

GEOLOGICAL SOCIETY NEWS LETTER

Volume 16, 1950

**PROPERTY OF
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MINERAL INDUSTRIES,**

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

Executive Board of the Society

Officers - 1949-1950

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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; a junior member between 18 and 21. A single membership may be held by husband and wife and their children who are under 18 years of age. The dues are \$3.50 per year (\$1.50 for Junior members), payable in advance, and include one subscription to the Geological NEWS LETTER. Dues of members living in counties not adjacent to Multnomah County are \$2.50 per year.

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 _____
 (member)

 (signature)

SOCIETY ACTIVITIES

LECTURES: On the second and fourth Fridays of each month in Public Library Hall, SW 10th Ave. and Yamhill St. Watch the Oregonian and Oregon Journal for announcements. Meetings start at 8:00 p.m.

TRIPS: An average of one field trip is held each month. For questions and suggestions concerning trips call Dr. F. G. Gilchrist, BR 7375.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 SW 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

JANUARY LECTURES

Friday
Jan.13 Dr. Warren D. Smith, Professor Emeritus University of Oregon, will talk on Oregon faults and earthquake possibilities. Dr. Smith is well qualified to speak on this subject from his studies in Oregon and the Orient.

Friday
Jan.27 Lecture to be announced. Watch local papers or call either Mr. or Mrs. Leo F. Simon (BE 0300 and EM 0549).

JANUARY FIELD TRIP

Sunday
Jan.29
1:00p.m. Members of the Salem Geological Society cordially invite the Gesockers to visit them in Salem. Meet on Sunday, January 29, at 1:00 p.m. at the north front of the Capitol Building. The Salem Society wants this to be a get-acquainted affair as well as an interesting trip. So the GSOC group will be divided into units and escorted by Salem Society members through the Capitol and Forestry buildings, and then to the houses of members of the Salem Society in order to see collections and partake of refreshments. Transportation will be arranged for those desiring it - call Mr. Erickson (BE 7191).

OREGON ACADEMY OF SCIENCE TO MEET

The 8th Annual meeting of the Oregon Academy of Science will be held at Lewis and Clark College on January 21, 1950. Schedule of papers to be presented and time of meeting has not been announced.

BANQUET TICKETS ON SALE

Banquet tickets for the Annual Banquet in March will be on sale beginning Friday, January 27, at the Society lecture in Library Hall.

NEW MEMBERS

Mr. and Mrs. Quentin T. Summers 3543 S.E. 122nd Avenue, Portland 66

THIS IS A BINDING OFFER

Members desiring to have their News Letters bound in red pressboard covers can avail themselves of the reduced rate offered by a local binder, who will put them up for the nominal sum of 10 cents per volume. Staples should be removed from each issue of the News Letter and they should be gathered in proper order, placed in a large envelope together with the owner's name and address, and left at the State Department of Geology, 702 Woodlark Building. In order to get this reduced rate, all of the News Letters must be ready for the binder not later than February 1. Some members make it a practice to bind the year's issues of both the News Letter and The Ore.-Bin together. This makes a nice-sized volume.

THE WELDED-TUFF PROBLEM

By

Lloyd W. Staples,
University of Oregon

In recent years, and especially during the last decade, the science of Geology has seen the expanding of two new concepts, both in the field of Petrology. One of these is concerned with the genesis of silicic plutonic rocks, while the other has attempted to explain the origin of certain silicic extrusive rocks. These studies are usually referred to as the origin of granites or "granitization," and the origin of welded tuffs. It is not intended to discuss granitization here. Contemporary geologic literature abounds in descriptions of granitization as more and more geologists obtain evidence of it in areas under study. The importance of this problem was made evident by the symposium on granitization held at Ottawa, Canada, on December 30, 1947, by the Geological Society of America. (see Origin of Granite, G.S.A. Memoir 28, 1948)

Geologists in several parts of the world have observed deposits of tuff which grade downward from porous, poorly compacted tuff to dense lithoidal rock, megascopically indistinguishable from rhyolite. Microscopic examination of this material often shows it to be composed of glass shards and pumice which bears all the evidence of being compacted and welded together by heat and pressure. As the rock originally was obviously a tuff, it seemed logical to call the product of compaction a "welded tuff." The problem of the origin and recognition of welded tuffs has attracted much less attention than granitization, but here in Oregon it is a subject of great importance because of the large areas covered by silicic extrusives. The problem involved may be summarized in this way: How are welded tuffs formed, and how does one distinguish them from rhyolite flows? An attempt will be made to outline the salient features of this problem, give some important criteria, and present a carefully selected and abstracted bibliography so that those interested may know where to look for more comprehensive treatment of the subject.

As long ago as 1868, Fritche and Reiss described welded tuffs from the Canary Islands. Iddings was the first to use the term "welded" and this was in connection with Yellowstone Park pyroclastics with collapsed pumice.

In 1933 Fenner described "sand-flows" from the Valley of Ten Thousand Smokes which were welded rhyolite tuffs. In 1935, Marshall in New Zealand recognized that the rhyolite plateau of North Island was an "ignimbrite," a name synonymous with "welded tuff," rather than a flow of rhyolite. At about the same time Mansfield and Ross did some classical work on the welded tuffs in southeastern Idaho. Reference to these and other studies is given at the end of this article.

As a result of both field work and laboratory study certain conclusions concerning the origin, occurrence, and identification of welded tuffs have evolved. There is general agreement on some of these conclusions while on others there remains considerable difference of opinion.

ORIGIN: The classical studies on the 1902 and 1929-32 eruptions of Mont Pelée recognized the importance of "nuees ardentes" (burning clouds, glowing avalanches). Fenner's work at Katmai indicated that welded tuffs were a result of this spectacular type of eruption. Further study is required to work out the thermodynamical problems involved. It appears

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probable that the eruptions were principally from fissures associated with cones rather than from central conduits, that the material had a very high initial temperature (indicated by the charring of trees), that as the clouds traveled they expanded and moved like a mobile liquid due to evolution of gases, that they followed slight slopes or valleys where possible, that their fluidity would permit them to rise high on the flanks of mountains even when there was an opposing slope. It should be noted that not all "nuees ardentes" give rise to welded tuffs, but under certain optimum conditions welding takes place. This may be due to difference in initial temperature, difference in grain size, difference in composition with reference to both silica and gas content, and depth of deposit which in turn controls degree of insulation.

OCCURRENCE: Welded tuffs often have great areal extent. As an example, the Bishop tuff of California covers 400-450 square miles, the North Island, N.Z., sheet is about 10,000 square miles in extent, and the eastern Idaho and southern Montana welded tuff may cover over 5,000 square miles. The thickness of the sheets varies considerably; for example, the Bishop tuff averages 400-500 feet, while the southeastern Idaho welded tuff lies in a fairly uniform blanket 20 to 50 feet in thickness, and one deposit at Crater Lake is only 3 feet thick.

Columnar jointing is usually well developed but may be entirely lacking. Likewise it may occur at the top, bottom, or be developed all the way through the deposit. In general, columnar jointing is common and to be expected. This often results in steep cliffs. Erosion frequently produces blocks at the foot of the cliffs rather than a fine crumbly ash.

Welding usually increases with depth in the deposit. This is very well demonstrated in the Bishop tuff where it is common to find the matrix at the top to be porous and soft, and as the bottom is approached the matrix becomes dense and lithoidal or glassy. Likewise, the pumice fragments show greater flattening and collapsing toward the bottom. This is also true of the New Zealand deposit. It should be noted, however, that a porous, ashy zone is often found at the bottom contact of deposits, due to quicker cooling of this zone.

On a large scale, welded tuffs commonly have small initial dips due to conformity with the original topography. Minor details of the topography are usually subdued. For most of the known deposits the top surface of the sheet is remarkably flat for great distances. An exception is the welded tuff of southeastern Idaho which appears as though it were sprayed on to the pre-existing surfaces. There is very little tendency to "puddle" in former depressions and the thickness of the sheet is quite uniform.

PETROGRAPHY: It is frequently the case that welded tuffs can be identified only in thin section; in fact, it is safe to say that many examples might not even be suspected of being welded tuffs until thin sections are made of them. In thin sections all or any of the following structures may appear and indicate some degree of welding. As is frequently the case, the amount of welding may vary from very little in one portion of the deposit to complete welding in another, so it is to be expected that the criteria given below will be gradational.

1. Flattening of shards. During consolidation the shards may change from "V" or "Y" shapes to closed linear arrangement.
2. Elimination of porosity. The rock becomes denser and may apparently be entirely free of openings. Pumice is frequently collapsed.
3. Accommodation in shape of fragments. The welding causes the shards to wrap around one another, or shards are often squeezed between crystals, resembling a stream rushing between boulders.
4. Flowage. In the case of very hot tuffs, flowage may in some degree eliminate the characteristic tuff structure.
5. In glassy types perlitic structures may develop. After welding, devitrification may begin. The development of spherulites is fairly common. Tridymite is common as a secondary mineral.
6. Any large quartz or feldspar crystals present are usually fractured and often corroded. Shards and glass may be forced into the embayments left by corrosion. The large crystals often show no strain.
7. There is less accidental or foreign material than in mud flows or even than in most common vitric tuffs.
8. Alignment. The glass shards have random orientation in normal vitric tuffs whereas distinct alignment is common in welded tuffs.

It might be well to include here the criteria given by Marshall for distinguishing welded tuffs from ordinary tuffs. He states that welded tuffs (ignimbrites) are usually uniform and normally fine textured, lack bedding, show pronounced prismatic jointing, have coherence and effective solidarity, and in thin sections show "flow structure" which is due to the bending of viscous glass shreds around previously existing crystals. Marshall distinguishes welded tuffs from lavas by the fact that the tuffs are in deposits which are approximately horizontal, there is an absence of glassy selvages, there are no scoriaceous structures, the specific gravity is low, a thin bed of fine glass dust often occurs below the formation, there is an increase in specific gravity from the top to the bottom of each formation, and there is no indication of mass flow.

In regard to the above criteria, it should be noted that although they apply to the New Zealand area studied by Marshall, newer studies have indicated some exceptions.

PROBLEMS INVOLVED: There remains the question of how material in a fine state of comminution could be carried through the air tens or hundreds of miles and still be hot enough on deposition to weld itself. From studies such as those made at Katmai it is probable that the material left fissures at high initial temperatures. In addition it is necessary to assume that gases continued to escape for a long period of time after deposition of the tuff and that there was an exothermic reaction going on during the escape of these gases. The heat maintained in this way, together with the load of the overlying material, was of importance in producing the welding. More study is required on the details of "nuee ardente" types of eruptions in order to completely answer the questions concerning the formation of welded tuff deposits.

In the case of the Bishop tuff, Gilbert found that where the tuff is less than 100 feet thick there is no welding. This is generally true for the New Zealand welded tuffs also, although there is a bottom layer which is granular (probably due to chilling). As noted, in the Idaho tuffs and at Crater Lake welding occurs where they are only 20 feet, or less, thick. Further work is required to determine the minimum thickness of sheets in which welding can occur. This will undoubtedly depend on the composition and temperature of the material, on the depth of burial, and on the speed of blanketing by later material.

In some welded tuffs there is a marked size sorting and this suggests a different type of "nuée ardente" deposit than those commonly known.

There is still considerable controversy over the propriety of the name "welded tuff." In New Zealand they are commonly called "ignimbrite," and Cotton prefers this name because where welding is far advanced the rock may no longer bear any resemblance to a tuff. Although this is true, the writer feels that the general usage in this country of "welded tuff" is preferable because it is more descriptive of the origin of the rock. In a recent paper, Fenner (1948) has objected to the term "welded tuff" as a general name for the type of deposits discussed here. His objection is based upon the faulty premise that welding implies softening and union by heat, whereas a large group of welded deposits are indurated by recrystallization. If his definition of welding were correct the difficulty could be overcome by the use of "indurated" instead of "welded," rather than using the new term "sillar" which he proposes to add to the literature. However "welding" is not limited to union by heat and there is no reason why both types of deposits cannot be referred to as "welded tuffs."

CONCLUSIONS: Welded tuffs have frequently been mistaken for rhyolite flows. In Oregon, good examples of welded tuffs are known to occur both east and west of the Cascades in large numbers. A detailed study of one of these occurrences in the western Cascades is now being made by Mr. Donald Hausen, a graduate student at the University of Oregon. There is danger in not recognizing welded tuffs but the writer is equally aware of the danger of going to the other extreme and concluding that there are no such things as rhyolite flows (because the silicic lava would be too sticky).

Because complete descriptions of the occurrence of welded tuffs have been given from relatively few localities, it must be recognized that generalizations are still somewhat dangerous. Many of the criteria given above apply very well to some deposits and fail completely for others. This shows the need for more work on welded tuffs and a careful evaluation of the data obtained.

The following references are presented somewhat in the order of their value, according to the writer's opinion. All of the works listed are available at the library of the University of Oregon.

SELECTED REFERENCE WORKS

Gilbert, C. M.

1938 Welded tuff in eastern California: Geol. Soc. Am. Bull.,
vol. 49, pp. 1829-1861.

This is an excellent description of the Bishop tuff, which is a good example of a welded rhyolitic tuff. Comparisons are made with other tuffs throughout the world and good photomicrographs are included.

Mansfield, G. R. and Ross, C. S.

- 1935 Welded rhyolitic tuffs in southeastern Idaho: Am. Geophys. Union Trans., 16th Ann. Meeting, pp. 308-321.
A good discussion of the characteristics of welded tuff in Idaho, accompanied by excellent photomicrographs, well described.

Marshall, P.

- 1935 Acid rocks of the Taupo-Rotorua volcanic district: Royal Soc. New Zealand Trans., vol. 64, pp. 323-366.
A classical work in which the term "ignimbrite" was first proposed. A good summary of the properties of ignimbrites is included. Photomicrographs accompany the article but are not very clear.

Cotton, C. A.

- 1944 Volcanoes as landscape forms, Whitcombe and Tombs, Ltd., N.Z. In the chapter on "Ash Showers and 'Nuees Ardentes'" a good discussion with many references is given, as well as limited discussion in several other parts of the book.

Fenner, C. N.

- 1923 The origin and mode of emplacement of the great tuff deposit in the Valley of Ten Thousand Smokes: Nat. Geog. Soc. Tech. Papers, Katmai ser., no. 1.

A very important paper describing a "sand flow" formed by "nuees ardentes." The indurated sand-flow rock is a welded tuff, although not called that specifically by Fenner. The genesis is well described.

- 1948 Incandescent tuff flows in southern Peru: Geol. Soc. Am. Bull, vol. 59, pp. 879-894.
A generalized article dividing the extensive Peruvian deposits into welded tuffs, due to heat and pressure, and "sillars" produced by recrystallization from pneumatolytic exhalations.

Williams, Howel

- 1942 The geology of Crater Lake National Park, Oregon: Carnegie Inst. Washington Pub. 540.
The chapter "The Wineglass welded tuff and associated pumice" as well as many other references to welded tuffs and "nuees ardentes" describes interesting occurrences at Crater Lake.

NEW GEOLOGICAL MAP AVAILABLE

A geological map entitled "Geology of the coastal area between Cape Kiwanda and Cape Foulweather, Oregon" by Parke D. Snively, Jr., and H. E. Vokes has been recently published by the U.S. Geological Survey as Oil and Gas Investigations Preliminary Map 97. The map is accompanied by a descriptive text and may be purchased for 50 cents from: Distribution Section, Geological Survey, Denver Federal Center, Denver, Colorado.

This map should be of interest to all Gesockers, especially to those who went on the GSOC field trip led by Mr. Snively last May.

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LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 SW 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

FEBRUARY LECTURES

Friday Feb.10 "Reminiscences of Geological Society Field Trips," by H. Bruce Schminky. The talk will be illustrated with movies. (Tickets for Banquet will be on sale.)

Friday Feb.24 Business Meeting. (Tickets for Banquet will be on sale.)

FIELD TRIPS

No field trip in February. Geology concealed by a recent glacial advance from the north pole.

15th ANNUAL BANQUET

Crystal Anniversary

Date: March 10, 1950

Place: Mt. Tabor Presbyterian Church Hall
S.E. Belmont and 55th Avenue

Time: 6:30 p.m.

Price: \$1.75 per plate

Speaker: Dr. Ewart M. Baldwin will tell of his experiences in Korea. His talk will be illustrated with Kodachrome slides.

Toastmaster: Mr. Norris B. Stone

Skits: Mrs. May R. Dale

Songs: Mr. Kenneth N. Phillips

Accompanist: Mrs. A. W. Hancock

Tickets: Mr. and Mrs. Leo F. Simon, 711 S.W. Ankeny Street, BE 0300 or EM 0549. Tickets may be obtained also at lecture meetings.

Chairman of Banquet Committees:
Mrs. Leslie W. Bartow

NEWS OF MEMBERS

It is a pleasure, indeed, to print some direct news of the Dr. John Allen family from Socorro, New Mexico, where he is on the faculty of the New Mexico School of Mines (letter dated November 20, 1949):

"I came almost directly from summer-camp work to this new position, and we have been head-over-heels in trying to get organized ever since. The last straw was the El Paso meeting of the Geological Society of America, which involved me in preparations for a field trip to the New Mexico central Mining District, and other things too numerous to mention.

"We love the new place and I like the new job exceedingly. It is small, my classes run from 8 to 11 students instead of from 80 to 150; it is spacious, there is plenty of classroom, laboratory, and office space, instead of being crowded as it was at PSC; and the people have the true western geniality and spirit of the frontier. We have bought a new house, the first new one that we have ever lived in, and Margaret and Mrs. Moss are already up to their ears in Garden Club, PEO, AAUW, etc., etc. We get out nearly every weekend into the mountains or to some new part of the state. Last week to El Paso, the week before to Silver City, Sunday to Albuquerque, and we will spend Thanksgiving in Chihauhua!

"The geology is superb. I can look out across the Rio Grande Valley from my office and see the escarpment of the Mississippian and Permian rocks lying unconformably on the pre-Cambrian, with a long sweeping pediment extending down to the river. I can go across the hall and see Socorro Peak rising 1400 feet above the valley, a mass of highly faulted volcanics and Paleozoic and Tertiary sediment. To the south there is a lava-capped mesa and to the north several cinder cones and fresh lava flows. A few weeks ago we went on a trip to the atom-bomb site, and collected a lot of fused glass ('Atomsite') from around the point of the explosion; I plan to send a batch to GEESOCKERS in the near future.

"I am very much pleased to hear that the Museum is finally on its feet. Perhaps I can contribute some samples from time to time, if they would write to me about what they would like. We have a very large mineral museum here, and might have trading material. How about some rocks and minerals from Oregon?

"New Mexico is in so many ways like eastern Oregon that we feel quite at home already, the rocks are much the same age, the mines are for the same minerals, and the vegetation in the mountains especially reminds me of the Ochocos. You probably remember that we always, since our stay in Baker, felt that we would enjoy this type of climate, and we do. Right now it has been perfectly clear and cloudless for the last ten days, warm in the daytime, and down to 35-40 degrees at night.

"Give our best regards to all the GEESOCKERS, and explain that I haven't forgotten them, and that I hope to have another story before too long."

SUMMARY OF LECTURE ON EARTHQUAKES

By

Dr. Warren D. Smith

(Note: It is hoped that Dr. Warren D. Smith's lecture on earthquake possibilities for Oregon, originally scheduled for Friday evening, January 13, can be presented at some not-too-distant date. However, Dr. Smith was good enough to furnish us with the highlights of the talk as he would have given it had the weather not gotten out of control -- and here they are. H.M.H.)

The early writers, such as Montessus de Ballore, considered that an hiatus existed in the matter of earthquakes in the Pacific Northwest. This proved, on research, to be merely an hiatus in our knowledge.

My own interest in this subject is due to my experience with, and study of Philippine earthquakes before coming to Oregon. In 1919 I published in the Bulletin of the Seismological Society of America the first paper on this subject in Oregon. This paper included a list of all the quakes known at that time. Since that time Messrs. Treasher, Allen, and Mason of the Department of Geology and Mineral Industries, with the assistance of the U.S. Coast and Geodetic Survey, have extended this list and have brought it up to date with the last one, August 24, 1949, whose epicenter was somewhere west of Coos Bay in the sea. It appears that we have had at least one earthquake every year in Oregon since 1846.

In my early paper I drew some tentative rift lines (I should have used the word tectonic) in an attempt to explain the location of these disturbances. The most prominent of these are:

1. The Columbia line.
2. The Oregon coast line. The apparent straightness of this coast from Coos Bay north, however, should not be attributed entirely to faulting.
3. The Willowa Mountains (north side) line.
4. Steens, Abert, Lakeview, and Hart Mt. lines in south-central Oregon.
5. The complex of NW-SE and NE-SW lines in the Baker region called attention to by Livingstone and others.

Several others might be noted.

Faults in Oregon are then discussed under two heads:

1. Faults which have pronounced topographic expression.
2. Faults, more or less concealed, which are revealed by stratigraphic and paleontologic evidence. There are many such in the Coast Range.

Possible reasons for relative paucity and moderate intensities of our earthquakes are discussed. We do not have sufficient data on which to base any theories at present. This aspect of the subject is highly speculative.

Attention is called to the lack of reliable seismic data in this State owing to the fact that we have only one seismograph at present, the old one at Oregon State College. A new one is soon to be installed there on a more suitable site west of the college and the old one set up in LaGrande.

In view of the large dams being constructed in many parts of the State we should know more about what the earth is doing beneath these structures.

Attention is called to the excellent report on earthquakes by the committee of the Oregon section of the American Society of Civil Engineers. This report, submitted in November 1949, urged the adoption of the "Uniform Building Code" of the Pacific Coast Building Officials Conference which pertains to earthquake resistant structures.

Recommendations: (mine)

1. Adoption of a building code to take care of earthquake hazards.
2. Establishment of a network of seismographs for the State as follows:
 1. Corvallis (already provided)
 2. Portland
 3. LaGrande (will soon be provided)
 4. Lakeview
 5. Klamath Falls
 6. Eugene (instruments to supplement the one at Corvallis)

Oregon can have a serious earthquake at any time in almost any part of the State, though the danger is not acute, judging from past history. We have no sure way of predicting when. The most severe in historical times was the one at Milton-Freewater, July 15, 1936 - intensity VIII on the modified Mercalli scale whose maximum is XII. An earthquake, of the intensity of the one at Milton-Freewater, in Portland would cause great loss of life and property.

IN THE LAND OF THE OREGON RHINOS

By
Phil F. Brogan

Low clouds draped the Jefferson County hills as we entered the lonely land of the rhinos - a valley that has its beginning in a narrow, rocky gorge a short distance north of Paxton. From a rocky rim we surveyed the region. It was a comparatively short canyon, as canyons go in the broad lands east of the Oregon Cascades. To the north it expanded into a wide basin, with the skyline slashed by untilted lavas. Near the center was a Mascall outcrop, from which we had earlier removed giraffe-camels and a three-toed horse, Merychippus. Black, Columbia lavas humped nearby, and protruding from these, to the northeast, was a bit of the John Day formation.

Before we entered the narrow gorge at the head of the canyon, I lectured to my fellow rock-hunter, Walter G. Peak, of Bend. Here, I told him, was one of the most interesting and least known areas, geologically, in the entire state. Exposed were at least four epochs of the Cenozoic era - the upper John Day, mid-Miocene, Pliocene, and Pleistocene. In one locality, I mentioned, plant, fish, and mammal fossils had been found within a radius of 100 yards.

Just a few years back, I told my companion, remains of a rhino, Teleoceras near fossinger, had been found. What a thrill it would be, I added, if we could find another rhino this November day, in the year 1949! But Colonel Peak was skeptical: This was no day for a rhino to be abroad, he contended. Furthermore, he said, we were hardly equipped to hunt rhinos: We had made the trip north from Bend in quest of fish vertebrae, reported from a gravel pit. But we had our picks.

Making our way over gigantic boulders weathered from a lava rim, we reached a railroad cut and started our quest for fish of the Pliocene, as represented by a yet-undefined swimmer which Dr. E. L. Packard, Oregon State College paleontologist, believes was as large as a shark - but definitely not a shark because that creature's skeleton is cartilaginous.

We were still discussing fish and rhinos when I happened to notice a fossil protruding from the steep slope of a cut. It definitely was not a fish. Digging foot holes in the torrential wash of an ancient stream, we went to work. Picks were first used to remove the heavier material; then we cautiously moved closer, employing the blade of a knife provided by a farmer, Art Johnson, who had joined us. Soon, a tooth emerged.

The fossil was the upper jawbone of a rhino, some 20 inches long. A row of huge teeth led back into the rocks. For more than three hours we worked in the soft material, and gradually there came to light one of the most impressive fossils this veteran hunter of the ages ever saw. But it was fragile, and quickly cracked as it was exposed to the air. Our rancher friend raced back to his ranch home and returned with glue and tape. Soon we had the jaw out of the bed where it had rested for long millions of years. It wasn't in the best of shape, but it was impressive. The fossil evidently represents another individual of the *Teleoceras* family, and it was found some ten miles from the scene of the original discovery in the area. Just as soon as it can be glued and plastered into shipping condition, it will be forwarded to Dr. Packard.

As we carried the rhino jaw out of the gorge, I thought of the find made in the Clarno country a few years ago by Lon Hancock. Lon's find represented a tiny, running type of rhino, a hyracodont. It was not only of interest because it was the first mammal fossil ever removed from clays of the Clarno Eocene, but because it marked the start of the story of the rhino family in Oregon - a story that lasted some fifty million years. The rhino found in the Gateway area of Jefferson county was among the last of the rhino families known on the American continent.

The Gateway rhino in no way resembled the tiny mammal of Clarno times. *Teleoceras* was a huge creature, with a long barrel-like body and absurdly short legs. The species was originally identified from western Nebraska and Kansas, where the animals lived in late Miocene and early Pliocene times. Its tummy scarcely cleared the ground.

The few remains of the rhino so far found in the Gateway area were in torrential stream deposits, and had obviously been washed into place by a flood. Near the recent find was the mold of a tree trunk.

Yes, there are rhinos in them thar hills, but there should be no rush of fossil hunters to the Gateway region until beds are more extensively explored. Rhino remains are scattered and scant. Years elapse between finds. This student of Oregon's ancient past has spent days searching cuts and pits, treeless hills and creek washes, without luck. Recently, he hit the jackpot.

The geologic story of the area still remains to be interpreted and told.

A VISIT TO YACHATS*

By

Dr. and Mrs. W. Claude Adams

During the summer, we had a pleasant two-week's sojourn at Yachats at the Sherwood Lodge, across the Yachats River from the town. This new lodge is built entirely of peeled logs, and the interior is finished with logs and knotty pine. The spacious lobby has a massive fireplace open on four sides built of pink sandstone from Madras, Oregon. Bear skins and antlers on the walls, and the whole rustic atmosphere are reminiscent of the Sherwood Forest of Robin Hood lore, the naming of the Lodge after one of its owners, Mr. H. M. Sherwood, being a happy circumstance. In the dining room is a large fireplace faced with the same pink stone and an unique barbecue fireplace in the coffeeshop built of the sandstone and thick slabs of slate from Vermont.

The Oregon Coast Highway has need of such type of hostelry, owned and operated by hospitable people and catering to a class of customers seeking homelike atmosphere, quiet, and relaxation. Mr. Sherwood's father, the late Andrew Sherwood, was State Geologist of Wisconsin and his geological collection was given by his son, who is a graduate of Oregon State College, to that institution and the bulk of it is on exhibition in the Geological Museum there. Specimens of his collection adorn the fireplace mantles of the Lodge.

The native beauty of the Yachats section is still unspoiled and a vacation in this area proves most pleasant. Several Indian shell mounds (kitchen middens) are to be seen on the south bank of the Yachats River near the mouth, and others in the town. The largest and best-known mound, located on the main street and now almost hidden from view by a stone wall and wild vines, yielded many Indian artifacts and a girl's moccasins and other bits of clothing that, oldtimers say, indicated an Indian princess had been buried there. An engineer acquaintance familiar with that region bemoaned the fact that the highway crews cut right through the most perfect shell mound along the coast, ruthlessly destroying it.

Our visit to Yachats was highlighted by the activities of the Gem and Mineral Club of Yachats and the sojourn for a couple of days of Chuckawalla Slim, rock-ologist, with his trailer load of interesting rocks and minerals. The Yachats rock-hound colony looks forward to the visits of this unique personality and his generous willingness to let them inspect his collection to their hearts' content. The Yachats Club with Mrs. Peggy Bamber as president is a live organization and the little community boasts of more people interested in rocks and minerals in proportion to the population than most towns or cities. A special meeting was held during the stay of Chuckawalla Slim to which we were invited and we met some interesting and cultured people. The meeting was held at the home of Mr. and Mrs. H. W. Cole. Mrs. Cole makes and sells to the wholesale trade seabeach novelties of miniature crabs, sea moss and everlasting flowers encased in transparent plastic for keychains, locketts, brooches, and earrings, and black plastic and gold jewelry, her product being marketed as Fritzie's Plastics. The molds after being poured require polishing which Mrs. Cole does herself with some outside help. She also polishes agates and stones. We spent another evening at the Cole's looking over their mineral collection and viewing their fluorescent exhibit under black light.

* This is closely related - in both time and subject matter - to Dr. and Mrs. Adams' account: "Observations, Geological and Otherwise, of the Oregon Coast" which appeared in the November 1949 News Letter; but due to limited space they could not be printed together.

Present at the meeting of the Club referred to were Mr. and Mrs. Paul Van de Velde, at present editors and publishers of the Waldport Record. Formerly Mr. Van de Velde had been Belgian Consul to Mexico for fifteen years. Incidentally, they are the donors to the University of Oregon of the large and valuable collection of native objects of art and culture from the Belgian Congo, Africa, which is now housed in the Condon Hall Museum on the Eugene campus. They also donated two huge, very old Sevres vases, which had been in the family for generations, to Gerlinger Hall.

Another notable couple who adds much to the Yachats community or rock enthusiasts are Dr. and Mrs. Arthur L. Eaton whose home is in Holtville, California, but who have summered at Yachats off and on for years. Dr. Eaton is a retired professor of science and languages. He has been active as a director of California Association of Mineral Societies and is a former member of the editorial staff of Desert Magazine. Mrs. Eaton also conducted a column in that magazine called "Cogitations of a Rockhound." Dr. Eaton lived many years in Mexico and spent several years in study and research at National University, Mexico City. His chief work was in archeology and he helped in the uncovering of the pyramids.

During his residence in Mexico and his extensive travels in foreign countries, Dr. Eaton was able to build up one of the finest collections of rare and beautiful opals, as well as other precious stones, to be found on the continent. On his invitation, we spent two evenings at his cottage viewing his magnificent opals, and were told that we had seen only a fraction of his collection. He showed cut and polished opals graded as to color, and with and without fire, also many specimens enclosed in their matrices. The opals from Mexico far surpassed in beauty, variety of colors, and iridescence those from Australia, Brazil, or any other location represented in his collection. Scarcely in a lifetime would anyone be privileged to see such a marvelous assemblage of opals. Dr. Eaton's fascination for this particular gem and his quest of them in the mines of Mexico and abroad has been a lifetime interest. Two of the rarest types of specimens and the most memorable were the Alexandrite from the Ural Mountains, which is in reality a chrysoberyl, and the red cherry opal from Mexico, remarkable for its clarity and glowing, vivid, red color.

Pictures of certain specimens in Dr. Eaton's collection appear as illustrations in several textbooks on mineralogy.

Agates of fine quality, jasper, and petrified wood are found in abundance around Yachats after the winter storms. The folk at Yachats who have rock and mineral collections, especially those gathered in that vicinity, are eager to show them to interested visitors, and doors of hospitality thus swung open to us in several homes and we were amazed at the beauty of the local yield.

NEW MEMBERS

Kenneth M. Lewis 2235 S.W. Palatine Street, Route 2, Box 531, Oswego, CH 5162

Mr. Lewis is Director of Oregon Museum of Science and Industry.

Dr. K. M. Swisher 5020 S.E. 92nd Avenue, Portland 66, TA 7410

FAULT PATTERN OF SOUTH-CENTRAL OREGON (Abstract)*

By

Ira S. Allison

Oregon State College, Corvallis, Oregon

The abundant faults in south-central Oregon comprise two principal sets which intersect in a diamond-shaped pattern that suggest shearing. One set trends northwesterly, and the other northeasterly, although considerable variation occurs. The resulting elevated fault blocks, such as Abert Rim, Hart Mountain, Steens Mountain, and Winter Ridge, and rift valleys, such as the basins of Goose, Summer, and Abert lakes, are familiar to many geologists. Little known, however, is the abundance of small, closely spaced fault scarps on the high lava plains of the region. Many of these faults, though easily discernible on aerial photographs, have small throw so that their scarps are inconspicuous and easily overlooked on the ground. They are sufficiently numerous locally to be a fraction of a mile to 1-2 miles apart. Their pattern and general distribution in the region furnish clues to the structural history of the northern border of the Great Basin.

 *From: Geological Soc. of America Bulletin, vol. 60, no. 12, part 2,
 December 1949. Abstract of paper presented at meeting of Cordilleran
 Section of the Geological Society of America, April 1949.

