

GEOLOGICAL SOCIETY NEWS LETTER

Volume 7, 1941



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THE GEOLOGICAL NEWS-LETTER

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MEMBERSHIP APPLICATION

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues

A member shall be at least 21 years of age, who is interested in and supports the aims and objects of the Society and who shall be recommended by the membership committee. A junior member shall be over 18 and under 21 years of age.

The annual dues are: for members \$3.50 (includes husband and wife), juniors \$1.00

Date _____
I _____ (print)

do hereby apply for membership in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Address

Business Address

Telephone Number Occupation

I am particularly interested in the following branches of Geology: _____

Sponsored by: _____
Member

I enclose \$_____ for first year's dues, March 1 to March 1. (Make checks payable to the Society).

Signature

ANNOUNCEMENTS

DATES TO MARK ON YOUR CALENDAR

- Thursday
Jan.9 NOTE THIS CHANGE OF MEETING PLACE FOR THURSDAY LUNCHEONS. TREASURE ISLAND RESTAURANT, 815 SW. Broadway. Our committee in selecting this place, paid particular attention to the LIGHT situation. We amateurs will now expect to have 100 percent identification of all specimens by the professional geologists.
- Friday
Jan.10 NOTE CHANGE IN MEETING PLACE - FOR THIS MEETING ONLY - 303 YMCA Building. This is the one meeting of the year that the Auditorium of Public Service Building is not available for our meeting, so do not forget this change. All Friday night lectures subsequent to this one will be held in Public Service Building auditorium.
- Subject: SIERRA PEAKS AND VALLEYS.
Speaker: Mr. James Stovall, Department of Geology, University of Oregon. The Sierra Nevada region contains some of the world's finest scenery, in addition to being of major geologic importance historically and economically. Mr. Stovall will present a series of beautiful natural-color slides to illustrate his lecture, covering such points of interest as Mt. Lassen, Yosemite National Park, and Death Valley. This is our first opportunity to hear the geological story of Mt. Lassen, our most recently active volcano .
- Thursday
Jan.16 Luncheon at Treasure Island Restaurant.
- Thursday
Jan.23 Luncheon at Treasure Island Restaurant.
- Friday
Jan.24 Details of this lecture will appear in our next bulletin. Also watch daily papers for announcements.
- Sunday
Jan.26 A trip over parts of Multnomah and Clackamas counties, with special attention to the sections Mr. Treasher has been studying. Trip leader- Mr. Ray Treasher.
- Thursday
Jan.30 Luncheon at Treasure Island Restaurant.
- Thursday
Feb.6 Luncheon at Treasure Island Restaurant.

During the month of February, our trip committee is proposing one and perhaps two unusual trips. They are planning on taking us on a visit to the basements of some of our collectors. This will be an opportunity for our members to see how our most enthusiastic collectors classify and display their specimens. More details on this will be given in a later bulletin.

OUR FISCAL YEAR BEGINS MARCH 1st - DUES ARE NOW PAYABLE!

ANNUAL BANQUET PLANS FORMULATED

Tentative plans for the annual banquet of the Geological Society, to be held Friday March 14th, were outlined last Friday night at the first meeting of the program committee, held at the home of the chairman, Louis E. Oberson. The second meeting of the committee will be held Friday January 17th at 8:00 p.m. at the home of Clarence Phillips, 7630 SE. 30th Avenue. All members of the committee listed below are urged to be present at this second meeting.

Louis E. Oberson, chairman
 Kenneth Phillips, speaker
 Mrs. Edward Boyrie, banquet menu and place of meeting
 T. A. Carney, program and menu design.
 Mrs. A. Weinzirl and women of Society, decorations
 Clarence Phillips, public address system and toastmaster.
 Mrs. J. C. Stevens, music
 Dr. A. C. Jones songs
 Ray Mackenzie
 L. L. Ruff
 Dr. David Weber
 J. Martin Weber
 Margaret Reid
 Myrtice Fowler
 Earl B. Kellmer
 Hannah E. McLeod
 Mrs. R. R. Poppleton
 Emily Marshall
 Mrs. A. W. Hancock
 J. E. Allen and R. L. Baldwin, publicity.
 Mrs. L. E. Kurtichanof

Although no definite plans have been as yet completed, the banquet will probably be held in the usual place, Reed College Commons, at 7:00 p.m. March 14th. The tentative program drawn up lists events as follows:

- 7:00 Dinner (with accompanying chamber music)
- 8:30 President opens meeting
 Society song (led by Dr. Jones)
- 8:35 President introduces retiring and new officers of the society.
- 8:40 President turns meeting over to toastmaster
 Toastmaster introduces visitors, and representative of Salem Chapter gives response.
- 8:50 Main speaker of the evening (40 minutes)
- 9:30 Short recess to take out or rearrange tables.
- 9:40 Program of stunts (none to take over 10 minutes) put on by members, groups of members, and Salem Chapter.
- 10:30 Wind-up with song.

Due to complaints made last year regarding poor acoustics, the committee is trying to arrange for the temporary installation of a public address system for the evening. Rather than interrupt the "geologic" program with separate musical numbers it was decided that chamber music will be obtained to accompany the meal.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES are held in Waller Hall, Willamette University, Salem, on the third Thursday of each month.

TRIPS are conducted in "caravan style" on the Sunday following the third Thursday of each month. Suggested reimbursement to car drivers is 1¢ per mile. Lunch should be taken and the leader will designate a suitable place, during the trip, for eating it.

LUNCHEONS - Members and friends meet each Tuesday noon at the Golden Pheasant, Liberty St. near Chemeketa; lunch 40¢. Geological specimens are exhibited; brief talks on experiences are welcomed - an excellent opportunity to get acquainted.

Tuesday Luncheon at The Golden Pheasant.
Jan.7

Tuesday Luncheon at The Golden Pheasant.
Jan.14

LECTURE Subject: VERTEBRATES FROM THE MARITIME OF WESTERN OREGON.
Thursday Speaker: Dr. E. L. Packard, Dean of Geology, Oregon State College.
Jan.16 Dr. Packard, one of our own members, is widely recognized as an outstanding authority on paleontology in its wider aspects; as a specialist in that science as portrayed locally, he is without a peer. His subject is a timely one in view of forthcoming trips of the Salem Chapter which are being planned to visit various fossil bearing areas in this vicinity. He is a good speaker who "puts across" his theme to beginners with a facility equal to that which he does to his advanced students. We are privileged to have this well known scientist speak to us on so appropriate a subject. Members and friends from Portland are specially invited.
8 p.m.

TRIP To Finzer and vicinity, 6 miles south of Salem on the Pacific Highway.
Sunday Leader: Franklin L. Davis
Jan.19 Meet at 9 a.m. opposite Waller Hall and the Capitol on State St. In this region there are interesting deposits of Oligocene fossils and everyone should be able to get good specimens. After visiting these deposits the party will drive to one or two vantage points in the near-by hills, from which the drainage of this area will be studied.

Tuesday Luncheon at The Golden Pheasant.
Jan.21

Tuesday Luncheon at The Golden Pheasant.
Jan.28

December 28th, 1940

Mayor and City Council,
City Hall,
Portland, Oregon.

Gentlemen:

At a meeting of this Society last evening, at which there were something over 100 in attendance, the question of an astronomical observatory for the Council Crest Park was discussed at some length. It was reported that an offer had been made to the City of a 15-inch reflector telescope.

We realize that such an instrument would have to be properly housed and made available to the use of the public.

I was instructed to advise you that the members of this Society present at that meeting wanted to go on record in favor of any feasible project that would make such an instrument available to the public at the Council Crest Park.

We have no first hand confirmation that such a telescope has been offered to the city but if it is true we sincerely trust that some arrangements can be made whereby such an offer will not be rejected.

Respectfully submitted:

J. C. Stevens,
President, Geological Society of
the Oregon Country

Portland, Oregon, January 4, 1941.

Mr. J. C. Stevens,
President, Geological Society of the Oregon Country,
Spalding Building, Portland, Oregon.

Dear Sir:

Your nominating committee is unanimous in recommending to the Geological Society of the Oregon Country the following members for elective offices to be filled at the annual meeting in February 1941:

For President: Kenneth N. Phillips.
For Vice-president: Leo Simon.
For Secretary: Mrs. Kathleen Mahony
For Treasurer: Miss Helen Iverson
For Director: Earl K. Nixon .

Respectfully submitted:

Orrin E. Stanley
Tracy Wade
Emma Nordgren
Mildred James
A. D. Vance, chairman

January 3rd, 1941.

Dear Jim:

Well, New Year's resolutions were meant to be broken and I suppose you have crashed all of yours already like the rest of us. I am rather glad Christmas and New Year's Eve are over. All these holidays in the middle of the week have upset my usual routine so perhaps now I'll get back to normal.

Regardless of the holidays the GSOC held their regular luncheons and while the one after Christmas was sparsely attended, the one after New Year's filled the room to overflowing. At the first no specimens were shown. There were only 13 at the start and the waitresses seemed to dislike serving that number, but Claire Holdredge came in and broke the spell, so we were served. I was afraid we would not get anything to eat if the jinx was not broken. Mrs. Schminky and I upheld the feminine constituency.

The New Year's luncheon made up for it, however, and was especially interesting. Because there were no specimens the previous week, I thought I'd have a good chance to find out what one of ours was - and did, of course. It turned out to be a hot water deposit of lime and silicate, and as it was found on the site of a mountain south of John Day - nowhere near water, especially hot water - it is especially interesting to us.

Miss Henley presented several specimens consisting of garnets in matrix from a quarry near Gratan, Sonoma County, California; jasper from Stone Canyon near King City, California, and some Honolulu lava. One of the Honolulu lava pieces would have made an excellent back scratcher.

Mr. Carney had a lovely piece of polished labradorite. When it caught the light it showed a beautiful peacock blue.

Dr. Booth had a specimen from a fossil Cycad forest in the Black Hills which showed the grainings remarkably well.

Mr. Ruff had a piece of fossilized wood which had been found below the main spillway at Bonneville in the Eagle Creek formation. The piece was found well below sea level.

A new book on the Physical and Economic Geography of Oregon recently published by the Oregon State System of Education was inspected. It looks like it might be a pretty good reference book.

Mr. Oberson was present as school teaching hadn't started again after the holidays.

Mr. Stevens had as his guest Mr. John A. Bruce from Omaha; a schoolmate of his he hadn't seen since they both left the University of Nebraska, 37 years ago.

Mr. Libbey introduced Mr. Pomeroy Merrill, a mining engineer who is in the city for a few weeks. Mr. Merrill has spent considerable time in Russia, the Straits Settlements, and the Philippines. He is extremely interesting and I hope Mr. Phillips can persuade him to talk to the society as I know everyone would enjoy it immensely.

The younger element was represented by Ellen James and Lotus Simon, and everyone was glad to see them.

Mr. Minar had as his guest Mr. W. P. Thompkins of the Western Foundry Sand Company of Seattle, who is interested in the use of garnets in sand blasting. Mr. Thompkins showed samples of the various screen grades of garnet used as well as some in schist matrix. He obtains this material from a mountain of schist over in Idaho in the Coeur d'Alene district. From the talk I gathered that the use of garnets will probably be more satisfactory in certain kinds of sand blasting.

Dr. Osgood was present after quite a long absence, and told us that he had been traveling over the country on a speaking trip but hadn't seen much geology.

Dr. Booth showed a book on Death Valley, put out by the WPA writers' project of northern California, one of the American Guide series. Miss Henley is going down in that section soon on a trip and she should have an interesting time. We hope to make it some time too. Especially when the desert is in bloom.

Dr. Hodge was present but when asked if he had anything to contribute, said he had nothing on his mind--- and now that I've told you all my news, I have nothing on mine, either.

Katie.

CHANGE OF ADDRESS

Mr. and Mrs. Roy C. Swanson Rte. 1 Box 214 Bremerton, Wash.

NEWS OF MEMBERS

Mr. and Mrs. Thomas A. Carney took part in the dedication of the New Roberts Grange Hall south of Salem on January 1st. Mr. Carney showed colored moving pictures and gave a lecture on the Mesa Verde National Park.

Mr. Earl K. Nixon, director department of geology and mineral industries for Oregon, was the principal speaker at the annual dinner meeting of the Oregon section American Society of Civil Engineers, at the Congress Hotel, January 6th. His subject was "Our Relations with the Latin-American Republics".

DAWN OF LIFE IN OREGON

by Edwin T. Hodge.

The Eocene is called the "dawn of recent life" because at that time appeared mammals; mammals though different from those of today yet possessed of attributes which enable one to see in them ancestral traits of modern creatures.

The actual history of the beginning of this "dawn" in Oregon is a much discussed problem; indeed, over the entire world it has been long debated. The writer thinks that the question is closely related to the Oregon Clarno formation. Hence, here, and perhaps in later articles offered to the News-Letter, I will present some conclusions that have arisen from a long study of the Clarno formation.

The Clarno formation is well known to most amateur geologists because of the excellent fossil nuts, leaves, "thunder eggs", and nodules found in it. Its rocks are very durable and form hills that have persisted since Eocene time and now rise above the general level as buttes and hogbacks in many parts of eastern Oregon. These old Clarno hills are varicolored and attract the attention of all who seek the beauties of nature in eastern Oregon.

For these and many other reasons the professional geologist is well acquainted with this important formation, yet there is no agreement among geologists as to its age.

Knowlton, Chaney and Merriam suggest an upper Eocene and Buwalda an Oligocene age for it. The writer wants to place it in the Paleocene (the earliest Eocene).

The only fossils found in the Clarno are plants; no animal remains have been found. Leaves are poor horizon markers and the Clarno leaves have been called Eocene, Oligocene, and Miocene in age.

It is strange that no animal fossils have been found. The writer offers the following explanation: It seems that most land animal fossils are found in beds that were formed in lakes, swamps, flood plains, torrential stream deposits or by widespread falls of volcanic ash; in other words, in lowlands. The base of the Clarno formation contains sandstone and conglomerates but these are very local and thin. Coal beds indicate swamps but these cover only a square mile or less of area. The volcanic ash beds also indicate small showers from local volcanoes that covered a few square miles in area. The sediments and thin lignite beds could have been found in a highland area (the leaves of Clarno time indicate an upland).

Animals dying on a highland are not easily entombed; bacteria soon destroy their flesh and rodents sharpen their teeth and get their calcium phosphate by gnawing and destroying the dead animal's bones. Also, when the volcanoes erupted the animals fled before the wind-borne ashes to beyond the limits of ash fall. They were not "snowed under" by falling ash as they were in the John Day time. Because the ash falls were local, the ash did not bury the vegetation everywhere and consequently the animals did not starve. None of the above reasons apply to the entombment and preservation of plants.

In the absence of animal fossils we must apply other geological evidence to determine the age of the Clarno formation. This other evidence is somewhat involved and will be a test of a News-Letter reader's capacity to follow the geologist trail to the solution of the Clarno mystery.

To help keep track of the trail I will place the following guide-posts:

- (1) Folding began at the end of Cretaceous time.
- (2) The sediments derived by the erosion of these folds were deposited partly in retreating Cretaceous seas and on the low swampy Cretaceous coastal plains. These sediments are comparable with earlier sediments and contain Cretaceous ammonites and dinosaurs (Lance and Laramie formations).
- (3) The seas retreated a long distance from the still growing folds so that the sediments derived from the rising mountains were in large part laid down on land. In the central United States these were laid down close to the mountain and conformable upon the Lance and Laramie beds; thus, in places, there is no break between the older and these younger or Fort Union beds. However, by this time the dinosaur and ammonites had died out and their place was taken by the archaic mammals. This change of life makes the paleontologist want to separate the Cretaceous from the Eocene at this level but he cannot surmount the absence of a nonconformity; being conservative, the paleontologist postpones the separation to above the Fort Union when a break does occur.
The folding by this time had become more localized, was accompanied by faulting and permitted volcanic rocks to emerge. This is the Puerco division of the Fort Union formation.
- (4) Some of the folds, formed in stages 1 and 2, had now been eroded so that their bases presented edges of folded Cretaceous rocks to the surface, elsewhere were eroded folds of still older rocks. The mountains that continued to grow in the more restricted zones now shed debris farther away. Some transported debris formed deposits that lie unconformably on Cretaceous rocks. Some of these are the Clarno formation. These higher mountains also produced wind-harriers and so produced climatic zones. This is the Torrejon division of the Fort Union and the end of Paleocene time.
- (5) The mountains reached their culmatory height. The climatic zones were definitely established and plants and animals responded thereto. This response yielded modern mammals and plants - the true Eocene. The mountains may be called the Laramides - the beginning of the Rockies, Andes and Himalayas. The Clarno beds were folded into the Clarno mountains 4000-5000' high. The high mountains were vigorously eroded to produce within the Laramide Rockies the Wasatch formation. The Clarno mountains also were eroded and yielded the oldest Oregon Eocene marine sediments - certain beds along the Coquille River.
- (6) The final portion of the Eocene was devoted to the continued but slower (mountains now lower) erosion of the Laramide mountains. Within the Rockies the debris formed the Green River, Bridger and Uinta beds with their magnificent fossils. Some of the sediments were carried to the Pacific where, in California, they formed thick deposits in subsidiary basins. In Oregon the Clarno mountains were eroded and the debris also carried into subsidiary

coastal basins to form the Umpqua and Tyee beds. When the basins had become filled a coastal plain lay along the Oregon coast where the Pulaski and Coaledo formations were laid down.

In summary of the outline: The Clarno formation was laid down at the close of the Paleocene time; was folded into high mountains in the beginning of the Eocene and since that time has been subjected to erosion. The Clarno folding also involved other rocks than Clarno, such as those of southern Oregon. The Clarno mountains were subject to erosion during the last two-thirds of Eocene time and the first third of Oligocene time before they were buried by the John Day formation.

In succeeding issues of the News-Letter I will present in some detail my evidence for the above outline of events and the life that lived while these events were transpiring.

THE ENERGY OF METEORITES

by E. N. Bates

About 6 a.m. on July 3d of 1939 the dwellers in and about Portland heard a thunderous report which announced the arrival of the Portland Meteorite of that date. The loud report set us thinking of the energy released by meteorites coming into the earth's atmosphere. Obviously no one will ever know the exact original weight of the meteorite nor the velocity at which it approached the earth. Let us assume, however, for convenience, that our earth visitor weighed one pound. For a morning meteorite it would not be an extravagant guess to say that its velocity was 40 miles per second. Meteorites have higher velocities from midnight until noon than they have from noon until midnight because during that time we are on the forward surface of the earth as it revolves around the sun at the mean velocity of 18.5 miles per second and that velocity is added to any initial velocity toward the earth the meteorite may have had in space. We are told by students of astronomy that meteorites enter the earth's atmosphere at velocities from 10 to 50 miles per second. Such high speeds of material objects so far exceed any velocities with which we are commonly familiar in our daily lives that their study becomes of interest. It may help us to comprehend those high speeds if we consider that an airplane flying at 360 miles per hour is going only one-tenth of a mile per second. In other words, while this fast plane is traveling about 13 feet, a meteorite going 40 miles per second would travel one mile.

The energy stored in a body due to its motion is called its kinetic energy. Whenever the velocity of a moving body decreases we know that the body has given up some of its kinetic energy which has been transformed into some other kind of energy. It is of interest to compute the kinetic energy of such rapidly moving objects as meteorites and then figure the equivalent in other familiar forms of energy such as work heat and electricity.

The kinetic energy of a moving body varies directly as its weight and as the square of its velocity, and is given in foot pounds. One foot pound is the energy exerted in lifting one pound weight one foot vertically. Now the kinetic energy of one pound of matter moving at the rate of 40 miles per second works out to be 693,440,000 ft.lbs. In order to reduce this quantity of kinetic energy into other forms of energy, let us first compute the value of some of the other units of energy in foot pounds. We find that in the burning of one pound of high quality coal the heat developed is equivalent to about 10,892,000 ft.lbs. of energy. One pound of dynamite contains about 2,217,000 ft.lbs. of energy. One horse-power hour is equivalent to 1,980,000 ft.lbs. of energy. One kilowatt hour represents 2,654,000 ft.lbs. of energy.

If we could harness the energy in a one-pound meteorite moving at 40 miles per second it would be capable of lifting a weight of 630 tons from the base to the top of the 550 ft. high Washington Monument. Or it could produce heat equal to the burning of 63.6 pounds of coal which would be capable of heating 596 gallons of water from the freezing to the boiling point. This energy would be equal to that of a one-horse power engine working continuously for two weeks or it would keep a 60-watt lamp burning continuously for 6 months. But the thing that attracted everyone's attention to the July third meteorite was the report like a loud clap of thunder, so it is interesting to note that every pound of a meteorite moving at 40 miles per second would, in coming to rest, expend as much energy as is released in the explosion of 312 pounds of dynamite. Small wonder that some of us thought that a local powder factory had blown up on July 3rd, 1939.

**GEOLOGICAL
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THE GEOLOGICAL NEWS-LETTER

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MEMBERSHIP APPLICATION

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues

A member shall be at least 21 years of age, who is interested in and supports the aims and objects of the Society and who shall be recommended by the membership committee. A junior member shall be over 18 and under 21 years of age.

The annual dues are: for members \$3.50 (includes husband and wife), juniors \$1.00

Date _____
I _____ (print)

do hereby apply for membership in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Address

Business Address

Telephone Number

Occupation

I am particularly interested in the following branches of Geology: _____

Sponsored by: _____
Member

I enclose \$_____ for first year's dues, March 1 to March 1. (Make checks payable to the Society).

Signature

ANNOUNCEMENTS

ALL LECTURES HELD IN AUDITORIUM, PUBLIC SERVICE BUILDING, 6th & Taylor.

DATES TO MARK ON YOUR CALENDAR

Thursday Luncheon at Treasure Island Restaurant
Jan.23

Friday Subject: ASTERISM AND CHATOYANCY IN MINERALS
Jan.24 Speaker: A. J. Walcott

The speaker for this evening was for several years in charge of the department of mineralogy at Northwestern University, later for 6 years doing research work at the Field Museum of Natural History in asterism in minerals (star garnet, star sapphire) and closely related chatoyancy (cat's-eye effect). During the latter period he also lectured regularly to an organized group of jewelers in Chicago. To illustrate his talk he will have wooden models of crystal forms and illustrative gems, such as star sapphire and oriental tiger-eye.

Sunday Clackamas County Trip

Jan.26 Leave SW. Front Ave. and Yamhill St. at 9:00 a.m. Visit Troutdale and quarry near Park Place. From Oregon City the caravan will travel to Carver by way of Redlands. Examination of Troutdale exposures between the Clackamas and Clear Creek. Visit Rhododendron outcrops near Estacada. Examination of Troutdale and Rhododendron exposures between Estacada and Milk Creek valley. You cannot afford to miss this trip.
Leader: Ray C. Treasher

Thursday Luncheon at Treasure Island Restaurant.
Jan.30

Thursday Luncheon at Treasure Island Restaurant.
Feb.6

FEBRUARY TRIPS

"The Eight Best Cellars"

During the month of February, instead of the customary out-of-town trips, something different is being arranged. It is planned to visit a number of outstanding basement collections (geologic) with which Portland abounds. Enough basements have been offered to justify two Sunday trips, probably February 9th and 16th. Watch local papers for further information on these dates. These trips will start approximately at 1:00 p.m. and extend to 9 p.m. They will afford an unusual opportunity to study the great variety of material displayed by collectors of different specialties, and see the arrangement of such displays. Many of the owners will be operators of lapidary equipment, which has been designed after their own peculiar individual ideas. There will be fossils, fluorescence, agates, nodules, gem material, woods, minerals pictures, and so forth. It is planned to meet at a central point, shortly after noon, divide into squads and each squad will proceed in rotation to the different basements, devoting about 2 hours to each. Between 5 and 7 buffet refreshments may be served if the hostess wishes to do so, to the squad which happens to be present at that time. The trip committee will appreciate advance registration.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES are held in Waller Hall, Willamette University, Salem, on the third Thursday of each month.

TRIPS are conducted in "caravan style" on the Sunday following the third Thursday of each month. Suggested reimbursement to car drivers is 1¢ per mile. Lunch should be taken and the leader will designate a suitable place during the trip for eating it.

LUNCHEONS - Members and friends meet each Tuesday noon at the Golden Pheasant, Liberty St. near Chemekata; lunch 40¢. Geological specimens are exhibited; brief talks on experiences are welcomed - an excellent opportunity to get acquainted.

DON'T FORGET -

Tuesday Luncheon at The Golden Pheasant
Jan.28

Tuesday Luncheon at The Golden Pheasant
Feb.4

Tuesday Luncheon at The Golden Pheasant
Feb.11

PERSONNEL of the SALEM CHAPTER NOMINATING COMMITTEE

C. C. Ward, chairman
N. C. Hubbs
Olive M. Dahl
Earle K. Stewart
O. A. Chase

NOTES

The membership roll of the Salem Chapter is growing rapidly and already numbers more than 40.

There were 14 present at the Jan.14th luncheon. (Let's hope for 28 on January 28th.) Mrs. Stockwell exhibited two groups of specimens from Death Valley: (1) from the "Cannon Ball" area, and (2) from the Furnace Creek area.

Mr. Reeves reports that the Doughton Hardware Co. has quoted a special price to members of the Society on

Maydole Geol. Pick (1 lb) - \$1.40
" Brick Hammer 1.25

These prices apply only when 1 dozen or more are ordered. See Mr. Reeves.

Mr. Davis has been investigating the question of pocket microscopes and has located two excellent pocket 'scopes which members may obtain at a price 1/3 off the regular list price. This glass is 10-power and comes in 2 sizes: Compact size (10 x) \$5.00; larger size (10 x) \$2.50.

Since the job of collecting items for the Salem section of the News-Letter has devolved upon me, - a job which Mr. Davis tactfully describes as a "combination of clearing-house and slave-driver"- I am sending out this call for contributions. Any items of interest to the Society, experiences you may have had in travelling the rocky path toward geological knowledge, or "tips" on possibly fertile fields for future trips will be most welcome.

- H. J. Smith, Rt.7 Box 118, Salem.

Sixth Annual Banquet of

Geological Society of
Oregon Country

Come One -

Good Eats

- Come All

Stunts

Music

Friday, March 14, 1941

7:00 p.m.

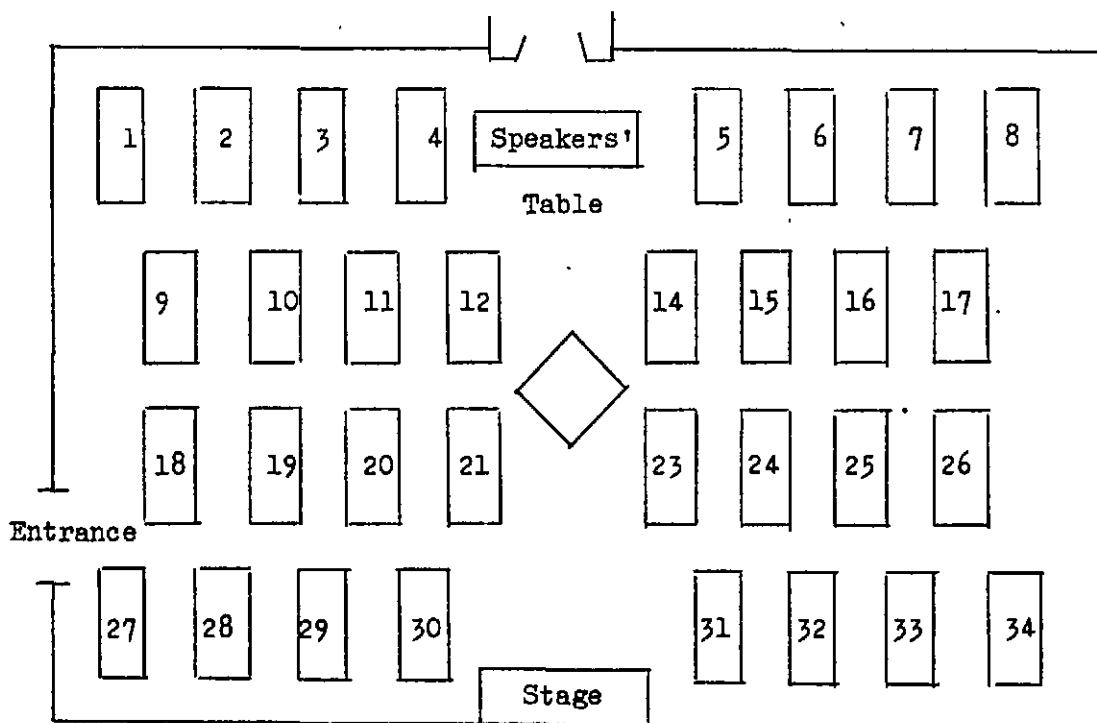
Reed College Commons

Price--\$1.25 per plate

Tickets sold by plat. Refer to plat below and make your selection; don't delay making your purchase. This should be a sell-out. Tickets will go on sale at the next meeting of the Society, on the evening of Friday, February 7th, 1941, Auditorium, Public Service Building. Tickets may be purchased at all subsequent meetings of the Society. Leo Simon, chairman of Ticket Committee.

Leo Simon, c/o Sowell-Simon Studios,
531 S.W. Washington Street
Portland, Oregon

Money for tickets should accompany mail orders. Seat preference will be made as closely as possible to your selection. Tables seat six persons.



SALEM CHAPTER'S FIRST LECTURE AND FIRST TRIP

(Editor's Note) It had been announced that the lecture was to be given and the trip led by Prof. Herman Clark, the President of the Salem Chapter. On account of illness he was prevented from doing so. Substitutions, therefore, were made at short notice by the events recorded below).

The Lecture on December 12 - "GLACIERS"

The first lecture given before the Salem Chapter of the Geological Society of the Oregon Country was delivered by Carl P. Richards, member of the Chapter, on the subject of "Glaciers" on the night of December 12, to an audience of 50 members and friends in Waller Hall.

Carl is exceptionally well qualified to give a talk on this subject as he spent many years in the study of glaciers as a member of the Research Committee of the Mazamas, which group has been keeping the official records of the glaciers on Mounts Hood, Adams, St. Helens and Jefferson for a number of years.

The most interesting part of his talk was the description of the two airplane trips taken around these peaks and the pictures he showed with the Balopticon gave the audience the feeling they were up in the plane with Carl and the others.

The glaciers of the Cascades are retreating rapidly, said Carl, and some are already gone. Superficially this would seem to indicate that the climate is moderating but the measurements of glacial movement begun in 1827 in the Swiss Alps indicate that glaciers in a general area advance for a period of time and then recede.

The definition of a glacier, said Carl, must include the fact that in order to form a glacier precipitation of snow must exceed evaporation and melting each year. The snow must be consolidated and recrystallized and the ice must move. He also explained the many glacial terms such as bergschrund, crevasse, neve, cirques, roches moutonnees, moraines, arete, col, and types of glaciers such as valley glaciers and Piedmont glaciers, and discussed the erosional processes of glaciation and bringing out such features as hanging valleys.

If all the ice in the world melted, said Carl, the level of the oceans would rise 93 feet. I don't know how he'll prove that, but he is so earnest about the whole matter that we'll take his word for it. His talk brought out many other interesting facts which space does not permit us to record. Suffice to say, he had an interested and appreciative audience.

The short business meeting preceding the lecture was presided over by Glen Paxson, Vice-president, in the absence of Professor Clark. Bill Reeves operated the balopticon.

The Trip on December 15 - SILVER FALLS STATE PARK

The first field trip of the Salem Chapter was led by W. A. Reeves and F. L. Davis to Silver Creek Falls State Park. Twenty-four hardy souls braved the freezing temperature to honor this auspicious occasion.

The opportunity to make a geological reconnaissance of the area was hampered considerably by the ice which was in evidence everywhere in the shape of huge icicles in the falls, glazed paths and drifting frozen mist which covered trees in the vicinity of the falls. Owing to the danger on the trail, the party did not venture farther than Lower South Falls on the south fork, but visited Winter Falls and North Falls on the return trip.

What the trip lacked in geology was made up by the magnificent winter dress of the various falls, presenting a fine opportunity for the photographers on the trip to secure some unusual views.

Arrangements had been made to have the Lodge open for the occasion and the party enjoyed their lunch before the warmth from the huge open fireplace. After lunch, short talks on the geography of the area were given by the leaders and each member of the party signed the register.

This area of falls is outstanding in the West. Nine falls all within a walking distance of four miles present scenery of such beauty that it is regarded by many as the finest state park. A new lodge building has just been completed and many improvements are being made to take care of the crowds that visit that area.

The party went in by Highway no.222, a distance of 25 miles, and returned by Highway no.214, by way of Silverton, a distance of 30 miles.

All agreed that another trip should be made to the park in the spring when the full trip on excellent trails would permit a more detailed study of the area. Arrangements are being made to send to each member of the Chapter a copy of the folder published for the Park Department of the State Highway Commission, which includes a map of the area.

- Franklin L. Davis.

Dear Jim:

By the time you receive this the presidential inauguration will be over. I suppose you saw the parade and attending ceremonies again this time. I'll have a front seat at the radio and remember the past two when on the day of the first I sat for ten hours on a narrow board in freezing weather for which seat \$2.50 was expended and saw my first inauguration and the last one during which there was a regular Oregon downpour. It is fascinating just the same.

For the news now - the GSOC has moved its luncheon place to the Treasure Island Restaurant on Broadway across from the Journal Building and have quite a nice light room. We were quite entertained last week as Clarence Phillips started music in one of the nickel-in-a-slot machines. Fortunately he picked a soothing waltz. By the way, he is up and coming these days as he and his law partners have combined with some more lawyers into a new and more extensive law firm.

Lloyd Ruff had a sample of the tin ore from the much discussed Burns tin mine and it was eagerly examined.

Claire Holdredge had some specimens of chalk from near Klamath Falls; a piece of calcareous tufa secured at Vale which forms at the mouth of a hot water well. The water is used in a laundry and ever so often they have to break off the tufa which forms. He also had a piece of Oregon jade from Port Orford. His principal specimen was one about which he had heard innumerable stories and everyone present was able to add to this. It was a piece of which is commonly called spoiled glass and is secured from glass factory dumps. It is really quite attractive being a clear green with white spots which look somewhat like moth balls. I'll confess the first I ever saw I thought was obsidian but apparently there are any number of folks believing the same thing until disillusioned.

Miss Henley received quite an array of specimens for Christmas and showed us some gypsum crystals from Imperial Valley.

Mr. Wiegand had just returned from a trip to Arizona and told us some interesting highlights of the trip. His wife made a statement while they were gone that can apply to any collecting trip of this bunch when she said she hoped there was enough money left to buy her a train ticket home as she knew if they secured another specimen she wouldn't have any place to sit in the car.

Tom Carney had a nice piece of rhodonite - a manganese meta-silicate which was very interesting.

The luncheon this past week was extremely well attended regardless of the rain and as always too interesting to miss.

Dr. Osgood had as his guest Miss Inez Brownlee who is, as he said, his right hand; for as he has ideas in the research field she does the work.

Tracy Wade received a grand Christmas present which we were fortunate in getting a glimpse of. He received the first two volumes of John C. Merriman's memoirs and the first volume which he brought to the luncheon had the latter half devoted entirely to the John Day region.

I noticed in the Oregonian recently that Mr. Stanley and Mr. Stevens had been made life members of the professional engineers organization and while Mr. Stevens was not present we were able to extend our congratulations personally to Mr. Stanley and of course also extend them to Mr. Stevens.

John Allen had a specimen of limbergite (I think that is spelled right) from Germany and of course everyone tried to identify it by smell.

Kenneth Phillips had a copy of the Honolulu Star Bulletin which had an interesting article on a new "volcanic house" which has been built for people to visit the volcano and view an eruption, if any, in ease and comfort.

Mr. Wiegand brought some specimens secured on his Arizona trip and a remarkably beautiful one of fluorite from Duncan, Arizona, also a piece of malachite and azurite from the Copper Queen mine.

Miss Henley had a specimen of dog-tooth spar from California and two garnets in pyrite.

Claire Holdredge gave us some interesting points on his trip throughout Oregon while doing his survey on non-metallics.

Mr. Phillips introduced Dr. Walcott, who is to be the next speaker, and he gave us a few words as to how he hoped to aid the amateur gem collector.

Tom Carney brought in some gorgeous specimens of asterism to show what Dr. Walcott is to talk about and they were quite a few O's and Ah's, especially from the female side. He had a star garnets, star sapphires, star quartz, cat's-eye (chrysoberl), black sapphire showing chatoyancy, and tiger eye (crocidolite).

One unannounced specimen which went the rounds was labeled "apatite" and was a piece of bread and butter.

With that I must close, although I'm leaving out just lots of what went on.

- Katie

Portland, Oregon, December 7, 1940

J. C. Stevens, President,
Geological Society of the Oregon Country,
434 N.E.Royal Court, Portland, Oregon.

Dear Mr. Stevens:

In response to your request I have served as a committee of one of the Geological Society to consider and make recommendations with respect to the qualifications for and privileges of junior membership in the Society, also for the grade of student membership recently proposed by the Salem chapter of the Society.

To meet the problems of management that may result from the creation of chapters of the Society in the several cities adjacent to Portland that contain universities or colleges, it is recommended that:

1. The grade of student shall not be created at this time.
2. Article II of the Constitution of the Society, entitled Membership and defining the five classes of members, be amended in Section 2 and be further amended by the addition of a Section 4, to read as follows:

"Section 2. Members, Fellows, and Honorary Fellows in good standing shall be entitled to vote. Associates, Members, Fellows, and Honorary Fellows in good standing shall receive all current issues of The Geological News Letter, the official bulletin of the Society, in consideration of the payment of dues. Juniors in good standing may, at the discretion of the Executive Committee, receive all or a portion of the current issues of The Geological News Letter in consideration of the payment of dues."

"Section 4. The membership grades of Associate, Member, Fellow, and Honorary Fellow, shall be construed to include the husband, wife, and minor dependents of a single family who desire and qualify for membership; provided, however, that minor dependents shall not be entitled to vote."

3. Article III of the Constitution, entitled Dues, be amended to read as follows:

Article III - Dues.

Section 1. The annual dues for a Junior shall be \$1.50, for all other grades of membership, \$3.50; provided, however, that the Executive Committee may remit the dues of any or all Honorary Fellows and may, to deserving individuals, remit all or part of the dues of Juniors, Associates, Members, or Fellows. Members to whom dues have been remitted in whole or in part shall retain all privileges of membership.

Very truly yours,

Arthur M. Piper
/S/ by Joseph E. Upson

ALKALINITY OF SOIL AND WATER

by J. C. Stevens

Salinity problems, with respect to the maintenance of a permanent irrigation agriculture, are becoming of increasing importance. One, which is cause for serious concern, is the progressive concentration of soluble material in irrigation waters and the gradual accumulation of salts in the soils upon which the water is used.

In many sections of the arid West, adverse conditions of considerable magnitude are apparent, particularly on those streams where complete utilization of the water resources is nearing realization. The increasing concentration of dissolved material in the streams has resulted, in part, from the repeated use of the water for irrigation. In the process, a substantial portion of the water applied, percolates through the soil, taking with it appreciable quantities of dissolved material. The water appears in the stream as return flow, from which rediversions are made for lands situated at lower elevations. A succession of such practices results in the water becoming of such high concentration as to be questionable for further irrigation use. In much of the intermountain region of the West, the underlying strata consist of cretaceous shales. These shales are usually highly impregnated with soluble salts and being practically impervious to water, restrict the movement of that percolating from top horizons, except laterally along the top of the strata. As a result of such movement, this water accumulates large quantities of soluble salt.

There is a great deal of uncertainty as to the limits of tolerance of agricultural plants to the various salt constituents, but it is an undisputed fact that accumulation of dissolved salts in the soil solution does occur and to the extent of producing toxic effects upon plant growth. The accumulation may result from inadequate drainage, insufficient application of irrigation waters for proper leaching of the root zone, or a soil inadequately pervious for water circulation.

Poor drainage is one of the more common menaces to irrigation. Heavy soils, or those relatively shallow over impervious strata, often present drainage problems not susceptible of correction within the scope of economic justification. Under conditions where irrigation supplies contain appreciable quantities of dissolved material, accumulation is bound to result unless proper drainage exists or can be provided. If drainage is adequate, the accumulation, of injurious quantities of salts, may be prevented by application of water in excess of that needed for plant growth to provide leaching of any accumulation of soluble salts from the root zone. The additional water necessary to maintain a favorable salt balance is somewhat uncertain. In the lighter textured soils there is danger of excessive leaching with too large applications, resulting in loss of valuable plant nutrients, while in the heavier soils the action may not be sufficient for maintenance of a desirable concentration of the soil solution.

During March, 1939, definite steps were taken to effect the appointment of a committee to conduct a comprehensive study of the salinity problem on western irrigation developments and to establish suitability criteria for irrigation

purposes of waters that carry appreciable quantities of dissolved material with consideration to the physical and chemical properties of the soils on which such waters would be used, and the crops likely to be grown. Commissioner Page, of the Bureau of Reclamation, in cooperation with the Geological Survey and the Bureau of Plant Industry, designated a committee of three, whose members represent each of the above organizations. The Committee personnel consists of Mr. C. S. Scofield, Principal Agriculturist, Bureau of Plant Industry; Mr. W. S. Collins, Chief, Division of Quality of Water, Geological Survey; and Mr. E. R. Fogarty, Soil Technologist, Bureau of Reclamation.

The objectives of the Committee are:

- (a) To assemble information on the extent and character of salinity investigations conducted by the various agencies active in this field, particularly as these studies pertain to problems in irrigation agriculture.
- (b) To summarize all pertinent data available from results secured in studies of salinity, and more specifically, data on the concentration of soluble material in irrigation waters now used, or contemplated for use, and the accumulation of salts in the soil.
- (c) To designate tolerance limits of concentrations of the various salts, occurring individually or in combination, in irrigation water and in the soil solution, for the successful production of agricultural crops.
- (d) To outline procedures for maintaining a favorable balance between the concentration of the irrigation water and soil solution.
- (e) To establish standards for ascertaining the irrigability of lands, due consideration given the character of the soil, and the suitability of the water available for irrigation.
- (f) To initiate, through the various agencies, programs for the sampling of stream flows, in conjunction with discharge measurements, for the purpose of determining the salt burden of different streams, and to extend the study to various lakes and reservoirs to provide information on the stratification of waters, and methods for proper release of storage to effect the most uniform concentration of flow.
- (g) To formulate plans for ultimate control of the concentration of irrigation supplies by identifying sources of contamination and developing methods for correction.
- (h) To outline procedures for the improvement of distressed areas, now under irrigation, and bring to the attention of the various interested authorities situations that are cause for serious concern.
- (i) To encourage scientific research, by those agencies so engaged, along lines where definite information, with regard to certain phases of the salinity problem, is definitely lacking.
- (j) To prepare reports and disseminate authoritative information on salinity problems as results of the study reveal.

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Geological Society of the Oregon Country

344 U.S. Court House, Portland, Ore.

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Executive Board

J. C. Stevens	President	434 NE Royal Court
A. W. Hancock	Vice-Pres.	2704 SE 84th Ave.
Miss Rose Jennings	Secretary	609 SW Lincoln St.
Miss Helen Iverson	Treasurer	5125 NE Couch St.
Clarence D. Phillips,	Director	
Ray C. Treasher,	Director	
Carl P. Richards,	Director	
Edwin T. Hodge,	Director	
Arthur M. Piper,	Director	

THE GEOLOGICAL NEWS-LETTER

Official Publication of the

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Editor-in-Chief and Business Manager

Raymond L. Baldwin
344 U. S. Court House
Portland, Oregon

Associate Editors

Edwin T. Hodge		A. D. Vance
Arthur M. Piper		K. N. Phillips
Ray C. Treasher	O. E. Stanley	Carl P. Richards

News-Letter issued semi-monthly on the 10th and 25th.

Yearly Subscription: \$2.00 Single copies: \$0.15

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The annual dues are: for members \$3.50 (includes husband and wife), juniors \$1.00

Date _____ (print)

I _____ do hereby apply for membership in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Address

Business Address

Telephone Number

Occupation

I am particularly interested in the following branches of Geology: _____

Sponsored by: _____
Member

I enclose \$_____ for first year's dues, March 1 to March 1. (Make checks payable to the Society).

Signature

ANNOUNCEMENTS

ALL LECTURES HELD IN AUDITORIUM, PUBLIC SERVICE BUILDING, 6th & Taylor.

DATES TO MARK ON YOUR CALENDAR

- Thursday Luncheon at Treasure Island Restaurant
Feb.13
- Friday WESTERN CANADA AND ALASKA, MOTION PICTURES WITH SOUND.
Feb.14 Through the courtesy of Liddell Travel Service, we are privileged to see a show of sound movies in natural color of scenes in southwestern Canada and in Alaska. This is in the nature of a non-technical travelogue, and should attract those interested in the scenery or topography of some of the finest vacation areas in North America.
- Sunday EIGHT BEST CELLARS: second trip. Leave SW. Front Ave. and Yamhill St.
Feb.16 at 12:30 p.m. Cellars to be visited on this trip are those of Drs. Adams, Booth, and Jones, and Mr. Rockwell. Bring 15¢ for refreshments between 6 and 7.
- Thursday Luncheon at Treasure Island Restaurant.
Feb.20
- Friday ANNUAL BUSINESS MEETING AND MOVIES.
Feb.28 Officers will be elected and inducted into office for the year beginning in March 1941. The President's report and those of committee chairmen will be abbreviated as much as possible to make room for other business and entertainment. Business will be transacted, including action on proposed changes in our by-laws regarding membership. After the business meeting, members will show movies and slides in natural color taken on Society trips during the past year, including the Grand Coulee and southern Oregon Mines trips.
- Thursday Luncheon at Treasure Island Restaurant.
Mar.6
- Thursday Luncheon at Treasure Island Restaurant.
Mar.13
- Friday ANNUAL BANQUET AT REED COLLEGE COMMONS (see page 23 for details).
Mar.14
- Thursday Luncheon at Treasure Island Restaurant.
Mar.21
- Saturday Trip to Eugene, banquet Saturday evening, field trip Sunday. Society
and Sun- invited to University by Dr. W.D.Smith. Museum inspection Saturday af-
day, ternoon; lecture after banquet by Dr. Smith. Field trip Sunday to the
Mar.29-30 various Willamette River irrigation projects and damsites.
- Sunday The long-awaited "Soil Trip" to be led by Dr. O. S. Powers of the De-
April 27 partment of Soils is tentatively scheduled for this date.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES are held in Waller Hall (2nd floor) Willamette University.

TRIPS are conducted in "caravan style". Suggested reimbursement to car drivers is 1¢ per mile. Lunch should be taken and the leader will designate a suitable place, during the trip, for eating it.

LUNCHEONS - Members and friends meet each Tuesday at noon in the Golden Pheasant, Liberty St. near Chemekata; lunch 40¢. Geological specimens are exhibited; brief talks on experiences are welcomes - an excellent opportunity to get acquainted.

DON'T FORGET:

LUNCHEONS: At the Golden Pheasant.
Feb.11-18-25.

LECTURE: Subject: "OREGON IN THE GEOLOGICAL STORY".

Thursday Speaker: Professor Herman Clark, Willamette University;
Feb.20 President, Salem Chapter GSOC.

8:00 p.m. This is the lecture originally scheduled for Dec.12, and which had to be postponed because of the illness of Professor Clark. He will review the fundamentals and terminology of geology which prevail more or less the world over and illustrate by citing examples of the various formations and processes here in Oregon. This talk is particularly appropriate at this time when the field trips are getting under way and for those members who are not yet familiar with the subject it affords an excellent opportunity to lay a sound foundation.

In addition to the lecture there will be a short business meeting and election of officers for the Salem Chapter for the next fiscal year.

TRIP: To the Stayton quarry and an example of Laminated Andesite (?)

Sunday Leader; Mr. N. C. Hubbs

Feb.23 Meet in front of Waller Hall at 1:00 p.m.

John Eliot Allen, Chief Geologist of the Department of Geology and Mineral Industries, has been selected by the President and approved by the Executive Committee to serve as Editor-in-Chief of the News-Letter for 1941.

Raymond Baldwin will continue as Business Manager, a position he has held with great credit for a number of years. During much of this time he has had to serve in the capacity of Editor also. The Society certainly owes Baldwin a debt of gratitude.

John brings to the editorship considerable journalistic experience, some of which, however, may be a bit vicarious for his father has been Dean of the School of Journalism of the University of Oregon for many years. But John, in his own right, has two scholastic degrees and long stretch on his doctorate, so we're anticipating a lot of fine editing from now on.

- JCS

Sixth Annual Banquet of

Geological Society of
Oregon Country

Come One -

Good Eats

- Come All

Stunts

Music

Friday, March 14, 1941

7:00 p.m.

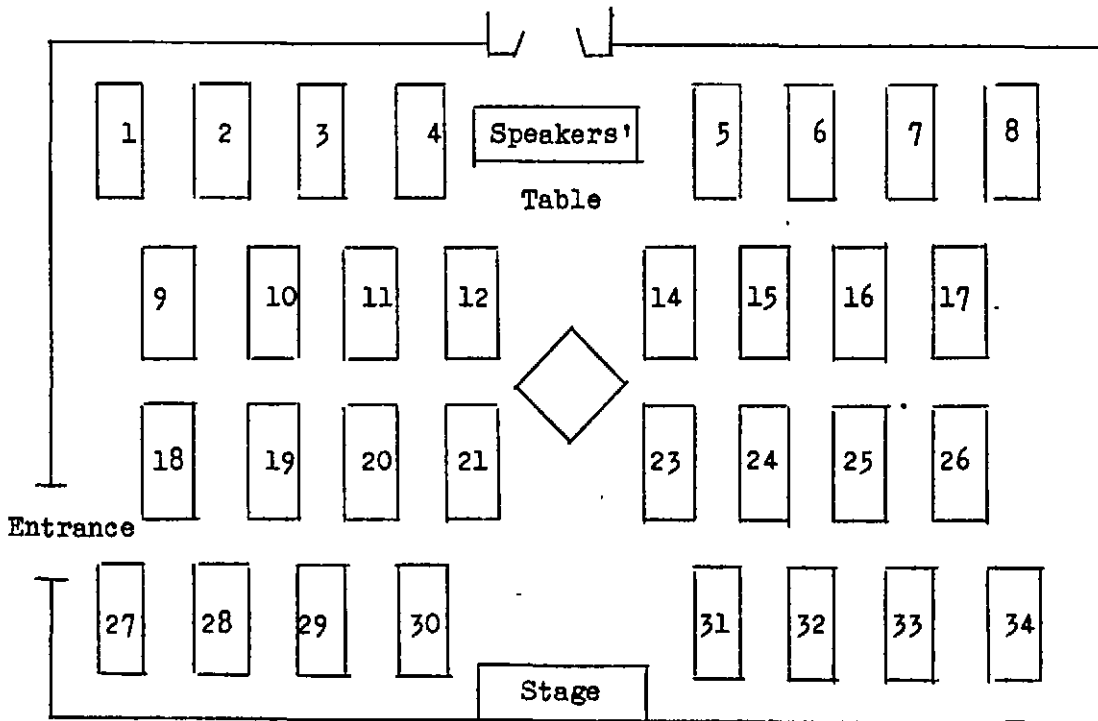
Reed College Commons

Price--\$1.25 per plate

Tickets sold by plat. Refer to plat below and make your selection; don't delay making your purchase. This should be a sell-out. Tickets will go on sale at the next meeting of the Society, on the evening of Friday, February 7th, 1941, Auditorium, Public Service Building. Tickets may be purchased at all subsequent meetings of the Society. Leo Simon, chairman of Ticket Committee.

Leo Simon, c/o Sowell-Simon Studios,
531 S.W. Washington Street
Portland, Oregon

Money for tickets should accompany mail orders. Seat preference will be made as closely as possible to your selection. Tables seat six persons.



Salem, Oregon, January 25, 1941.

To Members of the Salem Chapter,
Geological Society of the Oregon Country:

The election of officers for the Salem Chapter of the G.S.O.C. will be held Thursday, February 20, 1941.

As provided in the By-laws of the Society, the Nominating Committee has filed with the Secretary a list of nominees for the offices as follows:

President	Herman Clark
Vice-president	Ira S. Allison
Secretary	Dorothy R. Rice
Treasurer	H. Mildred Stockwell
Director	Carl P. Richards
Director	W. A. Reeves
Director	Vivian F. Carr
Director	Winston D. Purvine
Director	V. D. Hill

Any ten members may file with the Secretary other nominations for any or all offices. Such nominations, however, shall reach the Secretary not later than Wednesday, February 5th, 1941. Letter ballots showing the above names, together with any additional nominations which may be filed, will then be mailed to all members of the Chapter.

Myrtle E. Reeves
Secretary, G.S.O.C. Salem Chapter

NOTES

At the January 28th luncheon there were 14 present. Mr. Richards outlined plans for the Salem Chapter's participation at the annual meeting in Portland, March 14th. Mr. Clark suggested certain procedures to be followed at the luncheon meetings.

The February 4th luncheon was the least well attended, to date, which was particularly unfortunate as we had a visitor (Mrs. Mahoney) from the Portland Society. F. L. Davis reported progress in the formulation of plans for the Salem Chapter's "stunt" in connection with the Annual Meeting at Portland. He also exhibited a remarkable specimen - a camel tooth - found at Fossil Lake.

Don't forget that your annual dues are due March 1st!

Junior Members	\$1.50
All other members	3.50

H.J.S.

NEWS OF MEMBERS

At a recent meeting of the Oregon Section of the American Association of Mining and Metallurgical Engineers, Dr. Lloyd W. Staples was elected chairman, and two members of the Geological Society, John Eliot Allen and F. W. Libbey, were elected to the office of vice-chairman and secretary-treasurer.

Dr. Warren D. Smith has added a large collection of Philippine material to the University Museum of Natural History, which has been donated by the widow of General Creed Hammond. The gift includes Moro and Igorot weapons; spears, daggers, swords, shields, as well as some old American muskets.

Earl K. Nixon spoke before the Northwestern Mining Institute in Seattle on January 24th, the subject being "The Work of the Oregon Department of Geology". Mr. Libbey attended the meetings with him.

Ray Treasher completed field work on his forthcoming publication on "Geology of the Portland Area" during his stay in Portland from January 22nd to February 3d. Many of the Society enjoyed the trip over a portion of this area on January 25th.

Arthur Piper has been absent for many weeks, and his return to Portland during the latter part of January is a welcome one.

From five to fifteen male members of the Society have found it convenient to have their luncheons at the "Barnyard" in Lipman-Wolfe's, where a large table has been reserved for the GSOC.

The second meeting of the "Geological Journal Club" was held February 3d at 702 Woodlark Building. As at the first meeting, three papers were presented and discussed at length. Attendance has been about twelve for each meeting, and the Society is well represented.

On Friday evening January 31st Mr. and Mrs. O.E. Stanley took the Men's Club of Glencullen United Presbyterian Church on a travelogue by kodachrome pictures to Alaska and parts of Mexico. Last month Mr. Stanley also spoke before the Audobon Society and showed the colored pictures from his Alaskan trip. (We saw them first!)

Friday evening January 31st, at Al Azar Temple, Dr. Adolph Weinzirl spoke before Technocracy, Incorporated. His subject was "Defending Public Health".

Mr. and Mrs. Thomas A. Carney conducted the program for the joint meeting of the Coast Beach Agate Societies at Nelscott on February 7th. About 300 were present. Tom gave a travelogue in colored movies of the National Parks and a lecture with slides on the cliff dwellers of the Mes Verde National Park.

This is just to remind those who wish to have News Letters bound, that it is time to begin assembling them. Price will be 40 cents per volume.

NEW MEMBERS

J. C. Cleghorn 219 High St., Klamath Falls, Oregon.
Mr. & Mrs. Winston D. Purvine 2140 S. Church St., Salem, Oregon.

February 6th, 1941.

Dear Jim:

So you are in Texas. Have you purchased a ten gallon hat and a pair of cowboy boots yet? A mountain in your backyard and a desert in the front. Well, we can do better than that in Oregon. We'll even throw in an ocean and a mighty river.

No time to wander as I have three luncheons on which to bring you up to date. Two in Portland and one in Salem.

Two weeks ago at the luncheon Mr. Vance showed some fossil ivory from a mastodon found in Alaska. Unlike most ivory as we think it, this piece was brown.

One of Dr. Adams' patients brought him an interesting piece of tourmaline in quartz which came from Arizona. These doctors are lucky that way.

Mr. Carney showed a brilliant specimen as usual and this time it was lovely amethyst crystals from Brazil. A rough specimen and several cut and polished. One in the old type of cutting called cuvette which is the opposite to the cameo style.

John Allen had a specimen of pyrophyllite from Mariposa County, California.

Mr. Wade submitted for inspection and ordering if desired, a bulletin on Mt. St. Helens. This was titled "Mt. St. Helens, a Recent Cascade Volcano", by Jean Verhoogen. Inasmuch as Mount St. Helens is one of the prominent mountains in our back yard I ordered a copy as I believe a closer acquaintance with "her majesty" would be interesting.

Dr. Adams had as his guest Dr. A. W. Weeks, a radiologist; and Dr. Arthur Jones had as his guest Mr. A. E. Harbord of the Harbord-Rogers Company in Portland. I'll have to admit that Dr. Jones himself didn't show up.

Taking advantage of the fact that school terms were between semesters, Miss Emily Marshall and Miss Abigail Neikirk were present. We were all pleased to see them.

Miss Jennings after an interminable absence due to the flu was in her accustomed place and it was really good to see her. She had been greatly missed.

This last week there weren't as many specimens as pictures but these were scanned closely. John Allen had some excellent ones of the Cannon Beach trip and Mrs. Poppleton had some pictures and news clippings of the R.A.E. work being done in the Snake River Canyon section. Mr. Poppleton is engaged in this work. Mr. Stanley had taken a candid camera picture of Miss Jennings signing the Salem Charter and this was shown.

There was a specimen of gold telluride (gray) from the Union Mine at Cornucopia, shown by Wessley Paulsen. I was interested in this as we have a couple of specimens purportedly from this locality and didn't really know just what they were.

Mr. Libbey had just returned from the Northwest Mining Institute held in Seattle and reported that the program was very good. Mr. Nixon had a paper. They were conducted thru the Geology Building by Dr. Goodspeed and there learned that a project was under way of making maps of the Tertiary of Oregon. In order to have these maps printed for general use - so they would be most helpful - a letter from those interested to Dr. G. E. Goodspeed or Dr. C. E. Weaver, Department of Geology, University of Washington, stating interest in securing such maps would be of great aid.

Mr. Carney produced a specimen of mariposite from Mariposa County, California. This specimen was flecked with pyrite crystals and being only feminine I thought it would make a lovely shade for an evening dress - grey blue background with gold highlights.

I noticed that I didn't mention Mr. Holdredge in the first part, but he, both this week and last, gave us some interesting sidelights on his recent trips around Oregon. He also suggested that some profitable caravans could be taken in the Coast Range along the coast itself as there are innumerable things to study from the California line to the northern boundary of the state.

The third luncheon I attended was a surprise to the Salem group and are their faces red. There were only eight (including myself) present but I was assured this was most unusual (like California weather). Joking aside it was pleasant and I was glad I made the trip.

They have a trip planned for the afternoon of February 23rd to Stayton to see some laminated - here a controversy came up. First Mr. Davis said limestone for which he got the merry ha! ha! Then andesite and basalt were named and it is now to be left to the inspecting and "critical" trippers to decide. This trip is to be led by County Engineer N. C. Hubbs and his daughter who is a student of geology at Willamette.

Mr. Davis is going to try to get the jump on Mr. Vance this spring on some fossil localities so I won't give him away too much - except to warn Mr. Vance. He, Mr. Davis, I mean, had a specimen of camel's tooth from Fossil Lake and said it was one of the finest specimens found. Fossils are out of my line, but the others agreed with him.

I don't suppose your officers' mess needs a mascot but Mr. Reeves has six puppies to donate to first comers. Their mother was a cocker spaniel but their father (?)

Mr. and Mrs. Richards were not present as he is laid up with a cold, but I'm sure he'll soon be O.K.

Well, as usual I've left out a lot - but till later, still

Katie.

CHANGE IN ADDRESS

Mr. and Mrs. Lloyd L. Ruff

3015 NE 45th Ave.

TR 6980.

THE PALEOCENE DURING THE LANCE TIME IN OREGON

by Edwin T. Hodge

Old rocks are not common in Oregon. This is not necessarily a misfortune to the amateur geologist because the younger rocks have a more perfect story to tell and are easier to study. The Eocene is the oldest of the younger rocks and in Oregon has a large exposure. In eastern Oregon the Clarno formation is the principal Eocene formation. In vol.7, no.1, pp.7-9 of the News-Letter, I discussed the Clarno problem and gave an explanation for the absence of animal fossils in it. Here I will discuss the oldest portion of the Eocene record.

By the end of Cretaceous time most of North America had been reduced to a low level; in some places (some say all) to a peneplain, and the debris had been carried into Cretaceous seas to form true Cretaceous deposits. Some shallow (epeirogenic) seas occupied portions of North America. In these seas lived the last of the Cretaceous ammonites and on the warm, low, swampy coastal margin dinosaurs and the ancestors of archaic animals lived. The erosional surface developed on the land cut across folded pre-Cretaceous rocks.

Gentle folding then began and low mountain ranges were elevated; also the whole continent was gently arched up. The new mountains are called the Laramide mountains. Renewed erosion began. The deep soils of the old continental surface were quickly swept to the continental borders. Also the mountains were denuded. The sediments were carried into seas where Cretaceous creatures still lived and some of them were entombed. Adjacent to the mountains the sediments were carried outwards and laid down on adjacent undeformed Cretaceous rocks. In both places the sediments resulting from the uplift were laid down conformably upon true Cretaceous rocks, entombing late Cretaceous fossils; but the sediments were deposited after a diastrophic movement (break).

In the western interior, for example, the relations of the oldest Paleocene beds to the Cretaceous show that the sea had but recently withdrawn or that the peneplane surface was unaltered because the sites of deposition indicate areas without good drainage and of much lower altitude than now exists.

In the Appalachian Mountains the consequent streams flowing seaward on the arched Cretaceous rocks became incised and eventually superposed on the north-south Appalachian structures; a position they hold to this day. On the Atlantic coast the oldest Eocene deposits were formed mainly by erosion of the arched-up Cretaceous beds, but in part from the older rocks. The sediments were carried into the Atlantic in such volume that the sea floor sank and today only the latest shore phases are visible. They consist of gravels, sands, glauconitic sands, marls and clays.

The main mountain range was along the Rocky Mountain axis and near it the Paleocene sediments were laid down as continental deposits, in some places conformably upon the late Cretaceous formations. As a result the seas were either completely filled or were forced off of North America by the uplift of the continent and its newly formed mountains.

