Portland Gold Prospectors, Inc

GPAA Portland Oregon Chapter

The Official Newsletter of the GPAA

The Prospector

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Chapter Meeting:

September, 21st 2014

At the
Milwaukie, Oregon
Grange Hall
12015 S.E. 22nd

Meeting Begins at

--- 1:30 ---

Dates to Remember…

August, 2014
1:30 PM

Our next meeting:

If you bring in 2 cans of food you will receive 1 ticket for our $1.00 raffle. You can bring in up to 10 cans for a total of 5 $1.00 tickets. We also have $5.00 tickets. For better prizes.

From The President's Desk

Come join us on Sunday, September 21st. Some important things need your opinion and approval.

If you weren't involved with the Yard Sale – you missed out on a lot of fun. Ken will give a full report on how it went – but it was successful in several ways.

I know most of you have been doing some prospecting - come share some "secrets" and stories with your fellow members. Ken and I will also share with you (at the break) what we've learned about beach mining and processing.

If you have friends, co-workers or others interested in learning about prospecting, invite them to join us and find out if it's something they'd like to do as well.

This is a great year to be prospecting and having fun and you can profit by others involvement and even find some gold. Remember memories become golden with time.

Sincerely,

David Chiara.

Portland Gold Prospectors, Inc.

Secretary's Report Aug 17th, 2014

Milwaukie Grange Hall, 12015 SE 22nd Milwaukie, OR

Meeting called to order by President Dave Chiara at 1:30PM

Pledge of Allegiance conducted.

Attendance:
29 members in attendance to the meeting.
3 visiting guests in attendance.

Meeting minutes:
A **Motion** was made and seconded to accept the Secretary's report as written and published in the newsletter.
The motion was approved by the Association body.

Treasury report: Beverly Parker
The Treasury report was shared with the association. A **Motion** was made and seconded to accept the Treasurer's report as written
The motion was approved by the Association body.

Newsletter: Bill Mutton
Bill was not available during this meeting, but continues to do a great job putting together the newsletter. Please help support him by sharing interesting stories or articles for research. The newsletter is posted every month on the association's website. In addition to this, you can have the newsletter e-mailed to you for free if you include your e-mail address next to your name on the sign-in sheets. If you want to have the newsletter mailed by U.S. Postal Service, this can be done for $15/year to help cover the cost of postage, stamps and printing. 10 copies will be printed and brought to the meeting each month.

Committee formed to explore options with the association claims:
The Vice President of the association, Bob Burns, will be leading an exploration committee to develop a plan of action for the association claims. This committee will be review how we can initiate paperwork allowing us to restore the land the claims are on. The BLM requires us to submit a plan of action if our association wants to replanting native grasses in the areas we have mined or redistribute silt from our trommels back into the prairie. If you wish to be part of this committee, please contact Bob and let him know of your interest.

Outings/ Association Claims – Ken Burns
As the claims and outings director, Ken returned to the Long Beach area this past month to zero in on the beach mining locations. He shared his findings with the association and has discussed a future outing to the Washington beaches.

Fund Raiser – Ken Burns
The 1st annual picnic was schedule for August 23rd. Many items were donated by members to be sold in the garage sale. The garage sale took place in Redland, OR and was a lot of fun and successful as well.

Another idea was proposed during the meeting as a fund raiser for the gold show next spring. In the past we have raffled off miner's backpacks. The proposal was to create a few themed baskets that could be raffled off. This will be discussed further by the board.

Safety:
No safety topics this month.

GPAA: - Robert Wedding
Nothing new to share from the GPAA.

Need new Webmaster for association site: The association is still looking for a new Webmaster that will work for low fees or free. Until then we will be using the current Presidents contacts to set up and maintain the site. This can be expensive and will add up over time, so please help the association by referring anyone you might know who is willing to help our non-profit group set up and maintain our site.

Membership - Ken Burns
New Membership cards are available for 2014. It does not cost to join the association. If you attend three events (meetings, outings, etc.) during the year you will receive a membership card that is good for the calendar year. The membership card allows you to use the PGPI claims and participate in all activities PGPI related activities. If you are new you will receive a card after your third meeting/event. Please sign in on the sheets near the entrance so this can be tracked.

Library: Joe Weber

The Library is available for all members of the association to use and check out items. New Maps donated by an association member this month. Check them out!

