



# The OPAL EXPRESS

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JEWETT PATTEE, EDITOR

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THE PREZ SAYS!

Thanks to everyone for helping The American Opal Society and the Founding chapter work. Lets all keep it up!

Other Lapidary and Rick Hound Clubs do much in the way of fund raisers and gifts to their respective associations. This keeps Money coming in to help cover the normal expenses of the club.

We are a "One Stone" club, but don't stick your roses up at other stones and pearls. It's fun to see peoples reactions to the thought that Opal cit and set properly can be enjoyed for many years. And what about those people that give an "OH! I thought Opal was a very delicate stone that could be broken or permanently damaged with little or no effort." Jade is as soft as, and can be marred or scarred just as easily as Opal. All stones need care in handling in order to maintain their beauty.

Well, I'm at it again. The first of May, I'm off to South Australia and Coober Pedy for a 3 week mining set up venture, and really looking forward to the warm hospitality and enjoyable, "hi mate", only the Aussies can give. I'll report on this when I get back towards the end of May.

## U R G E N T ! ! !

Is there anyone who might be able to take over the position of Show chairman this year? Brian Franks will be in Egypt for several months with Hughs and will be unable to continue as chairman. Good luck Brian.

Thank you,

The Prez

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Happy Spring! We hope everyone had a wonderful Easter. We regret to say that we have been asked by the Santa ~e Springs Library to not have Pot Lucks in the Meeting room except on major holidays such as Christmas, Thanksgiving etc. So no Pot Luck in April.

But please don't let that stop you from coming because on April 13th we have a special Guest speaker. Mr. Larry Bidwell of the Glendora Gems who also is its Founder will give us a wonderful insight on Mineralogy. Larry has been a teacher in the local schools for years. I've known Larry for three years and he really knows his minerals. He plans on bringing some interesting examples with him that you don't want to miss. So come on out and bring your friends!

From the President:

There are many kinds of mistresses, but there are a great many who share one. I first met mine about 1½ years ago. Through a crowd I saw her winking and I just knew that wink was meant or was directed at me. I fell under this ladies spell and have been paying the price ever since!

I have since learned that his sometimes coquettish lady can be, and generally is very fickle. She draws you in and hooks you, then leads you through a wild love affair.

She sometimes breaks your heart but you're so in love that you endure hell and high-water... when you get to this point and you think she will drive you crazy-- you need Help!

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Remember everyone is welcome to come out to the Workshop that is held at Edith Ostrander home every Tuesday nite at 7:00.

At this time there are 3 sanding machines and in the near future a Flat-lap machine will be purchased. Edith always has the SWEETEST refreshments! Sessions are only \$1.00 a visit, we all know money is tight, but in order to have quality stones we need quality equipment. We are also serious about buying a good digital scale, this will be plus for weighing Opals and setting prices on the stones all our members are making for the October Show. We hope to see you all on April 13th, and don't forget to come over to Edith's on Tues. nites. See you there!

## **Field Trip – Buffalo Canyon Opal** *by Eric Seiple*

*From ROCK & GEM Magazine, September, 1988*

### ***An Hour East of Fallon You'll Find Nevada Opal and Miocene Fossils.***

***Plant fossils are scattered through the shales of Plant Ridge in Buffalo Canyon, and include excellent live oak leaves.***

Buffalo Canyon lies in the heart of the arid Great Basin geographic province, approximately 65 miles east of Fallon, Nevada—the county seat of Churchill County. This is a land characterized by three widely distributed plants: sagebrush, juniper and pinion pine. But JO to IS million years ago during Mid- to Late Miocene geologic times, present-day Buffalo Canyon was the site of a large lake around which flourished a great variety of plants including spruce, fir, pine, sycamore, elm, ash, maple, zelkova, willow and evergreen live oak.

Today, the fossilized remains of these trees, along with commercially minable quantities of diatomite can be found in the sedimentary layers deposited in that ancient lake. In addition, several diatomite beds in Buffalo Canyon have been changed to prized opal through the geologic forces of heat and pressure. The opal field is quite extensive and yields abundant colorful material.