For example, in Alberta and northern Montana the Lance formation (Judith River formation and Paskapoo in Alberta?) and in central Montana the Sundance formation is 0 to 800 feet thick. Its lower part in northern Montana is called variously the Marys River formation (0 to 990 feet thick), Hell Creek member (550 feet thick), Colgate sandstone (55 feet thick), Fox Hills and its upper William Creek

(0 to 720 feet thick), Trollock (50 to 40 feet thick), and Ludlow.

The Lance formation is composed of sandstone, shales and conglomerate. Limestone indicates the nearness of the sea; coal beds indicate a low coastal plain. It bears dinosaur bones and no break between it and the Cretaceous has been found.

Where Paleocene beds were laid upon undeformed Cretaceous beds the animal succession shows no break. When the change was from sea to land deposits, or from low flat eroded lands to piedmont fans adjacent to mountains the plants changed abruptly.

The change from the Mesozoic to Cenozoic took a long time; the evidence for the change is well preserved. In older periods such transitional beds have been largely removed from the record, hence between older periods there is a more impressive hiatus in the record. If the break is made on the basis of diastrophism it belongs to the Paleocene, if on the basis of fossils, it belongs to the Cretaceous. Where a record is complete, fossils show gradual changes and to mark a time division plane by means of them is to be arbitrary. Consequently diastrophic breaks are the only ones that may be used to mark true divisions. On this basis the Lance belongs to the basal Paleocene.

My college classmate, Knight (1) says, "The following sequence of events in

(1) Knight, S.H., Laramie, Wyoming, Physical Evolution of the Rocky Mountains of South Central Wyoming. Geol.Soc.Amer.Abst.

physical evolution of the Rocky Mountains is exhibited in the Medicine Bow Mountains the adjacent Laramie and Hanna basins, and the Platte valley: (1) Deposition conformably on marine Upper Cretaceous of several thousand feet of coal-bearing sediments (Medicine Bow and Ferris formations) followed by folding and thrust faulting; (2) An interval of erosion sufficient to remove more than 13,000 feet of sediments and expose the pre-Cambrian in the mountain nucleus".

The above is a brief description of the transition from Cretaceous to Paleocene time. In Oregon the uplift of Lance mountains forced the withdrawal of Cretaceous seas. The Laramide revolution folded Cretaceous and older rocks. Before Clarno time the Lance mountains had been eroded to low hills. On the Oregon coast we do not find the debris eroded from the Lance mountains. Apparently they formed such a heavy load on the continental edge that it sank deeply below sea level. The oldest Tertiary sediments exposed on the Oregon coast lie landward and on top of those of Lance time.

SPECIAL NOTE

DUES ARE NOW PAYABLE. Make check to Geological Society of the Oregon Country, and mail to Miss Rose Jennings, 609 SW Lincoln St., Portland.

ADDITIONS TO OUR LIBRARY
thru the courtesy of the U. S. Geological Survey.

- Bull.387 "Structural Materials in parts of Oregon and Washington",
by N. H. Darton.
- Bull.531-L "Coal resources of Cowlitz Valley, Cowlitz and Lewis Counties,
Washington," by A. J. Collier.
- Bull.830-B "Geology of the Robertson, Humdinger, and Robert E. Gold Mines,
Southwestern Oregon", by Philip J. Shenon.
- Bull.846-B "Geology and Ore deposits of the Takilma-Waldo District, Oregon",
by Philip J. Shenon.

A NEW VOLCANO HOUSE

Members who have traveled in Hawaii will be interested in the following quotations from the Honolulu Star-Bulletin of Dec.7th, 1940.

"A new \$100,000 volcano house, one worthy of proud Pele and her vast and eerie kingdom of fire, will soon take form on the edge of Kilauea crater.

"The plan for a new volcano house became a certain thing last February, when the old hotel was destroyed by fire. Losses totaled about \$350,000. Only the five guest cottages and the old volcano house, utilized as a museum, remained.

"To the left (of the lobby) is a 30x50 foot lounge which is to command a sweeping view of the vast crater and the snow capped Mauna Kea and Mauna Loa. In case of an eruption, when the hotel is filled, dining facilities can be arranged in the lounge.

"The new hotel will be the only building in the territory with a complete hot water heating system. A similar system was drawn up in the architect's plans for the Honolulu postoffice several years ago but local officials convinced Washington that Hawaii did not need any additional heat. It will be a different case, however, for the new volcano house, perched 4,000 feet above sea level.

"One of the innovations will be the two steam baths, which will take up an area of 16x18 feet, one for men and one for women. Heat will be piped in from the steam cracks, which constantly send up vapors around the volcano area. Cold showers, nearby, will be used after the bath. The present sulphur baths, in the old hotel buildings across the road, will also be used, with additional ones planned for the future."

- K.N.P.

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LETTER**

VOL. 7 NO. 4 PORTLAND, OREGON Feb. 25, 1941

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Sponsored by: _____
Member

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Signature

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Thursday Luncheon at Treasure Island Restaurant.
Mar.6

Thursday TUNE IN ON KOAC FOR GEOLOGY PROGRAMS.

Mar.6 & 13 "Ancient Lakes and Fossils of Southeastern Oregon" will be the title of two half-hour discussions by Drs. E. L. Packard and I.S.Allison of Oregon State College, presented on Thursday evenings, Mar.6 and 13, from 9:00 to 9:30 p.m. over KOAC (550 kilocycles). This is a part of the program put on by the School of Science for the period extending from February 1st to June 6th.

Thursday Luncheon at Treasure Island Restaurant.
Mar.13

Friday ANNUAL BANQUET AT REED COLLEGE COMMONS (see page 33 for details)
Mar.14

Sunday Local Interest Trip. Repeating the trip cancelled by weather conditions
Mar.16 on Dec.15, 1940. Leader: Mr. Amza Barr.
Maps: Portland, Troutdale, Oregon City, and Boring quadrangles.
Route: Leave SW Front Ave. and Yamhill St. at 9:00 a.m. Proceed to 92nd & Division and thence to Powell Valley road by way of 92nd Ave. See old scour channel around Kelley Butte. Visit rock quarry that turned into a gravel pit. Continue south on 92nd Ave. to Foster Road, thence to 100th Ave. and south to Indian Rock quarry on Mt.Scott. Rocky Butte lava in Troutdale ? gravels. Thence to top of Mt.Scott (walk of 1½ miles if road is skiddy). This is a view stop which will be passed if visibility is poor. Thence west, around south side of Mt.Scott, to 82nd, south to King Road and west along King Road to gravel pit. The stream that made this deposit seems to have come from the north. Continue west to Linwood Road and turn south. The road crosses a lake in an old abandoned channel hanging on a terrace along Kellogg Creek. Thence east, by way of Harmony School, to 82nd, south on 82nd to Lawnfield Road and east on Lawnfield Road to its end. Lunch. Visit cave in lava flow, see an interesting landslide, and examine some old wells on the side of a mountain. Thence to Carver. Examine lavas and gravels. Thence to Grant Park on the Clackamas River. Visit Indian caves. Disband. About 45 miles of driving.

Thursday Luncheon at Treasure Island Restaurant.
Mar. 20, 27

Week-end Trip to Eugene. Registration for the trip must be completed by Mar. 20.
Mar. 29-30 Open house in the museum and class rooms in the afternoon.
Informal banquet about 6:30 p.m. Place and time later.
Illustrated lecture on The Geology of Alaska by Dr. Warren D. Smith in the evening. Dr. Smith traveled several thousand miles through Alaska and the Yukon.
Sunday there will be a field trip to several of the Willamette Valley Project damsites.

Easter Sunday Open to suggestions for trip.
April 13

Sunday The Soil Trip. Leader: Dr. W. L. Powers, Soil Scientist, School of
April 27 Agriculture, Oregon State College.
Meet in Salem at 9:00 a.m. in front of Willamette University.
This trip will give a cross-section of soil types from the bottom lands in the vicinity of Lake Labish to the Cascade foothills around Silver Creek Falls area.
If you missed the first Soil Trip, here is your chance to make up the loss.

Sunday Joint G.S.O.C.-Mazama Trip. Leader: Dr. Edwin T. Hodge.
May 11 Details later.

FIELD COURSE IN GEOLOGY TO BE GIVEN

Persons desiring either lower, upper or graduate credit in geology may obtain such credit by taking a field course to be given by Dr. E. T. Hodge during the Spring Term of the Portland Extension Center. Three courses will be offered: G 206, lower division credit, open to students who are or have taken a year's work in general geology; G 380, upper division credit; and G 580, graduate credit. The latter two courses are open to students properly qualified. The instruction for G 206 will consist of preparatory reading, four one-day field trips and a report on each trip. Special arrangements may be made as to field work for the other courses. The field trips will be held on April 13 and 27, and May 11 and 25. The purpose of the course will be to instruct practically in the art of gathering and interpretation of geological information in the field. It is to give reality to textbook and lecture-room geology. The last date for enrollment will be April 15th.

SPECIAL NOTE

DUES ARE NOW PAYABLE. Make check to Geological Society of the Oregon Country and mail to Miss Rose Jennings, 609 SW Lincoln St., Portland, or to H. Mildred Stockwell, 694 N. Church St., Salem.

Sixth Annual Banquet of

Geological Society of
Oregon Country

Come One -

Good Eats

- Come All

Stunts

Music

Friday, March 14, 1941

7:00 p.m.

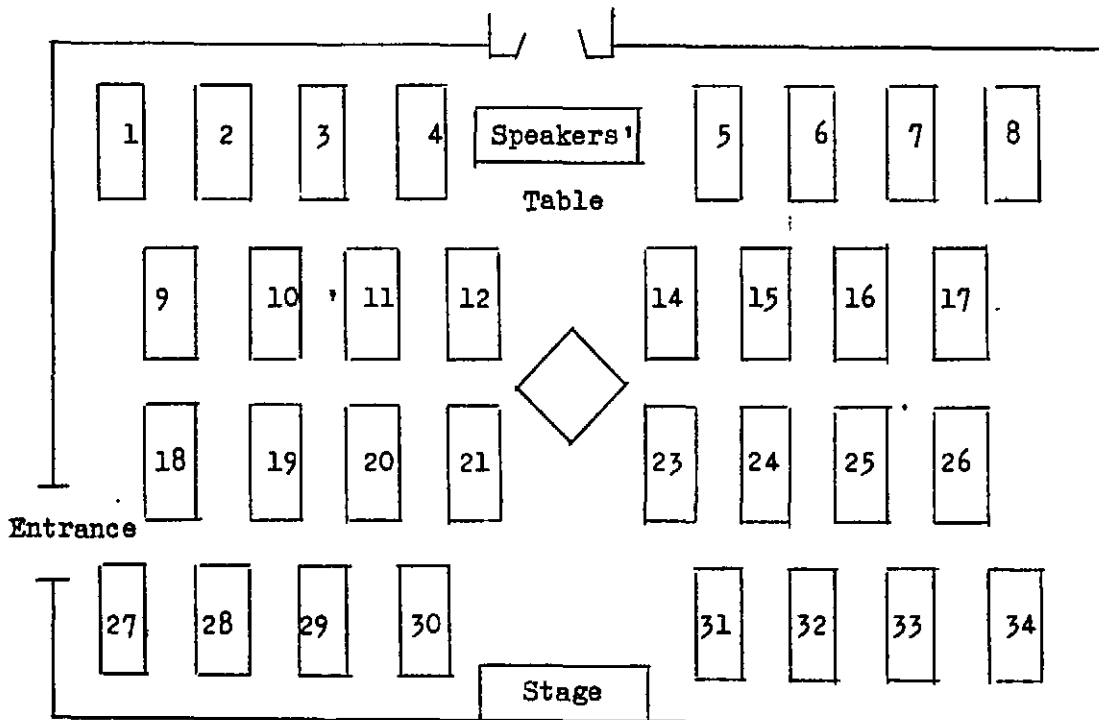
Reed College Commons

Price--\$1.25 per plate

Tickets sold by plat. Refer to plat below and make your selection; don't delay making your purchase. This should be a sell-out. Tickets will go on sale at the next meeting of the Society, on the evening of Friday, February 7th, 1941, Auditorium, Public Service Building. Tickets may be purchased at all subsequent meetings of the Society. Leo Simon, chairman of Ticket Committee.

Leo Simon, c/o Sowell-Simon Studios,
531 S.W. Washington Street
Portland, Oregon

Money for tickets should accompany mail orders. Seat preference will be made as closely as possible to your selection. Tables seat six persons.



SALEM CHAPTER ANNOUNCEMENTS

LECTURES; Third Thursday of each month, 2nd floor of Waller Hall.

FIELD TRIPS: The Sunday following the monthly lecture.

"WORK NIGHT": An informal get-together for members and friends - the first Tuesday of each month - in the Museum at Waller Hall. Specimens will be classified and prepared for the collection which the Salem Chapter is starting.

DON'T FORGET:

Tuesday luncheon meetings at the Golden Pheasant, Feb.25, Mar.4-11.

SIXTH ANNUAL BANQUET, Reed College Commons, Mar.14th, 7:00 p.m.

If you have not already secured your tickets(\$1.25) see Mr.Reeves at once. You'll miss it if you don't!

Attendance at the luncheon meetings is stepping up a little but there is still room for many more in the basement dining-room.

On Feb.18th the "stunt" committee was again reporting progress but the illness of the chairman, Miss Dahl, has handicapped it considerably. We are all hoping that she can soon return to duty.

A number of interesting specimens were exhibited:

Pyrites from the Cornucopia Mine by Mr. Davis.

Mrs. Stockwell submitted two rock fragments for identification, One, slate grey in color, was variously labeled sandstone, lava, etc. The other, a light buff color, was definitely sandstone, according to Mr. Davis. Mrs. Stockwell finally admitted that they were both chips from the same rock (sandstone, from the Congregational Church construction) and that the yellow color was the weathered exterior and the grey was the interior of the stone. She also had with her some of the table decorations used at the Annual Banquet in Portland last year - cave men leading most interesting prehistoric monsters.

Professor Clark offered some unusual rock (?) chips whose coloring seemed rather superficial and which Mr. Miner finally pegged as "Nux Pistachiononsensis Clarkiae".

Mr. Carl Richards reviewed an interesting article appearing in the NATURAL HISTORY magazine. Dinosaur tracks recently uncovered told the story of a Brontosaurus being trailed by a carnivorous Tyrannosaurus but the termination of the hunt was left in doubt.

Have you paid your DUES for the next fiscal year beginning March 1st? You will not want to miss a single issue of the News-Letter, so see Mrs. Reeves before March 1st, please.

CLACKAMAS COUNTY FIELD TRIP OF JANUARY 26th.

Ray Treasher, who has been making a detailed geologic study of the Portland and Clackamas areas, was the leader of this trip, which covered much of the area southeast of Portland.

The first stop of the day was at Park Place, two miles north of Oregon City, on the north side of the Clackamas River.

Upon casual examination, what appeared here to be a natural rock garden made of Columbia River basalt boulders, covered attractively with moss, ferns and wild flowers, turned out not to be a natural feature, but was evidently placed there first by the Indians to mark the site of a burial ground. The owner of the property said that when he came there many years ago he picked up a number of arrow points, beads and other artifacts from among the rocks as he arranged them in a terrace formation. Later he planted ferns and wild flowers among the rocks and did it so artistically that it now resembles a natural rock garden similar to others seen in tramps through the Oregon forests.

Across the Clackamas River about half a mile to the south there is a high bluff overlooking the river. A large quarry here exposed a good example of Troutdale formation, sand and gravel filled in with clay and ash. In places on the face of the cliff fairly large chunks of clay were noted embedded in the sand and gravel. It was explained to the group that these chunks might have been frozen and dropped into the stream bed by undercutting of the banks and were embedded and remained practically the same shape as they were when they fell in. An interesting feature of the Troutdale formation is the great number of quartzite pebbles which it contains. These apparently have traveled for a great distance, very likely from far up in eastern Washington. The pebbles in this formation are usually not larger than a goose egg with an occasional one as large as a coconut. An almost perpendicular "dike" of clay was noted in the bluff extending down thru the gravels and sand. This was possibly caused by a sun crack in the material which later filled with mud as the flood waters of the stream bed recovered the area. The Troutdale formation was in part of torrential formation.

Another stop was made about three miles east of Park Place at a road cut on the south side of the Clackamas River where there is another outcrop of Troutdale formation. From this place there was a good view of a terrace across on the north side of the river. Ray Treasher said the gravels on these terraces are very thin and are in part reworked Troutdals. Up to this time mention had been made a number of times about the younger volcanics that overlie the Troutdale formation and the question of their origin came up at this stop. Dr. Hodge said they came from literally thousands of vents from all over the area where they are found and that the lava poured out from these multitudes of vents in a catastrophic flood.

The caravan then moved on and crossed the river at Carver and proceeded east on the Estacada road and turned north across Deep Creek to a road cut half a mile north of the creek. Here is a classic example of the last stages of the decomposition of boulders into soil. In places the decomposition has gone so far that the rocks are almost all clay. This is also Troutdale formation and there was some discussion as to why these rocks usually so resistant to decay have decomposed so much more rapidly than the same formation in other localities. Ray says this interesting phenomenon is found always close to the surface. The elevation here is about 575 feet and he says this type of decomposition is found up to an altitude of 1000 feet.

By the time this place was thoroughly geologized it was after noon and the pangs of hunger overcame the thirst for knowledge and we were soon at Eagle Fern Park where we made one of the shortest stops for lunch that the Society has ever made. It might be mentioned here that this lovely park which is little known to the general public contains some of the finest and largest western red cedars in any park in this vicinity. Leo Simon remarked that the whole canyon for half a mile or more above the park should be included in the park area, a suggestion that any lover of the outdoors could agree with.

Leaving the park ~~the park~~ the caravan took the road to the southwest and stopped at a road cut about a mile above the park. A discussion arose here as to whether this was material in place or whether it was an old landslide. On the hill above the cut was overlying breccia while the material in the cut was decomposed basalt and tuffaceous material. A peculiar structure was noted here that seemed to baffle explanation. Scattered through the almost decomposed chunks of basalt were pebbles of various sizes and shapes that were not decomposed at all.

The next stop was at Faraday where there is an outcrop of Rhododendron volcanic breccia and agglomerate in and along the stream bed of the Clackamas. The hills immediately in the foreground are underlain by Troutdale formation and capped with younger volcanics. To the southeast on the south side of the river an old landslide was noted that apparently had dammed the river for a time, throwing its course to the north.

The caravan drove to Estacada and crossed the river to the Foothills Highway. The last stop of the day was made where the highway crosses Clear Creek over a modern concrete bridge. By way of contrast and a graphic reminder of how highways have been improved in recent years, a small segment of the old highway and an old wooden covered bridge can still be seen just below the new highway and bridge. The old bridge which looks as though it had come down from pioneer times was built in 1911 and is now used as a machinery shed by a farmer who lives next to it.

Another outcrop which was said to be Troutdale formation was examined here and the leader informed us that leaf prints might be found here, but since Hancock failed to locate any, the probability is there are none here.

- H.L.J.

FLUORESCENT LIGHTING.

Leo Simon reports that the P.G.& E. engineers have a booklet describing the various elements used in the new fluorescent lighting units to give various color effects:

Blue:	Calcium tungstate (scheelite)
White:	Magnesium tungstate
Green:	Zinc silicate (willemite)
Yellow-white:	Zinc beryllium silicate
Yellow-pink:	Cadmium silicate
Pink:	Cadmium boronate

Those familiar with the chemical composition of the fluorescent minerals will recognize some color effects of minerals of similar composition. Phosphorus and manganese are usually present in the compound as an activator.

February 21, 1941

Dear Jim:

This letter will be rather scrambled as there have been three luncheons since I last wrote and I'm not sure that memory has kept everything straight.

At the luncheon three weeks ago there were so many present that the set-up was not enough so we overflowed somewhat. First indications were that a high chair in the room would have to be utilized, but a waitress came to the rescue with another chair.

Mr. Wade had as his guest Mr. G. H. Morency, Chief Switchman of the Pacific Telephone and Telegraph Company who owns a home at Otter Rock. Mr. Wade suggested that Mr. Vance and Dr. Packard should watch him closely as he has found some fossils in the region of Otter Rock and has his eye out for more. He had with him a skull which the experts (Mr. Vance) decided was a porpoise; another fossil piece which was probably some part of the porpoise; and a piece of Teredo wood.

Mr. Stevens had three guests: Mrs. Stevens; his favorite daughter-in-law, Mrs. R. J. Stevens; and her mother, Mrs. Woodworth.

Fred Tisdale who has been coming to the luncheons and meetings fairly regularly was reintroduced for, as Mr. Stevens says, until they become members they are guests. Mr. Tisdale, however, had his application already with the exception of a sponsor and that item was quickly remedied.

Mr. Wade had received a Christmas present of a useful article with an ivory head on it which came from Alaska. Beautifully polished it made an attractive article as well as a utilitarian one. (Ed.- What was it?)

Mr. Carney showed us some wulfenite crystals from the famous Hilltop Mine in Arizona; and as usual they were of exceptional character.

At the next luncheon there weren't so many present. There was, however, much discussion as to who should preside as those in high office were presumably in a hurry. Miss Jennings rose to the task nobly and made things so interesting that the hurrying ones didn't leave.

Miss Grace Poppleton had a piece of limestone from the dump pile at the Carlsbad Caverns and some Indian artifacts from Sea Island.

Dr. Adams had a rock which contained a quartz vein with chalcocite, azurite, malachite, manganese oxide stain, and gypsum.

Tom Carney showed a piece of Brazilian agate which was very interesting.

The last luncheon brought out Mrs. Booth who is an infrequent visitor to the luncheons. We were pleased to see her for herself and to help swell the female side, as the men do predominate.

Mr. Calef had picked up the last issue of the Saturday Evening Post which contains an article and some interesting color pictures of shells found in Florida. He has such a collection and said this article was certainly true.

Dr. Jones had a fossil tooth that probably came from a ground sloth. He said it was of Pleistocene age and came from southeast Malheur county.

There was also passed around a copy of the December Scientific Monthly which contains an article by Professor Ralph W. Chaney on the "Bearing of Forests on the Theory of Continental Drift". I just glanced at it in passing but I intend to read it as that theory has rather fascinated me.

Mr. Minar had a building block which was made of pumiceous tuff. It is yellow and black and I thought it would be quite heavy but on the contrary it was extremely light.

Mr. Weygandt showed a piece of manganese ore and a piece of the refined manganese product. He also had a piece of copper from Ajo, Arizona.

Tom Carney's specimens of Nail Head Calcite and Prehnite from West Paterson, New Jersey, were lovely as all of his specimens are. I really need some new adjectives to describe his specimens - they are always extraordinary.

Mr. Reeves came up from the Salem Chapter and he told me that he had disposed of all the pups he had to offer.

Mr. Libbey introduced the State Board's efficient secretary, Miss Ruth Van Meter, and John Allen introduced Mrs. Alice Lancaster, wife of the field engineer at Baker. Mrs. Lancaster is Executive Secretary of the Red Cross for Baker County and as John said, gets around almost as much as her mining engineer husband.

This is aside from the luncheon but I thought it was interesting news. Dr. Hodge, in addition to his geology class at the Portland Extension Center where we all more or less got our original incentive to study geology is to have a field trip class in the spring term. There will be more details in the News Letter and it will be worth looking into.

Enough is enough for this time.

Katie.

INDIAN MOUNDS ON THE NESTUCCA RIVER.

Three masonry mounds are reported by Frans Berg to be located three-quarters of a mile south of the upper Nestucca River in Tillamook County, on a ridge-top at an elevation of about 1600 feet, 600 feet above the river. Each mound is 35 feet long and only 8 feet wide. The long axes are all oriented northwest and southeast, and the three mounds are aligned along this trend, one to two hundred feet apart. They average about 18 feet at their highest point. The rocks of which they are made are said to be fitted together.

The location of the mounds is probably near the center of the north half of sec.34, T.3 S., R.7 W. Mr. Berg's ranch is in the SW $\frac{1}{4}$ of sec.26, and they are located about one mile to the southwest. The logged-off country is covered with dense brush. Mr. Berg's address is PO Box 254 (1721 SW Front Ave., Portland). He is 72 years old.

- J.E.A.

IRRIGATION WATER FOR NEXT SEASON DOUBLES OVER LAST YEAR

by J. C. Stevens.

The results of the first snow surveys for this season have just been received. Heavy snows during January have substantially increased the volume of water stored in the form of snow on the headwaters of Oregon streams. Below is an interesting and encouraging comparison of 1941 with former years:

<u>Drainage Basin</u>	Range in Elevation of Snow Courses	Average water depth (inches) in snow cover on February 1			
		<u>1941</u>	<u>1940</u>	<u>1939</u>	<u>1938</u>
Owyhee River	5100-8600	8.4	4.8	4.8	-
Malheur River	4800-5900	8.6	3.5	4.7	4.3
Burnt River	5100-5430	7.6	2.7	4.9	3.2
Powder River	5400-7125	10.0	5.0	8.1	7.4
Pine Creek	5400	24.1	9.7	17.5	21.4
Grande Ronde River	4775-7480	14.0	7.8	11.7	14.7
Walla Walla River	5070	14.1	5.9	14.1	9.7
Umatilla River	3925-5070	7.2	3.4	6.8	4.3
Willow Creek	5400	7.7	2.8	5.4	2.8
John Day River	4775-6650	7.0	2.5	5.2	3.8
Deschutes River	3500-6400	10.2	5.4	11.6	8.0
Crooked River		6.4	2.0	3.9	1.9
Sandy River	3500-5600	15.1	6.4	21.3	19.0
Clackamas River	3400-3500	4.1	2.5	7.4	5.6
Willamette River	2325-5750	12.0	4.6	15.6	9.6
Harney Lake	5100-7900	5.6	1.9	5.3	1.4
Silver Lake	4900	2.6	1.0	2.8	-
Warner Lake	4720	8.9	3.0	5.4	-
Umpqua River	3000-5140	7.7	2.0	9.8	5.0
Upper Rogue River	3000-6900	11.2	4.8	7.9	7.9
Applegate River	4600-4900	20.3	6.3	9.3	7.4
Illinois River	4400-6000	15.3	2.7	7.8	2.5
Klamath Lake	4150-7200	9.0	3.7	5.1	5.9
Goose Lake	5320-5720	6.6	1.4	4.8	3.7

LECTURE BY DR. E. L. PACKARD
before Salem Chapter, Geological Society of the Oregon Country.

The lecture before the Salem Chapter on the evening of January 16th was given by Dr. E. L. Packard, head of the Department of Geology of Oregon State College, and a member of this chapter. His subject was "Vertebrates from the Maritime of Western Oregon".

The area considered was bounded roughly on the south by a line running from Florence to the crest of the Cascades, thence north along the crest of the Cascades to the Columbia River.

Beginning with the start of the Cenozoic era, about fifty million years ago, seas invaded this area probably at least five different times, - seas successively advancing and retreating with accompanying sedimentation - offering enough

different types of problems to interest all sorts of persons and their descendants to the third and fourth generations. These problems include the study of the sedimentation, vulcanism, glaciation, shifting climates, etc., in the region at our very doors and about which we know comparatively little. This talk mostly concerned that peculiar class of marine mammals which found themselves frustrated by the conditions they faced on land and for some very good reason changed to a water habitat.

No vertebrate fossils have been definitely located in the Eocene. During the succeeding periods were found the whale, whose fossil remains are found in many places in Oregon. A bulletin on an ancestor of the present day whale, the Cetothera, has been published by Dr. Packard, describing this new species, *Cophocetus oregonensis*.

Another land mammal which has taken to the sea is the seal. It has this distinct difference from the whale - its hind feet have been molded into its tail, while in the whale this is not true.

Of particular interest in this group are the turtles. Dr. Packard told of finding a skull larger than that of any that he knew about. In order to complete his identification, he needed a carapace. This was found by Mr. Vance near Johnson Creek above Newport, and from this Dr. Packard got valuable aid in his work of identifying the species.

Another mammal discussed by the speaker was the sea cow of which fossil remains are found in Oregon. Some excellent skull specimens are known and it is planned to work on these in the near future.

The amateur, Dr. Packard said, was of great assistance in paleontology in helping the professional to solve these problems.

Lantern slides were shown, illustrative of these various groups of fossils. Fifty-four people were present. At the close of the lecture, Dr. Packard answered questions and the group spent some time examining specimens in the museum. His talk should stimulate a more intelligent interest in the wealth of unsolved problems to be found in our own front yard, so to speak.

"In character, in manner, in style, in all things,
the supreme excellence is simplicity."

- Longfellow.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 5

PORTLAND, OREGON

March 10, 1941

GEOLOGICAL NEWS-LETTER

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Geological Society of the Oregon Country

344 U.S. Courthouse, Portland, Ore.

POSTMASTER: Return Postage Guaranteed

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

MEMBERSHIP APPLICATION

Executive Board

J. C. Stevens	President	434 NE Royal Court
A. W. Hancock	Vice-Pres.	2704 SE 84th Ave.
Miss Rose Jennings	Secretary	609 SW Lincoln St.
Miss Helen Iverson	Treasurer	5125 NE Couch St.
Clarence D. Phillips,	Director	
Ray C. Treasher,	Director	
Carl P. Richards,	Director	
Edwin T. Hodge,	Director	
Arthur M. Piper,	Director	

THE GEOLOGICAL NEWS-LETTER

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Editor-in-Chief and Business Manager

Raymond L. Baldwin
344 U. S. Court House
Portland, Oregon

Associate Editors

Edwin T. Hodge	A. D. Vance
Arthur M. Piper	K. N. Phillips
Ray C. Treasher	Carl P. Richards
O.E. Stanley	

News-Letter issued semi-monthly on the 10th and 25th.

Yearly Subscription: \$2.00 Single copies: \$0.15

All communications and material for publication should be sent to the Editor-in-Chief. Change of address is required 30 days in advance of the date of proposed change.

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues

A member shall be at least 21 years of age, who is interested in and supports the aims and objects of the Society and who shall be recommended by the membership committee. A junior member shall be over 18 and under 21 years of age.

The annual dues are: for members \$3.50 (includes husband and wife), juniors \$1.00

Date _____ (print)

I _____ do hereby apply for membership in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Address

Business Address

Telephone Number _____
Occupation

I am particularly interested in the following branches of Geology: _____

Sponsored by: _____
Member

I enclose \$_____ for first year's dues, March 1 to March 1. (Make checks payable to the Society).

Signature

PORTLAND CHAPTER ANNOUNCEMENTS

ALL LECTURES HELD IN AUDITORIUM, PUBLIC SERVICE BUILDING, 6th & Taylor

DATES TO MARK ON YOUR CALENDAR

- Thursday
Mar.13 Luncheon at Treasure Island Restaurant
- Thursday
Mar.13 **TUNE IN ON KOAC FOR GEOLOGY PROGRAMS.**
"Ancient Lakes and Fossils of Southeastern Oregon" will be the title of a half-hour discussion by Drs. E. L. Packard and I. S. Allison of Oregon State College, presented on Thursday evening, Mar.13, from 9:00 to 9:30 p.m. over KOAC (550 kilocycles). This is a part of the program put on by the School of Science for the period extending from February 1st to June 6th.
- Friday
Mar.14 ANNUAL BANQUET AT REED COLLEGE COMMONS (see page 43 and enclosed program for further details).
- Sunday
Mar.16 **Local Interest Trip.** Repeating the trip cancelled by weather conditions on Dec.15, 1940. Leader: Mr. Anza Barr.
Maps: Portland, Troutdale, Oregon City, and Boring quadrangles.
Route: Leave SW Front Ave. and Yamhill St. at 9:00 a.m. Proceed to 92nd & Division and thence to Powell Valley road by way of 92nd Ave. See old scour channel around Kelley Butte. Visit rock quarry that turned into a gravel pit. Continue south on 92nd Ave. to Foster Road, thence to 100th Ave. and south to Indian Rock quarry on Mt.Scott. Rocky Butte lava in Troutdale ? gravels. Thence to top of Mt.Scott (walk of $1\frac{1}{2}$ miles if road is skiddy). This is a view stop which will be passed if visibility is poor. Thence west, around south side of Mt.Scott, to 82nd, south to King Road and west along King Road to gravel pit. The stream that made this deposit seems to have come from the north. Continue west to Linwood Road and turn south. The road crosses a lake in an old abandoned channel hanging on a terrace along Kellogg Creek. Thence east, by way of Harmony School, to 82nd, south on 82nd to Lawnfield Road and east on Lawnfield Road to its end. Lunch. Visit cave in lava flow, see an interesting landslide, and examine some old wells on the side of a mountain. Thence to Carver. Examine lavas and gravels. Thence to Grant Park on the Clackamas River. Visit Indian caves. Disband. About 45 miles of driving.
- Thursday
Mar.20,27. Luncheon at Treasure Island Restaurant.
- Week-end
Mar.29-30. **Trip to Eugene.** Registration for the trip must be completed by Mar.20. Open house in the museum and class rooms in the afternoon. Informal banquet about 6:30 p.m. Place and time later. Illustrated lecture on The Geology of Alaska by Dr. Warren D. Smith in the evening. Dr. Smith traveled several thousand miles through Alaska and the Yukon. Sunday there will be a field trip to several of the Willamette Valley Project damsites.

- Friday
Mar.28 Subject: GEOLOGY OF THE BUTTE FALLS QUADRANGLE.
Speaker: Dr. W. D. Wilkinson, Department of Geology, Oregon State College. Dr. Wilkinson was in charge of the 1940 summer survey work of the State Department of Geology and Mineral Industries, and will discuss interesting structural relations studied in the area extending generally from Trail north to Tiller. Cinnabar prospects will be described; also there will be comments on the so-called beryllium deposits. Slides illustrating rock types will be shown.
- Thursday
Apr.3+10 Luncheon at Treasure Island Restaurant.
- Friday
Apr.11 Open Date. Watch daily papers for announcement of meeting.
- Friday
Apr.25 Subject: THE SOLAR SYSTEM.
Speaker: Dr. Seth B. Nicholson, Solar Observer, Mt. Wilson Observatory. This talk will be illustrated by slides and motion pictures and will be of very great interest.
- Sunday
Apr 27 The Soil Trip. Leader: Dr. W. L. Powers, Soil Scientist, School of Agriculture, Oregon State College.
Meet in Salem at 9:00 a.m. in front of Willamette University.
This trip will give a cross-section of soil types from the bottom lands in the vicinity of Lake Labish to the Cascade foothills around Silver Creek Falls area.
If you missed the first Soil Trip, here is your chance to make up the loss.
- Sunday
May.11 Joint G.S.O.C.-MAZAMA Trip. Leader: Dr. Edwin T. Hodge.
Details later.

FIELD COURSE IN GEOLOGY TO BE GIVEN

Persons desiring either lower, upper or graduate credit in geology may obtain such credit by taking a field course to be given by Dr. E. T. Hodge during the Spring Term of the Portland Extension Center. Three courses will be offered: G 206, lower division credit, open to students who are or have taken a year's work in general geology; G 380, upper division credit; and G 580, graduate credit. The latter two courses are open to students properly qualified. The instruction for G 206 will consist of preparatory reading, four one-day field trips and a report on each trip. Special arrangements may be made as to field work for the other courses. The field trips will be held on April 13 and 27, and May 11 and 25. The purpose of the course will be to instruct practically in the art of gathering and interpretation of geological information in the field. It is to give reality to textbook and lecture-room geology. The last date for enrollment will be April 15th.

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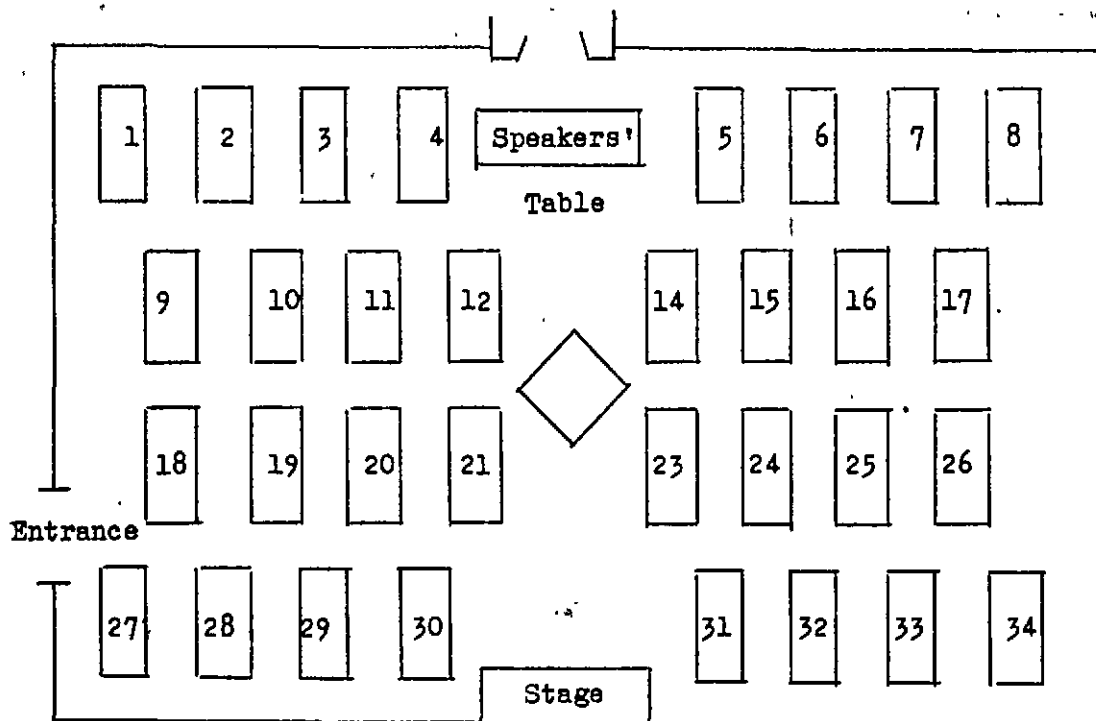
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531 S.W. Washington Street
Portland, Oregon

Money for tickets should accompany mail orders. Seat preference will be made as closely as possible to your selection. Tables seat six persons.



SALEM CHAPTER ANNOUNCEMENTS

Lectures: Third Thursday of each month; 2nd floor, Waller Hall.

Field Trips: The Sunday following the monthly lecture.

"Work Night": First Tuesday of each month; in Willamette Museum.

(All members are urged to come and bring specimens)

Luncheons: Every Tuesday at the Golden Pheasant; 40¢ and worth it!

DON'T FORGET -

- Lecture Subject: "Willamette Valley Flood Control".
 Thursday Speaker: Dr. Warren D. Smith, of the University of Oregon.
 Mar.20 The subject which Dr. Smith will discuss should be of particular interest to all residents of the Willamette Valley and there is probably no one better qualified to present "whys and wherefores" of the problem than the head of the Geology Department of our state university. We hope that the entire membership of the Salem Chapter will avail themselves of this real opportunity to hear a most interesting and timely discussion of a problem which concerns us all. Members and friends from Portland are cordially invited to share it with us.
 8 p.m.
- Trip Lake Labish drainage basin north of Salem, with a number of fossil exposures en route.
 Sunday Leader: Professor Herman Clark.
 Mar.23 Start from Waller Hall (State Street at 1:00 p.m.)

NOTES

Off to a flying start, the new Board of Directors of the Salem Chapter, at their first meeting, organized the following committees:

- Trip: Glen S. Paxson, chairman
 N. C. Hubbs
 Mrs. R. T. Gordon
- Program: Olive M. Dahl, chairman
 Carl P. Richards, chairman
 O. A. Chase
- Publications: Franklin L. Davis
 Editorial: Horace J. Smith
 History: Mrs. C. P. Richards.
 Work Night: C. C. Ward, chairman
 Wayne Tate
 W. E. Richardson
- Library: --
- Hospitality: Mrs. W. A. Reeves, chairman
 Membership: Robert W. Peterson, chairman
 V. D. Hill
 Vivian F. Carr
- Exhibits: --
- Publicity: Ralph H. Mitchell
 Auditing: J. L. Kennedy, chairman
 E. L. Minar

Owing to the fact that all five of the new directors were elected at one time and that each received the same number of votes, the order of their retirement was decided by lot, with the following results:

Carl P. Richards	Term ends 1944
Vivian F. Carr	" 1943
Winston D. Purvine	" 1943
V. D. Hill	" 1942
W. A. Reeves	" 1942

The institution of a "Work Night" is apparently a grand success. Between 25 and 30 members turned out for the first meeting March 4th, and although little "work" was done, many interesting and profitable discussions were held and a number of new "finds" were displayed.

New Members

Mrs. Helen H. Paget, Route 3, Silverton
 Victor K. Overman, #5 Avondale Apts., Corvallis
 Mr. and Mrs. C. B. McCullough, 285 W. Lefelle St., Salem

Correction of last News Letter: We took Mr. Davis' word for it that the vari-colored fragments from the construction job at the new Congregational Church were sandstone. However, if he was correct the farmers of this locality are being "gyped"! They have been paying good money to have the same ground rock spread on their land. The quarry is up near Falls City, and an acid test shows the stone to be approximately 70% calcium carbonate. Who's wrong about what?

The March 4th luncheon was well attended and those present were given the treat of examining some beautiful and unusual specimens brought by V. D. Hills:

1. Ammonite, altered to semi-fire opal, from Calgary, Alberta, Canada.
2. Selinite, crystallized in leaf form - a new find in Montana.
3. Grassularite Garnet xls in matrix from Snohomish, Wn.

Mr. Davis had as his luncheon guest "Wes" McWain, a talented Willamette Student who is hoping to become a Junior Member of our organization.

These luncheon meetings are decidedly worth while and it is hoped that more members and interested persons will come out and enjoy them. All are welcome.

March 8, 1941

Dear Jim:

Will make this short today. The GSOC has officially started a new year so that, with installation of new officers and thoughts mostly on the coming banquet, specimens are taking a back seat.

At the luncheon a week ago Mr. Wiegand tried to palm off a love letter from the days of Cleopatra, I guess. However, it was presumably a bill of some kind written in the hieroglyphics of those days on stone. It had been sent him from Syria.

Dr. Jones showed a piece of an obsidian knife which his brother had brought back from Mexico. This came from the site of one of the Aztec pyramid temples and it was unusual in that it was a deep green. We usually think of obsidian as black or brown.

Kenneth Phillips had a piece of the Blarney Stone from Ireland which had come on a St. Patrick's day card with a certificate attesting to its authenticity.

Mr. Vance showed a small vial of the glass globules used in the lacquer put on the traffic lines to make them show distinctly at night.

Mr. Carney showed a lovely specimen of nail head calcite with dolomite crystals from Joplin, Missouri.

Dr. Booth introduced Dr. Calvin L. Smith who has been collecting locally for a number of years. He also introduced Dr. Edward Hume who was in town with the Christian Mission. Dr. Hume told us some interesting stories and I'll tell you when I have more time.

Mr. Libbey had a specimen of stibnite, antimony sulphide from North Powder, Ore.

Dr. Jones introduced Mr. Gordon Goodpastor, a filbert grower from the McKenzie Valley.

Cecil Wimberly, from San Diego, was also present.

Yesterday was the first luncheon with the new officers and it was interesting to see Kenneth Phillips take over with assurance.

The past officers were so efficient in their jobs that I know the new ones have a high goal to work towards.

Miss Henley just returned from a trip to Death Valley and gave us the high lights. She also brought a specimen of orbicular jasper for all those present. I'm sure she had a lot more to tell.

Mr. Hancock had a specimen of a ginkgo leaf impression from Riddle, Oregon, of Eocene age and a trigonia shell and echinoderm from Izee, Oregon, which was Jurassic in age.

Mr. Vance had a copy of the "Power Specialist" containing an article on a mammoth shovel. No kidding, this is what it said - "The shovel can scoop up half a carload of earth from a point a city block away and deposit it on top of an

eight story building in less than a minute".

Mr. Libbey introduced Hugh Lancaster, their geologist at Baker, and Jim Adams of the local office.

Mr. Reeves of the Salem Chapter was present as was Mr. Smith, who is a member of the local group but who hadn't attended one of the luncheons.

Tom Carney had a breath-taking specimen of dolomite crystals showing galena and chalcopyrite. This was pink with the gold crystals and of course I thought of clothes. Naturally you aren't interested but your wife will be. In this case it brought to mind a pink net evening dress with tiny gold sequins catching the light.

John Allen is ill, I'm sorry to say. A severe attack of pleurisy. We all do hope he recovers quickly.

Katie

CHANGE IN ADDRESS

Miss Helen C. Brady		1616 22nd St. NW., Washington DC.
Miss Rose Jennings	206 NE 31st Ave.	EA 0631
Mr. & Mrs. Bradley	241 N. High St.	Salem, Oregon
Mr. & Mrs. W.A. Reeves	1055 N. 16th St.	Salem, Oregon

NEW MEMBERS

Wessley Paulsen	1831 SW 14th Ave.	Portland Oregon
Mr. & Mrs. Victor K. Overman,	5 Avondale Apts.,	Corvallis, Oregon
Mrs. Helen H. Paget	Route 3,	Silverton, Oregon

DOINGS OF OUR MEMBERS

Saturday evening, February 22, at Central Library, Lloyd L. Ruff spoke before the Portland Public Speaking Club. Title of his address was "This animal we call man".

Friday evening, February 28, at Central Library, at a regular meeting of the Oregon Audubon Society, Miss Mella White gave an address on "Bird Life in the Southwestern States".

Sunday, March 2, Leo F. Simon led a bird walk through Eastmoreland, in vicinity of Crystal Springs Lake.

We have heard a rumor of a wedding in our midst. Perhaps J. Martin Weber will be able to tell us more about it.

The Stanleys, Minnie and Orrin, showed a selection of their colored slides at "Aldercrest" on February 23. Aldercrest is the country place of Mr. Fred Merry on Aldercrest Road in northern Clackamas County. It is a delightful place, though still lacking some of the things that effete city dwellers have come to take for granted in their daily lives. For one thing, there is no telephone with its nerve shocking jangle to disturb quiet conversation, but if one gets lost on

his way to Aldercrest he stays lost so far as getting additional directions from the host is concerned. Water (just ordinary water, you know) is dipped from Kellogg Creek which murmurs past the front door. Water of a higher degree of purity comes from somewhere outside, a pailful at a time, and illumination quite satisfactory for ordinary occasions is provided by a Coleman lamp; but neither Mr. Merry nor the Stanleys could think of a way to connect the projector to this lamp.

Mr. Merry, however, was not to be deprived of his private picture show, so after much deep thought he arranged with a storage battery concern to rent him nineteen 6-volt batteries for the evening and each load of guests brought its quota of batteries which were lined up on the floor and connected in series. The show went on as well as though the power had come straight from Bonneville.

Beside the Stanley collection of kodachromes showing Alaska, Mexico and way points, LeRoy Knowles showed 8-millimeter movies of things nearer home, and Rev. R. A'Court Simmons, with his 16-millimeter projector and its 750-watt lamp showed interesting movies of home scenes, scenery in far places, and church dignitaries in solemn procession as well as in their lighter moments at picnics and socials.

The Society is greatly indebted to those who opened their homes to us on February 9th and 16th when we visited eight of the "Best Cellars". It was appreciated that these trips meant considerable effort on the part of the owners, as basements are not usually kept up like a show-window, especially if they are "working basements". That these efforts were appreciated is attested by the large turnouts and the great interest which was taken in the collections. All were very instructive and many surprisingly beautiful specimens were on exhibition. The buffet suppers served by the hostesses contributed much to the pleasure of the day.

There are many other outstanding collections in Portland it is hoped that they may be offered as material for future trips.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 6

PORTLAND, OREGON

March 25, 1941

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

344 U.S. Courthouse, Portland, Ore.

POSTMASTER: Return Postage Guaranteed

THE GEOLOGICAL NEWS-LETTER
Official publication of the
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Executive Board of the Society

Kenneth N. Phillips	President	2213 SE 52nd Avenue
Leo F. Simon	Vice-president	531 SW Washington St.
Mrs. Kathleen Mahony	Secretary	1915 SW Park Avenue
Miss Helen Iverson	Treasurer	5125 NE Couch Street
<u>Board of Directors</u>		
Arthur M. Piper (1942)	J. C. Stevens (1943)	Earl K. Nixon (1944)
Carl P. Richards (1942)	Clarence D. Phillips (1943)	

Staff of Geological News-Letter

John Eliot Allen	Editor	702 Woodlark Building
Raymond L. Baldwin	Business Manager	344 U.S. Courthouse
<u>Associate Editors</u>		
Edwin T. Hodge	A. D. Vance	<u>Salem Chapter:</u>
Arthur M. Piper	O. E. Stanley	Horace J. Smith
Ray C. Treasher	J. C. Stevens	

The Geological News-Letter is issued semi-monthly on the 10th and 25th.

Yearly subscription: \$2.00

Single copies: \$0.15

Communications and material for publication should be sent to the Editor. Change of address and subscriptions are required 30 days in advance of date of change, and should be sent to the Business Manager.

MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

.
(signature)

Sponsored by

(member)

PORTLAND CHAPTER ANNOUNCEMENTS

ALL LECTURES HELD IN AUDITORIUM, PUBLIC SERVICE BUILDING, 6th & Taylor

DATES TO MARK ON YOUR CALENDAR

- Thursday Luncheon at Treasure Island Restaurant
Mar. 27
- Friday Subject: GEOLOGY OF THE BUTTE FALLS QUADRANGLE
Mar. 28 Speaker: Dr. W. D. Wilkinson, Department of Geology, Oregon State College. Dr. Wilkinson was in charge of the 1940 summer survey work of the State Department of Geology and Mineral Industries, and will discuss interesting structural relations studied in the area extending generally from Trail north to Tiller. Cinnabar prospects will be described; also there will be comments on the so-called beryllium deposits. Slides illustrating rock types will be shown.
- Week-end Trip to Eugene. Saturday afternoon, open house in museum and classrooms.
Mar. 29-30 Saturday evening, 6:30 p.m. informal banquet at the Anchorage. Price 60¢. Illustrated lecture on the Geology of Alaska by Dr. Warren D. Smith in the evening. Dr. Smith traveled several thousand miles through Alaska and the Yukon. Sunday there will be a field trip to several of the Willamette Valley project damsites.
- Thursday Luncheon at Treasure Island Restaurant.
Apr. 3-10
- Friday Open date. Watch daily papers for announcement of meeting.
Apr. 11
- Thursday Luncheon at Treasure Island Restaurant.
Apr. 17
- Friday Subject: THE SOLAR SYSTEM
Apr. 25 Speaker: Dr. Seth B. Nicholson, Solar Observer, Mt. Wilson Observatory. This talk will be illustrated by slides and motion pictures and will be of very great interest.
- Sunday The Soil Trip. Leader: Dr. W. L. Powers, Soil Scientist, School of
Apr. 27 Agriculture, Oregon State College. Meet in Salem at 9:00 a.m. in front of Willamette University. This trip will give a cross-section of soil types from the bottom lands in the vicinity of Lake Labish to the Cascade foothills around Silver Creek Falls area. If you missed the first Soil Trip, here is your change to make up the loss.
- Sunday Joint G.S.O.C.-MAZAMA trip. Leader: Dr. Edwin T. Hodge.
May 11 Details later.

SPECIAL NOTE

DUES ARE NOW PAYABLE. Make check to Geological Society of the Oregon Country and mail to Mrs. Kathleen Mahony, 1915 SW Park Ave., Portland, or to H. Mildred Stockwell, 694 N. Church St., Salem.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; 2nd floor, Waller Hall, 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture.

WORK NIGHTS: First Tuesday of each month, Willamette Museum; 7:30 to 10:00 p.m.

All members are urged to be present and to bring any interesting specimens they may have.

LUNCHEONS: Every Tuesday; Pollyanna Room in the ARGO HOTEL; 40¢.

(Please note the change in location which was made to enable us to have a room to ourselves).

Don't forget the TRIP on Sunday March 23rd to the Lake Labish Drainage Basin north of Salem. The start will be made from Waller Hall at 1:00 p.m. and a number of fossil exposures will be visited en route.

G.S.O.C. PINS

Pomeroy & Keene, Salem jewelers, have agreed to make up the official G.S.O.C. pins in either of two styles and, provided ten or more pins are ordered, the prices quoted are as follows:

Button style (gold)	\$0.75
Safety-catch pin style (gold)	1.00

The latest report from the Secretary shows that the Salem Chapter has 34 members and 4 Junior members (total of 38 members whose dues are paid). Have YOU paid your dues yet? Let's boost the roll to 50 by May 1st.

The new location for the luncheon meetings, at the Argo Hotel, affords privacy which was lacking heretofore and discussions can be uninterrupted. There is also plenty of room to show motion pictures (if we had them to show).

At the March 18th luncheon Mrs. Richards showed us some interesting colesmanite crystals from Death Valley, and two specimens of orbicular jasper from Morgan Hill 50 miles south of San Francisco.

Mrs. Stockwell had a specimen of Oregon asbestos from the headwaters of Cow Creek, south of Roseburg, in which the fibers were remarkably long.

We are hoping that many more members and friends will attend these weekly luncheons and take part in the interesting and helpful discussions.

NEWS OF MEMBERS

Thomas A. Carney spoke Tuesday March 11th before the art class of Lincoln High School on the subject "Cutting and Polishing of Gem Stones".

Earl K. Nixon spoke on "Strategic and Critical Minerals in Oregon" before the Commonwealth Conference in Eugene, in the afternoon, and before the Mazamas in Portland on the evening of Wednesday March 19th.

HISTORIAN OF SALEM CHAPTER DESIRES MATERIAL

The function of the Historian, as evolved during the first few years of the existence of the G.S.O.C. in Portland, has been to collect and file in suitable record form, material depicting the events or news of the Society which do not appropriately fit into the NEWS-LETTER. These consist of photographs taken by members on trips or during other Society events, and newspaper clippings relative to such. These are assembled in a scrapbook and form a most interesting historical record.

The Salem Chapter is only a few months old, and the photographs and records of the events now taking place in its early days of organization will, in the course of time, be of great interest, not only to the participants themselves, but also to their successors.

So the present historian makes this appeal to such members who have suitable contributions as described above, to donate copies of them for the Chapter's scrapbook. These may be given to me at the regular meetings or luncheons, or mailed to me at my home address, 530 N. 19th St. (Phone 4315).

When the scrapbook has been developed, it will be available at all meetings of the Chapter for members to see.

Florence M. Richards
Salem Chapter Historian

COURSE IN GENERAL GEOLOGY TO BE GIVEN

A 10-weeks, non-credit course in elementary geology will be given by Professor Herman Clark under the sponsorship of the General Extension Division of the Oregon State System of Higher Education. From March 24th to May 31st classes will meet each Wednesday evening (7:15 to 9:15) in Room 124 of Collins Hall (new science building) on the Willamette campus. This course will deal entirely with the fundamentals of geology and offers an unusual opportunity for the beginner to acquire a practical, working knowledge and greater appreciation of this science. The fees are: \$5 00 for one, \$9 00 for two, and \$12.00 for three persons; payable at the second class on April 2nd.

FIELD COURSE IN GEOLOGY TO BE GIVEN

Persons desiring either lower, upper or graduate credit in geology may obtain such credit by taking a field course to be given by Dr. E. T. Hodge during the Spring Term of the Portland Extension Center. Three courses will be offered: G206, lower division credit, open to students who are or have taken a year's work in general geology; G380, upper division credit; and G580, graduate credit. The latter two courses are open to students properly qualified. The instruction for G206 will consist of preparatory reading, four one-day field trips and a report on each trip. Special arrangements may be made as to field work for the other courses. The field trips will be held on April 20 and 27, and May 4 and 18; May 11 trip is optional. The purpose of the course will be to instruct practically in the art of gathering and interpretation of geological information in the field; text will be Lahee's "Field Geology". It is to give reality to textbook and lecture-room geology. The last date for enrollment will be April 15th.

ANNUAL REPORTS OF OFFICERS AND COMMITTEES FOR 1940.

This issue of the News-Letter is largely composed of the reports for 1940 of the following officers and committees:

Secretary	Publicity Committee
Treasurer	Service Committee
Librarian	Executive Committee
Nominating Committee	Membership Committee
Program Committee	Museum Committee

SECRETARY

Membership and Dues

On February 28, 1941, the Society had 167 members in good standing for the year ending February 28, 1941.

Membership divided as follows:

6 Junior; 160 members; 1 honorary Life Fellow.

1 Junior and 44 members belong to the Salem Chapter.

We have received 5 new members for the year beginning March 1, 1941; two of these are from the Salem Chapter. We have 4 News-Letter subscriptions for year ending February 28, 1941, and one new News-Letter subscription for year beginning March 1, 1941.

Total to date 172 members, 5 News-Letter subscriptions.

Dues have been paid by 86 members for year ending February 28, 1942.

The Executive Committee held five meetings during the year.

Letter Ballot for Offices of the Society
for the year beginning March 1, 1941

As provided in the By-Laws of the Society, there was sent to each member in good standing on February 1, 1941, a letter ballot containing the names of the regular ticket of nominees for the offices in the Society for the year beginning March 1, 1941. Return addressed envelopes were enclosed for the mailing of the ballots.

Prior to this annual meeting 66 ballots have been returned. As no other names were submitted according to our By-Laws the vote was unanimous in favor of the regular ticket of nominees, as follows:

President:	Kenneth N. Phillips
Vice President:	Leo Simon
Secretary:	Mrs. Kathleen Mahony
Treasurer:	Miss Helen Iverson
Director:	Earl K. Nixon, to serve three years, term ending March 1, 1944.

Minutes of the Fifth Annual Business Meeting

Meeting called to order at 8:15 p.m., February 28, 1941, in the auditorium of the Public Service Building in Portland, Oregon, President Stevens presiding.

President Stevens asked that all reports be made very brief, in view of the fact that all reports will be published in our official publication, the Geological News-Letter.

Minutes of the fifth annual business meeting were not read in view of the fact that they had been published in the News-Letter following the annual meeting held February 23, 1940.

The Secretary read report as to number and types of memberships. Also the reports on the letter ballot.

President Stevens read Amendments to the By-Laws as adapted by the Executive Committee January 28, 1941. After a very short discussion, the President asked for a vote. The vote was unanimous for the adaption of the amendments.

President Stevens asked for brief reports of the committee chairmen. Complete reports will be published at an early date.

Moved by Clarence Phillips and approved, that resolutions be adapted and copies be transmitted to the appropriate representatives of the following:

- C. W. Johnson, Manager, Public Service Building Company,
for use of auditorium.
- Clair Johnson, Executive Secretary YMCA,
for occasional use of auditorium.
- E. Palmer Hoyt, Manager, the Oregonian,
for cooperation on news stories.
- Donald J. Sterling, Managing Editor, Oregon Journal,
for cooperation on news stories.
- Ed. F. Averill, President, Oregon Audubon Society,
for use of lantern.
- Dexter Keezer, President, Reed College,
for use of College Commons for annual banquet.
- Harold Holmes, Manager, Treasure Island Restaurant,
for use of banquet room for luncheons.
- Miss Margaret B. Ryan, Manager, Orange Lantern Tea Room
for use of room for luncheons.
- Walter May, Pacific Gas & Electric Co.,
for services of Messrs. Jarrett and Jan on public address system.

Miss Emma Nordgren, publicity chairman, made the suggestion that we give geological specimen paper weights to the city editors of The Oregonian and Journal. Thomas A. Carney and A. D. Vance offered to donate specimens for this purpose.

Moved by Clarence Phillips and approved, that all reports be accepted as read.

The President introduced and thanked the retiring officers for their cooperation during the past year.

The President then gave us a very brief but inspiring talk.

Officers for the coming year were asked to come to the front and we had a few well chosen words from our new President.

Dr. Edwin F. Hodge told us of our opportunity to take a course in Field Geology.

Meeting adjourned 9:15 p.m.

Rose H. Jennings, Secretary

Treasurer
Cash receipts 1940-41

1940	<u>Dues</u>	<u>News-Letter</u>	<u>Banquet</u>	<u>Multigraph</u>	<u>Equip.</u>	<u>Total</u>
Mar.1 fwd.						478.89
March	73.50		75.50		33.00	182.00
April	28.00	4.00				32.00
May	45.50	4.00				49.50
June	11.50					11.50
July	31.50					31.50
August						
September	15.50	2.00				17.50
October						
November	5.00	.45		75.00		80.45
December	22.50 (S)			75.00		97.50
January	7.50 "	2.00				
	24.50					34.00
February	144.75		37.50			182.25
	<u>409.75</u>	<u>12.45</u>	<u>113.00</u>	<u>150.00</u>	<u>33.00</u>	<u>718.20</u>

Cash disbursements 1940-41

1940	<u>NewsLetter</u>	<u>Multigraph</u>	<u>Banquet</u>	<u>Equip.</u>	<u>Furn.</u>	<u>Staty.</u>	<u>Lecture</u>	<u>Misc.</u>	<u>Total</u>
March	8.45		179.89			1.77			190.11
April									
May	8.57					17.75		5.00	31.32
June	8.66					9.85		28.50	47.01
July	49.58				15.25	.51	10.00	3.10	78.44
August	51.51			11.87		1.81	7.50	6.29	78.98
September									
October	8.37							4.00	12.37
November	8.45							5.50	13.95
December	8.55	285.00						11.00	304.55
1941									
January	44.14	90.00					8.00	3.50	145.64
February	10.61					13.66		.85	25.12
	<u>206.89</u>	<u>375.00</u>	<u>179.89</u>	<u>11.87</u>	<u>15.25</u>	<u>45.35</u>	<u>25.50</u>	<u>67.74</u>	<u>927.49</u>

Report of the Treasurer

Trial Balance before Closing, February 28, 1941.

	<u>Debit</u>		<u>Credit</u>
U.S.National Bank	269.60	Surplus 3/1/40	730.14
News Letter Expense	206.89	News Letter Sales &	
Staty., Print., Postage	45.35	Subscriptions	12.45
Banquet Expense 1940	179.89	Banquet tickets 1940	75.50
Old Multigraph	218.25	"	37.50
Lecture Expense	25.50	Memberships- Dues	379.75
New Multigraph	375.00	" Salem	30.00
Rep.Old Multigraph	11.87	Sale of old Multigraph	150.00
Bookcase (furn.)	15.25	Sale of Equip.	33.00
Equip. (screen)	33.00		
Misc.	67.74		
	<u>1448.34</u>		<u>1448.34</u>

Trial Balance after Closing
February 28, 1941

	<u>Debit</u>	Surplus	<u>Credit</u>	
U.S. National Bank	269.60			636.41
Multigraph eq.	351.56			
Furniture (bookcase)	15.25			
	<u>636.41</u>			<u>636.41</u>

Reconciliation of Bank Statement February 28, 1941

Balance per check book	269.60		
Checks outstanding per list on bank statement	20.01	289.61	
Balance per bank statement		289.61	

Helen Iverson, Treasurer

Librarian

Last year we recommended that our library be moved downtown where it would be centrally located and easily accessible to our members. We are glad to report that not only has this been done but we have purchased sectional bookcases to hold our books and bulletins.

