:

1. The Ancient Volcanoes of Oregon. 1953.
2. A Geologic Map of the Bend Quadrangle, Ore. and a Reconnaissance Geology Map of the High Cascade Mountains. 1957.

R. F. Wilbur

TWO GEESOCKERS IN ALASKA III. KOTZEBUE, THE DIOMEDES AND NOME

By Ford and Alice Wilson

The journey here described was one of the "musts" in our program to see Alaska The trip, sponsored by Alaskan Prospectors' Society, was unusually successful throughout.

Along with 26 others and a crew of 3, we boarded a Cordova Airlines DC-3 charter plane at International Airport about 9 in the morning of July 4. Very soon the plane had crossed Cook Inlet and the Susitna River lowlands to begin its climb over Rainy Pass in Alaska Range. The course was straight from Anchorage to McGrath on the Kuskokwim.

Mt. McKinley and Mt. Foraker were close enough for nice telephoto color shots. Some of the Alaska Range topography showing deeply incised rivers also yielded interesting pictures. Once out of the mountains, these same streams revealed ancient and intricate patterns of successive and superposed meanders The ages-old and abandoned channels were discernible only through subtle differences in vegetation color.

We landed for a brief stop at McGrath - time enough to snap a few pictures of McGrath Road House and other buildings of the village which is built right along one of the runways. Again airborne, our course was set directly for Kotzebue. We passed over many meandering streams, crossed some low hills and entered the Yukon drainage basin. More lazy rivers, a multitude of tiny lakes and then we crossed the historic Yukon, a few miles south of Nulato, a short distance from the mouth of the Koyukuk.

Next came a monotonous succession of low rounded hills, apparently quite uninhabited. Kotzebue is located at the northern tip of a 75-mile long peninsula above which we traveled. Visible to the east was Selawik Lake and the Kobuk River delta. To the west was Kotzebue Sound which extends inland from Chukchi Sea. Our pilot suddenly lifted the plane in an upward hop, and we had crossed the Arctic Circle without mishap.

Kotzebue was clear in the sun as we circled it for pictures, and then landed on the airstrip a mile away. The hike to our hotel sharpened our appetites as well as revealing the makeup of the village. It extends for perhaps a mile along the water's edge, and averages about a block or so wide. Friendly, happy eskimos were everywhere. Many wore their holiday clothing, some very colorful.

After lunch, we watched and photographed the Eskimo celebration. First, came foot races, including the Arctic baby buggy race. In this, the mothers wear long kimona-like dresses up into which the babies are pushed so that they rest low on the Mother's back. A strap around the midsection holds the passenger in place. A foot race under these conditions is more interesting to the spectators than to the contestants. A tug-of-war between Eskimos and service men was a walkaway for the natives. The muktuk eating contest was something new to us. The contestants had only to consume a cube, approximately 2-1/2 inches in size, of the whale delicacy, cutting off each bite with a knife or ooloo. The best technique was to cut thin bites, give each a few fast chews before going on to the next wafer. The blanket toss was as always, full of action - and spills. The girls seemed to have the best of it. The Arctic baby beauty contest, with the infants dressed in furs, was a hard one to judge for winner. At the end of the afternoon came the colorful Eskimo dancers. Age-old dance forms performed to age-old music and songs gave us a rare opportunity for photography, and we made the most of it.

The contest for Miss Arctic Circle of 1958 came at 8 P M., after dinner. About a dozen Eskimo beauties, clad in gorgeous fur parkas, were in competition. Again there was ample photographic coverage, for here was something quite unusual to record. Later came boat races on the Sound and the Eskimos were really boatmen.

For us, the big event was yet to come. We have seen many pictures of the midnight sun, but now was the opportunity to take our own. We chose a 20 degree telephoto lens and with it put 5 exposures, 15 minutes apart, on the same color film frame. The first exposure was before midnight and the last one after. We wanted, of course, to show the arc made by the sun as it dipped down nearly to the horizon and then started up again. Obviously, there was just one chance to secure the picture.

Next day, we explored the village, browsed in the shops, talked with the Eskimos, and sniffed all the horrible smells from fish and flesh drying on racks everywhere.

Sunday morning, with reports of possible cloudy weather ahead, we left early for the plane and the next leg of the trip. The pilot set a course southwestward, just seaward from the Seward Peninsula. Soon low fog obscured the entire area. But we were in luck. Just a few minutes

TWO GEESOCKERS IN ALASKA - cont.

before reaching Little Diomede, the weather cleared and we had good views of this island as well as Soviet Big Diomede and the Siberian Coast. To the east, blue in the haze, was Cape Prince of Wales and the York Mountains.