THE LONG TOM, A FORMER TRIBUTARY OF THE SIUSLAW RIVER

Northwest Science, volume 23, no. 3, August 1949, carries a report by Ewart M. Baldwin and Paul W. Howell on the history of the Long Tom River. In their introductory paragraph the authors state:

"A study of the topographic maps covering the Long Tom drainage system of western Oregon shows that many of its tributaries, including former tributaries now diverted, trend westward. Certain of the smaller tributaries constitute "barbed drainage" typical of streams in which direction of drainage has been reversed. Much of Long Tom drainage lies within an area drained by the Siuslaw River system. This evidence pointed to a former westward course to the ocean. It was with this in mind that the writers sought corroboratory evidence such as remnant stream gravels, windgaps, etc., in the field. A thick section of alluvial material, filling a valley far too large for the present streams, was recently discovered at the divide between Elk and Fish creeks (located 4 miles west of Noti) and substantiates the hypothesis of former westward drainage. The presence of this broad, filled valley together with the westward trending tributaries of the Long Tom River, is considered proof of its former westward course before capture diverted it to its present northward course paralleling the Willamette River to its junction with that stream a few miles north of Monroe."

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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; a junior member between 18 and 21. A single membership may be held by husband and wife and their children who are under 18 years of age. The dues are \$3.50 per year (\$1.50 for Junior members), payable in advance, and include one subscription to the Geological NEWS LETTER. Dues of members living in counties not adjacent to Multnomah County are \$2.50 per year.

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 _____
 (member)

 (signature)

SOCIETY ACTIVITIES

LECTURES: On the second and fourth Fridays of each month in Public Library Hall, SW 10th Ave. and Yamhill St. Watch the Oregonian and Oregon Journal for announcements. Meetings start at 8:00 p.m.

TRIPS: An average of one field trip is held each month. For questions and suggestions concerning trips call Dr. F. G. Gilchrist, BR 7375.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 SW 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

* * * * *

OUR CRYSTAL ANNIVERSARY BANQUET
(The 15th Annual)

The time is 6:30 p.m. on March 10th, and if you are there on time, you will be served on time. The ladies of the Mt. Tabor Presbyterian Church are noted for their cooking - do not let a good meal spoil by standing in the kettle.

Our crystal ball forecasts entertainment of the highest quality. We are most fortunate to have Dr. Ewart M. Baldwin tell us his impressions of a country that most of us will never see. Korea in colors should be an evening's entertainment in itself.

But in addition to this menu, our "toastmaster", Norris B. Stone, is scheduled to "pop-up" a whole basket of well-buttered stunts.

Take the Mt. Tabor bus or drive to S.E. 55th and Belmont, and you will become crystalized with enjoyment at a cost of only \$1.75 per person.

* * * * *

MARCH LECTURE

Friday
Mar. 24 Lecture to be announced at meetings and in local papers.

FIELD TRIP

Sunday
Mar. 26 FIELD TRIP to the Oswego-Tualatin area. The group will meet at the Richfield Service Station at the north end of Oswego at 1:30 p.m. The trip will be under the leadership of R. Erickson of the Trip Committee. Contact Al Vance if transportation is desired. We will be joined on this trip by the Salem Geological Society.

Points of interest to be visited will be as follows: the semi-gravel deposit adjacent to the filling station; the iron outcropping on Iron Mountain; the semi-gravel deposits at the west end of Lake Grove; and the glacial erratics of the Tonquin area. If time permits, the Troutdale gravels in south Oswego will be studied.

* * * * *

AUDUBON SCREEN TOURS

MONDAY, MARCH 20, 1950 - Benson High School, 8:00 P.M. Admission 60¢; children free.

"MIDNIGHT MOVIES IN ANIMALAND"- Howard Cleaves, veteran expert in wild life photography, has prowled at night from the Everglades swamp of Florida to the snow peaks of the Cascades; from spruce forests of Maine and New Brunswick to the deserts of California and Arizona to take motion pictures which reveal the mysterious night happenings in the wilderness.

Cosponsored by the Oregon Museum Foundation, Inc., the Oregon Audubon Society and Chi Omega Alumni of Portland. All receipts go to the Oregon Museum of Science & Industry.

NEWS OF MEMBERS: The Sacramento Bee reports that Ray C. Treasher has been elected President of the newly organized Sacramento Geological Society.

HOW HIGH IS UP?

By

H. Bruce Schminky

Ever since man came upon this earth, his life has been governed by ups and downs. Our primitive man must have learned very quickly that he was colder on a mountain top than in the lowlands around it. In his search for food, he must have realized eventually that plant and animal life changed with elevation. In this same search he would soon know that it was easier to climb a gentle slope than a steep one. He must have discovered that streams generally make these gentle slopes into a mountainous region, and that following these streams to their head would usually lead to the best place to cross the mountains. Every one of these fundamentals is as important to us today as to the first men whose primitive minds recognized their existence and began to use this knowledge in their daily lives.

Ancient man did not care what the actual difference in elevation was between two places; or, if he did wonder about it, he had no way to measure it. Modern man, with his many extensive engineering projects, needs to know elevations very accurately for some things, while for others approximations may satisfy. To meet his needs in determining differences in elevations, modern man has developed several methods.

The simplest measurements are those that can be made direct with a rule or a tape line. This is good only when the objects to be measured are side by side for comparison, as in a building.

When the ends of the project to be measured are miles apart - as a highway, railroad, canal, or pipeline - the engineer's level gives the most accurate result. This is simply the measuring of a series of stair steps, in which the horizontal line of sight through the telescope on the level is the stair tread, and the rod at which the surveyor looks gives the height of the riser. By adding all the steps going up, and then subtracting the sum of all the steps going down, we get the difference in elevation between the two ends.

The engineer can also find the difference in elevations by triangulation. This takes some involved surveying and calculations, but can give very accurate results.

A portable barometer, which records changes in elevation by measuring the air pressure, gives approximate results satisfactory for exploration purposes.

Where do we start to measure elevations? Surprising as it may seem to the layman, the starting points, or "datum planes" to which elevations are referred, are legion. The nature of the work being done and the distance from points of known elevation account for these variations in datums.

Sea level is our most common reference datum. The United States Coast and Geodetic Survey has been establishing tidal gauges along coasts since its origin. Mean sea level for each gauge is determined by an average of water heights taken at least every hour for a period of at least one year. This is assumed to give the level at which the water in the oceans would stand if not disturbed by tide and wind. As time and money permitted, these points of established sea level were connected by lines of levels by either the Coast and Geodetic Survey or the United States Geological Survey. Other level lines were extended inland until they were gradually connected into a network across the country. Along all of these lines, brass tablets, or bench marks as they are called, are set at suitable

1950

intervals and locations. When the levels are closed and adjusted for errors, the elevations and the locations of these bench marks are published.

Now if all this work could have been completed at one time and if all errors had been found and eliminated, we would have an ideal system, and it is probable that we would use all our elevations in terms of sea level. Let us look at conditions as they are here in Portland, just one hundred miles from the ocean, to see how far we are from the ideal.

When Portland began its struggle to get established among the trees bordering the Willamette, there were no levels connecting it with the sea. But the time came when the citizens wanted to get their feet out of the mud, and grades had to be established to drain the water off of the streets. In Ordinance Book Number One we find Ordinance Number Twenty-one, which reads:

"An Ordinance establishing the grade of that part of Front Street situated between Ash and C (Couch) Streets.

"That the grade for that part of Front Street situate between Ash and C Streets be as follows:

"Beginning at the center of the intersection of Ash and Front Streets at a height of $2\frac{1}{2}$ feet above the high water line of 1852 and thence to the center of the intersection of Front and C Streets with a descending grade of one foot."

This was passed August 22, 1854. At that time they thought they had seen the highest flood that would happen, and their streets would be above the next one.

As time passed, the cities of East Portland, Albina, St. Johns, and Linnton were growing along the banks of the Willamette. Each decided on its own datum as need arose, and thus they continued to grow, each striving to be the one main city on the Willamette. In 1896 all were consolidated with Portland. Now the differences in datums would cause confusion if allowed to remain as they were before consolidation.

Sometime in the early 90s the Northern Pacific Railroad had made a survey between Portland and Astoria, and the line of levels that was a part of this work was tied to a tide bench established by the Coast and Geodetic Survey at Astoria. In 1895 and 1896 the Geological Survey began surveys to make the Portland Quadrangle Topographical Map; and to save time, an elevation established by the railroad was used for their starting elevation. A number of bench marks whose elevations were based on this railroad survey were set in and around Portland.

One of the government bench marks was set at the 5th Avenue entrance to the Portland City Hall. So it was rather natural for the city fathers to look for a relation to government elevations when it came time to iron out the differences in datums between the new cities acquired by the consolidation. The datum they decided to use was mean low water as determined by the gauge at Astoria, rather than mean sea level. The new base of grades was $9\frac{1}{2}$ feet below the Portland base of 1854, 69 feet above that used by East Portland, and 2 to 3 feet below those of the other cities. All the street and sewer grades of the various cities were corrected accordingly, and all new ones were made to conform.

Later the Geological Survey ran its own levels to Astoria, and in their report in 1898, they state that there had been a two-foot error in the levels run by the railroad. When all the adjustments were made, the mean sea level relation at Portland was 2.45 feet above the city datum.

At that time Portland made no attempt to change the datum to conform to the corrected elevations. But in 1914 and 1915 ordinances were passed making mean sea level as established by the Geological Survey the official base of grades. The city then ran an extensive bench level survey, and a book was published listing all the bench marks in terms of the government elevations. By this time, however, hundreds of thousands of grades had been established by the city; and because of the cost and time required to make the corrections on all the maps and profiles, and in the records, the work was postponed from year to year. Grades continued to be established by the old datum of 1896.

Because the Columbia River carried such a great volume of water, the Coast and Geodetic Survey doubted that the Astoria gauge was giving true sea level readings. So they accepted a gauge at Fort Stevens as being nearer to the ocean and therefore more reliable in its results. In 1922 they published a new list of benchmarks, giving elevations based on the Fort Stevens gauge. The results of this survey made mean sea level 0.32 foot below that of the Astoria gauge. This did not tend to hasten Portland into changing to the Geological Survey datum.

The Geodetic Survey was still not satisfied with the results of tide gauges on the Columbia. The jetty on each side made many changes in the channel to the ocean, and made a difference in the off-shore currents as well. So it was decided to use a tide gauge at Garibaldi. New levels were run, and the result at Portland was a new sea-level reading 0.67 foot below that of the Geological Survey in 1914. This was in 1926.

Now with three sets of government elevations for the benchmarks at Portland, the city decided that it would not try to keep up with Uncle. On December 7, 1927, the ordinance changing to the Geological Survey datum was repealed, and the city datum of 1896 was made official for all time.

It was just as well that this was done, for the Coast and Geodetic Survey made a new adjustment in their levels in 1947. Sea level is now 1.07 foot below the old Geological Survey figures. There is nothing to indicate that this will be the last change. While the total variation at Portland has been only one foot, in other areas these changes have amounted to several feet.

We have another datum in use in Portland that has been of great interest to all during the summers of 1948 and 1949. It is the River gauge established by the Corps of Engineers. The zero mark is set at low water. Here in the harbor minus readings give ship pilots the minimum depth of the channel, and the plus readings give the minimum clearance under the bridges at flood stage. Because stream channels fall from their head to their mouth, river gauges are on a sloping line instead of a plane. Their readings apply only to the place where the gauge is set. They are set to record the difference between low water and flood stages. For that reason, the bottom reading is made zero instead of a sea level figure. It would be a waste of time to write, let us say, 4190 for low water and then have to subtract from a flood reading of 4202 to find that we were having a 12-foot flood.

Sometimes the engineer will change a datum relation to eliminate having both plus and minus readings to work with at the same time. For example, when the Interstate Bridge was under construction across the Columbia River, the plans were made on the basis of the zero on the river gauge at Vancouver having a value of 100 feet. By doing this, even the lowest pier footing had a plus elevation, and yet no odd values were given to the high or low river readings that were recorded during the period of construction.

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There are still many areas where no known elevations have been established. Then, as was done when Portland started, the engineer "assumes" a convenient elevation for his starting point.

In most work the datum is fixed so that all readings will be above zero. The miner, however, is likely to find most of his workings below the point where he made his discovery. He sinks his shaft, and from it runs tunnels into the ore body. He refers to these tunnels as the "100-foot, the 540-foot, or the 2000-foot levels," as the depth of his mine requires. This means that the tunnels are that many feet below the entrance to his shaft. Of course the ore could be found at the bottom of a canyon, and all the work might be done in the mountain above the first tunnel, or, as work progresses, the vein may be followed below the starting level.

As in our Portland harbor, all charts give minus readings to show the depth of the channel at each port. Coastal port readings are referred to mean lower low water as their datum. Here are the tide recordings at Garibaldi, based on records of an automatic recording gauge from May 1933 to April 1934, as published by the United States Coast and Geodetic Survey:

Highest tide (estimated)	11.00 feet
Mean higher high water	7.40
Mean high water	6.70
Half tide	3.90
Mean low water	1.10
Mean lower low water	0.00
Lowest tide (estimated)	-3.50

Perhaps it would be of interest to compare the river readings at Portland with the tide readings at Garibaldi.

Tide Gauge Garibaldi		Stark Street Gauge Portland
38.74 feet	Flood of 1894	33.00 feet
35.64	Flood of 1948	29.90
33.94	Flood of 1876	28.20
29.54	Flood of 1852	23.80
11.00	Highest Tide	5.26
7.40	Mean higher high water	1.66
5.74	Low water in the Willamette	0.00
3.90	Mean sea level 1947	-1.84
2.52	City of Portland datum	-3.22
0.00	Mean lower low water	-5.74
-3.50	Lowest tide	-9.24

From this comparison, we can see why we have tide action at Portland during low water in the Willamette, for the highest tides are 5 feet above and the lowest are 9 feet below river level. It also shows why there is such an increase in the current of the Columbia during floods, for the river has a 42-foot head at lowest tide in 1894.

So, whether it is up or down, it is the feet that tell us the difference.

THE BUILDING STONES OF OREGON*

By

Warren D. Smith

This is a subject which has always fascinated me - the place of building materials in the history of civilization. There are various ways of marking off civilization epochs but I like to think that building stones and the use we make of them, especially in fine buildings, reflects a particular civilization epoch better than anything else. And here I would refer you, if not already familiar with it, to John Ruskin's Classic, "The Stones of Venice." As we go back in prehistory we see men living first in trees perhaps, then getting down into caves, later in wattle huts, and then gradually going up the scale through the adobe brick house, crude stone huts, half dugouts and half houses, with nothing more than sod roofs; later on frame houses, then those made of burned brick or neatly cut stone, plaster, and finally, concrete. Perhaps in the future we shall have glass houses or a combination of hard rubber and glass. As we look about the world we see man in one quarter or another living in any one of these many and varied types of dwellings.

In Oregon we have not done much with building stones for the very good reason that we have a supply of good timber from which we can produce a great variety of lumber which, in our environment and under our economic conditions, is perhaps the most satisfactory material for the simpler dwellings at least. But for our public buildings we naturally look to something more durable and, shall we say, more artistic. This subject I shall come back to in the last part of my talk.

What are some of the varieties of building stones we have in Oregon? Well, first of all, the most abundant rock is lava of which we have several kinds, chiefly basalt and andesite, both extrusive and intrusive. The typical place to look for basalt is in the Columbia Gorge near the bottom of the great lava pile which we call the Cascade Range. Above this dark and fairly dense lava we have a lighter colored rock known as andesite which makes up a great deal of the superstructure of the range. The andesites are varicolored; some red, some gray, and some are slightly greenish in color. These two rocks, basalt and andesite, have been used to great advantage in constructing the beautiful new buildings in Crater Lake National Park. They are strong and rugged looking, and there is enough difference in color so that they are not monotonous to look at.

Next to these rocks perhaps our most abundant stone is sandstone. The sandstones in this State, in general, are a light gray or a dark gray on fresh faces, and consist of a number of minerals which from the point of view of good stone are generally looked upon more or less as impurities. Many of these sandstones weather easily to a dirty buff and are soft and friable so that one has to choose them with great care. The best grade of sandstone in the State, to my knowledge, is the Pioneer sandstone from the old Pioneer Quarry in Lincoln County. This was used in the old Call Building in San Francisco which was subjected to a very severe test during the San Francisco earthquake and fire of 1906. This stone has also been used in the breakwaters at Newport and other places along the coast.

Next to the sandstones, we have limestone, though in most cases more or less transformed to marble, but these stones have to date been little used in the building industry except for the making of cement or lime.

*Radio talk over KORE, Eugene.

1950

In southwestern Oregon and northeastern Oregon there are many exposures of white marble which could be made available for building purposes. Also in the northeast corner of the State in the Willamette Mountains near Enterprise, we have a black marble of quite unusual quality, said to be the equal of the finest Belgian black marble, but at present no use is made of this except to burn it for lime. It sounds like a statement in one of Ripley's cartoons when I tell you that this coal-black marble comes out of the kiln as snow-white lime. The coloring matter is largely carbonaceous material, or other organic matter, which is completely burned away in the process of making the lime. We do not know as yet how much of this material is available. A visit to this quarry some years ago showed me that there was an abundance of the stone but that one would have to use considerable care in selecting it on account of numerous joints or small fissures cutting through it.

In the extreme northeast and southwest corners of the State, particularly near Baker and Ashland, we have considerable outcrops of granite or near granite, some of which make a very fine building stone. Other deposits of granite are known but they have not, as yet, been made use of in the trade.

Still another stone, which in other states is made to serve a number of purposes, is serpentine. This is a greenish-looking rock, sometimes with very smooth shiny surfaces which take an exceedingly brilliant polish. There are perhaps a few other stones which may be found after some search, but as yet we have little knowledge of them in this State. We have many slatelike rocks, but as far as my personal knowledge goes, very little true slate in the State; that is, of a quality that would be suitable for certain types of construction.

We have another rock, however, which has found some use in the State and which is present in vast quantities, namely volcanic tuff. Several buildings in Eastern Oregon, notably in Baker and Canyon City, have been built of this, as well as the old Mount Angel Monastery near Silverton. This material has a peculiar property, of being easily quarried, can almost be cut with a cheese knife at the time and later hardens on exposure. It lives up to its name in being exceedingly tough. This same sort of stone has been used to great advantage in earthquake regions like the Philippines and Japan. It has a certain amount of elasticity which makes it of great value in such regions.

Due to the high cost of lumber there is a growing demand for a substitute construction material, and much experimenting with blocks made from pumice is under way and some commercial use has been made of this and similar composition stone materials. In the region adjacent to Crater Lake there is a vast quantity of this light frothy lava, some of it in a fine powdery condition while much of it is in the form of good-sized chunks. This was thrown out during the climactic destruction of old Mount Mazama. This material when ground up and compressed into blocks makes a building block suitable for certain types of construction.

I have not said much so far about brick. We have many clays in this State suitable for brick and I predict that we shall have more and more brick manufactured and used here. One of the most attractive public buildings in this State is the library building on the University campus. It is from the Willamina plant of Edward Brothers at Willamina, Oregon.

A word or two should be inserted at this point about the qualities desirable in a good building stone. In the order of their preference, I would name them as follows: 1. Durability, 2. Strength, 3. Color, 4. Texture, 5. Ease in quarrying and finishing, 6. Accessibility (transportation and cost).

Some stones which would be very desirable in certain ways cannot be used because of some serious drawback in one or the other of the points I have named. Perhaps the best all around building stone in the world is the Bedford limestone of Indiana which seems to be nearly 100 percent satisfactory in all of these points.

Great care should be used in selecting building stones and sometimes exhaustive tests of the stones' compressive and tensile strengths, porosity, behavior on freezing and thawing, etc., are necessary. And always the stone should be selected which will best harmonize with the environment of the proposed building. To understand what I mean here, I again call attention to the materials used in the new buildings at Crater Lake.

I shall wind up this short talk on building stones by venturing some suggestions as to the sort of materials that I would like to see used in our State buildings. Personally, I should like to see one of our State buildings reflect the rugged natural beauty of our State. We passed up a fine opportunity to do this in our new capitol. Although a beautiful building, it does not reflect Oregon. It should not be just another building, but should be both beautiful and distinctive. Our National Parks are leading the way in this type of construction. The foundation of this new building could be of the heavy rugged blocks of basalt and andesite. Above this on the outside granite might be used. The granite in our State is generally grayish and of fairly fine grain, giving a "pepper and salt" appearance. This could be used either smooth or rough. The inside might be finished in white marble trimmed with black marble and serpentine. When this building is constructed, I personally hope that it will not be a slavish copy, and a poor one at that, of something that existed in ancient or medieval times, but an edifice that will reflect the spirit of modern America and of the rugged Northwest. There is no reason why practically every bit of material in this building should not come from our own quarries. In utilizing our own stone, we would serve three purposes:

First: We would stimulate one branch of our mineral industry, the quarrying of stone.

Second: We would give work to a great many unemployed, a type of work which these people could easily do, under competent supervision, because quarrying stone is pretty much manual labor of the back-breaking type.

Third: We would erect an enduring monument which would last for centuries and be an inspiration to the people of the State.

At this point I may be pardoned if I digress long enough to speak of a building I was in not long ago - the Palace of Fine Arts in Mexico City. This is by far the most beautiful building I have ever been in, in North America. It is made of Mexican stone, white marble on the outside and Mexican onyx in the interior. It cost six million dollars and was thirty-one years in building. This building was constructed to last for centuries and was meant to be a monument to the culture of our time.

And so in thinking and talking about the mineral industries of Oregon, let us not overlook the building stones, for these things reflect the culture of a period or civilization sometimes better than anything else. What have we left today of the great Maya civilization in Central America except ruined stone temples and monuments such as those of Chichen Itza and Uxmal? What would we know of the civilization of ancient Egypt if it were not for the stone pyramids and tombs along the Nile?

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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; a junior member between 18 and 21. A single membership may be held by husband and wife and their children who are under 18 years of age. The dues are \$3.50 per year (\$1.50 for Junior members), payable in advance, and include one subscription to the Geological NEWS LETTER. Dues of members living in counties not adjacent to Multnomah County are \$2.50 per year.

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 _____
 (member)

 (signature)

SOCIETY ACTIVITIES

LECTURES: It will be our policy during the coming year to offer, in addition to the regular lecture or other feature of the evening, a short period of instruction on such subjects as recognizing the common rocks and minerals; reviewing the highlights of general geology and the geology of Oregon and the Northwest; getting acquainted with field methods, etc. These short and informal ventures in instruction will be welcomed by those who have never covered the ground before, and will not be long enough to bore those who have. We believe the membership which progresses is the membership which is constantly learning. E.T.H.

Until further notice, meetings will be held at the Public Library Hall, SW 10th and Yamhill St., on the second and fourth Fridays of each month at 8:00 p.m.

TRIPS: An average of one field trip is held each month. For questions and suggestions concerning trips, call Mr. Rudolph Erickson, BEacon 7191.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 SW 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

LECTURES

Friday Joint meeting with Pan-American Association, Library Hall, 8:00 p.m.
Apr.14

Friday Program: (1) 30 min. instruction on (a) some common minerals
Apr.28 (b) " " rocks
(2) Selection of a textbook in general geology
(3) Lecture, "Terra Incognita - The Blocks and Basins of southeastern Oregon."

Wednesday Benson High School, 8:00 p.m. (Admission - 60 cents, adults; children free)
May 3 "FROM COAST TO CREST" - Alex. Sprunt, Jr., Lecturer

An all-color film from the Gulf Coast of Texas inland to the land of the Navajos in Arizona; the Grand Canyon; along the Colorado River in Utah; through Colorado's Mesa Verde to Wyoming's Grand Tetons; thence to Yellowstone. An ideal way to travel to learn the wonders of our out-of-doors. It contains some of the most skillful bird and scenic photography ever taken.

Co-sponsored by the Oregon Museum Foundation, Inc., the Oregon Audubon Society, and Chi Omega Alumni of Portland. All receipts go to the Oregon Museum of Science and Industry.

APRIL FIELD TRIPS

Two field trips are scheduled for April. See next page for date and itinerary.

CHANGES IN ADDRESS

Miss Eliza Stevens
3934 S.E. Boise St.
Portland 2, Oregon

Mr. and Mrs. Wm. B. Gruber
4700 S.W. Humphrey Blvd.
Portland 1, Oregon

Mr. and Mrs. E. N. Bates
4 Glen Drive
Sausalito, California

APRIL FIELD TRIPS

Sunday Afternoon: Continuation of the March field trip in the Oswego area. Meet
 April 16 at Marylhurst Station on the Oswego-Oregon City Highway at
 1:30 p.m. for a look at the Troutdale gravel terrace between
 that point and South Oswego. The second stop will be made on the West Linn-
 Willamette road to see the junction of the Tualatin and Willamette rivers. The
 third stop will be at the older basalts exposure in the Coalca-Doernbecher Mill
 area. Collectors will find quantities of zeolites at this stop. The trip will
 be led by R. Erickson.

Saturday and Sunday: A two-day trip to Eugene will be made under the leadership
 April 29 and 30 of Dr. Ewart Baldwin. Assemble at Condon Hall in Eugene
 at 11:00 on Saturday, April 29. The day will be spent
 going through the University Museum and inspecting exhibits including the fossil bones
 found in McKay Reservoir area near Pendleton. Sunday will be devoted to field trips,
 weather permitting. The following itinerary is for the benefit of those who may
 want to join the trip on Sunday:

Sunday

9:00 Assemble at Judkins Point (between Eugene and Springfield on the
 Willamette River).
 10:00 Railroad cut south of Judkins Point.
 11:00 Quarry at east end of Springfield Butte.
 12:00 Lunch stop at or near Jasper.
 1:00 Highway cut at Pleasant Hill.
 1:30 - 2:30 Quarry $\frac{1}{4}$ mile north of Goshen at fossil leaf locality.
 After leaving Goshen quarry, the caravan will proceed north and make
 various stops on route to Portland.

Members making the trip should review the articles in the January 1947
 and May 1948 News Letter.

If reservations are desired for Saturday night, contact Trip Chairman,
 R. Erickson (BE 7191). If transportation is either desired or available, contact
 Al Vance (MU 5204).

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 P.O. Box 8357
 Portland, Oregon

THE LIFE HISTORY OF THOMAS CONDON

By

Jean Kerns*

Great-great-granddaughter of Dr. Condon

The Condons of Norman-Irish stock were prominent in Ireland from the 11th to the 17th centuries. They had a large estate and a beautiful old castle for a home in the time of Cromwell; however, too many successive wars caused their property to be reduced to nothing. As a result, they found themselves workingmen rather than nobles.

Thomas Condon was born on March 3, 1822, in southern Ireland. His father was an expert stonecutter who worked in the nearby quarries. This could have been partly the reason for his great interest in geology later in life.

Since workingmen did not live especially well in Ireland at that time, the Condons decided to emigrate to the United States. They came when Thomas was eleven. The Condon home in New York was in "the uncultivated wilderness of what is now Central Park." (1) Thomas was a busy youth. Soon after arriving in New York, he obtained a job as gardener and delivery boy for a florist by the name of Miss Cox whose home and business were near the place where New York Central Library now stands. He was quite well liked by his employer, as was evidenced by her gift of a gold pen when he left her service. This was always a treasured possession of his.

The next job which Thomas found was that of an office boy for a well-to-do physician, Dr. McNevin. Two incidents that happened when young Condon was working for the doctor show something of his character. Dr. McNevin often asked his office boy to take a friend of his, an elderly exiled Irish patriot by the name of William Sampson out riding in his gig. Mr. Sampson had learned that Thomas liked to draw, so one day he gave him 50 cents to buy some drawing pencils. Did young Condon buy drawing pencils? No, he bought a book entitled The Life of William Sampson. Another time Thomas was helping Mrs. McNevin in the upper hallway of her house. Mrs. McNevin was lamenting that the design on the floor oilcloth was wearing off. Thomas said that he could fix it. The good lady was taken aback, but she told him he might try. The result, done in oil, was so nearly like the original design that the two could not be distinguished one from the other.

Dr. McNevin was getting along in years and no longer needed an office boy, so young Condon was left without a job. He soon found one with a mercantile establishment which he kept until he was eighteen.

During his nineteenth year, Condon went to Michigan with his father. They bought some farm land and moved to that state immediately. Not long after moving, Mr. Condon, Senior, died, leaving Thomas as chief provider for his mother and several brothers and a sister. The responsibility delayed his education somewhat and necessitated his teaching school for several years in order to earn money for his own education and that of his brothers and sister. He returned to New York State where he taught and later went to college. He decided to study for the ministry of the Congregational denomination and took his work at the theological seminary at Auburn.

In 1852 he was graduated and entered the ministry. Because of his Irish ancestry, Rev. Condon could find no parish in the predominantly Scotch Central New York. He and his new bride, Cornelia Holt, decided that the missionary field

*We have Dr. Claude Adams (Miss Kerns' great uncle) to thank for receipt of this article, which was written as a term paper in her 4th year English course at Baker High School. Ed.

(1)References (1) to (5) found at end of this article.

would be more in their line, so they applied to the Home Missionary Board of the Congregational Church for work in the Oregon country. They had heard of the pioneer missionary work of the Whitmans at Walla Walla and had been inspired by the story of their devotion and courage. The autumn of 1852 found the Condons sailing for San Francisco on the clipper ship, The Trade Wind. In San Francisco they transferred to an ocean steamer bound for Portland, Oregon.

In the first ten years of their life in Oregon the Condons lived in St. Helens, Forest Grove, and Albany. The work of minister was usually combined with the role of schoolmaster in these early Oregon towns, so naturally Rev. Condon taught the children of the town during the week and gave his sermon on Sunday.

"After ten years of active pioneer missionary work in the favored region of western Oregon, Mr. Condon could not resist his longing for a more needy field and finally planned to move his family to the eastern part of the state, where he felt there was much greater need of Christian service." (2)

In the early spring of 1862 the Condons and their four children headed for The Dalles via the Columbia River. Upon reaching their destination, the Condon family found that a recently purchased house was already occupied and they were put to some inconvenience to find suitable quarters. The town was crowded to overflowing because gold had been discovered in eastern Oregon and southern Idaho. The Dalles was the gateway into this rich region and was, of course, a very wild, lawless town. This situation provided an excellent missionary challenge for an ambitious and earnest young minister.

When Mr. Condon first arrived in The Dalles, he found a small Congregational Church membership meeting in the Court House. He put all of his energy into building up this church which, in a few years, became a strong organization and occupied its own building. It was not essentially a Congregational Church but rather a "Community Church." Members of the Congregational, Presbyterian, Episcopal, and Baptist churches were all forgetting the small differences in their beliefs and were working for the good of all. Rev. Condon gave his people every available chance to hear a minister of their own denomination, thus staving off any jealousy which might arise. This is proof of the tact and wisdom of Rev. Condon.

As there were still many professional gamblers in The Dalles, it was quite a fashion to wear a garment known as the gambler's coat. These coats were long, dark brown, and trimmed with a lighter shade of brown fur. Some pranksters among the gamblers of the town proposed that they give the new minister one of these wonderful coats. These very "gentlemanly" men made a serious presentation of the coat. In accepting the garment, Mr. Condon "spoke with hesitation, as if in doubt, as he said naively, 'I think I can teach that coat to behave itself.'" (3) Mrs. Condon removed the fur trimming from the bottom of the coat and shortened it so that her husband could wear it. He wore it for several years in this way. Rev. Condon's attitude in meeting the situation won the admiration of the gamblers who thereafter were among his best friends. They had a great deal of respect for him and even sent their children to the Sunday School.

Aside from his duties as a minister, Mr. Condon found plenty of time to follow his hobby of fossil hunting. He spent many an hour roaming the hills near his home with a geologist's pick and hammer. With one skillful blow he could break open a rock and show the beautiful outlines of a leaf within.

After the Indians were quieted in the part of the state farther east, Mr. Condon took many trips into that region. He also had many people on the lookout for any interesting stones or other things of geological interest. In this way he was slowly gathering a very valuable collection on Oregon geology. He sent many a valuable fossil to the East to be classified and carried on a very voluminous correspondence with top scientific men in the field of geology and paleontology, men of national and international reputation.

As Mr. Condon's reputation as a geologist grew, he came into great demand as a lecturer in the towns of this state. Some of these lectures were given for the benefit of a church or the Y.M.C.A., and some of the organizations helped to defray the expenses of his lectures.

In 1872 the state of Oregon began to awaken to the importance of her interesting geology. An office of State Geologist was created for Mr. Condon which carried a salary of \$1,000 a year. The salary was not sufficient to aid the work much, but did indicate that people partially realized its importance.

During the same year it was proposed that a State University be created. This bill did not go through immediately, but was passed several years later.