Our library is now located in Mr. Piper's office, 307 Old Post Office Bldg., 6th Avenue, corner Morrison. With our library so located, members and their friends having appropriate bulletins and books which they care to donate to our library, can feel they will be appreciated and properly handled. These books and bulletins are now being indexed and classified by Miss Margaret Hughes, our new librarian. During the past year the following additions have been made to our library.

From the American Museum of Natural History -

A new Element in the Ceratopsian Jaw with additional notes on the Mandible.

By Barnum Brown and Erich M. Schlaikjer.

A new Fossil Crocodylian from Mongolia

By Charles C. Mook

Merycochoerinae; a New Subfamily of Oreodonta

By C. Bertrand Schultz and Charles H. Falkenbach

Pleistocene Mammals from the Ma Kai Valley of Northern Yunnan, China

By Edwin H. Colbert

Some Problems in Crocodylian Nomenclature

By Charles C. Mook and Gertrude Elizabeth Mook

Studies on the Earliest Primates

By George Gaylord Simpson

From the United States Geological Survey -

Geological Survey Professional Paper 189-C "Pliocene Diatoms", from The Kettleman Hills, California,

By K. E. Lohman

Bul. 387 - "Structural Materials in Parts of Oregon and Washington"

By N. H. Darton

Bul.531-L - "Coal Resources of Cowlitz Valley, Cowlitz and Lewis Counties, Wash".

By A. J. Collier

Bul.831-B - "Geology of the Robertson, Humdinger, and Robert E. Gold Mines, Southwestern Oregon"

By Philip J. Shenon

Bul.846-B - "Geology and Ore Deposits of the Takilma-Waldo District, Oregon"

By Philip J. Shenon

Bul.896 - Lexicon of Geologic Names of the United States, Part 2, M-Z

By M. Grace Wilmarth

Bul.907 - "Geology of the Alaska Railroad Region"

By Stephen R. Capps

Bul.914 - "Microscopic Determination of the Ore Minerals"

By M. N. Short

From State of Washington Department of Conservation and Development -

Bul.32 - The Geology of Washington, Part I, General Features of Washington Geology (1936) accompanied by the preliminary geologic map

By Harold E. Culver

From State of Oregon Department of Geology and Mineral Industries

Bul.32 - Analyses and other properties of Oregon Coals as related to their Utilization"

By H. F. Yancey and M. R. Geer

Bul.21 - Second Biennial Report of the State Department of Geology and Mineral Industries of the State of Oregon 1939-1940.

Preliminary Geologic Map of the Medford Quadrangle, Oregon

By Francis G. Wells

Geology of the Round Mountain Quadrangle, Oregon

By W. D. Wilkinson

From Dr. Edwin T. Hodge

Cascade Andesites of Oregon

By Richard Bogue and Edwin T. Hodge

Mazama Year Book December 1939

Mazama Year Book December 1940

Two copies of vol.5 Geological News Letters, 1938.

From Kenneth N. Phillips -

Washington Geological Survey - Bulletin No.20- "The Mineral Resources of Stevens County"

By Charles E. Weaver

Raymond L. Baldwin, Librarian

Executive Committee

Amendments to the By-Laws

adopted by the Executive Committee January 28, 1941:

Amend Article II Section 1 so as to read as follows:

Section 1. The Society shall be composed of members who, by knowledge, experience

and honorable standing are qualified to advance the objects of the Society, and who shall be elected to membership as hereinafter provided, and shall be divided into four classes of membership, as follows: Junior, Member, Fellow, and Honorary Life Fellow.

Members, Fellows, and Honorary Life Fellows in good standing shall receive all current issues of The Geological News-Letter, the official bulletin of the Society, in consideration of the payment of dues. Juniors in good standing may, at the discretion of the Executive Committee, receive all or a portion of the current issues of The Geological News Letter in consideration of the payment of dues.

Amend Article III Section 1 so as to read as follows:

Section 1. The annual dues for a Junior shall be \$1.50, and all other members shall pay annual dues of \$3.50; provided, however, that there shall be extended to the wife or husband of a member, as the case may be, all privileges of the Society, except the right to receive the publication of the Society. Honorary Life Fellows shall not be required to pay dues.

The Executive Committee, in its discretion, may remit the dues of any member in whole or in part and members whose dues have been so remitted shall retain all privileges of membership.

Adopted March 14.

Membership Committee

At the beginning of the Society year we asked the membership to give us a list of friends and persons who they thought would make good members.

To these prospects we sent a letter setting forth the aims and purposes of the Society; also included a membership application.

About 15 members were secured as a result of these letters which I think is all that could be expected.

Herewith attached is a copy of the letter and membership application.

Respectfully submitted:

Jane Hurst

Mrs. Kathleen Mahony

Dr. Courtland Booth

Leo F. Simon, chairman

Letter sent to prospective members:

You have been proposed for membership in the Geological Society of the Oregon Country. We are therefore glad to extend to you the opportunity to become one of us.

The combined educational and recreational advantages constitute its principal appeal.

We have a lecture twice a month on Friday evenings on some timely and appropriate topic by one who can put technical things into words of one syllable so that even the most confirmed amateur can understand. In fact, we're practically all amateurs.

We also have frequent field trips under the leadership of someone with a scientific outlook who can point out the simpler geologic features of the area

visited. Time is also taken under suitable guidance to collect mineral and fossil or, if you prefer, botanical specimens. If you are not a collector but just like to be out of doors in God's sunshine and rain that's reason enough to come along.

In addition you will receive the Geological News-Letter on the 10th and 25th of each month to keep all of us up-to-date on what's doing. People living out of town who cannot participate in the activities of the Society, can receive the News-Letter for \$2.00 per year.

The dues are so modest everyone can afford to belong. Remember you don't have to be a geologist to join.

If you're interested fill out the enclosed application,

Yours truly,

Leo F. Simon, Chairman
Committee on Membership,
531 SW Washington Street, Portland, Oregon
Phone AT 0438

Application blank enclosed

Museum Committee

I am sorry to say that no very material progress towards the securing of a natural history museum for the City of Portland can be recorded. Near the close of 1939 matters looked very encouraging; an organization had been perfected known as the Oregon Museum of Natural History, Inc. with a splendid group of men as trustees. However, as the "best laid plans of mice and men oft gang agley", so the Second World War that loomed on the horizon early in 1940 knocked all our plans into the proverbial cocked hat and we are still staggering from the blow.

The matter has been revived recently, the new City Commissioner Kenneth Cooper has taken an interest in the matter and as soon as the legislative waters at Salem have subsided somewhat it is likely that a conference will be called to consider not only a natural history museum but also an astronomical observatory for the City of Portland.

J. C. Stevens, chairman

Nominating Committee

January 4, 1941

Your nominating committee is unanimous in recommending to the Geological Society of the Oregon Country the following members for elective offices to be filled at the annual meeting in February 1941.

For President - Kenneth N. Phillips
For Vice President - Leo Simon
For Secretary - Mrs. Kathleen Mahony
For Treasurer - Miss Helen Iverson
For Director - Earl K. Nixon (to 1944)

Respectfully submitted: A. D. Vance, chairman

Elected February 28.

Program Committee

During the year ending Feb. 28, 1941, evening lectures or programs of education and entertainment have been conducted regularly on the second and fourth Fridays of each month. Meetings have been held regularly in the auditorium of the Public Service Building in Portland, with two or three meetings held in room 303, YMCA Building, when the regular meeting place was not available for our use.

Following is a list of speakers and topics presented.

<u>Date</u>	<u>Speaker</u>	<u>Subject</u>	<u>Remarks</u>
1940			
Mar. 8	Dr. G. F. Beck	Fossil Woods	Annual banquet, Reed College Commons
Mar. 22	Leslie L. Motz	The Role of the Assayer	
Apr. 12	S.H. Williston	Quicksilver-Volatile in Nature, Volatile in Economics	
Apr. 26	Ray H. Atkeson	Oregon in Natural Color	Color Slides
May 10	C.P. Holdredge	Geological Wanderings in Colombia.	Motion Pictures
May 24	E.T. Hodge C.P. Holdredge Wayne Lowell	Grand Coulee Region of Washington	
June 14	A.M. Piper John E. Allen E. T. Hodge A. M. Piper R. C. Treasher	Resume' of papers to be presented at Seattle in June 1940 before the Section of Geology, American Association for the Advancement of Science.	A symposium
June 28	Prof. J.H. Jonte	Death Valley in Color	With colored motion pictures
July 12	Jas. L. Loder	A Nation in Color	Travelogue, with movies
July 26		Outdoor meeting at home and private collection of A. W. Hancock	
Aug. 9		Annual picnic at Mt. Tabor City Park.	
Aug. 23	Max Demorest	Crystal Structure of Snow and Ice	Illustrated
Sept. 13	O.E. Stanley	Alaska in Color	Kodachrome slides
Sept. 27	Dr. Wm. Colburn	Mineral Crystals	Color slides
Oct. 11	Jack Dement	Radioactivity and Fluorescence in Minerals	
Oct. 25	Dr. O.F. Stafford	Chemical Story of Aluminum	
Nov. 8	J.R. Ward	The Dutch East Indies	With cultural exhibits
Nov. 16	I.S. Allison	Pleistocene Lakes of Oregon	After dinner on O.S.C. campus, Corvallis
Nov. 22	John E. Allen	Tectonics of the Wallowa Mountains	Illustrated
Dec. 6	E. K. Nixon	Geographical and Geological Sketches of Peru	
Dec. 27	Robert E. Millard	The Call of the Stars	
1941			
Jan. 10	Jas. E. Stovall	Sierra Peaks and Valleys	Travelogue, colored slides illustrating geological features

<u>Date</u>	<u>Speaker</u>	<u>Subject</u>	<u>Remarks</u>
1941			
Jan.24	Dr.A.J.Walcott	Asterism and Chatoyancy in Minerals	Illustrative specimens
Feb.14		Travelogue, colored movies of Alaska and western Canada, courtesy of Canadian National Railways.	
Feb.28		Annual business meeting, followed by motion pictures and slides taken by members on field trips of the Society during the year just past.	

Program Committee:

Francis Jones	Louis Oberson
F. W. Libbey	C. P. Richards
Kenneth N. Phillips,	chairman

Publicity Committee

As publicity chairman I have very little to report. Both the Oregonian and the Journal have been very courteous and generous at all times and have printed all our notices of field trips and meetings for the past year. For the Grand Coulee trip both newspapers gave us picture space covering 8 by 10 inches or about a four column wide cut by 8 inches deep.

I should like to make a suggestion at this time if I may. I think it would be a nice gesture for the Society to show their appreciation of this service in donating a polished specimen of some sort that may be used as a paper weight for each one of the city editors. I don't mean that the Society should go to any expense in this, but I feel sure that some of our members have a piece of polished wood or a half nodule laying around their basement that the owner may not mind parting with. I think this would be appreciated by the newspaper men.

Emma Nordgren, chairman.

Service Committee

February 28, 1941

During the calendar year 1940 the Society purchased \$242.25 worth of publications at a profit of \$16.71 or 6.9%. This comparatively low saving is due to the large proportion of purchases from organizations that publish at cost, and discounts do not apply.

Thirty-two members used the service of the committee during the year.

Expenses were as follows:

Stamps	.90
Loose leaf note sheets	
	.50
Total	1.40

The donation to the Society of a Geological map of Washington was received from the Department of Conservation and Development of Olympia and turned over to our librarian.

Since 1938, when the present committee was appointed, there have been purchased \$583.05 worth of publications at a profit of \$41.59 or 7.13%.

Respectfully submitted:

Tracy Wade, chairman

Trip Committee

February 28, 1941

The trip committee of the Society submits the following list of trips sponsored by the Society during the past year.

1940 Trips.

- March 17 Tualatin Valley-Wolf Creek trip. Leader: Dr. Francis T. Jones.
 April 14 The "Doodle Bug" trip. Leader: The Doodle Bug.
 May 18-19 Wolf Creek Highway and Cannon Beach trip. Leader: H. B. Schminky.
 May 30, June 2.- Coulee Dam trip. Leader: Dr. George F. Beck.
 June 16 Haskins creek and North Yamhill river trip. Leader: Lloyd Ruff.
 June 30 Badger Lake and Tygh Valley trip. Leader: A. W. Hancock
 July 14 Cinnabar mines on the Clackamas river trip. Leader: H. B. Wood
 July 28 Salem and the Eola Hills trip. Leader: Franklin L. Davis.
 Aug.11 Lower Evergreen highway trip. Leaders: Hancock and Schminky.
 Aug.30-Sept.2 - Joint trip with the Oregon Section of the American Institute of Mining & Metallurgical Engineers to southern Oregon. Leader: John E. Allen.
 Sept.15 Warm Spring Indian Reservation. Emergency trip led by all.
 Sept.29 Lewis River trip. Leader: A. D. Vance.
 Oct.13 Lincoln Beach trip. Leader: H. B. Schminky.
 Oct.27 Jackson creek quarry trip. Leader: H. B. Schminky. Emergency trip.
 Nov.16-17-Oregon State College trip sponsored by Sigma Gamma Epsilon.
 Dec.15 Local interest trip. Leader: Amza Barr. Cancelled by weather.

1941 Trips.

- Jan.26 Clackamas river trip. Leader: Ray Treasher.
 Feb.9 & Feb.16 - The Eight Best Cellars. Leader: Dr. Courtland L. Booth.

This made 18 planned trips for the year, of which only one was cancelled due to bad weather.

Respectfully submitted:

H. B. Schminky, chairman.

CHANGE OF ADDRESS

Mr. & Mrs. Raymond L. Baldwin
 Mrs. H. Mildred Stockwell

Cherry 1452 Route 8 Box 1887, Portland, Oregon
 695 N. Church St., Salem

NEW MEMBERS

Miss Virginia Hubbs
 Mr. Westley McWain
 Mrs. R. T. Gordon

Route 7 Box 398, Salem, Oregon. (Junior member)
 90 Fairview Ave., Salem, Oregon. (Junior member)
 Route 4, Box 100, Salem, Oregon.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 7

PORTLAND, OREGON

April 10, 1941

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

344 U.S. Courthouse, Portland, Ore.

POSTMASTER: Return Postage Guaranteed

THE GEOLOGICAL NEWS-LETTER
Official publication of the
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Executive Board of the Society

Kenneth N. Phillips	President	2213 SE 52nd Avenue
Leo F. Simon	Vice-president	531 SW Washington St.
Mrs. Kathleen Mahony	Secretary	1915 SW Park Avenue
Miss Helen Iverson	Treasurer	5125 NE Couch Street

Board of Directors

Arthur M. Piper (1942)	J. C. Stevens (1943)	Earl K. Nixon (1944)
Carl P. Richards (1942)	Clarence D. Phillips (1943)	

Staff of Geological News-Letter

John Eliot Allen	Editor	702 Woodlark Building
Raymond L. Baldwin	Business Manager	344 U.S. Courthouse
<u>Associate Editors</u>		
Edwin T. Hodge	A. D. Vance	<u>Salem Chapter:</u>
Arthur M. Piper	O. E. Stanley	Horace J. Smith
Ray C. Treasher	J. C. Stevens	

The Geological News-Letter is issued semi-monthly on the 10th and 25th.

Yearly subscription: \$2.00

Single copies: \$0.15

Communications and material for publication should be sent to the Editor. Change of address and subscriptions are required 30 days in advance of date of change, and should be sent to the Business Manager.

MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date
I, (please print full name) do hereby apply
for membership (junior membership) in the Geological Society of the Oregon Country,
subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to
the Society).

. Sponsored by
(signature) (member)

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On alternate Fridays, at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, 2nd and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

DATES TO MARK ON YOUR CALENDAR:

Thursday Luncheon at Treasure Island Restaurant.
Apr.10

Friday Subject: SPLITTING THE ATOM.
Apr.11 Speaker: Dr. Francis T. Jones.
Probably no subject is receiving more attention from top-flight scientists than that of atomic energy, with its limitless ramifications. This is a talk you will not want to miss.

Thursday Luncheon at Treasure Island Restaurant.
Apr.17

Friday Subject: THE SOLAR SYSTEM.
Apr.25 Speaker: Dr. Seth B. Nicholson, Solar Observer, Mt. Wilson Observatory.
This talk will be illustrated by slides and motion pictures and will be of very great interest.

Thursday Luncheon at Treasure Island Restaurant.
Apr.24

Sunday The Soil Trip. Leader: Dr. W. L. Powers, Soil Scientist, School of
Apr.27 Agriculture, Oregon State College.
Meet in Salem at 9:00 a.m. in front of Willamette University. This trip will give a cross-section of soil types from the bottom lands in the vicinity of Lake Labish to the Cascade foothills around Silver Creek Falls area.
If you missed the first Soil Trip, here is your chance to make up the loss.

Sunday Joint G.S.O.C.-MAZAMA trip. Leader: Dr. Edwin T. Hodge.
May 11 Details later.

Week-end Trip to the beach. Reserve these three days. Lots of geology, fossils,
May 30-31 agates, campfires, and discussions.
June 1 Particulars later.

SALIM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; 2nd floor Waller Hall, 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture.

WORK NIGHT: First Tuesday of each month; Willamette Museum, 7:30-10:00 p.m.

LUNCHEONS: Every Tuesday; Pollyanna Room in the Argo Hotel; 40¢.

LECTURE Subject: GEOLOGICAL MASTERPIECES OF U.S.A., with colored motion pictures.

Thursday Speaker: Mr. James Loder, Salem.

Apr.17 In the course of his business as an automobile dealer, Mr. Loder has travelled extensively thru this country and, being an amateur colored-movie fan of the first order, he has captured and annexed some of Uncle Sam's outstanding geologic and scenic gems. These he enjoys showing and describing to others, that they may know and better appreciate the grandeurs of the United States. It is our great privilege to have him bring to us on this occasion his pictures which will include - Niagara in winter; Zion, Bryce and Grand Canyons; Petrified Forest; Death Valley; Yellowstone National Park. For excellence in quality of both color and composition, these pictures are unexcelled, and his accompanying descriptions as the pictures proceed are educational, as well as entertaining. This lecture will be held in the Chapel, Waller Hall.

TRIP LEADERS: G. S. Paxson and M. Stephenson.

Sunday LOG OF TRIP TO SUNSET TUNNEL, SUNSET CAMP AND BUXTON:

Apr.20 Miles:

- 0.0 Leave from State Street in front of Waller Hall at 8:00 a.m. (POSITIVELY). Via Dayton, Lafayette, Carlton, Yamhill and Gaston to Forest Grove.
- 53.2 Forest Grove. Intersection of Wolf Creek Highway and Tualatin Valley Highway at 9:30 a.m. (we hope). Via Gales Creek and Timber to Sunset Camp.
- 77.0 Sunset Camp. Turn right on to new road to west portal of tunnel.
- 80.2 West portal of Sunset Tunnel. Park cars and walk thru tunnel to east portal. Excellent exposure of Oligocene marine fossils.
- 83.4 Back to Sunset Camp and eat lunch at Nehalem River Bridge.
- 94.1 Vernonia Junction. Turn right on Route 47 and to Buxton, examining sedimentary exposures along road and railroad.
- 121.2 Forest Grove again. Caravan breaks up here and returns by alternate routes at option of driver.

NEW MEMBERS: Lee M. Unruh, 885 D Street, Salem.
Mrs. Minnie Bingham, 1625 Center St., Salem.

DUES ARE DUE AND ALMOST OVERDUE!

SALEM CHAPTER NEWS

Owing to the press of business, et cetera, it has been impossible for members delegated to write up various trips and lectures to get the material prepared in time for this News-Letter. It is hoped, however, that their contributions will soon be forthcoming.

Attendance at the luncheons has shown a gratifying upswing since the change in location. Last Tuesday there were 17 present at the Argo. F.L.Davis had as his guest Mr. Thos. O. Russell, chief engineer for the Public Utilities Commission.

Mr. Paxson discussed plans for future field trips, and told of his recent excursion to the Spencer Creek region where, with the aid of only a jack-knife, he dug up four fossil species: *Arca devincta*; *Pecten Andersoni*; *Polinices Galianoi* (gastropod); *Chione ensifera*.

Mr. Davis gave a brief report on the trip to Eugene and Fern Ridge dam. From this trip Mr. Richards returned with an interesting specimen of a zeolite amygdule in a diabase matrix which he found in the apron of Fern Ridge Dam.

Great interest has been displayed in the course in Elementary Structural Geology being given by Professor Herman Clark under the sponsorship of the Oregon State System of Higher Education, General Extension division. Approximately 35 have already signed up for the course.

At their meeting on April 1st the Executive Committee made the following additional committee appointments:

Hospitality Committee:	Mr Theo. W. Olson
	Mrs. G. S. Paxson
Library Committee:	Miss Dorothy Rice

Additions to the Library

The U.S. Geological Survey has presented the Society with a copy of the "Geology and Ground Water Resources of Lanai and Kohoolawe, Hawaii", by Harold T. Stearns.

Dr. and Mrs. Arthur C. Jones have donated a number of back issues of the News-Letter to the society files. Any other members who have copies which they do not intend to keep would do the Business Manager a favor by turning them in to him, as extra copies are of value in supplementing the "New-Letter back files.

DO PAY YOUR DUES!

KATIE'S LETTER

Dear Jim:

Spring in Oregon has been so lovely that everyone spends as much time out of doors as possible. I don't know about Texas but I'm sure that it can't compare to Oregon.

The GSOO has had four luncheons since I last wrote you and to let you know I still can list facts I'll make a chart of what has happened and let you interpret it for yourself.

- Here goes: 3-14-41: Guests: Mrs. F. Simon, Mrs. L. Simon.
 Specimens: Mr. Smith - hyalite- Idaho; brown garnet, Idaho.
 : Mr. Stevens: Polished specimens of petrified wood and nodule for the editors of the local newspapers.
 Mr. Vance: Agatized gastropods, Buxton.
 Mrs. Jones: Copy of Junior History Journal - article on Oregon.
 Miss Henly: 3 types of actinilite crystals.
 Dr. Jones: Piece of gabbro from Michigan.
- 3-20-41: Guests: Dr. Hodge present - an infrequent visitor!
 A.L. Gordon, attorney from Aumsville (Dr. Booth's guest).
 Mrs. James.
 Specimens: Mr. Libbey- barite from Washington.
 Mr. Stanley: Specimens of pictures obtained on Reed College campus.
 Mr. Bates: High grade ore from Cornucopia.
 Miss Henley: Kyanite from Death Valley.
 Mr. Carney: Rubellite.
- 3-27-41: Guests: Mason DeNeff (guest of Dr. Booth)
 Mrs. Paula Richards (guest of Dr. Jones)
 Mrs. Wilkins (guest of Miss Henley)
 Specimens: Miss Henley: borate crystals; kernite-white crystals.
 Tom Carney: Petrified wood.
 Miss Hughes: Onyx from Montana.
- 4-3-41: Guests: Mr. Paxson; Mr. Reeves (both from Salem group)
 Specimens: Mr. Minar: Lump pumice from Klamath Falls.
 Mr. Ruff: Shark's tooth
 Mr. Simon: Grey and white volcanic breccia with seam of calcite.
 Mr. Schminky: Bird points.
 Miss Henley: Specimens of meteorite; asbestos fibers.
 Mr. Carney: Brecciated wood.
 Dr. Jones: Ashland granite.

This last luncheon ended with duck stories from about everyone present and I guess I'd better save them for a later date.

Katie.

NEWS OF MEMBERS.

Earl Marshall and his son David led a four-hour bird trip caravan to Sauvie's Island on Sunday March 30th, with the Oregon Audubon Society.

An article by Ray C. Treasher entitled "Gold Dredging in Southwestern Oregon" appeared in the March issue of the Engineering and Mining Journal.

H. B. Wood, field geologist for the Oregon State Highway Department, who has been working along the coast with headquarters at Newport, was in Portland Monday March 31st and will work in the Tualatin Valley north of Hillsboro for a week before returning to the coast.

John Allen spoke Friday April 4th before science classes of Franklin High School on "Identification of Minerals".

The "Geological Journal Club" meets on the first and third Mondays of each month at 7:30 p.m. at 702 Woodlark Building, to review recent technical geologic publications. Those interested in attending these discussions are invited, but must come prepared to present an abstract of some recent paper of geologic interest.

ANNUAL BANQUET A SUCCESS

The dining room at Reed College Commons was for the fourth consecutive year the scene of the annual banquet of the Geological Society of the Oregon Country, Friday evening March 14th. This was the first banquet for the new Salem chapter, and most of its membership was present. The room was filled. Spring flowers, mostly daffodils, were used for decoration, in small vases on the tables and massed on the mantel. Daffodils and iris formed the centerpiece for the speakers' table. During dinner, music was furnished by a trio, two violins and piano.

Dr. Edwin T. Hodge was master of ceremonies. He was introduced by the retiring president, Dr. J. C. Stevens. In his speech, Dr. Stevens eulogized with oratory and rhyme Dr. Hodge's activities, especially in geological research. He referred to the Three Sisters and geological changes and modern developments in the McKenzie and Willamette river valleys.

Dr. Hodge first introduced special guests: Kenneth L. Cooper, Commissioner of Finance for the city of Portland; William A. Bowes, head of the city's Department of Public Works; Prof. Herman Clark of Willamette University, and president of the Salem chapter; and Ormond R. Bean, Public Utilities Commissioner of Salem, who Dr. Hodge presented as a direct descendent of Dr. Thomas Condon. Prof. Clark spoke briefly, stating that the Salem chapter now has 39 paid-up members, with more than 30 of them present at the banquet. He then introduced a junior member of his group, Westley McWain, as an after dinner speaker. This talented young man, a sophomore at Willamette, entertained with a humorous monologue.

Dr. Arthur C. Jones led the company in singing the society's popular song, "The Oregon Country ain't what she used to be".

Dr. Stevens reviewed some events of his presidency during the past year, and expressed appreciation for the work of the professional geologists in helping make the organization a success. He presented the other retiring officers, and then gave to the new president, Kenneth N. Phillips, custody of the society's

prized "Two Islands" by Dr. Condon. This book, he said, is a symbol for this organization. Mr. Phillips accepted the book, and presented Dr. Stevens with a geologic pick, having on it the inscription "J. C. Stevens, Pres.G.S.O.C.1940th". Later in the evening, at the close of his speech, Dr. Elmo Stevenson was also presented with a pick by Dr. Hodge for the society.

The speaker of the evening, Dr. Elmo Stevenson, is Professor of Science and Education at Oregon State College. His subject was "Northeast Oregon, Past and Present". He was introduced as an all-round scientist from the Willowa country, who has climbed every peak in that district. He confined his address to the realm of historical geology. He spoke rapidly but simply, avoiding technical terms, and held the close attention of his audience throughout. He discussed the different eras and periods as related to northeastern Oregon, giving a general picture of the geological development of that section, and present day features as a result of forces of the last 15 minutes of geologic time. He used a chart to show geologic time, represented as hours and minutes. He said that the first four hours on this chart show no evidence of development. It was Azoic time, without life. During the hours from 6 to 10 o'clock, there is fragmentary evidence, as far as Oregon is concerned. The last 2 hours would explain some of the features, but to the last 15 minutes of time belong the features so characteristic of Oregon. Dr. Stevenson exhibited an elephant tooth of the species *Elephas columbi*, found in the Grande Ronde valley.

After an intermission the second part of the program was devoted strictly to entertainment features. Dr. Jones read a poem on Paleozoic Love. His topic was "Evoloooshun". With a fur cape and wooden club he represented the ape man, then, using the fur and a stone axe, later prehistoric man. As an encore, he sang one verse and the chorus of a song he composed for the society's first banquet, five years ago.

Three skits followed. The first was sponsored by the Salem chapter, represented by Mr. and Mrs. Ralph H. Mitchell, Westley McWain, and Stanley Morris. Mr. Mitchell announced himself as M.C., since we are living in an alphabet age. Mrs. Mitchell was Hulda, a Swedish nurse, Westley McWain was the "baby", in rompers and Mr. Morris was the colored chauffeur, Dorchester. As the "Salem Sallies" they had for their subject "Erratic Geology", and started out by poking some fun at Franklin Davis as an erratic geologist, traveling back and forth between Portland and Salem. Westley McWain, as the small child, Conglomerate, carried a large toy dinosaur and a "doodle-bug". Mr. Mitchell had a large "Textbook on Rocks". All of the dialog was appropriate to the occasion.

"Dust and Barbarism" by Hancock and Company was next on the program. It was a parody on a GSOC trip. Mr. Hancock was leader, in appropriate costume. H.B. Schminky represented Leo Simon, the floral expert, in the latter's hat and coat, and carried a bunch of flowers which he endowed with scientific names. Miss Audry Horton, with black mustache and butterfly net impersonated Louis Oberson, and Miss Berrie Horton, as a member of the GSOC group, gave a talk on the subject "Mud".

The third skit, put on by Leo Simon and Paul Roscoe, was entitled "Hysterical Geology" in 10 E-Z lessons. Mr. Simon was a spectacled geology professor, short of stature, and with a German dialect. Mr. Roscoe was his assistant. He used a large chart to illustrate his easy lessons, the drawings for which were made by Mr. Roscoe, a Franklin High School student. The "true to life" pictures referred mainly to events connected with GSOC trips.

The evening's fun ended with singing a geological version of Auld Lang Syne. Dr. Jones again led the singing.

This year, for the first time, a public address system was enjoyed, installed through the courtesy of the Portland General Electric Co. Louis E. Oberson was general chairman of the banquet, and Mrs. L. E. Kurtchinof had charge of decorations. At each plate was a souvenir picture of Wallowa Lake, from the Standard Oil Company series. These were secured by Mrs. Clarence D. Phillips, who also prepared the place cards for the speakers' table. The cards were decorated with drawings of prehistoric animals. Thomas A. Carney made the drawings which decorated the menu and program cards. The musicians who played for the dinner were Mrs. Harry Moore, Mrs. Curtis Shipley, and Mrs. James Siebert.

- E.M.B.

THE PRESIDENT'S ANNUAL ADDRESS

This Society has now reached its fifth birthday; it is out of its swaddling clothes and is a healthy, lusty youngster. This in spite of some rather discouraging and adverse social conditions in other parts of the world that cannot but help be reflected in our own affairs.

My duties have necessitated my absence at a number of the more important meeting of the Society. Among them the last annual meeting, but somehow the affairs of the Society seem to go on just the same, thanks to our able Vice-president, Mr. Hancock, and to our genial Secretary, Miss Jennings.

The reports you heard at the annual business meeting show that the Society is in a satisfactory condition both financially, technically, and socially.

We have had some very instructive and entertaining lectures; we have had many trips full of interest technically and characterized by pleasant social relationships. To me a hike over the country is doubly enjoyable if one has a worth while objective in view and certainly this Society has such an objective.

The membership of this Society includes a number of professional geologists to whom we look for guidance and help; they have cheerfully given of their time and knowledge to this Society which we appreciate deeply.

Among those of amateur standing in this Society we number doctors, dentists, lawyers, florists, photographers, engineers, many of the teaching profession, and a number of students. It is gratifying that a group with so many diverse vocations can still concentrate their interests in one avocation.

Perhaps a few suggestions pertaining to the Society's welfare would not be out of place:

1. Many of our members would be amply repaid if they could arrange their affairs so as to take advantage of the extension lecture courses in geology and mineralogy and allied subjects that are offered through the Oregon System of Higher Education. The cost is ridiculously low and the values are high.

2. Members get just as much out of a society of this character as they are willing to put into it. Many of them would derive substantial profit by taking a greater interest in Society affairs, by entering into the discussion at the meetings, even in preparing articles for the News-Letter, or to prepare lectures to be presented before the Society at its regular evening meetings. If you have something of interest why not get in touch with the chairman of the program committee?
3. It would be a very desirable thing if the Society could undertake some line of study or research. That phase of the program has been neglected during my administration. There was a research committee in previous years. I recall one committee that did some very creditable work in connection with the glaciers on the mountains in the Oregon Country. Your new President has already mentioned to me some plans that he has in mind along this line. I hope sincerely that something of this line can be carried out.

Now let me assure each and every officer of this Society and the members as well of my deepest appreciation for the cooperation and spirit of helpfulness that has marked their contacts with me during the past year. I am sure I speak for the entire membership in promising to the next administration the same degree of loyalty that mine has enjoyed.

Mr. Phillips, the symbol of authority of this Society is this little volume entitled "Two Islands" by Dr. Thomas Condon, who came early to this country as a preacher of the Gospel and remained to become its earliest and one of its most distinguished teachers of geology.

He dates the beginnings of the physiographic and geologic outlines of the Oregon Country by the elevation from the sea of Siskiyou Island to the south of us and Shoshone Island to the east. Later a mountain range rose between them cutting off the sea and the southwestern trade winds and dividing the Oregon country into two distinct meteorological and geographical areas.

"Two Islands" has become the shibboleth of this Society. It is an evidence of leadership. It has been in my custody during the past year and now I gladly surrender it to you with the firm conviction that the traditions that are fast accumulating around this little volume will be preserved and augmented and passed on with credit to your successor.

J. C. Stevens,
President

DUES ARE DECIDEDLY DUE!

SPECIAL DELIVERY to Banquet Hall, Reed College Commons,
Geology Kate,
c/o J. C. Stevens, president,
Geological Society of the Oregon Country.

Dear Katie:

I have been getting your letters all right but I wonder if you haven't been kidding me about this Geological Society.

I got in town the other day - on a Thursday - just about noon. I thought here's my chance to take in that Society lunch and see for myself some of those nice fossils and minerals - you said Tom Carney and Claire Holdredge or Al Vance always brought some, and hear some of the ballyhoo that guy Stevens peddles.

That fellow Carney must be quite a fellow; you said his specimens "as usual are exceptional". I guess that was because, as you said, you had run out of adjectives. You might pick up a few from those Hollywood writers if they haven't got 'em all copyrighted.

Well, when I got to the Orange Lantern, they said you didn't meet there any more and they didn't know where you'd gone - suggested I might try the Imperial Hotel. So I went to the Imperial, but no dice. One of those smart-alec girls asked me if I'd been to 'Treasure Island. Well, I did go to Sally Rand's Nude Ranch last summer but how in the heck she knew is more than I can figure out.

I notice the last News-Letter you sent gives the names of a lot of officers and committees and a business manager, but they're still talking about Treasure Island. Goodness! don't they know that joint folded up way last September?

The thing that gets my goat, though, is those lectures about asterism and chatoyancy and trips to the eight best cellars.

Now, Kate, you gotta come clean and give me the low-down on this gang you're running around with. They just can't be on the square when they go in for spiritualistic seances like that in dark basements.

Yours,

Jim.

EIGHT BEST CELLARS TRIPS

The "Eight Best Cellars" trips planned for Feb. 9 and 16 were huge successes, both as to interest and attendance. Each Sunday 85 or more persons took advantage of this unusual opportunity to see some of the finest private rock collections in Portland. The crowd was divided into four groups each time, each group visiting four homes. The hours were from 1 to 9 p.m., and food was provided at the supper hour at various homes. The first Sunday afternoon the homes of A.D. Vance, A.W. Hancock, J. Louis Renton, and the offices of the State Department of Geology & Mineral Industries were visited. The second Sunday the groups saw collections of Dr. Courtland L. Booth, E. H. Rockwell, Dr. W. C. Adams, and Dr. Arthur C. Jones.

While all the displays included most of the kinds of rock specimens usually collected, including nodules, agate, minerals, and fossil fauna and flora, each featured that rock which the collector favors most as a hobby, and so had its own particular interest. A large number of the most beautiful specimens of their kind to be seen in the Pacific northwest were shown. The displays were spread out on tables and shelves, with special illumination, and carefully marked so everything could be readily identified, studied and enjoyed.

On Sunday Feb.9th the group of which the writer was a member called first at the home of Mr. and Mrs. A. D. Vance. Mr. Vance has for some years been a collector of fossil mollusca in western Oregon, and his display was extensive and varied. He had numerous other marine forms, in some instances specimens in one group represented several geological periods. He also showed a quantity of arrowheads which he collected on Sauvies Island, and some fossil fauna, one specimen being a sea otter skull from the Oregon Coast, and part of a Pleistocene horse's leg and hoof from Fossil Lake. Polished beach agates and fossil flora from central Oregon were featured.

This group next called at the offices of the State Department of Geology and Mineral Industries. Here John E. Allen and F. W. Libbey were hosts. The work of the several departments was explained, the printing plant where the GSOC Newsletter is prepared, the map making department, and the analysis section for the determination of minerals. The equipment for analyzing minerals includes two microscopes, one binocular and one petrographic, using polarized light. There were three display cases containing Oregon rocks and minerals. In one case were such minerals as talc, asbestos, molybdenum, manganese and chromite. In another case were industrial rocks, limestones and marbles. The third case contained cinnabar and gold ores. Publications of the department were displayed on a table.

Mr. and Mrs. Hancock next received this group. Mr. Hancock's remarkable collection of fossils is well known to many members of the society, but is always new and interesting. It is unlikely that a finer private collection of this type may be found in this part of the country. Besides the large display of invertebrate and vertebrate forms, he has a splendid representation of leaves and other flora, all arranged according to the respective geological periods, beginning with the pre-Cambrian. The mastodon skull which he found in eastern Oregon last year occupied a prominent place in his basement museum. Pictures, showing some of the life in each period are placed along the wall behind the displays. Some interesting crystals and other miscellaneous specimens were also shown.

Last stop on the first tour for the one group was the home of Mr. and Mrs. J. Lewis Renton. Two rooms in the basement were used for displaying Mr. Renton's large collection of fluorescent rocks and polished agate. He used three different lamps to show the coloring in the fluorescent rocks, of which there were three separate displays. Glass show cases contained many beautiful polished nodules, also called thunder eggs, and thin sections and other pieces of numerous kinds of polished agate. The much admired Montana moss agate, iris agate, and lovely fire opal from Nevada were a noteworthy part of this fine collection. Mr. Renton explained his elaborate lapidary equipment, which occupied considerable space in another part of the basement.

Four more "best cellars" were visited the following Sunday, Feb.16th. Dr. Courtland L. Booth's home was first on the list for one group. His collection featured fluorescent rocks, including a large group from Franklin Furnace, N.J., gathered by himself last summer. He used a black bulb and a quartz lamp to show the colors. Among the minerals contained in these rocks are calcite, fluorite,

manganese, aragonite, willemite, and franklinite. Dr. Booth told his guests some of the facts regarding fluorescence. He also had an interesting mineral collection arranged on shelves, and miscellaneous objects gathered on his travels about the country, spread out on a long table. Crystals and polished petrified wood attracted special attention. As at the home of Mr. Renton, most of Dr. Booth's basement was given over to his hobby. One room contained a large cache of uncut rocks, and in another was his lapidary equipment. It should be mentioned that Dr. Booth invited his guests to handle and examine his specimens as much as desired, an unusual and appreciated privilege.

Mr. and Mrs. E. H. Rockwell were the next hosts. Here was a large array of beautiful polished specimens arranged against a black background, very effective in bringing out their loveliness. There were three main groups, nodules, thin sections of agate, and fossil wood. The agate collection included gem turquoise, from Nevada, gem malachite and opal, also two large frames of transparencies, thin sections of sagenitic agate, made more beautiful by light shining through them, and some rare amethyst crystals in geode form. Mr. Rockwell told where he obtained many of his specimens, and entertained his guests with interesting stories of his experiences while traveling around looking for rocks. He also gave a short talk about the formation of nodules. Some lovely hand colored enlargements of pictures he has taken of localities attracted much interest. Some choice mineral specimens were displayed on the living room mantelshelf.

The third visit was to the home of Dr. and Mrs. W. C. Adams. Instead of having his rocks in the basement, Dr. Adams has an attic museum. He divided the group in half, and while one party inspected the collection upstairs, Mrs. Adams in the living room showed the others a number of large poster ink drawings which she had made of Indian petroglyphs and pictographs. But first of all Dr. Adams gave a short review of Dr. Condon's life in Oregon, and showed a series of slides made and colored by Dr. Condon, and used by him in his geology classes at the University of Oregon 50 years ago. The slides illustrated the evolution of life, from amoeba to mammals, and geological features which were discussed in his classes. John E. Allen told some facts about Dr. Condon, and said that the University of Oregon has geology graduates in most of the institutions of the United States, and has turned out more geologists than any other college in this country. Mrs. M. H. Calef told of having been a student in Dr. Condon's geology class, and that he was a "sweet old man" who was always treated with great deference by all his pupils.

In his display room Dr. Adams had a case filled with fossil specimens found in Oregon by Dr. Condon. The collection included a number of teeth of animals of different periods. Photographs, from which illustrations for Dr. Condon's book, "Two Islands", were made, were on display, also two of his old books. One was "Ancient Fauna of the Nebraska Bad Lands", by Dr. Joseph Leidy, a Smithsonian publication dated 1853. The other was Enfield's "Institute of Natural Philosophy" published in 1802. An interesting feature of Dr. Adams' collection was a number of modern faunal skulls and modern shells. He also had a nice collection of minerals.

Explaining her drawings, Mrs. Adams said that when trips were made to see the rock carvings illustrated, she made sketches of them, and Dr. Adams took photographs. Using both of these, she made the large drawings. Reproductions of petroglyphs and pictographs all over Oregon and southern Washington have made a valuable and very interesting record. Stone images found on Sauvie's Island were subjects for Mrs. Adams, and an unbroken band of petroglyphs, several hundred feet long, at Tule Lake in northern California. Rock paintings on McKay creek, north of Prineville,

geometric designs in the John Day country, carved boulders at Boardman, Wash., horizontal rock carvings at Roosevelt, Wash., and floral designs found at Steamboat Rock, were only a part of her large collection. A large picture album containing Dr. Adams' photographs of these things was passed around.

The last "best cellar" was at the home of Dr. and Mrs. Arthur C. Jones. A miscellaneous collection of choice specimens, mineral and fossil, have a permanent home on specially built shelves in the den. But in the basement playroom a much larger display was arranged. In one section were marine invertebrates, placed according to the geological period represented. They were mostly Mollusca. Very interesting was the collection of Indian artifacts and kitchen midden relics displayed on a large table in the center of the room. In one corner was a large supply of rocks of various kinds, including minerals and concretions, and the visitors were invited to select from these whatever they might desire to take home. Dr. Francis Jones assisted his brother as host.

Two displays not listed on the "eight best cellars" trips were the collections of two young enthusiasts, Harry Horton, nephew of A. W. Hancock, and Dr. Jones' young son Irving. They were interesting and attracted their share of attention.

- E. M. Barr

THE SNOW COVER IN OREGON ON MARCH 1st

by J. C. Stevens

In the News-Letter of February 25th we gave a comparison of the water depth stored as snow on the watersheds of the more important streams in Oregon. Since then another survey has been made and the status on March 1st has just come to hand. This report is not quite so encouraging, due to the fact that less snow was added during February 1941, than in some previous Februaries. The following are typical examples:

<u>Drainage Basin</u>	Snow water depth on March 1, 1941, in percent of that in		
	<u>1940</u>	<u>1939</u>	<u>1938</u>
Owyhee River	127	119	135
Powder River	99	94	83
Umatilla River	77	42	43
John Day River	127	87	92
Willamette River	138	36	--
Harney Basin	151	107	136
Upper Rogue River	97	50	56
Klamath Basin	138	83	78

DUES ARE DUE AND ALMOST OVERDUE!

GEOLOGICAL FIELD TRIP TO FINZER STATION AND PROSPECT HILL

January 19th, 1941.

The Salem Chapter had its field trip to Finzer Station and points south in the Salem Hills (the area geologically known as the Salem Lavas) on January 19th.

With respect to Finzer Station, this was a repetition of the trip taken in the summer of 1940 under the leadership of W. A. Reeves and F. L. Davis by the Portland society. Many people in the newly formed chapter had not visited the Finzer Station location, and for that reason considerable time was given to this important exposure.

The reader, on referring to the Salem quadrangle, will note that Finzer Station is near the Willamette River, about six miles south of Salem. The exposure is in a railroad cut on the old Oregon Electric Railroad. This formation has been designated as the "Illahe" by Thayer, "Geology of the Salem Hills and the North Santiam River Basin"; however, he points out that later studies may require that the name Illahe be dropped and that correlation will prove that it is either the Eugene or Pittsburgh Bluffs formation. It is possible that the work of this group in its modest way may be of assistance in these further studies. These formations are all Oligocene and the colored map included in the thesis of M. J. Mundorff, entitled "The Geology of the Salem Quadrangle" brings out the relations of the geological formations very clearly.

The group spent the morning at this location and the following specimens were collected and identified:

Solen sp.
Leda washingtonensis Weaver
Agasoma gracidum Gabb
Agasoma columbianum Anderson and Martin
Spisula pittsburgensis Clark
Yoldia oregona Shumard

These identifications were established from the illustrations and lists in Mundorff's thesis.

Professor Clark discussed this location and answered questions, after which the party lunched on the roadside, there being no more suitable place available.

After lunch the party continued southward to East Independence where the caravan turned directly east onto the top of the Salem Lavas, which Thayer considers are middle Miocene in age and correlates them with the Stayton lavas. A number of stops were made to study this lava blanket over the Oligocene and the party wound up at Prospect Hill, el. 1121 feet. This is the highest point in the Salem Hills and is a landmark which may be noticed for many miles before entering Salem on the Pacific Highway from the north. Many readers will doubtless remember that as they approach Salem, far to the south a large isolated group of tall trees will be seen on the skyline. These trees, together with the largest Franquette English walnut orchard in the United States, occupy this slightly rolling ground on the top of Prospect Hill. At this point Professor Clark pointed out in a roadside cut the red weathered residual soil, illustrating spheroidal weathering in the breakdown of the basalt. Within a few feet were found specimens of three types of iron ore in this residual material, namely hematite, magnetite and limonite. Professor Clark also spoke of the red soil exposed in every road cut and called attention to the fact that in the bottoms and in the stream valleys on these hills, the red ferric iron had been reduced by chemical action to ferrous iron with a characteristic black color, this reduction having been brought about

by the humus which accumulates in the soil at lower levels.

Also on the Salem Hills there was noticed at different places considerable quantities of tuffs. The question was raised as to how tuffs differed from pumice. For the benefit of those who did not grasp the explanation in the field, it is pointed out that pumice is a silica glass with a large number of cells, somewhat similar to a sponge, caused by the explosive release of water vapor, together with volcanic material. This produces an extremely light material which floats on water. Tuffs may be described as the finer material, such as dust and ashes, carried away from a volcano by air currents and finally deposited in beds forming tuffs of various types, depending upon the nature of their bed formation. In his thesis, Mundorff gives a number of tuff locations, some of which were visited, and devotes a couple of pages to the technical description of the volcanic ash which is the outstanding feature of the Illahe sandstone, although at a certain location in the Finzer formation there is also present a tuff which is cemented with calcium carbonate.

There were twenty-four persons on the trip.

TRIP TO STAYTON QUARRY Feb.23rd.

The Salem Chapter, led by Mr. N. C. Hubbs, took their February field trip in the Stayton area. Twenty-two members were in the caravan in spite of the Oregon showers which fell throughout the day.

The caravan started at Waller Hall Sunday afternoon and then proceeded out State Street and over State Highway 162. Our first stop was at the quarry in Stayton. The rock from this quarry is used for flagstones and occasionally for walls in Salem and the surrounding valley. We were pleasantly surprised to find we were to be protected from the showers by a conveniently located grove of trees, while examining the formation of this quarry. The Stayton lavas overlie the Illahe formation, which we inspected on a previous trip. The formation is basalt of the Stayton Lavas which, in this particular location, in addition to its vertical jointing splits horizontally into thin sheets. The lavas shade from medium-gray to dark-gray, and in some of the pieces olivine was visible.

The next stop was to be at the Fern Ridge tuffs which is about 5 miles northeast of Stayton. The tuffs overlie the Stayton Lavas and is believed to be a part of the same volcanic sequence. We were well on our way when, due to some recent work on the road and the heavy rains it was decided best to leave the cars and travel by foot. We were more or less started when suddenly the shower turned to RAIN and we felt it to be better judgment to back our cars out of the mud and finish this trip on a drier day and at which time we could also visit the Silver Creek Falls quarry.

On our way home we stopped at the Drift Creek Falls. There was a great deal of water flowing over the falls and with the ferns and green moss made a lovely picture. The trail was too slippery for traveling - there was not much question as to whether we could get down but some as to whether we could reascend it. From there we travelled back to Salem through the Waldo Hills area.

D.R.R.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 8

PORTLAND, OREGON

April 25, 1941

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THE GEOLOGICAL NEWS-LETTER
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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date
I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

FINAL NOTICE

This is the last issue of the News-Letter that will be mailed to those who have not paid 1941 dues. Make checks payable to G.S.O.C. and mail to Miss Rose Jennings, 609 SW Lincoln Street, Portland.

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On alternate Fridays, at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, 2nd and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

DATES TO MARK ON YOUR CALENDAR:

Thursday Luncheon at Treasure Island Restaurant.
Apr.24

Friday Subject; THE SOLAR SYSTEM.
Apr.25 Speaker: Dr. Seth B. Nicholson, Solar Observer, Mt. Wilson Observatory. This talk will be illustrated by slides and motion pictures and will be of very great interest.

Sunday The Soil Trip. Leader: Dr. W. L. Powers, Soil Scientist, School of
Apr.27 Agriculture, Oregon State College.
Meet in Salem at 9:00 a.m. in front of Willamette University. This trip will give a cross-section of soil types from the bottom lands in the vicinity of Lake Labish to the Cascade foothills around Silver Creek Falls area.
If you missed the first Soil Trip, here is your chance to make up the loss.

Sunday: Trip: RED CLIFFS NORTH OF BONNEVILLE
May 11 Leader: Dr. E. T. Hodge. On this joint field trip with the Mazamas the party will make a climb to the foot of Red Cliffs, over the great Cascade Land Slide. Some of the party will scale Red Cliffs and explore the country lying above and beyond. The cars will assemble east of the Bridge of the Gods on the Washington side at 9:00 o'clock, May 11th. The maximum walking distance will be about five miles, mostly over a road, although it will be possible for some members of the party to stop at interesting places, reducing the walk to lesser distances.

Week-end Trip to the beach. Reserve these three days. Lots of geology, fossils,
May 30-31 agates, campfires, and discussions.
June 1 Particulars later.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: On the third Thursday of each month, 2nd floor Waller Hall, 8:00 p.m.
TRIPS: On the Sunday following each regular meeting.
LUNCHEONS: Tuesday noon, Pollyanna Room, Argo Hotel, 40 cents.
WORK NIGHTS: First Tuesday of each month, Willamette Museum, 7:30-10:00 p.m.

KATIE'S LETTER

Dear Jim:

Instead of writing you I should be either washing my hair, washing the dishes, or any one of the other hundred or so items which come under the heading of a home maker's duties. However, a few minutes off schedule won't be missed for some time so to keep you up to date on the Geology luncheons I'll tell you the news.

A week ago was Easter vacation for the schools and Miss Almeda Smith and Miss Myrtice Fowler took advantage of the opportunity and came to the luncheon. I really expect to see more of the teachers tho I suppose the vacation was all planned out beforehand.

Some time ago I wrote you of a Mr. Ward who had just returned from the Dutch East Indies. Hadn't seen him since but he was present at this luncheon and it was nice to meet him again. These geologists get around and when one of them shows up after a lengthy absence it is always interesting to speculate as to what out of the way place he or she may have been.

Not as many specimens as usual but those shown were as varied as could be. Mr. Vance had a fossil crustacean. I understood him to say it was "stock-eyed" but that doesn't sound right. Dr. Francis Jones showed a piece of meteorite from one which is supposed to be the same as the missing Port Orford meteorite. He also had a fine beryl crystal.

Mr. Hancock suggested reading the last issue of the Natural History Magazine which contains twelve pages on the "Fiery Floods which Formed the Inland Empire".

Dr. Booth caught me up in a decided error. I must be getting deaf. A recent guest of his, A. L. Gordon, I placed in Aumsville, but he is an attorney in the Yeon Building herein town. My apologies are offered.

This last week the Geology luncheon was, as Mr. Kenneth Phillips said, "the only luncheon in town where arsenic was passed". Miss Henley had some specimens of arsenic and it was out of the ordinary to see the mineral (realgar) from which arsenic is extracted.

Mr. Weigand had a tree cast from the Clackamas river section.

Mr. Nixon after his duck stories of several weeks ago brought in pictures of the Lesser Snow Geese he had seen at Burns to authenticate his story.

Mr. Carney showed a polished specimen of moss agate in slab form. The moss was easily seen and it was an excellent specimen.

Several guests were present including J. R. Collins, and Mrs. Campbell, members, as well as Miss Esther Holmes, a Metallurgical Engineer. She has just recently come to Portland, and, while I had presumed that metallurgical engineers were always male, Miss Holmes is quite charming and I'm sure most efficient in her line.

The things to be done are bothering my conscience so I guess I'd better get busy.

Katie

NEW MEMBER

Miss Sallie E. McCoy

2424 NE 11th Ave., Portland

To Committee Chairmen and Members of the Society:

This will confirm appointment of the following members as chairmen of the committees listed below, for the year ending Feb.28, 1942. Each chairman is authorized and directed to select members of the Society to act as members of his committee and assist him in any way possible, or to call upon other members of the Society from time to time for any assistance they may be able to give. Officers of the Society will offer suggestions or give assistance in any way possible if requested; but each committee will be responsible for planning and carrying out its own work. The chairman of each committee will be expected to report on committee activities at the annual business meeting in February 1942, or at such other times as the officers of the Society may request reports.

At the end of the current year, committees will continue to function until qualified successors have been appointed.

<u>Committee</u>	<u>Chairman</u>
Audit	Clarence D. Phillips
Editor of Geological News-Letter	John E. Allen
Field trips	A. W. Hancock
Historian	Mrs. Amza Barr
Librarian	Miss Margaret Hughes
Membership	Leo Simon
Museum	J. C. Stevens
Programs	F. W. Libbey
Publicity	Miss Emma Nordgren
Public Relations	Clarence D. Phillips
Research	Lloyd Ruff
Service	Tracy Wade
Social	Mrs. L.E.Kurtichanof
Business Mgr., Geological News Letter	Raymond L. Baldwin

Your willingness to serve as committee chairman is greatly appreciated, and the thoughtful cooperation of all members of the Society is earnestly requested.

Other committees will be appointed later.

Kenneth N. Phillips
President

April 9, 1941

ALASKA IN PHOTO-TRAVELOGUE

On Saturday evening March 29th at a joint meeting of the G.S.O.C. from Portland and Salem and the Condon Club of the University of Oregon, Professor Warren D. Smith gave an illustrated talk on Alaska, otherwise known as "Uncle Sam's Ice Box".

As a brief introduction to the subject the speaker pointed out the importance of Alaska in the following particulars: It provided stepping stones for ancient man from northeast Siberia to North America. Second, it is a region abounding in natural resources of which metals, fish, fur seals, and wood pulp are perhaps the most important. Third, it contains considerable potential supplies of coal and petroleum. Fourth, it is a paleontological storehouse, particularly in the matter of Pleistocene vertebrate fossils. Fifth, it contains a great range of geological formations from the oldest to the youngest, and spectacular geologic features such as active volcanoes, living glaciers, fiords, and high mountains. Among volcanoes, we have such interesting examples as Katmai and the Valley of the Ten Thousand Smokes. Among glaciers, one is the famous Malaspina, the largest Piedmont glacier known. The highest mountain in North America is Mount McKinley. Sixth, in the Alaskan Gulf is hatched much of the weather we experience in the northwest. Seventh, one of the most colorful chapters in North American history is that of the gold rush to the Yukon in 1898. Eighth, the very interesting city of Sitka may be likened to an erratic left by the slow moving Russian advance and retreat on the shores of North America; and finally, the last frontier of the United States is the interesting Matanuska Colony.

A number of outstanding names of early investigators in the geology and geography of Alaska were briefly discussed: John Muir, the great naturalist; Alfred Brooks, formerly in charge of Alaskan division of the U.S. Geological Survey; Philip Smith, at present in charge of the division; Lawrence Martin, student of Alaskan glaciers; and Robert Griggs, who led the expedition to the Valley of the Ten Thousand Smokes.

After this introduction, the speaker took his audience along a several thousand mile trip from Seattle through the Inland Passage out to Seward; thence over the Alaskan Railroad to Fairbanks, racing down the Tanana River to the Yukon, then up this river to Circle City, north of the Arctic Circle, and on to Dawson, thence over Whitehorse Pass and down to Skagway (made famous by the operations of one "Soapy" Smith) and back by way of Juneau to Seattle. The lecture was illustrated with some fifty or sixty lantern slides. Some comments were made concerning Alaska as one sector in the front line of defense of America in the Pacific.

NOTES ON OREGON NICKEL

Northwest of Riddle Mtn. lies Nickel Mountain. About five miles by poor road from the town is the well-known Nickel Mine. Here in a variety of peridotite called saxonite (high olivine) occurs a deposit of genthite - a hydrous magnesium silicate of nickel. The peridotite breaks down into serpentine which is distributed widely on Nickel Mountain in elongated masses. Chromite and magnetite are associated with the nickel mineral. The genthite is bright green in color and shows up strikingly wherever it has been opened. So far, the area prospected is about one and one-half square miles, on the slopes south, southwest and southeast of the summit. Nickel oxide in picked pieces of the genthite has ranged from 19% to 27%, but average samples of the ore are said to have run about 5% nickel with about 1/10% of cobalt. These ores are similar in character to those of New Caledonia where smelting ore was reported to run from 6% to 7% nickel.

There are two problems connected with this deposit which would have to be solved satisfactorily before it could be said that the occurrence would have commercial value. First, a large tonnage would have to be proven, and second, the metallurgy would need to be worked out on a commercial basis. If a sufficient tonnage could be proven, it would appear that the second problem would not necessarily present great obstacles. With nickel selling at 35¢ a pound, an ore running 5% would have an apparent gross value of \$35.00 per ton, which would allow a fairly expensive treatment process. There seems also to be some possibility that a by-product of chromite might be made.

Nickel has also been found in rock from areas around Myrtle Creek and from western Curry County, south of Carpenterville. In both these cases, nickel probably occurred with pyrrhotite and the rock was undoubtedly low-grade.

Exact figures on 1939 production of nickel are not available, but the United States Bureau of Mines states in Minerals Yearbook for 1940 that world production reached an all-time high in 1939. In 1938 world production was 127,000 tons. Estimated consumption in the United States for 1939 is about 52,000 tons, most of which was used in the automotive industry. Canada produced about 85% of the world output in 1939. Nearly all of this production came from the mines of the International Nickel Co. at Sudbury, Ontario. These ores average about 3% nickel, nearly 2% copper, with material amounts of gold, silver, platinum, palladium, and iridium.

Norwegian nickel ores reported to run 1.2% nickel and 0.5% copper are similar in character to the Canadian deposits.

The treatment of the Oregon ores on Nickel Mountain could probably be worked out along the lines of the metallurgical processes in use at New Caledonia where ore is smelted with coke and sulphur-bearing material to form a matte carrying 35% to 40% nickel. Sulphur-bearing material is mainly gypsum, but alkali waste, chiefly CaS, even pyrite are used. The ore plus fluxes are briquetted with over 33% coke and smelted to form the matte. This is bessemerized with siliceous flux to slag the iron. The converted product runs about 80% nickel. This is ground and roasted to get rid of sulphur. The NiO is then briquetted with carbon and heated to bright redness for 48 hours. The resulting metal runs about 99.2% nickel.

- F. W. Libbey

NEW METEORITE

Discovery by a Georgia plowboy of an iron meteorite weighing nearly a ton; the second largest ever found east of the Mississippi, buried two feet deep in the red clay of a cotton field, is announced by the Smithsonian Institution.

The question of its age is of considerable theoretical interest because this particular area is marked with curious depressions, or bays, which, when first noticed, were attributed to the impacts of shooting stars which fell long before man, but within recent geological times. This theory has, however, been almost completely abandoned, and other reasons have been given for these depressions.

The boy was plowing when the blade was caught. As this particular area is almost free of large rocks, his interest was at once aroused. The exceptional weight of a small fragment, about the size of a half dollar, caused considerable local interest and came to the attention of W. H. Powell, a county health officer.

Mr. Powell caused the main body of the meteorite, weighing 1760 pounds, to be excavated and shipped to Washington. The field where the chunk of sky iron was found had been under constant cultivation for at least 50 years and the spot had been plowed over many times. Almost certainly the fall could not have taken place during the time this country has been inhabited by white men because the impact with the earth of such an immense fiery ball certainly would have found a place in the local tradition. It must have struck with a terrific force, sufficient to have buried it to a far greater depth in this relatively soft soil. A conservative estimate is that it would have penetrated six feet. Erosion in this relatively level country removes perhaps less than an inch of soil in a century, so that by normal erosional processes it would require over 5000 years to have removed four feet of soil from the surface so as to bring this meteorite close enough to the top to be caught by the plow point.

One hypothesis advanced by Dr. C. W. Cooke and E. P. Henderson is that this meteorite may have fallen about 15,000,000 years ago when the countryside was covered by a shallow sea. The force of the meteorite's impact would have been broken by the water and it would have gently settled to the bottom and gradually been covered by sediments.

- Smithsonian Institution

ZINC

Because of national defense needs, zinc is assuming an importance in this country seldom approached before. Even with output at an all-time high, consumption has been increasing faster than production. Zinc has no satisfactory substitute for its various uses, such as galvanizing iron and steel sheets, tubes, wire and wire cloth; manufacture of brass; and making of die castings. It has very many other uses, some of which are described in a section of a report recently issued by the American Zinc Institute. This section is quoted below:

"A considerable tonnage of the zinc mined goes into the zinc pigments - zinc oxide, zinc sulfide, and lithopone which are white, and the gray pigment, zinc dust.

"Paint offers the largest single use of zinc pigments. For exterior and interior paints, enamels, lacquers, and industrial coatings, manufacturers find in white zinc pigments such desirable properties as great durability, tint retention, hiding power, resistance to ultra-violet rays, good gloss properties, and controlled chalking. Practically every outside paint on the market today contains a substantial percentage of zinc oxide. The zinc sulfide pigments possess tremendous hiding power which makes them especially useful in interior finishes of all types.

"Rapidly increasing in popularity is the zinc pigment known as metallic zinc powder or zinc dust. Metallic zinc powder and zinc oxide together make the pigment of a rust-preventive paint which is especially suitable for painting iron and steel and galvanized surfaces. A number of special metallic zinc paints are manufactured for use as metal primers, specially formulated to meet unusual conditions such as priming parts of steel ships and bridges, and metal used in refrigerating plants and air-conditioning equipment.

"Zinc oxide is essential to the rubber industry. The millions of automobile tires, truck tires, bus tires, and inner tubes, carry a substantial amount of zinc oxide. In the operation of truck and bus pneumatic tires large quantities of heat are generated and the presence of considerable zinc oxide is desirable to give such tires low heat generation, good heat dissipation, and good reinforcement. In pneumatic balloon tires, zinc oxide aids in reinforcing and in preventing tread cracking. Both zinc oxide and zinc sulfide are also used to give color to white side-walls. And zinc oxide is a valuable ingredient for the reinforcement of rubber hose tubing, insulated wire and cable, rubber boots and shoes, surgical rubber, and a host of rubber specialties. Zinc sulfide and lithopone are used in some of these products to provide a high degree of whiteness.