We now headed southeasterly and soon reached King Island. The Eskimo village is perched on stilts, high up on the steep, rocky wall which forms the island's west side.

Our next stop was historic Nome. A chartered bus with a friendly driver met our plane, took us around town and gave us special tourist service A mile south of Nome on the famed gold beach, we found the King Islanders camped. They were drying salmon for winter food as well as making and selling their famous carved ivory. It was nice to buy things from the group who had carved them. Later, we explored Nome on foot, photographing the odd, the unusual and the historic.

Late in the afternoon, we departed for home on a non-stop flight. The route was along Norton Sound, past Unalakleet, and then over a long succession of meandering streams and low hills. Beyond McGrath, Mt. McKinley was pink in the evening light. Soon we could see the lights of Anchorage and the end of our journey. Everyone, including the plane crew - captain, co-pilot and stewardess - had a grand time. Our color slides, which turned out very well, will enable us to relive the trip, and we hope that our stateside friends will enjoy them too.

RADIOCARBON TESTS DATE PLUVIAL LAKES IN GREAT BASIN

The age of pluvial lakes that once occupied the Great Basin is the topic of a recent study by Wallace S Broecker and Phil C. Orr. Their report is entitled "Radiocarbon chronology of Lake Lahontan and Lake Bonneville," and is published in the August issue of the Geological Society of America Bulletin

The Great Basin is the geographic area covering most of Nevada and adjacent parts of Utah, California, and Oregon. It is characterized by numerous dry and nearly dry lakes that were once part of much larger lakes. Fossil shorelines can be seen in southeastern Oregon and elsewhere perched more than 200 feet above the present lake basins. The two largest lakes were Lake Lahontan, which probably extended into southeastern Oregon, and Lake Bonneville, a remnant of which is Great Salt Lake. They existed in late Pleistocene time and their levels fluctuated with climatic changes.

In order to determine the absolute chronology of these two fossil lakes, the authors made radiocarbon measurements on fresh-water carbonates, including shells, marl, and tufas which were collected from old lake sediments, terrace deposits, and wave-cut caves. Age determinations made on more than 50 samples show the following pattern of lake-level fluctuations:

1. Moderately low water level extending back 34,000 years.
2. High-water period from 25,000 to 14,000 years ago.
3. Decline to moderately low level 13,000 years ago.
4. Rapid rise to maximum high level about 11,700 years ago.
5. Rapid fall about 11,000 years ago.
6. Possible rise 10,000 years ago.
7. Lake levels have remained low for past 9,000 years.

M. L. S.

LECTURES AND OTHER THINGS OF INTEREST

Date	Speaker	Subject	References in Newsletter
9/13/40	Orrin E. Stanley	Alaska in Color	
9/27	Dr. William Colburn	Mineral crystals	
10/11	Jack Dement	Radioactivity and Fluorescence in Minerals	
10/25	Dr. O. F Stafford	The chemical story of Aluminum	
11/ 8	J. R. Ward	The Dutch East Indies	
11/22	John E. Allen	Tectonics of the Wallowa Mountains	
11/28		Salem chapter presented with Charter	
12/6	Earl K. Nixon	Geographical and Geological Sketches of Peru	
12/27	Robert E. Millard	The call of the Stars	
	(Luncheons at Imperial Hotel for 2 weeks)		
1941	(Luncheon at Treasure Island, 815 S.W. Broadway)		
1/10	James Stovall	Sierra Peaks & Valleys (held in 303 YMCA)	
1/24	A. J. Walcott	Asterism and Chatoyancy in Minerals	
2/14	Lidell Travel Service	Western Canada and Alaska, motion pictures with sound	
2/28	Annual Business Meeting		Vol. 7 No. 6 p 53
3/14	Sixth Annual Banquet at Reed College Commons-Dr. Hodge, toastmaster		Vol. 7 No. 7 Pp66-70
	Speaker-Dr. Elmo Stevenson, Northeastern Oregon, Past & Present		
3/28	Dr. W. D. Wilkinson	Geology of the Butte Falls Quadrangle	
4/11			
4/25	Dr. Seth B. Nicholson	The Solar System	Vol. 7 No. 6
5/9	Jack DeNeffe	Travelogue in South America	
5/23	Miss Sabina Nelson	Guatemala - its people and customs	
6/13	Beverly B. Wilder	The Ancient Forests of Oregon	
6/27	Lloyd Ruff	Geological Investigations connected with the Detroit Damsite - North Santiam River	
7/11	Dr. Donald B. Lawrence	Mount St. Helens-A sleeping Volcano	(Reprints from the Mazama Vol. 8 No. 2 & No 5
7/25	Dr. Laurence Gould	Antarctic Glaciers	
8/22	Annual Picnic	Geological Amateur Hour	