At the close of the year 1873, Mr. Condon was teaching at Pacific University. It will be noted that from this time to the end of his life Thomas Condon was to be a college professor rather than a minister. Mr. Condon spent two or three years in teaching geology at Pacific University, but he was actually waiting for the University of Oregon to be organized, hoping that he could fulfill his contract to begin teaching there. In 1876 the Board of Regents elected him to the chair of Geology and Natural Science of the State University. He resigned his position as State Geologist to accept this chair. The subjects which he taught were Geology, Paleontology, Mineralogy, Botany, Rhetoric, Guizot's History of Civilization, Physical Features of the Earth, Mental Philosophy, International Law, Constitution of the United States, and Ethnology. This is proof enough that he was a very busy teacher; he was also a very excellent teacher. Said one of his early students:

"To students in the University of Oregon, Professor Condon always held an enchanter's wand. Coming as we did from high schools and small educational centers, we knew a little of the knowledge found in books and learned from observation, but Professor Condon led us out into a new world. Every object in nature had its meaning, its history, easy to read and understand when interpreted by an earnest explorer in the realm of science . . . Students were indeed filled with awe and wonder when shown the rare specimens of ancient life by the ever-interested and inspiring teacher." (4)

Professor Condon was an exceptionally understanding and sympathetic man. Many times a troubled student would come to him for help. His love for a wild uncontrollable boy was boundless, for he was a truly Christian man. Professor Condon "loved to trust his students but his sense of honor was very high and woe to the student that cheated. . . His preparations for written examination in his crowded room were sometimes cause for thought. One day he looked into the clear blue eyes of a young man with the remark: 'Ray, you have an honest face. You may sit over behind that case of specimens.' Of course the class all laughed and Ray never quite outgrew his new title." (5)

In the 1890's Dr. Condon took many and extensive trips into the eastern part of the state. He was gathering more material on the geology of Oregon for a book which he published in 1902 under the title of The Two Islands. The material from this book will make up the next section of my article.

It is interesting to note that Dr. Condon corresponded with and was helped in his collecting by two men from eastern Oregon, one a Mr. Day, the other a Mr. A. H. Huntington, for whom the towns of John Day and Huntington respectively were named. In recognition of the work done in the fossil beds of central Oregon, the town ^{of Condon} was named after him. It was in the John Day Valley that Dr. Condon made his most startling discoveries of the fossil remains of prehistoric animals. Positive identification of these various forms was made by consultation with some of the most noted paleontologists in the east through correspondence and by their personal examination of these specimens. Dr. Condon's phenomenal work attracted the attention of the scientific world to this hitherto unexplored region of fossil beds, and many noted scientists from this country and also from abroad have visited the region for observation, study, and the collection of rare specimens. Many specimens have been taken out of the state and are now exhibited in eastern museums.

Dr. Condon named two Miocene dogs from the John Day region and presented them at the Academy of Science of the University of Oregon. Dr. John C. Merriam of the University of California renamed one of the species, honoring Dr. Condon by attaching the name Condon to the generic and specific names. Dr. Condon was also honored by having his name included in the scientific names of two species of the primitive horse, namely, *Anchitherium Condoni*, Leidy 1870, now *Miohippus Condoni*, Bridge Creek, Oregon; and *Hipparion Condoni*, the Ellensburg horse, a new species of *Hipparion*.

Dr. Condon's work as a pioneer geologist and his theories as to the geological history of Oregon which are universally accepted today have won for him the title of "Father of Oregon Geology." His accomplishments in the fields of geology and paleontology have gained for him international recognition in the scientific world.

In 1907, five years after the death of his beloved wife, Thomas Condon was laid to rest. He spent thirty-one years as professor in the University of Oregon, remaining in that capacity until his death. To him, there was no conflict between religion and science, and he was able to help many young persons over the rough places in their attempts to reconcile the two ideas. His own faith remained firm to the last and he was ever a combination of minister and geologist. So ended the life of one of Oregon's great but self-effacing men.

Oregon Geology

There is a theory that in its infancy the earth was a very smooth-surfaced planet completely covered by water. The center was quite warm. As this center gradually cooled, it fit more loosely against the outer crust, causing the crust to wrinkle. These wrinkles grew slowly larger and today are viewed as the mountain ranges of the world. How accurate this briefly outlined theory is, I could not guess; but I do know that we have many magnificent mountain ranges on this earth of ours which scientists know were caused by disturbances in the earth.

Students of the earth's history have found that different portions emerged from the ocean at different times. The Rocky Mountains are at least one hundred million years old, while the Appalachians are over two hundred million years of age. Yet this is a relatively short time, for the earth is known to be, at the minimum, two thousand million years in existence!

With that brief statement of the age of the earth, we shall attempt to tell about the prehistoric Northwest. During the Mesozoic era much activity was going on far beneath the sea where our West Coast of North America now is. The first was the movement which started the formation of the Rocky Mountains. Before long,

geologically speaking, the nuclei of two islands were formed. These "bumps" rose slowly over a period of millions of years, twins in age and environment. The next great factor in Western geography to be formed was the Cascade Barrier. It rose between the islands and became a permanent wall between them. This was the last major upheaval in these Western waters as the Mesozoic era ended.

At the dawn of the Cenozoic era - the one in which we now live - there was an uprising of another range of mountains. These are called the Coast Range for the obvious reason that they run down the coast. They are not nearly so rugged as the Rockies or the Cascades, perhaps because they have not had so much time to "grow." This is a summary of the geographic conditions and changes of the Pacific Northwest. The remainder of this article will deal with climate, life, and proof of the existence of the two islands.

The climate of the Two Islands was very warm during the earlier periods of their existence. The reasons for this are that the Pacific Ocean is, generally speaking, a warm ocean and, too, the Aleutian Islands were yet under water at that time. Because the Aleutians were nonexistent, the warm Japanese current could get to the isles, warming them still further. These combined forces resulted in a tropical climate in the region.

In a tropical climate, one would naturally expect to find palm trees and corresponding animal life. Palm trees were to be found on the Two Islands, for fossilized palm leaves have been found in the fossil beds of the John Day Valley. Bones of seven species of rhinoceros, camel, and tapir have been found in rocks which were formed in the same period.

After millions of years during which these islands were enriched by the decay of the plant and animal life, there was a great restless movement within the earth. This movement made itself known on the surface by enormous flows of hot lava which destroyed all life in their paths. These lava beds can be seen today in central Oregon where they stretch for miles. The only kind of life seen on them is a bent and scrubby evergreen here and there.

The great lava flows of the Northwest and the slow, but progressive, rise of the land of the area soon cut off all connections of the central part of the region from the sea. The result was a huge inland sea between the Rocky Mountains and the Cascades. This sea was left to the powers of the slow but certain force of evaporation. The southern part of this state still has lakes which are the remains of that sea, but which are becoming smaller and smaller year by year. The Great Salt Lake in Utah is a larger and more impressive remainder of the "Northwest Sea."

The Two Islands, which were some three hundred miles apart, make a geologist's paradise today. One, the Siskiyou, makes the southwestern portion of Oregon today. The other, the Shoshone, is of more immediate interest to us who live in the area around Baker, for it includes this section. Imagine palm trees and tropical animals around here! (Especially on a below-zero winter day.)

The records of an ocean are continuous on its beaches. For that reason we know that the Siskiyou Island was surrounded by the ocean. For the same reason we know also that the Shoshone Island (our island) was in the center of several lakes. Lake records are left in the bottom of the lake for the simple reason that everything sinks to the bottom. The beds of the old lakes of central Oregon have yielded many interesting geological specimens. Among the specimens is the Tertiary horse; it had three toes and was about the size of a sheep.

So there we have it! Oregon has an especially interesting past written in her rocks, but it takes a geologist to read it. Today, college students can study geology at the University of Oregon where Thomas Condon's collection of Oregon geology is displayed in the Museum of Natural History of Condon Hall on the campus. This memorial building was built in his honor and named for him. A fellowship in paleontology was left by his daughter, Ellen Condon McCornack, and named in his honor.

References

- | | | | | | | |
|-----|----------------------|----|--------------|-----------|------|---------|
| (1) | <u>Thomas Condon</u> | by | Ellen Condon | McCornack | - p. | 5 |
| (2) | " | " | " | " | " | - p. 21 |
| (3) | " | " | " | " | " | - p. 29 |
| (4) | " | " | " | " | " | - p.276 |
| (5) | " | " | " | " | " | - p.282 |

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The Two Islands. J. K. Gill Company, Portland, Oregon, 1902.

McCornack, Ellen Condon

Thomas Condon, Pioneer Geologist of Oregon. University Press, Eugene, Oregon, 1928.

COMMITTEE CHAIRMEN FOR THE YEAR 1950-1951

Luncheon - Mr. Leo F. Simon	Historian - Miss Ada Henley
Business Manager - Mr. Raymond L. Baldwin	Librarian - Miss Mary Margaret Hughes
Program - Mr. Ford E. Wilson	Publicity - Mr. H. Bruce Schminky
Banquet - Mrs. Leslie W Bartow	Auditor - Mr. Leslie W Bartow
Communications - Mrs. Leo F. Simon	High School Liaison - Mr. Louis Oberson
News Letter Editor - Mrs. Leo W. Haven	Exhibits - Mr. A. W. Hancock
Field Trips - Mr. Rudolph Erickson	Housing - Mr. A. D. Vance
Membership - Mrs. H. Bruce Schminky	
Social - Mrs. May R. Dale	

Chairmen of other committees will be announced at a later date.

At the last meeting of the Executive Board of the Society, Mr. Orrin E. Stanley was elected unanimously as a Director for the period ending February 28, 1953.

Annual Report of the Treasurer year 1949-1950

February 28, 1950.

March 1, 1949 Balance on hand \$777.50

INCOME March 1, 1949, to February 28, 1950.

Memberships 1949-1950 \$298.50
" 1950-1951 Prepaid 169.50 \$468.00

Detail as follows:

72 renewals at \$3.50 \$252.00
4 new " 3.50 14.00
9 renewals " 2.50 22.50
1 new " 2.00 2.00
4 Jr. renewals at 1.50 6.00
1 NY Library " 2.00 2.00
\$298.50

1950-1951 Prepaid

37 renewals at \$3.50 \$129.50
16 " " 2.50 40.00
\$169.50

News Letter subscriptions \$ 8.03
1949 Banquet receipts 266.50 \$274.53
\$1520.03

EXPENSES

News Letter \$305.12
1949 Banquet expense 259.13
Lecture expense 10.75
Stationery, printing & postage 29.64
Miscellaneous expense 23.39 628.03

BALANCE ON HAND FEBRUARY 28, 1950 \$892.00

RECONCILIATION WITH CHECK BOOK

March 1, 1949 - Check book balance \$777.50
Deposits March 1, 1949, - February 28, 1950 742.53
\$1520.03
Less checks drawn March 1, 1949, - February 28, 1950 628.03
Check book balance on hand February 28, 1950 \$ 892.00

Respectfully submitted,

/s/ N. B. Stone, Treasurer.

March 20, 1950

I have examined the books of the Geological Society of the Oregon Country and have found them correct and in good order.

/s/ Leslie W Bartow,
Chairman Auditing Committee.

TREASURER'S REPORT (cont.)

February 28, 1950

PRE-Closing Trial Balance

	<u>DEBIT</u>	<u>CREDIT</u>
United States National Bank	\$1520.03	\$ 628.03
Memberships		468.00
News Letter	305.12	8.03
Lecture Expense	10.75	
Banquet Expense	259.13	266.50
Stationery, Printing, & Postage	29.64	
Misc. Expenses	23.39	
Multigraph	119.77	
Furniture & Fixtures	35.05	
Surplus		<u>932.32</u>
	<u>\$2302.88</u>	<u>\$2302.88</u>

POST-Closing Trial Balance

	<u>ASSETS</u>	<u>LIABILITIES</u>
United States National Bank	\$ 892.00	
Furniture & Fixtures	35.05	
Surplus		<u>\$ 927.05</u>
	<u>\$ 927.05</u>	<u>\$ 927.05</u>

AGE OF THE EARTH
(From the Smithsonian Institution)

The earth is most probably about 3,350,000,000 years old. This is the estimate of Dr. Arthur Holmes, professor of geology at the University of Edinburgh and one of the world's foremost authorities in the study of the earth's age, as published in the annual report of the Smithsonian Institution.

The period since the beginning of terrestrial time has been variously estimated at from two to five billion years. All estimates during this generation have been based on the decay of the radioactive element uranium into lead.

The problem is, at best, extremely complicated. There are several isotopes of uranium, each of which decays eventually into a different isotope of lead. Many solutions of the problem are possible. By an involved mathematical treatment Dr. Holmes arrived at the one which he considers the most probable.

It is pointed out, however, that accuracy within a few tens of millions of years is hardly to be expected.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 16 NO. 5

PORTLAND, OREGON

May 1950

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

616 Morgan Bldg. Portland, Oregon

POSTMASTER: Return Postage Guaranteed

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Officers of Executive Board, 1950 - 1951

			<u>Zone</u>	<u>Phone</u>
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Vice Pres:	Mr. Ford Wilson	3573 N.W. 35th Avenue	10	
Secretary:	Miss Ruby Zimmer	805 S.E. 60th Avenue	15	LA 8319
Treasurer:	Mr. Norris B. Stone	Rte. 1, Box 179-A, Oswego, Oregon.		Oswego 6531
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	Mr. Orrin E. Stanley (1953)			Mr. Leo F. Simon (1952)
	Mr. Louis E. Oberson (1953)			

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Asst. Editor:	Miss Margaret Steere	6205 S.E. Scott Drive	16	BR 2276
Assoc. Editors:	Messrs. L. L. Ruff, A. D. Vance, H. B. Schminky, K. N. Phillips, F. W. Libbey, O. E. Stanley			
Bus. Mgr:	Mr. Raymond Baldwin	4804 S.W. Laurelwood Drive	1	CH 1452

PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

- 1) Those who love, enjoy, and believe in the Oregon Country and want, therefore, to support the activities of the Society;
- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

LECTURES: Until further notice, meetings will be held at the Public Library Hall, S.W. 10th Avenue and Yamhill Street.

TRIPS: An average of one field trip is held each month. For questions and suggestions concerning trips, call Mr. Rudolph Erickson, BEacon 7191.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

MAY LECTURES

Friday, 8:00 p.m., Library Hall. "What to See along the Oregon Coast" -
May 12 Dr. Edwin T. Hodge.

Date and place of second meeting in May to be announced. "The Blue Mountains" - Dr. Edwin T. Hodge.

We ask the indulgence of our members during this period of uncertainty as to change of meeting place. Due to certain drawbacks -- the most serious being lack of parking space -- selection of a different assembly hall is being considered; but, in the meantime, our reservation of Library Hall is being kept for at least one meeting per month until some satisfactory plan can be worked out.

MAY FIELD TRIPS

There will be two field trips during May.

The first trip will be conducted by Dr. Edwin T. Hodge on May 14, 1950, and will be styled Onion Flats River Puzzle trip. Members will meet at the park grounds at Willamette, Oregon, at 12:00 a.m., Daylight Saving Time, for a picnic lunch. Trip will start at 1:00 p.m., D.S.T., and will go by way of Pete's Mountain scrub land area around to the Rock Creek area north of Sherwood for a look at the stream channels in that and the Onion Flats areas. This should be a trip of considerable interest to those geologically inclined.

The second trip will be conducted by Phil Brogan, May 27 and 28. See next page for details.

CHANGE OF ADDRESS

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Central Washington College
Ellensburg, Washington

May R. Dale
1202 S.W. Cardinell Dr.
Tel: CA 2123

Mr. & Mrs. Chas. O. Conner
1818 S.E. Silver Springs Rd
Zone 22
Tel: Evergreen 11280

MAY 27 and 28 FIELD TRIP

Oregon's great open spaces on the sunrise slope of the Cascades, in the scenic Bend region, will be the goal of GSOC members on May 27 and 28, with Phil F. Brogan, trip leader, prepared to unveil a number of geologic surprises. These will include a dissected volcano, an exhumed volcanic plug and the "Terrebonne diamonds."

Headquarters will be at the South City Limits motel, Bend, with 1:00 p.m., Saturday, May 27, as the rendezvous time. The region to be visited that afternoon is said by geologists to hold more spectacular volcanic features than any other part of America.

Brogan has suggested that Portland members joining on the weekend outing make the trip a loop affair by driving to Bend over the North Santiam highway past the new Detroit dam. After exploring the region south of Bend Saturday afternoon, the group will be routed north toward Portland Sunday, May 28, over the new Warm Springs cutoff, a highway that has opened up many new geologic vistas.

The May 27-28 itinerary, as outlined by Brogan, follows:

Saturday, May 27: Assemble at South City Limits motel at 1:00 p.m. Drive south 10 miles to Lava Butte. Inspect features of butte, view butte fault, look over spatter cones, examine lava gutters.

Continue south from Lava Butte about four miles to area where lava plug exhumed. Abundance of iridescent obsidian, of many varieties.

Drive to Camp Abbot area to base of extensively dissected volcano. Innards of volcano grandly exposed. Lava dikes visible.

Return to Bend via newly discovered Lava Cast Forest. If time permits, trip can be routed into main Lava Cast Forest.

Campfire program around huge outdoor fireplace at motel.

Sunday, May 28: Up bright and early, assemble at top of Pilot Butte, at eastern city limits of Bend at 8:30 for "sunrise chat."

Inspect pumice quarries in Tumalo community, en route north. These quarries believed to be most extensive in America. Head out over route 97 for Redmond.

Brief stop at Redmond cinder pit, where old cone has been stripped to its basement. Some volcanic bombs in area.

Short detour to "Terrebonne diamond pits," where hyalite opal that has a greenish fluorescence has been found as beads on cinder clinkers.

Stop at Crooked River gorge, for view of intracanyon lavas. Swing into Cove canyon, for downstream view of intracanyon lavas and box canyon formation.

Drive through new North Unit project and Madras, then west across newly opened Warm Springs highway. Short stop at Vanora grade leaf locality.

Final scheduled stop at talk at Mill creek bridge, on route of new highway. Adios.

THE G.S.O.C. CRYSTAL ANNIVERSARY BANQUET

By
Ano Nymous

The fifteenth annual banquet of the Geological Society of the Oregon Country was held in the Mount Tabor Presbyterian Church on March 10th, the dinner being served by the women of the church. Attendance numbered more than 150, including 12 of the 15 past presidents of the Society. This being the crystal anniversary of the Society the table decorations were large crystals. Small crystals were mounted on each place card by Miss Ada Henley who provided the cards. The cover design of the program was made by Miss Dorothea Minar, but this year she used a drawing of a crystal instead of the customary prehistoric animal.

Following the dinner President Leo Simon greeted the members and guests and turned the meeting over to Norris Stone who kept things moving, starting out with the opening song which was his composition. Other songs were written by A. W. Hancock and Mrs. L. W. Bartow, the general chairman of the banquet committee, who, with her assistants, did a swell job.

After President Simon read his farewell address he was given a geological pick that should serve him until he is again elected to the same office. Dr. Edwin T. Hodge, who has been drafted as president after fourteen years of "private life," outlined the policy he proposes to follow during the coming year. (Elsewhere in this issue will be found Leo Simon's and Dr. Hodge's addresses.) Mr. Simon passed along to his successor the gavel and a copy of Dr. Condon's Two Islands which are retained by the president during his term of office.

Dr. Ewart M. Baldwin, assistant professor of geology at the University of Oregon, gave an interesting illustrated talk on Korea where he was making explorations for the United States Government. His pictures of the people and the country of Korea gave the audience a very clear idea of the life he had lived while on this mission. He, also, was presented with a geologist's pick. Orrin Stanley got the surprise of his long life by being handed a filing cabinet for six hundred of his kodachrome slides in appreciation for his photographic reporting of picnics and banquets, and has since been griping because he no longer has a good excuse for allowing the slides to clutter up his desk and bookcases. That case and another just like it have since been filled. He thanks the Society for its thoughtfulness and generosity.

The last part of the program, a play written and directed by Mrs. Rudolph Erickson, brought the evening to a whirlwind close. It bore the title: "THE WISHOMETER."

Dr. J. C. Stevens spoke briefly about the trend of modern inventions in mechanizing everything, and said that at long last a really useful invention had been perfected. The curtains were drawn back revealing the "wishometer" and its manager and technician, Kenneth Phillips as Dr. Kinsey, and Bruce Schminky as Prof. Schmoe.

The "wishometer" had been constructed in the laboratories of the Oregon Museum of Science and Industry under the watchful eye of Kenneth Lewis. Its front was covered with gauges, indicators, and charts. It looked capable of doing anything and that is just what it did.

After explaining his contraption to the audience, Dr. Kinsey asked for volunteers to try its prowess. Louis Oberson as usher brought the suc--- (Pardon me, please.) the "seekers after truth" to the stage. The first experimenter was Mrs. Simon who complained that her husband was too energetic,

and that she wanted to be made younger so she could keep up with him. After paying her dollar "for wear and tear on the machine" she entered the cubicle and soon came out followed by a bent old man with long white whiskers, and burdened with camping paraphernalia. Dr. Kinsey explained that the machine could not make a person younger, so it had to make Leo older. Mrs. Simon said that she was satisfied, and led her "Methuselah" from the stage.

Al Vance was the next sufferer. He wished to be freed from his affliction. He had paid Drs. Jones and Adams high fees, he said, and had received no relief from the terrible itching that tormented him. The wishometer did a "dog gone good job" this time, for he emerged with a little dog under his arm and a broad smile on his face. His fleas had suddenly left him and adopted the dog as their future host.

The next gentleman was "Dr. Hodge," impersonated by Mildred James. His trouble was that there were a lot of dumb people who would not believe his theories, and he wanted settled for all time the question: "Which came first, the Columbia River or the Cascade Mountains?" It has been rumored that Mrs. James suffered internal disturbances, possibly from the effects of the cigar which she maneuvered so skillfully.

Kenneth Lewis wished to have his wife made more beautiful, but Prof. Schmoie must have put the machine into reverse gear for Mrs. Lewis came out of the "wishometer" wearing an Alaskan Indian war mask and Mr. Lewis threatened to sue Dr. Kinsey, but was reminded that he had signed a release which he had earlier insisted should be signed by all experimenters.

Mrs. Baldwin told Dr. Kinsey that she was bored to tears with Ray's "goody-goody" disposition. She preferred that he should be more like he was when they were married, "just a wee bit devilish," (she thought). Prof. Schmoie didn't want to make the same mistake twice in succession, and by careful manipulation he brought Ray forth in a red suit, complete with horns and tail, dancing after his wife who fled from him in terror.

The usher next brought Lon Hancock, the famous fossil hunter, who "brings 'em back" long dead and perfectly petrified. He was leading his fossil hound, Clementine, and expressed a longing for "a live fossil that would move its legs a little, or open its eyes." After putting his "X" on the release sheet and squirming over the paying of a dollar for the use of the machine, he entered through the "new moon door." The machine ground its gears, rattled fiendishly and Hancock came out followed by May Dale in -- well, partly in -- a gorgeous black formal gown. The old prospector was so pleased that he tried to buy ten more tickets; he, who had boasted that he had never paid a cent for any of his specimens!

Phil Brogan came next with a wish to trade his Bend Bulletin for the Ore.-Bin in order that he might live in a larger city and have more time for free lance writing and geological trips. As soon as he entered the "wishometer" it exploded with a loud clatter, the indicators all went dead, and the operators threw up their hands and wailed: "The machine! It's Brogan inside!"

From the expressions of pleasure that were heard after the play it would appear that Mrs. Erickson and her talented cast of actors should have a glorious and possibly a profitable future.

RETIRING PRESIDENT'S SWAN SONG

Dear Members and Friends,

This meeting marks the 15th anniversary of the Society's founding (The Crystal Anniversary). I believe, and hope you all agree, that it was a very successful year. I know you enjoyed the interesting talks arranged by the program chairman, Mr. Ford Wilson.

The enjoyable, instructive, and well-attended geological trips planned by the trip committee under the able and efficient chairman, Mr. Rudolph Erickson, were outstanding, especially the 3-day beach trip over Decoration Day and the 2-day Centralia-area trip to the fossil beds and coal mines at Tono, Washington. On this occasion we heard a new interpretation of the origin of the "Tenino Mounds." Also, the trip to Ruth Coats' Hobby House at Tillamook and environs was a revelation and she proved herself a most gracious hostess. The various trips were very ably written up in our News Letter by the publicity chairman, Mrs. May Dale.

The many interesting geological articles published this year were due, no doubt, to the editorial staff under the able direction of our pleasant editor, Mrs. Leo Haven. Right here I want to call your attention to the fine work accomplished by our ladies on committees. In the past we have neglected to utilize their talents to the fullest extent. Of the 17 committees, 8 were chairmanned by ladies, and 2 ladies were heads of 2 committees each. They certainly work hard if given the opportunity. Heretofore the work was mostly carried by the men.

In my acceptance speech last year I aimed high and planned much more that I accomplished, due to circumstances beyond my control. The holding of elementary geology classes was one of these. I hope the new president, Dr. Hodge, with your help, will accomplish this.

Dr. J. C. Stevens, President of the Oregon Museum of Science and Industry, has announced the construction of a planetarium and also a lecture hall adjacent to the museum which we hope will give us a more suitable meeting and study room to carry on an educational program.

Soon we will install, in the museum, our GSOC library which at present is housed at the State Department of Geology and Mineral Industries using their valuable space.

Again I want to thank all the committees and members for their splendid cooperation and I know you will give Dr. Hodge the same wholehearted support you have so faithfully given me. What service I have rendered you has been a great pleasure and I hope the Society will enjoy many more years.

Again I thank you,

/s/ Leo F. Simon

ADDRESS OF INCOMING PRESIDENT
DR. EDWIN T. HODGE

No greater honor can come to a person than to be elected president of the most distinguished and most intellectual society in the city of Portland. I am grateful for this honor and very proud.

The Geological Society of the Oregon Country was founded in the midst of the great depression. Thanks to its courageous leaders, it lived to face the severe restrictions of a war to save the world from dictators and concentrated authority. But, due to exceptional leadership and its stalwart membership, the society survived.

Next, the Society had to compete with the fleshpots of a super-inflation. Again, wise leadership and earnest members carried the Society through.

Now the G.S.O.C. has passed these three periods. Happy days lie ahead. With prospects of normality the easy burden of leadership can now be entrusted to me.

In this Year of Our Lord, 1950, the motto of our Society will be "Joie de Vivre" - The Joy of Living! At each Friday (now Thursday) meeting there will be a treat for body, mind, and soul. There will be instruction for the mind, relaxation for the body, and sociability for the soul.

We have just about exhausted the supply of those geologists and others who live in our area and who have anything on their minds. However, it will be our policy, when one of these characters is available, to use him for a lecture. Our main objective, nevertheless, will be to make our meetings periods of education, recreation, and social delight.

On the educational side we will identify specimens of members and give regular instruction in how to know minerals, rocks and ores, general geology, geology of Oregon and the Oregon Country, and how to find, read, and interpret the history found in the rocky pages of the Oregon hills. If you are not going to slump back and become a candidate for psychiatry, doctors of medicine, or senility, then come to our meetings and enjoy our instruction and fellowship.

M.D.'s are agreed that 90 percent of all tired people, bored people, and unhappy people need, for a cure, just one thing - to walk! Not to walk, however, like a donkey with head and ears hanging low; nor to climb like a monkey-faced and bearded goat. But to walk and climb with an understanding of and a joy in one's surroundings. Mother Nature is ever-ready to play a game with us. She has hidden and bids us seek treasures in the vicinity of Portland -- treasures of rare and great value. On these treasure hunts we will learn and have fun!

Now, if any of you are old and worn out, or hopelessly lost in your rut of living, don't join us on our trips. Our trips are for those who are young in spirit and young in heart, and for those who want to get younger.

IN APPRECIATION

The success of the Crystal Banquet of 1950 is in direct proportion to the untiring efforts of the willing workers who so graciously accepted the various responsibilities.

In addition to the chairmen named on the program, you may be interested to know that Mrs. Hancock had help from Lloyd Ruff (who can tell you what you ate). Ada Henley (who personally had been making these handmade place cards since Christmas) was assisted with the other table decorations by Mrs. L. E. Kurtichanof, Mrs. R. R. Poppleton, Miss Rose Jennings, and Mr. Simon (for the big crystal display). We are indebted to the State Department of Geology, the Oregon Museum of Science and Industry, and Anton Schneider for the loan of the crystals.

Mrs. Leo Haven was assisted by Mrs. Bruce Schminky and daughter, Carol Ann, and Mrs. Kenneth Phillips as special greeters to make you feel at home. Our thanks should also go to Mrs. Lillian F. Owen, of the State Department of Geology and Mineral Industries, for her assistance in editing and multigraphing the programs.

May Dale called upon Dr. Stevens, Bruce Schminky, Ken Phillips, Al Vance, Jo and Leo Simon, Mr. and Mrs. Ray Baldwin, Mrs. Mildred James, Dr. Hodge, Joan Wahl, Lon Hancock, Mr. and Mrs. Ken Lewis, Louis Oberson, Phil Brogan, and "Pup" (Skipper) Erickson to ably take part in Mrs. Rudolf Erickson's clever skit, "THE WISHOMETER." And have you been wondering who was responsible for the unique machine? Page Mr. Lewis and his helpers at the Museum.

Our M.C. deserves a big hand for carrying on so well in spite of the unhappy task of having taken his wife to the hospital a couple of hours before the banquet. We all missed her; and, at this date, congratulate her on her speedy recovery.

To the above, all chairmen, the ladies of the church who served the dinner, our interesting speaker, Dr. Ewart M. Baldwin, and all others who served so well -
THANK YOU.

Tyra Bartow, Gen'l Chairman.

MAMMOTH BONES NEAR SILVERTON, OREGON

The October 1946 issue of the News Letter carried the notice of a remarkable find of vertebrate fossils in a peat bog on the Paul Pinson farm 3 miles east of Silverton, Oregon. As a sequel to this notice we wish to report that Drs. H. P. Hansen and E. L. Packard have published an article about this find in the October 1949 issue of Ecology, entitled: "Pollen analysis and the age of proboscidian bones near Silverton, Oregon." At the time the authors made their study, only a portion of one or possibly two skeletons had been removed from the peat bog, and further search was hindered by depth of water in the excavation and slumping of its walls. It was believed however, that bones of several mammoths were still in place in this bog.

The authors call this the richest find of proboscidian bones yet reported from western Oregon, and they interpret the age of the bones, on the basis of thickness and character of overlying peat, to be about 10,000 years.

PORTLAND'S NEW PLANETARIUM

Don Clark, who will have charge of Portland's new Planetarium (the only one in the Northwest, located at 908 N.E. Hassalo) reports that construction is progressing nicely. At the present writing, the structure is up and the plasterers are nearly finished, with just the touching up remaining to be done. This includes painting and treatment with a special material to insure the proper acoustical effects. Opening is scheduled for the middle of May.

Portland's skyline will be reproduced as seen from the middle of the Burnside Bridge, with the outlines of all the principal buildings. Then with the installation of a rheostat to control the intensity of light, and with other machinery to give the proper sound effects, the spectator will see evening come on and the stars come out. The main projector which reproduces the stars has a lamp which shines through tiny holes simulating the position and magnitude of the stars on the dome overhead.

In addition, there will be a planetary projector which will demonstrate the orbits of the planets, the moon's phases, and just about all the phenomena which occur in the solar system. Equipment will also be augmented by slides showing the various planets, nebulae, etc., at close range.

Outside the building, near the exit door, will be mounted a 12 $\frac{1}{2}$ -inch telescope of the reflector type (about 100 inches long; weight about 150 pounds) through which can be observed the various actual phenomena explained and simulated in the demonstrations.

Special lectures will be conducted for children. In addition, Mr. Clark aims to recognize the diverse interests of the adult public -- whether they be philosophical, astronomical, or merely idly curious. Furthermore, the lecture material will be varied from time to time. For example, the earliest demonstrations probably will include "Stars of Spring," followed by "Stars of Summer," etc. Later plans hope to include some material on meteorology. And the possibility of rocket trips and even "flying saucers" are topics which may come in for consideration.

Altogether, this is going to be a project in which Portland can take particular pride, and one which will be well worth all the support and publicity we can give it.

Ed.

ORIGINS OF CONCRETIONS

From the Smithsonian Institution: In the clay beds of New England are often found curious "fossils" - small, flat to rounded stone objects which often occur in the shapes of animals, dolls, and other familiar things. Scientifically known as concretions, many of them seem almost to bear the marks of human handicraft. Fantastic theories of their origin have been propounded during the last three centuries. The first report on these puzzling objects was by John Winthrop, Governor of Connecticut in 1670, who sent a collection of them to the Royal Society of Great Britain with his comments.