"The ceramic industry is another large user of zinc oxide. In the production of tableware, enamelware and glass, zinc oxide imparts good color, gloss and opacity. Zinc oxide also helps to give these products greater resistance to shock caused by sudden changes in temperature. Its presence is also beneficial in preventing the crazing of pottery and the chipping of enamel from iron.

"Zinc oxide finds a wide use in the manufacture of medical and cosmetic products such as ointments, face powders, talcum powders and sunburn cream. The zinc oxide used for these products is of exceptional purity, smoothness and whiteness. Because it is non-toxic and is opaque to ultra-violet light, this type of oxide is of interest to the manufacturer of skin creams and powders for preventing the penetration of the sun's rays which cause sunburn.

"Zinc oxide and lithopone are used with the coloring pigments in the base of linoleum, and they are the chief white pigments in the paint which forms the decorative and wearing surfaces of both printed and inlaid floor coverings.

"The zinc pigment, lithopone, is used in oil cloth and shade cloth in the paint coating which is applied to the cloth by a rolling operation. Good color, opacity, and washing properties are the chief benefits derived through the use of lithopone.

"Zinc sulfide pigments are used in the manufacture of paper to provide high opacity, good color, and brightness. These pigments are used chiefly in bond papers, bread wrap, and envelope stock."

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MEMBERSHIP APPLICATION
 GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

I, Date
 (please print full name) do hereby apply
 for membership (junior membership) in the Geological Society of the Oregon Country,
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I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

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PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On alternate Fridays, at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, 2nd and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

DATES TO MARK ON YOUR CALENDAR:

Friday: Lecture speaker: Mr. Jack DeNeffe.

May 9 Subject: TRAVELOGUE OF SOUTH AMERICA. Motion pictures obtained on a recent trip to South America will be shown by Mr. DeNeffe. In Chile he visited the famous Braden Copper properties, and took many pictures of large scale operations there.

Sunday: Trip: RED CLIFFS NORTH OF BONNEVILLE.

May 11 Leader: Dr. E. T. Hodge. On this joint field trip with the Mazamas the party will make a climb to the foot of Red Cliffs, over the great Cascade Land Slide. Some of the party will scale Red Cliffs and explore the country lying above and beyond. The cars will assemble east of the Bridge of the Gods on the Washington side at 9:00 o'clock May 11th. The maximum walking distance will be about five miles, mostly over a road, although it will be possible for some members of the party to stop at interesting places, reducing the walk to lesser distances.

Week-end Trip: OCEAN LAKE-NEWPORT BEACH TRIP.

May 30-31- Leaders: A. D. Vance and H. B. Wood. Schedule for this trip outlined June 1 on next page. Group meets Friday, 10:00 a.m. at Roads End, 2.7 miles north of Ocean Lake; Saturday and Sunday 9:00 a.m. at Ocean Park Auto Camp. Make your cabin reservations early! Write T. C. Simmons, Ocean Park Auto Camp, Agate Beach, Oregon.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; 2nd floor Waller Hall, 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture.

WORK NIGHT: First Tuesday of each month; Willamette Museum, 7:30-10:00 p.m.

LUNCHEONS: Every Tuesday, Pollyanna Room in the Argo Hotel; 40¢.

SCHEDULE FOR OCEAN BEACH - NEWPORT TRIP.

- Friday May 30 Leader: H. B. Wood. Meet at Roads End, 2.7 miles north of Ocean Park, at 10:00 a.m.
2. Scott's Point gabbro, 7.5 miles east of Kernville (30 minute stop).
 3. Zeolite basalt, 2.5 miles east of Kernville on north side of Siletz river (1 hour stop).
 4. Depoe Bay lavas, agglomerates and tuffs (1 hour).
 5. Cape Foulweather: Thomas quarry, 3.7 miles south of Depoe Bay (30 minute stop).
 6. Otter Crest View Point, 4.2 miles south of Depoe Bay (30 minute stop).
 7. Spencer Creek Ocean Park Auto Camp for night.
- Saturday May 31 Leader: A. D. Vance. Meet at Auto Camp at 9:00 a.m.
1. Drive to Schooner Creek, walk down beach 3/4 mile to Yaquina Head. Examine contact between volcanics and sedimentaries. Return along exposed reefs.
 2. 10:30. Drive to Punch Bowl and visit Marine Gardens on north beach. Low tide - 0.2 feet.
 3. 12:00. Lunch at Punch Bowl State Park.
 4. 1:15. Wade Creek south along beach for one-half mile.
 5. 2:30. Return to Spencer Creek and hunt for another turtle.
 6. 5:00. Return to camp for dinner.
 7. 7:30. Gather for social evening at the outdoor fireplace.
- Sunday June 1 Leader: H. B. Wood. Meet at Ocean Park Auto Camp at 9:00 a.m.
1. Drive to Yaquina Head (1½ hours)
 2. Iron Mountain, 1.5 miles north of Agate Beach. Round trip hike about 1½ miles (1½ hours).
 3. Basalt sill 4.7 miles east of Eddyville on Yaquina highway #26 (30 minute stop).
 4. Greatly Canyon 44.1 miles east of Newport (1 hour).

The "Geological Bulletin" published by the Central Washington College at Ellensburg, G. F. Beck, editor, is being replaced by a new publication, "Fossil Woods of the Far West", the first issue of which is dated April 1st. As the title indicates, the new pamphlet, which is to be issued once a month, is to be concerned with the identification of the western fossil woods, especially by use of thin sections under the microscope.

Each month two prints of photomicrographs of some of the thousands of samples in Dr. Beck's collection will accompany the publication. Sections will be sampled and identified for subscribers at 25 cents each. The subscription price has been set at \$1.00 per year, including the twelve issues and twenty-four prints.

COLD IN THEM THAR HILLS?

(With fragmentary temperature records from the summit of Mt. Hood).

by Kenneth N. Phillips

A good deal of misconception exists as to the climatic conditions at the top of our highest mountains. Many people assume, for example, that precipitation increases more or less uniformly with increase in elevation, reaching a maximum of vague magnitude at the top of such peaks as Mt. Hood; likewise, they assume, that the air is continuously cold at high elevations, with minimum far below anything recorded at the regular weather stations, which in Oregon do not extend above about 5,900 feet in elevation. A little reflection will serve to cast some doubt on such assumptions.

It is common knowledge that most of the rainfall or snowfall in this region occurs in the period from November 1st to April 30th. During this period the prevailing winds come from the south or west. The air passes from a warm to a cooler land, and is further cooled by expansion as it is forced to rise over the Coast and Cascade mountain ranges, losing its capacity to retain moisture and giving the most copious precipitation in those areas, such as southwest mountain slopes, where the air is forced to rise most rapidly. The topography of the Cascade Range is such that the rate of rise is steeper in the foothill areas, between 1,000 and 3,000 elevation, than it is at higher levels. Hence the most abundant run-off comes from streams draining such areas as Bull Run River and Little North Santiam River, neither of which extends back to the Cascade divide at any point. Isolated peaks like Mt. Hood or Mt. Jefferson rise so far above the general level of their neighbors that the large air masses tend to divide and pass around them. Incidentally, this condition is all that makes possible the dry farming, precarious at best, in large sections of eastern Oregon which would certainly approach Death Valley in aridity if a continuous crest as high as Mt. Hood extended the length of the Cascades. While the annual precipitation at very high levels in the Oregon mountains has never been measured, it seems certain that it must be very considerably less than in the forested foothills, where the greatest run-off occurs.

It has been stated above, and is generally known, that air is cooled by expansion as it is forced to rise to elevations where the barometric pressure, or weight of superimposed air, is less than at low levels. If perfectly dry air were forced to rise adiabatically - that is, without transfer of heat to or from adjacent air masses or the earth -- its temperature would decrease about one degree Fahrenheit for each 180 feet of rise. This is known as the "adiabatic gradient". Under such a condition, it would be about 60 degrees colder on top of Mt. Hood than in Portland, disregarding radiation effects for the time being. However, as the temperature of normal air is lowered, condensation occurs with formation of clouds, and the latent heat of the contained water vapor is liberated; so that the air mass may have to rise 300 or 400 feet, or even more, for each degree drop in temperature.

But this is not the whole story. Two other facts have an important bearing on the picture: (1) the fact that vapor, fog, or clouds, serve as a blanket to prevent loss of radiant heat at night; and (2) the fact that air contracts and becomes heavier as its temperature drops. In the thin, dry air of eastern Oregon, radiation of heat to outer space is ordinarily very rapid during clear nights; hence we have a great range in temperature during each 24-hour period, particularly in

those areas where the topography is such that air drainage is poor. Thus, during almost any period of severe cold weather, readers of the daily Portland papers may note temperatures below zero -- at times far below zero -- at such points as Austin, Seneca, Meacham, Danner, Drewsey, or Chemult. In fact, one of these stations nearly always has the dubious honor of being the coldest official weather station in the state. All of them are situated in topographic basins, valleys, or plateaus where the heavy cold air tends to collect as surely as run-off collects in a pool, and where loss of heat by radiation may continue until sunshine returns or a fog blanket intervenes to prevent further radiation.

In this connection, it may be appropriate to call attention to the condition known as "temperature inversion", in which a cold (heavy) layer of air near the earth is overlain with warmer (light) air above. Fairbanks, Alaska, is a notorious example; but similar conditions occur at times in Portland. If the upper layer is moist, conditions are right for an ice storm, or "silver thaw".

The coldest weather in the Portland area usually is caused by air drainage down the Columbia River Gorge, bringing cold, dry air from east of the mountains. These east winds are not ordinarily very deep; they seldom reach elevations over 5,000 to 7,000 feet. As recently as Dec. 15, 1940, when Portland was shivering in a strong east wind with temperatures around freezing, a party of mountain climbers reported that in the "chute" near the summit of Mt. Hood it was too hot for good climbing, and on the summit a temperature of 42° F. seemed pleasant in the brilliant sunshine. There was no wind on the upper slopes or summit of the mountain, even though the air movement was reported by weather officials to be much deeper than usual.

Along the summit of the Cascade Range the relative humidity is greater than farther east, and clouds are common during the winter months. When present, these clouds prevent loss of heat at night; hence, in cloudy weather, the nights are but little colder than daylight hours. However, there are many periods of several days at a time when the air in the mountains is very clear and dry. During such periods, the night radiation from peaks at high levels must be very rapid indeed. It is interesting to speculate upon the low temperatures that might be reached at an elevation such as the summit of Mt. Hood, if conditions were such that the chilled air could not escape but continued to lose heat by radiation. However, air drainage is ideal; and a circulation is immediately set up that keeps the peak warmer than many other parts of the state (if "warmer" can be used to express a temperature that may go down to 0° F. or lower.)

In view of the above considerations, it is hardly to be expected that the temperature on the top of such peaks as Mt. Hood will ever go as low as has been recorded at regular weather stations at far lower elevations in Oregon. (For example, -52° F. at Austin on Jan. 8, 1937; -52 at Danner on Jan. 21, 1930; -49 at Seneca on Feb. 14, 1932; -33 at Meacham on Feb. 9, 1939; -53 (estimated) at Drewsey and Riverside on Dec. 24, 25, 1924, when the index was drawn into the bulbs of the thermometers). At any rate, the fragmentary records now available seem to warrant such a generalization.

A thermometer of the "Sixes" type for registering maximum and minimum temperatures between occasional inspections was installed on the summit cabin on Mt. Hood (elevation 11,244 feet) by the Mazama Research Committee on July 24, 1938. In this type of thermometer a U-shaped column of a mercury alloy (which freezes at about -60° F.) moves two indexes to the limits of travel of the mercury. These indexes remain at positions indicating the extremes of temperature since the last visit. After readings have been recorded, a magnet is used to reset the indexes

to their starting positions at the ends of the mercury column (momentary temperature). While instruments of this type have possibilities of some inherent errors, a study of the records warrants belief that they may be relied upon, except as to the unknown insulating effect of snow or ice that may possibly have coated the instrument shelter during the periods of minimum temperature.

As far as the writer knows, the thermometer on Mt. Hood represents the only attempt to obtain any kind of a record at a very ^{high} altitude in the Pacific Coast states. Some records have been obtained on the summit of Mt. Rose, near Reno, by Dr. Church of the University of Nevada. There also, the minimum temperatures recorded are considerably higher than those for some stations at much lower elevations.

In the table below the maximum and minimum temperatures listed represent the range since the last setting of the indexes. They were not reset on Nov.25, 1938, Dec.11, 1938, Mar.29, 1939. Maximum was not recorded for the period June 9-16, 1940. Readings were made by various members of the Mazama club.

<u>Date</u>	<u>Time</u>	<u>Temperatures, Degrees F.</u>		
		<u>Momentary</u>	<u>Max.</u>	<u>Min.</u>
July 24, 1938	12:30 p.m.	+77	-	-
do	4:15 p.m.	+47	-	-
Aug. 7, 1938	10:30 a.m.	+36	+59	+18
Sept. 11, 1938	11:00 a.m.	+40	+63	+17
Nov. 25, 1938	4:00 p.m.	+22	-	-
Dec. 11, 1938	4:30 p.m.	- 2	-	-
Dec. 12, 1938	12:50 p.m.	+13	+68	-12
Mar. 29, 1939	2:00 p.m.	+12	-	-
Apr. 16, 1939	11:45 a.m.	+35	+35	-16
June 11, 1939	1:30 p.m.	+33	+49	+ 2
Nov. 5, 1939	10:15 a.m.	+22	+65	0
Mar. 24, 1940	2:00 p.m.	+22	+33	- 6
June 9, 1940	11:40 a.m.	+47	+47?	+10
June 16, 1940	9:20 a.m.	+44	-	+26
Aug. 20, 1940	1:00 p.m.	+44	+69	+22.5
Aug. 25, 1940	2:45 p.m.	+42	+48	+24
Dec. 15, 1940	11:00 a.m.	+20	+66	- 2

NEWS OF MEMBERS

It is rumored that Lawrence Gould will be through Portland again this summer. Certainly those who heard his other two talks will want to hear him again.

Jim Ward, who has been in the East Indies and spoke before the Society concerning his experiences there, left for Brazil on May 1st. He will be doing geologic exploration work for Drilling and Exploration Co. Inc., of Los Angeles.

PALEOCENE OR FORT UNION TIME

by

Edwin T. Hodge

In vol.7 no.3, pp.28-29, I discussed the transition from Cretaceous to Paleocene and suggested that on land this bit of ancient history is represented only by the eroded folds of Cretaceous and older rocks and that the eroded debris lies below the level of the sea.

Here, I propose the possibility that the Clarno rocks are of Paleocene age and were laid down when the great Fort Union mountains were elevated. All of the history so far recited deals with Lance time. It is to be considered Paleocene because of a diastrophic break, even though the life continued through without break.

After the Lance Mountains had stood for a long time and were much eroded, and the Cretaceous seas had fully retreated, new orogenic movements took place. The new folding was more restricted and confined to narrower zones. It was accompanied (Knight*) by thrust faulting. This new folding, being within the area of the first folding, involved the coarse early Paleocene deposits as well as Cretaceous and older formations.

The second uplift of the Laramide Mountains produced the Fort Union Mountains and took place in Alberta, Montana, Idaho, Wyoming and Utah. The new mountains were higher than the early Paleocene (Lance) mountains and produced even more restricted climatic zones.

The sediments and volcanic ejections from these rejuvenated mountains were carried away and laid unconformably upon Cretaceous and older rocks that had been exposed by erosion during Lance time. Knight says, in south central Wyoming, this erosion was to a depth of 13,000 feet; so deep that it exposed Pre-Cambrian rocks and that the debris formed several thousand feet of the locally derived Hanna formation of Paleocene age.

The erosion at first was vigorous and the deposits were laid down close to the re-elevated Lance Mountains and made deposits of great thickness which today yield "bad land" topography. Originally all, but now, only a small part of them are considered as of lacustrine origin. They were generally due to the work of subaerial agents, rain, wind, and most of all, of large and small streams, in filling basins of slow subsidence. Much of the material of the deposits is so widely distributed as to show great volcanic activity.

Some of the debris, not necessarily from the mountains, was carried to the south and formed the Midway formation of the Gulf states. Other similar streams flowed into the California sea to form the Martinez formation. North of California, the continental border was much farther west than at present, and the Paleocene sediments now lie beneath the Pacific Ocean.

The heavy load of sediments along the Gulf and from California southward depressed all of the Central American area below sea level and thus afforded a free migration of marine life between the Atlantic and the Pacific.

* Knight: see previous article.

As a whole, the beds resulting from the second period are known as the Fort Union. They consist of friable yellow sandstones and gray shales from 1000 to 2000 feet thick. The beds are exposed over a vast area, comprising eastern New Mexico, North and South Dakota, Wyoming, Montana, and, in Canada, along the MacKenzie River valley to the Arctic Sea. The whole region was a flat, low-lying plain, with sluggish sediment-laden streams and great peat-bogs and marshes in which were accumulated the masses of vegetable matter which are now lignite. The Fort Union contains freshwater shells (Unios, etc.) which indicate streams and local lakes upon flood plains. Such conditions are ideal for the entombment of plant remains as fossils, and it is not surprising that nearly five hundred species, often in a beautiful state of preservation, have been found.

The sediments are irregularly bedded and commonly cross-laminated, and have numerous local unconformities due to cut and fill. In places, the Fort Union sediments seem to grade into the Lance beds without interruption, and in other places they appear conformable with the overlying Wasatch beds. The faunal evidence appears conclusive that the Fort Union formation belongs above the Mesozoic-Cenozoic boundary line.

Vulcanism commonly accompanies mountain uplift. The record of vulcanism during Lance time has not been found. Indeed, the broad folding and arching during Lance time may not have produced volcanic action. In Fort Union time the folding was more intense, occurred along narrow zones, involved deep seated thrust faults and produced violent volcanic action.

Wyoming's Torrejon and Montana's Lebo formation (Jepson) contain volcanic ash beds. In the East Indian region basalt eruptions began in the Cretaceous and continued into the Paleocene. Many of the Paleocene formations of the Rocky Mountain region are formed from pyroclastics. In Yellowstone Park a 2000-foot section shows ash falls which buried 17 successive forests. The rejuvenated Lance Mountains of Idaho were accompanied by showers of ash, tuff, and flows of rhyolite and basalt. To the west the Clarno ashes, tuff, agglomerates and lava flows were probably produced at this time.

This new Fort Union activity raised the continent as a whole (2000 to 3000 feet). The Lance uplifts had changed the climate from a warm coastal humid type to a cooler upland climate. The mountain ranges were of the north-south trending type which, lying athwart the westerly winds, produced a warm rainy western slope and an eastern arid hot and cold slope and far to the east a warm and cold cyclonic climate. These climatic changes were unfavorable to the large sluggish reptiles, but were stimulating to the versatile archaic mammals. Consequently the remains of mammals were entombed in the new sediments - a mark of the Eocene. The withdrawal of the seas had now extinguished 95% of the marine species. The new environment had so stimulated evolution that most of the archaic mammals had disappeared.

Thus ten orders and twenty-one families of mammals lived in the Fort Union of which only three orders and three families were inherited from the Lance and Laramie. Nineteen of the Fort Union families passed upward into the Wasatch. During Fort Union time new forms continually arrived and there was a steady change toward "true" Eocene life.

The sequence as given by Knight for the Medicine Bow Mountains of Wyoming may now be interpreted as follows: (1) deposition conformably on marine upper Cretaceous

of several thousand feet of coal-bearing sediments (Medicine Bow and Ferris formations, Lance); (2) followed by folding and thrust faulting (Fort Union Mountain building with its vulcanism); (3) an interval of erosion sufficient to remove more than 13,000 feet of sediments and expose the pre-Cambrian in the mountain nucleus, (early erosion of the Fort Union Mountains, Fort Union Time).

In New Mexico an isolated circular area contains beds 800 to 1000 feet thick which rest conformably upon the Laramie. The upper and lowermost of these beds contain large numbers of mammals. The lower bed and its fauna is called the Puerco and the upper the Torrejon. The Puerco contains insectivores, some of which bear molars of the Zalambodont pattern.

In northwest Wyoming Jepson** gives the following sections:

** Jepson, Glenn L., a Complete Paleocene Section in Wyoming, Geol.Soc.Amer., (Abst), vol.41, no.1. p.200, March 31, 1930.

	Local angular unconformity
Paleocene of Fort Union	(Clark Fork, grades into Wasatch (Silver Coulee=Tiffany, Colorado=Paskapoo, (Alberta - Melville, Montana (Rock Bench = Torrejon, New Mexico=Lebo, Montana (Puerco, New Mexico
Cretaceous	Disconformity and conformity Mantua with dinosaur bones

"This single section contains representatives of all the Paleocene mammalian faunas previously known in North America. It is confined by the Lance below and the Wasatch above, neither of which has been observed elsewhere in proximity to the Paleocene".

"In studying the stratigraphy and paleontology of the sediments lying between the Lance (Upper Cretaceous) dinosaur bearing beds and the lower Eocene Wasatch of parts of the Bighorn Basin, Park County, Wyoming . . . three new Paleocene faunal horizons were discovered. The lowest is just above the Lance, in the base of a heavy buff sandstone which the U.S. Geological Survey has heretofore regarded as Lance, and includes among other Puerco genera Oxyacodon, Euconodon and Loxolophus. Two hundred feet higher a second level yields Torrejon forms such as Chriacus, Tetraclaenodon and Tricentes. Above this a third new horizon . . . contains genera (Carpolestes, Leptacodon, and Ectypodus) which correlate it in part with the Montana Bear Creek and the Colorado Tiffany. The fourth and uppermost horizon of the Paleocene in this locality is the Clark Fork.

"From the disconformity at the top of the Lance upward through the Paleocene to the locally angular unconformity between the Clark Fork and the Wasatch, no pronounced structural or stratigraphic break has been observed. The sediments are a series of somber clays and sandstones."

Jepson says further***: "Four faunal horizons have been distinguished in the

*** Jepson, Glenn L., Paleocene Sediments and Faunas of Polecat Bench, Northwestern Wyoming: (Abstr.) Proceedings of Geol.Soc.Amer., p.89, 1937.

Bighorn Basin near Powell, Wyoming. The reptilian and mammalian faunas in this section which contain equivalents to all Paleocene mammalian faunas known in North America, serve as a useful comparative or reference section.

"The lowest fauna approximates that of the Puerco of New Mexico in time and occurs in the base of a thick and persistent sandstone which overlies dinosaur-bearing beds and for which the name Mantua is proposed. The contact is marked by angular discordance in some localities and conformity in others. Strata of the second level, called Rock Bench, yield vertebrates of Torrejon (New Mexico) and Lebo (Montana) age. The third unit is named Silver Coulee and correlates with the Tiffany ((Colorado), the Paskapoo (Alberta), and the Melville (Montana). The fourth and uppermost is that of the unique Clark Fork fauna, which was named by Granger in 1914, and which has many forms in common with that of the overlying "Wasatch" Greybull formation. This upper delimitation of the Paleocene is also expressed in locally angular unconformities."

Vulcanism began at the beginning of Fort Union time and the Clarno may be a part of this igneous activity. The Clarno rocks are strongly folded and faulted and this may have taken place at the end of Fort Union times.

The base of the Clarno formation is poorly exposed but limited evidence indicates that it lies unconformably upon Cretaceous and older rock. Hence it is younger than the Lance and Laramie age, but need not be any younger than Fort Union Age. The Clarno is the first or oldest formation to lie upon ammonite-bearing or true Cretaceous rocks. The base of the Clarno formation is composed of coarse sediments of both local and distant origin. The source of their sediments was either the Lance Mountains or the Fort Union Mountains. The fossils of the Clarno formation indicate that the lava flows accumulated upon an upland.

Its strongest evidence for being of Fort Union age, however, is the degree of erosion. Clarno folds indicate mountains with a local relief of about 5000 feet. These mountains were eroded so that the basement rocks were exposed; indeed, it was probably peneplaned. The Clarno mountains were more difficult to erode than those of the Rockies because they did not stand as high and were composed of more resistant rock. All of this erosion took place before middle Oligocene time. The amount of this erosion is indicated by the thick prism of Eocene sediments (5000+ feet) on the Oregon coast. The degree of erosion and thickness of derived sediments is equal to all of the "true" Eocene of the Rocky Mountain region. The erosion probably required all the time from Wasatch to Uinta time.

The uplift of the Fort Union mountains, their early vigorous erosion and deposition of eroded debris and their volcanic rocks, constitutes the Fort Union stage. The slower erosion that followed is placed in the true Eocene and will be discussed at a later time.

THE ROCK HOUND

A Rock Hound is a depraved species of mankind, a cross between a geologist and a mineralogist, if you know what that means. If you don't, you are not much the loser. The Rock Hound is usually found hunting for rocks on a hot summer day in the blazing sun, many miles from water or shade. The rocks he finds he seldom brings home. He usually trades with his friends who have acquired their rocks in the same way.

The Rock Hound travels from Georgia or some equally distant spot to Arizona in his search for rock, thereby saving the cost of postage, as a rock is heavy. Of course, what little he spends on gas, groceries, tires and oil on the way out, is negligible to him, as he will die a pauper anyhow.

His house is all cluttered up with motors, grinding wheels, piles of rock, and cases of specimens, much to the disgust of his wife and others of the immediate family. He has stacks of catalogues and letters from out of the way places, which are always becoming lost and eventually turn up in the soup or in the morning's biscuit batter, like as not.

The Rock Hound invariably begins a conversation in this way: "When I was hunting for malachite near Bisbee", or "When I was up in the hills back of Deadwood looking for sylvanite", and then he launches into an interminably long, haggling tale of his explorations. He fills his pockets with many small stones and others not so small, to show his friends who do not care to see them, and when they do see them don't know what they are and would still be bored if they did.

The Rock Hound is worse than the inveterate hunter or fisherman, because the open season on rocks is year-round.

He has been known to cross the continent in search of a certain kind of rock, only to be told that there is a better grade of that rock to be found in his home state, close to his home town, and almost in his back yard.

The Rock Hound is human in some ways. He eats food except when on a lone scout for some certain species of rock when he will often hunt all day and far into the night with the aid of a flashlight, before he ever thinks to satisfy the inner man. He has been known to hold his head under the water for long periods in search of moonstones or agates. He even digs in heaps of refuse and ole mine dumps with a small stick used as a shovel. He speaks with pride that is all his own of his achievements in the "game" as he is wont to call it.

Passing motorists who see him at work or play, as he may call it, give him only a passing glance and say to themselves as they flash on down the highway, "There's one of those nuts. Imagine a man spending his time hunting rocks. He sure is nuts". . . And sometimes I think we are.

Written by one of them,
Bryant F. Mears
Silversmith and Lapidary
Eagle Pass, Texas.
(When I am not hunting rocks.)

SALEM CHAPTER ANNOUNCEMENTS

- LECTURE** Subject: ERRATICS OF THE WILLAMETTE VALLEY AREA.
Thursday Speaker: Dr. Ira S. Allison, Oregon State College; Vice-president,
May 15 Salem Chapter, G.S.O.C.
8 p.m. During our geological excursions into the country we occasionally come across an erratic, one of those "strangers within our gates" and, just as the human stranger 'midst unfamiliar company excites interest and inquiry, so does the geological intruder evoke investigation. Dr. Allison has been one of the most assiduous sleuths in unravelling, not merely the present whereabouts of many of these erratics, but the regions from whence they came and the manner of their arrival. The story they unfold, which he will bring to us, is of absorbing interest and of much geological significance. The lecture will be illustrated by a number of lantern slides.
- TRIP** Columbia River Highway, Troutdale and Hood River.
Sunday Leader: Professor Herman Clark.
May 17 Caravan will leave from in front of Waller Hall promptly at 7:00 a.m. Friends of the Portland group who desire to make the trip may join the caravan at the Cinder Pit on Mt. Tabor at approximately 9:30. From there the party will proceed via Rocky Butte and Troutdale to Hood River, with numerous stops en route. If time permits, the return will be made via the Mt. Hood loop. This will be a long trip but will include many interesting geological features - some of them unique - and there is probably no one better qualified to explain them than Professor Clark. He has covered the ground many times and the trip is one which he takes regularly with his students in geology at Willamette University.
- WORK NIGHT** Plans formulated by the Work Night Committee were set forth in a letter dated April 28th and mailed to members of the Salem Chapter. Mr. F. L. Davis has generously donated a large glass case in which to display specimens collected by our members and various sub-committees have been designated to have charge of identification and arrangement of certain groups of specimens. Work materials (lacquer, shellac, brushes, ink, etc.) will be provided and members are urged to bring in their own specimens - fossil, rock or mineral - for identification and labeling. Arrangements have been made for a display of the quartz family of minerals, and on June 3rd a powerful fluorescent light will be set up for testing any rock or mineral specimens suspected of fluorescence or phosphorescence. Trip leaders are asked to be responsible for bringing in on work night the materials gathered on the trips they headed, and will also be in charge of the group on work night, interested in identifying the specimens obtained on these trips. Specimens contributed to the Society or collected on field trips will be identified and made presentable for cabinet display, as a permanent collection of the Salem Chapter, and will be of great assistance to all members in helping them to catalog future "finds".

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. The text suggests that organizations should implement robust systems to track and report on their operations, ensuring that all data is up-to-date and easily accessible.

2. The second part of the document addresses the challenges of data management and security. It highlights the need for strong cybersecurity measures to protect sensitive information from unauthorized access and data breaches. The author recommends regular security audits, employee training, and the use of secure communication channels to mitigate risks.

3. The third part of the document focuses on the role of technology in improving efficiency and productivity. It discusses how digital tools and automation can streamline processes, reduce errors, and free up resources for more strategic tasks. The text encourages organizations to invest in modern technology and to foster a culture of innovation and continuous learning.

4. The fourth part of the document explores the importance of effective communication and collaboration. It stresses that clear communication is key to ensuring that all team members are aligned and working towards common goals. The author suggests implementing regular meetings, open communication channels, and collaborative work environments to enhance teamwork and productivity.

5. The fifth and final part of the document discusses the importance of staying up-to-date with industry trends and developments. It encourages organizations to engage in ongoing research and development, attend industry conferences, and collaborate with peers to stay ahead of the competition. The text concludes by emphasizing the need for adaptability and resilience in a rapidly changing business landscape.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 10

PORTLAND, OREGON

May 25, 1941

GEOLOGICAL NEWS-LETTER

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

Friday Speaker: Miss Sabina Nelson
May 23 Subject: Guatemala, its people and customs.
Miss Nelson spent last year in Guatemala. She will describe the country and its inhabitants as well as some of the many volcanoes. There will be pictures, and examples of some of the textiles made there will be exhibited.

Friday Speaker: Lloyd L. Ruff
June 13 Subject: GEOLOGICAL INVESTIGATIONS CONNECTED WITH THE DETROIT DAMSITE.
The study of this area, made for the U.S. Army Engineers by one of the members of the society, should prove of great interest.

Week-end Trip: OCEAN LAKE-NEWPORT BEACH.
Leaders: A. D. Vance and H. B. Wood.

Friday Leader: H. B. Wood. Meet at Roads End Dike 2.7 miles north of Ocean
May 30 Park at 10:00 a.m. (1 hour)
2. Scott's Point gabbro, 7.5 miles east of Kernville (30 minutes).
3. Zeolite basalt, 2-5 miles east of Kernville on north side of Siletz river (1 hour).
4. Depoe Bay lavas, agglomerates and tuffs (1 hour).
5. Cape Foulweather (Thomas quarry) 3.7 miles south of Depoe Bay (30 minutes).
6. Otter Crest View Point, 4.2 miles south of Depoe Bay (30 minutes)
7. Spencer Creek, Ocean Park (3-4 hours)

Saturday Leader: A. D. Vance. Meet at Auto Camp at 9:00 a.m.
May 31 1. Drive to Schodner Creek, walk down beach 3/4 mile to Yaquina Head. Examine contact between volcanics and sedimentaries. Return along exposed reefs.
2. 10:30. Drive to Punch Bowl and visit Marine Gardens on north beach. Low tide - 0.2 feet.
3. 12:00. Lunch at Punch Bowl State Park.
4. 1:15 Wade Creek south along beach for one-half mile.
5. 2:30. Return to Spencer Creek and hunt for another turtle.
6. 5:00. Return to camp for dinner.
7. 7:30. Gather for social evening at the outdoor fireplace.

Sunday Leader: H. B. Wood. Meet at Ocean Park Auto Camp at 9:00 a.m.
June 1 1. Drive to Yaquina Head just north of Agate Beach (1½ hours).
2. Iron Mountain, 1.5 miles north of Agate Beach. Round trip hike about 1½ miles (1½ hours).
3. Basalt sill 4.7 miles east of Eddyville on Yaquina highway #26 (30 minutes)
4. Gellatly Canyon, 44.1 miles east of Newport (1 hour).

MAKE YOUR CABIN RESERVATIONS EARLY! Write T. C. Simmons, Ocean Park Auto Camp, Agate Beach, Oregon.

SALEM CHAPTER ANNOUNCEMENTS

- LECTURES:** Third Thursday of each month; Rm.124, E.S.Collins Hall, (new science building), Willamette campus, 8:00 p.m.
- TRIPS:** On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at time specified.
- WORK NIGHT:** First Tuesday of each month; Willamette museum; 7:30 p.m. Members are urged to bring specimens for identification and classification - either for their own personal collection or for the collection which the Salem chapter is gradually acquiring. Work materials will be provided. On June 3rd a powerful fluorescent light will be set up for testing rocks or minerals for fluorescence or phosphorescence.
- LUNCHEONS:** Every Tuesday; Pollyanna Room, Argo Hotel; 40¢.

The paid memberships in the Salem Chapter now number 46, but as "membership" may include both husband and wife, the actual membership is almost twice that figure. Enthusiasm is growing constantly as trips and lectures not only increase our geological information but also make for better personal acquaintanceships and greater loyalty to the Society.

WORK NIGHT. Plans formulated by the Work Night committee were set forth in a letter dated April 28th and mailed to members of the Salem Chapter. Mr. F. L. Davis has generously donated a large glass case in which to display specimens collected by our members and various sub-committees have been designated to have charge of identification and arrangement of certain groups of specimens.

Work materials (lacquer, shellac, brushes, ink, etc.) will be provided and members are urged to bring in their own specimens - fossil, rock or mineral - for identification and labeling.

Arrangements have been made for a display of the quartz family of minerals, and on June 3rd a powerful fluorescent light will be set up for testing any rock or mineral specimens suspected of fluorescence or phosphorescence.

Trip leaders are asked to be responsible for bringing in on work night the materials gathered on the trips they head, and will also be in charge of the group, on work night, interested in identifying the specimens obtained on these trips.

Specimens contributed to the Society or collected on field trips will be identified and made presentable for cabinet display, as a permanent collection of the Salem chapter, and will be of great assistance to all members in helping them to catalog future "finds".

Those who were out for Work Night on May 6th were especially privileged to examine some wonderful specimens of quartz - agates, plume jaspers, rose quartz, and others to take your breath away. These were part of the collection of Mr. Overman who brought them from Corvallis for the occasion.

Attendance at the Tuesday luncheons has been holding up well, and there is never a Tuesday without its quota of specimens "from here and there about these United States". Last week there were specimens of rhyolite from near Mt. Shasta, brought in by Mrs. Stockwell; a fragment from a granite erratic four miles north

of Salem, by H. J. Smith; and a beautiful piece of gem quality material containing malachite, azurite and chalcedony arranged in a colorful pattern, submitted by Prof. Clark.

Designs for a distinctive marker for members' cars have been worked out and it is hoped that by the time for the next trip each car in the caravan will be identifiable (from front or rear) to the drivers. It may not be amiss to suggest here that each driver should feel responsible for the car following his. Thus, in case of any emergency (such as running out of gas!) no car in the caravan will be left stranded. A glance now and then in your rear-view mirror will tell you if the car following you is in sight; if not, slow down or stop until you are sure it is not in trouble.

It seems that Bill Reeves and Buck Bradley couldn't wait any longer before making a trip to eastern Oregon in search of "pretty rocks". I forget just how many hundred pounds they brought back with them, but it is rumored that they also acquired some animated fragments that were disposed of as rapidly as possible. ("How many ticks would a wood-tick tick"--- etc.)

Change of address: Mrs. H. Mildred Stockwell (from 685 N. Church St. to
635 N. Church St., Salem)
Phone: 8662.

The editor wishes to apologize to those members whose contributions are being postponed in publication due to lack of space in this issue. It's an "oversize" already!

"OREGON IN THE GEOLOGICAL STORY"

Lecture by Professor Herman Clark, president of the Salem Chapter, given before the Salem group on February 20th.

On February 20th our president, Prof. Herman Clark, of Willamette University, gave us a most interesting and informative lecture in Waller Hall. The talk was primarily intended to explain the meaning of some of the geological terms in common use throughout the world for the benefit of those of us who have more interest than geological knowledge.

He pointed out that changes on and in the earth are constantly occurring and the function of the scientist is to determine and interpret the conditions under which these changes take place. Two theories of change were discussed, - the theory of Catastrophism, and the theory of Uniformitarianism - and a number of slides were shown illustrating various types of erosion, weathering, faulting, and the way in which sedimentary deposits are made.

Prof. Clark also sketched the process involved in "mass wasting" and carried a hypothetical area through the various physiographic stages of "infancy", "youth", "maturity", and "old age" - showing the continuous levelling-off of the earth mantle produced by the various natural agencies. In time the eroded earth mantle

may again become consolidated with the formation of new sedimentary rocks, may again be elevated by diastrophism, and the entire process repeated.

Following the lecture Prof. Clark showed some very interesting rock and mineral specimens and a general informal discussion of them was enjoyed by many members and friends present.

SUMMER SCHOOL COURSES

The Oregon State System of Higher Education has announced the following courses to be offered for University credit during the summer session at Lincoln High School June 16 to July 25, 1941. Fees: for auditing one course, \$6.00; for one course for credit, \$10.50; two or three courses for credit, \$25.00. The courses in geography are "upper division".

The instructor for these courses is Dr. L. M. (Larry) Gould, professor of geology at Carleton College, and well known to many GSOC members by reason of his stay in Portland in 1939, when he spoke to the Society on some of his experiences in Greenland and in the Antarctic. Dr. Gould's friends in the Society will welcome this chance to renew a pleasant acquaintance.

For those who can take the time, the courses offered present a fine opportunity to study under a capable and dynamic instructor of international renown.

GEOGRAPHY: Visiting instructor, Gould.

Geo 416s. Geography of the Polar Regions. Three hours.

A systematic study of the Arctic and Antarctic regions in terms of their physical characteristics such as land forms, glaciers, and climates, and the relationships of these to the peoples, the flora, and the fauna which are found there. A special feature of the course will be a resume' of the history of polar exploration from its beginning to the most recent expeditions. For teachers and students of geography, writers, and others who wish an intimate and unified knowledge of the regions which lie about the Poles.

Daily, 1:00. Room 309.

Geo.455s. Conservation of Natural Resources. (G) Three hours.

Inventory of natural resources in mineral wealth, water, soil, timber, etc. Practices leading to waste and extravagance. Public policy which prevents needless waste, promotes restoration, and encourages conservation. Daily 11:00. Room 309.

GEOLOGY: Visiting instructor, Gould.

G201. Physical Geology. Three hours.

A general study of the phenomena of the earth's crust with emphasis on the materials composing it and the manner of their formation and occurrence. It is designed to give the student an understanding of landscape or earth features in terms of their geological background. The course will conclude with a brief outline of the history of the earth which will include the more significant events in the origin and development of life. Daily, 10:00. Room 309.

GEOLOGICAL NEWS LETTER

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June 10, 1941

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Occupation Hobbies

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. Sponsored by
(signature) (member)

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LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

Friday Speaker: Beverly B. Wilder

June 13 Subject: THE ANCIENT FORESTS OF OREGON. Mr. Wilder is engaged in a study of the fossil plants of the Molalla area, and will receive his doctorate for that study from the University of California this fall. He promises to discuss the Tertiary plant life in this part of the country in words we can all grasp!

Friday Speaker: Lloyd L. Ruff.

June 27 Subject: GEOLOGICAL INVESTIGATIONS CONNECTED WITH THE DETROIT DAMSITE, NORTH SANTIAM RIVER.

The study of this area, made for the U.S. Army Engineers by one of the members of the society, should prove of great interest. The geology of the region will be discussed together with the methods used to ascertain the safety of the foundations, which involved detailed mapping of the fracture and jointing systems as exposed on the surface, in diamond drill holes, and in the 36-inch diameter "calyx" drill holes. Lantern slides and drill cores will assist in the illustration of the various features.

Sunday Trip: THE WHITE RIVER REGION OF MOUNT HOOD NATIONAL FOREST

June 29 Leader: Eric H. Gordon, District Ranger, stationed at Dufur.

This trip will cover historic points on the old Barlow Trail, scenic lookout points, and geologic features of the eastern Cascade Mountains. Leave SW Front and Yamhill at 7:30 a.m. and reassemble at the Bearpaw Forest Camp on the Wapinitia Highway, about 3 miles beyond the Olallie Lake Road junction, at 9:00 a.m. From here the caravan will swing northerly across Badger Creek to Tygh Creek and on to the Highway at Tygh Valley.

Friday Trip: SPIRIT LAKE AND MOUNT ST. HELENS.

July 4 Leaders: Kenneth N. Phillips and Leo Simon

to Details will be announced later. Tentatively, it is planned to visit Ape Canyon and the recent (about 1854) andesite flow on Mount St. Helens, and the alpine flower beds near St. Helens Lake. Distance from Portland, about 110 miles. Those not wishing to camp should at once contact the manager of Harmony Falls Resort, Spirit Lake, Wash. Suggested reading: J. Verhoogen, Geology of Mt. St. Helens (U. of Calif. Pub.); Donald B. Lawrence, papers in Mazama 1938 and 1939.

NEWS NOTES

John C. Cleghorn, vice-president of the Klamath Mineral Club of Klamath Falls, writes that he has obtained much information from the pages of the News-Letter, and encloses a well-written and illustrated article on the geological history of the Klamath Country, which appeared in the News-Herald May 24th. While deploring in his letter the "lack of access to many experts" in geology, Mr. Cleghorn shows such a grasp of the geological features of that area that we doubt that the lack is very acute. He also notes that there has very recently been a geological club formed at Lakeview.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; Rm.124, E.S.Collins Hall (new science building), Willamette campus; 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.

WORK NIGHT: First Tuesday of each month; Willamette museum; 7:30 p.m. Work materials are provided, and members are urged to bring in specimens for classification.

LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

Thursday Subject: FLOWERS OF THE MINERAL WORLD - CRYSTALS.

June 19 Speaker: Thomas A. Carney, member of G.S.O.C., Portland.

This will be the first time the subject of crystals has formed the topic at any of our meetings. It is an important branch of geology and will be presented to us by one who has studied and collected crystals for many years. In addition to discussing the subject in general, Mr. Carney will tell us of some of the oddities and unusual forms found in crystals. He will also demonstrate the tree-like growth in some forms of crystal structures. In this experiment beautiful crystal forms will grow before our eyes within a few minutes, indicating the process of development, at a vastly slower rate, of the formations we find in geodes, moss agates and other minerals. Furthermore, there will be on display a number of specimens from his large and varied collections of crystals and other minerals. Mr. Carney always puts on a "finished" lecture and on this occasion it holds promise of being exceptional, too.

Thursday Subject: (To be announced later).

July 10 Speaker: Dr. Donald B. Lawrence, University of Minnesota.

The G.S.O.C. has heard Dr. Lawrence on former occasions - always with great acceptance. He is a native Oregonian and has made intensive studies of geologic features of the Columbia Gorge, also of Mt.St.Helens, and has contributed much, through lectures and printed papers, to the scientific knowledge of these areas. Whatever he chooses as his topic on this occasion, we are assured of a most interesting evening.

Thursday Subject: ANTARCTIC GLACIERS.

July 17 Speaker: Dr. Laurence McKinley Gould, Carleton College, Northfield, Minn.

Formerly second in command of the first Byrd Antarctic Expedition, 1929-30 Our Chapter is indeed privileged to have a visit from this internationally known scientist. His topic, too, is one of great interest, for the Antarctic glaciers rank as the greatest ice streams on the earth. He studied them closely during the 1200 mile sledge trip of the Byrd Expedition's geological party, of which he was the leader, and, in view of his extensive travels within both the Arctic and Antarctic Circles, as well as in other glacial areas, he is in an unique position to correctly appraise the nature and significance of these gigantic rivers of ice. Dr. Gould will also discuss other matters relative to the Antarctic Continent and his lecture will be liberally illustrated with lantern slides showing scenes and depicting conditions on that bleak, but beautiful, country. Tell your friends of this meeting, so that all who can may enjoy this outstanding occasion. Meet in Waller Hall, 8:00 p.m.

Trip Molalla Quadrangle.

Sunday Leaders: Professor W. D. Wilkinson and O. A. Chase.

June 22 Mr. Chase will lead the caravan which will start from Waller Hall at 8:30. At the field camp of the Geological Survey, near Molalla, Prof. Wilkinson will demonstrate and explain some of the methods used in making geographical surveys. Several "exposures" in the Molalla quadrangle will also be visited.

Within the last year or so geological clubs have been formed in a number of cities within the state. Through the efforts of Henry Griffith, Al Brown, and Mrs. Eleanor Carrico in Burns, a very active group has been formed there. Bend has long been the seat of operations of a very enthusiastic group, with our good friend Phil Brogan being one of their leading lights. Now we hear of groups forming at Klamath Falls and Lakeview.

The editor would welcome the receipt of letters, telling of the activities of these various groups, or of manuscripts on geological features visited by members of the various societies.

DID YOU KNOW THAT:

- . . . there is a sequence of 25,000 feet of marine Pliocene shallow water sediments in the Ventura Basin, southern California?
- . . . that Crater Lake is the deepest fresh-water lake in the United States?
- . . . a mnemonic scheme for memorizing the Paleozoic column is: "Come Over SILvia, Don't MISS PENNY Pictures?
(Probably etchings . . .)

The editor and business manager wish to thank Mr. and Mrs. Dwight Henderson for the donation of the files of many back bulletins.

Mr. and Mrs. O. E. Stanley gave an illustrated lecture on their Mexico trip to the United Presbyterian Church Scout Troop on Friday June 6th.

Dr. Courtland L. Booth received first prize for his display of fluorescent minerals at the recent convention of the Federated Mineralogical Societies, held at Oakland, California.

Clarence Phillips was taken to the Good Samaritan Hospital June 5th, for operation for appendicitis. As we go to press he is doing very well and receiving visitors. It is expected he will go home the week-end of June 14th.

Dr. Ralph W. Chaney, head of the Department of Paleontology at the University of California, and one of the foremost paleobotanists in the country, was through Portland last week, on his way to the John Day area, where he is supervising a crew collecting there. He promises to speak to us in August if possible.

Mr. E.H. Rockwell was exceedingly busy over the week-end of May 30, as General Chairman of the exhibition of the Northwest Federation of Stamp Clubs held at the Multnomah Hotel. Over 500 frames of stamps belonging to outstanding stamp collectors of the Northwest were on display. Mr. Rockwell won a silver medal with his early U.S. Cancellations, and Dr. C.L. Booth also placed with his U.S. Proofs.

MEMBERSHIP
of the
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY
1941

As of June 5th, 1941, there are 88 senior memberships and 3 junior memberships in the Portland organization and 40 senior memberships and 3 junior memberships in the Salem organization. In addition we have 5 subscribers to the News-Letter.

K. Mahony

(Charter Members-*)
(Junior Members -JM)

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(JM) Cutress, Chas.	Route 12 Box 577, Milwaukie, Ore.	
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*Hodge, Dr. and Mrs. Edwin T.	BE 4821	2915 NW Luray Terrace
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(JM) Ice, George		1654 Tenino St.
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*Iverson, Miss Helen	LA 7504	5125 NE Couch
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<u>Name</u>	<u>Phone</u>	<u>Address</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

NOTES ON THE OPEN HOUSE AT EUGENE, MARCH 29th, 1941.

The "open house" of the Department of Geology at the University of Oregon at Eugene was well attended by the Salem Chapter of the Geological Society of the Oregon Country.

At the lecture on Alaska given by Dr. Smith after the banquet on Saturday evening, he gave it as his opinion that the best thing published in Alaska from the geological and geographical standpoint was Brook's "Geography and Geology of Alaska", published by the U.S. Geological Survey in 1906 and long since out of print. The writer of these notes has a copy of this publication in his library picked up at a second-hand book store.

After the lecture when the group adjourned to the Condon Museum, the writer had the pleasure of inspecting the anthropological material found in Lake County by Dr. Cressman last year, through the courtesy of Dick Kahn who is a student in the Department. He is a camera enthusiast and pleased the writer very much by copying the two photographs of Dr. Condon on display in the museum and presenting him with the films. So, if anyone wants a print just get in touch with the writer. This same Dick Kahn advised that Dr. Barnett, in charge of the Department in the absence of Dr. Cressman, has a project involving the examination and photographing of private anthropological collections. If you have any knowledge of such, communicate with Dr. Barnett who will be very grateful.

Our new President, Kenneth Phillips, was in photographic evidence on the trip in which he and Dr. Jones are shown assisting Leo Simon to change a tire. Judging by the picture the assistance seems mostly in the form of advice and sympathy.

Our Vice-president, Dr. Allison of Oregon State College, attended the field trip, and added to the discussions.

F. L. D.

ATTENDANCE REPORT
April 20th, 1941 Field Trip.

39 Salem Chapter members, including 4 from Corvallis.
8 guests of Salem members, including 2 from Portland.
7 Portland members.
3 guests of Portland members.

57 Total

18 or 19 cars in caravan at lunch time.

Reported by:

H. Mildred Stockwell, Treas.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 12

PORTLAND, OREGON

June 25, 1941

GEOLOGICAL NEWS-LETTER

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THE GEOLOGICAL NEWS-LETTER
Official publication of the
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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

.
I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

Friday Subject: GEOLOGICAL INVESTIGATIONS CONNECTED WITH THE DETROIT DAMSITE,
June 27 NORTH SANTIAM RIVER.

Speaker: Lloyd L. Ruff.

The study of this area, made for the U.S. Army Engineers by one of the members of the Society, should prove of great interest. The geology of the region will be discussed together with the methods used to ascertain the safety of the foundations, which involved detailed mapping of the fracture and jointing systems as exposed on the surface, in diamond drill holes, and in the 36-inch diameter "calyx" drill holes. Lantern slides and drill cores will assist in the illustration of the various features.

Sunday Trip: THE WHITE RIVER REGION OF MOUNT HOOD NATIONAL FOREST.

June 29 Leader: Eric H. Gordon, District Ranger, stationed at Dufur.

The trip will cover historic points on the old Barlow Trail, scenic lookout points, and geologic features of the eastern Cascade Mountains. Leave SW Front and Yamhill at 7:30 a.m. and reassemble at Government Camp at 9:00 a.m. From here the caravan will swing northerly across Badger Creek to Tygh Creek and on to the Highway at Tygh Valley.

Friday MOUNT ST. HELENS AND SPIRIT LAKE.

July 4 Leaders: Kenneth N. Phillips and Leo Simon.

to The recreational possibilities of Spirit Lake and flowers of nearby alpine meadows will be combined with some geological phenomena of Mt. St. Helens to make this trip attractive and worthwhile. Considerable hiking will be done, and those taking part will see areas not reached by casual tourists. Swimming, boating, and fishing available for non-hikers; campfire sessions in evening. This trip is the best possible preparation for Don Lawrence's talk on July 11.

July 6 Dress: Wear old clothes, heavy-soled shoes with tops high enough to keep out loose pumice. No mountaineering equipment needed.

Accommodations: Camp as near as possible to the east end of the campground at Spirit Lake, to keep party together; some cabins may still be available from Harry Thurman, Spirit Lake, Wash.

Lunches: Have a lunch prepared each day, to be eaten on the trail. Carry a canteen or fruit juices, as water may be scarce.

Transportation: Those seeking transportation or passengers should register with Leo Simon, 531 SW Washington St., ATwater 0438, by noon July 3rd.

July 4: Leave Portland as early as possible, drive to Castle Rock and Spirit Lake. Pitch camp to reserve sites. Note tree well in pumice at ranger station. Leave camp at 11:00 a.m., drive 5 miles to Timberline, where party will assemble for a short talk and early lunch. Hike to Ape Canyon via Windy Gap, Plains of Abraham, and Pumice Butte (good trail but loose pumice in places. Spectacular scenery and some striking exposures. Driving distance about 115 miles; walking, 7 miles.

July 5th: Flower trip to St. Helens Lake, led by Leo Simon. Assemble at Spirit Lake store at 8:30; cross lake outlet and take trail to St. Helens Lake. Those who wish may go on from St. Helens Lake to climb The Dome, 5,702 feet, and note the difference in its vegetation and geology, as contrasted with Mt. St. Helens. Alpine flowers bloom here in profusion, and should be at their best. Trail is good, with considerable change in elevation; round trip distance about 7 miles (to St. Helens Lake), 11 miles (to The Dome).

July 6th: Leave Spirit Lake store at 9:00 a.m., drive 3 or 4 miles west on highway, thence southeast on former southside road toward Spirit Lake to parking place at ford. Hike up creek to recent andesite flow (about 1854). Note overthrown trees at edge of flow, unique islands of till and soil carried on top of lava. No trail, brushy in places, rough on lava flow; but the geology is worth the effort. Return to cars in time to drive to Portland. Walking 4 to 6 miles; driving 110 miles.

Read in advance in GSOC library: Verhoogen, J.: Mt. St. Helens, a Recent Cascade Volcano; Lawrence, D.B.: Trees on the March (Mazama 1938), and Continuing Investigations on Flora of Mt. St. Helens (Mazama 1939). Carry USGS topographic map of Mt. St. Helens quadrangle, or Columbia National Forest map.

Friday Subject: MOUNT ST. HELENS, A SLEEPING VOLCANO.
 July 11 Speaker: Dr. Donald B. Lawrence, University of Minnesota.
 See Salem chapter announcements for details on this talk.

Friday Subject: ANTARCTIC GLACIERS.
 July 25 Speaker: Dr. Laurence McKinley Gould, Carleton College.
 See Salem Chapter announcements for details on this talk.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; Rm. 124, E.S. Collins Hall (new science building), Willamette campus; 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.

WORK NIGHT: First Tuesday of each month; Willamette Museum; 7:00 p.m. Work materials provided, and members are urged to bring in specimens for classification.

LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

Thursday Subject: MOUNT ST. HELENS, A SLEEPING VOLCANO.
 July 10 Speaker: Dr. Donald B. Lawrence, Professor of Botany, Univ. of Minnesota.
 Mt. St. Helens is not only a sleeping volcano, it is also our youngest local one, having erupted less than 90 years ago. In both these respects it affords valuable evidence for geological study. Realizing this, Dr. Lawrence has spent considerable time each summer during the past three or four years exploring the mountain's slopes and surroundings, investigating, on the one hand, the plant and tree life and, on the other, the geology of the region. The reciprocity of these two features reveals Nature's process of change in volcanic areas. The story is a fascinating one and will be brought to us, both verbally and by means of lantern slides, by one who has done a large amount of original research on the subject.

LECTURE Subject: ANTARCTIC GLACIERS.

Thursday Speaker: Dr. Laurence McKinley Gould, Carleton College, Northfield, Minn.

July 17 Dr. Gould was formerly second in command of the Byrd Antarctic Expedition, 1929-30. Our Chapter is indeed privileged to have a visit from this internationally known scientist. His topic, too, is of great interest, for the Antarctic glaciers rank as the greatest ice streams on earth. Dr. Gould studied them closely during the 1200 mile sledge trip of the Byrd Expedition's geological party, of which he was the leader, and, in view of his extensive travels within both the Arctic and Antarctic Circles, as well as in other glacial areas, he is in a unique position to correctly appraise the nature and significance of these gigantic rivers of ice. Dr. Gould will also discuss other matters relative to the Antarctic Continent and his lecture will be liberally illustrated with lantern slides showing scenes and depicting conditions on that bleak but beautiful country. Tell your friends about this meeting, so that all who can may enjoy this outstanding occasion. Willamette University Chapel; 8:00 p.m.

MEMBERSHIP LISTINGS

CORRECTION:

The following charter members of the Society were not listed as such in the membership list:

Mr. and Mrs. Ben F. Smith
 Dr. and Mrs. H. L. Underwood
 Mr. and Mrs. Franklin L. Davis (now Salem Chapter)
 Mr. and Mrs. Carl P. Richards (now Salem Chapter)

OMISSION:

Mr. and Mrs. Paul Van Scoy, 1000 Chemekata St., Salem.

REINSTATEMENT:

Mr. and Mrs. Barney L. McNab, Route 12 Box 670, Portland.
 Mr. Andrew L. Rapp, 2202 SE Taylor, Portland

NEW MEMBER:

Mr. L. D. Waring Jr., 245 S. 15th St., Salem.

DO YOU KNOW THAT . . .

. . . zircon crystals in the black sands of the Oregon Coast are strongly fluorescent?

. . . there are forty miles of underground workings within an area of two square miles at the Cornucopia gold mine in northeastern Oregon?

. . . columnar basalt, fresh from the quarry, will cleave smoothly in flat planes; but if it is left overnight and freezes, conchoidal fracture develops when it is cleaved and a smooth break can no longer be made?

June 6th, 1941

Dear Jim:

It has been several weeks since I last wrote and quite an accumulation of notes has piled up. Most of the things I take notes about are so interesting that I jot them down so that I shan't forget before writing--but my shorthand boils away when it is cold so that I may or may not be able to dig some meat out of it.

The first luncheon of the Geological Society in May--as the first flowers in May--produced Mrs. John Allen. She informed me her "cheerful cherub" was under her mother's eye so that she was enjoying her trip downtown.

As for specimens, John Allen showed cinnabar from Maury Mountain; Dr. Booth had a piece of Howlite (silica, boron, calcium) from California; Mr. Minar submitted for inspection an excellent piece of muscovite from the coast of Maine; Mr. Vance had a little shell from Spencer Creek; Tom Carney showed a specimen of moss agate; and Mr. Nixon showed pictures he had taken around Burns of the Lesser Snow Geese. I never saw so many geese in one spot.

The second luncheon of the month was quite well attended and Mr. Paulsen had for exhibition a rock sent to the office for identification. This was from Days Creek in the Roseburg area and he stated it was actinolite. Lloyd Ruff had picked up a piece of material at Camp Creek. It looked like a little piece of wood, but was unusual in the fact that it was encased by the bark; it may have been a root. John Allen had a piece of "high-grade" gold ore from the Virtue mine east of Baker. He stated that from this mine four to six million dollars' worth of ore had been extracted. Mr. Hancock at one time worked in this mine and the two of them told us that, as the story goes, more than that was hi-graded during the working. Mr. Libbey produced a specimen of typical Cascade gold ore, which he had obtained from the Lucky Boy Mine. This was particularly interesting to me for it was quite colorful and in addition, it is probable that I should at some time run across some of that ore as it is comparatively near home, while Baker is on the other side of the state.

Mrs. Arthur Jones had as her guest Miss Mason, who had just recently returned from Guatemala. Since that luncheon we have all heard Miss Mason give an extremely interesting lecture on her trip and do feel a little better acquainted with the country.

There were several guests at the third luncheon of the month: first, Miss Pitcain, Secretary for the Horse Heaven Mines and she certainly knows what cinnabar mining is all about. Mr. Amo DeBernarids, Supervisor of Visual Education, Portland School District, was present regarding his project of establishing a school museum and gave us some interesting high-lights on this part of education in the school system. He is interested in securing aid in identifying his material and I am sure that he shan't lack for such aid from the members of the organization who are so well qualified to do so.

At this meeting also, Mr. Bates gave us something just a little off of the beaten track, but especially interesting to the women at least. He had just returned from Corvallis where he had seen a demonstration of a flax machine. Two kinds of flax are raised in Oregon at present, the seed flax and the fiber flax. Both produce seed, but the seed flax is encouraged to grow in a bush and thus produces a great deal of seed, while the fiber flax grows very long and produces long stalks. He gave us more details, and had a sample of the pure fiber from which linen is made. It really

looked like a switch for some drab blonde head. But it was fine and not at all rough to the touch.

Mr. Hancock had recently been over in Madras country and roaming around he picked up some Eocene rhyolite. Sawed into, it was polished, and he suggested that it would be useful in making rock gardens. We filed that away for future reference. Mr. Weigand had an ammonite from the Bay of Biscay, France; and Tom Carney showed plume agate. Ray Mackenzie was present for the first time in my memory and showed a book of maps of Oregon on which every road, house, chicken coop and so forth is marked. These maps are scaled two miles to the inch. They have been produced as part of the state-wide highway survey.

At the last luncheon in May the Salem Chapter was well represented by Franklin Davis and Mr. Reeves. Mr. Reeves is a fairly frequent visitor so we consider him a regular, but Mr. Davis hadn't attended since we moved to the Treasure Island and everyone was exceptionally glad to see him. Mr. Davis said that Carl Richards had informed him that he had enjoyed his visit with the group a week or so before so he thought he would drop in as well. Wessley Paulsen had a specimen of stibnite from a mine in the Bohemia district which was quite striking 'n appearance.

Dr. Booth had just returned from his trip to the California Mineral Societies convention at Oakland and his trip eastward into Nevada after fluorescent material. He brought back the bacon in the form of a cup for the best fluorescent display at the convention and, I understand, last week end he also picked up another prize at the Stamp Collectors' convention held here in Portland.

This brings me up to the most recent luncheon and I'm sure my memory and notes will be a little bit clearer. I know I've left out a lot of interesting material, perhaps the things you are really interested in. Will try not to get so far behind again.

J. Martin Webber was present at a luncheon meeting for the first time since his marriage and of course that left him right on a limb for any good-natured kidding. He is a good sport though and took it in his stride. He and Miss Margaret Reid, taking a breather between the ending duties of the school year, were present and we certainly enjoyed having them. Ellen James was there as well and as she generally shows up just during vacation we knew that school was over. Harry Clark, a charter member, who has recently been stationed out of town, is now located ~~in~~ in Portland again and I am sure that he will renew his connection with the Society.

The week-end trip to the Coast was quite successful and Leo Simon has some specimens picked up while there. Lloyd Ruff picked up a concretion which had a leaf impression of Miocene age and also brought in a specimen of Thompsonite (zeolite) from Pisgah Mountain, Lane county.

Miss Henley had as her guest a young chap by name Donald O'Connell, who had as varied a list of hobbies as some of the older members of the Geological Society: He not only collects rocks and fossils, but is an amateur gardener with a specialty of orchids, and is an accomplished musician as well. Talking to him afterwards he rattled off scientific names for his orchids so rapidly that I thought he was speaking in a foreign language.

Tom Carney had an unusual specimen--a long crystal of selenite from Mexico which contained water. It looked like a "spirit level" such as carpenters use, but of course is not used for such a utilitarian purpose.