Be on my committee

Outings See Ken Burns

Need volunteers to help check out, select and run outing events.

Newsletter & Emails

If you have not been receiving the Newsletter by Email,
Please email us at portlandgpaa@aol.com
Don't forget, you can also download the Newsletter from our website.

Article of the Month

Gold from the Sea

Written by Timothy McNulty

Abstract:
Gold ores worldwide in 1974 averaged 0.15 ounces troy per ton. By 1986 that average had dropped to 0.05 ounces per ton. As the concentration of these minable continental ores continues to diminish, the seas have increasingly become the object of exploration and research into gold reserves. Significant quantities of gold have been mined from ocean beach placers, and mid-oceanic ridges have yielded rich gold ore samples, but the greatest accessible reserve is the ocean itself. Seawater contains vast quantities of dissolved gold, perhaps as much as 10 trillion dollars (US) worth, though in dilute concentrations. Recent evidence suggests that much of the earth's continental gold deposits have biological origins. Certain bacteria are believed to have been involved in the precipitation of gold out of dilute hydrothermal solutions. A possible avenue for commercially viable gold recovery from seawater might involve such a bacterium, or a specifically engineered microbe.

Introduction:
Humankind seems spellbound when confronted with gold. It is a soft and ductile metal and probably had very little utility to the peoples of the ancient world, but it was prized and sought after none the less. What seems most remarkable is that gold's value has not suffered as the world's currencies of the twentieth century have gone on to other standards. Perhaps gold's most valuable quality then, is its beauty (Weast 1980). Though probably not the first metal to be gathered from the earth, evidence suggests that gold was first mined at least 6000 years ago. It has been a standard of barter and exchange for at least 4000 years. Nearly all of Earth's civilizations have prized it, and yet it is quite rare. Estimates of gold's abundance range from 3 to 6 ppb (parts per billion) in the Earth's crust (Simon 1973, Lucas 1985). That is equivalent to about 1 gram of gold in 275 tons of rock. Much of the gold that has been mined over the course of human history has come from rocks rich with veins of the metal, or panned from the alluvial beds of streams and rivers. As these easily accessible sources become increasingly rare, gold mining has shifted to bulk ores of lesser grades. About 60% of the world's known gold reserves

are in the Republic of South Africa and the next largest reserves are in Russia (Minerals Yearbook 1985). As the gold of the Earth's continents continues to become scarcer, both dreamers and scientists have been exploring the seas for this noble metal.

Discussion:

Seawater contains gold in solution. The English chemist, S. Sonstadt, was the first to definitely establish its presence in 1872. Even today, though, precise measurements of its concentration are highly controversial. Owing to gold's extreme dilution, many factors confound its experimental measurement, such as the necessity for ultra-pure reagents, gold's affinity for and absorption into the walls of the experimental glassware, and gold's tendency to precipitate out of solution during transportation or preservation (Burk 1989). Though some of the earlier investigations, prior to 1960, have yielded wildly varied values, as high as 4000 ppt (parts per trillion) (Putman 1953), subsequent efforts have been more consistent. When considering only the data gathered since 1980, reported values for the concentration of gold in seawater have ranged from 5 to 50 ppt (Lucas 1985), with the average concentration at about 13 ppt. Some of the highest concentrations recently reported have come from seawater samples taken from the Bering Sea at 50 ppt (Pashkova 1988).

Perhaps the higher concentrations of gold found in the Bering Sea can be attributed to the gold rich rivers of Alaska and Siberia that flow into the Bering Sea. Though the oceans of the Earth are mostly homogenous in the concentrations of dissolved minerals and trace elements, it is reasonable to believe that the effluence of gold-rich rivers may be at least partly responsible for the variability of concentrations. The gold concentration of some rivers has been measured in the low 1000's of ppt, and gold's actual solubility limit is about 4000 ppt at 23o C at a 1.8% concentration of chloride ions (Wood 1971). The reason why gold is found in such low concentrations relative to that of a saturated aqueous solution has to do with several natural processes, such as the action of biological scavengers which accumulate gold, the adsorption of gold on clay particles and sediments, and the adsorption of gold by high molecular weight organic matter present in seawater (Krauskopf 1956,Wood 1971, Burk 1989). This might also help explain the higher concentration of gold measured in the polar seas where the abundance of sedimentary deposits of microorganisms is less.