A logical explanation of their formation is presented by Dr. Ray S. Bassler, Smithsonian Institution geologist, in the Annual Report of the Institution just issued. They date generally, he says, from about 23,000 B.C., when the great ice sheet of the Wisconsin glaciation was retreating northward over the New England States. Small lakes were left in the wake of the northward-melting ice. Each summer, debris from the retreating glacier would form a thin layer on the bottom of these lakes. In the winter various substances, including calcium carbonate or lime, which had been held in solution in the water during the summer, would be precipitated to the bottom, forming a second layer. Thus two layers, or "varves" were laid down each year, so that their total number, now easily counted in surface outcrops, serves as a measure of geologic time since the retreat of the glaciers. The calcium carbonate, Dr. Bassler explains, has a tendency following certain laws of diffusion, to be deposited around clay and other particles in

PROGRAM
FIFTEENTH ANNUAL BANQUET
GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

MENU

Cinnabar Crystal Froth

Tourmaline, Wulfenite, and Augite Crystals

MOUNTAIN WOOD AND MOSS JASPER

Magnesite with Limonite Ooze

Apophyllite Crystals and Orpiment

Essence of Siderite

Jade Breccia

Greetings	President Leo F. Simon
Master of Ceremonies	Norris B. Stone
Opening Song	Everybody Sing

CRYSTAL GAZING

1949

1950

Mr. Leo F. Simon

Dr. Edwin T. Hodge

"KOREA"

By

DR. EWART M. BALDWIN
Assistant Professor of Geology
University of Oregon

Intermission

Songs

Group

"THE WISHOMETER"

(Written and directed by Mrs. Rudolph Erickson)

Closing Song

Group

BANQUET COMMITTEE CHAIRMEN

Speaker	Rudolph Erickson
Dinner	Mrs. A. W. Hancock
Entertainment	Mrs. May Dale
Program Design	Miss Dorothea Minar
Decorations	Miss Ada Henley
Corsages	Mrs. Ben Smith
Hospitality	Mrs. Leo W. Haven
Tickets	Mr. and Mrs. Leo Simon
Gifts	Albert D. Vance
Photography	Orrin E. Stanley
Publicity	H. Bruce Schminky
Accompanist	Mrs. A. W. Hancock
General Chairman	Mrs. Leslie W Bartow

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THE HILLS OF OREGON
(Air - "Home on the Range")

There's wonderful hills, 'long the Oregon shores
covered deep with a mantle of trees.
The birds in their nests, swing happy and free
in breezes from over the seas.

Chorus

Hi' Ho' Let's away. Let's go where the treasures abound.
There's opals and agates and geodes galore, and nodules
all over the ground.

There's maple-clad hills, all purple and gold
Many others are covered with snow.
But give me the hills, the sage-covered hills
Where beautiful pentstemon grows.
The skies over head are as clear as a bell
The meadowlark's out before dawn
Dame Nature we find in her happiest mood
Weaves magical pictures in stone.

Chorus

The eagles nest high on a rhyolite ledge
There's doves in the canyons below
The mimulus clings to the rocks they love
And the beautiful pentstemon grows.
The magpies assemble and chatter and scold
From their home near an old waterfall.
Far over the hills in strange mournful tones
The coyote answers their call.

Oh give me those hills, east Oregon hills
Where the breeze thru the juniper blows
There's lupine abloom and paintbrush ablaze
And the beautiful pentstemon grows.

Chorus

Hi' Ho' Let's away. Let's go where the treasures abound.
There's opals and agates and geodes galore, and nodules
all over the ground.

A. W. Hancock

OPENING SONG
(Air - "There are smiles")

We have miles and miles of ancient lavas
In the old Cascades as you may know.
We have lots and lots of Andesites too
Mighty rising peaks e'er capped with snow.
We have Oreodons and Ehippi
And a host of other things long dead.
But tonight we've got a real LIVE banquet
So why not let us get going - NUF SED.

Norris B. Stone

FUNNY FUNNY FOSSIL
(Air - "When you wore a Tulip")

When you dug a fossil, a funny, funny fossil
I'd hoped for a Dinosaur.
The rockhounds kept digging, earth's interior starts jiggling
Mountain slides to those on all fours.
Lon Hancock finds horses and bones from various sources
And Al Vance his turtle love.
So when you dig for those fossils, those funny, funny fossils
Can't you get me a Dinosaur?

T.C.B.

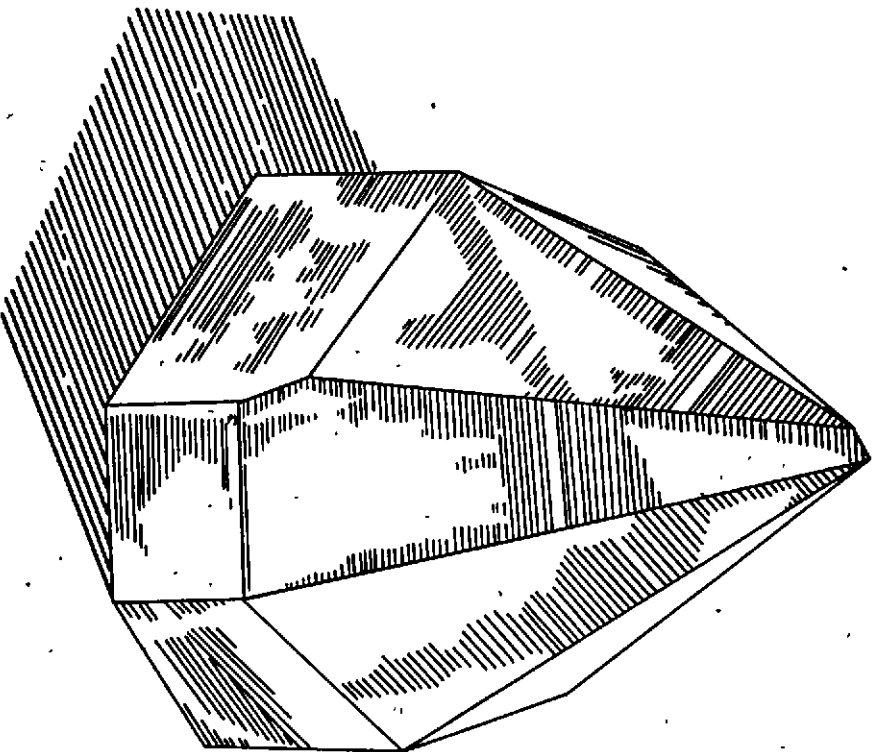
CLOSING SONG
(Air - "Smile, Smile, Smile")

Pack pleasant memories of a night of fun
And smile, smile, smile.
Greet all the Geesockers before you run
Smile, folks, that's the style.
Here's the place for friendships
It always was worth while.
SO - pack pleasant memories of a night of fun
And smile, smile, smile.

T.C.B.

G. S. O. C.

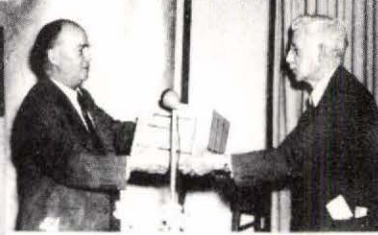
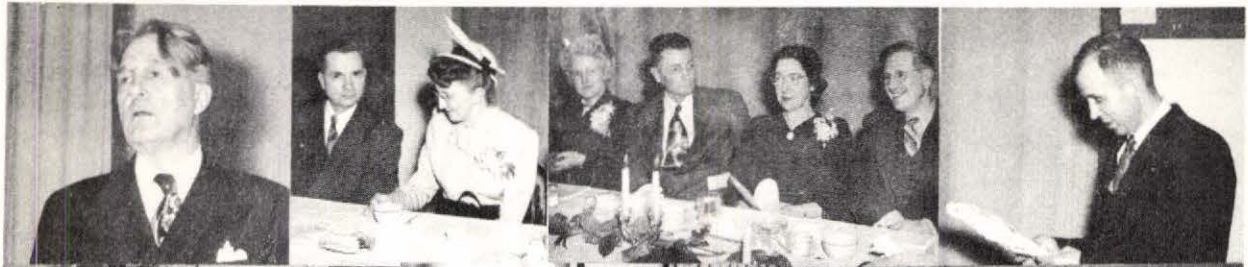
Annual Banquet



Fifteenth - "Crystal" - Anniversary -

DOROTHY
HINKLE

March 10, 1950.



**GEOLOGICAL SOCIETY
OF THE OREGON COUNTRY
15TH ANNUAL BANQUET 3-10-50**



TOP ROW: Dr. J. C. Stevens, Louis Oberson, Mrs. L. W. Bartow, Mrs. Phil Brogan, Ford E. Wilson, Dr. E. T. Fodge, Dr. Ewart Baldwin.
SECOND ROW: H. S. Schminky as Prof. Schow, Morris Stone, Orrin E. Stanley, Dorothea Miner, Morris Stone, Mrs. Ford E. Wilson,
President Leo Simon. THIRD ROW: K. N. Phillips as Dr. Kinsey, Mrs. R. L. Baldwin, Raymond L. Baldwin (a little devilish) Lloyd
Ruff, K. N. Phillips, A. D. Vance, Mildred James as Dr. Fodge, K. N. Phillips, Mrs. Leo Simon and Leo Simon. FOURTH ROW: K. N.
Phillips, A. W. Hancock, H. S. Schminky, A. W. Hancock, May B. Dale, Mr. Miner of Salem, Earl Miner, K. N. Phillips, Kenneth Lewis,
Mrs. Lewis.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



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PORTLAND, OREGON

June 1950

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Geological Society of the Oregon Country

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PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

- 1) Those who love, enjoy, and believe in the Oregon Country and want, therefore, to support the activities of the Society;
- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

LECTURES: Until further notice, meetings will be held at the Public Library Hall, S.W. 10th Avenue and Yamhill Street.

TRIPS: An average of one field trip is held each month. For questions and suggestions concerning trips, call Mr. Rudolph Erickson, BEacon 7191.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

JUNE LECTURES

Friday "McNary dam site" an illustrated lecture by Ford E. Wilson.
June 9
Library Hall
8:00 p.m.

Friday, June 23 Lecture to be announced.
8:00 p.m.

JUNE FIELD TRIPS

There will be two field trips in June.

Sunday The first will be on Sunday, June 11, under the leadership of
June 11 Dr. E. T. Hodge. Members will meet at 12:00 noon (D.S.T.) at the new Journal Building in Portland and will proceed from there to Forest Grove where lunch will be enjoyed on the campus of Pacific University. From there Dr. Hodge will lead the members southward through the old waterway connecting with the upper reaches of Chehalem Creek. A visit to the large erratic (largest known in the State) near McMinnville is also on the agenda.

Sunday The second trip of the month will be on Sunday, June 25th. This
June 25 will be a trip to the fossil leaf deposit at Franklin Butte near Scio. Dr. Ethel I. Sanborn will be honorary trip leader. Members will meet at Jefferson, Oregon, at 10:00 a.m. (D.S.T.) and will proceed from there to the leaf localities on Franklin Butte.

In the afternoon the caravan will proceed to a fossil shell locality four miles south of Brownsville and dig for shell specimens of which there are reported to be a number of varieties, including brachiopods.

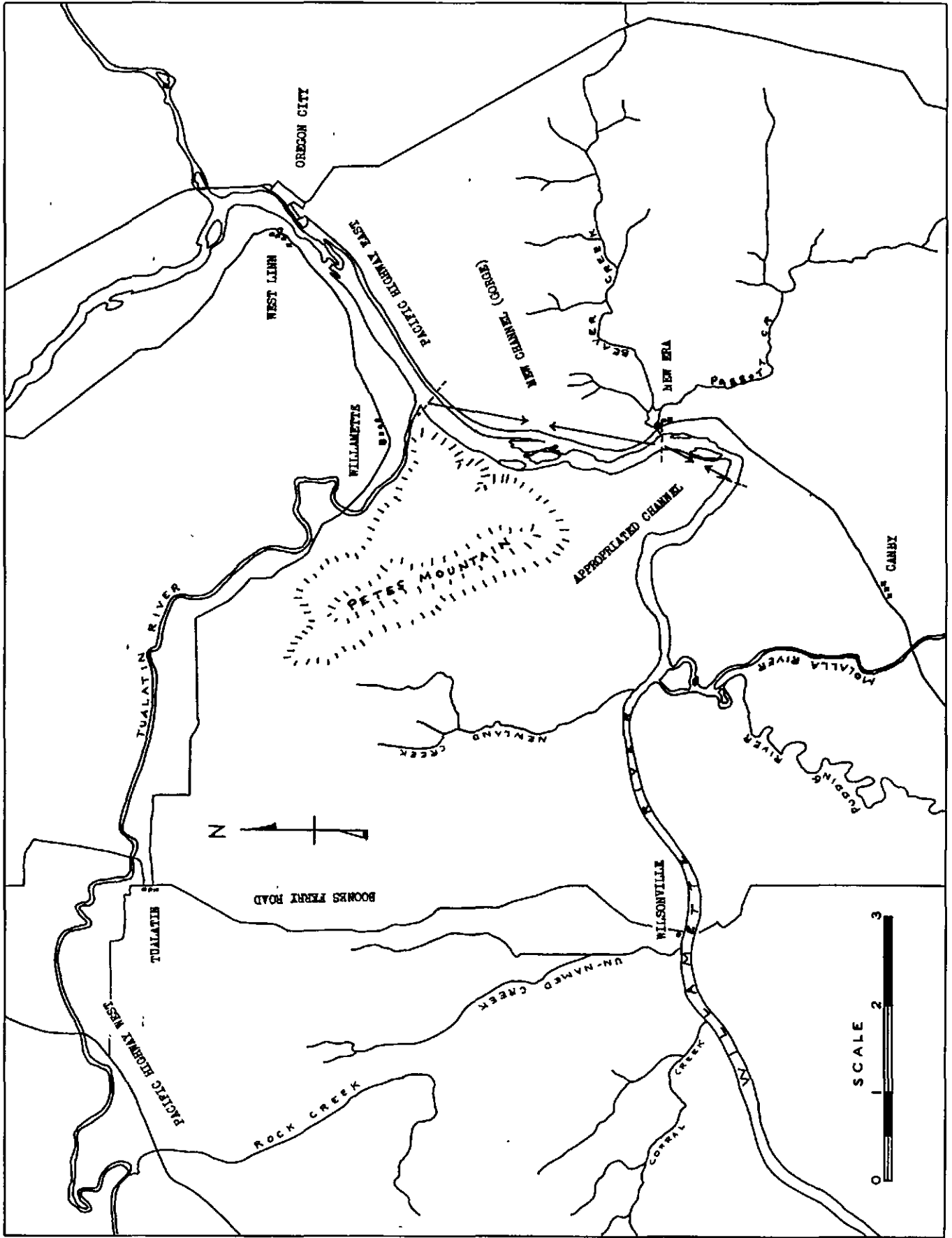
It is suggested that drinking water be included in the items carried on this trip.

R. Erickson.

NEWS OF MEMBERS

Miss Miranda S. Streloff arrived via stork in San Francisco on April 18, 1950. Miranda is the granddaughter of Mr. and Mrs. E. N. Bates.

Word has been received that Ellen James has accepted a position as paleontologist with the Smithsonian Institution and plans to leave for Washington, D.C., soon after receiving her Master's degree at the University of Oregon in June.. As soon as her Washington address is received it will be published in the News Letter for the benefit of her many friends among the GSOC members.



MAP OF THE NEW ERA GORGE AREA

THE NEW ERA GORGE A RECENT CHANNEL?

By
R. Erickson

The Willamette River channel where it cuts through Pete's Mountain between New Era on the south and the mouth of the Tualatin River on the north is, as most will recall, quite a steep-sided gorge, especially on the west side. However, there is not much choice between either side as to ruggedness. The river flows closely along the steep western bank all through the gorge and just prior to its entrance into the gorge executes a most unusual swing from east to south-by-east and then immediately reverses and turns to the northwest to enter the gorge. In the gorge bottom proper toward the center and south, the river channel is much narrowed by huge rocks around which the current boils when the river is in flood. To the east of the north entrance of the gorge at highway level, a flat area extends eastward some little distance. Doubtless at one time its extent was considerably greater, since it would seem that slides from and the breaking down of the eastern and southern walls or hills must have covered considerable area.

While the gorge proper to the south has been carved in basalt the area here on the east side of the north entrance shows evidence of sediments having been laid down in some depth. The area is much given to sliding as witness the recent difficulties of the highway engineers at this point. The drainage ditch along the highway here shows sand with much mica occurring in the material that has come down onto the highway. Presumably this could indicate an old channel filled with sediments. The area is just opposite the present mouth of the Tualatin. It would seem that the Tualatin here is much the older stream and previously extended across the present Willamette channel and eastward thereof, turning northeastward to cut the channel presently occupied by the Willamette northward from the junction of the two rivers. An excellent point to view the terrain is at a point on the former highway between West Linn and Willamette where the road drops down into the Tualatin Valley.

A visit to the high point of the highway between Coalca and the Doernbecker mill will disclose an outcrop of rock that is thickly impregnated with zeolites. It will be noticed, also, that the rocks here decompose rapidly, as can be seen from the disintegrated condition of those exposed only since the recent improvement of the highway. Dr. Lowry, in his article in the News Letter of January 1947, indicated rocks here of Eocene age. I am informed that these zeolitic rocks extend across the river channel. Admitting that the down cutting of the river through the gorge is probably controlled by the rim of hard rocks at the lip of the Oregon City falls, yet it does appear that with such easily eroded rocks in its bed as here exist, the channel would be cleared of obstructions and its sides of a much more gentle slope were the Willamette channel here of the age of the Tualatin.

In regard to the unusual turns or swings of the Willamette mentioned in the forepart of this article, it appears that this could very well result from the work of Beaver Creek and Parrott Creek, which streams join and enter the Willamette at New Era, making a barbed entrance. To the south of New Era and north of Canby, there occurs a rim of volcanic rock (presumably Columbia River basalt from Treasher's map) which rocks trend northwesterly-southeasterly and end at the east bank of the river where it recurves northwest to enter the gorge. Presumably these rocks once extended northwest of their present terminus, and Beaver and Parrott Creeks cut through this barrier on their way to join Milk Creek and the Molalla. One of these streams apparently flowed across the terrain south of the rim rocks and north of Canby, since there are evidences of former channels to be seen here. And with

the present gorge not open, the waters of all these streams apparently went westward of where they now enter the Willamette. It would seem that the Willamette here appropriated a portion of the combined channel of Beaver and Parrott creeks when the Willamette began its present course through the gorge.

Where the waters of the upper Willamette Valley escaped prior to the cutting of the New Era gorge presents a problem. It would appear that this must have been into the Tualatin, somewhere to the westward of the Pete's Mountain heights, but the location is something this writer cannot determine. As to the waters of the Molalla River, Milk, Beaver, and Parrott creeks, the following is presented:

The upper reaches of a southeasterly-flowing unnamed creek that enters the Willamette just above Wilsonville parallels the upper reaches of Rock Creek which flows northwestward to enter the Tualatin north of Six Corners. The high point of the divide here appears to not exceed fifty feet above the Willamette banks at Wilsonville and thirty feet where Rock Creek enters the Tualatin. The two streams combined form an almost northwest-southeast line from the Willamette to the Tualatin and are but slightly south at the Willamette contact to where the Pudding River and the Molalla presently enter the Willamette.

Much of the bed of Rock Creek is of a scabland type and much of its course is a fairly wide bed. However, at places, and particularly near where it parallels the unnamed southeasterly flowing creek, its bed is much constricted. Because of this narrowness it has been said that Rock Creek could not have been a former Willamette channel but this objection would not be so true as to its having been a former Molalla channel. Hence these waters also joined the Tualatin.

It is hoped that some day this district will have the attention of a capable geologist who will have the time at his disposal to determine a number of the questions raised in the above problem.

VANISHED LAKES AND ICE AGE WEATHER

By

Phil F. Brogan

North Pacific storms that were pushed far south of their normal courses as they moved inland across southern Oregon and California, then east over the Great Basin in vast cyclonic sweeps, played major roles in the creation of western America's "ghost lakes," of the last ice age.

This is the conclusion of Dr. Ernst Antevs, research associate, Carnegie Institution of Washington and a long time student of south-central Oregon's ancient climates.

The part the "detoured storms" played in the formation of the old lakes of the Great Basin is outlined by Dr. Antevs in a recently published University of Utah Bulletin, "The Great Basin, with Emphasis on Glacial and Postglacial Times." The vanished lakes discussed by Dr. Antevs in the bulletin are marked by terraces and gravel bars. Such markings are abundant in south-central Oregon, and were first noted in the last century by I. C. Russell, pioneer geologist. Some of the most spectacular evidence of these "ghost lakes" of old is found in northern Lake County; and the distinct terraces, formed when waves of the

pluvial lakes cut into fault-block valleys, have enabled geologists to determine the depth of the lakes when they were full in Bonneville and Lahontan times.

Playas or alkali flats mark the location of many of the vanished lakes of south-central Oregon.

A portion of Dr. Antevs' bulletin deals with Oregon's lost lakes and the discovery of evidence that man occupied the interior country prior to the Mt. Mazama explosion. Dr. Antevs, formerly of the University of Stockholm, is internationally famous for his studies of ancient climates and continental glaciation. On one of his trips to Oregon, he worked with Dr. L. S. Cressman, University of Oregon anthropologist, and spent some time in the interior country.

When the western Canadian ice sheets were large, modern conditions that give much of southwestern America arid weather did not prevail, Dr. Antevs believes. "Storm tracks were pushed off their normal courses, and the heaviest precipitation occurred well to the south of the ice border, or in northern Nevada and Utah," Dr. Antevs writes. Prehistoric Lake Bonneville, of which Salt Lake is now a shrunken remnant, was in Utah. Lake Lahontan spread over a considerable part of northern Nevada, sending fingers of water into valleys as huge embayments. One arm of Lake Lahontan reached into Oregon, from the south.

In the age when Bonneville and Lahontan covered thousands of square miles, with Bonneville reaching a depth of 1,000 feet before it overflowed into a Snake River tributary via Red Rock pass, huge lakes covered long valleys in south central Oregon. These old lakes included Winter, ancestral to Summer Lake of the present, and Christmas, a body of water that blanketed the present Silver Lake region and spread north to the mud volcanoes of the Fort Rock area.

In the Warner Lake region to the east was another huge lake in late Pleistocene times. So far as known, this vanished body of water, some 90 miles long and nearly 20 miles wide northwest of Plush, has no name. This writer suggests that it be referred to as Russell Lake, honoring I. C. Russell, geologist, who explored the region in 1883.

With heavy precipitation occurring the year around (result of the southern "detour" of Pacific-born storm), basins in Utah, Nevada, and south-central Oregon were flooded, Dr. Antevs maintains. The fluctuating depths of the Pleistocene lakes would be explained by the advance and retreat of glaciers, and the effect of those glaciers on storm patterns.

Meteorologists say that most storms that strike the west coast and move inland are born in the Aleutians, or in the northern Pacific. These storms always move eastward, in great cyclonic, counter-clockwise whirls.

As ice sheets started to shrink in the last glaciation, man, spreading southward, found an opening in the glaciers at the eastern foot of the Canadian Rockies, Dr. Antevs believes. "Some of them were surely guided by the funnel-shaped valley of the Missouri River to the mountain passes leading to the Snake River plain," he reported. Once in the Great Basin, the migrants are believed to have spread into ancient Oregon. Their first homes were possibly caves overlooking the lakes that had disappeared long before white settlers came to the west.

In his report, Dr. Antevs points to the fact that traces of ancient man have been found in the Wickiup basin, on the upper Deschutes River, and in south-central Oregon caves.

A RECONNAISSANCE OF THE GEOLOGY
OF THE EUGENE AREA

By
Ewart M. Baldwin

About 25 members of the Geological Society assembled in Eugene the morning of April 30th to inspect the geologic wonders both at the University of Oregon and in the hinterland of Eugene. The first part of the program was an inspection tour of the Museum of Natural History and the Department of Geology. Fossil leaves of the "New Goshen" locality were viewed as well as vertebrate fossils from Pendleton.

After lunch, and with clearing skies, the caravan headed south on the Fox Hollow road that leads around Spencer's Butte, the prominent intrusive south of Eugene. Our first stop near the top of the hill revealed weathered basalt which is generally considered to be the equivalent of the Columbia River basalt. As we progressed around the south side of the butte we could look south and east across Camas Swale to the Cascade Mountains beyond.

Tuffaceous sediments and tuff of the Fisher formation underlie the basalt that surrounds Spencer's Butte. Some of the rock is reddish purple, but most of it is weathered to a brownish-yellow color. An intrusive basalt with columns composed of buttonlike polygons was noted in a quarry near the movie set ("Rachel and the Stranger" -- Loretta Young, etc.). As we started to drop down the hill into Fox Hollow, we passed an outcrop of sandstone similar to the Eugene Foundry sand. Tuffaceous rock of the Fisher formation could be seen in the road-cut all the way down into Fox Hollow beneath this sand. Particularly large blocks of medium-to-coarse-grained pyroclastics form cliffs along the hollow, although large blocks of this material have rolled down the hill.

The basal Fisher was exposed in a quarry where boulder conglomerate is present. Some of the boulders were several feet in diameter, a fact that points to a nearby source, or action of a powerful stream.

The Fisher formation is unconformable upon the Spencer formation, an upper Eocene marine formation, that crops out in Fox Hollow and much of the way down the hollow. At the Hadleyville school, the massive mid-Eocene Tyee sandstone is present unconformably beneath the Spencer formation. The Tyee makes up the Coast Range between this point and the Oregon Coast. At another point along the road, the Tyee was well exposed in the quarry walls where intrusive basalt had been quarried far back into the hill. This quarry also contained interesting lizards, plants, etc.

Between Crow (a small village on the old north-south territorial road) and Vaughn (a Long Bell lumber town), the road followed the old channel of Coyote Creek which formerly drained westward to Noti. The old valley has been incised only a short distance by the new drainage, and the divide is about midway between the two towns. Noti Creek, which now drains westward through Vaughn, enters a deeper canyon to the west. This valley is carved in the Tyee formation but several outcrops of a common type of intrusive are exposed. The rock, usually in the form of dikes and sills, is a quartz-bearing gabbro. Spheroidal weathering is well displayed in the outcrop near Noti. Noti is a sawmill town located at the junction of former Coyote Creek and the former-westward-flowing Long Tom River -- at one time a tributary of the Siuslaw, but now a tributary of the Willamette River.

The last stop of the day was at the Eugene Foundry Sand quarry at Wallace Butte. This quarry contains both clay and quartz sand. The sand was washed and prepared for foundry use during World War II. The deposit is considered to be a weathered part of the Eugene formation.

The advent of daylight saving time shortened the night, but the group assembled Sunday morning with favorable weather still present. No new member of the Society showed up, so those assembled departed for Judkins Point which is made up of well-exposed intrusive basalt. Particularly good columns are exposed in the highway cut through the point on the east edge of Eugene. This is a post-Eugene intrusive. A short distance east of Judkins Point the group waited for a freight train to vacate the fossiliferous cut of Eugene sand and siltstone. Many quite well-preserved fossils were collected. A narrow dike cuts the strata here.

Springfield Butte is capped by inclined basalt flows which descend to valley level at the northeast corner of the butte. Abundant zeolites occur in basalt exposed in the quarry.

Since time was pressing, it seemed best to push on toward Jasper and Meridian Dam. Coarse tuffaceous sandstone and tuff were observed in the road-cuts on the way to Jasper. Much of it resembled sediments of the Fisher formation viewed the previous day. One of the railroad cuts near Jasper contained several excellent fossil logs. Several photographed this interesting phenomena before and during dismantling of some of the better pieces. It was at this locality that another car of GSOCS finally caught up with the group.

From Jasper we crossed the river and reached the main highway via a devious gravel road. It was decided to eat lunch at Lowell or at the zeolite locality just beyond. Some ate while others both ate and collected. The better zeolites were exposed in rock uncovered during rerouting the highway past the proposed dam. Paul Howell, resident geologist at the Lookout Dam (Meridian) joined the group. Mr. and Mrs. Ted Gordon of Salem, experts on zeolites, also showed up at this time.

Several tons of rock hung precariously above us as we worked on the zeolites. After a short time, one who spoke with authority came along and ran us out to a less productive hunting ground on up the river a short distance. Before turning back it was decided to view the dam site from Lookout Point, but a huge delegation of grangers engulfed us cutting our stay short.

On the way back, our first stop was at Pleasant Hill where badly decomposed gravels were viewed and their probable age discussed by Paul Howell who has been working on the ancient gravels of this drainage.

The final stop was at the "New Goshen" leaf locality. Rain began to fall, and after some search for leaves, the group continued on its way.

We were particularly fortunate that Mr. Rudolph Erickson, trip chairman, picked the only good weekend that we had during our long wet spell.

METEORITES NUMEROUS

About 1,450 meteorites have been found all over the world -- 52 percent of which now are represented in the collections of the Smithsonian Institution.

This is revealed in a report by Edward P. Henderson, associate curator of mineralogy, in the Institution's annual report, just issued.

For some years efforts have been made to build up the collection of these visitors from space, analysis of whose composition may yield clues to the nature of matter outside the earth. Up to date, Mr. Henderson says, a total of about 535 different meteorites have been found in the United States but only 97 of these were actually seen to fall. The earliest witnessed fall was in 1807 when the Weston, Connecticut, stone was recovered. In the 141 years covered in this study only 97 different meteorites were observed to fall in this country, and of this number only 6 were iron meteorites, the others being classed as stony meteorites. This is of interest because almost one-third of the known meteorites for the entire world are classified as irons.

Since 1900, however, only 55 falls have been reported, and there were 14 years in this period when there were none at all. There is a wide variation in the number found in different States. Texas leads with 83. Fifty-four have been found in Kansas, 40 in Colorado, 29 each in Nebraska, New Mexico, and North Carolina, 21 in Tennessee, and 20 each in Alabama and Kentucky. As yet none have been found in Delaware, Massachusetts, New Hampshire, Rhode Island, or Vermont. For this curious distribution Mr. Henderson has no explanation.

The actual number which hit the earth must be much greater than is recorded, it is pointed out. There is no record that one has ever struck a human being. Only 18 of those recorded for the entire world have hit buildings, while 12 have landed on roads. The risk of being struck thus appears to be negligible.

The origin of these visitors from space is still controversial, Mr. Henderson says, but their composition is believed by many geologists to be similar to the material which would be found in the centers of large planets. It is obvious, however, that before reaching the earth, meteorites exist in a very different environment from that which they find here. They have never been exposed to much oxygen or water. Alteration starts very quickly and a coating of rust develops.

(From the Smithsonian Institution, February 2, 1950.)

BPA HOBBY CLUB SHOW A SUCCESS

Mrs. May R. Dale, a Bonneville Power Administration employe, is being congratulated upon her successful presentation of the first BPA Hobby Club Show. From May 18 - 21 inclusive at the Oregon Museum of Science and Industry, 35 hobbyists displayed the results of their enthusiasm combined with leisure hours, to make an exhibit of wide popular appeal. Mr. Kenneth Lewis, Museum Director, thought well enough of some of the displays to propose rotating them for longer periods; so those who were unable to attend the formal showing may still have the chance to see portions of it. Petrified woods, rocks and minerals, cut gems, and Indian artifacts were among the collections exhibited.

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PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

- 1) Those who love, enjoy, and believe in the Oregon Country and want, therefore, to support the activities of the Society;
- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

LECTURES: Lectures are held in the Public Library Hall, S. W. 10th Avenue and Yamhill Street on the second and fourth Friday of each month. Meetings start at 8:00 p.m.

TRIPS: Field trips are held on the Sundays immediately following the lectures; that is, two a month until October. For questions and suggestions concerning trips, call Mr. Rudolph Erickson, BE 7191.

LUNCHEONS: No luncheons in July.

JULY LECTURES

Friday "The McNary Dam," an illustrated lecture by Ford Wilson, geologist
July 14 with the U.S. Corps of Engineers.

Friday "Has Oregon any water to give away?" by Arthur M. Piper.
July 28

Note: The June issue of Western City magazine carries a picture of G.S.O.C. past president Arthur Piper, who was a featured speaker at the Pacific Northwest Section of the American Waterworks Association meeting held in Tacoma, Washington, May 11-13, 1950. Mr. Piper, who is staff scientist with the U.S. Geological Survey, warned the Association members that a better use of underground water sources is imperative to avoid chaos.

Ed.

JULY FIELD TRIPS

There will be two field trips during the month of July.

Sunday The first trip will be on July 16 and will be led by Dr. E. T. Hodge.
July 16 Members will meet in the bus depot at 5th and Main Streets, Vancouver, Washington, at 1:30 p.m., DST. The trip will be to the east and north of Vancouver and will be an exploration of our neighboring city and terrain as we see it from our Portland windows. Those who care to may prepare to join a picnic supper at the end of the trip.

The second trip of the month will be July 30th and will be led by Dr. and Mrs. Arthur G. Jones:

Sunday FORECAST OF PROPOSED G.S.O.C. FIELD TRIP - July 30, 1950
July 30

Klickitat, deep in a canyon cut in the Coriba basalts east of Mt. Adams, will be the goal of the field trip for the G.S.O.C. Sunday, July 30. There will be a trip up the river canyon by speeder bus on the logging railroad of the J. Neils Lumber Company, Gray Butte, on the lower edge of the Yakima Indian Reservation, the Goldendale surface of Palouse-like soil over the lavas, and the details of the dissection of the Miocene lavas, of the canyon will be seen at close range.

Gather at the Journal Building, S.W. Front Avenue at Yamhill, 8:00 a.m., DST. Members from the north and northeast districts may join with the caravan at the south approach to the Interstate Bridge, opposite Jantzen Beach, 8:30 a.m.

Leave U.S. Highway 99 at Vancouver, turn east on the Evergreen Highway (U.S. 830). Fisher Quarry of massive andesite blocks on left at mile 17.8. Note dike a mile beyond, at 18.5 where lava is in contact with stream gravels. Red rock bluff on north of highway at 19.5 mile, volcanic breccias and some stratified tuffs from here to Camas.