Mr. Phillips informed us that Clarence Phillips had had the "exciting" (?) experience of having his appendix removed and we all wish him speedy recovery.

I guess this brings me up-to-date, as you are presumably still in Texas I shall address the letter there.

Katie.

G.S.O.C. SALEM CHAPTER FIELD TRIP
April 20, 1941

Report of Dr. E. L. Packard's Talk

If we were to go back forty or forty-five million years ago the land in Oregon would be found sloping to the westward, with no Cascade range, and covered with luxuriant vegetation similar to southern Mexico. Later, about twenty million years ago, an arm of the sea encroached upon the northwest corner of Oregon, indenting it with passageways comparable to Puget Sound. This sea extended not farther south than Eugene, eastward as far as Coburg, Brownsville, Silver Creek Falls and northward to Portland and across the river into Washington.

This Oligocene sea should more properly be referred to as three seas since it advanced upon the land and retreated again three times in all. Conditions were evidently different at each time this sea advanced and retreated as revealed by various types of fossils found in the sediments. The sediments deposited in this Oligocene sea are exposed to us in roadcuts, valleys, hillsides and along the ocean front. All sections of these Oligocene exposures are not the same; therefore to build up a stratigraphic column, which will give a complete picture and geologic history of this period, we must take these various sections and match or piece them together.

Probably 10,000 feet of sediments make up this column which is read from the bottom upwards. The sediments making up this column are in different layers. The layer deposited nearest the shore line is richer in organic matter and reveals more leaf and wood fossils than the sediments deposited in deeper water. Beyond the shore line would come a layer of sandstone followed by a layer of shale. Where these sediments were deposited in deeper water a different type of marine fossils is shown from those found in sediments laid down nearer the shore line, just as today we have different types of clams, etc., near or on the shore than those types of marine life found in deeper waters. In a fourth layer of sediments the sand grains are quite uniform with tiny flakes of mica and some finely pulverized clay. This layer was laid down beyond the breaker line, about 10 fathoms deep, and contains little if any organic matter.

The fossils collected on this trip probably belong to the middle Oligocene. The most conspicuous type is the lustrous pearly shell with herring bone markings of the genus *Acila*, which is now living on the Oregon coast, but far out from shore where it is obtained only by dredging. A second genera of which there are only a few species, is *Nemo Protocardia* or *Cardium*, which has radial ribbing and is smooth on one end. A third fossil, having a long tubular shell, is one of a class of mollusks known as *Dentalium*. This averages about seven inches long, larger than the present ones found on the Oregon coast. Indians have used this particular fossil

for beads and wampum. A few gastropods were found but it is necessary to see the base in order to determine the type. The fauna at this location are not as rich in number, types and kinds as in some other places. The fossil crabs are rare but determinable if well preserved. Concretions are also found in these sediments. Altogether there is a wide range of organisms in marine sediments.

- H. Mildred Stockwell

WILLAMETTE VALLEY FLOOD CONTROL PROJECT

Lecture by Dr. Warren D. Smith
before the Salem Chapter, March 20th, 1941

Criticism is sometimes levelled at science for being too theoretical and failing to come to grips with practical problems. This may be true in some instances, but Dr. Smith showed clearly in his lecture on March 20th before the Salem Chapter that the science of geology has been of very practical help in evolving an effective scheme to overcome the economic losses periodically suffered due to river floods. A thorough understanding of the geology of streams enables the devising of effective means for their control, so that they may be of maximum economic value to the population within their watersheds, as well as to the country at large.

Citing the growing menace of floods to the economic life of the nation, we exemplified in the periodic ones on the Mississippi, the Connecticut, and other rivers, Dr. Smith stated that there is a national program for water and land conservation, and that the Willamette Valley project is a natural regional one, forming a part of the national scheme. "It is not just another Pork Barrel project!" he added.

An outline of the geography and statistics of the Willamette River was given and may be quoted briefly here:- the only river of importance in the United States which flows north, the Willamette, is 294 miles long, with a watershed of 11,200 square miles (comparable to the entire area of Belgium, which has 11,752 sq. miles. The mean annual run-off is 46.62 inches over the 4,860 square miles of the drainage basin (above Albany). To convey the significance of this the following were presented for comparison:-

Sacramento River	24.06 inches over a basin area of	4,300 square miles.
Colorado R. (at Yuma)	1.15 " "	225,000 "
Tennessee R.	23.63 " "	21,400 "
Hudson R.	22.28 " "	4,500 "
Rio Grande	1.46 " "	14,000 "

The tributaries of the Willamette on the east are long and of steep gradient compared to those on the west. The river lies on the west side of the valley, which is high on the east (the Cascade Mountains) and low on the west (the Coast Range). In this respect the Willamette is somewhat similar to the river Po in Italy, where the stream has been forced to the south by the great burden of sediments brought down from the high Alps to the north. Many of the geological features of the Willamette River, Dr. Smith made clear, were pointed out several years ago by Dr. E. T. Hodge of the State College, when he was at the University of Oregon.

Regarding floods, it was stated that geological evidence indicated Pleistocene floods reached an elevation of over 400 feet above sea level. In recent times, however, the floods of 1861, 1890 and 1927 were recalled as especially damaging and, as

to the probability of their repetition, the doctrine of uniformitarianism was cited - what has been, will be again.

At the hearing in Salem, a few years ago, before the Colonels of the U.S. Engineers, for the purpose of learning the reasons for or against the proposed scheme of flood control, many learned and lengthy statements were presented, but the person who "stole the show" and did more to convince the Colonels than all the rest, was probably a little man over ninety years old, who, in a wheezy voice, told of how, in the flood of 1861, he rowed around in a boat over the area of what is now the intersection of State and Commercial Streets in Salem. That statement climaxed the hearing and the project was launched forthwith!

A review of the business and commerce of the Willamette Valley included such figures as 60 billion board feet of standing lumber in the eight counties; agricultural crops totalling nearly 51 million dollars annually; industries aggregating 286 million dollars. Some 1,600,000 tons of commodities and produce move between Willamette Valley points and the Portland gateway each year. Business of such dimensions warrants a liberal expenditure to protect it from periodical disruption due to natural causes which are not beyond the ability of man to control. That such damage is very real is indicated by official figures, recently issued, to the effect that in six counties, Lane, Benton, Linn, Marion, Polk, and Yamhill, the damage due to one flood was estimated at \$1,896,000.

In addition there is the constant loss due to unproductive land or inefficient land use, for want of proper drainage or irrigation.

In considering remedial measures the geological features of the stream and its basin generally must be taken into account. The nature of the materials which prevail in various localities; the stage of the stream in geological history; the steep gradient of the eastern tributaries, with their resultant power to transport materials. The law of such water transportation was quoted as follows:- "The power of a stream to transport materials varies with the velocity and, in any given section of the stream, this velocity varies as the cube root of the volume, or, in general, this varies as the sixth power of the velocity". Thus - if the velocity be doubled, the carrying power is increased 64 times!

The increasing of the velocity of a stream also adds to its lateral cutting propensities, causing meanders and oxbows. Some instructive aerial photographs, thrown on the screen later, showed striking examples of oxbow lakes in the Eugene area.

When a stream overflows its banks, its velocity is reduced, resulting in the dropping of most of its load of silt. This builds up the immediate banks, a process which, in the course of time, causes the stream to flow in a channel, the banks of which are higher than the valley floor. Tributary streams into the valley are thus compelled to flow parallel to the main river before they can find entrance. In the Willamette Valley, the Long Tom, Muddy and Pudding Rivers are examples of this effect. Such rivers are termed Yazoo streams.

The protective measures recommended by the U.S. Engineers after spending two years in an exhaustive investigation at a cost of over \$300,000, included seven dams impounding 2,326,000 acre feet in their reservoirs; new navigation locks at the falls in Oregon City; channel straightening and deepening to allow a minimum of 6 ft. to Salem, 5 ft. to Albany and $3\frac{1}{2}$ ft. to Corvallis; bank protection (revetments, etc.); fish facilities; irrigation and drainage.

The initial plan is estimated to cost 56 million dollars, of which the Engineers have recommended that the Federal government pay 46 million, the remainder to be raised locally, chiefly for relocating highways. The irrigation and drainage part of the Engineer's plan will come later and only after the people have voted for it.

The percentages of flood run-off controlled by the seven dams will be 75% at Eugene, 53% at Albany and 57% at Salem. The place to control a stream is near its headwaters, and all the dams are so located. With such percentages of the floods brought under control, the river will be deprived of most of its capacity for damage, which, after all, is the main purpose of the project. Were a flood, similar to the one in 1861, to occur now, it would cause damage to 7,000 farm units; 3,000 farms, villages and suburban homes; also 18 towns would be completely or partially under water.

Another important return on the outlay for this project will be in the idle and not very productive lands brought into production; some of this land, however, will have to be left for overflow areas. Other benefits include the rendering available of additional electric power, which may be a very important benefit (despite Bonneville) in view of the trend towards manufactures which are heavy power consumers, and the ever increasing migration towards the Pacific Northwest. It was noted in this connection that, just now, Bonneville is actually purchasing power from Eugene!

Any improvement in navigation is a stimulant to additional traffic; irrigation and drainage result in greater crop yields - a family on 40 acres of improved land is better situated than one on 160 acres with improvements; the lakes created by the dams will cause recreational centers to develop around those lakes. These, and other derivatives of the project, all mean an increase in the business and commerce of the region, as well as a stabilization of the economic outlook of the entire area.

Dr. Warren Smith's lecture, whilst outstanding in itself, was memorable for two other reasons. First, it was the first lecture of the Chapter to be held in the recently completed and thoroughly up-to-date science building, known as the "Everell Stanton Collins" hall of Willamette University; and, second, included in Dr. Smith's audience of nearly a hundred persons was Charles A. Sprague, Governor of the State of Oregon.

- Carl P. Richards

ERRATICS OF THE WILLAMETTE VALLEY AREA
Lecture by Dr. Ira S. Allison, Oregon State College,
and Vice-president of the Salem Chapter
May 15, 1941.

The term "erratic" is applied to any rock that does not belong in the immediate vicinity in which it is found, -hence, one that is "out of place" in its environment. Hundreds of these erratics are scattered over the United States. Those in the east and middle west were probably brought to their present locations by glaciers or the ice sheet which covered those parts of the country during the Ice Age. The erratics of the Willamette Valley, however, require a different explanation for their presence here. While mention is made of these stranger rocks in many of the earlier writings on the geology of this region no systematic study of them was undertaken until Dr. Allison began such a study in 1932. Since that time he has examined hundreds, probably thousands, of erratics in the Willamette and Columbia River valleys with the result that we now have available considerable data concerning them, and also a plausible theory as to their means of transportation.

Glacial erratics of the midwest usually show striations or scratches caused by the scrubbing of the ice and other rocks. Those of the Willamette Valley rarely show such striations due to the fact that they were floated in, and not pushed along by a glacier or ice sheet. They are usually angular in shape and are found lying on or in the valley fill. All are approximately of the same age, and are "fresh" (showing little weathering), which proves that they arrived in comparatively recent geological time. This time was probably the late Pleistocene or during the closing stages of glaciation - 15 to 18,000 years ago.

As all granite is very much alike it is almost impossible to trace the source of granite erratics of the Willamette Valley but there is, however, a peculiar type of porphyry which outcrops in western Idaho and at other places in the upper Columbia River drainage basin, and some erratics of this porphyry are found here.

Regarding the distribution of these Willamette Valley erratics, practically every road cut will show specimens of these "foreigners" in the silt layers which overlie the weathered lavas. They have been found up to elevations of 400 feet, and vary in size from small fragments to blocks nine feet long. The distribution seems to be general throughout the valley, with possibly a slight preponderance on the north and east slopes.

Along the Columbia river valley from The Dalles to the Pasco basin, erratics are encountered up to the 1100 foot level and even up to 2500 feet in the vicinity of Spokane. As to how these "tourists" arrived at their present sites, Dr. Allison suggests the following theory:

The hypothesis of a "Willamette Sound" or inland fresh-water sea, on which the icebergs floated, eventually to melt and deposit their loads of rock and silt over the Willamette Valley, offers too many almost insurmountable objections to be probable. It seems much more reasonable to assume that during the latter part of the period of glaciation, the glacial Columbia River became "ponded" by the formation of huge ice-jams aided by landslides of considerable proportions. This backed up the water above the ice-jams in the Columbia gorge and would account for the deposition of erratics at the higher elevations east of the mountains.

Below the Columbia Gorge, however, the river flows through a comparatively open region in which ice-jams would not be likely to form. How, then to account

for the depositing of erratics up to an elevation of 400 feet in the Willamette Valley? It is probable that, from time to time, the ice-jams of the Columbia Gorge broke loose, and that an enormous head of water roared down the valley carrying with it the floating bergs with their loads of rock and silt. It is probable, too, that at that time the floor of the Willamette Valley was somewhat lower than it is at present and that the valley served as a convenient "surge-pool" into which the piled-up waters of the Columbia poured. In support of this theory Dr. Allison points out the remnants of a number of ancient river channels which can be explained in no other way. A subsidence of even 100 feet in the Willamette Valley floor would easily account for the deposition of erratics up to the present 400 foot level at which they are found.

At any rate, the more than sixty persons who braved the rain to hear Dr. Allison's talk, and see the large number of lantern slides he has accumulated on the subject, felt more than repaid and we are proud of the fact that the Vice-president of the Salem Chapter is the one man who most thoroughly knows the ERRATICS OF THE WILLAMETTE VALLEY AREA.

‡ H.J.S.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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July 10, 1941

GEOLOGICAL NEWS-LETTER

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THE GEOLOGICAL NEWS-LETTER
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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

Just how can we summarize the multifold purposes of the Society in a phrase? The need for such a "motto" was discussed at the last directors' meeting, and in an effort to develop a slogan that can be used at the head of the News-Letter, we suggest a competition. What does the Society mean to you? What do you get out of it? If you can write this down in a sentence, it may mean that your words will be perpetuated in the masthead. The first suggestion is given above. Others will be printed as they are received, if the editorial board feels they have distinct merit. At a future meeting of the Society one will be adopted. Try your hand at this no-profit contest!

JEA

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

Friday Subject: MOUNT ST. HELENS, A SLEEPING VOLCANO.
July 11 Speaker: Dr. Donald B. Lawrence, University of Minnesota.
See Salem Chapter announcements for details on this talk.

Friday Subject: ANTARCTIC GLACIERS.
July 25 Speaker: Dr. Laurence McKinley Gould, Carleton College.
See Salem Chapter announcements for details on this talk.

TRIPS

Sunday Leader: A. D. Vance.
July 20 FOSSIL DEPOSITS WEST OF CASTLE ROCK, WASHINGTON.
Start from Public Market, Front and Yamhill Sts., at 8:30 a.m.

HOW ABOUT A FIELD TRIP TO FAIRBANKS?

"The huge gold dredges employed in working Alaska's enormous gravel beds are digging up many interesting things besides gold nuggets. Hundreds of tons of antedeluvian bones are washed from the frozen gravel beds, some of them, such as the Eohippus, the prehistoric horse, being 500,000 years old. This animal was a little larger than a rabbit, and its bones and tiny hoofs are found everywhere. Also the bones of larger animals are found often at a depth of 30 to 40 feet underground. Mastodon tusks of from 6 to 10 feet long are found in great heaps. In some instances the skeletal remains are perfect; in others badly scattered and broken in.

"Another interesting sight in Fairbanks in the summer time are the flowers grown from seeds evidently buried for centuries at a depth of several feet and washed out by the giants. These flowers grow on stalks higher than a man's head, with pale waxy looking buds having an odor stupefying to insects."

- Western Mining News,
June 1941.

(The miner that wrote this must have just come from the Big Rock Candy Mountains).

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; Rm.124, E.S.Collins Hall (new science building) Willamette campus; 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.

WORK NIGHT: First Tuesday of each month; Willamette Museum; 7:00 p.m. Work materials provided, and members are urged to bring in specimens for classification.

LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

Thursday Subject: MOUNT ST. HELENS, A SLEEPING VOLCANO.

July 10 Speaker: Dr. Donald B. Lawrence, Professor of Botany, Univ. of Minnesota.

Mt. St. Helens is not only a sleeping volcano, it is also our youngest local one, having erupted less than 90 years ago. In both these respects it affords valuable evidence for geological study. Realizing this, Dr. Lawrence has spent considerable time each summer during the past three or four years exploring the mountain's slopes and surroundings, investigating, on the one hand, the plant and tree life and, on the other, the geology of the region. The reciprocity of these two features reveals Nature's process of change in volcanic areas. The story is a fascinating one and will be brought to us, both verbally and by means of lantern slides, by one who has done a large amount of original research on the subject.

LECTURE Subject: ANTARCTIC GLACIERS.

Thursday Speaker: Dr. Laurence McKinley Gould, Carleton College, Northfield, Minn.

July 17 Dr. Gould was formerly second in command of the Byrd Antarctic Expedition 1929-30. Our Chapter is indeed privileged to have a visit from this internationally known scientist. His topic, too, is of great interest, for the Antarctic glaciers rank as the greatest ice streams on earth. Dr. Gould studied them closely during the 1200-mile sledge trip of the Byrd Expedition's geological party, of which he was the leader, and, in view of his extensive travels within both the Arctic and Antarctic Circles, as well as in other glacial areas, he is in a unique position to correctly appraise the nature and significance of these gigantic rivers of ice. Dr. Gould will also discuss other matters relative to the Antarctic Continent and his lecture will be liberally illustrated with lantern slides showing scenes and depicting conditions on that bleak but beautiful country. Tell your friends about this meeting, so that all who can may enjoy this outstanding occasion. Willamette University Chapel; 8:00 p.m.

Thursday Subject: THE PARADE OF THE TREES THROUGH THE AGES.

Aug. 21 Speaker: A. W. Hancock, Portland.

As an amateur student and collector of fossil life, Mr. Hancock has few peers. The lecture he promises us on what might be termed "the cycle of tree life", is the result of much study and observation and will be instructive to an unusual degree. A selection from his extensive collection will be on display.

THE SOCIETY UPON THE STANISLAUS

by Bret Hart

I reside at Table Mountain, and my name is Truthful James;
I am not up to small deceit or any sinful games;
And I'll tell in simple language what I-know about the row
That broke up our Society upon the Stanislow.

But first I would remark, that it is not a proper plan
For any scientific gent to whale his fellow man,
And, if a member don't agree with his peculiar whim,
To lay for that same member for to "put a head" on him.

Now nothing could be finer or more beautiful to see
Than the first six months' proceedings of that same Society,
Till Brown of Calaveras brought a lot of fossil bones
That he found within a tunnel near the tenement of Jones.

Then Brown he read a paper, and he reconstructed there,
From those same bones, an animal that was extremely rare;
And Jones then asked the Chair for a suspension of the rules,
Till he could prove that those same bones was one of his lost mules.

Then Brown he smiled a bitter smile, and said he was at fault,
It seemed he had been trespassing on Jones's family vault;
He was a most sarcastic man, this quiet Mr. Brown,
And on several occasions he had cleaned out the town.

Now I hold it is not decent for a scientific gent
To say another is an ass, - at least, to all intent;
Nor should the individual who happens to be meant
Reply by heaving rocks at him, to any great extent.

Then Abner Dean of Angel's raised a point of order, when
A chunk of old red sandstone took him in the abdomen,
And he smiled a kind of sickly smile, and curled up on the floor,
And the subsequent proceedings interested him no more.

For, in less time than I write it, every member did engage
In a warfare with the remnants of a paleozoic age;
And the way they heaved those fossils in their anger was a sin,
Till the skull of an old mammoth caved the head of Thompson in.

And this is all I have to say of these improper games,
For I live at Table Mountain, and my name is Truthful James;
And I've told in simple language what I know about the row
That broke up our Society upon the Stanislow.

The Salem Chapter will soon be (officially) six months old. Its "birth certificate" is dated November 28, 1940, but actually it was in existence before that date.

Recalling the fate of a similar Society, at the age of six months, and the publicity given it by Bret Hart, we deem it fitting that the proceedings be re-

viewed - and the moral drawn. The minutes of that previous meeting, as set forth by one "Truthful James", have been corrected by the Salem Chapter and we hope that sixty years from now they will still stand as amended.

THE SOCIETY UP ON WILLAMETTE SLOUGH

(with apologies to Bret Hart)

When Herman Clark of Salem put the Salem Chapter through
There were many willing helpers here along Willamette Slough.
With some thirty ding-dong-daddies, and some bachelors as well,
And a host of lovely ladies it can't fail to ring the bell.

A Society of Promise, and of real Achievement too,
With every member working - both the officers and crew.
We have no "Browns", no Abner Deans", upon our roster or our rolls;
We have no money in our jeans but do not crack our neighbors' polls!

There's a lot of fun and nonsense.- bits of information too, -
Passed around at luncheon meetings; why, then, are we missing YOU?
If you have a criticism you had better make it good
For the Baby Salem Chapter is aging "in the wood".

We have no Major Prophets, and no Minor ones, I vow,
To whom the humblest neophyte's compelled perforce to bow;
But all are searching earnestly for Nature's Truth to find,
As a source of relaxation and for stimulus of mind.

Some have more erudition and more knowledge of the Earth,
But these turn in and help the dumb,- of whom there is no dearth.
We've found no "mules", no "mammoths", in our journeys far and wide,
But a lot of friendly fellowship and some other things besides.

There's been no row in Salem like the one on Stanislaw,
With fossil bones a-flying - nor will there be, I trow;
The Chapter's still a-growing and with six months nearly through
Everything is bright and rosy up along Willamette Slough.

H.J.S. 5/7/41

FIGURE ON THIS ONE:

There were two cyclists, cycling towards each other. One was going 15 miles per hour, the other 10 miles per hour. They started 50 miles apart. A fly, flying 45 miles per hour, flew back and forth between the noses of the two until they met. How far did the fly fly?

Salem Chapter
CASH RECEIPTS and DISBURSEMENTS YEAR 1940-1941.

<u>Receipts:</u>		
Nov.27, 1940 to Jan.7, 1941, forty memberships @ \$1.00		\$40.00
<u>Disbursements:</u>		
Dec.7,1940, remitted to Portland thirty memberships @ \$.75		\$22.50
Jan.13,1941 remitted to Portland ten memberships @ \$.75	7.50	30.00
Feb.20, 1941, Balance on hand		\$10.00

Respectfully Submitted:
H. Mildred Stockwell, Treasurer

We have examined the books and records maintained by the Treasurer of the Geological Society of the Oregon Country and the above statement of receipts and disbursements for the period November 27, 1940 to February 20, 1941, and find same to be correct and accurately reflects the financial condition of the Society as of February 20,1941.

J. L. Kennedy
E. L. Minar
Audit Committee

THE RED BLUFFS TRIP
May 11, 1941

The trip was made jointly with the Mazamas and Dr.Hodge's class in field geology. The party met at the north end of the Bridge of the Gods and drove from there about four miles up an old logging road, then parked the cars and hiked three miles to the bluffs. There were frequent stops for rest and explanations of the topography by Dr. Hodge, who gave a short resume' of the geological work connected with the building of Bonneville Dam. Engineers in the early twenties made investigations for a private company with the idea of putting a power dam across the river and reported that it was not feasible except at a prohibitive cost owing to their not being able to locate bedrock. Later when Dr. Hodge was called by the government for a more thorough investigation, after careful and exhaustive study and exploration, he came to a conclusion contrary to the general impression: the great landslide as a whole had reached stability and the movement, such as it was, was only local and would not endanger the proposed dam. By use of extensive core drilling they located the rock upon which the power house was later built.

After the long three-mile trek through the hot sunshine the party came to the cool and welcome shade of the new forest growth which has sprung up on the little outwash plain from the bluffs. This forest cover consists largely of alders, maples and here and there a Douglas fir. Most of the latter show by

their curved trunks that the land on which they are growing has been subject to movement during their lifetime. Some of them were noted to have two and even three curves in their trunks, denoting as many landslides since they stretched up above the low forest growth beneath them.

After a little search for water it was finally located in a beautiful cool stream that tumbled over the bluffs and meandered down across the little outwash plain, a most welcome and refreshing sight for the thirsty crowd. Before the rest of us had had time to finish our lunches, Hancock, always the true explorer, had made a reconnaissance of the cliff back of our lunch place and brought back some samples for determination and discussion. One was a piece of carbonized wood which was found to be not carbonized by fire but by the slow process of time.

Dr. Hodge pointed out that there is a layer of peat several inches thick in the bluff which indicates that at one time when this was the top surface a lush growth of vegetation fifteen or twenty feet thick developed, which afterwards was covered over and pressed down.

After lunch most of the party scrambled up the scree slope to a place where there was a good view of all the surrounding country between the red hills and the bluffs to the south of the river. Dr Hodge proceeded to explain in detail the great landslide from the geologist's point of view and the origin of the legend of the Bridge of the Gods. The Indians had no word for bridge as we know the term so one morning when a Klickitat Indian came down to the river after the great landslide and found he could walk across, whereas always before he had to cross in a canoe, the foundation was laid for the mythical Bridge of the Gods. This slide was of enormous extent, four or five miles long and almost as wide. There are other slides up and down the Cascades which seem to be about the same age and it is probable that earthquake action was the trigger which set them off all about the same time. The dam was of sufficient size so that it literally pushed the river over against the south bluffs and dammed the water for a considerable time and made a lake much larger than the present Lake Bonneville. As the water backed up behind the obstruction the pressure became so great that eventually it burst through in a great flood and rushed on towards the ocean, leaving in its wake a changed topography, a large U-shaped bend in the river, a series of rapids which had not been there before, and many other physical changes.

There is a difference of opinion as to when this catastrophic landslide occurred. One conclusion is based on the study of tree rings by Dr. Lawrence. He counted the rings on large stumps which had been logged several years ago and also took many tree ring samples from trees still growing. He found no distortion of the rings in trees that were five hundred years old when they were logged and from this evidence is based the theory that the slide occurred at least five hundred years ago. On the other hand, we have considerable evidence that it was of a more recent origin, perhaps about the time of the Revolutionary War. The Indians, reckoning time by moons and winters, date the slide as having occurred about 170 years ago. The Spanish explorer Bruno Heceta, who in July 1775 anchored off the mouth of the Columbia, records in his notes that during the night a great flood of water came down and carried his vessel far out to sea. Could it have been the rush of water from the bursting of the dam of the Gods? Lewis and Clark, when they came down the river in 1805, noted that a great landslide had come down and changed the course of the river and estimated that it happened about twenty years previously. There must have been abundant evidence of its recent happening for these two trained observers to make this statement. Lastly we have the evidence of the drowned trees which were still in the position in which they grew and still undecayed up to the time they were removed during the completion of the Bonneville

project. Many of these old snags were exposed to the elements during low water of the river and were therefore more or less subject to decay. It seems highly improbable that these snags would remain for a period of five hundred years, without decay and disintegration.

At this juncture storm clouds began to roll in from the West and most of the party hurried back to the cars and arrived just before a downpour of rain. Dr. Hodge and eight or ten others who thought they should investigate just beyond "that little knoll over there" were not so fortunate and got more than a little damp. The wind which preceded the rain blew down a large fir tree across the road about a hundred feet from where the cars were parked but fortunately all the cars were below where the tree fell.

- H. L. Jennison

MOST ANCIENT RECORD OF LIFE?

A supposed fossil imprint which may be the earliest record of animal life on earth is being studied at the Smithsonian Institution.

It is an impression which appears to be that of the body of a jellyfish in a slab of fine-grained, red sandstone from rock strata in the Grand Canyon more than 500,000,000 years old.

Animal life, so far as the fossil record goes, starts almost in full flower in the so-called Cambrian age which began about half a billion years ago. Below them in time must have been countless generations of evolution. Yet the pages of the rocks are almost completely blank. All over the earth, wherever there are outcrops of pre-Cambrian rocks, paleontologists have sought for some record of animal life, with highly debatable results. About all they have found, until the discovery of the present jelly-fish, have been markings in sandstone that might have been made by crawling worms in the soft sand of some ancient beach.

Various reasons have been advanced for this. Nearly all Cambrian fossils are those of shell-bearing creatures who lived in shallow seas. When they sank in the bottom mud, the imprints of the hard shells were preserved. Perhaps, say some geologists, there was little calcium in the pre-Cambrian seas from which shells could have been formed. Perhaps the water was too acid to permit their formation. Perhaps life really originated on land and only took to the seas in the Cambrian period.

The fact remains that wherever life was, it left no unmistakable signs of its presence.

The present imprint was discovered in the Grand Canyon in 1935. It looks strikingly like positively identified jellyfishes from the Cambrian period and like the hardened, dried remains of these animals found along seashores today, and this is probably the correct interpretation.

The sandstone slab upon which the fossil is imprinted is marked on its upper surface by overlapping ripple marks. Minute sand grains are piled up into ripplelike overlapping layers, with the imprint crossing several of them. Exactly the same conditions can be seen today along the Atlantic shores, especially along Chesapeake Bay, where the jellyfishes, when left stranded, dry into slightly

shriveled bodied but still retain their general shape, before being covered by the sand layers of succeeding waves.

The best proof that this actually is the imprint of an animal is that the lobed structure is impressed upon the ripple marks. Other parts of the slab with exactly the same arrangement of sand layers should show similar markings if the specimen were inorganic.

- Smithsonian Institution News Release,
March 26, 1941.

ABSTRACT

Fries, Carl Jr., "Tin Deposits of the Black Range, Catron and Sierra Counties, New Mexico": U.S. Geol. Survey Bull. 922-M., 1940

Scattered over a region of 450 square miles on the west side of the Black Range in southwestern New Mexico are twelve areas of known tin deposits and five areas of reported tin deposits. In 1940 the Bureau of Mines carried on some actual underground exploration, and at the same time Carl Fries of the U.S. Geological Survey conducted a geological investigation.

This is an unusual occurrence of tin as the rocks of the area are younger rhyolite flows, tuff and breccia, basalt flows, and clastic sediments.

Stratigraphy: The oldest rock (1) is a rhyolite breccia more than 200' thick consisting of numerous thin flows of non-porphyrific rhyolite flows intercalated with tuff and breccia. This series carries traces of tin.

A massive porphyritic rhyolite flow (2) more than 500' thick, light red-brown in color lies conformably on the rhyolite breccia. The rock is 30-40% phenocrysts of clear quartz and sanidine. This rhyolite is altered to a porous white rock in bands typically $1\frac{1}{2}$ miles long and 200' to 1400' wide. In altering, the rock is bleached and porosity is increased 35 to 40% by decomposition and leaching of the glassy groundmass. Specularite and magnetite in minor amounts are formed as secondary minerals, at least in part derived from the glassy groundmass of the rhyolite. Tin in the form of cassiterite occurs in veinlets in this altered rhyolite.

After consolidation of the porphyritic rhyolite, erosion and faulting took place. The rocks following are (3) rhyolite breccia, (4) tuff and flows, (5) tuffaceous sandstone, (6) 150' of basalt flows, and then (7) 350 feet of sandstone and conglomerate. This series is conformable one with the other and lies with angular unconformity on the porphyritic rhyolite.

Occurrence of cassiterite: The porphyritic rhyolite carries the larger deposits of cassiterite. None of the formations above carry it, and only traces are found in the breccias below. The flow layers of the porphyritic rhyolite are steep and irregular and diverge upward forming a fan-like cross section. Alteration of the rock is parallel to the flow layers. Later zones of shearing cut the zones of alteration, crushing and brecciating the altered material. The parallel specularite-cassiterite veinlets are earlier than shear zones and independent of them.

The cassiterite occurs in widely scattered, northerly trending veinlets or stringers in the altered rhyolite. The size of these stringers is commonly 1 inch wide and 2 to 3 feet long, rarely they are 1 foot wide by 20 or 30 feet long.

The tin bearing stringers are composed mainly of specularite. Cassiterite forms up to 90% of the volume of the stringers but averages only 20 to 30%. The specularite is earlier than the cassiterite, which came up into open fissures already encrusted with specularite and, from centers of crystallization, grew as radiating fibrous concentric nodules. As these nodules grew, they coalesced and filled the fissures. Replacement of the specularite by cassiterite has also occurred, causing a large percentage of the cassiterite to be intimately intergrown with specularite. There are no sulphide minerals. Magnetite occurs in smaller quantities and is intergrown with the cassiterite. Not all of the specularite carries cassiterite.

The close association of specularite-cassiterite veinlets and regional alteration indicates that they occurred at nearly the same time, this in turn indicates the common origin of the altering and tin-bearing solutions. Fries expresses the opinion that the altering and tin bearing solutions were given off as a phase of the volcanic activity later than the altered zones. The fan-like flow structures indicate central vents subjacent to these altered zones.

Economics: Although the grade of the minable rock along the richest stringers is as much as 12 pounds to the ton, the stringers are so irregular as to make separate mining of them impractical. The grade of ore obtained by bulk mining would depend upon the frequency of stringers and the amounts of disseminated cassiterite in any minable block. Of 407 samples cut by the Bureau of Mines engineers, only 50 contained more than one pound of tin to the ton, and only 5 samples more than 5 pounds to the ton. Sampling indicates no appreciable amount of cassiterite disseminated in the country rock except immediately adjacent to the visible stringers. No bodies of minable size were found. The metallurgy of cassiterite, so intimately intergrown with specularite, is extremely difficult, and high recoveries would not be obtained.

Placer deposits in the vicinity were investigated, but because of arid conditions, of erosion and stream flow, concentration in placers was not high.

General conclusions: Prospecting for tin should not be limited to areas of old rocks of granitoid nature as cassiterite also occurs in acid flow rocks as fibrous, concentrically-layered wood tin, and more rarely as minute flakes and granules disseminated thru specularite. The deposition is limited to fissure veins and lenses and dissemination thru country rock is limited to areas measured in inches and not in feet or miles from these concentrations.

In areas of late volcanism prospecting might be limited to acid-type rocks showing hydrothermal alteration. Placer deposits of cassiterite from recent volcanics might be much more apt to occur in regions of humid erosion, where concentration ratios would be higher than in areas of arid erosion. Once cassiterite is discovered in streams, prospecting for the lode might be done by panning. Placer tin from recent rocks would be concentrically banded wood tin associated with specularite and magnetite.

- W.P.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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GEOLOGICAL NEWS-LETTER

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"The investigation of the earth sciences
can be a constant source of inspiration,
with discovery as a reward of diligence".

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.
TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.
LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.'s.

Friday Subject: ANTARCTIC GLACIERS.
July 25 Speaker: Dr. Laurence McKinley Gould, Carleton College.
See Salem Chapter announcements for details on this talk.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; Rm.124, E.S.Collins Hall (new science building) Willamette campus; 8:00 p.m.
TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.
WORK NIGHT: First Tuesday of each month; Willamette Museum; 7:00 p.m. Work materials provided, and members are urged to bring in specimens for classification.
LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

LECTURE: Subject: ANTARCTIC GLACIERS.
Thursday Speaker: Dr. Laurence McKinley Gould, Carleton College, Northfield, Minn.
July 17 Dr. Gould was formerly second in command of the Byrd Antarctic Expedition 1929-30. Our Chapter is indeed privileged to have a visit from this internationally known scientist. His topic, too, is of great interest, for the Antarctic glaciers rank as the greatest ice streams on earth. Dr. Gould studied them closely during the 1200-mile sledge trip of the Byrd Expedition's geological party, of which he was the leader, and, in view of his extensive travels within both the Arctic and Antarctic Circles, as well as in other glacial areas, he is in a unique position to correctly appraise the nature and significance of these gigantic rivers of ice. Dr. Gould will also discuss other matters relative to the Antarctic Continent and his lecture will be liberally illustrated with lantern slides showing scenes and depicting conditions on that bleak but beautiful country. Tell your friends about this meeting, so that all who can may enjoy this outstanding occasion. Willamette University Chapel; 8:00 p.m.

Thursday Subject: THE PARADE OF THE TREES THROUGH THE AGES.
Aug. 21 Speaker: A. W. Hancock, Portland.
As an amateur student and collector of fossil life, Mr. Hancock has few peers. The lecture he promises us on what might be termed "the cycle of tree life" is the result of much study and observation and will be instructive to an unusual degree. A selection from his extensive collection will be on display.

THE QUICK IDENTIFICATION OF THE STRATEGIC ORE MINERALS

by Wessley Paulsen

The Army and Navy Munitions Board has defined as strategic minerals those essential for the national defense, for the supply of which, in war, dependence must be placed upon sources outside of the continental limits of the United States. Because some of these minerals are not common and not among those which have been most consistently sought by the prospector, the description, mode of occurrence and simple chemical tests are given below. All of the chemical tests described have been used in the laboratory of the State Department of Geology and Mineral Industries and have been found to give consistent, accurate results.

The chemicals needed are few and inexpensive. They are as follows:

1. Lime
2. Sodium carbonate
3. Hydrochloric acid
4. Metallic tin
5. Borax
6. Nitric acid
7. Dimethyl glyoxime
8. Ammonia water, strong
9. Metallic zinc.

Test tubes are the only essential glass material (for the nickel test a glass funnel and filter paper are needed when impurities must be filtered off).

Description, Mode of Occurrence and Simple Chemical Tests for Strategic Minerals:

The strategic minerals include: Cinnabar, the ore of mercury; scheelite, ore of tungsten; pyrolusite and rhodochrosite, ores of manganese; stibnite, the ore of antimony; chromite, the ore of chromium; nickeliferous pyrrhotite and garnierite, ores of nickel; and cassiterite, the ore of tin.

CINNABAR: Mercuric Sulphide. It is 86.2% mercury and 13.8% sulphur. Cinnabar is recognized chiefly by its crimson red color and its high specific gravity, 8, which is just half that of gold and almost twice that of black sand. Prospecting is usually done by panning sands or crushed rock. The cinnabar grains form a brilliant red "tail" in the pan.
Occurrence: In veins with chalcedony, opal, and quartz, infillings in breccias, and as disseminated grains in porous rocks of all kinds.
Chemical Tests: The best test used is roasting in a closed tube. The supposed ore is finely crushed, mixed with an equal amount of lime and placed in a glass tube having one end sealed (test tube), and then roasted at a moderate temperature. Gray globules of metallic mercury collect in the upper unheated portion of the tube just above the powdered mineral.

SCHEELITE: Calcium tungstate. When pure, 82% tungsten. Difficult to determine in the field. Its appearance is very similar to that of quartz, but grades into dark yellow and buff. It has an unusually high specific gravity for a mineral without a metallic luster, and may be detected even when finely disseminated by crushing the rock and panning in the same manner as for gold.
Occurrence: In coarse grained granitic rocks and in veins, especially in and near limestone-granite contacts, associated with garnet, epidote and wollastonite.

Chemical test: The mineral may be decomposed by boiling in hydrochloric acid, leaving a yellow residue of tungstic oxide. If the residue is redissolved, tin added and boiling continued the solution first turns blue, then brown.

RHODOCHROSITE: A carbonate of manganese with inherent pink color. It is heavier than calcite or dolomite and softer than rhodonite, the pink manganese silicate.

Occurrence: In veins with ores of silver, lead and copper and with other manganese minerals.

Chemical tests: Soluble in hot hydrochloric acid with effervescence.

PYROLUSITE: Manganese dioxide. It is recognized by its color, softness (it will soil the fingers), and its iron black streak on unglazed porcelain. The percentage of manganese is highly variable.

Occurrence: A secondary mineral usually found in sedimentary rock. It is also found in veins with quartz and various sulphide minerals.

Chemical tests: Soluble in hot hydrochloric acid with effervescence.

CHROMITE: Chromite is a compound oxide of iron and chromium, 63% chromium when pure. It is very heavy, massive, iron black to brownish black and has a characteristic chocolate colored streak on unglazed porcelain.

Occurrence: Always is found in peridotite rocks and the serpentine rocks derived from them.

Chemical tests: There is no simple chemical test for chromium. The mineral, chromite, is usually identified by its physical properties.

STIBNITE: Antimony trisulphide, 71% antimony and 29% sulphur. Radiating groups of elongate striated crystals are very characteristic of the mineral. It is very heavy, soft, and has a lead grey color and streak.

Occurrence: Found in quartz veins or beds in granite and gneiss. Also occurs as replacement deposits in limestones and shales.

Chemical tests: No definite test, chiefly recognized by its low fusing point and the sulphurous odor when heated.

NICKELIFEROUS PYRRHOTITE: Pyrrhotite is a brownish bronze sulphide of iron. The nickel contained is in no definite proportion, varying from nothing in some pyrrhotite to a small percentage in pyrrhotite nickel ores.

Occurrence: In large masses associated with basic igneous rocks. Also in vein deposits and contact deposits between granite and limestone.

Chemical test: The most delicate and positive test for nickel is to dissolve the mineral in nitric acid, neutralize with ammonium hydroxide, filter any precipitate out, and then add to the filtrate a few drops of dimethyl glyoxime solution. A scarlet precipitate proves nickel.

GARNIERITE: A hydrous nickel silicate. It is earthy to fine grained in structure, and has a characteristic apple-green color.

Occurrence: In veinlets and as incrustations. It is very often associated with serpentine and chromite.

Chemical test: Is the same as that for nickel in pyrrhotite.

CASSITERITE: Also known as stream tin, and tin stone. Cassiterite is the tin dioxide, 78.6% tin when pure. It is usually finely granular as found in igneous rocks, and nodular and concentrically banded when found as placer tin. The color is black or brown, and the streak on unglazed porcelain is white, unusual for a black mineral.

Occurrence: In veins associated with quartz, and in or near granitoid rocks. A more common source is as rolled pebbles in placer deposits. Rarely it is

found as narrow stringers and veinlets in altered acid flow rocks.

Chemical test: When the mineral in question is large enough to be seen as a single piece, it may be tested by placing the mineral grain in a watch glass or test tube with zinc. Hydrochloric acid is added, the reaction between the hydrochloric acid and zinc causing the grain to become coated with a white to grey coating of tin. The metallic luster of the coating may be brought out by polishing. When not occurring in mineral grains, but finely divided in the rock, involved micro-chemical or spectrographic tests are necessary.

GOLD IS WHERE YOU FIND IT

In a summer long since over, there appeared in certain parts
A geologizing rover with an aptitude for charts;
His manners were patrician and his speech collegiate,
And his rock-wise erudition seemed both deep and up-to-date.

He spoke of schists and sulphides and of sedimentary zones,
Of sphalerite and sericite and correlated stones;
He was eloquent on shearings, displacements, dips and stresses,
On major faults and minor faults, intrusions and buttresses.

He named the varying strata with familiar nonchalance,
And was liberal with data on their known significance.
He scheduled ores micaceous, and discoursed of diorite,
Of shales carbonaceous, hornblende and hematite.

His work was scientific, he excelled in taking pains,
And, while loth to be specific in assessing any veins,
He in one place gave the ruling, "Little hope of values here" .

And some roughneck, short on schooling, mined a million there last year;
Not mine to science underrate - wealth follows oft behind it.
This tale is but to illustrate that "Gold is where you find it".

- Author unknown

FIGURE ON THIS ONE:

The Chinese head of a great business firm needed a new secretary. Advertising brought a thousand applicants, from which three of superior attainments were selected. To choose between these three as to their keenness and perception, the plan was devised as follows: "I will paint a cross on each of your foreheads", he said, "either black or white. I will seat you in a room facing each other. As soon as any or all of you see a white cross, start tapping with your foot. As soon as you can tell me the color of your own cross, rise, and come and do so." After being seated, all began to tap. After a moment, one man rose, and told the master that his cross was white, as indeed, were both the others.

By what process of reasoning, step by step, did he reach this logical conclusion?

(Last issue: 90 miles. It was two hours before the cyclists met.)

BOOK REVIEW

"The Sciences - A Survey Course for Colleges": (John Wiley and Sons, N.Y.),
edited by Gerald Wendt.

This series of books should be an outstanding contribution to the numerous efforts made in recent years to survey science as a whole and present it as an integral part of a liberal education. Its purpose is to attract and hold the interest of students in the study of science so that a larger percentage of future citizens will have a broad understanding of the universe and an appreciation of what science has contributed to the progress of mankind from the time of the cave man to the present day.

The volume treating meteorology, oceanography, and geology, is written by J. Harlan Bretz, professor of geology, University of Chicago. Dr. Bretz approaches the subject of "Earth Sciences" by depicting the boredom of Mr. American Citizen, on an excursion steamer, who, blind to the wonders of nature everywhere about him, moaned "Wish we were back in town - all you see is just land and water, land and water". The author then proceeds to set forth questions and subjects which, if understood by this man, would have kept his mind alert and added healthful pleasure to his leisure time spent with nature. Dr. Bretz has throughout the book adhered to his endeavor to present the problems as they appeared originally, to ask the questions the first investigators asked, to make interpretations and conclusions by the inductive method in logically connected steps and to "stand on verified fact when reaching into the tenuity of theory". He urges his readers to seek an appreciation of this method of scientific approach and its trustworthiness rather than a memorization of facts.

This small volume of 255 pages covering a condensation of the fundamentals of geology and related subjects, with its carefully selected bibliography, excellent illustrations and glossary, forms a sound foundation for continuation study, and as the editor states, "provides a key for the understanding of our environment and the possibilities inherent in science".

The book should be of special interest to the members of the Geological Society because the purpose which initiated its publication is similar to that which called our society in being: stimulation of the study of geology by the citizens of the country in ever widening circles. Some of our members, however, may question the reasons set forth by Dr. Wendt for the selection of this plan for promoting continuation study. Two of these arguments may well be mentioned here, namely:

That courses in science taught by successful specialists are primarily
for the training of more specialists; and

That the usual technical textbooks do not meet the need of college students or intelligent citizens in search of education.

We believe these premises are not applicable to Oregon in the field of geology.

There was such a large group of non-professional or amateur geologists in Portland who had completed extension courses and desired further direction and study that in 1935 our Society was organized to integrate and direct their interests. The professional members have furnished wise leadership and promoted necessary educational activities, which have stimulated continuation study in formal class work. Each quarter a large percentage of the student body of the extension course comes from Society membership. Under the interpretation of difficult problems given by Dr. Hodge in lectures and vivid chalk and blackboard illustrations, these amateur geologists follow through "ponderous technical textbooks" and find them interesting.

GEOLOGY AS A CULTURAL SUBJECT

(from "The Drift of Things", MINING AND METALLURGY)

We have long thought that some knowledge of geology should be a prerequisite for every college degree. With the average American traveling some seven thousand miles a year about his country, much of the passing scenery is meaningless without such knowledge. One sees only what he knows, as a German poet once said, and that statement applies particularly to the case in point.

Antioch College, in Ohio, publishes from time to time a little bulletin which is sufficiently short and so well written that we always take a few minutes to read it when it comes to our desk. Geology is a required science at Antioch, and we here reprint from ANTIOCH NOTES an explanation of why this subject is in the general curriculum:

"Physical science stands out as probably the crowning intellectual achievement of the race to date. As a method, science has not only performed brilliantly in its own domain, but is being applied, sometimes with startling success, to other areas of knowledge and experience. Some acquaintance with the fundamentals of chemistry, physics, and biology. . . is essential to every man and woman who hopes to achieve even a rudimentary understanding of the ruling ideas and temper of the modern world. . . There is, however, a fourth science which perhaps few institutions would consider a 'must'. . . - geology. Offered in the upperclass years, geology is important not only in its own right but as an introduction to the philosophy of science, and as one kind of longtime perspective on human life and human values.

"At first view, geology seems to consist of a mass of factual material that is both minute and dull. Underlying these facts, however, and made possible only by their patient accumulation, is a body of concepts both vast and thrilling. . . .

"The fundamental idea of the 'Introduction to the Earth Sciences', as it is called, is change - the ceaseless flow of matter through time, and the changing forms which it assumes. The course - lecture, discussion, and laboratory - is divided into four units. The first unit treats of the processes by which the solid-seeming earth is constantly being remolded - erosion, internal stresses and crumbling, vulcanism. The second unit deals with the universe of which the earth is a fragment - the extent of space and measurement of astronomical distances; the possible origin and evolution of galaxies, stars, and solar systems; and measurement of geologic time. The third unit deals with how time sequence in geologic formations is determined; theories on the origin of life; ancient lands and seas; and life as it has adapted itself to changing geography and climate. The final division of the course considers. . . the interpretation of landscape; the distribution of mineral and other resources and its effect on international relations; and finally, geology's perspective on the evolution of man and society, and its prognosis of the future.

"The student who assimilates these concepts should, at least, have an enlarged 'frame of reference' for his thinking, a quickened imagination, and perhaps a serener spirit with which to confront the complexities and crises of the world today."

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 15

PORTLAND, OREGON

August 10, 1941

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

344 U.S. Courthouse, Portland, Ore.

POSTMASTER: Return Postage Guaranteed

Portland, Oregon

August 10, 1941

Education, recreation, for the individual and for the family.

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway. A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday ANNUAL GEOLOGICAL SOCIETY PICNIC

Aug.22 Mount Tabor Park, 7:30 p.m. Entertainment will be a "Geological Amateur Hour", with songs, stunts, and variety acts. Auditions are now open for all volunteers to participate in the fun - if you can swing or sing, or are a musician, ventriloquist, poet, actor or acrobat, or know any one in the society who is hiding his or her light under a rock, please get in touch with Mrs. Kurtichanoff (SU 5416) or Mrs. Oberson (TR 6397).

Saturday NEAH-KAH-NIE MOUNTAIN TRIP

Sunday Caravan under the leadership of Dr. Courtland L. Booth. Headquarters Aug.23-24 at Neah-kah-nie cottage of Dr. and Mrs. C.L.Booth who will hosts for Sunday morning breakfast from 7:00 to 8:30.

Leave Portland at your convenience Saturday. Wolf Creek Highway via Necanicum Junction (see exhibit in filling station) and Nehalem.

Supper may be secured at the community house in Manzanita for 35¢. Meet at the Booth cottage early Saturday evening for a bonfire.

Sleeping reservations must be made with the trip committee chairman, A.W. Hancock, SU 5285, as facilities are limited at this time of the year.

After breakfast, drive to nearby rocks to examine peculiar exposures. Then to Short Sand State Park, Arch Cape and thru Arch Cape tunnel. Return to Short Sand Creek, taking your own lunch baskets on a $\frac{1}{4}$ -mile trail to Short Sands Beach. Then a 2-mile hike will be taken. Those not wishing to hike may remain at Short Sands where all will gather for lunch about 1:00 p.m. From there you are on your own.

Bring bathing suits and camera.

REMEMBER---Reservations must be made.

SOCIETY MEMBERS HONORED.

Oregonian, July 23d.-- "Chancellor Frederick M. Hunter recommended. . . an advisory board of the state system of higher education on educational problems of national and state parks in Oregon . . . which will carry on a program which received impetus from Dr. John C. Merriam, president emeritus of the Carnegie Institution, who regards Oregon as offering a uniquely rich field for research in natural sciences. Members of the advisory board are: Dr. Merriam, honorary chairman; Dr. R.W. Leighton, University of Oregon, chairman; Dr. Ira S. Allison, Oregon State College; Dr. John P. Buwalda, California Institute of Technology; Dr. George C. Ruhle, naturalist of Crater Lake National Park; Dr. E. L. Packard, Oregon State College; Dr. L.S Cressman and Dr. Warren D. Smith, University of Oregon; and Dr. Howell Williams, University of California.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month; Rm.124, E.S.Collins Hall (new science building, Willamette Campus; 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.

WORK NIGHT: First Tuesday of each month; Willamette Museum; 7:00 p.m. Work materials provided, and members are urged to bring in specimens for classification.

LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

CAN YOU DANCE? (Call SU 5416 or TR 6397)

Thursday Subject: THE PARADE OF THE TREES THROUGH THE AGES

Aug.21 Speaker: A. W. Hancock, Portland.

As an amateur student and collector of fossil life, Mr.Hancock has few peers. The lecture he promises us on what might be termed "the cycle of tree life" is the result of much study and observation and will be instructive to an unusual degree. A selection from his extensive collection will be on display.

CAN YOU SING? (Call SU 5416 or TR 6397)

The editor and manager of the News-Letter wishes to thank Mrs. Nellie Lange for the gift to the Society of two and a half years back numbers of the News-Letter.

DO YOU PLAY A TUBA? (Call SU 5416 or TR 6397)

NEW MEMBERS

Mr. and Mrs. John B. Cox	5602 SW Menefee Drive
Mr. George C. Taylor, Jr.	503 NE Laurelhurst Place
Mr. Donald O'Connell (JM)	424 SE 20th Ave.
Mr. and Mrs. Wm. C. Brown	1335 NE 76th Ave.

CHANGES OF ADDRESS

Miss Emma Nordgren	4936 NE Going St.
Miss Mella C. White	435 NE Laurelhurst Place
Mr. and Mrs. J. E. Allen	10006 NE Prescott St.
Mr. and Mrs. J. Martin Weber	4051 NE 23rd Ave.

CAN YOU ACT? (Call SU 5416 or TR 6397)

FIGURE ON THIS ONE:

A village in southeastern Oregon straddles a north-south fault line. For some as yet unexplained reason, those who live to the east of the fault always tell the truth, those who live to the west of the fault never tell the truth. A geologist, arriving late at night to study this phenomenon, and wanting to be sure that he camped on the east side of the fault to avoid any possibility of ill effects, accosted three villagers he met, to inquire of a camping place. Asking

number 1: "What side of the fault do you live on?" he received a reply in Basque, which he did not understand, so he asks number 2 to translate. Number two says, "He says that he lives on the east side of the fault". To make sure that he was getting the straight dope the geologist asks number 3: "On what side of the fault does number 2 live?" And receives the answer: "He lives on the west side of the fault". Now the problem is: Does the geologist pitch his camp with number 3?

(Last week's problem): The thought process of the winning Chinaman:

1. I can see two white crosses. 2. All three of us are tapping.
3. No one is leaving the room! 4. If my cross were black, one of the others could quickly tell that his own cross was white, and therefor would leave the room. 5. Therefore my cross must be white too.

ARE YOU A POET? (Call SU 5416 or TR 6397)

Dear Jim:

There hasn't been a letter for a long time about the Geological Society luncheons as it seems this is my busy summer. I have scads of notes about all the happenings and Miss Henley very nicely wrote up one of the luncheons for me- which I of course just as nicely mislaid. However, to give you a resume' of the events of the past month or so, I shall do my best in the shortest space possible.

A great many guests have been present at various times and some of these include the following:

Dr. "Larry" Gould of Minnesota.
 Wayne Lowell of Chicago and points west.
 Mr. and Mrs. Clair S. Altland, Pennsylvania.
 Mr. and Mrs. Frank A. Beane, Arizona.
 Dr. Hans Thalman, of Palembang, Sumatra.
 Dr. Arthur Jones' old physics teacher, Mr. Murphy, and his son.
 Reverend Mr. Montgomery.
 Eva Catlin

That list contains a sprinkling of geologists, school teachers, and what have you.

As far as specimens are concerned, that would be an endless list for there are always specimens. I'm going to list some of them without special reference to the luncheon at which they were presented, so here goes.

Mr. Carney: Phantom line XI - Brazil
 Double Nodules - Oregon
 Mr. Minar: Levanto Marble - Italy
 Dr. Booth: Realgar Xls.
 Mr. Libbey: Free gold.
 Mr. Hancock: Plume agate.
 Mr. Vance: Oysters (fossil, of course)
 Mr. Allen: Cassiterite crystals - Alaska
 Asbestos - Oregon

Further search rounds up Miss Henley's notes and I'll include them.

"As usual at the summer luncheons, guests were many and interesting. Among them was Dr. H. C. Harrison, from the New York College of Ceramics, now a resident

of Portland, in charge of the spectrograph at the State Department of Geology and Mineral Industries, and a prospective new member for our society.

"Lloyd Ruff presented as his guest Dick Mote, with a master's degree from Oregon State College, now at the University of Minnesota.

"Miss Mella White was accompanied by Miss Bach, a teacher at the Ockley Green school, and Geary Kimbrell by his daughter.

"Dr. H. L. Underwood, though a charter member, attended the luncheon for the first time and brought his nephew, Jack Judson, a geologist from South America.

"Dr. Larry Gould was there - of course we're all looking forward to his coming lecture. He sounds like a most interesting speaker.

"Dr. Booth presented his cousin, Mrs. Whitney, from Texas City, Texas, a flourishing little town in which is being located the only tin smelter in the United States. Its engineers are from Holland and the tin is being imported from Bolivia. Mrs. Whitney promises to send us specimens later on.

"The younger generation was well represented by Lotus Simon, Ellen James, and Donald O'Connell. Donald is now a full-fledged junior member and brought some very interesting specimens of cassiterite from a stream bed in Alaska, which were a new form of this mineral to some of our professional geologists. Cassiterite, as you know, is a tin oxide which has been mined for hundreds of years in Cornwall, England, and Alaska has one of the small deposits found in this country.

"Among other minerals exhibited were the beautiful brown crystals of vanadinite and descloizite from Mexico, brought by Dr. Booth. Mr. Nixon showed some lime nodules in bentonite from the Mojave Desert 40 miles east of Barstow, and a large specimen of magnetite from Shasta Dam. Dr. Francis Jones brought a large fragment of garnet schist, and Mr. Libbey a good sized geode containing cinnabar from the new Cordera Mine now being opened by the owners of the Horse Heaven Mine. Miss Henley had a small light blue specimen called bruceite and a tiny quartz crystal in galena, both from Nevada."

I shan't be writing again very soon as I'm going to be rather busy for the next couple of months, thus missing quite a few of the luncheons. The best way of course of knowing what goes on at the luncheons, as well as the meetings and field trips, is to be present in person, and I am only sorry you can't be here.

- Katie

REPORT OF THE G.S.O.C. RESEARCH COMMITTEE

The Geological Society is now of school age--seven years old; it arrives there as a healthy organization, well-grounded in the fundamentals of general geology. For many of us it is a hobby, pursued with varying degrees of intensity, with the purpose of carrying us away from the cares of an ever complex world. To others it may help fulfill the desires of an intellectual curiosity. Some few of us make its fascinating mysteries our chosen profession. To all, it brings closer the appeal of nature's greatest laboratory--the great outdoors.

The Society has made many contributions to the geological knowledge of the Oregon country, but its studies have only begun to tap the possibilities of such a great and varied field of research. Within the realm of its possible endeavor there is much important work to be done in the various fields of geology. The research committee believes that the Society should sponsor investigations and research on a scientific plane, that will make worthy contributions to the geologic knowledge of our State. To this end the research committee invites additional suggestions to be added to the program outlined below, and above all urges the participation of all members of the Society in this program. The success of the plan is dependent on a sufficient number of members being interested and active to insure completion of a project without its becoming tiresome.

It is the intention of the research committee to sponsor from time to time both continuing projects and projects slated for completion within the current regime. Progress to date has been slow chiefly because of the busy summer season. Three projects have been organized and are under way as follows:

Printed forms for reporting fossil localities are in circulation and individual committee members are responsible for coordinating given areas of the State. It is the special desire of the committee to record all new localities discovered and all the old localities visited by the caravans or by the individual members. Get your forms from any of the following:

L. L. Ruff:	Southern Willamette Valley
Salem Chapter: Glen C. Paxson,	
Research Chairman	Central Willamette Valley
A. D. Vance	Coast Range
R. C. Treasurer	Southwestern Oregon
H. B. Schminky	Southeastern Oregon
Mr. & Mrs. A. Barr	North central Oregon
J. E. Allen	Northeastern Oregon
A. W. Hancock	Central Oregon

An addenda to the Bibliography of Oregon Geology has been started under the editorship of L. L. Ruff and R. C. Treasurer. The initial phases will be handled by the Geological Journal Club which meets twice a month and is composed for the most part of Society members, who have already divided up the various publications to avoid duplication of effort.

The natural building stones used in Portland buildings and store fronts are of fascinating variety, to say the least. The Society is very fortunate in having as a member Mr. E. W. Minar, who is thoroughly familiar with the stone industry. Through his able cooperation the committee expects to have some interesting data on the subject in the near future.

- Lloyd L. Ruff, Chairman

THE LIFE HISTORY OF THE HORSE

Part I - Tertiary Horses

by W. Claude Adams

The life history of the horse began with an ancestral type of a very small animal no larger than a squirrel and developed through a long line of evolutionary changes into the noble and intelligent animal we know today. The horse likely arose from an extinct group of horse-like animals of the Ungulata, the Condylarthra, of which the Phenacodus is the best known genus. These Eocene animals had five toes and walked with the sole of the foot partly on the ground. The first clearly defined horse is the Eohippus, the remains of which are found in the Lower Eocene rocks of six to twenty-five millions years ago. From Eohippus on, the horse has a clear family tree, much clearer than man himself.

Authorities differ as to where the horse originated. Some assert that he first arose in the Utah-Wyoming region, spreading from there into Texas, Mexico, and South America, eastward into territory as far as New York and westward to the Pacific. The bones of his descendants are found in the Rancho Brea pits of California, in the John Day beds of Oregon, in the Bad Lands of Nebraska, and in other localities. The horse existed as far north as Alaska, whence he passed by way of the land bridge over Bering Straits into Asia. Others claim that Eohippus came from Asia, and that the evolution that took place there paralleled that which occurred on this continent. But we know that there were nine to twelve distinct species of true horses in North America during pre-glacial times, varying in size from a very small specimen in Mexico to one much larger in Texas, for since the primitive five-toed antecedent of the horse, a corresponding number of stages in its life history are recognized from as many formations where the fossil remains have been found.

The most primitive form is the Lower Eocene Hyracotherium or Hyrachyus, which was somewhat tapir-like. The form is rather obscure, because only the skull has been found and it is not known how many toes the feet possessed. The skull is preserved in the British Museum.

The other and better known early form is the Eohippus, or Dawn Horse, found in the Lower Eocene basin of Green River, Wyoming, and in New Mexico, and described by Marsh. It represents the earliest known animal which is clearly akin to the horse family. The Eohippus has been described as a small animal ranging from the size of a cat to a fox, with a heavy head, short neck, a long lower lip, arched back, and hind legs too long to match the front legs. He had four toes on his front feet and a vestige of the first digit in the form of a splint. The hind foot has three toes and splints of the first and fifth digits easily discernible in some species.

Next in the Middle Eocene (Bridger beds) came the Orohippus, also described by Marsh, an animal resembling the Eohippus in size and structural features, except that the rudimentary thumb or dew claw is dropped, leaving the four toes on the fore foot.

Dr. Condon says: "Scarcely any lesson in Paleontology has in it more of interest than that of the intermediate stages of progress that connect the functional hoof of the Tertiary horse with the rudimentary splint of the living horse of the present time. Here in the Shoshone land of our story - the eastern Oregon of today - are the archives of this horse history of the past. In short, in these

Shoshone rocks of the Miocene age (now mostly Oligocene-Ed.) we see God's creative work of the ages in transforming a five-toed animal to one of a single digit. It is the revelation of this creative process that makes the fossil horse of Oregon so full of scientific interest".