8. - LECTURES - Continued

1941

9/26/41	O. E. Stanley	Journeys in color through Northern Rockies	
	Table was reserved every day except Thursday, at Lipman's "Barnyard" Restaurant		
10/10	Clair Holdredge	Dislocation and Interruptions in the Domestic supply of minerals, because of the War	
10/24	Prof. Geo. W. Gleason	Technique and Chemistry of Portland Gas & Coke Co. Operations	
11/17	Ray C. Treasher	Geologic History of Portland Area - 701 Public Service Bldg.	
11/28	Dr. Courtland L. Booth	Trip to Wayne Wonderland	
12/12	Horace J. Smith	The Tule Lake Petroglyph (The meeting was postponed because of the blackout, and other uncertainties)	

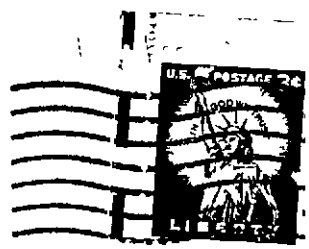
1942

1/9	Horace J Smith's lecture as above was again postponed		
1/23	Ray Atkeson	The Columbia Ice Field	
2/13	Horace J. Smith	The Tule Lake Petroglyph	
2/27	Geary Kimbrell	Annual Meeting. Pictures	Vol 8-5-25
3/13	Dr. Ira S. Allison	Annual Banquet - Seventh. Toastmaster-A. W. Hancock Geology of Fort Rock-Christmas Lake, Silver Lake, Summer Lake Fossils and Lakes of South Central Oregon Grand Ball Room, Multnomah Hotel	
3/27	Dr. Lester Proebstel	As Malaya faces the advancing Japs	
4/10	Dr. Edwin T. Hodge	Strategy of Natural Resources during and after the war	Vol 8-8-46
4/24	Al Monner	Viewing Oregon and Idaho with a color camera	
5/8	Robert L. Nichols	Lava Cast Forest of Oregon	
4/25		Report of Program Committee	Vol 8-8-52
5/22	Wm. T. Kirk	Around the United States in two hours	
6/12	C. P. Holdredge	The Geology of the Pacific Coast and its significance with relations of attack or attempted invasion	-Vol 8-12-86
6/26	Dr. Warren D. Smith	Geology of the Philippines	Vol 8-17 133-139
7/10	Bureau of Mines	Thru the oil lands of Europe and Africa, Poland, Greece and Egypt	Vol 8-14-101-102 Vol 8-15-114-115
7/24	Continuation of above program		
8/14	Wayne Thoms	Geology of New Zealand	

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE

Dec. 1958 PORTLAND, OREGON



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1958 - 1959

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CALENDAR

Buffet luncheon every Thursday noon at Portland Chamber of Commerce, 824 S. W. Fifth Avenue, second floor. One dollar. You are welcome.

Friday Dec. 12 — The lecture will include a lively discussion of the Reptiles and Amphibians of North America from the Arctic Circle to the Tropic of Cancer, but especially of Oregon. There are many interesting slides to be shown. The speaker will be Douglas Burns, a former camp counselor at Camp Hancock. Doug now attends the University of Oregon Medical School.

No Library meeting or Field Trip during December, 1958.

-- PRESIDENT'S CHRISTMAS MESSAGE

As man prepares to rocket off into space he finds himself still confronted with the problems of meaning and values. At this time of year we are reminded of the answers to these problems found in the world's religions, particularly in the religion to which the western world is largely committed. 'Mery Christmas' is a salutation in which these meanings and values are implicit. Through unremembered eons of human history they have been treasured and transmitted. They have become part of our living sustenance. There is no reason to believe they have become outmoded or will become so in the future. Merry Christmas.