(Continued on next page.)

Gravel cliffs along cuts east of Washougal probably belong to Troutdale formation. Pause at avalanche shed on Mt. Pleasant for discussion of geological features to be seen up and down the Columbia River Gorge here. Slides from north side of gorge along route all the way to Stevenson, with giant blocks of basalt which have tumbled down. Beacon Rock is a volcanic plug of a younger volcano which the river has denuded in cutting the gorge.

Table Mountain high to the north just east of Beacon Rock is the source of soft volcanic tuffs, breccias of the Eagle Creek formation which formed the "Dam of the Gods." Stop at north end of Bonneville Dam, at about mile 45.3 for a view of dam, south wall of gorge, lava dike abutment for south end of dam. Pause at view point above site of Cascade Locks just east of Bridge of the Gods; park on stretch of old road.

Shell Rock Mountain, east of Stevenson, is opposite Wind Mountain, both intrusives of jointed, platy rock which Ira Williams called diorite porphyry. The gravel cliffs at Underwood just west of the mouth of the White Salmon River have been discussed by G.S.O.C. before; some claim they are Troutdale. We will pause to take samples and decide the matter for ourselves.

Just east of Hood River will be seen the west limb of the Bingen anticline, and the eastern limb will be noted plunging eastward 3.6 miles farther on; while dunes of river sand have climbed up the sides of the valley a mile beyond on the Oregon side of the river. A syncline succeeds the anticline, as we drive on eastward, and is beautifully exposed by the cutting of the obliging Columbia. Note the fault-block terrain with little valleys paralleling our route as we climb up along the line of the great Columbia Fault in this area, and the tilted edges of the fault blocks, which slope toward the north.

Cross the Klickitat River at the western edge of Lyle, turn sharply left up the Klickitat River road, and caravan slowly up the canyon 16 miles to the town of Klickitat. No stops will be made along this way, so notice the layered basalts, alluvial fans, river terraces and some sedimentaries on the route. Stop in Klickitat, then on 3 miles to the Dry Ice Plant, where we will picnic for lunch. Instructions will be given after lunch for the speeder trip through the upper canyon. We will assemble at a view point at the upper end of the railroad ^{for a} panorama of Mt. Adams, Mt. Hood, Gray Butte, and the Goldendale surface. The party will break up after return to the loading point. Find your own way and your own geological wonders on the route back to Portland. Total distance about 185 miles.

ASTRONOMY, ASTROLOGY, AND MOON SIGNS

By

J. Hugh Pruett

Astronomer, Oregon General Extension Division

Those of us who attempt to follow and teach the noble science of astronomy are sometimes mistakenly assumed to be adherents also of another "faith," the name of which closely resembles that of our own. It is not uncommon in the course of introduction for one party to the transaction to remark, "Oh yes, I know about you. You are the astrologer." Astronomers never consider this as complimentary, but after years of being exposed to it, learn that amusement rather than anger is the better way of accepting the "honor."

To those who consider themselves true scientists, it is surprising that astrology is still so widely held. A bookstore owner has told me that, although he is a "disbeliever," yet because of the great demand for magazines of this nature, he attempts to carry a full assortment so as to keep everyone happy. There are surely thousands of sincere people who feel that to be deprived of this supporting faith would leave them "of all men most miserable." But among the intelligent and really scientific readers of the Geological News Letter, I am sure I shall hurt few feelings if I state directly that I cannot subscribe to the faith of astrologers. If any feel I am unfair, I hope they will write directly to me and not bother the editor unnecessarily.

There is a similarity between astronomy and astrology, aside from the sound of the words, just as there is between the faith of Christians and Mohammedans. Followers of both religions believe in one God; both astronomers and astrologers believe in the stars and study them. But there is also a decided distinction. Astronomy, according to the Universal Dictionary, is "the science that treats of the distances, magnitudes, compositions, motions, and all that is discoverable regarding the heavenly bodies. It is founded on careful and oft-repeated observations made chiefly with elaborately constructed instruments." Astrology is defined as "the pseudo science which pretends to foretell future events by studying the positions of the stars and ascertaining their alleged influences upon human destiny." Other dictionaries give similar definitions.

Careful study clearly indicates that astrology, which has been designated by one California astronomer as "the superstitious belief in the influences of the stars," came into being long after astronomy had reached a high degree of exactness. The pseudo science seems to have had its beginning in Babylonia about the year 600 B.C. Ptolemy, around A.D. 150, perhaps the only Greek astronomer to work with astrology, seems to have given the start to the present horoscopic methods. The wise men of old Babylon distinguished between what we now call astronomy and astrology by designating them natural astrology and judicial astrology.

From Babylonia, judicial astrology was introduced several centuries before Christ into Greece, Rome, and Egypt. During the middle ages the Arabs promulgated its teachings with great zeal, and many Jews and Christians sought profit in its practices. We should note that in the earlier forms, astrology was concerned only with the welfare and future activities of rulers and governments. Much later, the system of including individuals was introduced.

Around A.D. 1600, the noted Danish Astronomer Tycho Brahe, after dabbling in astrology during the earlier part of his life, finally abandoned it and made the statement that he was convinced there was no scientific basis for believing that future events in the lives of rulers and individuals could be foretold by the stars.

It is generally conceded that he was the last scientist of his line to believe in astrology. His pupil, the great Kepler, later compared astrology with astronomy as "the foolish daughter of a wise mother."

It is interesting to note that three of the major planets, Uranus, Neptune, and Pluto, were not known two hundred years ago. How incomplete must have been the forecasts made before this time! But as soon as these planets were discovered, in some mysterious way it was immediately known exactly how to make use of them and they were assigned important places in the astrological scheme of things.

Both astronomers and astrologers have suffered persecution in the past for their views. Several states now have laws forbidding astrological practices. This method of foretelling the future has been denounced by religious and educational organizations. In 1943 a bill was introduced into the California legislature to legalize this practice and to provide a State Board of Astrological Examiners "to applicants over 25 years of age who have studied astrology for five years." At once, Dr. C. H. Cleminshaw of the Griffith Observatory prepared an article for publication in the Griffith Observer in opposition to the bill. He sent copies of this publication to all members of the legislature. For some reason the bill was soon dropped and never came to a vote.

As for tolerance in the relations between these two classes of star students, the astrologers - at least by their own report - have decidedly the better record, for they claim splendid cooperation between themselves and the astronomers. They say: "We work together in the greatest of harmony." This supposed friendliness is often emphasized in lectures and written articles. But astronomers are universally intolerant toward astrologers and resent bitterly any insinuations of amity. A few years ago the American Astronomical Society, teaming with the American Society of Magicians, persuaded the Federal Communications Commission to rule astrological broadcasts off the air. Intolerance most likely, but to many it seemed a desirable move.

What do the prominent astronomers of the present have to say about astrology? Let us quote a few:

Dr. Daniel Buchanan of the University of British Columbia has said: "Many people confuse astrology with astronomy and suppose there are reputable scientists who believe in it. Actually astrology is an 'art' equivalent to crystal gazing or palmistry. --- A fortune teller could see your future just as clearly by gazing into a \$1.95 crystal ball as by peering into the multimillion-dollar 200-inch telescope of Palomar Mt."

Professor Frank Schlesinger, late director of Yale University Observatory, said: "If there is any basis for astrology, astronomers would like to know it. Some have looked into it. I have, and have come to the conclusion there is no basis for its claims."

Dr. C. A. Chant of the Dunlap observatory in Ontario, Canada, wrote: "It is remarkable that such a superstition still exists. The Copernican theory of the universe is now universally accepted. The earth is simply one of a group of planets revolving around the sun, and the fixed stars are millions and millions of miles away. How can the positions of these bodies at the time a person is born determine what will happen to him through all his life? --- It is simply incredible that the conduct of a person's life is controlled by the configuration of a number of comparatively small material bodies millions of miles out in space."

Dr. Harlow Shapley, director of Harvard Observatory says: "Star reading is plain buncombe. The stars, despite queer notions to the contrary, have as little influence on our daily lives as the leaves in a cup of tea. And yet some people believe in that too."

Dr. Cleminshaw (mentioned above) writes: "When the newspapers devoting space to astrology are courteously asked why they represent themselves as dedicated to truth and enlightenment and then deliberately spread superstition, their answer is usually that the daily horoscopes amuse the ignorant, make them buy papers, and do no harm. They keep alive a superstition through which fakers collect money through fraud. Some people believe in astrology because they suffer from a neurotic condition much more serious than just ignorance. It is a case of delusions of grandeur, a person's conviction that he is so important that even the stars take part in determining his fate. It is easier for a person to inquire about his future from an astrologer than to get busy and do something constructively about it himself."

The May, 1938, issue of The Reader's Digest in the article, "That Gigantic Fraud, Astrology," says: "During the last 300 years, not one recognized scientist anywhere in the world has professed belief in the slightest connection between the stars and man's destiny. The only feeling scientists have about astrology is one of disgust that in a nation of free schools such hocus-pocus should have so many believers."

The general public should no longer be misled. They may accept either view without fear of prison, but they should know that professional astronomers do not accept astrology.

Many today indulge in a mild form of astrology without being aware of it. This has to do with forecasting weather by the change of the moon or by the tilt of the new moon, planting in the light or dark of the moon, or doing various kinds of work according to moon signs. Any certain lunar phase appears the same from all parts of the world. A full moon of July may find Alberta, Canada, sweltering in sultry summer, and southern Argentina shivering in wintry frosts; California under cheery blue skies, and New York in the gloom of torrential downpours. All of these sorts of weather are blamed on the same moon change.

The influence of the moon on weather and crops is given little weight by scientists. Astronomers find no reason for such ideas. Full moonlight is only about 1/500,000 as bright as sunlight. The "highest" high tides - these are caused by lunar positions and not brightness - occur at both new and full moon, the darkest and lightest times.

Weather Bureau officials and agricultural college statisticians are practically unanimous in disclaiming that any existing data indicate that either weather conditions or crops are in the least affected by moon changes or moon signs. As to moon effects on plantings, they say: we are helpless to decide since temperature, rainfall, sunlight, etc., are so much more dominant that they mask completely any lunar influences. Even those who still "plant in the moon" surely agree that beans planted in the wrong time of the moon in May stand a far better chance of producing a successful crop than those put into the cold ground in December while the moon is "just right."

For extensive reading on astrology one may find the arguments "for" in any of the numerous magazines published by its proponents, and on sale at most news stands. Arguments "against" may be found in The Reader's Digest mentioned above, Good House-keeping (November 1940), Scientific Monthly (March 1941), The Saturday Evening Post

(April 17, 1943), and Griffith Observer (April 1943). These magazines can be found at any good library. Many other references may doubtless be found in the various volumes of Reader's Guide to Periodical Literature.

G.S.O.C. TRIP TO BEND, MAY 27-28, 1950

On their late May trip into the upper Deschutes region,* members of the Geological Society of the Oregon Country viewed striking proof that volcanoes blazed in the Bend area only yesterday, geologically speaking; and that great floods of lava dammed rivers, flowed through forests, and created a type of scenery outstanding in the Northwest. Bend served as headquarters for the GSOC members on the week-end trip, with Rudolph Erickson in general charge of arrangements. Phil F. Brogan, member of the society who lives in Bend, was expedition leader.

The society members literally plunged into the volcanic heart of the region on an afternoon trip south from Bend, with Lava Butte - a 500-foot high scoria cone that overlooks the entire upper Deschutes area - and the snow-blanketed Three Sisters their first stopping place. This was a lecture point from which was unfolded the graphic story of spectacular volcanism that left such markers as spatter cones, cinder buttes, massive lava flows, and a 20-mile long fissure. A flow of basalt from Lava Butte, the group learned, spewed westward and tumbled into the old gorge of the Deschutes River.

From Lava Butte, the 18-car caravan moved south to a dissected lava plug in a low shield volcano, then headed into the former site of Camp Abbot, on a side trip that enabled Ford Wilson to check on some concrete that had been in place seven years. (Ford was with the Army Engineers when Camp Abbot was built.) A swing south across Highway 97 took the large group to another cinder cone that had been extensively stripped when Camp Abbot was constructed. In this area and at the volcanic plug excavation, the GSOC members collected iridescent cinders.

Also, on the way south, the party visited the Lava River caves, a mile-long tunnel two miles south of Lava Butte.

Back to Bend Saturday evening, the group joined in a campfire party, with Dr. Arthur Jones leading the singing and with Ken Hicks, of Bend, providing banjo accompaniment. Campfire speakers included Lon Hancock, who touched on the story of the ancient John Day region; Ford Wilson, who reviewed new discoveries in the field of geology; and Phil Brogan, who told of geologic wonders "behind the hills."

The Gee-Sockers started Sunday with a sunrise trip to Pilot Butte, an old volcano of the steptoe type at the eastern city limits of Bend; then headed north for the pumice pits in the Tumalo area and the nationally famous Peterson Rock Gardens, nine miles north of Bend. From that point the group, now numbering some 20 cars bearing about 60 persons, visited the Terrebonne "diamond pits," to collect hyalite opal perched like diamonds on brown cinders. A brief stop was made at Peter Skeen Ogden Park, where there was a lecture on introcanyon lavas.

At noon on Sunday, the party dropped from the Madras plateau into the awesome gorge of Crooked River, at the Cove, where the GSOC members joined in a picnic lunch under the towering palisades of the Cove "island." Then the caravan headed back up the long grade, and with Lon Hancock now in charge, moved north to the Vanora grade locality west of Madras, and headed for home across the new Warm Springs highway.

*For additional comment on this section of the country, see illustrated feature article in the magazine section of the Oregonian for June 4, 1950. Ed.

NOTE: Following is an excerpt from Mr. Brogan's letter transmitting the report on the Bend trip: "This week-end I am going into a country I would like to guide the GSOC into some day -- the spectacular Abert Rim region of Northern Lake County." Future trip chairmen take note! Ed.

EXPLORATION TRIP OF JUNE 11, 1950

By

Dr. Edwin T. Hodge

It is hard to decide whether the trip was a geological one or a trip taken wholly for the purpose of luxuriating in the scent and sheen of the most colorful and fragrant spring in my memory. As leader, I enjoyed an earnest and joyous group of fellow-explorers. In the group were: Emily Childs; Lee Haven; Rudy and Jane Erickson; Ada Henley and her sister, Mrs. Edna Wilkins; Ruby and Hazel Zimmer; Norris and Ruth Stone; May Dale; Glenna and Mrs. Teeters; Bruce, Ruth, and Alice Schminky; Carol Waak; Orrin Stanley; Dr. and Mike Swisher; John O'Conner; Ken Lewis; James Galt; Spencer Wood; R. E., E. C., and Mrs. Wilbur; Louis, Viola, and Mary Lou Oberson; Lydia Hodge.

Following are listed the highlights covered:

- 1) We saw the great northeastward-dipping fault block of Forest Grove with its surmounting David Hill and the fault-lined valley of Gale Creek.
- 2) Also, the valleys of Gale, Dairy, and East Dairy and other creeks, all of which flow toward the Forest Grove area.
- 3) Beginning at Forest Grove and extending southeast to Wilsonville and south to Newberg is that less-than-150-foot level or flood plain with no divide in it, which yet serves as floor of the Tualatin and the Chehalem streams.
- 4) At Dilley we saw the northern end of the Chehalem Mountains. These are another great fault block or cross-broken block. It dips slightly north of east and is capped by a great thickness of Coriba, or -- for those of you who have been led astray -- the Columbia River Basalt formation of middle and upper Miocene age.
- 5) Emerging from beneath the Coriba are several Tertiary formations. We turned up Scoggins Creek for about a mile to the old quarry where, long ago, when sandstone was a building material, the ring of sledges and the percussion of chisels were to be heard. Here were found abundant casts of Gries Ranch or lower Oligocene fossils. In addition, the quarry served to illustrate several features of general geology.
- 6) At Gaston we saw the remains of old Wapato Lake. This must have been a busy place for the squaws of not so long ago as they waded the shallow waters of the lake and felt for the bulbs of the wapato with their feet; then, reaching down, dug with their hands the edible bulbs and gathered them into their baskets.
- 7) The Tualatin River comes in from the Coast Range at Gaston and then, instead of continuing southward, turns abruptly north to make a big swing around the north end of the Chehalem Mountains, and then turns southeastward - a very silly thing for a river to do. It should cut its length in half by going south to the Willamette at Newberg.
- 8) At Wapato we were on the 200-foot terrace which is a prominent feature, not only along this abandoned valley, but elsewhere in the Tualatin and Willamette valleys as well. From this terrace we had a fine view of the Laurelwood Fault.

This cross-splitting fault has shifted the northern part of the Chehalem Mountains to the east, either by tilting the north part more steeply eastward or by a bodily shift of the whole block to the east. The fault gave access for erosional attack by streams to the soft rocks which lie below the Coriba. Hence a rather large "box-canyon" has been cut into the west wall of the Chehalem Mountains.

9) Continuing south we noticed that there were two distinct terraces: the 200-foot and the 500-foot. This seems to indicate that at one time this valley was everywhere two miles wide and that on the 500-foot level a river flowed. Then at a later date -- probably due to uplift of the region -- the stream entrenched to the 200-foot level. Both of these levels are cut in bed rock; they are not alluvial fillings.

10) From Dewey to Valley View School the valley is much narrower. This suggests two things: (1) at the 200-foot stage two streams may have competed for possession of the valley. The Chehalem reached north and the Wapato branch of the Tualatin reached south. If this idea is correct, then a divide should have been left between, and to date no survey indicates such a divide. Or (2) the stream here encountered harder rock. This is indicated by two large slabs of basalt, one on Ribbon Ridge and the other just to the west toward Woodland School.

11) At Valley View School the valley turns eastward. This ^{is} reminiscent of the eastward swing of the Tonquin Floodway. In this case, however, the swing seems to be in response to the hard rocks of the Red Hills of Amity and the south end of the Chehalem Mountains.

12) We turned west at the above school into the great lowland of Yamhill and Carlton. A large part of this lowland is below our 150-foot elevation and is filled with alluvium, and we can only guess as to the kind of rock which lies below. However, there were several hills near Carlton, and to the north the whole region is occupied by some "Tertiary Middle (?) Eocene Shales." This very soft rock probably accounts for the dissection of the large lowland adjacent to the great Yamhill Valley.

13) After the 200-foot floor of the valleys had been cut and widened, there was another uplift of the land and a deepening of the valleys. This deepening was more than to the present level -- how much more we do not know, but it probably was more than 100 feet deeper.

14) After this deepening there was a damming. The dam, or dams, caused all the streams to flood and to make flood plains, a process which they are doing to the present time and a fact which those planners who are trying to make over our valleys ought to recognize.

15) One dam (or the dam) may have been that at Oregon City. If the Willamette had been superimposed over the Oregon City Ridge, and then unwittingly had cut down and found itself on the basaltic barrier, it would have held all the streams above the dam to its level. The crest of the Oregon City dam is now 52 feet, and once was higher. From this level the flood plains would slope gently backwards to higher elevations. If the downcutting of the dam were too fast some portions of the flood plains would be left perched above the streams, which by retrograde erosion are cutting back towards them. This is exactly the situation we find today.

16) The depth of the valleys referred to in (13) above is indicated by the depth of the Willamette River below the Oregon City falls, which is much over 100 feet.

17) The relationship of Oswego Valley to what we are now discussing may be evident to some of you, but is so important a topic that I will leave it to a later and independent communication.

18) Water once stood at an elevation of 306 feet, as shown by the giant erratic near Bellevue. This erratic, I hope, will be discussed in a communication to the Oregon Journal in the near future, and I will not talk about it here except for a few remarks. Many of these erratics appear to have come in flocks. This was due either to ice packs which floated out from the glaciers of the north, or to the concentration in any one ice raft of many boulders. This is the case with the Bellevue Erratic because we found with it several kinds of rock. The rock hounds had a field day and added greatly to their collections. They obtained: albite granite porphyry, binary granite, hornblende biotite granite, a beautiful hornblende andesite, argillite, quartzite, and a banded quartzite.

Sitting on the erratics we had a magnificent view of the Vale of the Yamhill, a view which, to some of us, was worth the entire expedition.

19) Here the party broke up. My people returned to the locks at Lafayette and there had a picnic supper.

I have not a 20th point and will have to end on an uneven number.

CALLING ALL BUDDING GEOLOGISTS!

Dr. John Eliot Allen has promised an article soon which will survey the potentialities of geology as a field for the young high-school or college student. This will be of particular interest to our junior members.

Ed.

PLANETARIUM OPENS

The Oregon Museum's new PLANETARIUM was formally opened to the public on Sunday, June 4, 1950, with over 150 persons attending the three shows. Lecture-performances will be presented each day except Monday at 2:00, 4:45, and 8:00 p.m. with a tentative schedule of four shows (at 2:00, 4:00, 6:00, and 8:00 p.m.) on Sundays. Admission charge is 50 cents for adults and 25 cents for children, tax included. Museum members will be admitted on payment of tax only. For a description of the Planetarium itself, see G.S.O.C. News Letter for May 1950; Oregon Journal (5-dot edition) for May 28, 1950; and the Oregonian for May 29, 1950.

NEWS OF MEMBERS

Dr. and Mrs. J. C. Stevens are now eligible to the select group of G.G.P.'s (great grandparents); reason: young Steven Audiss Smith, born March 24, 1950, in Birmingham, Michigan.

JULY LUNCHEONS CANCELLED

No GSOC luncheons will be held during July. The restaurant at the Chamber of Commerce where luncheons have been served in the past is to be closed during that period. The Thursday luncheons may be resumed in August. Watch for announcements.

THE TENINO MOUNDS*

"A good deal has been written on these mounds. Many believe them to be artificial. That they are natural may be demonstrated by careful examination on the spot. If the distribution of the materials of which they are composed be examined, these facts will be found: First, that in all these mounds near Tenino three kinds of material enter into their composition. The upper portion of every one of these contained a large share of vegetable mold, rich and dark of color; the middle portion a sandy loam, the base clay and gravel, or clay and boulders.

"These three are so graduated into each other as to make it impossible to believe they were ever heaped or sifted into their present relations to each other, but easy and natural to believe that the succession in which they stood was due to the same causes that made a like distribution in the fields around them. No artificial heaping could imitate this. But again, the whole cloth out of which these mounds were carved is yet to be seen in their neighborhood.

"And again, the thickness of these uncarved portions varies in different places, and the height of the mounds of the place always corresponds with the thickness of this uncarved portion of the strata; higher mounds from thicker strata, smaller mounds from thinner strata. They are therefore, not artificial. But may they not be due to eddies in currents of water: No; there is no touch of stratification such as water leaves. If any one will compare those of Tenino with those of Wasco County, in Oregon, on the north slopes of the hills, 6 or 8 miles from The Dalles and plainly due to atmospheric agencies, the Tenino ones will seem explained."

*Quoted from the "Report of the Governor of the Washington Territory for 1884."

NEW MEMBERS

Mr. James Galt
1131 S.W. Montgomery Street
Portland 1, Oregon

BR 8134

Mr. and Mrs. Albert Keen
2715 N.E. 41st Avenue
Portland 13, Oregon

John F. O'Conner (Junior Member)
C/o Mrs. Robert L. Forrest
2644 N.E. Bryce Street
Portland 12, Oregon

Mr. and Mrs. Arthur J. Hedges
1854 N.E. 66th Avenue, Apt. B
Portland 13, Oregon

Mr. and Mrs. William F. Clark
5237 N.E. Wistaria
Portland 13, Oregon

GA 3242

Bus. Address: 943 N. Russell

Miss Hazel F. Zimmer
805 S.E. 60th Avenue
Portland 15, Oregon

EM 8319

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

- 1) Those who love, enjoy, and believe in the Oregon Country and want, therefore, to support the activities of the Society;
- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

LECTURES: Lectures are held in the Public Library Hall, S.W. 10th Avenue and Yamhill Street on the second and fourth Friday of each month. Meetings start at 8:00 p.m.

TRIPS: Field trips are held on the Sundays immediately following the lectures; that is, two a month until October. For questions and suggestions concerning trips, call Mr. Rudolph Erickson, BE 7191.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

AUGUST LECTURE

Friday
Aug.11 Charles Jacobs, Ceramist for the State Department of Geology and Mineral Industries, will talk on clay technology and will demonstrate methods of throwing clay on a potter's wheel.

ANNUAL PICNIC

Friday
Aug.25 ANNUAL ERUPTION AT MOUNT TABOR PARK. Sampling of liquids and solids will begin promptly at 6:30 p.m. So be on time and ready with equipment (plate, cup, and eatin' irons). If the telephone committee misses you, bring the same eats (more of same) that you brought last year. With Mrs. Louis Oberson as chairman and Ken Lewis in charge of entertainment, this is sure to be a most successful crateral ebullition.

SEPTEMBER LECTURE

Friday
Sept.8 Ralph Mason, of the State Department of Geology and Mineral Industries, will talk on Oregon earthquakes.

AUGUST FIELD TRIP

Sunday
Aug.27 There will be only one field trip in August. The trip will be to the Scotts Mills area on August 27 and we will have the benefit of the attendance of Doctors Packard and Baldwin on this trip. Essentially this will be a shell collection trip with such geology as the two professionals are willing to give us.

Members will meet at Marquam at 9:30 a.m., DST, August 27. The trip will include a reconnaissance up Butte Creek Road and stops at the three shell localities in and near Scotts Mills, one of which was first discovered last year. Also a visit to the old limestone quarry some two miles north and east of Marquam, and, time permitting, in the afternoon a visit to the two fossil leaf localities in the Molalla area, one of which is also a recent discovery.

Bring lunch and advisedly some drinking water.

R. Erickson.

NEWS OF MEMBERS

Sympathy is extended to Miss Clara A. Nelson on the death of her mother, Hanna Emilia Nelson, on June 26, 1950.

New Members:

Mr. and Mrs. William H. Oberteuffer
Route 2, Box 98
Oswego, Oregon
CH 2268

Mr. and Mrs. John C. Cleghorn
219 High Street
Klamath Falls, Oregon
K. F. 5424

Wallace G. Ludgate
8100 S.W. 8th Avenue
Portland 1, Oregon
CI 8508

LUNCHEONS RESUME

Thursday luncheon meetings are again being held at the Chamber of Commerce after a month's recess.

LOST AND FOUND

Did anyone lose a geology pick while on the Bend trip over the weekend of May 27-28? A pick bearing the initials "R.E.H." was found at the Terrebonne diamond mine the day after our visit there; and correspondence with Dr. Ruth E. Hopson, of Salem, discloses that it is not hers. The owner is urged to write Mr. Phil Brogan, 1426 Harmon Blvd., Bend, Oregon.

Ed.

MEMBERSHIP LIST TO BE PUBLISHED

Our up-to-date membership list will be published in the October News Letter and will include all paid-up members as of September 1, 1950. If payment of your 1950-51 dues has slipped your mind, or if a recent change in your address or telephone number has not been reported, be sure and square yourself before September 1st with our Secretary, Ruby Zimmer (805 S.E. 60th Avenue, EM 8319) so that your name will be correctly included.

SEEN IN B-MIKE'S COLUMN
(The Oregonian, July 24, 1950)

"Oregon Museum of Science and Industry has a tame baby raccoon. They got it from Mrs. L. C. Binford who told Museum Director Kenneth Lewis the coon's name was Polly, that it would follow people around and even sleep with them if they'd let her. Polly enjoyed herself the first day at the museum but started to cry when they put her in a cage. Mr. Lewis took her home for the night and she had fun playing with some puppies. Bedtime came and Polly settled down, but must have felt cold, for when morning came, she was under the blankets of the bed at the foot. Mr. Lewis now recommends baby raccoons to replace the old-fashioned hot water bottle for keeping feet warm. . . Polly's second notice of the public was in a bus ride with a boy who frequents the museum. He already had a fawn in his arms, but decided to take Polly home and take her back in the morning when Mr. Lewis would take the fawn to the proper authorities. Most busses have signs barring dogs and cats, but nothing is said about raccoons and deer. You find the funniest people, two and four-legged, riding on busses."

I N . M E M O R I A M

Dr. Warren D. Smith

With the passing of Dr. Warren DuPre Smith in Eugene on July 17, 1950, the Society -- and, in fact, the entire field of geology -- has lost a most valued member.

"Dr. Smith, widely known throughout the Northwest as a speaker and writer, had served as a member of the University of Oregon faculty from 1914 until his retirement in 1947 when he became professor emeritus. From 1932 he was head of the combined departments of geology and geography.

"He served in the Philippines as a geologist with the U.S. bureau of mines from 1905 to 1914, with headquarters at Manila. He returned there for the period 1920-22, when he was chief of the division of mines in the Philippines.

"After his retirement from the university, Dr. Smith continued active in his profession. In 1947 he became geographer with the office of strategic services, Far Eastern section. In 1948 he became president of the Oregon Academy of Science. During this period he served as a member of the Philippine committee of the National Research council and was vice president of the Pacific Coast Geographers' association. He was author of several books and many articles."

(Oregonian, July 19, 1950.)

The following article becomes invaluable in view of the fact that it will be the last from his pen. (Ed.)

ROMANCE OF THE BEACHES*

By

Warren D. Smith

For nearly four-hundred miles of coast line, Oregon has a string of beaches like beautiful pearls strung on a beam of light. Year in and year out for millions of years the immemorial sea has been pounding away on the headlands, building up and tearing down ever transforming the scene. In the long geological story the changes that have taken place since the coming of the White Man are but a flicker on the reel of time.

I shall not run the risk of boring my listeners tonight with a long technical discussion of the geological story; though that, to some, might be of interest, but I shall dwell more on the human episodes, the romance of the beaches. However, a few general statements concerning the geology must be made in order to understand the things I am about to relate. Some people are satisfied just to gaze out over the beaches toward the sea and reflect in a hazy and lazy way and leave unanswered the thousand questions that leap to the enquiring mind.

Perhaps you are one of these and I'll not quarrel with you; or maybe all you want to know is where the good fishing is to be had, a T-bone steak or a soft Simmons bed - well, who doesn't? If you can put off these delectable things, I'll spend a few minutes on quite different topics.

*Radio talk over KORE Eugene.

As you travel the coast from the Columbia River southward you will observe that the coastline north of Cape Blanco is strikingly different from that to the south of this point. In the northern portion, the rocks are younger and less resistant, the beaches are longer, more curving, and the back country less rugged. On the other hand, the southern coast is more abrupt; the beaches shorter; and the rocks in the headlands older and harder. Not only do we find marked differences in scenery, but the minerals in the rocks are different. This last is very important since much of my story deals with gold and associated metals. These have never been found in any appreciable quantity on the northern beaches; whereas, in the early days, many thousands of dollars in gold were reclaimed from the southern ones.

A second feature I should like to call to your attention is the fact that we have older elevated beaches behind and above the present beaches; and these, too, have yielded even more gold than the beaches of more recent origin.

During the summer of 1947 my work in appraisal of the mineral value of the former Indian lands of southwest Oregon took me out to most of these beaches.

Let your mind go back to a sunny day in 1851, and think of yourself as standing on the terrace just south of Five Mile Point and near the mouth of a small stream. The beach is dotted with hundreds of busy miners shovelling and panning the glistening sand -- a man comes from out of the background rolling a keg before him and when he reaches the edge of the cliff he yells, "Whiskey-run! Whiskey-run!" but the men either didn't hear him at first or they thought he might be merely joking, so they apparently did not heed the call. Finally he knocked the bung out of the barrel and then someone saw the precious fluid gurgling out of the barrel. With a yell he came running, followed by the entire gang with their pans; and one fellow who had no gold pan brought his frying pan. It didn't take long to get rid of the whiskey, but little work on the beaches was done that day. That's the story of the origin of the name of the little stream today known as "Whiskey Run!"

From this time on to near the end of the century, mining flourished along the beaches and in the hinterland up the Sixes, Elk, and Rogue rivers. At Port Orford, Gold Beach, Randolph (now a ghost town) were thousands of tents and shacks of the early diggers after the precious metal. Not only gold was washed out but platinum as well.

Some of the operations were simple sluice box recovery, while larger companies were formed which used hydraulic methods which enabled them to handle thousands of yards as against the few yards one or two men could wash with the rockers and sluices. You see, after the big strikes in California began to play out, men came north into the Rogue and Illinois; and finally, over the divide, they followed other streams like the Chetco to the coast. One of the early travelers, William Wells, made a horse back trip along the coast from Crescent City north and has left a vivid description of the life of the early Whites and the Indians and some of these early mining operations. Many Chinese were brought in as laborers and later many of them struck out on their own. On the upper Chetco in eastern Curry County they carried on placer operations and this district still retains the name of "China Diggings." On the South Fork of the Coquille River is another locality called "China Flats" where they operated. Old residents of Gold Beach tell you today of seeing Chinese washing gold on the present site of the Fair Grounds.

Today, if you travel the beaches or go up such streams as Johnson Creek, Sixes, Elk, Rogue, and Chetco, you can see scattered remains of these old operations, fragments of old sluice boxes, ditches, abandoned tunnels, gouged out hillsides, and even larger pieces of equipment, such as rusted pipes and various parts of concentrating machinery.