Oregon's record of the prehistoric horse may be divided into three periods of development, the first, middle, and last. The First Period began in the Upper Oligocene when the horse had attained the size of a sheep and had lost its fourth toe. There were nine species called Miohippus in Oregon listed by Osburn, one of which, and a very important member, is Anchitherium Condoni, Leidy 1870, now Miohippus Condoni, Bridge Creek, Oregon. This was a typical three-toed horse of the Lower Lake country of the Miocene era. The Condon specimens of the jaws and teeth of the Anchitherium are particularly well preserved, with teeth beautifully agatized. Quoting from Condon: "Many of these Anchitherium fossils indicate a really beautiful little animal of graceful outline about the size of an antelope, bringing to that early period a truthful prophecy of the highest type of our modern horse. And so abundant were they on the hills of Shoshone that fragments of skeletons are found in nearly all its fossil beds." Dr. Condon relates that it was of one of these handsome fossils of the teeth of Anchitherium from the lower beds of the John Day that "an experienced stableman once exclaimed, 'Full mouth, five years old past. Horse? By George! it is!'"

The Middle Period which embraces the three-toed horse of the Mid-Miocene is represented by the Hypohippus in Colorado and Oregon which Osburn has called the three-toed "Forest Horse", because of the adaptability of the wide hoofs and substantial side toes for traversing soft ground.

Another genus allied to this Mid-Period was Parahippus, the toes of which are slender and do not touch the ground. It shows evolutionary changes by the presence of a layer of cement in the depressions of the teeth. The Merychippus is the most important representative of this Middle group. Its side toes no longer reach the ground and resemble splints.

In the last stage of the three-toed horse, three genera appear, first, in the Upper Miocene, or as Condon states, in the Early Pliocene, the Hipparion, about the size of an ass, occurring in the Upper Lake and closely related to the Merychippus. Condon's foot of the three-toed horse Marsh called Hipparion, but it is now classed as genus Merychippus. It is a half-way type in the stage of development, the side toes becoming more slender and the vestigial toes almost reduced to splints and the teeth showing greater areas of cement.

Two allied forms followed, the Pliohippus, a more modern form of the Upper Lake bed, and the Protohippus. The Ellensburg horse known as Touchet horse found in a stone quarry in 1866 near that location was first thought to belong to the Protohippus, but was later classified by Dr. Merriam as Hipparion Condoni. These later forms approached the modern horse, with the middle toe becoming larger, the side toes becoming splints, and the species differing only in the skull, shape of the hoof, and the less length of the molar teeth.

The John Day beds have yielded many valuable specimens, among which is a perfect head of the three-toed Merychippus which Dr. Condon sent east for identification and classification. It was kept there until a few years ago when, on demand, it was returned to Dr. Condon's grandson, Ormand R. Bean, State Public Utilities Director. The eastern Museum coveted it for its collection. Mr. Bean values this specimen at \$5000.

The three-toed horse, when found by Dr. Condon, startled the scientific minds of the world. This discovery was only ten years after Darwin's theory of the Origin of Species came out. When Marsh of Yale saw the bones of the foot of the three-toed horse in Dr. Condon's collection in 1871 or 1873, he was so delighted that he sat up far into the night to assemble and sew the bones to a cardboard with darning needle and thread. He begged Dr. Condon to sell the specimen to him for the Yale collection, but Dr. Condon could not part with so valuable a find. When he exhibited this specimen of the three-toed horse, paleontologists knew of but one other in the world - a cast of the foot of the Hipparion found in France.

Finally, in the Late Pliocene or Early Pleistocene of the Quaternary, comes the modern horse - Equus. The gradual changes in which the parts become more horse-like may be noted in the shape of the head and elongating the neck, in the increasing length of the crowns of the teeth, and absence of pronged roots. From the ancestral type having five toes, the digits have been dropped, first the thumb (1), then the little finger (5), then the index (2), and fourth finger, leaving the middle digit (3) which becomes the hoof of the horse. The hoof becomes rounder, the splint-bones shorter, and the second bone of the leg more rudimentary. Today's horse is walking on its middle finger and middle toe nails. Thus the evolutionary change is complete.

ARE YOU A TUMBLER? (Call SU 5416 or TR 6397)

BOOK REVIEW

"Our Trembling Earth", by Joseph Lynch, S.J. (Dodd-Mead 1940)

The director of the Fordham Seismological Laboratory (one of the best equipped in the world) answer the queries of laymen who are puzzled by the scientific mysteries of "earthquake recording" in an entertaining fashion. In an attempt to make somewhat abstruse matter clear to anyone, Father Lynch has, from the seismologist's point of view, perhaps slipped in part into the pitfall of oversimplification, while still leaving many of the problems unexplained from the point of view of the man on the street.

But this is of little importance, for not only does the book clarify such questions as where earthquakes occur, what earthquakes are, how earthquakes are located and identified, and what the value of seismology is to the general public, to geology and to the petroleum industry, but it also explains in an easily understood manner the basic geophysical theories of the origin of mountains and continents and the composition of the interior of the earth.

Rather picayunish criticisms might be made concerning the misplacing of several of the plates (we never did find one of them referred to in the text) and the lack of adequate references and bibliography, but all in all the book is a definite contribution to the literature designed to popularize science, and it does tell us why Jesuit priests are so often occupied with geophysics!

- J.E.A.

ARE YOU A DRUMMER? (Call SU 5416 or TR 6397)

- THE EARTH IS LIFE -

The Tie of the Soil : The Strongest Human Instinct

Every component ion of our physical selves is of the earth.

Our nourishment is of the earth.

Our wearing apparel is directly, or indirectly of the earth. .

Our sheltering abode is of the earth.

The gold and silver in our pockets are of the earth.

An intense curiosity about the world of nature and all

The handiwork of it's Creator fill with awe and

Inspire in us a deep appreciation of the goodness of it all.

Then comes the fellowship of our kind - men women and children;

Then our faithful aides and friends : fish, birds and animals.

Then the fruits, flowers, grains, vegetables, grasses, trees and all-

Co-ordinating for the welfare and happiness of the whole.

Oh the wonderful world of mountains, plains, valleys, rivers, lakes, seas,

Sunshine - Moon, and our neighbor planets and stars.

With childlike wonderment and exultation for all the

Beautiful in this world. It then is perfectly

Natural for me to want those whom I know and love to be

Attune with my viewpoint in the spiritual appreciation

Of this our beloved mother-earth - from whose bosom we come

And to whose bosom we return in that great Day.

- Hazen Maynard

GEE-OLO-GEE -- A GEOLOJOKER

(With apologies to the Composer of "The Man on the Flying Trapeze")

by Dr. Arthur C. Jones.

There was once a young fellow of promise and pluck,
He was headed for fame, but he had some tough luck;
Doctor Hodge got him started to studying rock,
He's a bug now on ge-ol-ogy.
Oh, his friends have all left him in sorrow
And his frat pin's in permanent hock,
While he wanders about and you may hear him yell,
'Come and see what I've found in this rock!"

OH!

That crazy young man with his ge-ol-gees
He whacks at a pebble and says, if you please;
"I think this is granite, or mica, - or cheese",
While his love she has wandered away.

OH!

That wearing young man with his ge-ol-ogees
He gulps Doctor Hodge's fine spun theories,
He argues his points in the cold winter's breeze
'Til everyone wanders away.

GEOLOGICAL NEWS LETTER

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

Gather information on minerals, rocks, and fossils;
Study them in laboratory, library, and lecture hall;
Observe how they reveal the past history of the earth;
Comradeship of like interests binding the whole together.

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TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday ANNUAL GEOLOGICAL SOCIETY PICNIC

Aug. 22 Mount Tabor Park, 6:30 p.m. Entertainment will be a "Geological Amateur Hour", with songs, stunts, and variety acts. There is still time for volunteers to participate in the fun - if you can swing or sing, or are a musician, ventriloquist, poet, actor or acrobat, or know anyone in the Society who is hiding his or her light under a rock, please get in touch with Mrs. Kurtichanoff (SU 5416) or Mrs. Oberson (TR 6397).

Saturday NEAH-KAH-NIE MOUNTAIN TRIP (NOTE CHANGE IN PLANS)

Sunday Headquarters at Manzanita Community House. Meet there Saturday Aug. 23-24 evening and at 9 a.m. Sunday. Due to the illness of Dr. C. L. Booth, these changes were necessary.

Leave Portland at your convenience Saturday. Wolf Creek Highway via Necanicum Junction (see exhibit in filling station) and Nehalem. Supper may be secured at the community house in Manzanita for 35¢.

Sleeping reservations must be made with the trip committee chairman, A.W. Hancock, SU 5285, as facilities are limited at this time of the year. After breakfast, drive to nearby rocks to examine peculiar exposures. Then to Short Sand State Park, Arch Cape and thru Arch Cape tunnel. Return to Short Sand Creek, taking your own lunch baskets on a $\frac{1}{4}$ -mile trail to Short Sands Beach. Then a 2-mile hike will be taken. Those not wishing to hike may remain at Short Sands where all will gather for lunch about 1:00 p.m. Bring bathing suits and camera.

REMEMBER---Reservations must be made.

"In general, let every student of nature take this as a rule - that whatever his mind seizes and dwells upon with peculiar satisfaction, is to be held in suspicion; and that so much the more care is to be taken, in dealing with such questions, to keep the understanding even and clear".

- Francis Bacon, "Novum Organum"

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, Rm.124 E.S.Collins Hall (new science building) Willamette Campus; 8:00 p.m.

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall at the time specified.

WORK NIGHT: First Tuesday of each month; Willamette Museum; 7:00 p.m. Work materials provided, and members are urged to bring in specimens for classification.

LUNCHEONS: Every Tuesday; Pollyanna room, Argo Hotel; 40¢.

Thursday THE TULE LAKE PETROGLYPH: an interpretation of what it signifies.
Sept.18 Speaker: Horace J. Smith, Salem.

This petroglyph is so extensive and so remarkable that it was made a National Monument. What it represents has been the subject of much research without arriving at satisfactory conclusions. Mr. Smith has studied it intensively for several years, and has developed a solution of the enigma which is startling, yet rings true. He will present the whole subject to us, and fully illustrate it with lantern slides, this being the first occasion on which his conclusions have been publicized. It is not often we have lectures on the original research of one of our own members, as this one is. So reserve this date and participate in an event of outstanding interest.

FIGURE ON THIS ONE: A trader in deepest Africa has no scale, but he does have a 40-pound grindstone. He wishes to break this into only four parts, so that with these four parts and a simple bar balance he will be able to weigh all even pound weights from 1 to 40 pounds. What are the weights of the four pieces?

(Last problem): No. 1 may have lived on either side of the fault - his answer would be the same in either case. Therefore no.2 was truthful; no.3 was a liar, and the geologist does not stay with the latter.

"The critical habit of thought, if usual in a society, will pervade all its mores, because it is a way of taking up the problem of life. Men educated in it cannot be stampeded by stump orators and are never deceived by dithyrambic oratory. They are slow to believe. They can hold things as possible or probable in all degrees, without certainty and without pain. They can wait for evidence and weigh evidence, uninfluenced by the emphasis or confidence with which assertions are made on one side or the other. They can resist appeals to their dearest prejudices and all kinds of cajolery. Education in the critical faculty is the only education of which it can be truly said that it makes good citizens."

- Walter Sumner: "Folkways"

"There lies a green field between the scholar and the poet; should the scholar cross it he becomes a wise man, should the poet cross it he becomes a prophet".

- Kahlil Gibran

LUNCHEON NOTES

August 7th:

An attractive visitor was Miss Jean Jewett of the Oregon Welfare Commission, a prospective new member with a keen interest in geology in general and rocks in particular.

Among members rarely seen at the luncheons were Mrs. Courtland L. Booth and Miss Kata Roza. Salem was represented by Mrs. Carl P. Richards. The Richards are dividing their time between Salem and Portland while Carl R. is engaged in this area.

Mr. Vance was accompanied by Mr. Laurgaard, former City Engineer of Portland.

Miss Fowler brought a beautiful piece of green smithsonite, as big as man's head, which came from New Mexico. This mineral, we learned, derives its name from the same Smithson for whom Smithsonian Institution was named, and is found in especially beautiful crystals in New Mexico and Greece.

Leo Simon showed us five concretions containing fossil leaves of Pennsylvanian age, and a rock showing ^{fossil} mud cracks and ripple marks.

Tom Carney's specimen was a polished half section of an unusual Burns nodule containing fine hairlike crystals.

Miss Henley had two specimens of rose quartz, a quartz crystal, and a twinned amethyst crystal.

August 14th:

Conspicuous by their absence were most of the regular attendants of the weekly luncheon, including the president. His chair was ably filled by Tom Carney until the arrival of Leo Simon, vice president, who was detained by business. Leo brought along some pages from several issues of the Oregon Journal, showing the publicity received by the Men's Garden Club (Leo included four times on one page!)

Messrs. Vance and Wade left this morning, we were told, on a fossil hunting trip. (This sounds promising).

Mr. and Mrs. Minar were accompanied by their daughter, recently returned from a three weeks' stay at Lake Tahoe. She exhibited a sample of the rock used to pave the streets in Virginia City, Nevada, a greenish stone impregnated with flecks of something that looked like gold - but probably isn't.

Mr. Minar presented several of us each with a nicely polished specimen of La Vinta marble from Rome - a mottled brownish red and dark green stone. He also showed some pieces of travertine marble from Montana.

Lotus Simon received congratulations for having had a birthday the day previous. (Sweet sixteen, Lotus?)

Charley McCarthy was there, in person, as the guest of Dr. Adams. This particular Charley McCarthy, however, is the principal of a high school in Worcester, Mass., and judging by appearances has plenty of personality.

Tom Carney's specimen was a large and very beautiful piece of polished fluor-spar from Texas, showing green, lavender and white.

Suggestion for the Trip Committee: Dr. Francis Jones says that the fresh cuts in the Wilson River highway should be a fertile field for fossil hunters; also that very nice zeolites can be found there. The trip should be made while the cuts are still fresh. This highway has never previously been covered by the Society.

(N.B. In future the price of the luncheon at Treasure Island Restaurant will be a minimum of 50 cents).

SUGGESTIONS ON WRITING TECHNICAL ARTICLES

Robins Fleming, in a letter published in the July issue of CIVIL ENGINEERING, makes some good suggestions to the would-be author of technical articles. It is well worthwhile, he says, for any engineer who has an article in mind to ask himself his motive in writing. If he is enthusiastic over a subject and wishes to transmit his knowledge to others his motive is a worthy one and he should proceed. On the other hand, some merely want to see their name in print, as was evidently the case with an engineer, just graduated, who asked the librarian of a technical library for a list of subjects suitable for articles. It was his intention, he said, to write for the technical press. Such articles could not be more than compilations.

The following rules for writing are suggested:

- (1) Be sure that you have something worthwhile to say.
- (2) Read what others have written on the subject.
- (3) Have in mind your readers - express yourself in language as simple as you would use in conversation.
- (4) Avoid irrelevant matter; never try to show how much you know.
- (5) Be generous with your credits.
- (6) Give special attention to the introduction and to the conclusion.
- (7) Bear in mind the logical presentation, sequence of sentences, and clearness. After writing examine carefully for errors in spelling, grammar, and punctuation.
- (8) If time permits, lay the manuscript aside for a month; then reread and revise. Boil it down!
- (9) If practical, have the manuscript examined for correctness by one well acquainted with the subject, and for clearness by one who has little or no knowledge of the subject.
- (10) Be prepared to have the manuscript returned as "not available". Better not talk much about it until it has appeared in print.

- by E. H. Robie, MINING & METALLURGY,
November 1940.

NORTHERN LIGHTS, or THE AURORA BOREALIS

by J. Hugh Pruett

Astronomer, General Extension,
University of Oregon

PART I: The Sunspots and Aurora of July 4, 1941.

On the afternoon of July 4, 1941, the writer went to the observatory to determine if there were any sunspots worthy of exhibition to the summer school astronomy class early the following week. Since we are now approaching the time of minimum in the 11-year spot cycle, there is a possibility that for days absolutely no disfigurement may be found on old Sol's beaming countenance.

The first telescopic glimpse of the sun was thrilling. One of the queerest spots ever viewed was splashed on the disk not far from its apparent center. The inside dark umbra was double. The lighter surrounding penumbra had an unusual stringy effect and held throughout its area numerous black umbral particles which normally are all together in the spot's center. Mighty forces were evidently at work in that region of the sun.

Later reports from Mt. Wilson indicated that a brilliant eruption of hydrogen gas started from this solar region at 7:10 a.m. July 4th, and was very likely the cause of telegraphic and radio disturbances on that day and the one following. At the University of Michigan's Lake Angeles solar station, Fergus Wood (son of Prof. L. A. Wood of the University of Oregon), the only member of the staff who was not able to get away for the holiday, hearing over radio that transatlantic short wave was in great difficulty, went at once to the observatory and obtained motion pictures of the solar disk. He found very striking arched filaments of brilliancy circumstriding the spectacular spot for about three-fourths of its circumference.

When night fell, laymen in great numbers all over the country unknowingly became co-workers of the professional observers. The direct view of the great sun spot was gone, but mighty forces somehow connected with it were surely reaching across vast interplanetary spaces and agitating the higher reaches of our atmosphere into a luminosity distinctly visible despite strong moonlight. Reports from several western states - in response to the writer's newspaper request for data - indicate that the auroral display after midnight was about as fine as any ever witnessed in our part of the world. Numerous observers said they had never seen any thing like it - "nor do I ever expect to again".

During the evening hours about all that was noticed was a very evident brightness of the sky over the northern horizon. Streamers were doubtless active also, but ordinary auroras require a moonless sky for detection. But after midnight the activity became so intense that it broke all orthodox rules of visibility. There seem to have been three periods of unusual activity.

Shortly after midnight, the northern sky became brighter. Then in a little while faint fingers began to reach upward toward the zenith. Soon great half circles of light with their ends seemingly touching the NE and NW points of the horizon formed and swelled extremely rapidly upward, about three per second sweeping past any reference part of the sky, according to one report. Another observer described these circles as "rolling up as the surf on a beach".

Finally this manifestation died down. But from about 1 to 1:30 a.m. a different - but not as bright - display took place. It took the shape of more upright flares. Many who reported did not distinguish between these two stages.

But all definitely listed the next stage as something very distinct and unbelievably spectacular. It occurred around 2 a.m. (Pac.Stand.Time) shortly after moonset. Observers seem to try to out-do one another in describing the surprising forms and the marvelous colors playing over the sky. In fact, when at the greatest intensity, the entire sky, with the exception of a small section low in the south, was suffused with the soft auroral light and bright shafts that produced an illumination on the ground about equal to that of a full moon. Let us quote from a few:

"Then began the most brilliant, awe-inspiring sight I have ever seen. It was a combination of very brilliant vertical flashes that seemed to center a little south of overhead. There was a perfectly clear place right there, then very brilliant white light all around it which held steady for a while. During the grandest part I could hardly believe it! One brilliant band that crossed Mars had a very decidedly light flame tint that gradually changed to rose-mauve. Other streaks showed a light green. In the NE and NW where brilliant bands touched the horizon there was an unearthly brilliance past my describing, as if a might furnace might be just out of sight". (Della Blaisdell, Weston, Oregon).

"At 2 a.m. it started in again. It covered the northern horizon with great fields of color. In the west it was mostly reds and pinks, while in the east it was all blues, lavenders, and very deep purples. North and directly overhead the color was either a brilliant white or a dazzling icy green. Great waves anchored at their ends rose from the horizon and expanded as they went higher. It was light enough to distinguish objects half a mile away. It seemed the whole horizon was a battery of floodlights pointed at a spot which seemed to be overhead". (Corporal George Levick, Portland).

"At first it seemed that brilliantly tipped shafts of light were swinging to the zenith with incredible speed. As the moon set, these short shafts were seen to be the more brilliant segments of complete concentric circles which were pulsating from every point on the horizon to that magnetic zenith. I faced the south for a long while, so surprised to find 'Northern lights' coming from the south. It gave one the feeling of standing inside a cool crystal globe entirely surrounded by flames. To me it seemed as though the circles of light as they rushed toward the zenith repulsed each other, pressing back the light into a more solid band which stayed in that fantastic pattern until distorted into new forms by the load of several more circles of light". (Marie McLear, G'engary, Idaho).

Letters came from as far east as Utah. J.F.Peters, night watchman at Paradise Inn on Mt. Rainier doubts if any one had a better observation point than did he. He describes the streamers and the rare corona (the circle of light in the magnetic zenith a little south of the geographical zenith) "as though the celestial sphere were a giant igloo with its opening to the south -- in the region of Cygnus".

A man - presumably young - near Spokane left a dance shortly after midnight. He evidently had trouble explaining to his folks why he didn't arrive home until 2.45 a.m. He wrote, "I am glad your article came out in the paper to prove the real beauty of them after we explained our coming in so late after looking at the Northern lights".

Auroras have most surely been observed ever since primitive man lifted his eyes skyward. The explanations given for them have at times been most fantastic. Most of the weird tales of mysterious armies seen marching in the sky can likely be traced to certain forms of the aurora. In II Maccabees (chapter 5), one of the apocryphal books of the Old Testament, we find the following: ". . . There were seen horsemen running in the air, in cloth of gold, armed with lances. . . encountering

and running one against another, with shaking of shields and multitudes of pikes. . . "

In 1917, when the aurora borealis was unusually active, many stories circulated as to their source. Some thought they were signal lights from our own military forces; others, that the enemy in secret hideouts were working for our destruction.

No entirely satisfactory explanation has ever been given as to the primary cause of these eerie lights. An early attempt is found in the oft repeated assumption that they are sunlight reflected high into the frosty air from the huge icebergs in the polar regions. Several objections confront this theory, but one good one should refute it. The lights are seen during midwinter nights when the sun is shining nowhere on our side of the earth in the region north of us, and when continuous darkness prevails over the Arctic ice. Summer auroras might stand some chance with this theory were there not other adverse arguments.

No attempt will here be made to do more than barely touch on the facts and theories of the aurora. Anyone desiring to study extensively-- and mathematically - into the subject is referred to about 70 pages of subject matter in The Reviews of Modern Physics for January 1936, January 1937, and October 1937. Much information may also be found in the Encyclopaedia Britannica.

(PART II "The Theories of Origin of the Aurora" to follow).

WHAT IS A MAMMAL?

Oh, what in the world is a mammal?
Have you puzzled a lot about that?
It may be a man or a camel,
It may be a seal or a bat.

And really its size doesn't matter,
It may be a mouse or a whale.
It may gallop on four hooves that clatter,
Or silently swim with its tail.

Though 'tis not a bird that wears feathers,
It may fly, it may swim, it may creep.
It may roam through the world in all weathers
Or spend the long winter asleep.

But whether its coat is like shoddy,
Coarse as wire, or finer than silk,
A mammal wears hair on its body,
And feeds its young babies with milk.

THE LIFE HISTORY OF THE HORSE

Part II - Quaternary Horses

by W. Claude Adams

After the long series of evolutionary changes which brought the horse down to something of the type we know today, it became extinct for a long period and the next time the horse appeared in North America as a well-authenticated matter of history was in 1519 when Cortez brought sixteen of them to Mexico - desert horses perhaps of Arabian strain, but more likely the Barb, domesticated in northern Africa, and some few of the Jennet breed. From this stock it is generally thought that the subsequent horses of North American have come.

One writer said: "The Eohippus, a homely youth, strayed from Oregon, and years later (grown strong and handsome) returned home via the back door, home from his tour of the world in twenty-five million years. He found none of his kin alive. The last native horse had died fifty to one hundred thousand years before".

Just what caused the extinction of the horse in North America has long been a conjecture among scientists. Dr. Osburn thinks the tsetse flies may have been responsible for its extinction by producing sleeping sickness. Within six months time, two of these flies were unearthed in Colorado in the Miocene strata. Other theories include change of climate, humidity of the soil, sudden fluctuations from heat to extreme cold, long continued rainfall, subsidence of the ground and flood conditions resulting in a dearth of forage, and last of all and no doubt the most important, volcanic eruptions, proof of which is shown by the fact that remains of the horse have been found buried in volcanic ash.

One thing is certain, within the time of man in America no native horses, wild like Tarpan the wild horse of Asia, have lived. Tarpan, properly named *Equus caballus przewalski*, is found in the steppes of Tataria and Mongolia and on the Gobi desert, quite pure in stock, and some mixed herds on the Russian frontier. Tarpan is the only original wild horse in existence today. He is small, with a large head, short upright mane, and in the winter has long, soft, furry hair of tan or mouse color. He may be a pure blood descendant of the Eohippus.

A horse bearing a class resemblance to Tarpan is painted on the walls of the Magdalenian caves in France, incised on the ivory artifacts of Aurignac, and carved on the rocks of Thebes, Nineveh, and on the marble walls of the Parthenon. The horses of that classic day were domesticated and were used in wars for drawing chariots, etc. It is thought that the horse was once used for food, as indicated by the bones of one hundred thousand of them found at the site of a Solutrian encampment of prehistoric date in France.

The story of how the horse was brought to North America by the Spaniards is as romantic as the exploits of the Spanish conquerors themselves. When the Mohammedans took possession of Spain, they brought their horses with them, and 800 years later the Spanish explorers brought horses from the same stock over the ocean to Cuba, and from there to Mexico in 1519, where they were used in the conquest of that country. Casualties in battle reduced the number of Cortez's sixteen horses to twelve, the "Twelve Immortals". Reinforcements of horses came from time to time, consisting of twenty brought by Alvarado who joined Cortez at Vera Cruz before the conquest was completed, and 980 by Narvaez later. The survivors of these and the remnant of the 115, some say 237, which were landed in Florida by De Soto in 1539 and later abandoned on the west bank of the Mississippi River, form the stock from which sprang

the wild horse herds of Mexico and Texas known as Mustangs and which subsequently overran the prairies and spread eventually to the Pacific states, according to the theory of Clark Wissler. Many of these wild horses were captured and trained as mounts by the various Indian tribes. Interbreeding developed the piebalds or pintos of white, spotted with the original bay or dun color of the Spanish horse. The highly domesticated Spanish horse when turned loose became completely wild.

The Bronchos are not a separate breed, but are merely the Mustangs of unconquerable spirit and irascible temper that refused to succumb to the domestication of the Indian, and the white men in the pushing of the frontier westward. It is the descendants of these bucking, fighting outlaw Bronchos that one sees in the Wild West shows and rodeos.

The Mustangs degenerated in size but were hardy, sure-footed horses and were used extensively as cow ponies, western cavalry mounts, by trappers and for the pony express. They exhibited great endurance and needed no forage other than what could be obtained by grazing at night.

Francis Haines in The American Anthropologist, First Quarter 1938, refutes the theory of the Cortez-DeSoto horses as progenitors of the horse of today, and sets forth the improbability of the few survivors being able to withstand the attacks of predatory animals and Indians, and the rigors of the wild state.

As early as the eighth century legend tells of the introduction of the first horse to northern North America when a Spanish bishop, fleeing the Moors, crossed the western sea and established the Seven Cities of Cibola north of the Rio Grande river. The location of the mythical Seven Cities with their wonders of gold, turquoises and emeralds became the goal of later explorers and missionaries. Fray Marcos de Niza, a missionary, came back to his Spanish settlement in Mexico with glowing tales of treasures to be found above the Rio Grande. Coronado set out in 1539 with a large company of 250 horsemen to find the Seven Cities, but turned back after searching in vain from California to Kansas. Another expedition under Fray Augustin Rodriguez in 1581 with "ninety horses with coats of mail" also proved a failure. It is not recorded in the accounts of the expeditions that any of these horses or their offspring were turned loose, therefore it is supposed the men returned home with their mounts. This conclusion discounts of the possibility of these horses being the originators of the Plains horse.

A more logical theory is that presented by the history of Juan de Onate, who asked permission of Spain to colonize north of the Rio Grande. He was not interested in gold, riches, and plunder, but rather in founding a new empire in a vast, interesting, unpopulated country. The 400 colonists brought with them 150 colts, 150 mares, 25 stallions and 25 mules and settled down in 1598 and soon after founded San Fe - "Holy Faith" - but were massacred in 1680 by the Indians about Albuquerque, with only a few of the Spaniards able to escape and reach El Paso to tell the story. The Indians took possession of the horses which had increased greatly in numbers in the 82 years of the white man's stay. In this length of time the Indians had learned the uses and something of the care of the horse and coveted the prize of the several hundred fine animals so much that they did not hesitate to wipe out the colony and preempt the horses. In the custody of the Indians these horses were protected from predatory beasts and were more likely to survive than the Cortez-deSoto animals. Onate explored from Kansas to California, and in his travels over the whole Southwest he found no traces of the strays or the offspring of Cortez's horses from Mexico or those from Coronado's and de Soto's expeditions which supposedly had been populating the plains for fifty years. Thus it seems reasonable to credit the Onate horses with being the principal progenitors of the modern horse, which pushes the date ahead from 1519 to 1598.

A CRETACEOUS WASP'S NEST FROM UTAH

The comb of an 80,000,000-year-old wasp nest--the earliest known relic of the social insects on earth--has just been added to the collections of the Smithsonian Institution.

The fossil, dating from the upper Cretaceous geological period when the great dinosaurs were coming to the end of their dominance, may mark a significant turning point in the history of life. At about this time, it is explained by Dr. Roland W. Brown of the U.S. Geological Survey who describes the specimen, there was a great evolutionary outburst of flowering plants which hitherto had occupied a minor place in the plant kingdom. A few million years later, in the Eocene or "dawn" age, they were to attain the dominance in the plant kingdom which they have held ever since.

It now seems likely, Dr. Brown says, that blossoms and social insects, indispensable partners ever since, developed at essentially the same time. Presumably the blossom with its pollen came first but it would have been of little advantage to the plant and probably would have soon disappeared had pollen-carrying insects not come into the world at the same time. It was a fortuitous combination and has determined the face of nature ever since.

This is also the first fossil evidence of the development of "society" in the world--the partnership of great numbers of free individuals in building a home and providing a community livelihood. Ever since, in spite of the great social progress of man, this has been exemplified chiefly by the social insects.

The fossil was found by Dr. J. B. Reeside and Dr. C. E. Dobbin of the U.S. Geological Survey in southwestern Utah. It came from a rock stratum relatively barren in other evidences of ancient life. There were a few fragmentary, unidentifiable leaves, some silicified wood, and a fragment of bone.

Apparently the wasp nest fell into mud which covered it over, forming a mould. The original material of the comb soon disappeared but the form was left. The mud was afterward bound together in an iron solution, resulting in a hard concretion in which the form would be preserved indefinitely.

There were no remains of the builders of the nest, Dr. Brown says, but it is very similar to the type built by some extant species of colonial wasps. Originally, he says, it probably was made of a tough, papery material which would be much more likely than the similar waxy comb of the bee to escape destruction long enough for the mould to form.

- Smithsonian Institution

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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Geological Society of the Oregon Country

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We are still waiting for some more contributions for our "mast-head". You have all read (we hope) several that have been proposed so far at the top of this first page - we believe that several more should be tried out before any one of them is chosen for a permanent motto or slogan. Why haven't we heard from some of the old editors of the News-Letter or some of the Past Presidents? Dr. Hodge, surely you have some ideas? Ray Treasher, let's hear from southern Oregon.

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday JOURNEYS IN COLOR THROUGH THE NORTHERN ROCKIES.
Sept.12 Still pictures by O.F. Stanley and Tom Carney; movies by Bruce Schminky and Myrtice Fowler.

Four vacation trips by members of the society through Rocky Mountain, Waterton, Banff, Kootenai and Glacier National Parks have resulted in some eight reels of colored motion pictures and hundreds of color slides. These will be shown by the above with appropriate running comments at the Public Service Auditorium, 8:00 p.m.

Saturday Trip: WARM SPRINGS INDIAN RESERVATION.

& Sunday Leaders: L. L. Ruff and A. D. Vance.

Sept.13-14 Drive to Simnasho, via Government Camp, Bear Springs, and Wapanitia.

Meet there at 3:30 p.m. (Better leave Portland by noon). Will study new road cuts in John Day Beds, and visit caves; ending up at Kah-ne-ta Hot Springs for the night. Sunday, will go down the Warm Springs River to the Deschutes in the morning, returning via the loop around the "north block". Afternoon will be spent at the Vanora Grade leaf locality, and on return trip via Miller Flat, Hee Hee Butte and the Bear Spring Road. Bring Hodge's map of the Madras quadrangle, or at least the North Central Oregon map, Warm Springs topographic map, or Mount Hood Forest map.

NEW MEMBERS

Mr. N. Papazian

703 NE Halsey St.

CHANGE IN ADDRESS

Mr. and Mrs. J.R. Collins
Miss Helen C. Brady

10017 NE Shaver St.
2138 California St. NW.
Apt. 201, Washington, D.C.

LUNCHEON NOTES

August 21:

Attendance was back to normal, with a small table in use for the overflow. Leo Simon again presided, when Kenneth Phillips was delayed in arriving.

We learned with sincere regret of the illness of Dr. Booth and Mr. Libbey. Best wishes for a speedy recovery! We shall miss Dr. Booth's leadership on the Neahkahnie trip - to say nothing of that promised breakfast.

Mrs. Eliza Stevens of Bonneville brought two guests - her niece, Miss Betty Stevens, and Mrs. North, the postmistress at Bonneville.

Miss Ava Bickner received special mention, as this was only the second time she has been able to attend a luncheon meeting.

Mr. W. R. Millar, auditor for the Telephone Company, was presented by Tracy Wade, who said Mr. Millar was a good hunter and good fisherman, and should make a good geologist.

John Allen made an appeal for reports of the trips and the Friday lectures for the News-Letter, saying none had been turned in for the past six months. (Any volunteers?)

Messrs. Vance and Wade were back from their fossil hunting trip on the private preserves of Mr. Hancock - comprising the whole of Eastern Oregon - and brought some interesting specimens. Mr. Wade had a nice fat ammonite and a collection of cinnabar specimens from the Horse Heaven mine. He neglected, however, to put a "take one" sign on the latter - an oversight, no doubt. Mr. Vance produced a fossil land snail and a portion of the skull of a rodent, and both had sections of the jawbone of some prehistoric animal containing vicious looking teeth apparently well preserved.

Mr. Calef showed some good sized sections of drill core from an oil well in the Ventura oilfield of California, on which Clair Holdredge gave an explanatory talk, saying it was Pliocene sediment derived from metamorphic and granitic rock. It is one of the most prolific oil producing sections of the world.

Mr. Stanley brought several pictures taken on his Canadian trip, including the Valley of Crooked Trees and a picture of himself taken at Mt. Edith Cavell.

Ken Phillips was back from a trip to the Nisqually Glacier on Mount Rainier where he went to make a topographic survey to determine the glacier's rate of recession. Incidentally, he reported having to compete on the highway with, apparently, every piece of motorized equipment owned by the United States Army. He told of having climbed Mount Adams on Sunday with the Mazamas. Among high lights of that trip was the finding of a ptarmigan there, said to be the farthest point south this bird has ever been seen, as well as several sandpipers. At the top, at an altitude of about 12,000 feet, he visited some old sulphur workings and in a small cave in which there were fragile stalactites and stalagmites of sulphur he found the bodies of four small birds, which had sought refuge there and been asphyxiated by the fumes. Two of these, an Arctic horned lark and rosy finch, he brought back and turned over to Stanley Jewett to be preserved.

August 28th:

Kenneth Phillips had two chunks of sulphur from Mount Adams. These were taken from the opening of a small fumarole. The gas had condensed into sulphur.

Mr. Wade: Map of the Sumpter quadrangle. Available to members. John Allen commented on the map to this effect: The field work was done by Geological Survey in 1908 and 1909, and 1912 and 1914. Published a couple of short papers. Maps never published. Notes have been in files of Survey ever since. Geology hasn't changed. Only discrepancy would be in the mines; more of them. Four million dollars produced from one property; twelve million from another. (North Pole Columbia lode).

Mr. Vance had a fossil crab from Short Sand Beach, found on the Neahkahnie trip. Ellen James also had a fossil gastropod from the same locality.

Tom Carney showed some lovely tiger eye crystals.

Dr. A. C. Jones recently returned from British Columbia with some rocks of basaltic origin; one piece of peaty type.

Several guests. John Allen's guest was Forest Hubbard from Sumpter. Mr. Stanley's guests were Dr. A. E. Mattern and the city's new sewage engineer, Mr. Bartow.

The Jones's guests were quite interesting - Harold Bean and Mrs. Philpoe. Harold Bean is the great grandson of Dr. Condon.

September 4th:

"School days", illness and other causes apparently thinned the ranks of the luncheon attendants as only 17 members and no guests were present. Mr. Libbey is still unable to be out and John Allen is confined to his home for a few days. The return of Dr. Booth was greeted with applause. Salem was represented by Mr. Reeves.

Ken Phillips brought some pieces of tufa rock resembling petrified wood; Mr. Vance showed a small artifact. A box of garnets in garnet schist was passed around with a "take one" sign, donated by R. F. Henley of the Mineral Society of San Francisco.

NEWS OF THE MEMBERS

If the news of the Society's meetings and trips received as much publicity as several individual members have been getting in local papers during the last few weeks, we should not lack for new members! Here are a few gleanings from the daily press:

Oregonian, Aug. 14th: Dr. Adolph Weinzirl, city health officer since 1937, resigns to become professor of hygiene and public health at the University of Oregon Medical School.

Sunday picture section of both papers for Aug. 17th contained photographs of the Men's Garden Club outing, in which Leo Simon was very much in the

foreground. Leo was also mentioned in Dean Collins' column. What kind of a penstemon was it, Leo?

Oregonian, Aug.20th: The Mazamas met Wednesday night at Mr. A. W. Hancock's home for supper and an inspection of his geologic museum.

Oregonian Aug.28th: C. Frazier Booth, son of Dr. Courtland Booth and a senior at Yale, has just returned from a tour with the Yale Glee Club to South America, where they sang negro spirituals, classical numbers, and Finnish and Norwegian songs in Brazil, Uruguay, Argentina, Chile, Peru, and Panama. He reports that governmental goodwill tours are getting our southern neighbors' goat, but that unofficial visitors are received with open arms.

Oregonian Sept.4th: A. W. Hancock entertained the Oregon Agate and Mineral Society, Friday night, September 5th, at his home.

Wessley Paulsen showed up at the luncheon August 28th, having returned from a month's stay near Marshfield, where he has been representing the State Department of Geology and Mineral Industry in the drilling program of the U.S. Geological Survey and the W.P.A. on chromite-bearing back-beach sand deposits.

*

Lloyd Ruff returned about the same time from a junket to central Idaho for the Army engineers. Still hunting damsites - and he reports that there are some honeys in that rugged part of the country.

*

Thanks are due Mrs. Charles Crogster for the gift of back numbers of the New-Letter.

*

THE OCCURRENCE OF HISINGERITE IN OREGON

According to Dana's "System", hisingerite is an amorphous, compact mineral with conchoidal fracture and no cleavage; color black to brownish black; lustre greasy; streak yellowish brown; hardness 3; specific gravity 2.5-3. It has an uncertain composition, but is essentially a hydrous ferric silicate, with approximately 35 percent silica, 40 percent iron oxides, the rest being largely water, with minor amounts of magnesia, alumina, and other impurities.

Larsen lists it as an isotropic mineral with an index near 1.66; opal-like, and in part finely crystalline. It is decomposed by acid.

A sample of grey porphyritic andesite submitted the DOGAMI turned to have as a vesicle filling a mineral similar in the above physical characteristics. It is not believed to have been reported from Oregon or California before.

Sept. 4th: A. W. Hancock entertained the Oregon Agate and Mineral Society, Friday night, September 5th, at his home.

"Be as bold in the conception of hypotheses, as rigorous in their demonstration".

- Charles Richet

Wessley Paulsen showed up at the luncheon August 28th, having returned from a month's stay near Marshfield, where he has been representing the State Department of Geology and Mineral Industry in the drilling program of the U.S. Geological Survey and the W.P.A. on chromite-bearing back-beach sand deposits.

NORTHERN LIGHTS, or THE AURORA BOREALIS

by J. Hugh Pruett

Astronomer, General Extension,
University of Oregon

PART II: The Theories of Origin of the Aurora.

It has long been known that a close connection exists between unusual sunspots, auroras, and electric and magnetic disturbances in the earth. It is generally assumed that the sunspots are the cause of the rest of the list, yet more cautious scientists say we do not know. It may be that all of these things, sunspots included, are brought about some cosmic force of which we know nothing as yet.

Let us consider some well known laboratory phenomena. A long glass tube with tight metal caps at each end is set up in a dark room. The metal ends are connected to the terminals of an induction coil. One end cap has in it a stop cock to which a pump for exhausting the inside air may be connected. At normal air pressure inside the tube a moderately strong induction coil will produce no visible electrical discharge between the ends.

Now start the air pump. After the exhaustion has gone on for some time, faint flickers of beautiful colored light will occasionally be seen along the length of the tube. Later, lashing ribbons will give greater light. Finally the entire volume of the tube will be filled with a soft nebulous glow. (Neon street signs are an example). Under proper conditions, rings of more intense light move along the tube through the fainter luminosity.

But if the pumping is continued, the light finally grows fainter. When a very high vacuum is obtained, the internal glow ceases entirely. If the electrical pressure is high enough it may be shown that a "cathode ray" discharge is taking place through the tube. This is nothing more than a stream of electrons, or bits of negative electricity, moving at the rate of thousands of miles per second. The electron stream cannot be seen but it may be detected by the line of light it makes by impingement on a longitudinal screen coated with a phosphorescent paint and placed inside the tube. A magnet placed near the glass tube will cause the luminous line to be deflected somewhat from its straight course. The electron stream constitutes an electrical current, so is "subject" to the well known left hand motor rule of physics.

We thus find that when the air density is too high or too low, no nebulous glow is visible in the interior of the tube. In between, conditions are right. In the free air above the earth an air pump is not used to produce rarefaction. This condition is found by going to greater and greater heights. There are evidences that some air - extremely rarefied however - exists for a few hundred miles above the surface. It is calculated that at 35 miles the density cannot be over $1/30,000$ of its surface value.

Since about 1880, a favorite theory held by many scientists is that northern lights are caused by streams of electrons shooting from the sun, likely from very active spots, and passing through - or being stopped by - the upper air where the density is of the right value to produce a glow. Dr. Stormer, the Norwegian authority on auroral phenomena, holds to this view. Elaborate diagrams and models have been constructed to prove that theory and phenomenon agree. It is shown that those electron streams which arrive in the vicinity of the earth strongly react with the earth's magnetic field. By applying the left hand motor

rule it may be shown that they will be deflected from a straight-line course and will move in a large curve around the earth, thus easily getting onto the night side. Spiraling down the earth's magnetic lines of force they get into the rarefied upper atmosphere and cause the auroral glow, either directly or by induction effects.

Despite the favor this theory still enjoys, many flaws are found in it. Hulbert and Maris of the Naval Research Laboratory have advanced a somewhat different one. They assume that when the sun is very active, sudden blasts of ultraviolet radiation are sent out from it. This intense energy is absorbed by the atmosphere at a height of around 125 miles. Portions of this energized air are ionized and blasted out to distances as great as 25,000 miles. This sudden outward movement of ions causes such a current of electricity that strong magnetic disturbances are induced in the earth. Sometime within less than a day these ions descend toward the earth - due to gravity - and produce auroras as they get into the upper air. Since magnetic disturbances are often detected many hours before auroras are seen, the authors have at least fitted their theory to observed facts. Stormer's theory still has more followers.

It is generally known that in northern regions auroras are more spectacular and occur much oftener than in our latitudes. There is a general tendency to believe the maximum effect would obtain at either the geographical north pole or at the magnetic pole, which is northern Canada at about 70 degrees latitude. This is not the case. There is a so-called auroral pole in Smith's Sound off Greenland at latitude 81 degrees. But not even here are displays at a maximum. The greatest auroral intensity occurs almost in a circle 23 degrees from the auroral pole. This irregular oval runs across the extreme northern parts of Canada, Alaska, Siberia, and Norway. Almost daily activity occurs in these regions.

Maps are constructed on which lines - isochasms - are drawn through places of equal number of displays per year. (See figure 1). The numbers on the lines indicate the average occurrences each year. Portland is given five, San Francisco one, and Mexico City one-tenth (meaning one in 10 years). Auroras are almost unknown in equatorial regions, yet there is a record of one seen in Peru.

The aurora borealis has its counterpart in the southern hemisphere where it is known as the aurora australis, or southern lights. The most thrilling of descriptions of such a phenomenon is found in Admiral Byrd's book, *Alone*. (pp.208-209).

The question is often asked, "Just where in space are the displays one may see from any locality - let us say Portland? Are we seeing "long distance" from the Arctic regions?" On July 5 last could the visible activity seen in the zenith and south of it have been north of us? No. It was in the direction it seemed to be, where, if Stormer's theory is correct, the

Fig. 1. Map showing the frequency of occurrence of auroral displays in the Northern Hemisphere. The numbers on the lines indicate the average number of auroras per year seen in the regions which they cross.

Fig. 2. Aurora Borealis of Aug. 12, 1919, as seen from Ogunquit, Maine.

(Courtesy of American Museum of Natural History)

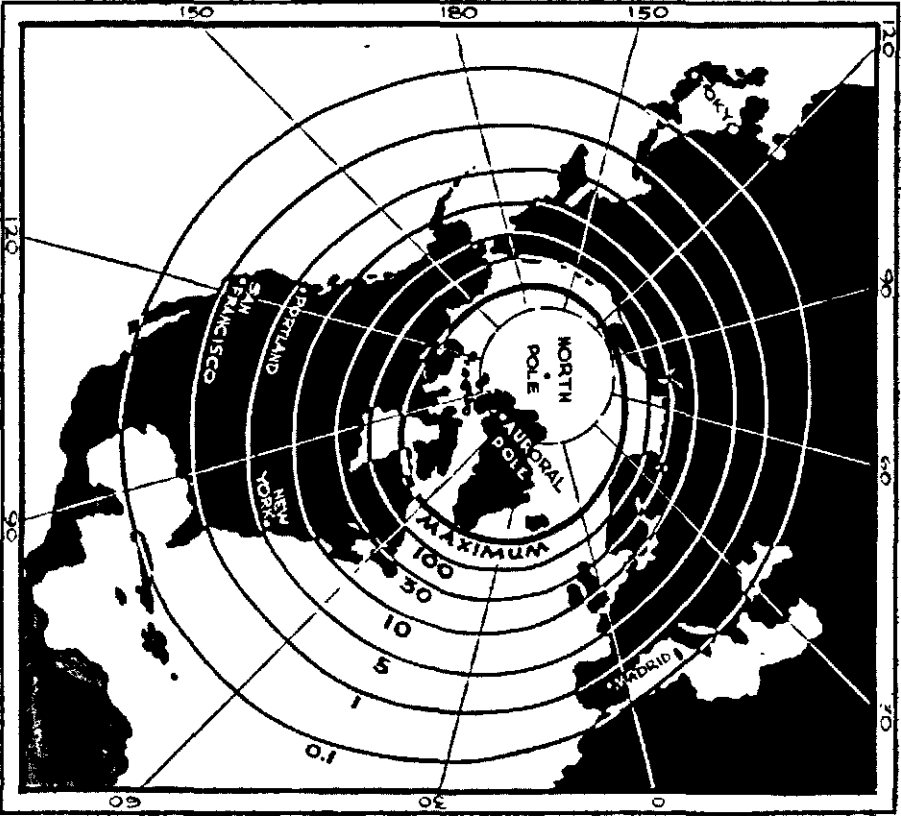


Figure 1



Figure 2

electrons' spiraling down the earth's magnetic lines of force were exerting their influence. Streamers seen high in the north from Portland are over the state of Washington. Faint glows near the horizon are the top parts of more spectacular displays much farther north.

Height determinations by trigonometric methods have been carried out very carefully, especially by Stormer, Vegard and others in the Scandinavian countries and by McLennan and his co-workers in Canada. Ground base lines of as much as 250 miles have been used. In Norway photography has been employed extensively. Simultaneous exposures at the ends of the base line (telephones connect the stations) will show a certain streamer's tip among different stars in the two pictures. From measurement on the pictures, angles are accurately determined.

It has been found that the bases of the visible phenomena during intense displays are as low as 40 miles above the earth and the tops as high as 250 miles. At heights of around 60 miles the maximum luminosity seems to occur. There have been reports from Arctic explorers that the nebulous light has been seen between them and a hill. A man in Canada claimed he saw the glow all around him, and when he stepped inside his barn, saw streaks of it coming through the knot holes in the boarded roof. These reports may correspond to those of excited meteor observers who are sure a blazing fireball strikes a nearby hill.

Dr. Stormer has found a curious type of grey-violet aurora on three occasions at a height of 600 miles. These occur shortly before dawn or after twilight and are labeled "sunlit auroras".

The spectrum of the aurora refutes the theory held until quite recently that the heavier atmospheric gases (nitrogen and oxygen) are most abundant near the earth and become non-existent at great heights where the composition is entirely the light helium and hydrogen. The gases glowing from auroral activity show many spectral lines but these are entirely those of oxygen and nitrogen. No helium or hydrogen lines are found. The mysterious green line at 5577 Angstrom units of wave length has finally been duplicated in the laboratory by using oxygen under the right conditions. Many red and violet lines are also found.

Very recently it has been shown that the light of the sky on a clear moonless night far from artificial light disturbances is far greater than can be accounted for by all the stars, both visible and invisible. The spectroscope shows the characteristic auroral green line and many of the others, but of course very dimly. It then seems that there is a constant dim auroral activity in the sky. If this is due to continuous moderate solar action, then the easily observed displays show up when the sun goes on a rampage.

Silence seems a distinguishing characteristic of the northern lights, yet many strongly maintain they have at times "heard the rustle of the aurora borealis as it drags its sky-wide silken skirts across the jagged stars". One observer of the July 5 phenomenon said she distinctly detected the faint rustle. Some scientists and explorers say it is all imagination and due entirely to head noises or the tinkling of tiny ice crystals forming from moisture particles in one's exhaled breath.

These sounds are said to resemble barely audible hissing, whispering, the rustling of taffeta silk, the noise of flying birds, or the sweeping of wind driven sand. Sometimes one man seems to hear the sounds while another close to him cannot. Occasionally blindfolding stops the audible effect. Ogilvie in 1882 reported:

"One man was so positive when there was an unusually brilliant display that I took him beyond all noise of the camp, blindfolded him and told him to let me know if he heard anything. At nearly every brilliant rush of the auroral light he exclaimed, 'Don't you hear it?' All the time I was unconscious of any sensation of sound."

A Canadian mounted policeman stated that his unharnessed dogs jumped up and growled when to him the sound was most distinct. Another said that, when the lights were brightest, his dogs' ears stood up as though they were listening. Still another that his dogs whined and turned around in circles.

Several years ago Dr. C. S. Beals of the Canadian observatory at Victoria sent letters to many of the better educated people in northern Canada regarding this disputed phenomenon. He received replies from 184, all but 40 of whom claimed they had heard such sounds. One correspondent estimated that in only five percent of the auroras observed had he heard any sound. Some who had lived in the far north for 30 years had experienced the sensation only a few times. Dr. Beals concluded there can hardly any longer be doubts that such sounds exist, but that they are not common.

That the sound is heard by one person and not by another beside him is doubtless due to individual differences in auditory sensitivity. It seems impossible that the sounds come from the luminous regions, 40 or more miles above the earth. But currents at great heights may induce at the ground feeble electrical effects which properly attuned ears may detect.

The general idea that auroras are more numerous in winter than summer is not confirmed by statistics. Since there are more hours of darkness before 10 p.m. in winter than summer, the average person doubtless sees more displays during the cold season.

During the height of the recent event, all observers noted the rare corona with its center about 15 degrees south of the zenith. This consisted of a central clear space of a few degrees surrounded by an irregular thick band of more intense light. It is found that the center is always within one or two degrees of the point in the sky toward which the magnetic dipping needle points (the magnetic zenith), so varies with latitude. It is therefore the direction from which the earth's magnetic lines of force come toward us and also the direction from which the auroral rays are heading directly at us.

FIGURE ON THIS ONE:

A straight-sided tank with a bottom area of 4 square feet contains water 9 inches deep. If a one-foot cube of wood with a density two-thirds that of the water is placed in the tank, what will be the distance from the top of the floating block of wood to the bottom of the tank?

(Last week's problem, by Ken Phillips: Break the grindstone into four pieces weighing 1, 3, 9, and 27 pounds).

"If a man will begin with certainties he shall end in doubts; but if he will be content to begin in doubts he shall end in certainties".

- Francis Bacon, "Novum Organum"

Bibliography for

"LIFE HISTORY OF THE HORSE"

by W. Claude Adams

Such favorable comment was raised by Dr. Adams' article on the "Life History of the Horse", which appeared in the last two issues of the News-Letter, that the editor asked him to prepare a list of references which would serve for further study by members whose interest had been aroused. He consented to do so, and submitted the following:

The Two Islands - Dr. Thomas Condon - 1902.

Thomas Condon, Pioneer Geologist of Oregon - Ellen Condon McCornack, 1928.

Story of the Horse - William Harding Carter, National Geographic Magazine,
November 1923

Around the World in 25,000,000 Years - Jackson Marks, the Oregonian,
July 30, 1933.

The John Day Fossil Beds - John C. Merriam, Harper's Monthly, March 1901

The Geological Story of Oregon - Ellen Condon McCornack, U. of O. Extension
Monitor, October 1916.

Rancho La Brea - Chester Stock, Los Angeles Museum Publication No. 1 -
April 15, 1930.
Science Series No.1-Paleontology No.1

The Ancient Fauna of Nebraska - Joseph Leidy, M.D.
Smithsonian Publication - 1852

Dental Anatomy - Charles S. Tomes - London 1898.

The Principal Forms of the Skeleton and the Teeth - Prof. R.Owen, 1854

Foundations of Biology - Woodruff - 1922.

Published Papers and Addresses of John Campbell Merriam, Vol.I, 1938.

Paleontology - Edward Wilber Berry, 1929.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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PORTLAND, OREGON

September 25, 1941

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

. Sponsored by
(signature) (member)

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday JOURNEYS IN COLOR THROUGH THE NORTHERN ROCKIES.
Sept.26 Still pictures by O.F. Stanley, movies by Bruce Schminky and Myrtice Fowler. Four vacation trips by members of the society through Lake Louise, Jasper, and Banff National Parks have resulted in some eight reels of colored motion pictures and hundreds of color slides. This second part will be shown by the above with appropriate running comments at the Public Service Auditorium, 8:00 p.m.

Saturday Trip: DALLIES HISTORICAL TRIP.

& Sunday Leader: Earl Marshall.

Sept.27-8 The party will meet immediately after supper (about 7:00 p.m.) in the Historical Museum at The Dalles. Judge Fred W. Wilson will be the speaker and will tell some of the interesting history of the region. Sunday morning the party will reassemble at the Museum to see exhibits not visible after dark, before starting on the trip which will include Pulpit Rock, where Daniel Lee preached, the site of the old Methodist mission, and the old Mint. Leaving town, the caravan will go 2½ miles out The Dalles-California Highway, where it will turn off to the left on the county road to join the old immigrant road down to the Deschutes River. They will stop at the Celilo viewpoint, before going down to the falls to see the Indian salmon fisheries (which are now running strong). Pictographs will be inspected at Celilo and at the old Indian village. The trip will proceed to Big Eddy and may get permission to go up the railroad track where some good rock hunting is reported.

CHANGE OF ADDRESS:

Miss Eva Catlin
Miss Mary Robertson

1016 Sixth Ave., Tacoma, Washington.
c/o Richfield Oil Co., Los Angeles, Cal.

Portland Extension Center announces three courses in Geology to be taught this winter by Dr. E. T. Hodge. The first term begins September 29, the second Monday January 5, and the third Monday March 30. Students may register for the first term any time after September 15 in the office, 814 Oregon Building, SW Oak street at 5th Avenue. Classes will be as follows: (to be held in Lincoln High School, SW Park Avenue and Market Street):

G 352p GEOLOGY OF OREGON. Spring term. Thursday, 7:15 p.m., room 203.

G 432p GEOLOGIC HISTORY OF THE PACIFIC COAST. Fall and winter terms. Thursday, 7:15, room 203.

G 505 READING AND CONFERENCE. Three terms. Thursday, 7:15, room 203.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, Collins Hall, 8 p.m.

FIELD TRIPS: The Sunday following the monthly lecture; meet at Waller Hall 9:00 a.m.

"WORK NIGHT": An informal get-together for members and friends - the first Tuesday of each month - in the Museum at Waller Hall. Specimens will be classified and prepared for the collection which the Salem Chapter is starting.

Thursday Subject: THE TULE LAKE PETROGLYPH.

Sept.25 Speaker: Horace Smith.

Sunday Trip: LITTLE NORTH FORK OF SWTIAM.

Sept.28 Leader: N. C. Hubbs.

We will visit an old mine and observe the general geology of the area. Bring along the "Metalliferous mineral deposits of the Cascade Range in Oregon", U.S.G.S.Bull.893, 1938. for maps and description of the mines visited.

Thursday Subject: STREAMGAUGING IN OREGON.

Oct.16 Speaker: Kenneth N. Phillips, U.S. Geological Survey; president, G.S.O.C., Portland.

Water is probably the most essential mineral to life, so it is fitting that our Government should devote considerable effort to the investigation of its resources. To find the amount of water available for civic uses, for irrigation and for power, requires extensive and constant investigation, which is carried out by the U.S. Geological Survey. Mr. Phillips has been with the Water Resources Branch of the U.S.G.S. for many years and will tell us of the problems involved in this work. The lecture will be illustrated with numerous lantern slides.

LUNCHEON NOTES

September 11:

A visitor today was Mrs. J. L. Ashton, recently from San Francisco but now a resident of Portland - interested in geology and a prospective member of Dr. Hodge's classes.

Sincere regret and concern were expressed over the serious illness of Tracy Wade, for whom we wish a speedy recovery. The luncheon group does not seem complete without him. It was gratifying, however, to see Mr. Libbey and John Allen back on the active list.

Among the interesting specimens shown were a fossil chambered nautilus, several inches in diameter, somewhat weathered, found by Mr. Stevens in an open cut in the vicinity of Vernonia. Mr. Hancock brought two agatized nuts and an attractive piece of petrified marl, of the Clarno formation. A very good section of opalized wood, showing a large area of fire opal, was exhibited by Mr. Carney. Mr. Calef showed an unusual fossilized formation from Florida, and Dr. Jones some waterworn pebbles.

John Allen passed around a good sized physiographic map of the Oregon Country, copies of which may be obtained for 50 cents each.

Dr. Hodge gave details of a class to be held for civil engineers and others who wish to obtain their Master's degree.

UNIVERSITY OF OREGON, Geology Department
September 19, 1941

Mr. John E. Allen,
Editor, Geology News-Letter
Portland, Oregon.

Dear John:

As I am unable to contact my Portland GSOC friends at the Thursday luncheons, I thought I would make a short report of my summer trips. After summer school I went with a party of Obsidians up to Collier Glacier to help Ruth Hopson with her studies of Collier Glacier which she is carrying on as a minor thesis for her doctorate at Cornell. She has a very valuable photographic record of the changes taking place there over a period of years and recently acquired, through the help of Mr. Cary Martin of Salem, some very valuable notes of an early visit, some fifty years ago, by Professor Collier, after whom the glacier is named. She and Mr. Martin might be persuaded to give the Society a lecture on this subject.

Next, I went over to Eastern Oregon to collect fossils in a new locality near Vale reported by Mr. Gordon Nichol, one of our students. We found, to our disappointment, that local souvenir hunters had removed many bones of what had been reported to be a nearly complete elephant skeleton. There were evidences of extensive excavations and only fragments were left. At another place we got some good specimens of fossil crayfish in the old Payette Lake beds.

Enroute to this part of the State we naturally detoured out to the famous (?) tin mine where we found everything shut down. However, the local gentry still believe they have the world by the tail and that it will soon not be necessary for us to worry about the Malayan tin any longer! Nuf sed!

As I had never before visited Malheur Cave, we took in that on another detour and found this one of the most striking of Oregon's many interesting geological features. It is by far the largest of the lava river tubes yet found in the State. It is too bad that local residents of the Central Oregon country have cluttered up this cave with extraneous objects such as a concrete altar (with Masonic symbol) bleachers and at the entrance a large cooking range. We followed the cave back about one-fourth mile until we were stopped by deep water. If one had a canoe, no telling how far he might go.

After that trip was concluded, my daughter and I drove down to Long Beach, California. No need to recount the visits to many places which many of you have already made. At Cal.Tech. I had lunch with Professor Ian Campbell and was shown over the new buildings of the geology department. This department is now one of the finest and best equipped in the U.S. and perhaps in the whole world.

We also made another detour into Sequoia National Park where I reuned with the Superintendent, Col. John R. White, and recalled our experiences in the early days of our Philippine sojourn. In addition to the giant sequoias, the geology of the Sierras as revealed here, is most interesting, as you perhaps know. The animals in this park are the tamest I have ever seen. We have a snapshot of two full grown bucks with full complement of antlers feeding from my daughter's hands.

In Long Beach (or perhaps it was Huntington Beach) the oil companies have devised a new method by which they are pumping oil out from under the cemetery!

Well, so long, 'til I come to another meeting.

Yours very truly,

Warren D. Smith

BOOK REVIEW

"CRATER LAKE; The Story of Its Origin", by Howel Williams.
University of California Press, 1941.

A Review.

Dr. Williams has spent several years studying the geological features of Crater Lake in an effort to interpret its origin. He concludes that a series of violent eruptions occurred and great quantities of pumice were ejected. This action partially drained the magma in the magma chamber, and further drainage was effected through underground conduits. The top of Mt. Mazama then collapsed into the empty chamber and the magnificent caldera resulted. Discussions of these features have appeared in technical journals.

This book is an attempt to present the story and technical data in a manner that will be appreciated by the lay-reader to whom the visual beauty of Crater Lake is not enough. It describes, how through the millions of years, the present landscape was sculptured and pictures the former scenes the existence of which made the present beauty possible. Dr. Williams has a style that presents his story in non-technical language, yet does not insult the intelligence of the reader.

The story is divided into two parts. The first "describes the changing scenes of the past as a privileged eyewitness might have done" (author's Preface). Chapters consider Mt. Mazama prior to its birth, - how the Mountain was formed, - the advent of glaciation, - the destruction, - and the growth of Wizard Island. The reviewer is rather a severe critic of any technical man's attempt to popularize his thesis, but found this section to be intensely interesting.

Part two has a style that will be familiar to readers of the Geological News-Letter. It sounds like a write-up of a GSOC field trip in that there is an "observer" who records the discussions of "The Naturalist" and the questions and answers of the field party. Very nicely written, this section gives more detailed information about some of the sequence of events mentioned in Part One.

The book is well illustrated by several black-and-white plates, two beautiful color reconstructions of Mt. Mazama, and several pen-and-ink sketches that show the development of Crater Lake. The general style is such that one may use the book as a pocket reference while visiting the Lake, or it may be read at home with an understanding of the geological features.