NOMINATING COMMITTEE APPOINTED

President James Stauffer has announced appointment of the following members to serve on the Nominating committee for officers for next year. Chairman, Leo Simon, Rudolph Erickson, Albert Keen, Robert Wilbur, and Ray Baldwin.

Ben F. Smith

Ben F. Smith, charter member of the Society, died Sunday, November 9, after a short illness. Mr. Smith retired some years ago from City of Portland Building Bureau. He was member emeritus of Portland Chapter of the American Institute of Architects, member of Washington Lodge No. 46 AF &AM, of Scout Young Camp, Spanish-American War veterans. He is survived by his widow, Mabel; a daughter-in-law, Mrs. Hester Smith; sisters, Mrs. Mae Wills and Louise Smith, Long Beach, California, and two grandchildren.

William Hammond

William Hammond died November 1st, after a few days illness. Mr. Hammond was the father of our member, Dr. John Hammond.

Our Society extends sympathy to these two bereaved families.

SCIENTIFIC SOCIETIES TO MEET IN CORVALLIS

The Oregon Academy of Science and the Northwest Scientific Association are holding joint meetings this year at Corvallis on December 29 and 30. The sessions of the Geology-Geography section will be both days in room 208 Memorial Union Building on the Oregon State College Campus. About 18 papers will be presented by geologists and geographers from the Pacific Northwest. All interested persons are invited to attend.

New publications of the Geological Survey for September 1958 shows the following - Oregon: Cornucopia (1954) Gervais (1957)

THE MUSEUM MAMMOTH TUSK

By Paul Howell

1. Discovery, Excavation, and Identification.

On Wednesday, 1 October 1958, the writer stumbled onto the remnant of a fossil mammoth tusk in the north face of the new highway cut just below the Oregon Museum of Science and Industry. Curiosity and initiative were the causes of the discovery; curiosity about the geology of the cut and the initiative to get out of the car and take a look at it. Mr. Douglas Huegli, Director of the Museum, was quickly notified of the discovery by telephone, and he in turn contacted Lloyd Ruff, Chief of the Geology Section for the Corps of Engineers Portland Office and a vice-president of the Museum Board From that point on the examination and excavation of the tusk remnant became a project, and for fear of vandalism the discovery was kept under wraps until Saturday. Several local geologists, all of whom are members of G. S O. C., met at the cut early Saturday morning, 4 October, to excavate the remains. Newspaper and Oregon State Highway Department people also gathered at the site.

At this point it developed that the original discoverer of the tusk was a young Highway Department Engineering Aid by the name of Ronald Scroggins. He discovered and recognized the material as fossil remains two weeks previous, but was unable to convince his superiors of the identity of the material or to interest them in its preservation. Because of this unfortunate circumstance, most of the tusk was torn out and carried away to the dump by the scrapers. Notwithstanding this, Scroggins deserves commendation for his efforts to save it. We need more observing and conscientious people like him in our Highway Department.

Once at the site, the geologists set to work with a will. Expert application of pick and shovel followed by careful digging and scraping with smaller tools soon excavated the tusk remnant, and by noon it was dug free, coated with shellac and plaster of paris, and ready for removal to the Museum. Approximately a foot and a half of the butt end was recovered, and, from descriptions of the original discovery given by Scroggins, it was determined that the tusk was seven to eight feet long and well curved. Lon Hancock, our Dean of Oregon paleontologists, made the final judgement on the animal's identity. The original possessor of the tusk was a large mammoth.

Those taking part in the "dig" were Lloyd Ruff, Ralph Mason, Lon Hancock, John Allen, the writer, and a few members of their immediate families. Newspaper men, photographers, and television people were thick as ants at a Sunday picnic during the morning hours, but most of these people had gotten their stories and had disappeared by noon.

2. Geology of the Site.

The tusk lay in a 16-inch layer of bluish gray silt and subangular basalt fragments. Beneath the silt-and-basalt-rubble layer is a massive bed of bluish gray silt several feet thick, which in turn rests upon the uneven surface of the underlying Columbia River Basalt. Overlying the silt-and-basalt-rubble layer is a three-inch layer of carbonaceous material, and amongst this layer are many fossil twigs and fragments of limb, mostly of fir trees. Large pieces of wood up to tree trunk size were seen at other places in the bluish gray silt, especially in the south face of the highway cut. Flecks and blobs of blue, chalky vivianite, a hydrous iron phosphate, are scattered through the rubble layer in which the tusk was buried, and more of the mineral encrusted the tusk. The carbonaceous layer is separated from the thick brown silt above by a slip plane. The brown silt at this point is at least thirty feet thick and has within it a few lenses of coarse basalt rubble. A second slip plane transects the cut face about halfway up the slope.