The most vigorous and remunerative operations were carried on before 1870. After that the excitement died down and the scene shifted from the placer operations on and near the coast to lode mining in the mountainous back country. Mining then changed from adventure to business.

In all these early activities the Indians, whose home was this wild coast country, took little direct part, though some of them either worked for the miners or sold them produce of one kind or another. It is recorded, however, that two half-breed Indians sold the McNameara brothers a claim on Whiskey Creek and that the whites made a profitable clean-up out of this ground.

I would like to digress here a little bit and take you to another beach, farther north at Nehalem where a most unusual find was made many years ago. On the Nehalem spit and nearby points, fragments of wax (some, pieces of candles; others, fairly good-sized chunks) were found. The late Prof. Stafford, for years head of the Chemistry Department at the University of Oregon, investigated these finds and analyzed the wax. He found out in analysis that it corresponded pretty well to Siamese wax. It seems probable that some ship from the Orient, perhaps a Spanish galleon from the Philippines, was wrecked on this coast and that these candles were church candles destined for some mission. Some have even thought that this wax was a residual product of petroleum and might have come from some local deposit, but there is nothing to support this theory.

Of course, nearly everyone in western Oregon has hunted for agates on the beach at Newport. This has become an important occupation for many people. Although many people have collected, cut, polished, and admired these semi-precious gems, some do not know their origin. Very briefly it can be stated that they were originally deposits of silica (SiO_2) in cavities in the lavas of the mountains back of the coast and have been eroded out and carried downward to the beaches by the streams. The plantlike inclusions in many of them are deposits of manganese oxide. In some cases there may be minute forms of algae as well. After a big storm is the best time to look for them.

There are many stories of lost treasure supposed to be cached at one point or another along the coast. Some years ago there was much excitement and digging near Neahkahnie Mountain, though nothing tangible ever turned up; but some people had a lot of fun out of this search. Of course, the best part of an activity of this kind is the search and not the finding.

While we are speaking of searching for buried treasure we should not overlook the story of the Port Orford meteorite. Prof. Pruett, our local authority in astronomical matters, has discussed this subject in newspaper articles, and therefore we shall not tell it all here. Suffice it to say that away back about 1852 one of these sky visitors was located in the wild back-country of Port Orford by Dr. Evans, who was making a territorial geological survey. Unfortunately he died without leaving an exact description of the locality. No one has been able to locate it since. Some timber cruiser, doubtless, will run across it some day and he may, if he is observant of the rocks, bring it to the attention of the scientists. Many people have gone out to look for it but they have generally got bogged down in the dense brush and have given up the search.

Now, we might run up the coast a little farther to the sea lion caves and go down by a stairway into this huge grotto, the lair of the lions of the sea. This is one of the few places along the entire coast where one can see these interesting animals at close range. Formerly one could only get into this place by entering at low tide from the sea side. One of the first to study this locality

was a former Oregon student, Eugene Callaghan, later professor of geology at the University of Indiana. When little more than a boy he swam in from the ocean and brought back a vivid account of the cave and later wrote a Master's thesis on its formation.

We now turn back again in our story of the beaches to the year 1851. Captain William Tichenor, who was in command of the Sea Gull, a ship which plied between Astoria and San Francisco, established a trading post for the miners at what is now known as Port Orford. A party was landed and established on a large rock close to the beach. This rock is now known as Battle Rock because of the clash between the Indians and the Whites on June 10th. The Indians, who resented this incursion of the Whites into their land, besieged this party, but in the engagement seventeen Indians were killed by fire from a small cannon. From this time on, relations between the natives and the miners grew worse until the Government decided to step in. Accordingly a treaty was made with the Indians on November 9, 1855, and soon thereafter the Indians were removed to the Siletz country where they were placed in a reservation. No direct financial compensation was ever paid them. Several years ago the Indians, encouraged by some of their white friends, began to agitate for some payment for their dispossessed lands. After long years the Supreme Court of the United States handed down a decision in favor of the original inhabitants of the land and turned the matter over to the Court of Claims to set a price upon the land in question.

And so men come and go, the Indian hunters and the white miners. The wilderness has given way in many places to the hustle and bustle of a new civilization - only the sea seems to be unchanging; and yet we know that it too has changed and the land it has fought against also has changed. If you break open that boulder you may get some of the evidence for these changes in the fossil remains of some small animal that long ago, on another beach, enjoyed its brief span of life. Let us go back to Newport and look at what is left of old "Jump-off Joe," a landmark to the early settlers and tourists, but now almost completely disappeared from view as a result of the ceaseless pounding of the Pacific waves.

To a geologist the seashore is perhaps the most interesting place for study, for here the atmosphere, the water sphere, and the rock sphere, are in continual conflict. "The present is the key to the past," the principle of Uniformitarianism enunciated by the English geologist, Hutton, long ago. If you want to see how the world was made go study the seacoast and the beaches.

And now comes to my mind an old picture in my collection of a considerable gathering of people on the beach at Newport with Dr. Thomas Condon expounding the geological story, the ex-minister reading a chapter from the oldest book, the "Book of Rocks." He told his listeners something of how the Creator of this Universe works.

In a future radio talk I shall have more to say about this man, a minister of the gospel who became the pioneer geologist of the Oregon Country.

And now before we leave this subject of the beaches, let's go down to a point near Whalehead, just north of Brookings, and look at the panorama spread before us. To get to this place you must leave the highway some three miles inland and take a side road down onto an old terrace some eight hundred feet above the sea. The speeding tourist who is hurrying to get to Sun-kist California rarely takes time to get off the main road and consequently misses some of the best scenery; and furthermore, the modern cars are not adapted to some of these unpaved roads. To walk a mile or so is something that many people nowadays consider just too much trouble. The road winds down past wonderful groves of

azaleas and rhododendrons and finally ends at a delightful old ranch in a grove of firs and spruces. Here we find the usual vegetable garden, and down in a little swale, protected from the wind, a rustic cottage, and below this a small light plant where electricity is produced from power furnished by a water wheel. The terrace on which this farmstead is located drops off quite precipitously to the ocean which is reached by a steep and winding trail. A trip down this trail is rewarded by the sight of one of the most interesting and most rugged vistas on the entire coast - delightful coves, bald headlands, and an interesting complex of old rocks which keep the geologist busy for days. The streams from the back country are deeply incised in this uplifted terrace, and the whole scene is wild in the extreme.

This is a fine place for deer, by the way, as much of the country is exceedingly heavily timbered or brushy. To stand on this great bench and witness the fog roll in from the sea and flow up these little canyons and then lift like a great curtain, with the beaches below brilliantly lit up by the sun, is a sight never to be forgotten. It has been proposed to make a state park out of a part of this stretch of coast. If this is done it will be one of the finest in Oregon's fine system of state parks.

And here the geologist, weary from his scramble over the rocks and long climb up the escarpment, sits him down and irresistably is captivated by the beauty and wildness of the natural scene. He dismisses for the time being the geological problems he hopes to solve and turns to the poet, Masefield:

"And all day long the sea
Would not let the land be,
But all night heaped her sand
On to the land:
I saw her glimmer white
All through the night,
Tossing the horrid hair,
Still tossing there;
And all day long the stone
Felt how the wind was blown;
And all night long the rock
Stood the sea's shock:
While, from the window, I
Looked out, and wondered why
Why at such length
Such force should fight such strength."

ATOMIC GLASS DISTRIBUTED AT LECTURE

Those of the members who attended Ford Wilson's lecture on the McNary dam site (July 14, 1950) found it doubly worthwhile. Not only did they hear a very informative talk delivered in a manner which held the interest of all, but they had the unique opportunity of securing a sample of atomic glass fused on the site of the atomic bomb explosion at White Plains, New Mexico, and of watching the reaction of a Geiger counter to this radioactive material. These latter privileges we owe to Dr. John Eliot Allen, who sent the samples of atomic glass up from New Mexico. On behalf of all who were fortunate enough to benefit from Dr. Allen's thoughtfulness and generosity, we say a very enthusiastic "Thank you."

Ed.

GOOD READING FOR THE AMATEUR GEOLOGIST AND MINERAL COLLECTOR*

An unusual amount of good reading for the interested layman, the amateur geologist, and the mineral hobblist is contained in "The Earth for the Layman" just issued by the American Geological Institute. Subcaptioned as "Selected books and pamphlets, mostly nontechnical, on geology, mining, rocks, minerals and gems, fossils, evolution and related subjects," the list of 625 titles covers the gamut of nontechnical reading from novels with a geological background or the identification of common fossils, to instructions on how to identify minerals and grind the facets on a gemstone. Occasional annotations are of material assistance to the reader.

Compiled by Mark W. Pangborn of the U.S. Geological Survey Library, this preliminary list will also be invaluable to librarians called upon to advise hobblists in the earth sciences, high school teachers and students of earth science, or the layman interested in nature study or conservation. It will also serve as an excellent guide to librarians in setting up exhibits for those interested in various phases of conservation.

Although the greater part of the list is aimed at the adult or senior high school reader, numerous books for children are included. No serious amateur student of mineralogy or other phases of geology should be without the volume.

A more complete list, including articles and more extensive annotation, will be issued in 1952.

"The Earth for the Layman", price \$1.00 prepaid, American Geological Institute, 2101 Constitution Avenue, N.W., Washington 25, D.C.

* * * * *

GEOLOGICAL GUIDE BOOKS AND ROAD LOGS IN THE UNITED STATES*

"Geological Guide Books and Road Logs in the United States," has just been issued by the American Geological Institute. Compiled by the Institute's Geological Information Committee, the report lists 210 guide books and pamphlets which have been prepared by various geological societies and other agencies in the United States. This is the first compilation of this type which has been published.

The guide books vary from large printed volumes to mimeographed stapled pamphlets. Many contain information which has never been formally published concerning collecting localities or the geology of the areas covered. Portions of 34 states are included in regional or local guide books, in addition a number printed by the U.S. Geological Survey and in connection with the 16th International Geological Congress cover extensive areas along the railroad routes.

The information included about each guide book includes: title; general area or route covered; date of publication; description of text and illustrations; disbursing agency and whether now available; and price.

"Geological Guide Books and Road Logs in the United States" may be secured from the American Geological Institute, 2101 Constitution Avenue, N.W., Washington 25, D.C.; price \$1.00 including postage.

*From: American Geological Institute, July 1, 1950.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 16 NO. 9

PORTLAND, OREGON

September 1950

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

616 Morgan Bldg. Portland, Oregon

POSTMASTER: Return Postage Guaranteed

GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Officers of Executive Board, 1950 - 1951

			<u>Zone</u>	<u>Phone</u>
President:	Dr. Edwin T. Hodge	2915 N.W. Luray Terrace	10	BE 4821
Vice Pres:	Mr. Ford Wilson	3573 N.W. 35th Avenue	10	
Secretary:	Miss Ruby Zimmer	805 S.E. 60th Avenue	15	LA 8319
Treasurer:	Mr. Norris B. Stone	Rte. 1, Box 179-A, Oswego, Oregon.		Oswego 6531
Directors:	Mr. F. W. Libbey (1951)			Mrs. Leslie Bartow (1952)
	Mr. Orrin E. Stanley (1953)			Mr. Leo F. Simon (1952)
	Mr. Louis E. Oberson (1953)			

Staff of Geological NEWS LETTER

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Asst. Editor:	Miss Margaret Steere	6205 S.E. Scott Drive	16	BR 2276
Assoc. Editors:	Messrs. L. L. Ruff, A. D. Vance, H. B. Schminky, K. N. Phillips, F. W. Libbey, O. E. Stanley			
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LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

SEPTEMBER LECTURES

Friday Sept.8 "Oregon's shaky past," by Ralph S. Mason of the State Department of Geology and Mineral Industries.

Friday Sept.22 "Oregon fossils and their significance," by Lon Hancock.

SEPTEMBER FIELD TRIP

Time: Sunday, September 24, 1950. Leave New Journal Building at 8:30 a.m.

Place: Tualatin Valley including Rock, Jackson, and McKay creeks.

Points of interest: Weathered basalts and overlying silts, quartzite pebbles, ferruginous bauxite, a new fossil locality, and possibly some blackberries.

Leaders: Lloyd L. Ruff and any experts who may be drafted for the occasion.

NEW ADDRESSES

<u>Changes of Address:</u>		<u>Zone</u>	<u>Phone</u>
Mr. and Mrs. Kenneth N. Phillips	4124 S.E. Woodward	2	VE 1052
Miss Emily Child	2019 Kenwood Parkway Minneapolis, Minnesota		
Mrs. Pearlita C. Stiff	6506 N.E. Pacific St.	13	
Mr. and Mrs. Ford Wilson	11844 S.E. Pine St.	16	

Change of Name and Address: (CONGRATULATIONS AND BEST WISHES)

Mr. and Mrs. Edward V. Shearer (Formerly Miss Margaret E. Chaney) R.F.D. #2, Box 64, Estacada, Oregon

Mr. and Mrs. Ted R. Roberts (Formerly Miss Miriam Shepard) 8920 S.W. 26th Ave., zone 19, CH 4351

PRESIDENT MISSED

Dr. E.T.Hodge is recuperating from some minor surgery performed August 25, and expects at this writing (August 28) to be fully recovered in about a week. Ed.

PLANETARIUM NEWS

The Planetarium of the Oregon Museum of Science and Industry is an integral part of your Museum. Surpassed in size, it is true, by a few large Zeiss-type planetariums in the four largest cities of the United States, it is, nevertheless, the newest and largest of the thirty or so Spitz-type "star museums" in the country. In a matter of time we should be able to claim, also, that the Planetarium is the best equipped of the Spitz group.

In its short period of operation the Planetarium has offered to hundreds of the Oregon public a resume of that grandest of all spectacles in our universe - the nocturnal panorama of the stars. Such questions that occur to thoughtful minds as "What are constellations?" "What is a universe?" "How large are the stars, and how far distant are they?" are just a few examples which are clearly answered by the aid of the astral projector and other special equipment in the Planetarium.

Children are great critics of what constitutes success in that special field of educational entertainment, (or vice versa) to which we are dedicated. It is, therefore, our special aim to become adept at the art of making astronomy real and interesting to them. This is not an easy thing to do, for the child has so many mundane or "earthly" phenomena competing for his interests that the study of stars is likely to appear too abstract, abstruse, and stuffy for much appeal. Nevertheless, we think that the Planetarium can overcome these features by vitalizing our subject.

Because rocket propulsion and space travel are no longer in the realm of the fantastic, the Planetarium proposes to offer, in the near future, a comprehensive program in which the audience will feel that it has participated in a rocket trip to the Moon and Mars. The audience will "see" the planets - not simply as "wandering stars," but rather as other worlds in our solar family of which our earth is but one.

It is the hope of the Museum Foundation that the Geological Society will "adopt" the Planetarium with the same active interest that it has shown in the Museum itself.

It is regrettable that the Museum is obliged to require an admission charge for the Planetarium (50 cents for adults, 25 cents for children, both including tax); and it is our hope that in coming years the pressure of expenses, both building and maintenance, will somehow be relaxed so that we can provide such services on a completely gratuitous basis.

We urge all Geological Society members who have not seen a demonstration in the Planetarium to avail themselves of this unique experience in the near future. If you are a member of the Museum Foundation, your admission fee is ten cents, tax, only.

Don Clark, Lecturer at Planetarium
Oregon Museum of Science and Industry

PARDON OUR OVERSIGHT

Your editor failed to mention, in expressing appreciation for the specimens of atomic glass sent up by Dr. John Allen, that Dr. Allen is anxious to add specimens from the Oregon Country to his collection at the New Mexico School of Mines. An ideal way to show that appreciation would be for as many as can to send him a specimen or two, addressing them to:

Dr. John Eliot Allen
C/o New Mexico School of Mines
Socorro, New Mexico

WHY IS A GEOLOGIST?

By

John Eliot Allen
New Mexico School of Mines

The scientist soon learns that in order to answer the question "Why?" he must first answer the other four questions in the journalist's litany: "When," "What," "Where," and "Who." Geologists are regarded by many as peculiar people who wander the hills cracking rocks or who pore over a microscope in the laboratory investigating mineral grains or minute fossils. Let us see if we can find out what makes them tick, by applying the journalistic technique.

WHEN: Geology itself is a study occupied with a portion of the flow of time. Geologists are involved in deciphering the story of a portion of that flow of time. If we were to outline the sphere of action of the geologist on this basis, it would be something like this:

Astronomy and Cosmology: From 2.5 billion to 4 billion years ago.

Geology: from 1.6 billion to 25,000 years ago.

Anthropology and Archaeology: from 500,000 years ago to 4,000 B.C.

History: From 4,000 B.C. to the present.

Thus we see geology as only one of a series of sciences which are attempting to explain the history of the universe, the solar system, the earth, life on earth, and man himself.

WHAT: The goal of geology is to reconstruct the pre-history of earth in all its aspects. As the science developed, like other sciences it became more and more specialized, so that now it is subdivided into a number of fields each concerned principally with its own aspect of the general subject. The accompanying chart indicates many of the fields of geology with an attempt to indicate their close or distant relationship with the other natural sciences.

Some of these may be briefly outlined as follows:

Geomorphology: the study of the origin of landforms, carved by the action of running water, gravity, weathering, waves, wind, and ice.

Mineralogy: the study of the fundamental minerals of which the crust of the earth is composed.

Petrology: the study of the units into which the minerals are arranged, the igneous, sedimentary, and metamorphic rocks.

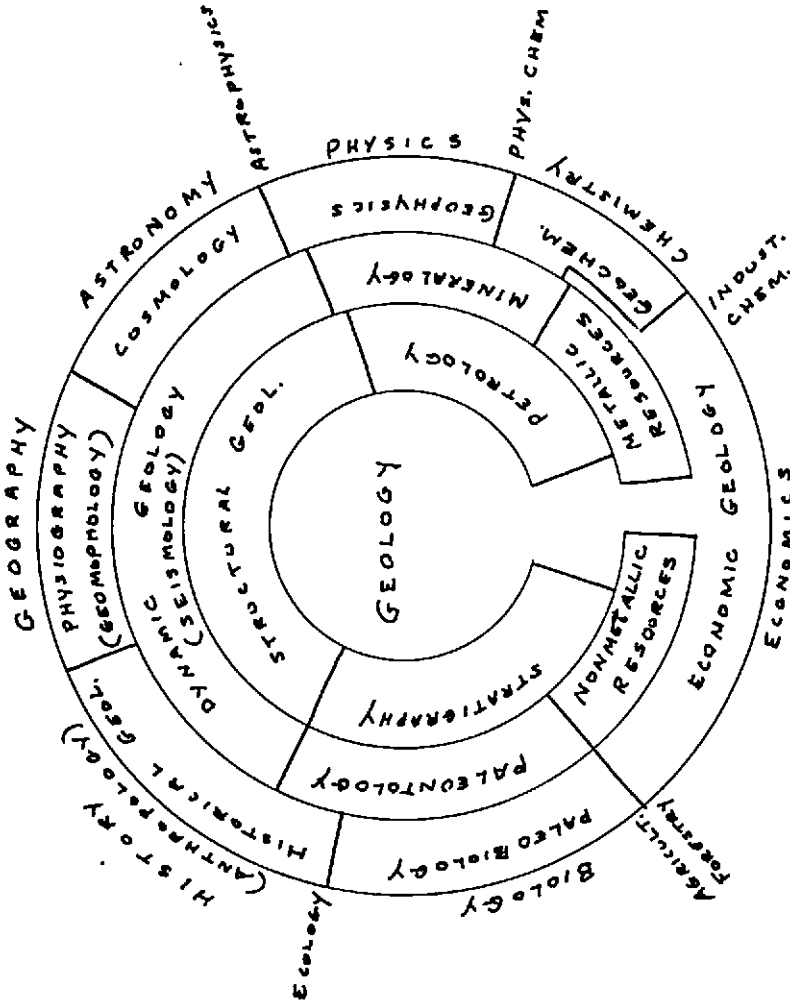
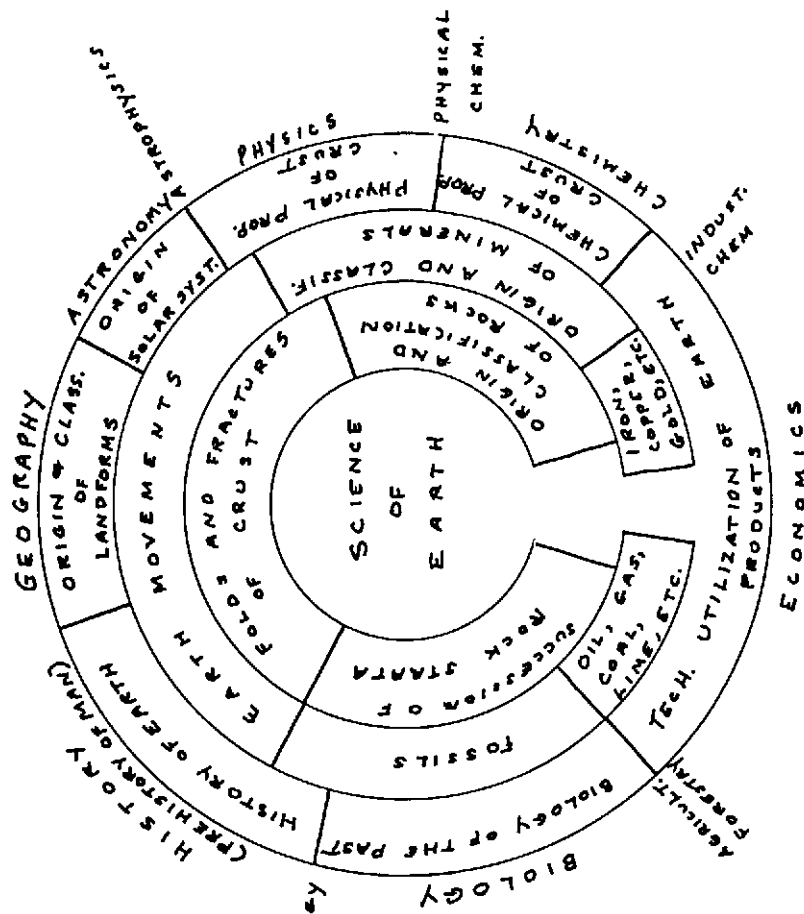
Stratigraphy: the study of the layers of sedimentary rocks, how they are laid down, and how they may be traced from place to place.

Structural geology: the study of the way in which the rocks of the crust are deformed by internal stresses into folds, faults, and other strain patterns.

Paleontology: the study of the life of the past by means of the examination of fossils, and the development and relationship of life forms on the earth.

A CHART

SHOWING SOME OF THE RELATIONSHIPS BETWEEN THE FIELDS OF GEOLOGY AND OTHER SCIENCES



NONTECHNICAL FORM

TECHNICAL FORM

Historical geology: the building up of a coordinated and logical story of events on earth during the geologic past, by the correlation of the knowledge gained from all other branches of geology.

It may be quickly seen that the study of any one of the fields requires a background of other physical sciences. How can one become an expert in paleontology without a thorough knowledge of biological principles? Or mineralogy, without chemistry? Or structural geology, without physics? These are fundamental; and educational emphasis within recent years has demanded more and more background of the "basic" sciences.

It has been said that every science passes through three stages in its historical development. The first is the "mystical" stage, as exemplified by alchemy and astrology, the forerunners of chemistry and astronomy. The second is the stage of classification and description when most of the energy is applied to the collection and organization of factual materials. The third stage, into which the sciences of chemistry and physics have entered within the last generation, is the dynamic and quantitative stage when the collected data are explained, understood, and put to active use. Many of the branches of geology are still in the second stage, I am afraid; but a valiant effort is being made, by using the methods of statistical analysis, physical chemistry, phase rule, and other advanced techniques, to advance geology into the quantitative stage.

WHERE: Of course, all the earth is the field of geology, but more pertinent is the question of where do geologists work and what type of work do they do? A study made in 1944 gives one an idea of this in regard to the 10,000 or so men (and women, too) working in the geological profession at that time:

Oil business	55%
Other industry	15
Government	13
Colleges and universities	6
Self employed	5
Mining industry	4
Museum and research	2

It would seem that the best chance for a job would be to specialize in oil geology!

Another way to classify workers in geology is by the type of work they do:

Field exploration	33%
Geological laboratory research	20
Management and administration	17
Consulting	12
College teaching	7
Graduate study	6
Misc., laboratory routine, writing, industry, etc.	5

Here we can deduce that most geologists must be prepared to do field work if they want a job, but that chances are very good for a geologist to work into a position of responsibility. This is especially true in the oil industry, where many of the "brass hats" started as geologists.

Industry is taking more and more geologists as time goes on. Led by the oil geologists, increasing numbers of men are being employed by the mining industry - coal, iron, copper, lead, zinc, and molybdenum mines as well, of course, as gold and silver mines. Now that nonmetals are becoming more important to our national economy, the geologist is leading the way towards greater and more efficient production of such plebeian things as gravel, crushed rock, slate, limestone, and such less well-known products as perlite, diatomite, special clays, salines, and potash.

Engineers are beginning to realize that the finest structure in the world, unless built upon a geological foundation, may not stand; and detailed geological work is now done before the choosing of sites for dams, bridges, highway cuts (sometimes!), canals, tunnels, etc.

Farmers are beginning to ask geological aid when they contemplate drilling wells; cities are hiring geologists to help plan their future water systems. Even the military forces during World War II finally found that geological information was of fundamental importance. It is perhaps a sign of the coming maturity of the science that all the various branches of geology are now coordinated into one agency which can speak for the profession as needed: the American Geological Institute.

WHO: Finally, before we can perceive the Why of a geologist, let us see Who he is, what sort of a man is best fitted for this profession.

As has been already suggested, he is a man with a well-grounded foundation in basic physical sciences, and considerable knowledge of all the fields of geology, with probably a specialty in one or more of them. He must fundamentally know the scientific method of attacking a problem - a technique which may be summarized as follows:

1. Recognize the problem.
2. Collect information (data) on this problem.
3. Organize and classify these data.
4. Establish not one but as many as possible hypotheses which can explain the data.
5. Collect more data to test and eliminate alternate hypotheses.
6. Draw conclusions from the remaining one (or, in geology, frequently more than one) hypothesis.

The geological method of "multiple working hypotheses" is derived from the fact that: (1) in geology there is frequently only a small portion of the necessary data available; and (2) the variables in a geological problem are often so numerous that no ^{one} answer can be definitely ascertained.

By temperament, the ideal geologist must primarily have a consuming interest in geology, and a lack of ambition to get the most dollars per foot-pound of effort. Geologists are not too well paid! Their compensation must come in other values than money, as will be indicated. Actually, the diversity of geology permits a wide range of temperament, since the work can range from detailed laboratory work in paleontology and mineralogy, through large-scale field work to administration and big business.

However most geologists must go in the field, and they must like outdoor work, they must enjoy the contest with nature and be equipped mentally and physically to cope with rugged terrane, climate, poor food, and other uncomfortable situations. The geologist must be ready to go to the Aleutian Islands, where it rains nine days out of ten; to the swamps of Louisiana or Venezuela; or to the 14,000-foot elevations of the Andes. He must be prepared to go underground in mines where the temperature is 80° and the humidity 95, or to Arabia where the temperature is 120° and the humidity nil.

Geology is a new science with wide-open fields of endeavor, and a multitude of unsolved problems. We still know almost nothing about the conditions only a mile or so below us; we do not know the origin of oil; and we are only beginning to understand how ore deposits happen to be as they are. We need men who are outdoor men, who can take care of themselves under a diversity of conditions; who are leaders, with initiative, energy, enthusiasm, and above all, imagination. These men will go far in geology, and will derive a lasting satisfaction from their devotion to geology as a life-work.

FIELD TRIP OF MAY 14, 1950

The following "Guest Editorial" which appeared in the Oregon Daily Journal for May 26, 1950, is a resume of the field trip lead by Dr. Hodge to the Rock Creek area north of Sherwood on May 14, 1950:

ANCIENT RIVER

By

Edwin T. Hodge

Professor, Department of Geology, Oregon State College

A short time ago I had the great pleasure and privilege to go on one of the exploratory trips of the Geological Society of the Oregon Country. On this expedition I saw one of the most marvelous and interesting natural features in Oregon.

I saw a region where some mighty torrent had flowed for a long time and left its record so plain that it can be seen by all. This is an old river way in which no river flows today and in which no river^{has} flowed for more than a thousand years. The ancient channel of the old river extends from Wilsonville on the Willamette to north of Sherwood to the Tualatin river. It includes such places as Clutter Spur, Mulloy, Carlon school, Tonquin, Cook Spur, Nasoma, Onion Flat, Cipole and Herman. The abandoned valley is two miles wide in its central part and is more than eight miles long. Its two ends flare open like a lopsided funnel; the south flare being much larger than the north one. In each case the widening is mostly to the east and this suggests that the water swept into the great passage-way from the east and departed toward the east.

The depth of the water at the time of the greatest flood is shown by the height of the features which were torn away by the rushing waters. Lava rock has been ripped away leaving only towering pinnacles. Elsewhere, slabs of the flat lava rock have been lifted up and torn away, leaving a pagodalike structure. Some places just slabs have been lifted out leaving a scar. Blocks of lava rock lie everywhere where they were tossed by the surging currents. Elsewhere long scraggy ridges aligned in the direction of the flood must have stood as islands in the swirling waters. Scarred edges of the old valley show that the depth of the waters was more than 200 feet at the time when the features were sculptured in the lava rock.

Flow of water enormous

The tremendous velocities of the waters is shown by the potholes and pits and swallows and suction holes in the channel. These signs of over-deepening of the river bed are also parallel with the direction of the channel. Some of the basins are shallow and expose bare rock. One or two contain water but most of them are filled with soils. Apparently these soils are excellent.

Some years ago I sampled the soils in one of the river-scoured basins in the company of Professor W. L. Powers of Oregon State College and found that at the deepest part it was 20 feet deep. This one is the one called "Onion Flat" and lies two miles northeast of Six Corners. Onion Flat is a river-scoured depression which once was a lake and the lake has since been filled wholly by the plants and creatures which lived in it. This no doubt accounts for its great fertility and also for its sub-irrigation. The elevation of the divide in the channel is somewhere between 125 and 150 feet. Assuming the average floor of the channel to be 130 feet the river scoured 20 feet deeper or to a depth of 110 feet above sea level.

Altogether the erosion shows a volume of water flowing through this channel 200 feet deep and moving at the velocity of the Columbia at its greatest flood.

If these features were found in the well-publicized Grand Coulee region, they would be called "scab land." If such a large old abandoned flood passage were found in the barren Grand Coulee region, it would be thoroughly described in the booklets for the tourists.

New soil very deep

Now the lower valley of the Tualatin is filled to a depth of 300 feet with alluvium into which the river has cut a narrow trench. There appears to be elsewhere similar fillings up to this 300-foot level. If our old flood channel had been filled by this alluvium, it would have been swept away. Hence we must conclude that the river swept through this passage after the period which filled all the old valleys with alluvium. Also it seems that the flood which moved through our old channel may have been the one which swept the alluvium out of the upper Tualatin valley.

What caused the flood? I am not prepared even to hazard a guess. Did a great lake occupy the whole Willamette region and one day this lake broke loose and flooded through our passage way? Or did a great lake occupy the Tualatin country and this lake break out with a mighty flood? If the flood moved either way, where did the water go?

One or two final points: Two streams now misfit in this great valley and wander around among the potholes and pinnacles and "scab lands." One follows north and is called Rock Creek; the other flows south and its upper branches entwine among those of Rock Creek, each acting as quite uncertain as to what territory belongs to it. But this is not all! The stream that flows south into the Willamette has no name. At least it has no name on any map which I have seen. No doubt the natives have a name for this stream, but of course natives never have any right in naming a local geographic feature. The name I might use for the stream, I prefer to use for the old flood channel. I choose my name from the Oregon Electric station of Tonquin. This beautiful name whose meaning I do not know is the name I choose.

The great flood channel of this ancient spillway I propose to call the Tonquin floodway.

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OCTOBER LECTURES

Friday "My Experiences in Manchuria and Korea," by Dr. E. T. Hodge.
Oct.13

Friday Lecture to be announced at meetings and in local papers.
Oct.27

OCTOBER FIELD TRIPS

Sunday A trip to see faceted quartzites in southwest Washington. Assemble
Oct.15 in front of Journal Building at 9:30 a.m., Sunday, October 15. Caravan will proceed across Interstate Bridge to Vancouver, north on Washington Street to 10th, and east on 10th to Reserve Street. Northeast on Reserve Street and Highway 8-A to Orchards. At Orchards, take Highway 1-U (Battleground Highway) to Brush Prairie. From Brush Prairie go north 0.4 mile to Hockinson Road, and turn east on Hockinson Road. From Hockinson go north 0.6 mile to Morgan Creek, and then follow leader Al Vance for balance of trip.

Sunday A trip to Salem at the invitation of the Salem Geological Society.
Oct.29 Mr. Reynolds Ohmart, President of Salem Geological Society, outlines trip as follows:

Place of assembly: At front (north) entrance to the Capitol Building on Court Street in Salem. Time: 1:30, Sunday, October 29.