R.C.T. 8/20/41

(Editor's Note): Howell Williams is one of the foremost volcanologists in the world. Before taking up the study of Crater Lake, he made a trip around the Pacific, to study the calderas in Japan, East Indies, and New Zealand. He has written authoritative studies of Mount Lassen, Mount Thielsen, Newberry Craters, and Mount Shasta.

NEWS OF MEMBERS

Mary Robertson was called to Los Angeles by telegram to accept a position as Technical Assistant to the Chief Geologist of the Richfield Oil Company. She has a private office and is finding the work most fascinating.

Tracy Wade is reported to be much improved, and has returned home from the hospital. He is not yet receiving visitors, but might like notes or letters from members.

Ray Treasher was in town this week, finishing the field work on the map of the Portland area, which is to be published this fall by the Department of Geology and Mineral Industries. This geologic map will be on a scale of 1:36,000 (about 3/4 mile to the inch) and will include the Portland, Troutdale, Oregon City, and Boring quadrangles.

MAKING ROCK SECTIONS

by Dr. H. C. Sorby

(From "Educational Focus", Fall 1940, Bausch and Lomb Co.)

To Henry Clifton Sorby, an English microscopist, modern metallography owes much, although his pioneer work in 1863 and 1864 on the micro-structure of iron and steel attracted little attention at the time it was announced. Sorby was a man of varied scientific accomplishment. His interest in the structure of iron and steel evolved from his work in petrography to which he made important contributions and in which he successfully employed the polarizing microscope and microspectroscope almost 100 years ago. In 1849 he prepared the first rock slice, thin enough for microscopical examination by transmitted light, ever made.

Although hand methods are no longer generally employed, Sorby's instructions for the preparation of petrographic specimens as provided to Beale for inclusion in his work on the microscope in 1879 are of interest today, first from the historical viewpoint, second as a forerunner of modern methods for preparing metal surfaces for microscopical examination, and third as practical instructions which can be followed by the interested student today.

Comparatively little can be learned of the structure of rocks and minerals from the examination of fractured surfaces by reflected light. Flat polished surfaces show very much more, but nearly all the important facts can only be observed by examining thin sections by transmitted light. What is really requisite is to have portions sufficiently thin, flat, and smooth to transmit light. In some cases fragments of clear minerals may be broken thin and flat enough to show certain facts very well, when mounted in Canada balsam; and in this manner we may easily study the fluid-cavities in quartz, or the structure of such rocks as obsidian and pitchstone. In many cases, however, we must have recourse to carefully prepared thin sections. The details of the method of preparing these must necessarily vary according to the mechanical means at the disposal of each person, and much time may be saved by the use of machinery. I shall, therefore, give such a general account as may be used by any one who has not machinery at command, premising that it will be easy to modify it in detail, according to the facilities which each may possess for employing more expeditious methods.

In collecting specimens for examination, I find it convenient to break off portions from the rock as flat and thin as possible, so that they may be ground down at once; for otherwise it may be requisite to saw off portions with a lapidary's wheel, or by means of a straight toothless saw of sheet-iron with emery. Having made the specimen of a convenient size and form, with one side flat, this must be ground down perfectly level and dressed off very smooth. I usually avoid using any polishing powder, since, if it were to work into cracks and cavities, it would be far more objectionable than any slight want of polish. If we attempt to grind down the surface on such a stone as should be used to finish off, very much time would be lost, and it is therefore best to use a series of stones of increasing fineness. I have generally used, first, fine emery on a plate of iron or zinc,

then a kind of stone known by marble workers as "Congleton"; after that a soft piece of Water-of-Ayr stone, and finally finish off on a very hard and fine-grained piece of the same kind. However, since it may be difficult to procure such stones, a flat slab of fine-grained marble or different kinds of slate may be used. What is wanted is to finish off the surface so as to be free from scratches and almost polished, with the hardest and the softest portions ground down to the same level. If not dressed smooth by slow grinding, the hard portions will stand out in relief; and when the section is finished, the soft parts may be all ground away before the hard are sufficiently thin, and the structure of the rock may be quite misunderstood. Having duly prepared one flat surface, it should be fastened down on a piece of glass with Canada balsam. This should be kept hot until it is so hard as to be just brittle when cold. I find it best to remove, time after time, a small piece, until it has become so hard that when cold, it can be rubbed to powder between the thumb and finger. The piece of stone should be made hot, but no hotter than needful, so that liquid may not be expelled from the fluid-cavities, and balsam should be spread over the flat surface, and kept hot for a while, so that it penetrates into the softer parts and hardens them. Before fixing the specimens on the glass, it is well to remove this balsam, and fasten it down by that on the glass. I find it much the best to use square pieces of glass. The usual 3-inch by 1 glasses are very unsuitable for this purpose, since they are much too long in one direction, and too short in the other. I use glasses $1\frac{5}{8}$ -inch square, and generally make sections about 1 inch square, which is a very suitable size. Since the section ought not to be removed from the glass, care should be taken in grinding down not to scratch the glass. This may be avoided by fastening small bits of sheet zinc at each corner with balsam, and grinding the stone with emery until they all come flat down on the plate. The stone is then equally thin all over; and having removed the bits of zinc it must be further ground down on the stones until of the proper thickness, and the upper surface finished off in the manner already described. The thickness must depend very much on the nature of the rock. If coarse-grained and composed of comparatively transparent minerals, $1/100$ th of an inch may not be too thick, whereas some very fine-grained and opaque rocks should be not above $1/1000$ th of an inch. Of course it is requisite so to grind them down as not to break up or disturb the different constituents; and, since some parts may be very hard and some very soft, it is impossible to prepare perfect sections unless they are slowly ground down on a fine-grained stone, which may gradually wear away the hardest parts without injuring the softest. After having finished the section I find it often better to keep it some time before I mount over it a thin glass cover, in order that the balsam may become quite hard. I then melt some balsam at a gentle heat on a thin glass cover of proper size, and just before I place it on, I wet the surface of the section with a drop of turpentine, which soaks into the pores so as to make it more transparent, and renders it much easier to fasten down the glass without any bubbles. This must be done at a very gentle heat, so as not to cause the section to break up by melting the balsam which holds it fast to the glass plate.

Sections of very soft rocks, which would easily break up in water, may be prepared in the same manner by hardening them with balsam. They should be first soaked with turpentine, and then with soft balsam, and kept hot until quite hard.

We may modify the above plan with advantage in preparing sections of such hard minerals as quartz. If ground down with emery and water, deep scratches are produced, and it takes a long time to remove them by means of the softer stones. This may be avoided by using fine emery paper, held flat on a piece of plate glass. After grinding down to nearly the proper thickness with emery and water, common English flour-emery paper may be used, which soon removes the deep scratches; and afterwards the surface may be almost polished by using the finest French emery paper employed in preparing steel plates for engraving; a perfect polish can then be easily given by means of rouge on parchment. Crystals of salts soluble in water

may also be ground down and dressed smooth on emery paper, and finally polished with rouge in the same manner: but in many cases they may be examined without this preparation, and may be fastened on glass with balsam. Some are decomposed by contact with balsam, and must be kept dry in small covered cells; others may be mounted in a concentrated solution of the same salt, when it is desirable to retain the liquid enclosed in the fluid-cavities; and when very small they may be mounted in Canada balsam, or, if that be objectionable, in castor oil.

Sometimes the structure of a rock or other mineral substance may be studied to great advantage by grinding it to a suitable shape, moderately thick and flat, fixing one side to glass with balsam, and acting on the other with a dilute acid. If one part is soluble and the other part not acted on, some valuable facts may be learned.

(The method outlined above, with minor changes and refinements, is essentially that used today for the preparation of rocks for microscopic study. - Ed.)

TRY THIS ONE:

What number, when divided by either 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, will always leave a remainder of 1?

(Last week's problem: The top of the cube will be $15\frac{3}{4}$ inches from the bottom of the tank).

A REVIEW

"Physiographic Divisions of the Columbia Plateau": Otis W. Freeman, Yearbook of the Association of Pacific Coast Geographers, vol. 6, 1940, 9 pp.

This paper presents a reorganization of the subdivisions of the so-called Columbia Plateau physiographic province. Dr. Freeman points out that the province "is really not a plateau at all, but rather an intermontaine lava-covered region between the Cascades and the northern Rocky Mountains". This area is one of the largest areas of volcanic rock on the earth's surface, covering more than 200,000 square miles and ranks with the great Deccan area in India. It covers great portions of eastern Oregon and Washington, and roughly is bounded on the north by the Okanogan Highlands, on the west by the Cascade Mountains, on the south by the Basin-and-Range country of Oregon's "high desert", and on the east by the Idaho mountains. Elevations range from 350 feet at Pasco, Washington, to nearly 10,000 feet in the Wallowa Mountains. Its surface is highly varied; there are small plateaus, rolling hills, piedmont slopes, and high, rugged mountains.

Fenneman originally defined the Columbia Plateau physiographic province and subdivided it into five sections: (1) Walla Walla Plateau; (2) Blue Mountains; (3) Harney section; (4) Payette section; and (5) Snake River Plains. Western physiographers have been dissatisfied with this subdivision and there has been considerable discussion about re-defining it. (Dr. Warren D. Smith has published considerable information on the physiographic provinces of the State of Oregon in the Commonwealth Review). Freeman has found it advisable to form twelve main divisions made on the basis of differences in physiographic relief; (1) Waterville

Plateau in the extreme northwest corner; (2) Palouse Hills, rolling mature topography in the northeast corner; (3) Channeled Scablands lying between 1 and 2; (4) Central Plains, including what is commonly known as the "Columbia Basin", and the Umatilla Basin in Oregon; (5) Yakima Marginal Folds lying west of the Central Plains and east of the Cascade Mountains in Washington; (6) Blue-Wallowa-Seven Devils Mountains and connecting Snake River High Plateau which covers most of northeastern Oregon and takes a big slice out of central Oregon; (7) Tri-state Slopes which applies "to the sloping surface of the Columbia Plateau that descends from the Blue-Wallowa-Seven Devils Mountains to the Snake River on the north and northeast" where it merges with the Palouse Hills; (8) Deschutes-Columbia Plateau which includes the Oregon area west and north of the Blue Mountains except for the Umatilla basin; (9) Payette Section straddling the Oregon-Idaho line and lying east of Snake River Plains; (10) Snake River Plains in the Boise basin; (11) Owyhee Section in southeastern Oregon and southwestern Idaho; (12) Harney Basin in the south, forming a transition section into the Basin-and-Range province to the south.

Dr. Freeman's treatment of the Blue-Wallowa-Seven Devils Mountains and Snake River Plateau is interesting. He further divides the sections as indicated in the name. The Blue Mountains applies to the uplifted and dissected plateaus and ranges that extend for 200 miles from southeastern Washington first southward and then westward into central Oregon. Included in this sub-division are the Grande Ronde and Baker Valleys, Elkhorn Ridge, and Strawberry and Aldrich Ranges, and Ochoco Mountains. The Wallowa Mountain sub-division is familiar to many of the GSOC members and needs no further definition. The Seven Devils Mountains in Idaho are somewhat similar to the Wallowas and separated from them by the Snake River and what Dr. Freeman calls the Snake River Plateau.

It would be unfair to criticize Dr. Freeman's division boundaries unless his full explanation were given. Space does not permit the re-publishing of his entire paper. It is believed, however, that Dr. Freeman has made a distinct contribution to western physiographic division. The essential step has been taken to point out the inadequacy of Fenneman's classification, and to crystallize many of the nebulous ideas regarding a reorganization.

- R. C. T. 9/1/41

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

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I am particularly interested in the following branches of geology:

.
I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

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PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (2nd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday Oct.10 Lecture: DISLOCATIONS AND INTERRUPTIONS IN THE DOMESTIC SUPPLY OF MINERALS BECAUSE OF THE WAR.

Speaker: C. P. Holdredge.

Aside from the stoppage of imports of certain strategic minerals from Europe and the difficulties which have arisen from lack of merchant shipping, there are various dislocations in the normal flow of minerals. Mr. Holdredge will discuss phases of the subject.

Sunday Oct 12 Trip: ANNUAL FOLIAGE TRIP.

Leader: Leo Simon.

Leave SW Front and Yamhill at 8:00 a.m. Reassemble at Government Camp at 9:30. Caravan will then proceed around Mount Hood on the Loop Road making stops at points of historical and geological interest. Upon reaching the upper Hood River valley, the autumn colors of the huckleberries, tamaracks and maples should be at their best.

Friday Oct.24 Subject: TECHNIQUE AND CHEMISTRY OF PORTLAND GAS AND COKE COMPANY OPERATIONS.

Speaker: Professor George W. Gleeson, O.S.C.

Professor Gleeson, head of the Chemical Engineering Department at Oregon State College, has acted as consultant for the Portland Gas & Coke Co. for a number of years. Recent expansion in the gas company's activities and Professor Gleeson's intimate knowledge of operations, will make for a most enlightening evening.

Sunday Oct.26 Trip: MARYHILL MUSEUM TRIP.

Leader: J. C. Stevens

Meet at SW Front and Yamhill 7:30 a.m. Reassemble at Stevenson, Wn., at 9:00. The caravan will proceed up the North side of the Columbia River, through a section of the country full of geological interest, stopping for several hours at the famous Maryhill Museum and thence on to Stonehenge where Mr. J. C. Stevens will tell us something of the historical significance of this most remarkable relic. This promises to be a most worthwhile trip.

Members of the Geological Society of the Oregon Country:

I am sending this note to let you know how much I appreciated the beautiful flowers and the many kind things the members of your society have done, and while Tracy could not see the flowers I am sure he will be more than pleased when he realizes how thoughtful you have been.

Sincerely,
Mrs. Tracy Wade

(We are extremely glad to report that Mr. Wade is making exceptionally good strides towards recovery, and is able to receive visitors now. Please phone first, so that too many do not arrive at once. - Editor)

SALEM CHAPTER ANNOUNCEMENTS

- LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either Collins Hall or Chapel, as stated below).
- TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State Street) at specified time.
- WORK NIGHT: First Tuesday of each month, Willamette Museum, 7:30 p.m. Please bring specimens or other items of interest if possible.
- LUNCHEONS: The Tuesday luncheons have been resumed; Argo Hotel. 50¢.

Thursday Subject: STREAMGAUGING IN OREGON.
 Oct.16 Speaker: Kenneth N. Phillips, U.S.Geological Survey; president G.S.O.C., Portland.

Water is probably the most essential mineral to life, so it is fitting that our Government should devote considerable effort to the investigation of its resources. To find the amount of water available for civic uses, for irrigation and for power, requires extensive and constant investigation, which is carried out by the U.S.Geological Survey. Mr. Phillips has been with the Water Resources Branch of the U.S.G.S. for many years and will tell us of the problems involved in this work. The lecture will be illustrated with numerous lantern slides.

The luncheon meetings have gotten off to a slow start after the summer doldrums. Attendance will doubtless pick up next month when the last of the vacations are over. Mrs. Stockwell returned from Vancouver Island and points north with enough specimens to keep the experts busy all winter. This week she brought in some interesting samples of brecciated jasper and granite of different colors. Herman Clark displayed some rare minerals from Finland, and those members who are not attending these luncheons are missing something!

NEW APPLICATIONS FOR MEMBERSHIP IN THE SALEM CHAPTER RECEIVED

Mr. and Mrs. A. O. Anderson Rt.7 Box 98; Phone 2-1213

Franklin Davis and Mrs. Davis are spending a week at Fossil Lake and he will probably return with a prehistoric menagerie. He has a knack for finding the critters!

The Chapter's specimen case is now in spick 'n span condition, and all ready to receive those choice specimens of yours that you are going to present to our "museum". Thank you!

H. J. S. 9/18/41

SALEM CHAPTER NOTES

An indication of the continuing vitality of the Salem Chapter was the record attendance at Mr. Horace J. Smith's lecture on September 25th. The capacity of the room was stressed so that extra chairs had to be brought in. President Clark announced that even greater crowds would be welcomed and accommodated by holding the meetings in the chapel of Waller Hall, which seats 500. Mr. Smith's subject was "The Tule Lake Petroglyph", to which he has given much study during the past seven years. These carvings have afforded a challenge to scientists as to their meaning and purpose, and no satisfactory explanation has been published. But, with convincing logic, Mr. Smith showed that they have a most specific meaning and an important purpose. Details cannot be given here, but so remarkable and telling was his treatment of the subject, both by word and by picture, that it is difficult to doubt the soundness of his reasoning. Arrangements are being made for Mr. Smith to repeat the lecture in Portland in the near future.

After a recess during the summer months, Tuesday noon luncheons were resumed on September 9th, and those since held indicate a sustained interest in Chapter affairs. At one of them we were glad to welcome one of our members from Corvallis, in the person of Dr. E. L. Packard of the State College. A considerable number of specimens have been passed around, outstanding among which were several fossils collected by Mr. Franklin L. Davis during a recent trip to Fossil Lake. On former trips he had acquired many fossil bones of *Equus Pacificus*, but his collection still lacked certain "links". On this trip he filled in some of them, so that he was able to show us a complete set of the bones in a front leg up to the humerus.

At the luncheon on September 30th a U.S. Government publication of 1870 was exhibited. It is a large volume dealing with mining statistics west of the Rocky Mountains, but its chief interest to members was the chapter on "The Geology of Oregon" by Dr. Thomas Condon. The suggestion was made that it be published in the News-Letter. Among those present on this date was Miss E. T. Knower, who joined as a new member. At this luncheon, too, a new feature was introduced in the form of a door prize. It transpired that Franklin Davis' fertile imagination was responsible for this innovation, and, to back up his idea, he donated the prize, which proved to be a handsome, well illustrated book of 500 pages, entitled "The Story of Evolution" by Benjamin C. Gruenberg. The holder of the lucky number out of 16 was Carl Richards.

During September, Chapter members have purchased from the Service Committee, books and maps to the value of \$43.00.

TREASURE ISLAND LECTURE NOTES

September 18th:

Guests were James Jerome, U. of O. School of Medicine, guest of Dr. A. C. Jones, and Mr. Orr ("Call me Hi-grade ORr"), mining engineer with Charlton Laboratories, guest of Geary Kimbrell.

Miss Margaret Hughes, the Society's librarian, was back from an extended trip to the North and East, including points in Canada from Victoria to Quebec. She reports acquiring maps and bulletins for our library from Canadian provincial geological departments.

Specimens exhibited: By Mr. Minor, variegated jasper and opal, from near Rufus. By Miss Hughes, two gastroliths (?) from Arizona, one containing a spirifer, and sandstone with unusual dendrites from Wyoming. By Tom Carney, a beautiful museum piece, crystal-and-wire silver from Kellogg, Idaho. By Dr. Hodge, sapphires and garnets from Idaho. "Help yourself but leave a few for me". (Search of available records indicates that the GSOC is the only group west of Iceland to be given a choice of sapphires with a lunch).

K.N.P.

TRIP TO MCCORD CREEK AND ONEONTA GORGE
July 10, 1941

The party met a short distance east of McCord Creek bridge on the Columbia River Highway where a spot was found large enough to park the dozen or so cars that made up the caravan. The first object of interest was the petrified stump of a western hemlock at the east end of the bridge. This stump is apparently in the same place in which it grew back in the Miocene, indicating that the climate of the region at that particular time was comparable with the climate of today. The material surrounding the tree seems to be of a basaltic tufaceous nature. When the writer first saw this stump about twenty years ago it was almost against the wall of the canyon while now the forces of erosion have cut the wall back for a distance of two feet or more, leaving room for a small person to squeeze in behind the protecting fence. Vandalism has taken advantage of the situation and have already begun to break off pieces of the stump. The attention of the Forest Service should be called to this matter and the fence repaired before the whole stump has been destroyed.

The party proceeded to the lower falls about three-quarters of a mile up the trail. The proper name for this beautiful waterfall is Elowah but the more prosaic name of Lower McCord Creek Falls has come into rather general use in the past few years. Lunches were left here and most of the party went on up the trail to the upper falls over one of the best trails in the Gorge. A stop was made along the trail at one of the viewpoints and Al Vance discussed briefly the geological features of the area.

Across the river could be seen the great slide which was visited by the society earlier in the spring on Dr. Hodge's annual trip. The highlights of the great earth movement were touched on and it was pointed out that the Satsop gravels (more commonly known as the Troutdale formation) are present here as in other parts of the Gorge and mark the boundary line between the basalts and the andesites. It is a torrential formation and may be found up to 2200 feet above sea level.

The Eagle Creek formation of Upper Oligocene or Lower Miocene age consists of tufts, mouldery mud flows and volcanic ash. According to Williams, folding occurred after it was laid down, but other geologists are of the opinion that the folding occurred before the basalt. This outpouring of basalt came from many fissures and openings, perhaps thousands of them. The later flows of volcanic material were andesitic and it is largely of this material that the mountains of the Cascades as we see them today are composed.

A profusion of late varieties of flowers was noted along the trail. Probably the most showy and colorful were the hairbells that grew not only along the trail but hung down from the damp rocks along the walls wherever they could find a foothold. The party stopped briefly at the upper falls, long enough to gather inspiration from the beauty of the place until the insistent call of the inner man overcame the hunger for beauty and caused a return to Elowah Falls and a ravenous attack on well filled lunch baskets.

On the way back the party stopped at Oneonta Gorge and as the water in the creek was low we were able to make our way up the creek bed to the falls a quarter of a mile back from the highway. Treecast holes were noted in the walls of the gorge and several of the party were able to obtain from them fragments of carbonized wood as well as some rather poor specimens of opalized wood.

- H. L. Jennison

HODGE THEORY OF ICE AGES SECONDED.

Members of the Society will be interested in the following article from the Smithsonian Institution, which discusses an hypothesis advanced several years ago by Dr. Hodge, and more or less accepted by those in Oregon. - Editor.

Either increase or decrease of the earth's temperature may cause an ice age, depending on local conditions.

This is the hypothesis advanced by Dr. Walter Knoche, chief climatologist of the Argentine Weather Bureau, in a bulletin just issued by the Smithsonian Institution.

It is often popularly assumed that the great ice sheets which covered large areas of the northern United States during the last geological period must have been due to a decline in temperature--for ice and snow are naturally associated with cold.

A few years ago both the British meteorologist, Sir George Simpson, and Dr. Knoche himself advanced a contrary, and seemingly, quite paradoxical, explanation--that ice ages may be due to a rise in temperature. This would cause more precipitation. In the polar regions, where the average temperature most of the year would be close to the freezing point, this would fall in the form of snow. The snow would pile up and become compacted into glacial ice. The glaciers would flow southward. They would produce their own cooling effect as they progressed. There would be considerable melting each summer but never enough to overbalance the new ice arriving from the North.

By the same reasoning, an ice age would begin to decline as the earth grew cooler and precipitation decreased. The summer melting in temperate climates would continue, perhaps at a slightly reduced rate, but the building up of new glacial ice would be reduced so as to more than counterbalance this slight loss.

This explanation seems adequate for most of the northern hemisphere but is far too simple for the earth as a whole, Dr. Knoche concludes as the result of extensive studies of local conditions in southeastern Patagonia and Tierra del Fuego, now extremely desolate regions.

In the North, polar ice would pile up over the Arctic and come down over the land where it would affect profoundly local temperatures. In the south there would be an increase of polar glaciation which would flow northward into the sea where, with a more uniform effect of the increased terrestrial temperature, it would melt more quickly than at present.

For southern mountain regions, however, the situation may be quite different. His studies, he declares, make it apparent that "in some mountains the glaciers of closely adjoining peak regions can advance or retreat either with a general increase or a general decrease of the temperature of the earth's atmosphere".

A great deal, he points out, depends on local conditions of cloudiness, prevailing winds, etc. With an increase in precipitation due to an increasing temperature ice certainly would pile up on the high mountains, even in temperate climates. But, under appropriate conditions, the total cloudiness would prevent melting and glaciers would overwhelm the lowlands.

Certain southern regions such as West Patagonia, Fuegia, and New Zealand, he points out, are characterized by cool summers and warm winters. At the mouth of the Straits of Magellan today snowfall at sea level is a rare exception and the average annual temperature is considerably above freezing.

However, glaciers descend from the mountains to the sea. Some of the glacier tongues lie in the middle of nearly tropical forests of tree ferns, bamboo grasses, and evergreen beeches. This situation might well be exaggerated with an increase of temperature.

A PLIOCENE SUNRISE

A. D. Vance

The strange one drew her knees closer under her chin as she crouched beside her mate, where a large branch joined the trunk of an old oak tree at the edge of the forest, and waited for the warming dawn.

Through a thousand generations a slowly changing climate had separated the forest trees and forced her ancestors to spend more and more time upon the ground until in the strange one's time she and her mate returned to the trees only at night to perch beyond the reach of four-footed hunters of the darkness.

The strange one shivered and pressed her smooth body closer to her hairy mate for warmth as she watched the east for the first signs of day.

At last a pale light drew a sharp line between the sky and the distant snowclad range. Far to the southeast the mountain that smoked trailed its vapor plume into view. An undulating wedge of geese, changing leaders again and again, moved northward across the brightening sky.

Suddenly a crimson glow touched the mist veil floating over the mountains and flaming upward set the high cloud banks afire in a riot of color.

Unseen wisps of cloud near the horizon blazed out in brilliant yellow like flaming pitch pockets as the colors spreading to the north and south rose higher and higher until they reached the zenith. The smooth, still waters of the nearby lake repeated the display in undiminished grandeur.

The strange one thrilled to a new emotion.

A low Ah-h! escaped her lips. Her mate awoke with a start, his sharp eyes searched the ground beneath the tree for danger, then he looked to the strange one who pointed to the colored clouds and repeated her soft Ah-h.

In the east the sky grew brighter and brighter and the red flame died from the clouds as the sun leaped above the horizon to start another day.

The strange one's mate climbed to the ground and she followed him quickly as a score of others descended from neighboring trees. Across the open place the small band moved cautiously toward the lake.

There was a new spring in the strange one's step that carried her into the van. Her mate pointed to her and said - Ah-h! Ah-h! The others took up the new sound and repeated it.

Henceforth this strange one whose smooth sunbrowned body was so different from the rest would be known as Ah.

Along the lake shore the band took up its endless search for food, but in that brief moment before dawn the human race had taken a giant step toward civilization.

Into a world that knew only hunger, passion, and fear, an appreciation of beauty had been born.

A REVIEW

"The Hood River Conglomerate in Washington": Charles R. Warren; American Journal of Science, vol.239, pp.106-127, 1 pl., 2 maps, February 1941.

The much again so-called Pleistocene Satsop formation of Bretz and Williams is again in the news. It has been shown that the formerly-designated Satsop beds of the Cascade Mountains and eastern Washington differ significantly in date from the type Satsop of the Grays Harbor (Washington) region, and the name HOOD RIVER CONGLOMERATE was applied to the formation by Buwalda and Moore. Tentatively, they traced the Hood River Conglomerate northward from Hood River into the Yakima Valley. Warren has confirmed and added to their findings as the result of work toward a Ph.D. degree. It is possible that the Hood River Conglomerate and the Dalles formation have some counterpart in the Portland area, which is the reason for this review.

Upon the original surface of the Yakima basalt (G.O. Smith's name for the formation more commonly known as Columbia River basalt) sediments were deposited. They include the Latah formation (near Spokane), the Ellensburg formation, the Dalles formation, and the Hood River Conglomerates. These formations were folded and deformed with the Yakima basalt (Columbia River basalt), and all data point toward a late Miocene or early Pliocene age for these sediments.

"The Hood River conglomerate is a deeply weathered, moderately well indurated, fluvial conglomerate, resting conformably or nearly so on the Yakima basalt, and deformed with the latter. Its distribution has been traced from the type locality at Hood River, Oregon, northeast past Goldendale, Washington, to Sunnyside. It is of contemporaneous origin with the Dalles and Ellensburg formations, both of late Miocene or early Pliocene date, and mammalian fossils collected from associated beds prove the conglomerate to be late Miocene or early Pliocene". (Author's abstract).

From a study of Dr. Warren's paper the following points seemed to be interesting and helpful in interpreting his data, and arriving at some sort of conclusions about the continuity of this formation west of the Cascades. The Hood River conglomerate may properly be considered a member of either the Ellensburg or the Dalles formations, though it may equally well be considered independent; it is lithologically distinct from the Ellensburg and Dalles formations, but in places is interbedded with them.

The Hood River conglomerate is composed of well rounded gravel containing up to 75 percent quartzites. It is moderately well indurated; in some instances it is so well indurated that subsequent deformation has sheared thru the quartzite pebbles. It usually is deeply weathered, and commonly the igneous pebbles are so altered as to crumble in the hands. It is moderately stained by weathering. Average pebble size is 2-4 inches; some are as large as 6 inches; one quartzite boulder with an 8-inch diameter was found; a few basalt and andesite boulders up to 2 feet in size were found. The boulders and large cobbles invariably are basalts. There is some silt and sand which seems to be lenticularly bedded with the conglomerate. Quartzite pebbles commonly constitute 20-50 percent of the stones. In places basalt or andesite pebbles form 95 percent or more of the deposit. Where the gravel contains more than 75 percent foreign stones it appears to be a "lag concentrate".

The Hood River conglomerate is parallel with the Yakima basalt which has dips from horizontal to 85°. It occurs near the original surface of the basalt at elevations ranging from 200 feet to 4,000 feet, and it must antedate the deformation of the basalt. Evidence is given to prove that it was deposited contemporaneously with the Ellensburg and Dalles formations. Mammalian fossils collected by Warren and identified by Stock indicate that the age of the Hood River conglomerate is late Miocene or early Pliocene.

An interesting observation by Dr. Warren indicates that any younger deposit made by a stream draining an area originally covered by the Hood River conglomerate

may contain reworked stones from it. Also that the Hood River conglomerate and its contemporaneous formations are younger than the Mascall formation of eastern Oregon.

The reviewer is rather familiar with the area in which Dr. Warren worked and in no instance is he able to find fault with Warren's observations. Warren collaborated carefully with Bretz, Buwalda, Waters, and others in his study. His conclusions add weight to a late Miocene or early Pliocene age for the Hood River, Ellensburg, and Dalles formations. These same conclusions may have some bearing on the age and origin of the so-called Troutdale formation in the Portland area. This matter will be discussed in a forthcoming publication of the Oregon State Department of Geology and Mineral Industries.

- R. C. T. 9/2/41

DESIDERATA MAXIMA

(Author unknown)

I wish I were on yonder hill,
A-basking in the sun;
With all the work I've got to do
D O N E !

I wish I were beneath a tree,
A-sleeping in the shade;
With all the bills I've got to pay
P A I D !

I wish I were upon a lake,
A-sailing in a boat;
With all the things I've got to write
W R O T E !

(Received too late for first page)

SALEM CHAPTER ANNOUNCEMENTS

Sunday Trip: TO PETRIFIED FOREST ABOVE SWEET HOME.
Oct.19 Leader: E. L. ("Buck") Bradley.
9:00 am Leave Waller Hall at 9:00 a.m. Via Pacific Highway to Albany; South
Santiam Highway through Lebanon to Sweet Home; turn right at Sweet
Home on Route 228 to Holly; turn left on county road (about two miles)
to an extensive deposit of petrified wood. Return will be made via Browns-
ville for inspection of the basaltic buttes near Brownsville and the rock
quarry at Saddle Butte. Round trip will be approximately 120 miles.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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PORTLAND, OREGON

October 25, 1941

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Geological Society of the Oregon Country

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PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (3rd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday Subject: TECHNIQUE AND CHEMISTRY OF PORTLAND GAS AND COKE COMPANY
Oct.24 OPERATIONS.

Speaker: Professor George W. Gleeson, O.S.C.

Professor Gleeson, head of the Chemical Engineering Department at Oregon State College, has acted as consultant for the Portland Gas & Coke Co. for a number of years. Recent expansion in the gas company's activities and Professor Gleeson's intimate knowledge of operations, will make for a most enlightening evening.

Sunday Trip: MARYHILL MUSEUM TRIP.

Oct.26 Leader: J. C. Stevens

Meet at SW Front and Yamhill at 7:30 a.m. Reassemble at Stevenson, Wn., at 9:00. The caravan will proceed up the North side of the Columbia River, through a section of the country full of geological interest, stopping for several hours at the famous Maryhill Museum and thence on to Stonehenge where Mr. J. C. Stevens will tell us something of the historical significance of this most remarkable relic. This promises to be a most worthwhile trip.

Friday Subject: GEOLOGIC HISTORY OF THE PORTLAND AREA.

Nov.7 Speaker: Ray J. Treasher.

The name of the speaker, together with the subject, is sufficient without further elaboration. Please note (1) the date, Friday, Nov.7th, which is the first Friday of the month instead of the second, which would be the regular meeting date; and (2) the Auditorium will not be available and the meeting will be held in Room 701, Public Service Building.

J. C. Stevens has donated to the Society a full year's back issue of the News-Letter.

NEW MEMBERS

Mr. and Mrs. C. R. Meyer LA 6435 3919 SE Grant Court
Mr J. M. Orr BE 2070 Charleton Laboratories

CHANGE OF ADDRESS

Mr. and Mrs. R. L. Baldwin CH 1452 4804 SW Laurelwood Drive

SALEM CHAPTER ANNOUNCEMENTS

- LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either Collins Hall or Chapel, as stated below).
- TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State Street) at specified time.
- WORK NIGHT: First Tuesday of each month, Willamette Museum, 7:30 p.m. Please bring specimens or other items of interest if possible.
- LUNCHEONS: The Tuesday luncheons have been resumed; Argo Hotel. 50¢.

Thursday Subject: EARLY CIVILIZATION OF AMERICA.
 Nov.13 Speaker: Dr. C. B. McCullough, Assistant State Highway Engineer, Salem. Member, G S.O.C. Salem Chapter.

During the year and a half he spent in Costa Rica a few years ago Dr. McCullough made a close study of the many ruins, relics and remains of the Mayas who inhabited Central America prior to the Spanish conquest, gathering information of great interest. The high ability of this race as builders is revealed by ingenious types of structures still standing; their knowledge of astronomy is indicated by the calendar they developed, which, for accuracy, equals the one we use today. These and other accomplishments and characteristics of the Mayas form an interesting and significant story which Dr. McCullough will bring to us, illustrating it with numerous lantern slides.

NOTE: Owing to Thanksgiving Day being on the third Thursday, our regular meeting date, the above lecture will be on the second Thursday, November 13th.

Sunday Trip: TAMPICO REGION NORTH OF CORVALLIS
 Nov.16 Leader: Dr. Ira S. Allison, Department of Geology, Oregon State College. Dr. Allison has spent more time deciphering the geology of the Willamette valley than any other geologist, and this trip should be of great interest to those interested in the Pleistocene and Tertiary of western Oregon.

STONEHENGE

by J. C. Stevens

On Salisbury Plain about 7 miles north of Salisbury in Wiltshire, England, lie the ruins of a prehistoric monument of megaliths that has been the source of no end of speculations as to its origin. The Stonehenge, what, by whom, when and why? Civilization has posed the query; civilization has no complete answer.

The first historical mention of Stonehenge was by Nennius in the 9th century. He says it was erected in memory of 400 nobles who were treacherously slain there by Hengist in 472. Geoffrey of Monmouth states that Constantine the Great, 272-337, "is buried at Stonehenge". In some of the verses of the Welsh bards its erection is attributed to Aurelius Ambrosius 121-180. The Welsh bard Aneurin however states that Stonehenge existed long before the time of Aurelius.

Salisbury Plain is a dull expanse with only a thin top soil supporting thistles but no shrubs or trees, and prior to its recent acquisition for military purposes was devoid of the works of man except ruins of the Stonehenge and here and there a prehistoric barrow pit of the Bronze Age.

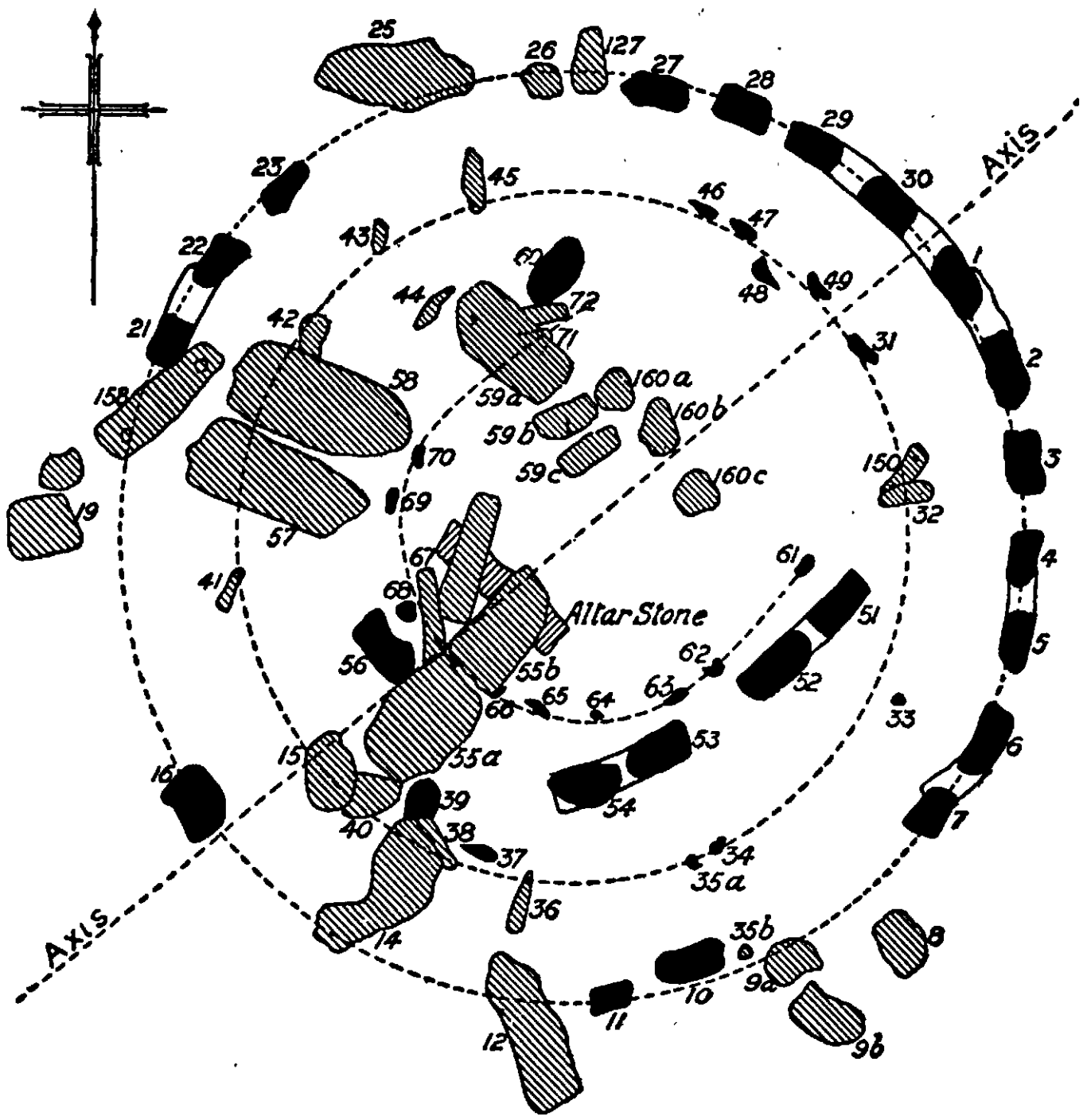
Stonehenge today consists of what casually appears to be a jumble of huge hewn stones protruding above the ground some 20 feet or so; some upright, some askew, and some with cap stones as huge as the uprights. The stones were all hewn to shape by stone hammers. In spite of centuries of weathering they still show remains of mortise and tenon joining. Most of the stones weigh upwards of 30 tons, yet they were undoubtedly transported from somewhere and set in place by the hand of man.

A closer scrutiny shows that these stones were arranged in an orderly pattern and for some definite purpose. The accompanying sketch shows the plan. The stones have been numbered; solid black represents upright stones as of 1900; the hatched areas represent those on the ground.

The obvious order of arrangement includes first a circular earthen dike 300 feet in diameter (not shown in the sketch) with a road or avenue leading out at the northeast. Within is the structure itself consisting first of an outer circle 100 feet in diameter, formed of huge uprights with cap stones. Of these large stones 17 uprights and 6 caps are standing. About 9 feet within the large circle is another circle of smaller "blue stones". Within the circle are two horseshoes, one of large stones and within it a smaller horseshoe of smaller "blue stones".

The inner circle has its axis southwest by northeast, which strangely enough points to the position of the sun at sunrise on the summer solstice, that is on the longest day of the year, June 21.

Within the inner horseshoe lying across the axis at the center of the curve is a well hewn symmetrical recumbent stone 15 feet long supposed to be the altar. Beyond the outer circle is a great monolith standing on the axis that has been given the name of "Friar's heel" (not shown in the sketch). If one stands on the center of the altar stone within the horseshoe and looks along the top center of the Friar's heel on June 21st he will see the sun rise on that axis on the horizon.



0 10 20 30 40 50 60 70 80 90 100

SCALE OF FEET

- Stones standing on 30th December 1900*
- Stones recumbent on same date.*

A line from the center of the altar over the center of the Friar's heel will not today bisect the disk of the sun. It is believed, however, that when Stonehenge was built that axis did actually bisect the sun's disk and thereby hangs an astronomical tale. It is well known that the inclination of the earth's axis is slowly changing and with it the position of the sun's farthest north - the summer solstice. This is popularly referred to as the "precession of the equinoxes."

Sir Norman Lockyer, an English astronomer of note, conceived the idea of dating the building of Stonehenge on the assumption that when built the sun rose exactly on the axis of the horseshoe at the summer solstice. He measured the deviation as of his day (about 1900) and, knowing the rate of precession, determined that on June 21, 1680 B.C. the axis of Stonehenge would have bisected the sun's disk.

Archeologists have accepted Lockyer's dating of Stonehenge and have placed its erection near the end of the Neolithic age and at the dawn of the Bronze age, say 2000-1800 B.C.

There are many other circular stone monuments throughout the British Islands and elsewhere that have been well proved to be burial places. The best guess as to the why of Stonehenge is that it was a glorified burial place perhaps for kings only, and that that use would not preclude its use also as a temple for sun worship and sacrifice. There is a recumbent sacrificial stone, also on the axis, near the outer earth dike that may have seen the slaughter of many a forgotten king's wives and concubines.

By whom? Could it have been the Neolithic predecessors of the Druids?

Before his death Samuel Hill built a restored replica of Stonehenge as a monument to soldiers of the World War of 1914. It stands on a prominent point near the highway between Maryhill station on the SP&S Railway and the Maryhill museum and is accessible by automobile.

WHERE IS THE OSWEGO IRON MINE?

John Eliot Allen

In an attempt to locate as accurately as possible the old Oswego Iron mine, the writer has made two trips to Oswego in the last month. On the last trip, accompanied by Al Vance, we found the actual outcrop of the "vein" and traced it for nearly a thousand feet, spotting at least four possible tunnel mouths (three caved).

The Oswego "vein" outcrops three-quarters of the way up (less than 50 feet from the crest, the steep bluff which lies half a mile north of the center of Oswego Lake. It was traced from a point a few hundred feet west of the section line 8-9 (at an elevation of 325 feet) east and northeast around the bluff to a point due east of the highest point on the ridge (at an elevation of over 400 feet). The westernmost outcrop seen is at the west base of the City of Oswego water tank which is reached by a bridle path (probably the old railroad grade) from the crest of the ridge to the west. To reach it, one may drive out the Boone's Ferry road, turn off south towards the golf course, and past it on the west, then proceed westerly

a quarter of a mile down a private road to the point where the old trail takes off.

From the water tank, the outcrop of the vein was apparently originally exposed by a more or less continuous cut, along which a grade rising to the east was established. Hollows in the hillside along this grade at three places (possibly more) suggest caved tunnel entrances. At the eastern end, a tunnel, although caved, is open for about 30 feet, sloping down to the southwest.

The bridle-path (or rail grade) may be followed on east around the bluff at a lower level. Another trail which runs down to the Hunt Club connects with it from the west. On this trail at a point nearly beneath the water tank, there is a suggestion of a mine dump, which may have been a low-level cross-cut to the vein. Pieces of iron ore were found on this dump.

If anyone has further information or old maps of the mine, the writer would appreciate hearing.

OREGON'S IRON INDUSTRY

Where was the First Iron Blast Furnace?

Compiled by Ray C. Treasher.

The history of the pig iron manufacture in Oregon shows that it had a rather checkered career. The ores were mined in the vicinity of Oswego, of a type known as limonite or "bog ore", averaging about 45 percent iron. Charcoal was used as fuel and the product of the blast furnace was listed by the U.S. Geological Survey as "charcoal pig iron". The cost of manufacture was rather high, so much so that the industry had difficulty in competing with eastern pig iron, and finally the furnace was discontinued. Pig iron was supplied to the trade in San Francisco.

The first reference to an iron industry was in the Oregonian in 1861 1/ when they say that beds of iron at Oswego "have lately attracted considerable attention". In the course of the next week, an investigation was made of the practicability of working. In 1862, the Oregonian carried several items, the first one being in April, that 12 pounds of pig iron were manufactured by Mr. Olds and Mr. Jacobs. Daniels 16/ indicates that this iron was reduced in a primitive way in a blacksmith's forge, which would hardly class it as an iron blast furnace.

On October 18 2/ Mr. J. S. Pierpont wrote a letter to the editor of the Oregonian stating that Mr. Olds was constructing an iron works on the banks of the Tualatin River to manufacture iron from its native ores. On November 25th 3/ an editorial states "We learned that the new iron works on the Tualatin River four miles above Oregon City will commence operation in ten or twelve days. The machinery, all of which was made at Oregon City, is being put up. It will employ about sixteen hands. Mr. A. K. Olds, the proprietor, is an experienced iron man from the eastern states. He believes he can produce a better article of iron than any shipped here from the ore on the Tualatin and at a lower price".

A careful search of the Oregonian's files was made but this apparently is the last reference to any proposed operations on the banks of the Tualatin River. If there was any operation it seems to be shrouded in the deepest mystery and we are forced to conclude that the plant never functioned.

The Oregonian for Feb. 4, 1865 (?) describes the organization of a company to exploit the Oswego iron deposits, by Messrs. H. D. Green, W. S. Ladd, and John Green. The blast furnace and plant is described. No mention is made of a furnace in operation on the Tualatin. Certainly, no newspaper could have resisted noting any plant in operation at the time.

On August 22, 1866 4/ "Judge Brockway and Colonel Hayward yesterday visited Oregon City, the future Lowell, and Oswego, the future Pittsburg of the Pacific States and Territories."

The first casting of pig iron was on Saturday, August 24, 1867 (?), six tons being produced. The article goes on to state that when the furnace is in full operation it should produce 18 tons of pig iron in 24 hours. The advantage this industry will give the Pacific region is brought out. On August 27, 1867 5/ the works were visited by Mr. Scott, editor of the Oregonian, and Mr. Bull. Mr. Scott discusses the organization of the company and its activities.

The first shipment of Oregon pig iron was made on the "Montana" bound for San Francisco on Sept. 6, 1867 6/. Fifty tons of pig iron was delivered into the "Montana's" holds with the statement that this was the "initial shipment".

An attempt was made at fabricating the pig iron. The Oregonian, Mar. 4, 1868 7/ says that "The first stove was cast and shipped to Messrs. Ladd and Tilton and is on display in their banking house". On April 14, 1868 8/ the first shovel was made. It was used to break ground for the Oregon Central Railroad. Each man in the plant had a part in turning out this shovel, and it was to be preserved as a suitable memento of the occasion. The first Oregon-made shovel, breaking ground for the first Oregon financed railroad. The Oregonian stated that the Oswego plant did not contemplate manufacturing shovels, as the cost was too high.

The issue of March 15, 1869 9/ carried a discussion of the closing of the Oswego Iron Company's operations because of litigation. Editorial comment decried the discontinuance of this industry which would be so advantageous to the Pacific Coast. No mention was made of any other operation ever having been carried on elsewhere in the State.

The next reference to the iron industry was on June 14, 1872 10/ when the Oregonian states that "iron ore was discovered in the bed of the Oswego and Tualatin River Canal Companies Canal midway between the upper end and the Lake. The ore is richer than that of the Prosser or Patton lodes, which are both contiguous to the works at Oswego and suggested that it might be advisable to take the ore by barge to Oswego". The Oswego plant was in disrepair at this time and had there been another locality where iron ore could have been processed, surely it would have been mentioned.

The issue of July 5, 1872 11/ states that Mr. Hawley of Hawley, Dodd & Company returned yesterday to buy iron for the blast furnace stack. They expected to have everything in order in six months. A new furnace was contemplated. On Sept. 11, 1873 12/, the Oregonian states that the Oregon Iron Company expects to start after a rest of two years. Ground had been purchased for a new rolling mill to produce the best grade of wrought iron.

References to the fortunes of the company 13/, 14/, 15/, continued until 1892. Operations were finally discontinued about 1895 and never were reopened.

Historians of Oregon's early days invariably mention the Oswego plant but none other. The most reliable and frequently quoted history is that of Leslie Scott's "History of the Oregon Country". The material for this history came largely from the files of the Oregonian which was captioned by that peerless editor, Harvey Scott.

The controversy about the priority of blast furnace operation seems to center around statements of Mr. Scott in his history. After searching the source of the material (The Oregonian), and reading Mr. Scott's statements most critically, it is evident that the argument arises from a misinterpretation of the text rather than any error in the history. Mr. Scott is quoted as follows: 18/

"The deposits began to attract notice in 1861. The first blast at Oswego started August 26, 1866. A. K. Olds of Yamhill and H. S. Jacobs of Portland made 12 pounds of iron in 1862 from Oswego deposits. They made ^{of} this iron, horse-shoe nails and an iron pick. In that year Olds built a plant on the Tualatin River, 4 miles from Oregon City. Operation continued until April 8, 1869, during which period the output was 2,395 tons of pig iron. For an early history of the Oswego Iron Works--" which he follows with references which have been quoted above.

Note that the output was 2,395 tons of pig iron up to April 8, 1869. This date corresponds closely to the closing date of the old Oswego Iron Company and must refer to their operations rather than any other. The item of 2,395 tons of pig iron is a sizeable one, and could have been produced only in a plant of sufficient activity to merit newspaper mention. But after Nov.25, 1862 3/ no further reference is made to any plant except that at Oswego.

It appears then that the above statement must refer to Oswego's production, and none other. That the error and controversy has arisen from a hurried reading of the history, referring the Oswego production to the preceding statement about a plant being built in the Tualatin. Should anyone have authentic historical data which will show that an iron blast furnace operated on the banks of the Tualatin prior to August 24, 1867, such information would be valuable to those interested in the development of Oregon's natural resources.

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A SUNSET PHANTASY

(As an aftermath of "A PLIOCENE SUNRISE", by Mr. Vance, you may find the following of interest. It is a copy of a letter written to my (then) ten-year-old son).

Frissell Point Lookout
Willamette Natl. Forest,
August 24th, 1931.

Dear Alan:

These bits of Obsidian which I am sending you have a (possible) history in which I think you will be interested, so I am jotting it down just as it came to me. This history must be reasonably true, for how else could the obsidian chips have gotten where they were? I found them between the two largest lava rocks on the point of the ridge when I moved the rocks to make a level place for the new lookout-house. Probably the Indian was the only other human being ever to touch them, and you and I are the first even to see them since they slipped from his hands that evening so long ago!

Obsidian is "volcanic glass", a form of lava that cooled so rapidly that it did not have time to become crystallized.

Thrown out from the giant MT. MULTNOMAH (21,000 feet), mother of the THREE SISTERS, before they were born, the OBSIDIAN CLIFFS to the northwest were probably formed by the very first of the lava from that monstrous eruption which changed the skyline of the Oregon Cascades. But to go on with the story:

An Indian sat on the rocky point of the ridge, thoughtfully inspecting the fruits of his long pilgrimage. Three full days and sixty miles of hard traveling had those bits of obsidian cost him since he passed this point on his way to the black cliffs.

The trip had been made hurriedly and, although the cliffs were "neutral ground" so far as human enemies were concerned, the last hurried dash and the anxious, almost frantic, search for suitable glass points was due to a fear of other than human agencies. Not for worlds would the Indian have spent the night near the cliffs, so there was not much time to pick and choose in his quest. And it was only after he was again down in the forest, out of sight of the three ghastly heaps of rocks and cinders, that he once more felt at ease.

And now, with thirty miles of forested hills between him and them, the Indian paused at sunset to look back over the way he had come, - to look and to feel, - and to watch the life and warmth die from the THREE SISTERS. The EARTH was his "Mother", but he did not regard the Three Sisters as being a part of the Earth. They belonged to the MANITOU (His three burning tapers set in triangular form), and while they were revered and worshipped they were not loved as was the EARTH, his Mother.

Like big red candles they were, burning with a crimson glow, - the evening shadows creeping upward 'til only their tips shone like flame-points. Spell-bound, the Indian sat, - awed, reverent, fearful, - only feeling. Thoughts are things apart from such a scene. His obsidian trophies slipped, unnoticed, from his hands and fell between the two great blocks of lava on which he sat.

The shadows grew and changed, fluid shadows, oozing into and gradually filling

the deeper fissures of the mountains like great pools of purple ink, -flowing upward. But these were only the pioneers, the scouts of the great grey shadow that rose solidly, steadily, inexorably from the valleys below. Up over the wooded base of the mountains it came, to timberline, to the snowline - to finally engulf the burning tapers of the peaks themselves, quenching them in the cold grey-black mantle which was NIGHT.

Then how cold and grim and grey they loom against the eastern sky! Dark below, with grey fading into rose (almost violet) which, in turn, pales upward to faint pink and finally back to grey. All softness is gone from the THREE SISTERS. Cold, hard, merciless,- caring not for wind or weather or time, resistless in their immobility, they stand -- eternally!

Far down in the canyon below, a Meadowlark sang its twilight song. The Klamath Indians abhor the Meadowlark for they think he sings of the departed, and the Klamaths never speak of their dead. Shivering a little the Indian drew his scanty blanket around him and, with scarce a thought for the lost obsidian chips that had cost him so much to procure, he dropped down the ridge. He wanted to get away from the feeling of depression he had experienced on the ridge-top. Down in the heavy timber it was warmer,- life was more real, more intimate, more in the present. It seemed almost that he had escaped from the THREE SISTERS.

P.S.: If the old Indian had stayed a little longer on the ridge-top he might have seen other things. Just after sunset the wind always rises for a little while and then dies away again. On this night, just after the Three Sisters had wrapped their blankets around them and covered their heads, the wind brought in great fog-banks which moved up and down the valleys - from the west and from the south and from the north, - all apparently converging and gathering inward toward the Three Sisters. The tips of the lesser mountain peaks showed above them, grim, grey spectres marching silently in the moonlight with only their heads showing above their blankets of smoke and fog. They appeared to be walking, in three long lines, from the north - from the south - from the west. Were they going up to the Three Sisters for a COUNCIL?

Perhaps if the Indian had seen them he would have felt less safe even down in the heavy timber!

Daddy

(Horace J. Smith)

GEOLOGICAL NEWS LETTER

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PORTLAND, OREGON

November 10, 1941

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

344 U.S. Courthouse, Portland, Ore.

POSTMASTER: Return Postage Guaranteed

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (3rd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday Subject: GEOLOGIC HISTORY OF THE PORTLAND AREA.

Nov.7 Speaker: Ray C. Treasher.

The name of the speaker, together with the subject, is sufficient without further elaboration. Please note (1) the date, Friday, Nov.7th, which is the first Friday of the month instead of the second, which would be the regular meeting date; and (2) the Auditorium will not be available and the meeting will be held in Room 701, Public Service Building.

Sunday Field Trip: A SEARCH FOR ZEOLITES AND FOSSIL LEAVES.

Nov.16 Leader: A. W. Hancock

Assemble at Front and Yamhill at 9:00 A.M. Reassemble at Battle Ground, Wash., at 10:00 A.M. Look for Eocene Leaves on Lewis River. Climb hills back of Yacolt for Zeolites. Proceed to Yale for quartz crystals; look over Tum Tum Mts. and Fargher Lake.

NEW MEMBERS

Mrs. R. M. Morton	Rt. #5.	Salem, Oregon
Miss Jeanne Jewett	Box 104	Lake Grove, Oregon
Dr. & Mrs. Alfred E. Mattern	402 Morgan Bldg.	Portland, Oregon

CHANGE OF ADDRESS

Mr. & Mrs. Kenneth P. Mahony	Box 148	Oak Grove, Oregon
Mr. & Mrs. Leslie W. Bartow	6515 S.W. Burlingame Ave. (after Nov. 15)	
Mr. & Mrs. Ray E. Mackenzie	7737 S.E. Reed College Place	

UPPER DIVISION SCIENCE RETURNED TO UNIVERSITY

The restoration of upper division and graduate science courses to the University of Oregon curriculum next fall will mean that several new geology courses will be offered at Eugene. Dr. Warren D. Smith, head of the Department of Geology, and Dr. Lloyd W. Staples have been giving courses in general geology, field geology, elementary paleontology, and stratigraphy. This course will now be expanded to include mineralogy, petrology, structural geology, and other advanced studies, leading to graduation majors and a master's degree in Geology.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either Collins Hall or Chapel, as stated below).

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State Street) at specified time.

WORK NIGHT: First Tuesday of each month, Willamette Museum, 7:30 p.m. Please bring specimens or other items of interest if possible.

LUNCHEONS: The Tuesday luncheons have been resumed; Argo Hotel. 50¢

Thursday Subject: EARLY CIVILIZATION OF AMERICA.

Nov.13 Speaker: Dr. C. B. McCullough, Assistant State Highway Engineer, Salem. Member, G.S.O.C. Salem Chapter.

During the year and a half he spent in Costa Rica a few years ago Dr. McCullough made a close study of the many ruins, relics and remains of the Mayas who inhabited Central America prior to the Spanish conquest, gathering information of great interest. The high ability of this race as builders is revealed by ingenious types of structures still standing; their knowledge of astronomy is indicated by the calendar they developed, which, for accuracy, equals the one we use today. These and other accomplishments and characteristics of the Mayas form an interesting and significant story which Dr. McCullough will bring to us, illustrating it with numerous lantern slides.

NOTE: Owing to Thanksgiving Day being on the third Thursday, our regular meeting date, the above lecture will be on the second Thursday, November 13th.

Sunday Trip: TAMPICO REGION NORTH OF CORVALLIS

Nov.16 Leader: Dr. Ira S. Allison, Department of Geology, Oregon State College. Dr. Allison has spent more time deciphering the geology of the Willamette valley than any other geologist, and this trip should be of great interest to those interested in the Pleistocene and Tertiary of western Oregon.

NOTICE TO PORTLAND MEMBERS:

The present group subscription to "Science News Letter" expires with the Nov. 29th. issue. Those desiring to renew their subscription, or others among those attending the Thursday luncheons wishing to subscribe should turn in their \$2.60 to me by Nov. 15th. These magazines will only be delivered at the Thursday luncheon.

If ten or more members wish to form a club and receive their magazines at the Friday meetings they may do so by designating one of the group to receive and distribute the magazines. Such group should send \$2.60 per person for ten or more magazines to

Science Service, Inc.
1719 N St. N.W., Washington D.C.

Individual subscriptions to your own address are \$5.00 per year or two years for \$7.00.

H. B. Schminky

NEWS OF MEMBERS

A. W. Hancock spoke at Camas, Washington October 5th., and again at Longview, Washington on October 28th., on "The story of the trees according to Fossil evidence."

Mr. & Mrs. O. E. Stanley are showing colored slides three times during November before various organizations. The Society has been fortunate in having already seen the pictures.

Wednesday, Nov. 5. Alaska Pictures, shown before the Ladd Addition Community Club at the home of Mrs. Zimmerman.

Wednesday, Nov. 12. Canadian Rockies Pictures, shown before the South Portland Community Club at the Failing School, 8:00p.m.

Thursday, Nov. 13. Mexican Pictures, shown by Mrs. Stanley before Women's club at Multnomah.

LUNCHEON NOTES

October 9

Mr. Bates, just returned from a trip to Montana, brought an oilstone, called Arkansas stone, a rather expensive material of very fine texture, nearly pure white. He also showed some porcupine quills, picked up on the highway, and told of visiting the tick fever laboratory in Helena, Montana.

A piece of sulphur obtained from northwest of Crater Lake was shown by Mr. Crawford.

Short scientific talks were given by several members, but due to poor acoustics and the unfavorable position of your reporter, the gist of these was unheard and so lost to posterity.

October 16

In the absence of Ken Phillips the president's chair was efficiently filled by the secretary, Kathleen Mahony.

Miss Jean Jewett, of the State Public Welfare Commission, attended for the second time and is now a member of the Society.

Mr. Paxton and Mr. Reeves represented the Salem Chapter. Mr. Paxton announced that their next trip on Sunday would be to the Sweet Home area, where petrified wood may be found.

Mr. Nixon introduced two guests - Dr. Joel Swartz and Mr. E. L. Stephenson, both geophysicists who are doing special work for the U.S. Geological Survey in Eastern Oregon, where they hope to locate new ore bodies. Their work has already proved helpful to mining men in that district.

Four interesting mineral specimens were shown by Miss Hughes, including a piece of hematite, chalcopyrite in quartz, carborundum, and one of rhodochrosite, quartz and epidote. These were given to Miss Hughes by an old mining man who had collected them over fifty years ago.

Mr. Carney brought two extremely thin and beautiful sections, one of moss agate and one of petrified wood, and also a piece of Arkansas stone showing how it looks in the rough.

Mr. Hancock produced a tray full of attractive zeolites of various forms, gathered in a few square feet near Battle Ground, Washington, some containing double terminated quartz crystals. As these seem to be abundant in that locality, we hope Mr. Hancock will lead a trip there soon.

Mr. Libbey promises a Friday evening talk by Ray Treasher in the near future.

HEARING AN AURORA

Donald B. Lawrence
Botany Department, University of Minn.
Minneapolis, Minnesota

This past summer I had the good fortune to be a member of the William O. Field Glaciological Expedition to Glacier Bay, Alaska, a region about 50 miles west of Juneau, and while there I observed a phenomenon apparently infrequently experienced at our latitude: that of "hearing an aurora."

Another member of the party, Mr. Anthony T. Ladd, and I were ashore on the afternoon of August 18th. Our 46-foot diesel powered fishing boat with the rest of the party was anchored for the day on the opposite side of Muir Inlet, two miles from where we sat, and it was hidden from our view. We had been enjoying a dip in a little morainic pond, and since the sky was clear and the sun was getting low, the air was rapidly becoming chilly. The land we were on had been freed of receding glacial ice only within the past five years so there were no woody plants yet growing on it and, in fact, almost no plants at all. There was nothing with which to make a fire except the limbs, roots, and trunks of interglacial trees that had been buried by the last advance of the glaciers several thousand years ago. With a little coaxing we started a fire with that ancient wood and we sat beside it waiting for the boat to return to the small protected bay beside which we now sat, and in which we anchored each night to be free from the danger of the ice bergs discharged from Muir ice-front three miles distant.