To reach the Buffalo Canyon collecting sites, first travel to Fallon, Nevada. From Fallon, go east 51 miles on Highway 50—the so-called “loneliest highway in America”—to State Route 722. Take SR722 east eight miles to the dirt road to lone. Turn south here (right) and proceed five miles. This will bring you to the base of Plant Ridge, the main leaf-bearing Site in the Buffalo Canyon region. Plant Ridge is the low ridge on your immediate left (east of the road to lone). It consists of well-exposed, almost horizontally-layered tuffaceous and diatomaceous cream- to tan-colored shales along whose bedding planes occur common plant fossils.

The most conspicuous forms encountered are intact leaves from an evergreen live oak, *Quercus chrysoepris*, a species almost identical to the living maul oak now native to the western foothills of the Sierra Nevada. Also present, but rare, are the leaves of sycamore, zelkova elm, ash and willow, plus juniper twigs, horsetail reeds and the winged flying seeds of maple,

spruce and fir. Preservation of the plant remains is generally fair to excellent. Many of the better-preserved fossils occur near narrow beds of blue-gray volcanic ash interlayered with the sedimentary section.

As far as I know, this particular fossil-bearing deposit has yet to be given a formal name by geologists. In the *Nevada Bureau of Mines and Geology Bulletin, Number 83*, in Ronald Willden and Robert C. Speed's “Geology and Mineral Deposits of Churchill County, Nevada,” these rocks are simply referred to as “older sedimentary rocks.” They were dated by paleobotanist Jack A. Wolfe, who considered their flora to be early to late Miocene in geologic age, most likely Middle Miocene because of the key species of maple and elm present—Species diagnostic of the Middle Miocene Epoch in west-central Nevada, or approximately 15 million years old.

At present, paleobotanist Daniel I. Axelrod is preparing a monograph on the fossil plants of the Buffalo Canyon area, so any particularly striking plant specimens collected here should be brought to his attention. (Dr. Axelrod can be contacted at the University of California at Davis, Botany Department 0900, Davis, California 95616.)

The most efficient way to locate fossils here is to split the shales along their natural bedding planes. Use the pick end of a geology rock hammer or a broad putty knife to split the soft, often crumbly sedimentary material. If you should happen to accidentally fracture a fossil specimen, use Duco Cement or some other fast-drying, reliable glue to mend the break. But try to be especially careful not to crack the fossils. Attempting to glue pieces of diatomaceous shale back together is usually a messy, delicate chore. Several coats of glue applied along the fractured surfaces may be required to get the job done, since the porous, powdery rocks often soak up glue like the proverbial sponge.

Not every sedimentary rock layer at Plant Ridge is fossiliferous - as a matter of fact there appear to be many more barren horizons than plant-bearing ones. But, generally speaking, the shales that outcrop from roughly half to three-quarters of the way up the ridge seem to yield the majority of specimens.

The “paper shales” observed near the base of Plant Ridge closely resemble the plant-and-insect-bearing shales at Stewart Valley, Nevada, and Florissant, Colorado, although I've yet to locate anything significant in them, save for a few poorly preserved leaf fragments. Still, these

paper shales may well be worth some special exploration. Excellent specimens could yet show up in them, due to the fact that they lie in such close stratigraphic proximity to the plant-yielding beds higher in the geologic section at Plant Ridge.

Another neat fossil plant-bearing area lies a short distance east of Plant Ridge. Continue south two-tenths of a mile along the road to lone, to the junction with the dirt trail that leads east to Buffalo Canyon. This junction lies five and two-tenths miles south of State Route 722. Turn east (left) here and proceed six-tenths of a mile to the fork where two dirt (rails diverge; the right branch heads to Buffalo Canyon, the left winds about through the Desatoya Mountains for a couple of miles, eventually deteriorating into a very primitive jeep trail suitable for use by wild burrows only. Take the left branch of the two trails. Almost immediately (less than a tenth of a mile from the fork), you will observe a faint path leading north (left). This path dead-ends at a natural amphitheater carved into an extension of the plant-bearing diatomaceous and tuffaceous cream-colored shales exposed at Plant Ridge, the so-called "older sedimentary rocks" described in Bulletin 83. My own name for this formation is the Buffalo Canyon formation, a designation that at least has the advantage of sounding somewhat warmer than the cold, factual reference, "older sedimentary rocks."