Object of trip: A guided trip through the main parts of the Capitol Building with descriptive talks by the guide. Then to the State Forestry Building on East State Street. This building in itself is worth a trip. Aside from the beautiful wood construction, there are housed here finely polished samples of some two hundred varieties of Oregon woods. Mr. Cronmiller, an official of the forestry department, and Mr. Oliver Mathews, a member of S.G.S. who is quite an authority on woods of Oregon and who has helped assemble the display, will be there to talk on native woods and explain points of interest regarding the work of the department.

If any members care to spend more time in Salem, several members of the S.G.S. who have collections of minerals and other things of interest to geologists have volunteered to take groups to their homes for whatever time they wish to spend.

STANLEY SHIRK JOINS MUSEUM STAFF

The Oregon Museum of Science and Industry has secured the services of Stanley Shirk of Philadelphia, Pennsylvania, as Director of Education at the Planetarium at 908 N.E. Hassalo Street. Besides managing the Planetarium and coordinating the museum programs with the local school system, Mr. Shirk will be acting director of the Museum.

Mr. Shirk comes well-qualified for his position, being a graduate in mathematics and science from Dickinson College, Carlisle, Pennsylvania, with a master's degree in education from Columbia University.

The Geological Society extends its congratulations to Mr. Shirk in his new position and wishes him every success in furthering the museum program.

The October program at the Planetarium is entitled "Earth's nearest neighbor." Admission to members of the Oregon Museum Foundation is free except for tax.

NEW PUBLICATIONS OF INTEREST

1. Volcanoes of the Paricutin region, Mexico, by Howel Williams. 1950. U.S. Geological Survey Bulletin 965-B. Price 65 cents. May be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., by sending either money order or cash. Postage stamps not accepted.
2. Topographic quadrangle map of Ochoco Reservoir, Oregon. Price 20 cents. May be obtained by sending 20 cents in cash to Distribution Section, Geological Survey, Denver Federal Center, Denver, Colorado.
3. Proceedings of the Oregon Academy of Science, vol. 1, 1943-1947. Published by Oregon State College Press, Corvallis, Oregon. Contains abstracts of papers presented at meetings from 1943-1947, and author and subject index.

NEWS OF MEMBERS

Miss Elizabeth Jacquetta Weinzirl, daughter of Dr. and Mrs. Adolph Weinzirl, was married to William R. Johnston at Westminster Presbyterian Church on September 9, 1950. Mr. and Mrs. Johnston will live in Portland.

PLEISTOCENE HISTORY OF THE NEWPORT, OREGON, REGION

By
Ewart M. Baldwin

Introduction

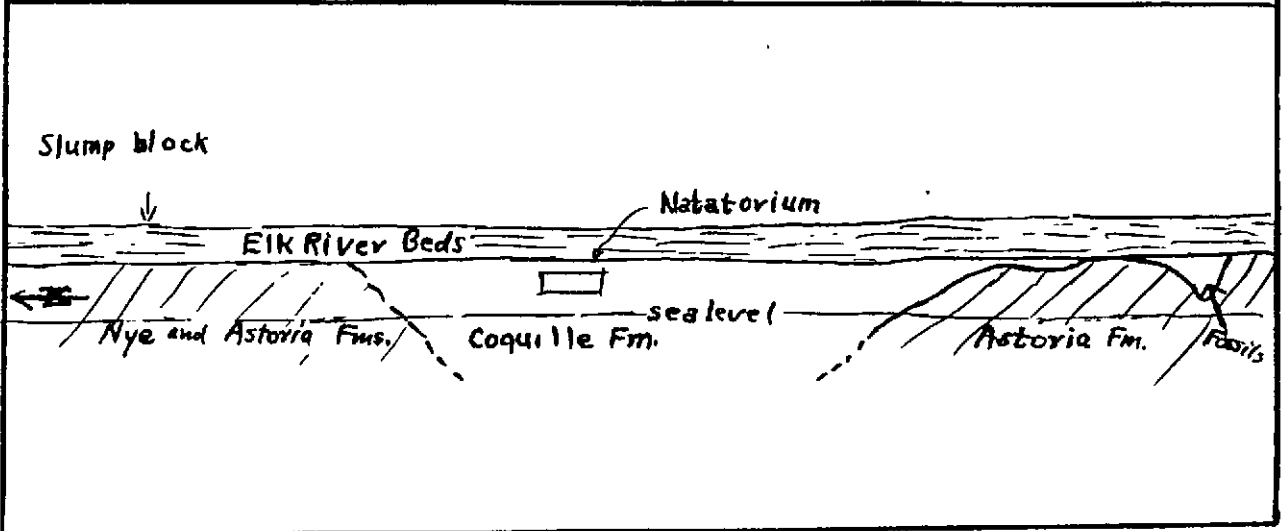
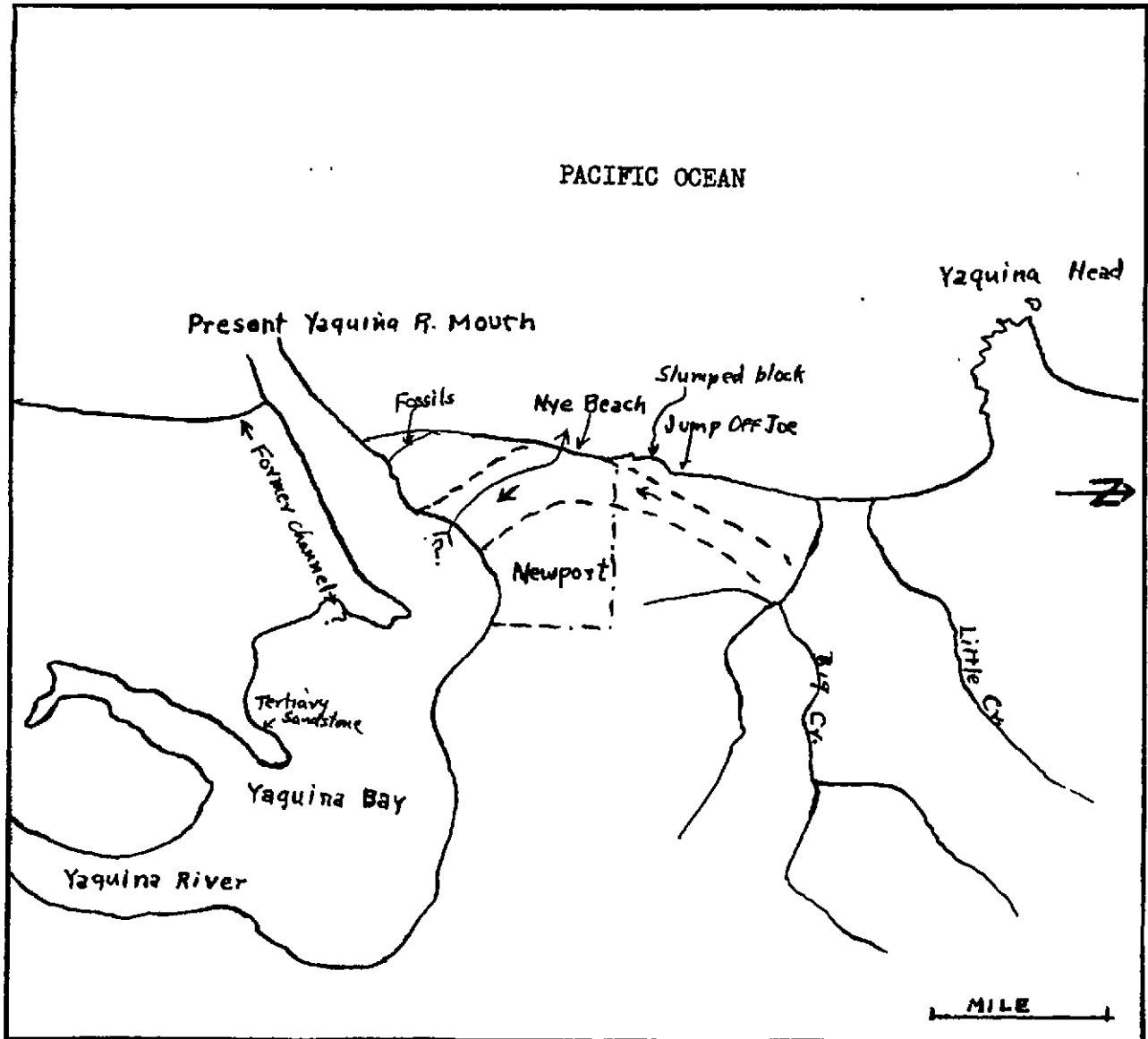
The Pleistocene geological history of the Newport region was studied many years ago by Thomas Condon, pioneer geologist of Oregon. Dr. Condon used many of the excellent geologic features as examples in his informal lectures on the geology of the region. J. S. Diller (1896), who made a geological reconnaissance of northwestern Oregon, referred to Condon's unpublished work in his account of the deposits at Newport. Diller showed the section at Nye Beach and at a small cove south of Nye Beach near the present North Jetty. Most of the geologists who published later reports on this region were interested mainly in the earlier Cenozoic strata. The most detailed mapping was done by Vokes, Norbistrath, and Snively (1949), who summarized the contributions of earlier workers.

The sequence of Late Cenozoic events along the southern Oregon coast was summarized by Baldwin (1945). Relatively unconsolidated sediments that crop out at Nye Beach on either side of the natatorium were correlated by him with sediments of the Coquille formation exposed north of the mouth of the Coquille River. It is the purpose of this paper to place Pleistocene events in the Newport region in the sequence of events that occurred along the Oregon coast and to trace former drainage in the Newport area.

Pleistocene sequence of events

The history of the southern Oregon coast as outlined by Baldwin (1945) is as follows:

- 1) Formation of high terraces by relative stillstand of sea followed by movement of the strandline. This probably occupied much of lower Pleistocene time as well as part of the Pliocene.
- 2) Relative uplift of the land to a point approximately 300 feet above present level.
- 3) Relative submergence to a point several hundred feet above sea level. Evidence points to at least 160 feet of submergence above present sea level, and indirect evidence suggests that as much as 350-400 feet of drowning occurred at the time of deposition of the Coquille formation in the river bay mouths.
- 4) Relative emergence accompanied by stillstands of the sea and terrace formation. One prominent stillstand formed the prominent terrace seen at Cape Arago and Cape Blanco upon which the Elk River beds rest. Warping occurred during and after the formation of the terrace, and the Elk River beds are significantly thicker in the downwarped areas.
- 5) Then followed continued withdrawal of the sea (relative emergence of the land) to a point approximately 200-250 feet below present sea level. (This figure is an estimate and it is unknown which is the deeper valley -- that occupied by the Coquille sediments or that occupied by the present bay muds.)
- 6) Relative submergence and filling by alluvium produced the mud flats and bay that we can see today.



MAP AND CROSS SECTION OF NEWPORT, OREGON, AREA

1950

In the sequence of events, the prominent terrace capped by the Elk River beds is younger than, and truncates, the Coquille formation; but is older than the second stage of downcutting.

Yaquina River drainage

The history of the Yaquina River and its tributaries is in part revealed by the distribution of sediments of the Coquille formation that occupies former valleys. Many of the Oregon rivers have shifted from their former courses, leaving their alluvial-filled valleys. Such shifts in stream mouths have been described by Baldwin (1945) and Snavely (1948).

Coquille sediments are exposed ^{younger} beneath/Pleistocene sands, both along Nye Beach on either side of the natatorium and along the Yaquina Bay in the lower business district of Newport, indicating a channel through the point beneath Newport. Small remnants of this formation crop out in the beach just north of the mouth of Big Creek, and in a small cove already mentioned near the north jetty. It would appear at first that the Yaquina River formerly flowed through the vicinity of Nye Beach on its way seaward; but an examination of the beach at low tide shows that reefs of Astoria sandstone nearly close the gap through which the submerged channel would have to pass. It is doubtful if there is room for even a narrow river channel. An alternative would be that a former valley of Big Creek extended southward behind the block of sandstone that is now slumping, paralleled the strand line at Nye Beach, and then turned eastward to join the Yaquina River. This is partially supported by the eastward inclination of the contact between Coquille sediments and older rock at the south end of Nye Beach. In this case, the small patches of Coquille sediments that lie north of Big Creek and by the jetty would lie in small tributaries that flowed eastward into the larger valleys.

The former mouth of the Yaquina River probably lies somewhat south of its present mouth beneath the dune area where evidence is buried. At present, the dunes have been encroaching northward and driving the river against the resistant Astoria sandstone along the north bank.

Lithology of Coquille formation

The sediments of the Coquille formation exposed in the vicinity of Newport are predominantly claystone and muddy sandstone with intercalated fragments of wood, some being quite large stumps and logs, and conglomerate. The beds are indurated enough to stand in low cliffs without appreciable slumping. The conglomerates contain pebbles of rocks common in Yaquina River drainage and a few whose source is not readily recognized. Many of the brilliantly colored rocks and agates that make the beaches of Newport -- famous as collecting grounds -- have been reworked from the Coquille formation.

Marine terraces

The Coquille sediments were truncated by the sea during the formation of several marine terraces along the seaward side and by stream erosion during corresponding stages of terrace formation. The lowest of these marine terraces is capped by friable sands of the Elk River beds which may be traced along the Oregon Coast. It was during erosion of the Coquille fill that the streams assumed their present position where they have incised with lowering base level.

The Elk River terrace has been largely removed by the sea between Jump-Off Joe and Agate Beach. The largest remnants occur in the town of Newport itself. Because of the small extent, one might think that it was a slumped part of a

higher terrace. Along Nye Beach the wave-cut platform of the Elk River terrace is approximately 45-50 feet above sea level, covered by 20-25 feet of horizontally deposited Elk River beds. This level was noted on the south side of Yaquina Head where gravels are plastered against the solid basalt and where slumpage may be ruled out.

There are very few fossils in the Elk River beds to indicate that they are marine; but the truncation of the underlying rock was accomplished by the sea, so the beds immediately overlying the platform were deposited at or very near sea level. There is some peat, which included sticks and stumps, in the Elk River beds just south of the natatorium at Nye Beach. The wood is brown, but does not differ greatly in appearance from the wood in the underlying Coquille formation; although botanical study may reveal significant differences.

A higher terrace is shown just east of Jump-Off Joe and northward along the beach where the Elk River terrace has been removed. Here the higher terrace is capped by horizontal sands also. In the sands is a peat bed about 2 feet in thickness. Whether it was this peat bed or one in the younger Elk River beds that was studied by Hansen and Allison (1942) is not known. They state (p. 86) that the fossil peat bog is located in terrace sands at the north end of Nye Beach. No peat was observed within the Elk River beds at the north end of Nye Beach; so, presumably, the higher bed is the one that was studied. There is also peaty material disseminated in the clay in the Coquille formation north of the natatorium at Nye Beach.

Newport region during the time of Coquille deposition

The Astoria formation near Newport contains basaltic flows and sandstone beds much more resistant than the Nye formation. It is altogether probable that the streams encountered difficulty breaking through this resistant formation except where the major streams had established a valley seaward. Thus Big Creek probably had a southerly course and was a subsequent stream tributary to the Yaquina River. The shore line may have been several miles to the west and a prominent ridge composed of strata similar to those in Yaquina Head may have extended southward. It would not be until the sea had succeeded in eroding through this barrier into the softer Nye sediments that such tributary streams as Big Creek were changed to a westward course. A change in position may have occurred during maximum filling of Coquille sediments when low divides might have been submerged. Later withdrawal of sea level would have caused superposition on the older rock.

Age of Coquille formation and Elk River beds

The age of the downcutting and subsequent alluvial fill of the Coquille formation is believed to be upper Pleistocene. Withdrawal of the water and downcutting is tentatively correlated with glaciation -- alluviation and rise of sea level, with deglaciation. This cycle has occurred once since (our present bays). The earlier is tentatively correlated with early Wisconsin glaciation; the latter, with late Wisconsin glaciation. To date, the age relationships have been determined by position in Pleistocene glacial chronology. The only fossils found in the Coquille formation occur in a cove near the north jetty at Newport. This locality was known to Condon and Diller, but the position of the fauna in the Pleistocene was not as well understood. A study of the fauna is in a preliminary stage; however, the following genera have been recognized:

Zirphae
Macoma
Schizothaerus
Hinnites
Thais

Most of these forms are present along the Oregon coast and are commonly present in estuarine sediments. The rarity of fossils in the Coquille formation is of some interest because present-day ^{bay} fillings would presumably be more fossiliferous. It may be that the remnants of the Coquille formation now preserved are well inland from the old bay mouths, and for that reason in a position where the water was too brackish, or sedimentation was too rapid to allow normal growth of a molluscan fauna.

Kitchen middens are common along the Oregon coast. Shells found in them are predominantly of Mytilus, the common rock mussel. Besides, the middens are located upon the Elk River terrace on points that were convenient camping spots for the Indians and would not be expected to be within the Elk River beds or in muds beneath the wave-cut platform. Thus the fauna at Newport is not a kitchen midden.

Further study of this fauna may yield a basis for closer correlation with other Pleistocene deposits.

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SUMMARY

Honorary Life Members	2
Charter Members	34 (Including 2 honorary members)
Junior Members	4
Other Members	<u>112</u>
Total	150

AUDUBON SCREEN TOURS

The Audubon Screen Tours - five in number as usual - are cosponsored again this year by the Oregon Museum Foundation, Inc., the Oregon Audubon Society and the Chi Omega Alumnae of Portland. Proceeds go to the Museum.

Monday, October 9, 1950

Location: BENSON HIGH SCHOOL - 8:00 p.m.

Title: "BENEATH BUCKEYE SKIES"

Lecturer: KARL MASLOWSKI

Admission: 60 cents (including tax)
Members of Foundation - 10 cents tax only
Children Free when with parents or group leaders.

"Beautiful Ohio" goes the song. And beautiful Ohio it is indeed - not only the river, but the state as well - a land of rolling hills and fat rich fields, of quiet streams and hardwood forests. These provide the intermeshed background, the habitat and environmental basis for varied and thriving wild-life communities.

Karl Maslowski, one of the country's top-notch naturalists, has made a documentary motion picture study of his native "buckeye" state. In natural color he has recorded the comings and goings of "Old Needle-Nose," the woodcock; "white-foot," the near little deermouse; "the Red Skeltons," an amusing red fox family, cubs and all.

Friday, November 3, 1950

Location: BENSON HIGH SCHOOL - 8:00 p.m.

Title: "CHANGING SHORES"

Lecturer: G. Harrison Orians

Admission: Same as above.

Keen-eyed study of nature's clues along Lake Erie reveals eras when it was part of a tremendous shallow sea - long before the time the Indians came to Maumeeland. The wildlife world there today - ducks, geese, shorebirds, and songbirds - are seasonal symbols of change. G. Harrison Orians of Toledo presents a colorful film account of a dynamic world of wildlife in process.

GEOLOGICAL NEWS LETTER

OFFICIAL PUBLICATION OF THE



VOL. 16 NO. 11

PORTLAND, OREGON November 1950

GEOLOGICAL NEWS-LETTER

Official Publication of the

Geological Society of the Oregon Country

616 Morgan Bldg. Portland, Oregon

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Directors:	Mr. F. W. Libbey (1951)			Mrs. Leslie Bartow (1952)
	Mr. Orrin E. Stanley (1953)			Mr. Leo F. Simon (1952)
	Mr. Louis E. Oberson (1953)			

Staff of Geological NEWS LETTER

Editor:	Mrs. Leo W. Haven	2932 N.E. 47th Avenue	13	GA 2426
Asst. Editor:	Miss Margaret Steere	6205 S.E. Scott Drive	16	BR 2276
Assoc. Editors:	Messrs.	A. D. Vance, H. B. Schminky, K. N. Phillips, F. W. Libbey, O. E. Stanley		
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PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

- 1) Those who love, enjoy, and believe in the Oregon Country and want, therefore, to support the activities of the Society;
- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

LECTURES: Lectures are held in the Public Library Hall, S.W. 10th Avenue and Yamhill Street on the second and fourth Friday of each month. 8:00 p.m.

TRIPS: At least one field trip is held each month. For questions and suggestions concerning trips call Mr. Rudolph Erickson, BE 7191.

LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

NOVEMBER AND DECEMBER LECTURES

Friday Nov.10 "Twenty-five Million Years of Life Along our Coast," by Dr. E. L. Packard, Professor Emeritus at Oregon State College. The lecture will be illustrated with large lantern slides.

Friday Nov.24 No meeting.

Friday Dec.8 "The Seven Races of Men," by Professor H. A. Boyd of Oregon State College. The lecture will be illustrated by large lantern slides.

Friday Dec.22 No meeting.

FIELD TRIPS

NO FIELD TRIP - NOVEMBER

OREGON MUSEUM NEWS

The Director of the Planetarium and Museum, Mr. Stanley Shirk, announces the title of his lecture during the month of November as "The Sun's Family." Because the weather man is having such difficulty keeping the sky clear of clouds, renew your acquaintanceship with the almost forgotten stars by attending the Planetarium shows. A new program is presented each month. Regular showings are given Saturday, Sunday, and Wednesday at 4:00 p.m. and on Tuesday, Thursday, and Friday at 8:00 p.m. Special hours are arranged for private showings for school groups, clubs, and other organizations. Group rates are 40 cents for adults and 20 cents for children. Individual rates are 50 cents for adults and 25 cents for children. Members of the Museum Foundation need pay only the 10 cents tax.

It is interesting to note the increasing attendance at the Planetarium of school groups from grade school to college. The last three weeks in September (school started following Labor Day) there were 420 children accompanied by some 30 adults. Up to and including the end of October, the number increased to 742 children accompanied by 82 adults. These showings are given by special appointment, of course, and do not interfere with the public showings.

OREGON MUSEUM NEWS (cont.)

Annual Dinner Meeting

The annual dinner meeting for members of the Oregon Museum Foundation is scheduled for Tuesday, November 14, at the Cosmopolitan Club. Program includes the membership meeting at 4:00 p.m. for election of new members to the Board to fill expired terms and resignations, and other business; at 5:00, the meeting of the Board of Trustees; and at 6:00 dinner will be served (\$2.75 per plate). Members of the G.S.O.C. are invited, even though they are not members of the Museum Foundation. Be sure to call the Museum (EA 3807) for reservations, however. An interesting program is planned for the dinner hour.

- - - - -

A membership campaign is being planned by the Museum. They are writing to all associated organizations of the Museum urging them to become members. Greater financial assistance is needed to carry on adequately our educational programs. Five dollars (\$5.00) is the minimum annual membership fee -- the sky is the limit. Membership in the Museum Foundation entitles one to free admission (except for payment of tax) to all museum-sponsored programs, including the Planetarium lectures and Audubon Screen Tours. This encouragement to be one with our organization should be but a minor factor in your desire to join us. Help us to spread Mother Nature's gospel to one and all! The potential cultural and vocational work of our Museum program to youth and adult is unlimited. Help us to improve and expand our activities and thus enable us to better serve the community. As an educational agency a museum has no peer. We are ALIVE! We WANT TO GROW!

WE NEED YOUR HELP!

NEW BOOK ON OREGON GEOGRAPHY

A new book which members of the Society will most certainly want to own is "Oregon Geography" by Professor S. N. Dicken, Head of the Department of Geology and Geography at the University of Oregon.

The book is an 8½ by 11-inch paper-covered edition with spiral binding. It contains 103 pages, a selected bibliography, and numerous maps and aerial photographs. The price has not been announced, but the book is on order at the J. K. Gill Company, Portland.

In a chapter entitled "The face of Oregon," Professor Dicken takes the reader on an air trip over the State to get a bird's-eye view of the region as a whole. He then returns the reader to terra firma and acquaints him with the important geographic factors of each of the nine regions of the State. These nine regions are discussed in the following order:

- | | |
|--------------------------|-------------------------------------|
| 1. The Coast Range | 6. The Owyhee Upland |
| 2. The Klamath Mountains | 7. The Blue Mountains |
| 3. The Cascades | 8. The Deschutes - Umatilla Plateau |
| 4. The Basin-Range | 9. The Willamette Valley |
| 5. The High Lava Plains | |

A LARGE WOLF FROM THE PLEISTOCENE OF WILLAMETTE VALLEY, OREGON

By

E. L. Packard

Paleontological Laboratory, Oregon State College

The Pleistocene deposits of Willamette Valley have yielded fossil mammals since 1842 when Perkins¹ discovered a ground sloth along "Walhamet River" below the present site of Eugene. Subsequent discoveries have proved the presence of proboscidiens, horses, a camel, bison, and a small canid within the valley. In most cases only single bones or teeth have been found.

Several years ago a relatively rich fossiliferous locality was discovered on Mill Creek, a small tributary of Pudding River, not far from Woodburn. In company with the discoverer, Mr. Art Lowe, the writer obtained a large canid jaw, not far from and what appears to have been at the same horizon as that in which he found a claw process of Myiodon harlani Leidy. The fossils were embedded in silts which Dr. I. S. Allison considers as possible pre-Wisconsin age. Those specimens and the other species not yet described also indicate a late Pleistocene age.

The specimen consists of a left mandible, lacking the incisors, a small posterior position of the coronoid process and the last molar. The condition of the teeth indicates a very old individual. The canine had been broken off and worn smooth by use. The last premolar was worn nearly to the lower enamel margin, and the carnassial had lost about one half of its anterior blade and the tip of the posterior one. The outer surface of that tooth also shows an oblique smooth, elongated area produced by the shearing action of the upper teeth. The canine has been broken on the outer side and minor breaks in the enamel of the second molar have occurred since burial.

The massiveness of the jaw and its heavy cheek teeth and their measurements appear to ally it to the group of Aenocyon dirus (Leidy). The crown length of the carnassial of the Mill Creek specimen is 34.2 millimeters, which compares favorably with 35.7 for a large specimen of the species dirus and 34.5 for a medium sized one from Rancho La Brea.² These are larger than corresponding measurements reported by Goldman³ for 172 specimens of the modern wolf, Canis lupus. The list represented 21 recognized North American subspecies. Only two specimens of males out of that large number possessed lower carnassials having an antero-posterior length as great as 33.8 millimeters. They represented the subspecies pambasileus Elliot and occidentales Richardson. The average of 15 specimens of the last named subspecies was only 31.0 millimeters and the average of 16 of the first named was 30.7.

This and other measurements indicate that the fossil jaw belongs to the A. dirus group rather than to the larger of the living North American subspecies of Canis lupus.

That extinct great wolf is the best known and most wide ranging of any of the Pleistocene canid species. That group ranged from Alaska to the Valley of Mexico, from California to Florida, and northward into Kansas and Indiana. It was first described from Evansville, Indiana, upon the basis of a maxillary with only one cheek tooth missing. Thirteen years later a lower jaw was found in Livermore Valley, California, and some time afterward the species was recognized from Tulare, California. These and a few other discoveries were supplemented by the rich finds at Rancho La Brea in 1906 and later. In Merriam's monograph of the Canidae of Rancho La Brea he gives detailed description of that wolf and a related form described as Canis milleri.⁴ Another allied type from Florida later was described by Sellards⁵ under the name Canis ayersi. In 1918 Merriam⁶ established the new genus Aenocyon, for the Canis dirus group.

That genus is now represented on the West Coast of North America at Rancho La Brea by hundreds of skulls; at Potter Creek Cave, Shasta County; questionably at Hawver Cave, Eldorado County, California; and by a single tooth referred to dirus from Fossil Lake, Oregon.

Other types of wolves have been reported from Pleistocene deposits of North America and suggestions have been made as to their relationship to the living forms. Canis armbrusteri Gidley from the Cumberland Cave, Maryland, and possible specimens from Rancho La Brea are thought by Goldman to be related to the living red wolf, Canis niger, Bartram. Other specimens from that cave and Canis occidentalis furlongi Merriam from Los Angeles suggest the presence of the gray wolf Canis lupus in the Pleistocene. It thus appears probable that the modern wolves arose before the close of the Pleistocene and it is possible that the ancestor of Canis lupus was closely related to some member of the now extinct Aenocyon dirus group.

Until much more complete fossil material becomes available it will be impossible to recognize the ancestor of the living Cascade Mountain Wolf, Canis lupus fuscus Richardson.

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Univ. Calif. Pub. Dept.; vol. 10, no. 27; 1918.

REPORT OF THE NOMINATING COMMITTEE

Your Nominating Committee presents the following names for offices to be filled at the next election on Friday, February 23, 1951:

President - Ford E. Wilson

Vice President - Mrs. May R. Dale

Secretary - Miss Ruby Zimmer

Treasurer - Norris B. Stone

Director - E. Cleveland Johnson

Signed: A. W. Hancock, Chairman
W. Claude Adams
Raymond L. Baldwin
Mrs. Louis E. Oberson
Mrs. Leo F. Simon

A GEOLOGICAL RECONNAISSANCE OF THE SCOTTS MILLS-MOLALLA AREA

By

Ewart M. Baldwin

A goodly number of Gesockers assembled at Marquam the morning of August 27 to participate in the field trip planned and lead by our efficient and genial trip leader, R. Erickson. Visitors included Mr. A. J. French and Mr. Jarrett of Dayton-McMinnville area, and Mr. Omart of Salem, as well as some from the Portland area. After due wait for the late, the caravan proceeded to the Vetter place where fossils had been uncovered during excavation of the driveway. One of the common fossils in this fauna was a disc-shape pelecypod called Dosinia. Somewhat similar shells have been found in the Miocene beds at Coos Bay.

The group proceeded up Butte Creek past basalt and tuffaceous sediments. A stop was made at a quarry where basalt dikes cut shell-bearing limestone. The dike is presumably of Columbia River basalt age. The group had a field day collecting Bruclarkia (a gastropod which here is often crushed), Pecten, Tellina, and many other forms. Dr. Arthur Jones found a small echinoid which may give additional evidence concerning the age of the beds. Fossils from this quarry have been studied by Dr. J. Wyatt Durham of the University of California, and an abstract published by Durham, Harper, and Wilder in the Geological Society of America (abstracts 1942) assigns these beds to the lower Miocene although the possibility still exists that the beds are upper Oligocene. If lower Miocene, the discovery would be of far-reaching effect, for a seaway would have to have extended inland from the Pacific and, if this is true, additional evidence should be uncovered.

Lunch was enjoyed beneath the shade of one of Oregon's picturesque covered bridges which, like most of them, is giving way to a modern steel and concrete structure for which the foundation has been poured. The day was hot but along the creek it was pleasantly cool. The rock exposed was a coarse tuffaceous sandstone with some small included pebbles. Fossils were present both above and below the bridge. Below the bridge prominent joints resulted in small steplike falls, and diligent search near these cascades produced several of the large Spisula (?) that are characteristic of this region.

The coarse tuffaceous texture and composition of the rock points to deposition near a shore line by streams, presumably from the east, that were contributing tuffaceous sediments from contemporaneous volcanoes or reworking volcanic terranes. There may have been considerable fluctuation in position of the shore line with minor oscillations in sea level or during encroachment of the sediments from the highlands. There is little reason to think that mountains stood where the Cascades do today.

After lunch Mr. Erickson lead the group to Connell Creek where the museum specimen of large Spisula was found during the construction of a logging road. The road to the locality was planked and like many a planked logging road, the worse for wear. Nearly all cars negotiated it without much trouble. Exposures at this locality were not as good as during the time of road building, but excavation proved that there were still abundant fossils present to be collected if more powerful means of persuasion could be summoned to bring them forth.

The last stop was scheduled for the leaf localities along the logging road that leads up the Molalla River valley. The better-known locality was by-passed as we entered the canyon to continue on about a mile or so to a point beyond the weighing station where a high cliff on the west bank was contributing leaf-bearing

blocks of sediments. The sediments in this exposure were light-buff-colored tuffaceous silts with occasional beds of conglomerate. Some excellent leaves were found, although some trouble was encountered in keeping them in one piece, as the rock tended to crumble when dried. Dr. L. E. Detling, of the University of Oregon, tentatively assigned the more prominent leaves to Alnus (alder); some may be Tetracera, a form not found in this area now. The better-known Molalla leaf locality, where members of the party had previously found Ginkgo nuts and many leaves, was visited. This cut produced a flora studied by Wilder and mentioned in the literature by Chaney (1944). Chaney assigned it to the lower Miocene and considered it nearly contemporaneous with the Eagle Creek flora in the Columbia River gorge. Some other geologists on geological evidence have been inclined to consider the Molalla formation post Columbia River basalt in age and, therefore, upper Miocene or lower Pliocene. Since a marked unconformity separates the Molalla from underlying platy andesite and Columbia River basalt in the Molalla River valley, it would appear to occupy the same position as the Troutdale formation to the north which is assigned to the lower Pliocene by Chaney.

Continued exploration by members of the Geological Society may help to answer many of the problems that still face geologists studying this part of Oregon. The general feeling expressed by the group upon dispersing was that the day was well spent in pleasant pursuit of knowledge and more tangible specimens.

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Geol. Soc. America Bull., vol. 53, p. 1817.
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THE BELLEVUE ERRATIC

By

Edwin T. Hodge

On the walls of the Vale of the Yamhill is a colossal erratic. An erratic is a boulder that has been carried far from its place of origin to a foreign and distant home. Most of the erratics in Oregon have a strange and unusual history. The one described in this communication is so exceptional that it deserves special notice and assurance of its preservation as one of the wonders of our state.