Seawater is not the only source of gold from the sea. As previously mentioned, the continental rivers can carry huge quantities of gold to the sea, and not all of it is dissolved or in colloidal solution. The erosive forces of wind, water, and ice can strip the continental rocks of its gold and carry it to the sea. The estuaries and ocean beaches near the mouths of these rivers can and have been commercially exploited. In the region of the Stuart Peninsula of Alaska, the Yukon, Kobuk, and Noatak Rivers pour into Norton and Kotzebue Sounds carrying their gold laden alluvial sands and gravels. By 1898, gold prospectors working the rich placer deposits of the Yukon River and its tributaries had arrived at Anvil Creek near Nome. The ocean beaches within a few miles of Nome yielded the most gold to have yet been mined from the sea. By 1904, nearly 250,000 ounces of gold had been panned and sluiced from the beaches. In October of 1904, two men working a rocker near the mouth of Little Creek recovered in seven hours more than 2,400 ounces of gold (MaClaren 1908,Brooks 1905). Gold is still being profitably

mined and dredged from these beaches and more ancient beach gravels in the area of the Stuard Peninsula. Profitable gold beach placers are not limited to Alaska. For instance, the beaches near the mouth of the San Lorenzo River in Santa Cruz, California, were mined periodically during the 1930's when the Great Depression forced many out-of-work Americans into the gold fields of California. It was reported that two men working a sluice could recover an ounce of gold per day when the first miners arrived at the Santa Cruz beaches. Within a year or two the gold had been depleted sufficiently so that only after a large winter storm, when much of the sands were stripped away revealing the richer sands closer to bedrock, were the beaches again profitable.

Some gold ores are associated the Phanerozoic ocean strata. These strata are believed to have been laid down on the ocean floors during periods of deep sea anoxia (Keith 1982,Spencer 1991). Most of these deposits are associated with the passive-margin environments of the lower Paleozoic and the upper Mesozoic eras. Since these strata and anoxia events are also associated with periods of high ocean levels, it is believed that oxygen the minimum zone, currently between at 500 to 1000 meters in depth, extended to the deep seafloors. It is believed that the increase in global temperatures and sea levels at these times interrupted the deep currents that carry the cold oxygen rich currents from the Polar Regions down to circulate around the ocean basins. The lack of oxygen in the deep ocean caused an enrichment of the sulfide elements and minerals associated with ocean volcanic activity (Spencer 1991).

Other areas of the oceans have recently been explored for the possibility of profitable gold ores. Much discussion and many proposals of late have focused on the mining of iron-manganese nodules of the deep sea floor sediments. Some of these have yielded gold concentrations in the range of 1 to 11ppm (parts per million) (Baturin 1988, Burk 1989). Such a concentration of gold is almost twice the average grade of ore mined from the Earth's continents in 1986 (Dworetzky 1988), and yet for these iron-manganese nodules, their gold content is a minor consideration given the much more valuable concentrations of manganese and selenium. However, owing to the cost of recovering and processing these nodules, no commercially viable mining operation is yet in operation, even though several such operations are planned and much research and even a few small scale tests have been conducted.

Gold ores have also been located along the mid-ocean ridges of the Atlantic and Pacific Oceans. One such deposit was found in association with the TAG hydrothermal field at 26o North latitude on the mid-Atlantic Ridge at the 3,670 meter water depth (Herzig 1991). The gold ores in these locations are associated with sulfide deposits formed by hydrothermal vents. These vents occur when the spreading seafloor allows water to percolate down in the crustal rocks and reach hot regions deep beneath the seafloor. The heated seawater dissolves mineral in much higher concentrations than can occur in cold water. From the spreading crustal plates the water dissolves various mineral and metals, such as sulfur, iron, copper, among others. Gold and silver are also dissolved but in very small concentrations. From samples of these hot solutions taken from the Sea Cliff hydrothermal field, on the northern Gorda Ridge, gold concentration ranges between 1 and 11ppb, and silver between 14 and 200 ppb (Zierenberg 1990). Temperatures of these solutions range from 100 to 350 deg C. Upon reaching the cold seafloor