From an examination of the highway cut faces, the old Sylvan Brick Company clay pit, the topographic map, and the existing literature we can construct a rather clear picture of the general geology of the area and the sequence of geologic events that has occurred. The oldest rock in the area is the Columbia River Basalt, which presents along Tanner Creek canyon a generally even surface but with a local relief of thirty feet or more. The basalt immediately beneath this surface is very vesicular, with less than half of the vesicles filled with mineral matter. This surface is to all appearances the original surface, for, though some depressions in it contain small accumulations of subrounded basalt rubble, there is little or no evidence that the surface was bevelled or developed by widespread erosion.

Overlying the basalt surface is a thick (300 feet or more) deposit of rudely interstratified silt and silty clay beds. This is the famous Portland Hills Silt, the origin of which has been much debated. Locally the silt sequence contains cinder beds and flows of Boring Lava but none show in the highway cut at the tusk site.

MUSEUM MAMMOTH TUSK - (cont.)

There has been a great deal of landslide activity in the Tualatin Hills, and significantly in the upper part of Tanner Creek canyon. The material involved includes large masses of basalt rubble, but perhaps 90 percent of it is silt. An almost continuous slip plane extends for several hundred feet along the north cut face, and the hummocky topography extending back from the cut attests to the slide activity here in Pleistocene and Recent geologic time. Slip planes are also in evidence along the south face of the cut, but only lnear its lower end.

On the basis of the similar mineralogy of the Portland Hills Silt and the present Columbia River silt and of the presence in the Portland Hills Silt of scattered quartzite pebbles, Lowry and Baldwin (1952) have suggested that the silt was deposited by the ancestor of the present Columbia River. For those who still have reservations the evidence presently exposed in the highway cut should settle once and for all the question of whether these silts were deposited by water or by wind. Although no quartzite pebbles are present, the silt in the cut faces does contain some small lenses of well-rounded pebbles, derived largely from the Columbia River Basalt. The case for water deposition is further strengthened by the presence of carbonaceous layers in the bluish gray silt and by relicts (limonite casts of twigs and limbs) of similar layers in the brown silt. Such material in all probability would have been completely oxidized and the evidence of its existence obliterated under eolian conditions of deposition. Furthermore the pebbles and some of the wood fragments are much too big and heavy to have been transported by wind. The bluish gray color of the lower silt is further evidence of suaqueous deposition. This bluish gray color is due to the ferrous state of the iron in the hydrated oxide, a state which is characteristic of the iron in fine sediments deposited under subaqueous conditions, especially in the presence of vegetable matter. The brown color of the overlying silts is due to the oxidation of the iron to the ferric state above the ground water table where oxygen from the soil air can come in contact with it. The iron in the vivianite is also in the ferrous state. Hence vivianite is present in the bluish gray silt but not in the brown silt, though it undoubtedly was present there before oxidation destroyed it.

The age of the Portland Hills Silt is also of importance to this discussion. On the basis of its stratigraphic position and involvement in the structural movement creating the Tualatin Hills, Lowry and Baldwin (1952) postulated a middle to late Pliocene age for the silt. On the basis of a rhinoceros tooth identified by Shotwell, Baldwin recently (1957) assigned the more definite age of middle Pliocene.

A first summation of the evidence led the writer to conclude that the mammoth tusk was buried during the normal sequence of silt deposition, and this may still be the case. However, a discussion of the evidence with Dr. Baldwin of the University of Oregon forced the writer to consider the following very plausible alternative hypothesis. The silts and silty clays are rather weak sediments, and apparently they never were well consolidated. The uplift that produced the Tualatin Hills caused a rapid and deep incision of the silt deposit. This weak material could not stand on steep slopes, so from time to time large segments of it slid down into the canyons. Movement of most of these slides were intermittent and has continued over a long period of time. The mammoth whose tusk was found could have become mired and have died in a small Pleistocene swamp along the west side of Tanner Creek canyon. Such small swamps exist there today. Subsequent landsliding could then have buried the swamp and, along with it, the mammoth. The evidence at the tusk site does not preclude such a hypothesis. The date of the burial cannot be determined unless it occurred so recently that a carbon 14 date can be taken on the buried wood.