It appears to be the largest of these visitors from far away and long ago.

On June 8th the Geological Society of the Oregon Country made a pilgrimage to this great rock. The word "erratic" means unusual and exceptional. The word also means a wandering nomad. The last is the meaning we use for the rock that lies three miles east of Bellevue near the old road between McMinnville and Sheridan. It lies on the slope of a hill about one-third of a mile northwest of the former historic school of Oldsville. Mr. Orrin Stanley made a special trip and determined the elevation at 306 feet.

From a distance it looks like a dot on the crest of a ridge. Of course the day we chose for our visit it lay surmounting a green field beneath an azure sky.

1950

From the top of it one has a magnificent panorama of the Vale of the Yamhill. The view is so inspiring that I propose to call the erratic the Bellevue Erratic.

Nearly all of the erratics dispersed over the northern half of Eurasia and North America and in some parts of the southern lands have been carried to their present resting places by the slowly creeping glaciers of the Ice Age. They were rocks entombed in the glaciers and were left at the place where the glacier moved and then melted. Prior to 1850, and for several hundred years, people thought that the numerous, though queer, boulders had been swept to their location by the waters of Noah's Flood and they called the boulders "drift," a term we use to this present day.

The odd thing about most of the Oregon erratics is that they are, in truth, drifted rocks.

Our drift boulder is an argillite and was torn loose from some Pre-Cambrian outcrop, probably a rock crop in British Columbia. The rock then is an old mud stone laid down on the shores of an ocean about a billion years ago. About 50,000 years ago it was seized by one of the great tongues of ice moving south in British Columbia and carried into the state of Washington and to the shores of Lake Lewis. Then a fragment of the glacier broke away and floated out onto the lake carrying the boulder with it.

The ice raft, drifted by the wind, finally reached the Wallula Gateway, passed through it and entered Condon Lake. The current carried it west to the spillway in the Cascades and it floated down the young Columbia River.

The waters of the Columbia did not at that time have the nice large canyon below for its waters. The sea passage was indeed so poor that, in times of the summer melts, much of the water flooded the valley of the Willamette.

Indeed there was at times a lake in the Willamette so large that it resembled a sound of the sea. However no marine materials have ever been found in the Willamette, but the terraces show the one high level of the lake.

Our iceberg, or rather berglet or calve, moved like thousands of others had traveled before. It came down during the summer melt when the northwesterlies were common winds. These winds drifted the ice raft south.

Here it comes! Let us stand near the site of the Bellevue erratic and watch it.

The Red Hills of Dundee and the Amity Hills rise as islands in the lake. Around the former we see a great iceberg floating. It flashes in the sunlight--- now a mirror white and now blue. It does not surprise us because floating masses of ice are very common. This one is so large that it raises our hope that it will, like some before, have frozen in it the luscious flesh of an elephant. It seems to be drifting towards us and we wait. Finally it moves to an anchorage on the strand and we walk out on it. We discover no frozen meat and all we see is a very large rock.

As Nature men we have a great curiosity about rocks; they are often useful. This one is certainly different. It is much larger and we can break off slabs that have a platy character. Hmmm, we can certainly use those. But most of all we are hungry and we move on to the high hills to the north, where perhaps we can find a sloth or two, which are very good eating and certainly a change from the eternal salmon.

Snap out of that dream, Erickson, and measure the boulder.

It measures 21 feet long, 18 feet wide, and 5 feet thick. Associated with it are many smaller rocks of different kinds. It is common to find not one boulder but a nest of them at each locality.

The mass of ice must have been very large to float so large a rock over a 500-mile journey. The ice had to withstand the laving action of the water in which it floated, the sublimating effect of the winds that drove it, and the warm air that surrounded it on its long journey. I would guess that it was about as big as the Portland Library.

THE 1950 ANNUAL PICNIC

By

Johanna Simon and May R. Dale

Even though the Annual Picnic of the G.S.O.C. was held on the 4th Friday of the month instead of the customary 2d Friday, good weather prevailed with zephyr-like breezes and a gorgeous moon. To be specific, the date was August 25 and the place Mt. Tabor Park, of course. Last year you will remember we enjoyed the newly installed floodlights; this year we ate in the newly created picnic site in the crater with adequate lights, tables, stove, and water faucets all conveniently located. Tables had been arranged according to our instructions, benches set out in neat order for the audience, fire lit, sufficient wood stacked near by, and a 20-gallon urn of water already boiling for the coffee. Thanks to Sam Allen, park foreman, for his courteous and efficient help and his genial company at our picnic supper. The group attending was rather small compared to some other years - we do hope that absence from the city was the main reason for nonattendance.

Thanks to Ken Lewis who brought his own P.A. System with him, we had no trouble hearing the entertainment program announced. This year the audience, being divided into groups named "Dinosaur," "Trilobite," etc., was induced to participate. It was a novel idea and had the advantage of eliminating the need of a few rehearsing their usual original, out-of-this-world informal theatre productions. A few charades using geological terms were cleverly enacted - we were all happy to see some of the younger members taking part in these. Ken Lewis and Glenna Teeters had thought up several good contests such as those of nursery-bottle milk drinking, coke drinking through perforated straws, to say nothing of a balloons contest in which the contestants had to blow up balloons and then sit on them to break them. If you think it easy, try it on a straight chair sometime. The benches really made it too easy. There was one unrehearsed stunt "Fannie Soakley and her Trusty Weapon" in which May Dale shot at crackers held aloft by a seemingly scared member of the audience. She, to all appearances, never failed to crumble the crackers although she put herself through ridiculous contortions while shooting through her legs, or by looking through a mirror, or with 2 guns at once - to say nothing of her sight being slightly obstructed by a monstrously sized hat. Because of a second's lapse of memory on the part of her accomplice in this prevarication, her farce was exposed and she was booed from the stage. May says it is a good thing it was unrehearsed - if she had known she was going to look so foolish, she would have lost her nerve and there would have been no stunt.

This was the second trial for the cafeteria-potluck method. Everyone was enthusiastic to taste a little of all the good dishes and several exclaimed: "Just like a Smorgasbord." Women exchanged recipes. The men just ate! We do want to thank everyone for bringing the food early. Hot dishes were immediately set into pans of boiling water on the cafeteria table. The line formed promptly

at 6:30. Food was served hot. A vote revealed that the cafeteria style was definitely favored for next year, so in order to eliminate the need of a telephone committee (consisting this year of one only, Mrs. E. Barr), those attending this year's picnic are asked to bring the same food next year (pardon us, the same type of food we mean) and those who did not have the good fortune of being with us this year, please contact whoever is chosen for food chairman next year or bring your favorite dish.

Those responsible for the 16th successful picnic are:

- General Chairman: Mrs. Viola Oberson
- Entertainment : Mr. Kenneth Lewis
- Park : Mr. Bruce Schminky
- Coffee : Mrs. Johanna Simon
- Food : Mrs. E. Barr
- Cafeteria : Mrs. May R. Dale

Our enthusiastic and genial president, Dr. Hodge, was certainly missed at this affair. Better luck next picnic, Dr. Hodge.

P.S. If you have any ideas for entertainment for next year's picnic, please jot them down and offer them when the time comes around again. They will be appreciated. No ideas, no skits!

TUALATIN AREA TRIP
Sunday, September 24, 1950

A continuous downpour couldn't dampen the spirits of some 50 GSOC'ers and friends who astonished the natives as they filed by in a caravan of 15 cars. We took the Germantown Road out of Portland which leads up to the ridge between the Willamette and Tualatin valleys.

STOP I - One mile west of Skyline Boulevard on Germantown Road, one side of the road shows spheroidal weathering in Columbia River basalt. On the opposite side is a pillow formation of basalt indicating that the lava cooled under water. Some of this pillow formation was extremely weathered.

Crossing Skyline Boulevard at the crest of the ridge we enjoyed a view of Tualatin Valley that was still wonderful in the heavenly downpour.

STOP II - A half mile from this viewpoint, the road bank deceives one into believing it is weathered basalt. However, it has been identified as silt. Some quartzite pebbles, water borne, have been found in it.

STOP III - Road cuts on the new Cornelius Pass road northeast of Rock Creek School. Deeply weathered basalt and overlying silt were pointed out. They are difficult to tell apart except where red clays had developed on the basalt.

STOP IV - At Rockton junction we were interested in the fill under the United Railroads, a branch of the SP&S. This fill is a weathered basalt and clay brought from an area close by.

Because of rain, no stop was made in the fresh borrow pit beside the railroad track at Helvetia.

STOP V - Jackson Falls Quarry (Washington County) - The county quarry on Jackson Creek showed at least two flows of gray basalt which had varying textures and different degrees of weathering.

STOP VI - $4\frac{1}{2}$ miles more brought us near Shadybrook School. McKay Creek ran through the property of a farmer who permitted us to enter to look for fossil shells. Up the wet and slimy banks and cliffs we struggled to be rewarded by specimens of many varieties of Oligocene shells.

We spread our lunch under a huge tree which very comfortably sheltered us from the rain. Dispositions were excellent; lunches were shared and I, for one, fared very well.

STOP VII - Pumpkin Ridge. Samples of ferruginous bauxite showing oolitic, banded, and massive structures were obtained only a short walk from the cars.

The official trip was ended. Thanks were extended to Mr. Lloyd Ruff for a very well-scouted and informative trip.

The Simon's group, of which I was a happy member, decided to accomplish one more interesting visit before calling it a day. In the vicinity of Verboort (situated in the widest part of the Tualatin Valley) there is a farm on which an avenue of gigantea sequoia was planted nearly 80 years ago. Even if you can't go to California, you may still see some of these majestic trees. The amiable farmer-owner sent us home laden with delicious apples from his own orchard. Thus ended another day worthy to be entered in your reporter's scrapbook.

May R. Dale

CORRECTION FOR MEMBERSHIP LIST

We neglected to indicate Mrs. S. L. Haaser (formerly Hazel Hooker) as a charter member. Please correct your membership list to read as follows:

#Haaser, Mr. & Mrs. S. L. 6132 N.E. Failing Street 13 TR 6251

NEW MEMBERS

Mr. and Mrs. Aldice A. Leavens Route 1, Summit Drive, Lake Grove, Oregon
Mr. Ben H. Jones 1105 Fulton Street, Newberg, Oregon

NEWS OF MEMBERS

Word has been received that Lon Hancock was elected President of the Northwest Federation of Mineralogical Societies at their annual convention held in Spokane in September.

MRS. JUANITA C. BOOTH

The Society learned with regret of the death on October 31, 1950, of Mrs. Juanita C. Booth, widow of Dr. Courtland L. Booth. Dr. and Mrs. Booth were charter members of the G.S.O.C.

GEOLOGICAL NEWS LETTER

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GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

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PURPOSE and MEMBERSHIP

The Geological Society of the Oregon Country serves the region now more commonly known as the Pacific Northwest. Its function is to educate people as to the wonders and natural resources of this vast region. Three classes of people seek membership in the Society:

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- 2) Those who wish to have knowledge of and to participate in the development of the natural resources of this region; and
- 3) Those who need help in finding, understanding, and enjoying the geological wonders which always and everywhere surround us.

The Society is not for professional geologists, though many lend their professional prestige to its support. On the contrary, the Society is composed of studious folk who want to enrich their intellectual lives and to walk with seeing eyes among the wonders of the earth on which they live.

Membership dues are \$3.50 per year for residents of Multnomah County; \$2.50 for other residents; and \$1.50 for Junior Members. A regular Membership comprises:

- (a) a single person; or
- (b) husband and wife (including children under 18 years of age).

A Junior Membership is for a single person under 18 years of age. Each membership includes one subscription to the GEOLOGICAL NEWS LETTER.

Applicants for membership should send name (and names of family members included, if any), address, phone(s), and dues to the Secretary, (Miss Ruby Zimmer, 805 S. E. 60th Avenue).

Please make checks payable to the Society.

SOCIETY ACTIVITIES

- LECTURES: Lectures are held in the Public Library Hall, S.W. 10th Avenue and Yamhill Street on the second and fourth Friday of each month, at 8:00 p.m.
- TRIPS: ; At least one field trip is held each month. For questions and suggestions concerning trips call Mr. Rudolph Erickson, BE 7191.
- LUNCHEONS: Every Thursday noon at the Chamber of Commerce, 824 S.W. 5th Avenue between Yamhill and Taylor streets. Luncheon 85 cents.

DECEMBER MEETINGS

- Friday Dec. 8 Mr. H. A. Boyd, Professor of Paleontology, Oregon State College, will lecture on "The Seven Races of Men," illustrated. Mr. Boyd is an enthusiastic and good speaker. In addition, everyone will want to make the acquaintance of the new Professor of Paleontology.
- Friday Dec. 22 No meeting.

FIELD TRIPS

No trip in December. A basement trip and a planetarium trip are planned for January and February - dates to be announced.

NEW MEMBER

Roberta G. Rippey 566 N. E. 43rd Avenue Portland 13 EM 9431

CORRECTION OF ADDRESS

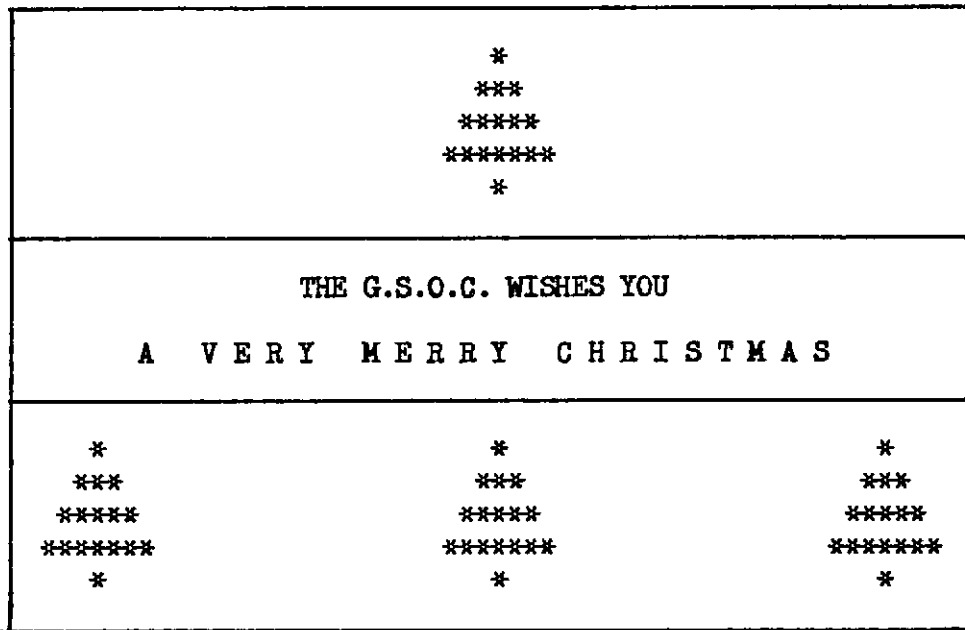
Dr. and Mrs. Ewart M. Baldwin 2058 Harris Street (not 2258), Eugene, Oregon.

BILL REEVES

Many friends and fellow workers feel a personal loss in the passing of Mr. Bill Reeves. He was a charter member of the Professional Engineers of Oregon and of the Northwest Society of Engineers, and for 30 years was Oregon State Highway Engineer for the Bridge Department.

The Reeves family joined the G.S.O.C. soon after its organization and maintained their membership after residing in Salem. Bill was an enthusiastic collector and an ardent follower of all geological activities in Oregon, giving them whole-hearted support. Because of his knowledge he guided many amateurs to a better understanding of their hobby and greater meaning in their study of geology.

His G.S.O.C. friends extend their sympathy to his family.



NEW YEAR MESSAGE FROM THE PRESIDENT

Dear Friends:

At the crest of the hill and in the pre-dawn light, we see the road beyond, which we will tread throughout the New Year. And we cannot resist a backward, loving look toward the long fraternal path we have traveled happily together.

O blithe New Year, portending the thrill of new adventure, take not away from us the memories of our sunny past. We are very thankful for our glorious journey together; for fond recollection of old-time adventures; the excitement of new discoveries; and, most of all, for the loyalty of comrades which the searching years have proved. These glowing souvenirs, we hope, will be more vivid from the summit of the New Year.

As a Society, we have survived both devastating wars and unmatched depressions. Such tribulations only served to weld our friendships more firmly together. We regret that the chimera of prosperity has somewhat dulled our sense of values; but this will pass.

As in our past, bless Thou again, O Lord, our coming year. Let it be a road of greater service to our fellow man; a road to explore wider fields of usefulness. May our studies and our teachings be a profit to ourselves and to the Oregon Country.

Edwin T. Hodge

JOSEPH SILAS DILLER*

By
F. W. Libbey

Many competent geologists have contributed to the knowledge of Oregon geology. Perhaps best known among these for their pioneering work are Waldemar Lindgren, who worked in eastern Oregon; and J. S. Diller, in western Oregon. Mr. Diller is the subject of this biographical sketch.

Probably no researcher has left us more basic information on Oregon geology than Diller, and dozens of succeeding geologists have based their studies on Diller's work. Rarely is any report published on the geology of western Oregon without referring to Diller. His were the first and only Oregon U.S. Geological Survey folios. They have been of incalculable assistance to geologists and mining engineers during the past fifty years.

Diller's first published report is dated 1877 and his bibliography shows great regularity in the publishing of 165 reports and papers over nearly 40 years. There is an amazing range of geological knowledge shown in the titles. He has papers on paleontology, petrology, volcanology (in which he appears to have had an intense interest), structural and stratigraphic studies, and economic geology. His first papers on Oregon geology - four in number - appeared in Science and American Journal of Science in 1884. The titles were "Observations in the Cascade Range, Oregon"; "Geologic work in northern California and in Oregon"; "Fulgurite from Mount Thielsen, Oregon"; and "Rocks from Oregon." From 1884 to the time of his retirement, reports and papers on the geology of northern California and western Oregon appeared regularly. A bibliography of his writings on California and Oregon geology alone would occupy too much space for this paper.

In Oregon Diller is especially remembered for his folios on the Roseburg, Coos Bay, Port Orford, and Riddle quadrangles (the last with G. F. Kay). His Coos Bay Folio included a study of the coal field and descriptions of many producing or developing mines of the early part of this century which was the time when Coos Bay coal was shipped in large quantities by water to San Francisco. Coal mining was then an important part of the economy of Oregon. In addition to the geologic mapping for these folios, Diller covered large areas of western Oregon in reconnaissance surveys connected with the economic geology of the region. Thus he describes mineral deposits of northwestern Oregon, southwestern Oregon, and the Bohemia mining district of eastern Lane County. He was considered a specialist on chrome, asbestos, and talc; and prepared reports on these minerals for the U.S. Geological Survey Mineral Resources Volumes from 1907 to 1919. During World War I he studied a great many chromite deposits in northern California and southern Oregon. As a result of his reports, many lenses of chrome were mined and used in the steel industry during that war period. His reports also formed the basis for subsequent studies of chromite in this general area by other geologists.

Mr. Diller's studies of Crater Lake geology extended over a number of years during the latter part of the last century and early in the present one. He became convinced that the Crater Lake depression is a caldera, a collapsed volcanic cone. Mr. Diller found considerable field evidence to support his theory and he gave a talk before the Mazamas on August 15, 1896, in which he described the geology of the area. The Mazamas accepted Diller's theory of the formation of Crater Lake and he was made an honorary member of the organization. He published several papers on the subject in 1898 and 1899.

*Much of the material used in this article was abstracted from "Memorial of Joseph Silas Diller" by A. J. Collier, Bulletin of the Geol. Soc. of America, vol. 40, pp. 61-79. Courtesy of U.S. Geol. Survey Library, Washington, D.C.

The quality of Diller's prolific reports is good evidence of his energy and scientific observation. It seems likely that it was less difficult in Diller's day to see rock outcrops and trace rock formations than it is today. Before logging of western Oregon forests became so widespread, brush probably had much less chance to grow and therefore the thick cover which the geologist has to fight in western Oregon today was probably far less in Diller's time. Nevertheless, his field work represents a tremendous amount of physical work. It is reported that Diller's notebooks are orderly and are easily followed; and that his specimens were systematically labeled. All evidence adds up to an industrious careful worker and a kindly gentleman.

Mr. Diller's avocations covered a considerable range as did his professional reports. He was said to be skilled in games of chance and was an ardent fly fisherman. He was fond of taking part in plays and acted in minor roles with several noted actors, one of whom was Joseph Jefferson.

Diller was born at Plainfield, Pennsylvania, August 27, 1850. His parents were of German Swiss stock. He attended public schools near Plainfield and the State Normal School at Westfield, Massachusetts. He became interested in geology and in 1877 enrolled in the Harvard summer school under Professor Nathan S. Shaler. Diller continued as an undergraduate at Harvard and received a bachelor degree from Lawrence Scientific School in 1879. He took postgraduate work at Harvard and at Heidelberg where, in addition to geology, he also engaged in archeological studies. In 1883 Diller had the choice of becoming a teacher at Harvard or joining friends in the U.S. Geological Survey which had been recently organized. He joined the Survey and continued in uninterrupted service until he retired in 1924. Perhaps the best appraisal of Diller's relations with the Survey is given in a letter written by George Otis Smith, then Director of the Survey, at the time of Mr. Diller's retirement. It reads as follows:

"I can not let the fact of your retirement pass without attempting to express something of what I believe to be the attitude of your associates in the Survey toward you by reason of your long association with them. We all recognize you as one of the living foundation stones on which the Survey's reputation rests. During 40 of the 44 years of the Survey's existence you have been a valued member of its staff. During all of that period you have given to it, and, through it, to geologic science and to the people of the United States, able, highly trained, unselfish, and wholly disinterested service.

"You have your share of monuments in the form of Survey classics to which your name is attached as author, but, more than this, you are entitled to far larger share than most of us of credit for that most important and most helpful type of indirect and officially unrecognized and unrecognizable service rendered through a never-failing readiness to aid and inspire your associates, old or young, in their own problems, thus giving to them and to the Survey through them the benefit of your own wide experience, thorough training, and fine scientific spirit. You may remember that I had the opportunity of close-range observation of you at work, and I venture to say that no man who has ever been on the Survey staff has rendered more frequently and rendered more cheerfully this type of indirect assistance which, by its very nature, can not appear in the cold official records, but is forever recorded in the hearts of all of us."

Mr. Diller, after his retirement, lived in Washington until his death November 13, 1928. He is buried at Plainfield, the place of his birth.

WORD FROM ORRIN E. STANLEY, ON VACATION

We are priveleged to quote from several of Mr. Stanley's letters as follows:

"Oct. 15, 1950; Bath, Maine

"I am beginning to realize that I shall not see Florida on this trip, nor several places I had scheduled to appear before my eyes. The gorgeous coloring here slows me down terribly, and yesterday I got involved in a geological excursion to Mount Desert Island to note the effect of glaciation, particularly, and other geological forces as well. I rode with a woman professor from Wellesly and some of her students. This was one of the trips taken by groups who had some kind of a convention at Bangor. Dr. Nichols recognized me in a restaurant and asked me to go with the party. And that set me back a day that I hadn't counted on. However, as I came particularly to photograph the Gaspe peninsula and the autumn coloring in New England and to visit Mrs. VanWiggeren (Jenny Gorter) -- and the swing around the south was just to use up the rest of my leave -- I can skip it without great regret. The visit to Mrs. VanWiggeren and to Mrs. Hall's son in Washington are yet ahead of me as "musts." And I am doing my darnedest to get past a few of the gorgeous trees without shooting them. I have even cut down on the time I spend in museums, and maybe I shall get real hard boiled about color before I get home.

"I came through Bangor today and like it about the best of any place that I have seen. For one thing the streets are better signed than any of the others -- better, I believe, than Portland, Oregon. I haven't seen Portland, Maine, yet; but shall be there tomorrow if I have ordinary luck. It begins to look as though I need a secretary and a general manager or else unlimited time and money if I am to take any more trips -- or even to get through this one. But I am having a whale of a good time while it lasts.

"Bath is a town of nice old houses, that were built to live in and to look like they belonged to prosperous people. They have dignity and beauty and size. I don't know whether the folks who now live in them can afford to heat them in the winter or not, but they make nice-looking streets. Bangor had much the same kind of houses, too."

"Oct. 31, 1950; Boston, Mass.

"Instead of sitting contemplatively at the nation's shrine in Plymouth yesterday, I parked the car, strode swiftly to 'The Rock,' took a few shots at it, bought some post cards and turned the nose of the car north to visit Mr. Cushman's brother whom I found to be a delightful gentleman with a charming wife, twenty charming chinchillas, several pretty cockers, and a hired man to whom he has to dole out the drinks like we are told they used to do on the old-time sailing vessels. It seems that the poor guy can't control his appetite for alcoholic beverages, and depends upon his boss, who doesn't drink at all, to help him keep comparatively sober. Charles Cushman operates a cranberry bog which he said was fairly profitable this year. His home is on a slight hill overlooking a sizeable pond, and is backed by small timber. He calls it 'Mulberry Lodge.'

"Then I came on north from there, stopping for the night in a house that was built in 1660 with the 'new' part added in 1700. The proprietor is not living in a house by the side of the road solely to be a friend of man; for he soaked me a dollar for a breakfast of bacon and eggs with orange juice, toast, and coffee. I have become seasoned to paying six bits for such a meal; but a dollar! Ouch!

"Today I drove over and under the Mystic River, and across the Charles on the 'Longfellow Bridge.' I don't believe this is the one that Henry stood on at midnight, but it would answer the purpose. It is a good, strong bridge."

"There are enough things to see and do here to keep me hopping for a month and I shall try to skim through them in a day. The State Historical Society building is next to the Bostonian where I am domiciled for the night, and the map is speckled with red spots showing the locations of such things as the Paul Revere house, Faneuil Hall, Copp's Hill Burying Ground, the Old North Church, etc. Then Lexington and Concord lie in my path back to Collinsville where I must go before starting home. They may have another picture show cooked up for me when I get there. I 'entertained' about forty folks there Sunday evening with new and old slides. My 'one hour' show lasted 90 minutes.

"The brilliant glory of the New England hills had faded before I had finished Canada; but the oaks are still beautiful with their various shades of deep red, russet, and brown, all of which makes rapid progress along the highway painful if not impossible.

"The colleges no longer require a day each for inspection. Today I whizzed past Tufts College, beautifully located on a hill as all colleges should be; Harvard University, lost in a maze of business and residence buildings; and Massachusetts Institute of Technology, beautifully plain and utilitarian-appearing. Besides these, I noticed many smaller colleges, universities, and schools.

"The weather has been delightful this week. One could not ask for any change unless it might be a few fleecy clouds properly placed for picture purposes.

"I finally cornered Bunker Hill monument and thought it would be a simple task to go right to it and ask it to pose for a portrait; but with the one-way streets, the many-angled ones, and those that looked promising but ended in a stairway too steep for the Dodge to negotiate, it was quite a job. At last I located a path to its base and took a shot at it, only to notice afterward that I hadn't changed the focus since snapping an old stagecoach at fifteen feet. But I bought a slide -- something that I never stooped to doing before this trip -- so shall be able to show Portland what the darned thing looks like in case Portland has no history textbook to look in.

"Collinsville, where I visited the Van Wiggeren household for more than a week, is a homey little place. The church to which they belong is only a block from their home. The stores are even closer, the bank and post office about as far away as the church; and Mr. Van Wiggeren's shops, if swung around from the near end, would over-lap the house and bank, too. I was quite thrilled by my trip through the shops where axes, hatchets, and machetes are made by the millions. The machetes are punched out of strips of red hot metal, shaped by power hammers, ground, polished, and tempered in the long buildings which are more than a hundred years old. Much of the work was done by hand until the Collins Company brought Mr. Van Wiggeren from an arms factory in New York state to introduce modern machinery. I thought it quite a sight to see a red hot axe put into a press and the hole for the handle punched by the simple moving of a lever. Only a few women are employed in the shops. One of them operates a machine for testing the temper of the cutting edge of each instrument that is made there. Different shapes of machetes are required by each of the Latin-American countries. They keep samples of each shape of cutting implement that they have made, including the spear-points they made for John Brown to use in his crusade for the abolition of slavery. I believe that they have something like 1200 different forms."

"Nov. 15, 1950; Waldron, Ark.

"A certain strength of character seems to be developing in me lately, or it may be simply the fear of the poorhouse; but I passed a most glorious display of crystals and other rocks this afternoon with the expenditure of only thirty cents for three small specimens. But only a few miles farther along the road I spied some interesting rocks in a roadcut and got about ten pounds of them into the car before I could make my getaway. The ten pounds are probably less valuable than the the three small pieces that I bought. Later I picked up quite a good-sized water-work rock that seems to be made up of a cluster of quartz crystals. It may be entirely worthless.

"In Nashville I was taken to see the Parthenon, which is supposed to be an exact copy of the original in Athens as it looked before it was ruined. It is a beautiful structure and had a very nice collection of paintings in it, with some Grecian sculpture fragments. I prefer to see the entire figure than simply an arm or leg or the head of a horse. I am not skilled enough to judge the parts.

"Thanksgiving day will find me with my sister-in-law in Riverside, California, if things happen to work out that way. John Allen is between here and there and he may have something cooking that will delay me some; and then I hope to make a call at the office of 'The Desert' magazine if I am not too far behind schedule.

"Today has been like a nice spring day and yesterday was quite decent, but there have been some heavy frosts several of the nights lately. Frost on the car windows is as far as it troubled me.

"Monday of this week I visited Reelfoot Lake in the northwestern corner of Tennessee. It was caused by the sinking of an extensive area in the earthquake of 1811. It is said to be about twenty feet deep in some parts, and the old cypress stumps are to be seen far out from the present shore. The lotus was not in bloom when I was there and I did not get close enough to any of the 1,576,802 blackbirds that I saw to tell whether they were redwings for which the place is famous.

"Five more states to cross before I hit Oregon, but I am making better speed than I did around the Gaspe peninsula."

Here's hoping we may hear more, Mr. Stanley,
and see those pictures when you return.

(Ed)

MUSEUM NEWS

The movement toward establishment of permanent new quarters for the Oregon Museum of Science and Industry was furthered recently when members of the Museum Foundation met with museum supporters at a dinner meeting at the Cosmopolitan Club on November 14. The Museum's new director, Stanley H. Shirk, reported that several large Oregon industries have indicated their willingness to supply exhibits as soon as adequate housing and financial stability can be assured. Advisability of conducting a drive for building funds was also discussed.

Meantime, don't forget that YOUR individual membership in the Foundation will help this fine cause along. (Ed).

NEWS OF MEMBERS

Rudolph Erickson has been named one of the new directors of the Oregon Museum Foundation.

J. C. Stevens was one of six men selected recently by a committee of students and alumni of Portland University for outstanding achievement in their respective professions. Formal recognition came at the University's Golden Jubilee dinner on November 14, 1950. In presenting the awards, Chief Justice Hall S. Lusk, master of ceremonies, referred to the six as "men who in a great and developing region have set standards of service that will be picked up and kept alive by generations^{vep} to come into their own in the growth of the Northwest."

RED WATERS CAUSE SCARE*

By

Phil F. Brogan

White Water, colored by glacial "flour," is common in the high Cascades of Oregon, from Hood south to the lofty Sisters. Occasionally, brown water races out of the mountains, through rocky gorges, following heavy rains. But it was water of another color, red, tumbling down winding Separation Creek in the western Three Sisters area that a number of years ago startled residents of the McKenzie valley and led to the belief in Eugene that the South Sister was releasing the crimson flow from its volcanic reservoirs.

It was in early August, 1933, that Separation Creek, carrying drainage from Eugene, Skinner and Lost Glaciers of the Three Sisters, went on a rampage and sent its bloody flow into the McKenzie River, coloring that stream as far west as its confluence with the Willamette.

Dam gives way

Geologists who investigated found that drainage from Eugene glacier had been dammed behind a moraine, forming a considerable lake. Suddenly, the dam gave way, and a huge volume of water surged down Separation Creek, cutting into red volcanic mud.

Among the first to arrive at the scene was Dr. Ruth E. Hopson, Oregon naturalist. She found a snow meadow buried under a red volcanic sediment, several inches thick. The torrent of released water sluiced out Separation Creek and deepened its course, "moving great boulders as though they had been tennis balls," Dr. Hopson noted. The night before the glacial lake surged through the gap in the terminal moraine she had been camped with a party of mountain climbers near the snow-covered meadow that was later covered with red mud.

Glacier breaks loose

forming the barrier behind

More recently, in 1942, the moraine/which Terminal Lake had formed, at the snout of massive Collier glacier, on the northwest flank of the North Sister, suddenly broke. That flood raced down White Branch Creek. Three plains and meadows were covered with volcanic debris. At one place, White Branch Creek abandoned its old course and cut a new channel through the woods. Rocks and boulders were strewn over the forest floor and trees were uprooted.

Directly below Collier glacier and the basin that held Terminal Lake, a massive gorge was cut through the volcanic litter. Once only a tiny creek, with white water spilling over glacier-ground rocks, White Branch Creek just below Collier glacier was 50 feet deep when the flood passed.

*Reprinted by permission from the Oregonian, November 12, 1950.