waters, much of the dissolved minerals and metals precipitate out of solution forming chimney-like vent structures. These chimneys build up and eventually fall over to form again. After enough time has passed, huge mounds of these structures form, being predominantly composed of iron and sulfide compounds. From the samples taken, gold concentrations ranged from 0.06 to 28.40 ppm. Similar, but ancient, sulfide deposits can be found in Australia, Cypress, and elsewhere. Many of these continental deposits have been commercially mined, but it was assumed that the recent oceanic deposits would not likely be of commercial grade because the evidence suggests that the continental deposits have gone through secondary concentration of the gold when ground water or surface weathering dissolves away much of the sulfide and iron matrix, leaving the deposits gold enriched (Herzig 1991). Though most of the mid-Atlantic Ridge sulfide deposits are of the lower grades that correlate to the virgin continental deposits, some, at least, appear to have undergone secondary concentration. It is theorized that this secondary concentration of gold occurs after the initial oxidation of the sulfide assemblages (0.8 to 5.5 ppm Au) and the percolation of the hydrothermal solutions redissolve and then redeposit the gold as pure native metal (at up to 23.0 ppm Au) (Herzig 1988). The discovery of this secondary concentration occurring at the bottom of the seas is important since geologists had previously assumed that sulfide gold ore deposits located on the continental plates would have had to have been exposed to weathering or ground water to be concentrated. It is now apparent that sulfide gold ore deposits may be found in previously unexplored regions. Much about the process of precipitation of gold and other metals from these solutions is unknown, however, it is believed that some sulfur-oxidizing bacteria of the genera Beggiatoa, Thiothrix or Thiovulum play an active role in this precipitation (Zierenberg 1990).

These chemosynthetic bacteria derive energy unlike their surface dwelling relatives (assuming that they are related). Instead of deriving energy from the oxidation of organic matter, or from photosynthesis, they oxidize sulfide compounds directly from the scorching hot hydrothermal liquids. How these bacteria can live and even thrive at 200o C is a matter of much discussion and investigation, but evidence suggest that these bacteria can efficiently remove gold, silver, copper, and other metals and minerals from dilute aqueous solutions. Proposed methods for this deposition vary. One such method involves the increase in pH in the micro-environment of the microbial mats that line these vent chimneys. These metals are less soluble at the higher pH's and precipitate out of solution and are then stored within the cell walls (Mullen 1989).

Other theories have been proposed regarding the role of gold precipitation from ore solutions by bacteria. Recent evidence suggests that most of the placer gold found in Alaska originated from bacterial scavenging. An analysis of the microstructure of Alaskan placer gold, and that of many of the epithermal deposits around the world, has revealed a fine structure of nearly pure gold microtubules approximately 1 micrometer in diameter. It has been proposed that these hollow gold structures are the exact shape and size of the cell wall of bacterium genus Pedomicrobia (Watterson 1992). These bacteria are believed to derive energy from the precipitation of gold around themselves. A close examination of the microtubules reveals branching structures of smaller diameters connected to the larger diameters. This observation is remarkable similar to the observed method of reproduction for Pedomicrobia. Instead of reproducing my fission, the splitting of the cell in two, these bacteria often reproduce by

budding, a process remarkable similar in appearance to the gold microtubules (Rennie 1992). The gold casings around the Pedomicrobia are extraordinary because of their high degree of purity, in excess of 98% gold (Pain 1988). It has been argued by these researchers that much of the Earth's placer gold deposits, have originated from similar biological processes with these or other bacteria. It is believed that the bacteria can concentrate the gold around themselves in such massive amounts because of an electrochemical reaction whereby the gold is gathered on specifically adapted membrane receptors to which the bacteria discharges excess electrons from its biological processes thus precipitating the gold out of solution (Watterson 1992).

The possibility that certain bacteria can concentrate gold in amounts sufficient to comprise a major share of the Earth's gold ores suggest that with the right application, these or similar bacteria may be employed in the extraction of gold from low grade deposits or solutions. Already, there are commercial applications of bacteria in the mining of gold. Specifically, the bacteria Bacillus cereus is being used by the Canadian Genprobe Company to increase the yield of gold from pyrite ores (Anonymous 1989). In this case the bacteria are after the pyrite matrix that binds the gold and prevents economic recovery otherwise. Bacterial processing of these pyrite ores is relatively inexpensive and has increased yields from an average of about 65% to as much as 96% (Dworetzky 1988). Given the affinity that some bacteria have for the concentration of gold, the question arises as to whether it might be feasible to employ such a bacterium, or one specifically engineered for the task, to scavenge gold directly from the dilute concentrations present in sea water.