At about six o'clock with three hours of daylight still left we began hearing a sort of humming noise that made us think that the boat must be returning. The sound was very similar to the noise of a truck motor off in the distance. The noise continued at intervals and we continually expected to see the boat rounding the bend of the little bay but not until about nine o'clock when dusk was coming on did the boat finally appear. Once aboard we learned that the motor of the boat had been running only the previous fifteen minutes, and since the region was completely uninhabited there were no other boats to hear. We had become accustomed to the slapping of wavelets against numerous small floating ice cakes, but this new sound was something different.

Our dinner was not over until well after dark, and when I returned to the deck I immediately realized that the droning we had been hearing was identical with what I had heard described as the "sound of a thousand bees" by a Minneapolis neighbor who had heard it in that city to the accompaniment of an auroral display some years before.

About the higher parts of each of the nearby peaks to the northward (sharp pointed peaks rising from 1,100 to almost 6,000 feet in elevation) there seemed to be a concentration of bluish white light that sent up flickering shafts. Occasionally large patches of light seemed to take off from the summits of the peaks and roll slowly toward the southeast. I cannot now recall whether or not the buzzing sound was more pronounced as the light became more brilliant, but the sound surely continued spasmodically on into the night as long as I could keep myself awake to watch and listen. The sound did not seem to have its source at any particular place but rather seemed general in its distribution.

Upon returning to Minneapolis I have been much interested to read Professor Pruett's account of theories of origin of the auroras in my G.S.O.C. News Letter, and I agree with him that the sound can hardly be produced at heights in the atmosphere of 40 to 600 miles. Professor Butters of this University heard the sound that accompanied an aurora in Minneapolis some years ago and observed that the swishing sound exactly coincided with the brilliant flashes; he believes that the sound had its origin in tiny invisible sparks of static electricity that were jumping off from objects all about him. If this is true this sound occasionally heard with auroras is similar in nature to the St. Elmo's fire so commonly seen and heard by mountaineers and mariners and so vividly described by Talman in his fine book "The Realm of the Air."

Although I saw auroral displays on three nights after the one described, I heard no sound with any of the others; however on these other occasions the light did not seem concentrated about the summits of peaks.

ARTESIAN WATER CONSERVATION IN NORTH DAKOTA HAS BENEFICIAL RESULTS

In recent years the owners of artesian wells in North Dakota have applied conservation methods, under the direction of the State Geologist, and this conservation has resulted in maintaining small but adequate flows from many wells that would otherwise have ceased flowing or have been reduced to mere dribblets. In earlier years the rate of discharge from the flowing wells was much greater than the rate of replenishment of the artesian water in the area of artesian flow. The additional water was taken out of storage, as a result of the compaction of the water-bearing sand and associated beds when the buoyant force of the artesian pressure was removed. Now the rate of discharge has been reduced nearly to the rate of replenishment, and the head of the artesian water has become nearly stationary. If the policy of conservation is continued, benefits will accrue especially to the wells on relatively high land.

The total flow from the artesian wells in the Dakota sandstone in the southernmost tier of townships in North Dakota was about 1,450,000 gallons a day in 1923 but only about 750,000 gallons a day in 1938. This decline in flow was produced in part by a gradual lowering in the artesian head, but in part also by the conservation program, which consists of throttling down the wells as much as practicable.

From 1915 to 1923 there was a shrinkage in the area in which flowing wells could be obtained in the Edgeley quadrangle of about 16.5 square miles a year, but from 1923 to 1938 the shrinkage averaged only about 4.5 square miles a year.

This information was obtained in the course of an investigation recently completed by L. K. Wenzel, of the Geological Survey, United States Department of the Interior, and H. H. Sand, of the North Dakota Geological Survey, working in cooperation.

The Dakota sandstone, which supplies water to most of the artesian wells in North Dakota, underlies nearly the entire State, and in most places it is covered by thick deposits of impervious formations, chiefly shales, that confine the water in the sandstone under pressure. The first artesian well that penetrated the Dakota sandstone in North Dakota was drilled for the city of Ellendale, in 1886. It was 1,087 feet deep, 8 or 10 inches in diameter at the top, and 3-3/4 inches in diameter at the bottom. It is reported to have had a flow of 600 to 700 gallons a minute, and the original pressure was variously reported as 145 or 175 pounds to the square inch, or sufficient to raise the water about 330 or 400 feet above the surface.

The expense of drilling such large and deep wells discouraged their construction for some time, but about 1900 the jetting method of drilling was introduced, and during the following two decades thousands of farm wells only 1 to 2 inches in diameter were sunk to the sandstone. The decline in artesian head that resulted from the increased draft on the basin caused little concern at first, but by about 1915 the flow of most wells had decreased noticeably and a few wells on high land had stopped flowing entirely. It is estimated that by 1923 the artesian head along the western boundary of the area of artesian flow had fallen at least 330 feet from its original head.

In 1916 steps were taken to conserve the artesian water in North Dakota, and in 1921 the State Legislature passed a law providing that the flow of artesian wells should be restricted to the quantity of water that could be used beneficially. The enforcement of the law was placed in the hands of the State Geologist. From 1923 to 1928 nearly all the artesian wells in the State were visited by members of the State Geological Survey, and specific instructions were given to each owner regarding changes that would reduce the flow of his well without detriment. Many of the wells were visited again between 1928 and 1935 in order to check the changes that had been made and the reduction in flow that had taken place. Through this program much waste of artesian water was prevented and much valuable information was obtained on the discharge from the basin.

In 1937 and 1938 many of the wells in the Ellendale-Jamestown area were visited by members of the Federal and State Geological Surveys, and measurements were made of their flow or, in those wells which had ceased to flow, of the depth to the water level. The resulting data were utilized to determine the changes that had taken place in the artesian basin since 1923, the benefits derived from the conservation program, and the perennial supply of artesian water.

A report on the water supply of the Dakota sandstone, with reference to changes in the Ellendale-Jamestown area, North Dakota, from 1923 to 1938, has been prepared. Pending its publication typewritten copies, without the illustrations, may be consulted in the offices of the North Dakota Geological Survey, Grand Forks, N. Dak., and the Geological Survey, United States Department of the Interior, Washington, D. C.

U.S.G.S. Information Service.

February 5, 1941.

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MEMBERSHIP APPLICATION
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date

I, (please print full name) do hereby apply for membership (junior membership) in the Geological Society of the Oregon Country, subject to the provisions of the By-Laws.

Home Address Phone

Business Address Phone

Occupation Hobbies

I am particularly interested in the following branches of geology:

I enclose \$. . . for the year's dues, March 1 to March 1. (Checks payable to the Society).

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(signature) (member)

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Friday Subject: TRIP TO WAYNE WONDERLAND.

Nov.28 Speaker: Dr. Courtland L. Booth.

Dr. Booth will describe with the assistance of pictures his trip into Wayne County of Southeastern Utah. The area includes the Capitol Reef National Monument, the Henry Mountains (laccoliths) and the San Rafael Swell--all of exceptional geological interest and containing various localities of especial interest to collectors.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either in Collins Hall or the Chapel, as stated below).

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State St.) at time specified.

WORK NIGHT: First Tuesday of each month; Willamette museum; 7:30 p.m. Members are urged to bring in specimens of interest.

LUNCHEONS: Owing to the irregularity in attendance it has been decided to discontinue the meetings in the Pollyanna Room of the Argo Hotel. However, one of the alcoves in the main dining-room will be available for members of the G.S.O.C. and their friends.

Thursday Subject: GEOLOGY OF THE WILLAMETTE VALLEY IN THE MCMINNVILLE QUADRANGLE.

Dec. 18 Speaker: Mr. Phil McKinlay, Graduate Assistant, Department of Geology, Oregon State College, Corvallis, Oregon.

Mr. McKinlay is engaged at present in an intensive study of the geology of the McMinnville area and will tell us how the work is done. He will first describe the procedure followed in the field and the equipment used; then, the way the specimens are studied in the laboratory to develop results and conclusions. Hence, this lecture will be of real and practical value to those who are sometimes puzzled as to the methods of approach in ascertaining the nature and type of the geology of a particular region. Moreover, the McMinnville quadrangle is so close to Salem that it gives "local color" to the occasion. Numerous photographic slides and maps will be used as illustrations.

Personal: Florence Iverson is now in the Young Oregonian Shop at Meier & Frank. Persons having purchases to make should consult Miss Iverson.

PORTLAND LUNCHEON NOTES

October 30

Miss Jean Jewett, our newest member, was accompanied by two guests - Miss Carolyn Doolittle and Mr. Earl Johnson, both of the Public Welfare Commission.

Mr. Baldwin produced as a memento of his vacation a good sized pressed and mounted specimen of a plant from Idaho called the Puncture Vine - evidently well named, as one wouldn't want to run into its vicious looking spikes on a dark night.

"Spikes" suggests the unusual fossil brought by Lloyd Ruff- the tooth of a prehistoric elephant of the Pleistocene age, weighing about five pounds. It was taken last September by a dredge from the waters of the Willamette four or five miles from the mouth of the Yamhill River, in the heart of the elephant country where other similar fossil remains have been recovered.

Tom Carney brought a large piece of petrified wood from the high desert with the surface polished as if by varnish, due probably to sandblasting.

A question by Leo Simon brought from Mr. Carney the definition of a pseudomorph as, literally, a false form, i.e., the replacement of one mineral by another in which the original crystal form of the replaced mineral is retained. (Information which is appreciated by some of the rest of us.)

Speaking of the trip to Maryhill, Mr. Stevens presented some interesting facts not generally known about the Museum. Built by Samuel L. Hill and named for his wife, it contains mementos of Queen Marie of Rumania, who presented them to Mr. Hill in appreciation of help given to her country after the war. It also contains a valuable library, collected by William Olds, given to General Owen Summers, and presented by him to the Museum. One book alone, bound in hand-tooled leather, is valued at \$2500. Of interest also is the large collection of Indian artifacts. The Museum was entrusted by Mr. Hill to a board of trustees and is maintained on a non-profit basis. It is supported by the admission charged and the income from a 7000-acre ranch on which the Museum is located. At the end of each year any surplus income is invested in new treasures for the Museum. Ninety thousand visitors have registered since its opening in the spring of 1940. On the museum property is a restoration of Stonehenge which Mr. Hill had made in honor of the first World War soldiers from Klickitat County. Mr. Hill is buried nearby in a tomb which he built for his friend, Eden Wells, and himself. Incidentally, the Museum closes on November 10, to be reopened next spring.

November 6

Mr Vance exhibited a copy of a new book by Richard G. Montgomery entitled "The Young Northwest," recommended by Franklin Davis as being of interest to the members of our Society. The intriguing title of Chapter I is "Dr. Condon's Oregon." The price of the book is \$2.00, but by ordering it through Mr. Davis it may be bought for \$1.60. Mr. Davis also recommends as interesting reading "The Life of a Fossil Hunter" by Steinberg, one of the collectors of the early geologists. This may be obtained from the Portland Public Library.

Speaking of libraries, how many know where the library of the G.S.O.C. is located? A poll of the luncheon group indicated considerable haziness on the part of most of us. (212 Pioneer Post Office Building).

Of the specimens shown, a concretion from Montana, brought by Miss Hughes, still remains a mystery-- none of the "experts" could name it. Dr. Booth's beautiful piece of aurichalcite from Ophir Hill Mines in Utah was fortunately so labeled, since the Doctor had temporarily lost his voice (but none of his genial personality.)

A fine example of pyromorphite crystals in an alluring shade of green from Colorado was shown by Mr. Carney - rather a rare specimen.

John Allen's guest, Mr. Randall Brown, is a new geologist of the State Department of Geology and Mineral Industries, and prospective member of the Society.

Mr. Libbey presented as his guest, Mr. Kenneth E. Hamblen, a consulting engineer of Portland, now operating a chromite property in the Kenai peninsula of Alaska, 140 miles south of Anchorage. Mr. Hamblen gave an interesting description of the country, where Russian is the predominating influence, the churches Russian mosques. The nearest town of 600 people is built like a New England fishing village, with but one street, and one car which runs back and forth on the road between the church and the cemetery. There are two principal deposits of chromite, one a typical glacial basin of solid dunite. The dunite deposits are little different from the deposits of Oregon and California. The chromite runs 48 to 52% Cr_2O_3 , lies in very mountainous country, with mountains 2000 to 3500 feet high. In the same area is best farming country in Alaska, with over 400 families. Drilling has developed one important deposit for 450 ft. in length, 150 ft. in depth, and there should be half a million tons in that ore body. There is evidence that it will extend several hundred feet farther. A plane trip to this district affords the most magnificent flying imaginable, flying as high as 15,000 feet by contact flying - no beams or beacons. It takes four or five days to get to Fairbanks. From Prince George to Juneau sedimentary formation showing coal beds....full of game...flew low over one very much surprised and frightened bear, which broke all speed records...Moose pay no attention to planes.....Tremendous defense program in that country, with possibly 200,000 troops in Alaska today...army bases at Seward and Kodiak.

Mr. Hamblen promises to bring pieces from both deposits for the Society's mineral collection.

November 13

A good attendance in spite of the downpour.

Ken Phillips presented an invitation from the Social Committee of the Mazama Club to attend their annual banquet Saturday, December 6. Tickets, which are \$1.25, may be obtained through Mr. Phillips. He also brought news of the rapid recovery being made by Tracy Wade, who is now able to take short walks, and will welcome visitors.

Dr. Jones introduced his guest, Dr. Monroe, now resident pathologist at Good Samaritan Hospital, and so much interested in geology that he majored in this subject at college and very nearly became a geologist instead of a physician. Which reminded Leo Simon that Dr. Hodge originally entered college to study medicine, but an absorbing interest in geology changed his career. The G.S.O.C. looks forward to having Dr. Monroe as a new member.

Mr Schminky introduced another prospective member, Mr. Snow, one of the drafting room force at the City Hall, who, it was said, is such a good geologist that he was almost chosen as leader of next week's field trip.

Another interesting visitor, the guest of John Allen, was Mr. Donohue, representative of the Blaesing Granite Company and an authority on granites and building stones in general. Mr. Donohue told of having visited 30 quarries in 14 states. The Blaesing Granite Co. represents seven quarries in Minnesota from which granite is shipped. It was said to be the outstanding granite operation in the United States, and has developed new methods of fabricating this material.

An excellent specimen of fossil fish in opalite from a lens near Moro, Oregon, was shown by Mr. Hancock, who said it was most unusual to find fossils in opalite, as they are commonly found in sandstone.

Mr. Orr told of having that morning tested four small diamonds for quality under the fluoroscope. One showed colorless, one bright blue, one yellow and one orange. He then burned them in an electric arc before the spectrograph, to determine what other elements besides carbon they contained. In the process the diamonds were, of course, destroyed.

Specimens brought by Miss Hughes for classification were identified as wulfenite, pyrrhotite, and hematite crystals.

Tom Carney described a week end trip with Mrs. Carney, via car and trailer, to Virgin Valley, Nevada, in quest of fire opals; going by way of La Pine and Lakeview, Oregon; Alturas, Cedarville and Vya, California, and through the Shelton Game Refuge to Virgin Valley. On this latter stretch of 87 miles he reports fair roads and magnificent scenery, with not a single car seen. In conversation with the game patrolman of the Game Refuge he was informed that the patrolman had that day counted over 2000 antelope in one herd.

Speaking of the mines in Virgin Valley, he describes the soil as bentonite clay, the hills being bentonite clay with an overcapping of volcanic ash; very hard to dig.

Out of Denio, Oregon, about 15 miles, near the Oregon line, is a fossil bed in which he saw large bones of both camels and elephants. (Mr. Hancock please take note).

Mr. Carney advises anyone making this trip to obtain a map from someone who has been there, as road signs are inadequate.

Out of Burns he obtained some good specimens of red and black obsidian, of which he showed two attractive polished pieces, one iridescent. And since the Society could not go to "the mountain", he brought the mountain to the Society - a box of about 35 excellent specimens of red and black obsidian, enough to go around and some left over. Thank you, Mr. Carney.

Of the Shelton Game Refuge, Leo Simon offers this comment: It was first financed by the National Audubon Association and later turned over to the U. S. Biological Survey. Greatly increased herds of antelope have been the result of this protection.

TO THE HUNT - FOR FOSSILS

By Arthur C. Jones

The larch trees shone yellow through the rain, for it was October on the slopes of Mount Hood. The birches had only a few golden leaves left to contrast with their silvery trunks. The dwarf dogwoods were like small, round bonfires of red flame, burning to brighten the ravines dulled by the overcast sky, where wisps of fog twined among the dark firs. The car hurried along through the Cascades on an important mission. Al Vance and the writer had a date with some fossils over in the John Day country.

Bear Springs signalled a halt to the rain, and the lighter gray of the clouds to the east down long aisles of ponderosa pine and incense cedar forecast that Central Oregon was going to treat us well with good weather for the hunt. Spray was the first goal of the party, and the green beds beyond promised good picking for almost anything from rodent skulls to giant Oligocene pigs, or from oreodons to big cat-like beasts that fed on them.

The plateau which lies west of Maupin welcomed us widely as we left the Cascade forest doorway, and the Tygh Ridge fault scarp stood out clear and sharp over the juniper tops. All the peaks of the Cascades were hidden behind a wall of rolling rain clouds, which draped down over the lower slopes and seemed to roll upward as well, towering above the ranges like super-mountains.

A curving but easy climb out of Maupin over the improved Bake-oven road brought us to the top of the Shaniko surface and we were across it to Antelope in short order. The dry weather here combined with the new road to give us free benefit of the 16 mile shorter route. Bake-oven was not so warm as the name implies, for the sky was lightly overcast, and it was Fall. Poplars in the hollows were brilliant yellow, though some had remained green below, making a combination suit for the autumn style show. They seemed to demand that we pay them all our attention, ignoring the drab farm buildings which they framed.

Black Butte stood guard to the north as we wound slowly down into the valley of the John Day River. The road was not muddy, which was a matter for mutual congratulation, since it would have been easy to slide off the now narrow highway at a dozen places on the long seven mile hill. We couldn't tarry at Clarno, though memory of the store-house up the ravine where the nuts and Eocene leaves are, made the stop very tempting. The oil well derrick was gone. Not far beyond a brief stop renewed our acquaintance with the red rhyolite tuffs which form the "Hoodoos", and before long we were over the ridge and coasting down past old ranch houses to Fossil.

The fossil bed from which the town took its name has been so thoroughly explored that few remnants are to be found, - or so the restaurant proprietess informed us. She further stated that she knew more about pies than she did about Oligocene mammals, and her pastry proved that.

Pines appeared among the basalt hills beyond Fossil which the John Day Highway climbs to the south-east. Shelton Park recalled the midnight ride of the "Three Musketeers", for the tables under which they found shelter from the rain that night were still there. How those girls ever got there on that slippery

night is more a mystery than ever after our drive over the same route under perfect road conditions in dry weather.

The Columbia River Basalts followed right down to the level of the John Day River as the road wound down into that valley again. Much of the lava has large amygdules of zeolite or agate. It fractures here into sharp-pointed blades or slivers about one to two feet in length, giving many of the cliffs a moth-eaten or frayed appearance. The buffs of the upper John Day tuffs finally appeared from beneath the basalts, the river valley widened out, and soon the smoke from the new mill at Spray feathered upward at the other edge of a wide cove.

We had no more than parked the car in front of the Spray Hotel when Ray Baldwin and his wife drove up from the east, as if by special schedule. They had been on a trip into Idaho, and had come in from Pendleton by way of the short road through Monument and Kimberley. Of course they would join in the hunt, or at least Ray would.

Three hours of daylight offered a first look at the nearest fossil...exposures three miles east of town, so the men of the enlarged party drove along for a scouting expedition. There were some green bands in the upper member of the John Day series which formed the cliffs where we stopped, though the buff-colored exposures were largest. Those colorful spires, buttresses and bastions formed an arresting picture in the afternoon sunlight. The gray sage blended with the lighter outwash of the lower slopes, and the brown lava rim rock stood out in vivid contrast to the light buffs below and the blue sky above.

Bone float soon gave evidence of buried treasure farther up the cliffs, but the largest find of the afternoon was a fragmented portion of a lower jaw. The teeth were clearly those of an oreodon. Some portions of long bones, the distal end of a femur which was presumably also oreodon, and a few assorted bits attested to those tragedies of the Oligocene by which paleontologists re-construct the pictures of by-gone epochs.

But October evenings grow chilly as soon as the sun sinks toward the rim rock, and we drove back to the hotel in the blaze of a red-gold sunset. The sides of the lower valley outlined the glow in a step-like silhouette, where great cliffs of the Columbia River basalts rise in tiers, eroded by the ancient John Day River.

The tang of sage in the early morning is a delight which only those who have experienced it can really savor. A light frost enhanced it's pungency next morning as the three amateur geologists set out. A breakfast of ham and eggs had re-enforced their ambition. Mist hung in the valley and diffused the first low rays of the rising sun like a screen of ground glass. It hid the river in the cove where the cliffs were, and made us grateful for extra sweaters and leather jackets. A castle crag was the first object of our hunt. Much searching produced small results, and the bits of limb bones we found were of no value in determining species, though one specimen belonged to an animal of good size. Baldwin kicked up another piece which was of such massive dimensions as to suggest that some Oligocene rhinoceros of almost modern build must have wandered there.

Walking and climbing over sloping surfaces all forenoon is hard on both ankles and appetites, and dulls the intellectual curiosity a bit. Lunch remedied all that, and the first new spot we found on the afternoon hunt turned up a frag-

mented but unquestionable tortoise shell. Plaster of Paris helped to re-enforce the block, and Vance saved all the pieces which the others salvaged from the slope below. More teeth, a bit of a small oreodon jaw with six teeth intact, and miscellaneous fragments of rib and limb bones completed the bag for the afternoon.

One of the boarders at the hotel that evening expressed a curiosity in regard to our search, and volunteered the information that he had found shells "like clams or mussels" up on the "Big Desert" and at the head of a dry creek called "Hide-and-peek", as well as at Black Snag sheep camp. This led to speculation as to whether there may be Cretaceous marine exposures farther north and west than those charted.

Turtle Cove was the goal for the following day, and proved a much more productive area. Each one of the party secured a skull. Identification awaits further research after the specimens are freed from their matrix, but one is probably an oreodon, another possibly a carnivore, if judged by one great tusk exposed. All were in the green middle member of the John Day tuffs, which are weathered to a very steep angle at this place. The tuff breaks into sharply angular bits, and is just as apt to fracture across a specimen as in any other direction. This makes it necessary to dig wide of a fossil if it is to be taken out in recognizable form. The task of transportation of the excavated chunks is no easy matter, either, since it necessitates a balancing act along sloping ledges, down V-shaped gullies and over shelving strata which are prone to crumble. Al Vance told of a descent he made once in this area which was complicated by a sudden hard shower. The whole hillside seemed to melt and run, and what had been firm footing became slippery mud all at once. He had only a short way to climb down, but for a while he was sure he would have to stay up there on the side of the cliff until it dried out again. The moral of the story is to stay off the John Day tuffs when it is wet weather.

Picnic lunch in the shade repaid us for the labor of a hard pack down the rocky stream bed with our loads, and then the fossils were carefully put away in boxes. Exploration was the order for the afternoon. Between Turtle Cove and the junction of the John Day Highway with the road to Mitchell there is an exposure of Cretaceous gravels. These are so well cemented that they form vertical cliffs beside the river. Quartzites, chert, shale and basalt pebbles are held in a matrix almost as hard as they themselves. Where we stopped there was a wide sandstone seam, but examination revealed no sign of shells. A wasp was busy on the ledge formed by the upper surface of the sandstone; he was digging busily at a tiny conical depression in the loose sand. Soon he made a quick movement and jerked forth an ant lion from his lair at the bottom of the sand trap. It was just another case of a trapper trapped.

Sheep Butte is the type locality for the John Day formation, not far up river from the Cretaceous gravels. All the strata are represented here, with buffs which verge on pink shades in the upper member, a wide green middle portion, and the basement member of vivid reds. The cap of almost black Columbia River basalt overlies the upper tuffs with hardly any disconformity. The whole makes a sight to feast the eyes and quicken the imagination of layman and geologist alike.

Picture Gorge is named for some pictographs left by Indians, and not for any picturesque scenery, though it is narrow and rugged enough, a defile through Coriba which opens out at the eastward end on a broad vista. Rounded yellow-brown hills constitute the Mascall beds, younger than the Miocene basalts, and overlain by the thin lava cap of the Rattlesnake formation. But the Mascall

fossils will wait for us a while longer, for we had to back track through the gorge and turn across the hills southwestward to Mitchell. More Mascall exposures line the road beyond the junction, and as we approached Mitchell we saw more high cliffs of Cretaceous conglomerates. Shales just below the town to the west are known to yield occasional ammonites, but they were not fruitful for our party. Vance found two which were in a poor state of preservation, while the others dug the fine shale fragments away by the bushels without even a hint of an ammonite being seen.

Rain began at dinner time and continued next day. We wound about the curves of the Ochoco highway through the clouds, the rain hid the farther hills, and the mud in the road cuts forbade the amateur geologists to stop and dig. Rain chased us across to Prineville and followed clear to Redmond. But the weather reversed the order of our trip over the Cascades, and we ran out of the wet along the long lanes of trees above Bear Springs, to emerge from the fog at Government Camp. It was clear in the valley west of Sandy, and new-washed color of yellow maples, varied dogwood and flaming sumac welcomed us back from a delightful hunt.

TRIP UP THE LITTLE NORTH FORK OF THE SANTIAM RIVER

by the Salem Chapter of the G.S.O.C.
September 28, 1941

Members of the Salem Branch of the G.S.O.C. and Mr. Leo Simon and his party from the Portland Chapter met in front of Waller Hall on the Willamette University Campus for a trip up the Little North Fork of the Santiam River. The first stop was made at the Wild Cat Mine, owned by Mr. E. Coleman. The property comprises six original claims covering one hundred twenty acres. As the mine is on the north bank of the river, and as there is no bridge at that place, it was necessary to cross the river in a flat-bottom boat. Of course, several members of the party succeeded in falling in the water.

Mr. Coleman claims that there are four hundred eighty-six thousand (486,000) cubic yards of gravel on the property which has been diamond drilled and assayed at \$2.02 a cubic yard in gold. The country rock appears to be basalt flecked with fine ruby-like grains. The mine shaft has been sunk at the upper edge of the property in the weathered material which Mr. Coleman claims assays 27% aluminum and 10% manganese. He says, also, that the ore has been pronounced red bauxite by Mr. Parsons of the American Aluminum Company. He claims to have 100,000,000 tons of the ore in sight.

Numerous samples were collected by members for the society's collection in the Willamette museum.

From the mine the party continued up the river for about one and one-half miles where there is located what is commonly known as "King Tut's Tomb". After lunch the members enjoyed a talk by Mr. Paxson on the geology of the region and also a talk on the plant life by Mr. Simon of Portland. After the talks the party inspected the rock called King Tut's Tomb. It is evidently of basalt and has horizontal jointing. Most of the members of the party believed it to be the remains of a dike or a sill.

On the way home the party stopped at the Stayton Flat-rock quarry where samples were obtained and pictures taken.

V. Hubbs

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Qualifications and Dues: Applicant must be sponsored by a member and recommended by the Membership Committee. A knowledge of geology is not a requisite. There is no initiation fee. A Member shall be over 21 years of age; or a husband and wife and all children under 18 years of age. The dues are \$3.50 per year, payable in advance, which includes one subscription to the Geological News-Letter. A Junior is an individual between the ages of 18 and 21. Dues are \$1.50 per year, payable in advance, and include one subscription to the Geological News-Letter.

Date
I, (please print full name) do hereby apply
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PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (3rd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p. m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday Subject: THE TULE LAKE PETROGLYPH. (CANCEL-SEE NOTICE-PAGE 213)
Dec. 12 Speaker: Mr. Horace J. Smith, of the Salem Chapter.

The enthusiasm over this talk was so great when it was given last September before the Salem Chapter, that it was felt we ought to take advantage of the opportunity of hearing this speaker.

Sunday Trip: WILSON RIVER HIGHWAY.

Dec. 14 Leader: Bruce Schminky.

Meet at S. W. Front and Yamhill, 9:00 A. M. Purpose of trip, will be to study the many new exposures of Volcanics, the Oligocene Sedimentaries and search for the elusive Miocene in the road cuts of the new Wilson River highway. A trip jammed full of interesting things. Don't miss it.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either in Collins Hall or the Chapel, as stated below).

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State St.) at time specified.

WORK NIGHT: First Tuesday of each month; Willamette museum; 7:30 p. m.

Members are urged to bring in specimens of interest.

LUNCHEONS: Owing to the irregularity in attendance it has been decided to discontinue the meetings in the Pollyanna Room of the Argo Hotel. However, one of the alcoves in the main dining-room will be available for members of the G.S.O.C. and their friends.

Thursday Subject: GEOLOGY OF THE WILLAMETTE VALLEY IN THE MC MINNVILLE QUADRANGLE.
Dec. 18 Speaker: Mr. Phil McKinlay, Graduate Assistant, Department of Geology, Oregon State College, Corvallis, Oregon.

Mr. McKinlay is engaged at present in an intensive study of the geology of the McMinville area and will tell us how the work is done. He will first describe the procedure followed in the field and the equipment used; then, the way the specimens are studied in the laboratory to develop results and conclusions. Hence, this lecture will be of real and practical value to those who are sometimes puzzled as to the methods of approach in ascertaining the nature and type of the geology of a particular region. Moreover, the McMinville quadrangle is so close to Salem that it gives "local color" to the occasion. Numerous photographic slides and maps will be used as illustrations.

SALEM BIRTHDAY PARTY

The birthday party and work night get-together of the Salem Chapter on Tuesday, December 2, was attended by 38 members of the local group. The program started off with a geological song led by Dr. Clark, who was master of ceremonies of the evening, and was followed by a get-acquainted five minutes in which all those present tried to complete a list of names, by comparison with numbers which had been pinned upon their lapels when they entered the room. Mrs. Richards won first prize for being the first to turn in her list.

After another song, sheets were passed out upon which 20 "jumbled rocks" were listed. These anagrams were to be deciphered in a given time and the highest score, 15 right, was produced by Mr. Smith.

Another song was followed by a spelling bee in which Franklin Davis and Carl Richards chose sides. Starting with three-letter-words such as "dip" and "ore", Dr. Clark led up to nice multi-lettered whizzers such as "roche moutonnee" (which Dr. Clark, himself, spelled wrong when he wrote it on the black-board) and "nunatak" both of which words downed nearly the entire assembly.

Two large iced cakes, coffee, and grape juice were forthcoming for refreshments. One of the cakes was the birthday gift of the Portland Chapter (courtesy of Franklin Davis).

LUNCHEON NOTES

November 27

Today's specimens included one of Archean gneiss from the Salmon River country of Idaho, shown by Mr. Holdredge, lately returned from there, and said by Mr. Holdredge to be the oldest rock he had ever seen; a piece of Cambrian belt quartzite nearly as old, probably Algonkian; a piece of pegmatite with mica crystals, and one of rhyolitic porphyry. Mr. Holdredge told of having seen two wild mountain goats on the highway.

Another fragment of porphyry from the southeast slope of Mt. Hood was shown by Dr. Jones, together with two beautiful highly polished specimens, one breccia and one plasma, the latter suggesting an attractive storm scene (Tom Carney said it looked like a bubble bath to him).

A yellowish beryl crystal from South Dakota and four emeralds from Colombo, South America made up Mr. Carney's contribution. As a side light on his recent trip to Nevada he told of meeting an elderly white woman in the vicinity of Burns who for 22 years has been making and selling excellent arrowheads from obsidian, using a deer horn as her tool.

The new index to the quadrangles of Oregon, Washington, Idaho and Western Montana, says Lloyd Ruff, may now be purchased for about 13 cents.

Today's guest was Mr. Thomas Jones, a mining geologist in charge of a gold mine in Alaska, introduced by Dr. Booth. Mr. Jones, who 20 years ago investi-

gated all the anticlines in Utah for an oil company, is now operating in the Kenai Peninsula, at an altitude of 1600 feet, about 40 miles from the chrome property described by Mr. Kenneth Hamblen some weeks ago. They operate for four to six months of the year, depending on weather conditions. Labor is the problem there now, the Defense program having taken all the labor available at about \$10 a day minimum. This situation is affecting all mining operations in Alaska.

December 4

"Phylogeny of North American Equidae" by R. A. Stirton is the imposing title of a publication by the University of California, submitted by Mr. Vance, which may be purchased for 40¢. It contains many illustrations and should be useful for the identification of fossils.

Another interesting publication is "Navigation of the Columbia River," containing its early history, with maps and cuts, being put out by the Corps of Engineers of the U. S. Army, according to Mr. Schminky. When released it may be purchased for the cost of publication, around 30¢, or may possibly be obtained without charge.

The pictures distributed free by the Standard Oil Company have geological interest and a complete set of these would be a valuable addition to the library of the Geological Society. As it is impossible now to get the entire set from the Standard Oil Company, it is suggested by Mr. Schminky that anyone having copies to spare bring them to one of the meetings so that the set may be assembled.

Submitted for identification was a specimen containing small blue crystals, found by Mr. Myers at Fields in Harney County, and pronounced labradorite by those who know their rocks.

In Fairy Cross Park in the southern part of West Virginia are found specimens of staurolite - fascinating little brown crosses, which, so the legend goes, were formed by the tears of fairies shed at the crucifixion of Christ. A number of these crosses were shown by Mr. Carney.

At the ammunition dumps near Hermiston Mr. Stevens reported finding a good sized fossil thigh bone of an elephant.

A visitor today and prospective member is Miss Graham, whose interest was aroused by attending Dr. Booth's lecture.

Mr. Fay Bristol, who has a silica quarry near the town of Rogue River, was introduced by Mr. Libbey.

Mr. Bates tells this one on Dr. Jones: When asked how to prevent getting stiff in the joints, his advice was "Drink nothing but water when in joints."

Those who listen to the KGW Womens Program concerning the University of Oregon Extension Division work were pleasantly surprised last week to hear Dr. and Mrs. Claude Adams discourse on things geological.

THE SPECTROGRAPHIC DETERMINATION OF SOME COMMON POISONS

(The following article is published as a partial answer to many questions regarding the uses of spectrographic analysis. The past few years have seen a tremendous growth in public interest in the newer methods employed in criminal investigations and it is hoped that an article on this subject will be of interest to the readers of the News Letter, especially in view of the fact that a large Grating Spectrograph is soon to be installed at the Portland office of the Department of Geology and Mineral Industries.)

The literature records numerous instances where spectrographic methods have been employed in toxicological examinations either as an aid in the diagnosis of the cause of illness or as an analytical tool in post mortem studies. The most notable example is the universally accepted procedure for the identification of carbon monoxide by means of the characteristic absorption spectrum of that substance when it is absorbed in blood.

In general, those cases that have been reported involve instances in which the material available for analysis was too limited to permit the usual macro-chemical methods. No one who is familiar with the spectrograph can doubt the outstanding advantages of this instrument under these circumstances; but, fortunately, spectrographic analysis possess other advantages which more than justify the initial expense of the apparatus necessary to undertake this type of analytical work.

Spectrographic analyses distinguish themselves by directness and simplicity and some of their advantages may be summarized as follows:

- (1) Preliminary treatment of the sample is usually limited to ashing and thus the separations involved in a chemical analysis are eliminated. Since only the reagent used for the ashing is mixed with the sample the possibility of contamination of the unknown by impurities in the reagents is much less than in the case of a routine chemical analysis.
- (2) The analysis is obtained at a low cost and the results are permanently recorded for future reference, or for study by another analyst.
- (3) The identification is positive and all of the elements detectable by the method employed are revealed on the spectrogram by one or two exposures.
- (4) Analytical data are obtained with great rapidity. Qualitative data may be had in less than one half hour and quantitative data within an hour or so if suitable standard plates or quantitative curves have previously been prepared.

The need for speed is often essential especially when an analysis is necessary in order to diagnose a case of poisoning. The samples submitted for analysis may vary in character from stomach contents to pills, liquid medicine, or food samples. When the sample is of an organic nature, the process of oxidation of the sample preliminary to the routine chemical analysis requires from eight to ten hours. Unfortunately such a delay before the analysis can be started sometimes means that the analysis for the purpose of diagnosis must of necessity be followed by the less pleasant post mortem examination.

Another important advantage of spectrographic analysis over the customary chemical examination is that the spectrographic analysis does not discriminate between that which is looked for and that which is wholly out of mind. Thus, the presence of traces of elements may enable the analyst to discover the source of the poison. Let me illustrate this point by citing three specific cases.

In a recent case, a bottle containing coffee was submitted to the Massachusetts State Police Laboratory to be examined for poisons. A wife had accused her husband of attempting to poison her. It was obvious that the brown, ill-smelling, sour liquid in the bottle was not pure coffee. A large amount of sulfuric acid was found to be present. No one could possibly drink it. However, the usual spectrographic survey analysis was performed, disclosing considerable traces of Copper, Lead, and Antimony. Since these metals, as well as the acid were present, the suggestion was given to the investigating officers that possibly the acid could have come from an old storage battery. The officers again interviewed the wife, and accused her of having taken acid from this battery to place in her own coffee. Surprisingly, she admitted it. Her object was to obtain grounds for a divorce from her husband. The survey spectrogram of the impurities in the acid were more significant than the mere presence of the acid itself.

An Italian family consisting of the mother, father, and two sons were starting to partake of a spaghetti dinner when the younger son was called from the table. The other three members of the family continued with the meal and soon after, each of the diners became ill. The mother died that night; her husband and the older son finally recovered; and the younger son, who had not eaten the food, was unaffected. The symptoms suggested the possibilities of poisoning by Arsenic or Bichloride of Mercury, so the remainder of the food was submitted to Dr. W. F. Boos for examination. Fortunately, Dr. Boos was very attentive to the task at hand, because during the course of the acid distillation of the sample he noticed a peculiar frosting of the distilling flask. He immediately suspected the presence of a flouride and subsequent investigation confirmed the presence of flouride as the sodium salt. This is the only recorded case of Flourine murder. If Dr. Boos had not been watching the distilling apparatus at the time the flask became frosted the flourine might not have been detected, as the routine toxicological examination does not include a specific test for flourine. On the other hand, a routine spectrographic analysis would have definitely shown the presence of the characteristic calcium flouride bands and the presence of the flourine would have been immediately established.

Recently portions of a human stomach were submitted to the head of the Department of Chemistry at Alfred University for toxicological examination. The diseased had died after an illness of several days during which time he had complained of an intense thirst and burning sensation in the stomach. These symptoms accompanied by the fact that the stomach was badly burned and had a garlic like odor are considered to be distinctive of Arsenic poisoning; therefore, a request was made that the analysis consist of merely a confirmation of the presence of Arsenic in the stomach and the stomach walls.

The Marsh test was undertaken by Dr. P. C. Saunders, a very capable analyst with a wide experience in the detection of poisons. Dr. Saunders observed that the reaction involved in the routine test for Arsenic did not take place in the

usual smooth manner and although a gray deposit similar to the arsenic mirror was obtained the reaction within the apparatus was accompanied by some "strike backs" of the flame at the exhaust end. In addition, the deposit did not appear to have the usual metallic luster of a typical Arsenic mirror. A sample of the stomach liquid was subjected to a spectrographic analysis. Arsenic was not found to be present except as a faint trace but the presence of considerable quantity of Phosphorus was readily confirmed by chemical analysis. A less experienced analyst might well have confused the presence of phosphine in the Marsh test for the presence of arsine, but the spectrograph positively differentiated between Arsenic and Phosphorus within fifteen minutes of the time the sample was submitted.

Because a poison usually distributes itself throughout many of the principal organs of the body, the older methods of examining only the stomach and the intestines is no longer considered sufficient to prove the presence or absence of a fatal dose. For example, Arsenic which is involved in 85% of deaths by poisoning, is very efficient in spreading itself through the system. A quantitative determination of Arsenic must be made on the right and left kidney, the right and left lung, the heart, the brain, the spleen, the liver, the skin, the thigh bone, the stomach, the stomach washings, the stomach contents, and the blood. Since many of these organs contain only faint traces of Arsenic, usually from a few milligram, the routine chemical analysis is tedious and somewhat inaccurate. However, the spectroscopist, once the standard plates or analytical curves have been prepared can analyze the ashed sample in a relatively short time and with a reasonable degree of accuracy.

Using 10 mg. samples of ashed flesh it is possible to detect the presence of 0.1 mg. of Arsenic, 0.01 mg of Lead, and from 0.1 to 0.01 mg. of Mercury and Phosphorus.

Since all of the samples to be analysed are converted to the ash with the exception of phosphorus samples, standard plates are prepared by placing an amount of each poison under investigation representing a lethal dose in a different ashed sample. A spectrogram of these standards when compared with the spectrogram of an equal weight of ashed unknown enables the spectroscopist to tell if the suspected poison is present and if so if it is present in lethal amounts. Further quantitative information can be obtained by any of the previous methods of quantitative spectrochemical analysis.

Because an element shows its characteristic lines irrespective of its mode of combination special precautions must be taken when analyzing for elements which may be in non-poisonous forms in the sample suspected of containing a poison. This is particularly true in the case of Phosphorus and elements occurring in the bones, as a constituent of certain proteins, and often in food in the form of phosphates. Thus an ashed sample frequently shows the presence of considerable quantities of Phosphorus and the distinction between poisonous and non-poisonous Phosphorus is of importance. At first thought this might seem to eliminate the spectrograph as a means of detecting Phosphorus poisoning, but when we remember that the poisonous form of Phosphorus is yellow Phosphorus we realize that a separation of the toxic from the non-toxic is possible. This separation is accomplished by a steam distillation of the acidified sample of the unknown and the distillate is analyzed for the presence of toxic form of Phosphorus.

The spectrograph is used to identify, and also estimate quantitatively, a wide range of the elements present in a given sample. The substance to be analysed is energized to give out light as a non-luminous flame, an arc, or a high tension spark. Spectra obtained by these methods are called emission spectra. The radiations emitted from each element, and occasionally from certain compounds, in the substance are definitely characteristic for any one of these elements and can be identified by their wavelengths. Except in some few cases the unaided eye cannot identify these radiations, and a spectrograph is necessary for such identifications. The radiations emitted from the energized substance pass through a narrow slit on the spectrograph, and by means of a prism or grating are recorded as lines, in order of their wavelengths, upon a photographic plate. Thus, by measuring the position of a line on the plate its wavelength is determined. Since the wavelengths characteristic of the elements are known, an element is identified by the presence of its characteristic lines on the developed plate.

In the arc method of spectral excitation all of the metals and the non-metals Arsenic, Phosphorus, Boron, Carbon, Silicon, and Fluorine may be detected. While in the high tension spark the range is broadened to include Chlorine, Bromine, Oxygen, Sulfur, Selenium, and Tellurium. Unfortunately the emission methods yield no information concerning the presence or absence of the radicals; however, in view of the recent strides in the development of absorption spectroscopy it is reasonable to believe that methods for the obtaining of this information may be available in the not too distant future.

Quantitative spectrographic analysis rests on the observation that when an element is present in a matrix, or body of other materials, its spectral lines grow gradually weaker and finally disappear in a definite order as the concentration of the element is decreased. This is known as the Persistence method of quantitative analysis and consists of comparing the spectra of the sample under analysis with those of a graded series of similar composition, and choosing visually the known which best matches the unknown. The method of Persistence is being gradually replaced by a method using a rotating logarithmic or step sector in front of the slit and measuring the length of a selected line with changes in concentration of the element producing that line. The use of a densitometer, which is a special form of photometer intended for the measurement of optical density, greatly increases the sensitivity of quantitative spectrochemical analysis. At the present time the use of the internal standard method with a logarithmic or step sector and employing a densitometer for the measuring of line intensity enables the spectroscopist to analyze a sample with an accuracy of better than 5%.

H.C.H.

BOOK REVIEW

"Geologic Observations in the the Philippine Archipelago"
by Bailey Willis

National Research Council of the Philippines, Bulletin No. 13, September, 1937. Received by Warren D. Smith.

Dr. Willis spent several months in 1937 in a reconnaissance of the Philippine Archipelago much of it made by airplane. This gave him a broad perspective of the whole region and with his trained eye and extended experience in many parts of the world he could make certain broad interpretations that perhaps other workers have not been prepared to make. Certainly the writer of this note could not do so because when he was in the Islands over twenty years earlier, he traveled largely on foot, on horseback, or by dug-out canoe and often times he was too close to the ground to get a broad picture. Literally, a great deal of the time we "could not see the forest for the trees."

Naturally, Dr. Willis spent most of his time in looking for faults. Faults in the terrain principally, and in doing so he naturally found some faults in the work of earlier investigators including the undersigned, but this was to be expected. In some cases he corroborated our earlier work, in other instances he had to differ with us, but this is the way it is in science and we do not have to apologize for this. Doubtless workers will come later, working closer to the ground than did Dr. Willis, who may have to shift some of his faults or eliminate them entirely. Any geologist coming from California is apt to be fault-minded. Well, we shall not follow this point too far as we do not wish to be too critical of either Dr. Willis or his colleagues in California.

One of the chief points of difference between Dr. Willis's interpretation and my own is concerned with the theory of continental fragmentation. My own idea was, and still is, that the Philippine Islands are the crumpled part of the continental shelf being very much in the same condition as the East Indian region. Dr. Willis says that this theory is untenable and thinks that the principal islands were separate nuclei where igneous rocks have been pushed up from below and around which sedimentation has taken place. This is a very critical matter since, if these Islands have been more or less separated for a long period of time or were never joined together or to the continental areas, some facts in the distribution of plants and animals, including man, will be difficult to explain.

Another matter which Dr. Willis was inclined to criticize is a map which Father Maso and I issued some years ago on which we showed a number of straight lines connecting earthquake epicenters. We did not mean to indicate that all the faults in the archipelago necessarily followed straight lines. We knew that many of them curved but these faults, whether curved or straight, coincided approximately with many of the straight lines on our earthquake map.

There are many interesting details in the geology of the archipelago which would be more interesting to those who have worked in that region than to many of our readers who have never seen the Islands, but I forego any detailed

statements of them here. After a thorough discussion of the tectonics of the region, Dr. Willis points out the connections between the valuable ore deposits and the main structural lines, something which had been done years ago by several geologists.

In the last part of the paper, Dr. Willis makes certain very definite and timely recommendations to the Philippine Government for the furtherance of geologic work in the archipelago and with all of these, the undersigned wholeheartedly agrees. Some of this work has already been begun--in fact was begun before Dr. Willis came to the Islands. I fear that he has inadvertently overlooked some of the detailed areal geologic work done by the Division of Mines of the Bureau of Science between 1907 and the time of his visit. The main points that he suggests are:

1. "Proceed as soon as practicable to secure an adequate topographic map of the islands.
2. Develop a corps of Filipino geologists under conditions that shall, so far as possible, prepare them for the diverse services to be required of the Philippine Geological Survey and insure their continued devotion to that Survey.
3. To begin the work of the Geological Survey concentrate the topographic mapping upon one or more mineral districts and the surrounding region."

In fairness to the older workers, it should be stated that all of these steps were taken many years ago. Perhaps Dr. Willis knew this; at any rate it will do no harm to reemphasize the importance of these so that the Philippine Government may keep the work going.

All in all, this bulletin of Dr. Willis's in summarizing the broad structural factors with new interpretations, has doubtless been very helpful to many workers in the Islands and certainly is of special interest to one like myself who worked there long before Dr. Willis came to the Islands.

If one should read this bulletin he would be impressed with the great significance of the Philippine Islands in Pacific Basin Geology. Since it is close to the junction between the circum-Pacific folded mountains and the great belt of the folded mountains through Southern Asia. It is a part of the world geologically very active and of very great importance economically and politically. To speak of one thing only--last year the Philippine gold production exceeded that of Alaska.

In 1943 there will be a meeting of the Pacific Science Congress to be held in Manila and at this time it is hoped that many American and foreign geologists may be able to get together and thresh out some of these interesting controversial questions which are so fundamental in Pacific geology.

It is interesting to note that Dr. Willis undertook this arduous reconnaissance of the Philippines after he had passed his seventieth year. His physical stamina and mental acumen in these latter years is a marvel to his younger colleagues.

NOTICE

The lecture by Mr. Horace Smith scheduled for Friday, December 12, has been postponed to some future date because of blackouts and other uncertainties. It had previously been decided to hold no lecture meeting on the fourth Friday of December, since it falls on the day after Christmas. If regular lectures are to be resumed in January, due notice will be given all members of the Society.

CHANGE IN ADDRESS

Mr. & Mrs. Claire P. Holdredge 6442 S. W. Burlingame Place Portland, Ore.

NEW MEMBERS

Mr. & Mrs. David B. Charlton 1610 S. W. Clifton St. Portland, Ore.
 Miss Ruth E. Hewitt Blackstone Apt. 1831 S. W. Park Ave. Portland, Ore.
 Miss Maxine Hipkoe 315 West 35th St. Vancouver, Wash.
 Miss Agnes B. Jones St. Helens Court Apt. 1131 S. W. Montgomery Portland, Ore.

MAZAMA CHORUS

"Come cuddle 'round our campfire and join in our song". The Mazamas would like some more singers, particularly tenors and basses, for their chorus. Professional direction assured, and a lot of fun besides. Rehearsals Wednesday evenings 7 to 8 p.m. in Mazama club rooms, Pacific Bldg. If you work late, come as you are. Regular Wednesday evening Mazama program follows at which G.S.O.C. members and friends are welcome, of course. Call Emily Moltzner, BE 9109, or drop in on a rehearsal if you'd like a "look-see" first.

Thanks are due Mr. & Mrs. Robert Campbell for the gift of back numbers of "News Letter".

Thomas A. Carney showed color movies of a travelogue of the National Park to the Oregon Society of Artists Nov. 27th. He also spoke at the meeting of the Oregon Agate & Mineral Society Friday Dec. 5. Topic was collecting crystals as a hobby. There was also a demonstration of dendritic growth from crystal structure.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 7 NO. 24

PORTLAND, OREGON

December 25, 1941

GEOLOGICAL NEWS-LETTER

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Geological Society of the Oregon Country

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WHERE DO WE GO FROM HERE ?

The early days of war find most of us in a state of nervous tension and mental confusion. So many changes and adjustments are required of us in our mode of living and even our manner of thinking that momentarily we permit our interest in self-education and worth-while recreation to be subordinated to more pressing matters. And properly so: for the main thing with all of us now is to win the war decisively at any cost. In such an atmosphere, it may be proper to ask: What is to become of the Geological Society during the war? What do we do now?

It must be admitted that, with the exception of the work of some of our members on strategic materials, the functions of the Society are not of a type that will have a direct and immediate bearing on the course of the war. Hence it seems fair to assume that to some extent our normal activities will be curtailed. Certainly any rationing or radical increase in the cost of tires and gasoline will have a deterrent effect on our field trips. Also, some of our members will no doubt soon be in the armed forces. For the rest of us, there is a great deal we can do and must do to assist in home defense. (In that connection, every GSOC member should register NOW at his headquarters for home defense.) It is to be expected that these activities may cut into our hobby of geology.

On the other hand, the maintenance of normal attitudes and pursuits has an important function as a builder of morale. Paradoxical as it may seem, it is in the interest of national defense for each of us to relax occasionally. We cannot afford now to abandon constructive hobbies. It is therefore planned that our lecture meetings, field trips, and luncheons will be resumed in January on a normal basis. This will be good news to our members, after missing the lecture meeting of Dec. 12 because of uncertainty as to blackout regulations and the omission of our second meeting on Dec. 26 because of its proximity to Christmas.

Your loyalty in attending these future meetings will do as much for you as for the Society. Let's keep our chins up. Let us keep constantly in mind that we are going to win this war, and that we are going to keep our geological interest alive at the same time. And I venture to predict that after the war is over, some of our members may, if they wish, travel and study geology in certain mandated and disarmed islands near China that once had visions of Empire, an "Asiatic co-prosperity sphere".

May there be no blackout of geology in the Oregon Country!

K.N.P.

REGISTER NOW FOR HOME DEFENSE

--And a very Merry Christmas to all

*

PORTLAND CHAPTER ANNOUNCEMENTS

LECTURES: On 2nd and 4th Fridays of each month at the Auditorium (3rd floor) of the Public Service Building, 920 SW 6th Ave., at 8:00 p.m.

TRIPS: On Sundays following lecture meetings, or as otherwise arranged. Meeting place at Public Market, Front and Yamhill.

LUNCHEONS: Every Thursday noon, in the banquet room of the Treasure Island Restaurant, 815 SW Broadway (50¢ minimum). A table is also reserved every day except Thursday and Sunday for the men of the Society in the "Barnyard", 8th floor, Lipman Wolfe & Co.

Friday **THE TULE LAKE PETROGLYPH:** an interpretation of what it signifies.

Jan. 9 Speaker: Horace J. Smith, Salem.

This petroglyph is so extensive and so remarkable that it was made a National Monument. What it represents has been the subject of much research without arriving at satisfactory conclusions. Mr. Smith has studied it intensively for several years, and has developed a solution of the enigma which is startling, yet rings true. He will present the whole subject to us, and fully illustrate it with lantern slides, this being the first occasion on which his conclusions have been publicized. It is not often we have lectures on the original research of one of our own members, as this one is. So reserve this date and participate in an event of outstanding interest.

SALEM CHAPTER ANNOUNCEMENTS

LECTURES: Third Thursday of each month, 8:00 p.m.; Willamette campus (either in Collins Hall or the Chapel, as stated below).

TRIPS: On the Sunday following the regular monthly lecture; caravan starting from Waller Hall (State St.) at time specified.

WORK NIGHT: First Tuesday of each month; Willamette museum; 7:30 p.m.

Members are urged to bring in specimens of interest.

LUNCHEONS: Owing to the irregularity in attendance it has been decided to discontinue the meetings in the Pollyanna Room of the Argo Hotel. However, one of the alcoves in the main dining-room will be available for members of the G.S.O.C. and their friends.

Thursday Subject: **ARCHEOLOGY OF THE NEAR EAST**

Jan.22 Speaker: Dr. Carl Sumner Knopf, President, Willamette University, Salem.

Many have expressed the hope that we might have the new President of our local University speak to us at one of our regular meetings. He is in great demand as a speaker and this date has been set to fit his calendar. It is one week past our regular meeting day, but it is hoped that all who possibly can will arrange to come. His subject, too, is one of particular interest at this time, as it deals with the Iranian Plateau, the area extending from Palestine to the Persian Gulf. He will discuss modern methods of excavation and the location and importance of the sites of some of the great archeological finds in that region, as well as the geological aspects of the materials comprising the records in stone. Dr. Knopf is a dynamic speaker and widely recognized as an authority on the subject of his lecture, so we are assured an evening of exceptional interest.

BUY U. S. SAVINGS STAMPS AND BONDS

BUILDING STONES IN PORTLAND

by
L.N. Dunihue

(Several months ago the Research committee of the Society initiated a study of the building stones used in Portland buildings. This work receives added impetus from the following notes, which Mr. Dunihue has very kindly permitted us to publish. He has had many years of experience with stones along the Atlantic seaboard, in the middle west, and on the Pacific coast, and this information, besides being of great interest, is of considerable value to the research project.)

INDIANA LIMESTONE

Select Buff: Police Headquarters: 1st. story and trimmings. Erected 1911.
Court House: 5 stories intervening between the granite base and the terra cotta entablature.
Spaulding Building: all except terra cotta and brick.
Porter building: two stories.
Public Library: All trimmings, also balustrades and benches along sidewalks.
Reed College: boy's dormitory and science building; trimmings.
Public Auditorium: base.

Standard Buff:

Finley Mortuary: entrance, steps and platform.

Select Gray:

Main Post Office.

SANDSTONESWilkeson, Wash: (near Tacoma)

Federal Building: (except terra cotta entablature).
"White" Church.
Christian Science Church, 19th. & Everett.
First Presbyterian Church: trimmings.

Utah:

Oregonian.

Wyoming:

City Hall.

Tenino, Wash:

Old Post Office.

Ohio:

Synagogue, 19th. & Everett. Trimmings, "Briar Hill".

DOLOMITEMinnesota:

Federal Building (interior) walls pink; carved panels, buff.

BASALTOregon:

Portland Hotel.
First Presbyterian Church, except trimmings.

TRAVERTINES

Montana: Guardian Bldg; entrance lobby, Travertine.

Italian:

Art Museum: trimmings outside and inside.

Liberty Theatre.

Weisfield & Goldbergs store; except a Sienna travertine border

around the display windows, which is also an Italian stone.

MARBLESMissouri:

Public Service Bldg; wainscot and floors of office section hallways "Napoleon Gray".

Colorado:

First National Bank Bldg: "Colorado Yule"

Fashion Shop. " "

Tennessee:

*Federal Bldg; floors.

Weiner's Store.

Alaska:

Public Service Bldg; rest rooms "Gravena".

Georgia:

Oregon Mutual Life Ins. Co; "White Georgia".

Belgian:

Meier & Frank Store; Base of show windows "Belgian Black"

Vermont:

*Burrough's Store; "Verde Antique".

Italian:

*Building; N.E. cor. 6th. & Oak; base "Black & Gold"

Guardian Bldg; elevator lobby "Montinella"

*A. B. Reynolds Store; base "Verde"

*Dayan's Store; entrance "Verde"

Chandler Shoe Store; facing "Pavonazetto", trimmings "Red Verona"

(All of the foregoing, except those marked with an asterisk, were supplied by Lutz Marble Co., Portland.)

GRANITESMinnesota:

Telephone Bldg. addition: base "pearl pink".

Rosenblat Store; base "Ruby Red"

Eastman Kodak Store; base "Ruby Red"

Cocoa Cola Building; entrance "Ruby Red"

Stearns Memorial Fountain; "Rainbow", except platform and watering trough for dogs, which are Calif. "Black Diamond".

National Cash Register Store; "Rainbow".

Zukor's Store; "Rainbow".

South Dakota:

First National Bank, branches, S.E. 6th & Morrison and S.E. 82nd and Foster. Base and entrance; "Carnelian".

Selling Bldg., entrance, "Carnelian".

Maegly-Tichner Bldg., entrance, "Carnelian".

Wisconsin:

Oregon City Woolen Mills Store; base "Ebony Black".

Henry Building; base "Ebony Black".

American Bank Bldg; entrance "Ebony Black".

California:

Stearns Memorial Fountain; platform and watering trough for dogs "Black Diamond".
(All of the foregoing granites were supplied by Blaesing Granite Company, Portland.)

California:

Court House; first story.

British Columbia:

American Bank Bldg; base.
Imperial Hotel; base.

Norway:

Vilcox Building; base at entrance "Emerald Pearl".

PAPERS RECEIVED BY THE LIBRARY

American Museum Novitates, March to August, 1941.

- No.1103 Schaeffer: The Pes of Bauria Cynops Broom. (Osteological study of the left foot of an upper Triassic pre-mammal from South Africa)
- No.1110 Schaeffer: A revision of Coelacanthus Newarki and notes of the evolution of the girdles and basal plates of the medial fins in the Coelacanthini. (primitive Triassic North American fish)
- No.1117 Burke: New fossil Loporidae from Mongolia. (Upper Eocene hare or rabbit, collected by the Roy Chapman Andrews Expedition.)
- No.1118 Simpson: The affinities of the Borhyaenidae. (The ancestry of a South American marsupial group)
- No.1119 Simpson: Some Carib Indian Mammal Names.
- No.1120 Simpson: The Eocene of Patagonia. (A general review of the taxonomy, stratigraphy, and correlation of the southern South American lower to middle Tertiary formations, and a rebuttal of criticisms of the authors earlier paper on Patagonia)
- No.1128 Mook: A new crocodylian from the Lance formation. (Description of a new Eocene crocodile skull from Wyoming)
- No.1130 Simpson: The function of saber-like canines in carnivorous Mammals. (This is a very interesting summary of the perennial question: Did the saber-tooth tiger use its sabers for cutting, stabbing, or slicing? The conclusions are made, after consideration of all the various evidence, that the primary function was stabbing)
- No.1131 Simpson: Discovery of Jaguar bones and footprints in a cave in Tennessee.
- No.1132 Berry: The dentary of Syllomus Crispatus Cope.
- No.1136 Simpson: Large Pleistocene Felines of North America. (Discussion of the relationships of the fossil Jaguars and Pumas, especially of the skeletal sizes and shapes.)
- No.1135 Colbert: The osteology and relationships of Archaeomeryx, and ancestral ruminant. (Detailed description and measurement and a discussion of phylogeny)

Bulletin of the American Museum of Natural History,

- Art.IV Colbert: A study of the Orycteropus Gaudryi from the island of Samos.
(Study of the fossil Aard-Vaark)

notes by JEA.

REPTILE-MAMMAL GAP LOCATED

The transition in geologic time between the age of reptiles and the age of mammals has been located by Geological Survey and Smithsonian Institution paleontologists in the mountains just east of Denver, Colorado.

The site is a mesa capped by basalt, formed from lava of volcanic eruptions. A little more than 200 feet below this basalt cap is a layer of rock containing fossil plants and fossil bones of strange animals known to have inhabited the earth during the Paleocene period, about 50,000,000 years ago. Then comes a layer of about 50 feet of barren rock. Immediately below this are rock strata with the bones of dinosaurs.

The warm-blooded creatures of the Paleocene, including very primitive types of flesh-eaters, were the distant ancestors of the creatures which inhabit the earth today.

A clear-cut horizon between the end of the age of reptiles when the earth was dominated by gigantic, cold-blooded, small-brained animals and the "dawn age" of warm-blooded life has long been sought here by paleontologists. Heretofore the absence or scarcity of the remains of Paleocene mammals at strategic points has prevented the locating of this transition with any degree of accuracy.

Here, according to Dr. R. W. Brown and Dr. C. Lewis Gazin, who have studied the collections, the sequence of rocks from one age to the other is clearly shown.

At this locality the transition from one age of life to the other is represented by 50 feet of unfossiliferous strata requiring at least many thousands of years for deposition.

The causes for the extinction of the dinosaurs remain unknown. Mammals of a very primitive sort existed, it is known, in association with them, but seemed to be decidedly inferior creatures in the pattern of life. Then, with the disappearance of the cold-blooded reptiles, the more agile creatures with bigger brains survived to become the rulers of the earth.

Smithsonian Institution

Nov. 14, 1941

PRESS RELEASE NO. 31

A geologic map of the Portland Area, comprising the Portland, Oregon City, Troutdale, and the Boring Quadrangles, by Ray C. Treasher, geologist of the State Department of Geology and Mineral Industries, will be on sale after the first of the year.

This map is the result of several years intermittent field work by Mr. Treasher, and depicts in three colors the ten geologic formations which make up the terrane in this region. The scale is about 2 miles to the inch, the total size being 22 by 28 inches. On the back of the map a large chart describes the various formations and indicates how they may be distinguished in the field.

A popularized summary of the historical geology of the area to accompany the map in the near future, will tell of the geologic events that have gone on in the past thirty or forty million years.

