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AMADOR SAWMILL AND MINING ASSOCIATION
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A 501 (c) (3) tax exempt non-profit Ca. corporation

"The primary objectives and purposes of this corporation shall be for public purposes: acquiring, restoring, and preserving authentic historic working sawmill and hard rock mining equipment for public education through display and demonstration, together with related activities."

THE ADVENTURES OF AN APPRENTICE FIREMAN
By Ken McCoy

I have never had a great desire to be a fireman/boiler tender. There are a number of reasons for this reluctance, all of which I consider quite valid. First: it is very hot; second: the one time I fired the boiler, the resulting cloud of black smoke melted a few glaciers; and lastly, there is the fear of what we shall call "**THE BIG BANG**."

I have, on occasion, started the wood fire necessary to warm up the beast and pressurize the oil burner. But then to my relief, I was relieved by Tom, the trained fireman.

And so it came to pass, that on the day before the start of the fair, we were scheduled for a "dress rehearsal" and Bill asked me to warm up the boiler as noted above, which I did. So far, so good..... but where is Tom? Suspicions are confirmed when I receive the "Two Minute Tutorial". You know the one that goes: just turn this until..... don't let this get below.....and whatever you do,....don't.....!!!!!!

I soon discovered that there are three mortal sins in the profession (and a number of lesser offenses), #1 Running out of steam, #2 Producing too much steam (aka: blowing the safety), and of course #3 **The big bang**.

Shortly after we started the mill, I stood and watched the gauge descend, lower and lower, until we experienced "The Sound of Silence"....not enough fire. Well, I cured that..... "What's that big roaring sound?".....too much fire. Now of course, all of this brings almost unlimited advice… some of it helpful. But I think it is fair to ask....If you knew all of this stuff, why didn't you tell me sooner? But as the day progressed, things got better and a sort of uneasy truce prevailed between the steam dept. and the production side of the operation.

And so I learned the ultimate lesson.... when Bill starts the two minute tutorial, call Tom, and remember that urgent appointment in Peoria!!!

FREE LOGS!!
By Alan Langmuir

My story of the "Free" logs started at 8 o'clock on a Saturday morning in June of this year. I had just gassed up my truck in Elk Grove to head to Bill Braun's house for a couple of days of volunteering to do some mini-logging. As I figured out my gas mileage, I thought I'd keep track of what "Free" really is as we went along.

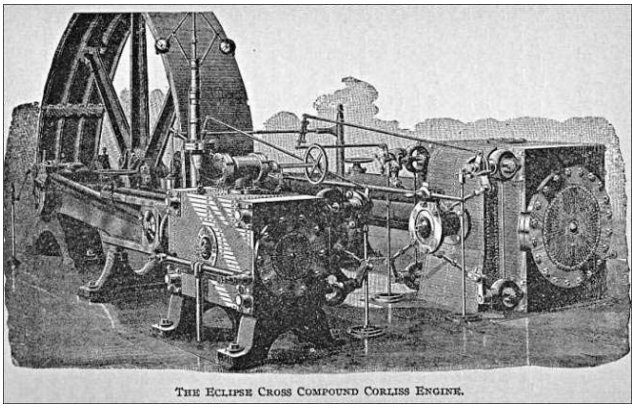
I got to Bill's house and saw that he had fueled up his diesel truck and loaded all 7 tons of a backhoe onto his gooseneck trailer. I threw my lunch in the bed and we took off toward Fiddletown. An hour latter we were 13 miles above Fiddletown down a steep dirt road at the beautiful home site of Tom Patten, who with the Plymouth Foothills Rotary Club, donated the "Free" trees. The house was locked up and no one around but I could hear a crawler of some kind and see lots of dust coming from a clearing down the hill about 300 yards away. We off-loaded the backhoe and Bill drove down a freshly cut logging road to look over the situation. He climbed back up the steep slope and said that Ron Pacheco, the hired tree faller, had come up early from Volcano and had already cut down three of the beetle diseased trees. We drove down the road and positioned the trailer rig for loading. It was really nice to have four-wheel drive!

That first load out was a real learning experience! First, the clam shell bucket was too small to grasp the biggest logs. Bill suggested we use chains and sling the logs under the bucket. It worked and we were back in business in 20 minutes. We chained down 5 logs for the first run up the sandy rut from the log deck clearing. Ron had cut in this road a few days before and it was not packed down. Well, we got stuck half way up. We looked at each other and said, "Shucks, what do we do now?" Again Bill came to the rescue. He remembered that Ron had left his keys in the crawler when he left for lunch. So, with Bill pushing with the crawler and me driving the truck, we were back in the business of hauling logs to the mill.