Conclusion:

Even at the conservative estimates of 10 ppt of gold in seawater, there is a great deal of gold in solution in the oceans. Humankind has unearthed perhaps a total of 3.3 billion ounces of gold over the course of history, an amount equivalent To a cube of gold 55 feet on a side (Dworetzky 1988), but the sea water of the Earth's oceans contain about 25 billion ounces of gold (Burk 1989). If the ability of some of these bacteria to concentrate gold around their cell membranes to the degree that they form massively dense agglomerations of hollow gold microtubules, as the evidence suggests, then perhaps a similar bacterium may find a practical application in sea water. It is believed that these bacteria concentrated gold from solution concentrations similar to that of sea water, though perhaps not similar with regard to other constituents. If such a bacterium could be identified and grown in sufficient amounts, it might then be fixed to substrates that could then either be moved through large volumes of sea water, or placed in stationary positions in areas of relatively swift currents. Once enough time had elapsed for these bacteria to gather sufficient amounts of gold, these substrates could then be gathered and processed to recover the gold. The problems in these approaches are not trivial, and the work and research needed for an evaluation of its practicality are not simple. I believe that such research might pursue exploring the precise biochemical and bioelectrical pathways for the deposition of gold in these naturally occurring bacteria. Perhaps with a sufficient understanding of these pathways, these gold scavenging abilities might be artificially promoted or enhanced sufficiently to achieve an economic recovery of gold from sea water.

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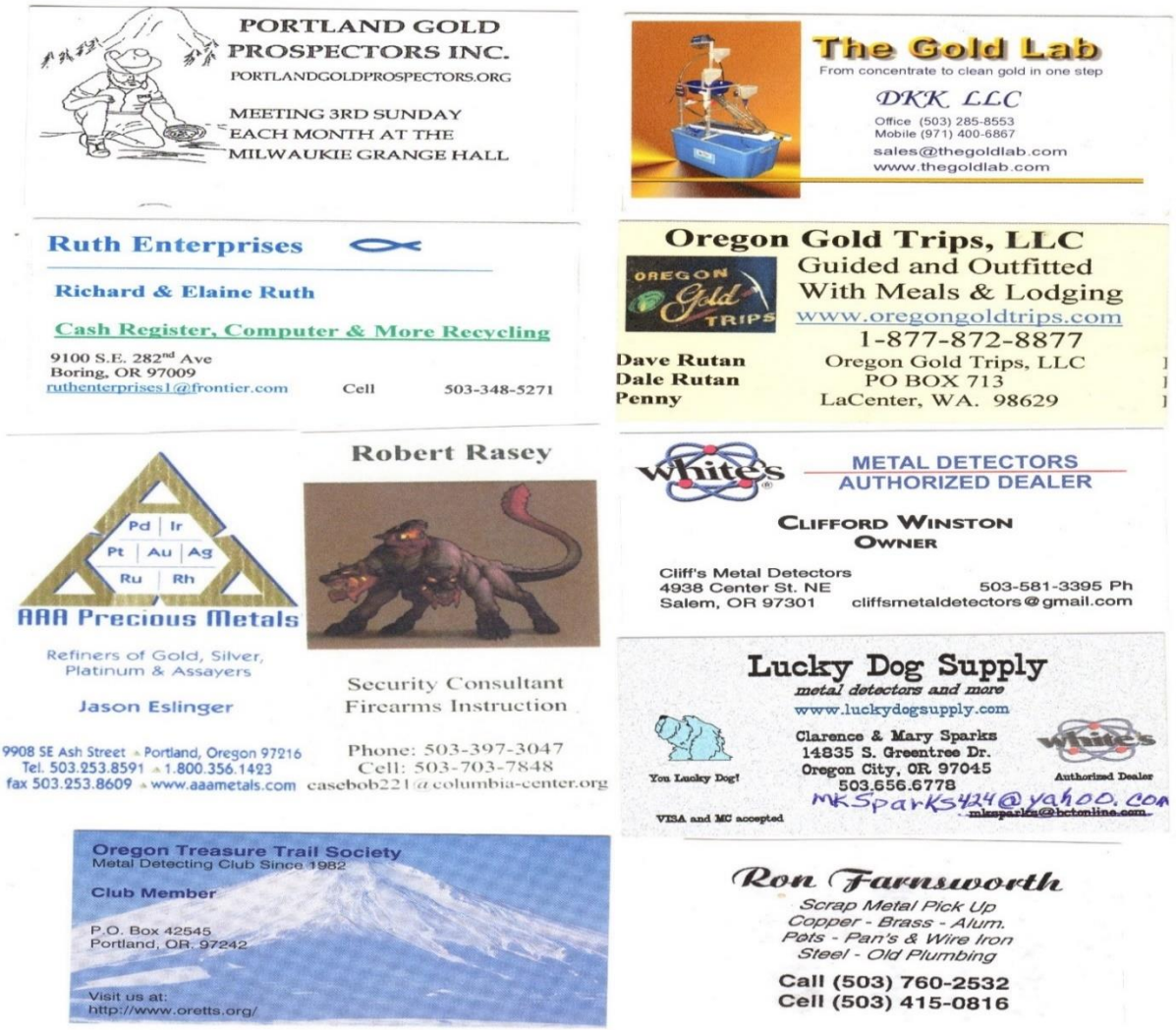
I found this article when looking for **gold in the world** and thought it was just fascinating. I shot an email to the author that was included in the article which I took off so people would not bother the author of the article. They gave me permission or I would not have put it in the newsletter. I really find, so much Gold dissolved into sea water is just mind blowing.