The shales here grade upward into geologically younger, tan to gray clays and mudstones bearing five distinct beds of lignite, a brownish-black coal whose alteration of the original vegetal matter has proceeded farther than in peat but not so far as in subbituminous coal. All five layers of the lignite have been analyzed for possible uranium content, but only two of the beds show any potential economic interest, averaging 0.052- to 0.1-percent uranium. The ashy gray mudstone in this part of the geologic section frequently contain abundant remains of reeds from a species of horsetail, a scouring rush.

Taken together as evidence, the lignites and fossil horsetails indicate ponded, swampy conditions during deposition of the younger phases of the Middle Miocene "Buffalo Canyon formation." The regularly-bedded diatomaceous shales lower in the section—rocks which represent the oldest periods of deposition—were likely laid down in a large lake that was bordered in part by several distinct plant communities—a predominantly deciduous hardwood forest of ash, elm, zelkova, maple, sycamore and willow;

an extensive evergreen live oak woodland; and a mixed conifer forest of pine, spruce and fir, which thrived along the neighboring slopes at the relatively higher elevations.

Although Plant Ridge yields a greater quantity of fossil specimens, primarily whole leaves of evergreen live oaks, this amphitheater locality does seem to offer a wider variety of plants. Especially significant here are the leaves of sycamore, zelkova and elm, in addition to occasional winged seeds of maple and fir. One bed of diatomaceous shale near the Contact with 'the overlying lignite-bearing mudstones and clays yielded numerous flattened fossilized fir cones.

During my last extended stay there, I spent a couple of productive days opening a modest-sized quarry near the eastern-most edge of the amphitheater. The digging was good. Among my keepers were several nice sycamore leaves, winged spruce seeds, a few relatively rare zelkova leaves and many live oak leaves.

in March I made a brief stopover at the amphitheater to check out my "quarry," which had lain dormant for a couple of years. Unfortunately, I found it had been obliterated by heavy rains. All that was left to mark the site of my past digs were several large slabs of shale I remember having yanked out while attempting to expose a particularly fossiliferous layer upon which were plastered some fine specimens of live oak leaves. The slabs of shale had been washed way down slope into a newly formed gully—the result of rampaging runoff.

I spent a couple of hours digging in the same general area as my original quarry, and am pleased to report that the fossil plants are still "alive and well"; they can still be found here, although there are fewer fossil bearing horizons present than at Plant Ridge.

After collecting at the amphitheater, it's time for a ride down Buffalo Canyon proper, which lies along the right branch of the divergence of dirt trails. Collectibles to be encountered in Buffalo Canyon include high-grade, potentially minable diatomite, plus extremely colorful specimens of opalized diatomite. The diatomite prospect lies roughly one mile from the fork, on the left-hand (northern) side of the trail, approximately 50 to 100 feet north of the trail. A major open pit mining-style cut has been made here to expose the extensive deposit of diatomite, a variety of sedimentary rock consisting almost entirely of the fossilized remains of diatoms—microscopic one-celled aquatic plants. The thickness of the diatomite exposed in the cut is on the order of

15 feet; it is a brilliant white, blocky material which, due to its high silica content, tends to fracture conchoidally.

Diatomite is used in a variety of applications: as a filtering agent, an absorbent; a filler or extender in paint, plastics and similar materials; as anticaking agent and as an important constituent of thermal insulation. From 1953 through 1955 diatomite was the leading mineral product of Churchill County and it continued to be important through 1959. Since that time more easily accessible deposits have been exploited, but when these areas become exhausted the huge reserves available in Buffalo Canyon will likely assume great value.

The opal field occurs from one-tenth to four-tenths of a mile east of the diatomite 'prospect, along the north side of the trail through Buffalo Canyon. Here, beds of diatomite have been contact-altered by intrusive volcanic rocks of the Desatoya Mountains volcanic complex—mainly thuyodacites and welded tuffs whose fluids, superheated during emplacement, locally opalized the silica-saturated diatomite. (Diatoms construct their chambers from opaline silica.)