As argument against the above hypothesis there is the evidence presented by the location of some of the chalky vivianite. This mineral, which was found encrusting the tusk and occurring in flecks and blobs nearby, is present also at other places in the bluish gray silt on both sides of the highway cut. The association of this form of the mineral with fossil animal remains is due to the presence in the fossil material of phosphorous, an element necessary to the formation of vivianite. Judging from the amount and location of the chalky vivianite along the cut, it would seem that considerable fossil animal remains still exist there. The writer thinks he detected bits of bone material in the center of some of the larger vivianite blobs. The important relationship here, however, is that some of the vivianite on the south side of the cut is in undisturbed silt. It follows that, if the fossil material buried there is contemporary with the mammoth tusk, the first hypothesis is the more valid and the Portland Hills Silt is more likely of

MUSEUM MAMMOTH TUSK - (cont.)

Pleistocene age. It is regrettable and yet challenging that the ages indicated by the mammoth tusk and the rhinoceros tooth are incompatible. We should not let this discourage us, however. As good scientists let us meet the challenge and keep seeking that elusive conclusive evidence.

References:

Lowry, W. D. and Baldwin, E M. (1952) Late Cenozoic Geology of the Lower Columbia River Valley. Oregon and Washington. Geol. Soc. Am. Bull., vol. 63, pp. 1-24.

Baldwin, E. M. (1957) Drainage Changes of the Willamette River at Oregon City and Oswego, Oregon, Northwest Science, vol. 31, pp. 109-117.

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Please make the following changes in the recent issue of Membership List.
Mr. & Mrs. Ford E. Wilson 1045 Elm St., Apt 665-32 Anchorage, Alaska
Change Miss Eliza Stevens telephone number to - PR 4-0439
Mr. & Mrs. Murray Miller (no longer long-distance) OL 6-6724
Mr. & Mrs. Norman N. Griffith 1733 S.W. Westwood Dr. Portland 19, Ore. CA3-3594
Mr. & Mrs. William Paterson 2928 N.E. Broadway AT1-2928

NEW MEMBERS

Miss Clara L. Bartholomay 1620 N.E. 24th Ave., Apt 306, Portland 12 AT 4-6986
Mr. & Mrs. Mack D. Pedersen Box 248 Cascade Locks, Oregon Tel. 8451

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Wednesday evening, November 19th, at the annual business meeting of the McLaughlin Memorial Association, one of the seven trustees elected for a three-year term was Mrs. J. Dean Butler.

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The following appeared in the Valley Advertiser, a Beaverton paper -
-- SCHOOL STUDENT DISCOVERS TOOTH IN FOSSIL HUNT

"CEDAR MILL - A recent hunt for fossils in Scoggins Valley by sixth and seventh grade students of Cedar Mill school resulted in the finding of a tooth of an extinct horse by Bob Douglas, seventh grade student. The group was accompanied on this field trip by Roy Wilkinson, teacher of the two grades. Identified by Lon Hancock, noted fossil authority, the tooth is described as possibly from occidentalis oregonesio, a horse of 10,000 years ago. Clam shells found in the area identified by Hancock as anadara were said to be 20,000 years old. The discoveries were made near Scoggins Valley, near Forest Grove, in an old quarry where fossilized rocks are prevalent.

Hancock relates that there could possibly be other interesting finds available in the same area because many animal types are usually found in the same general beds."

Mr. Hancock was also guest speaker at a luncheon of the Kiwanis Club of Montavilla, on Nov. 11th, his subject being "Geology of The Oregon Country."

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At the first annual meeting of the Oregon Museum of Science and Industry, in the new Museum building Sun., Nov. 16th, the following members of our Society were re-elected to office. Dr. Francis Gilchrist as Secretary, and Rudolph Erickson as Treasurer.

In Oregonian Nov. 4 in Peoples' column, following article appeared over signature of Bruce Schminky:

"Have you heard the latest radio advertisement of our Ore. Centennial Commission? We are being sold down the river by that body. They say attend the exposition, which is to be held "on the cool Columbia River estuary". I called radio station on which I heard this astounding statement, and they assured me that the comm. had given them the material which was being broadcast.

It would have been very appropriate to hold this Centennial Exposition at Astoria, the first settlement in Oregon, and I am certain that Astorians would still go along with that idea. But our Commission has made its plans to hold the celebration in Portland, so why tell the world that "slip" about it being at the mouth of the Columbia? We have no estuary here."

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Compiled by Margaret L. Steere
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