Here is a short blurb on the trommel:

Drum is apx 10'Lx2'Dia., motor is a 5 horse Briggs and Stratton (needs a new throttle linkage), hopper is apx a 4'x5' square top with a 12" hole opening into the drum. Plumbed for water, sluice attaches on the side. Road worthy, fenders, lights, good rubber and licensed. Tows well. **$4600**

Call Roy or Pat Valentine, 541-523-1562.

Western Mining Alliance is Fighting For You
But They Need Our Help!!!

The WMA is an alliance of miners fighting to restore our legal mining rights. We need all miners to stand together and fight this illegal taking of mining claims and our rights to mine.

If you won't stand up now we will lose all of our rights. We are an organization founded by some of the most experienced miners alive. We are teamed with other organizations fighting to take back our rights for land use, timber management, fishing, hunting and the other activities we, as Americans pay taxes to use.

We are supported by the mining equipment manufacturers; small businessmen; political representatives and of course by our claim holders. As a member of the WMA you will receive:

- Monthly e-mail updates on the legal fight
- Flash messages on critical events
- Access to our published reports on mining districts
- Join the Watershed district and the mining district

Here's a link to more info http://westernminingalliance.org/?page_id=626

GPAA Membership Renewal Credits

	1 Year	2 Year	3 Year	1 Year w/o mining guide
Buzzard Special	1,365	1,820	2,730	
GPAA Membership Renewal	1,365	1,820	2,730	1,365
		Paid in Full		Payment Plan @ Sign-up
Gold Life Membership		20,000		9,500
LDMA Membership		45,500		18,200
			Once Expedition is Paid-in-Full	
Alaska Expedition			22,750	

WHEN RENEWING, PLEASE WRITE A NOTE OR BY PHONE SAY YOU BELONG TO THE PORTLAND PGPI OR GPAA CHAPTER TO REQUEST THE CLUB CREDITS.

These credits are used to buy things from the GPAA Catalog. If you do not have a GPAA Catalog, you can go to http://www.goldprospectors.org/catalog/index.asp?PageName=Catalog to see what all they have. If there is anything in the catalog that you would like to have for the raffle Please let one of the board members know.

All members note:

Our club earns purchasing points with renewal of GPAA Membership. Please tell them you're a Portland Gold Prospector member.

2014
Board Members

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The Printed version of this newsletter is just the most important news about Portland Gold Prospectors Association Meetings.

If you would like to see the entire Newsletter you can have it Emailed to you Or go to www.PortlandGoldProspectors.org and you can view or download the whole Newsletter there. I really want to make it very informative and complete, but it would Be far too expensive to print out the longer version of the newsletter.