The result is an attractive, colored opalized material which comes in shades of all the way from nearly white through red, brown, bluish gray and reddish purple. Unfortunately, much of it is severely fractured which may limit its lapidary value. On the positive side, though, there is a veritable heap of opal available. At last inspection, so the potential for locating exceptional high-grade specimens is certainly present.

At road's end, roughly eight-tenths of a mile from the diatomite prospect, one a eighth-tenths to two miles southeast off fork, lies a very recent mining operation, the Lucky and Gold Trail mining claim owned by Fred and Cleo Erb of Fallon, Nevada (according to Bulletin 83). There has been no published documentation mineral yields from the property but, from the overall appearance of the remaining works, the developers had quite an operation under way. At last inspection (spring 1987), there was still plenty of mining equipment scattered about the premise, giving the impression that the site had been abandoned. Don't let this fool you lot of hard work obviously went into the project and it's a good bet that the claim only sits idle for now, awaiting better days.

All the collecting sites in the Buffalo Canyon area are presently accessible; far as I am aware; there are no collect restrictions save the common-sense courtesy all the conscientious

rockhounds a fossil hunters abide by: Always obtain permission from the owners before collecting on private property.

Plant Ridge can be easily reached conventional vehicles, as the dirt road lone is frequently traveled and nicely graded. The amphitheater locality would be a close call for conventional autos. When last there (March, 1988), I noted serious deterioration of the trail to the due to recent flooding—there were many more potholes, gullies, ruts, and more washouts than I could recall ever having encountered previously. Drivers beware. Generally speaking, if you can reach amphitheater in a stock auto, you shouldn't have any trouble making it to the diatom prospect, the opal field or the Lucky a Gold Trail mining claim in Buffalo Canyon. As always, though, play it on the safe side.

The best camping site is probably at amphitheater fossil plant locality, which happens to be a Bureau of Land Management-approved wood-cutting area; there is no water available, though. The best time to visit is usually of the most comfortable weather for visiting, although early fall can also be very pleasant.

A field trip to Buffalo Canyon, Nevada will provide rockhounds with something out of the ordinary: a chance to collect opal and a large selection of fossilized plants as well.

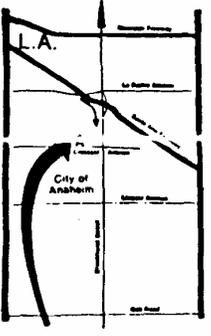
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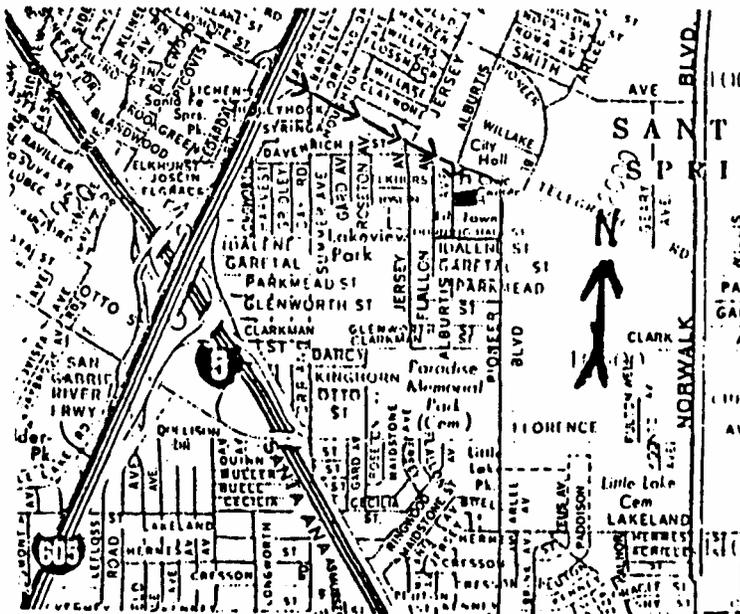
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