We met Ron at the asphalt road junction to tighten the binders and get some paper work from him about the logs and where they came from in case we were stopped by the Forest Service. We then took off down the hill in low gears to the Amador County Fair Grounds in Plymouth where we off-loaded the logs with the fair grounds' fork lift. The "Al, Bill and Ron" show became a well oiled logging crew over the next few days by delivering 20 logs. In the early morning Ron would cut roads into the pine forest, select the diseased trees to be harvested, fell them, limb them, and buck them into 16'6" long logs. He then tightened the choker and snaked them to the clearing where Bill and I loaded them on the trailer. At the fair grounds Bill set up a sprinkler to keep the logs from drying out. It was hot dirty work but worth all the time, effort and money to keep our public historic education exhibit in operation.

The out of pocket costs for the "Free" logs? Fuel, tree falling, dozer, backhoe, sweat, and a great adventure!

Pictures from the “free logs” expedition:



FROM THE PRESIDENT'S SHOP

Bill Braun

2009 has seen improvements on the sawmill structures and for future expansion of the steam plant. The engine room has been enclosed with doors, windows and solid walls. Electric outlets and lights were also installed in the engine room. The worn guide tracks for the carriage knees were replaced.

Progress has been made towards the installation of a permanent stationary boiler at the sawmill. The code repairs to the 1945 Dutton boiler by Bay City Boiler were approved by the State of California Pressure Vessel Unit. The State then issued the necessary operating permit for 125 psi maximum allowable operating pressure. The R1 report documenting specifications of the repairs is in the Association files for future reference. The R1 report is generated by the code repair shop to detail all the repair specifications required by the American Society of Mechanical Engineers (ASME). ASME sets the standards for pressure vessel construction and repairs. They issue the "S stamp" and "R stamp" for boiler construction and repair respectively to the shops that meet the rigorous standards set by ASME.

Though the boiler repairs are complete, the installation needs site preparation and construction work done. In addition, the metal framework will be constructed to support the boiler. The boiler will be fired by burning scrap slab wood from the sawmill, so cast iron grates had to be made. A contract was issued to Mid Cal Pattern Works in Stockton, CA. to make the three patterns necessary for a foundry to mold and pour the cast iron grates. The casting work was done in September by Sunset Foundry in Valley Springs, CA. I must say that the pattern and casting work are of the highest quality. Al Hiatt owner of Hiatt's Metal Fabrication, Plymouth CA. has generously donated his services in cutting the framework steel to size and sandblasted ready for primer. Welding all the various parts of the framework together is next.

New boiler grates

Once the boiler is in place next to the sawmill engine room, the steam and water piping will be installed to the engine and reserve feed tank. The goal is to have the boiler in operation by April of 2010. The sawmill will be easier to steam up for the annual Amador Fair and other scheduled events with a complete self contained power source.

The 2009 Amador County Fair was a success and the sawmill ran well with only one delay when a stick of wood jammed the sawdust drag chain. Each year the mill runs better and we have more fun! Thanks to all the volunteers for their dedication and hard work. Full Steam Ahead!

REMINDER: The work days are the 3rd Saturday of each month. Don't forget the annual pot luck dinner Nov. 7th, Board meeting 9am, sawmill ops. 11-2pm, potluck 4-7pm, main course prepared by Chef McCoy. Bring a potluck dish by last name, A to K: salad, L to Z: dessert or appetizer. RSVP to Bill by Oct. 30.

HOW HOT IS THE WATER? OR....I DON'T NEED NO STINKIN' GAUGE!

By Tom Innes

A question we often get is what is the water temperature of the steam donkey while it is operating? We don't have a temperature gauge. We only monitor the steam pressure and the boiler water levels. So, do we really care about the temperature? Not necessarily, so long as we know it is hot and we have enough sense not to touch the boiler.

Steam was looked at as a power source going back to biblical times. But it wasn't until early in the 18th century that the first practical steam engine was developed. It was the Newcomen but it was more of an atmospheric engine, i.e. it used atmospheric pressure for the power stroke. It was an important development since prime power sources were desired to operate the pumps that pumped water from the mines, replacing draft animals. Much of this early work was done in England.

More practical engines taking advantage of steam expansion were developed toward the last part of the 1700s. This was the beginning of the industrial revolution where power was needed to operate machinery and production equipment. Much of the equipment was designed by "cut and try" methods, keeping in mind the poor knowledge of materials and the lack of ability to accurately fabricate machine parts. It wasn't until the 19th century that steam
power was studied from a scientific view. A great deal of scientific development took place in France where both scientists and engineers were trained in national universities with the understanding that steam energy was critical to the development of steam for prime power sources. Issues of power, efficiency, safety and fuel resources drove these studies. This became especially important when power was needed for mobile uses. Today, steam power is still a useful power source.

Understanding the relationship between temperature, pressures and energy, production became necessary and important. These relationships were not evident and they are not linear or straight forward. A great amount of experimentation took place with accurate measurements made of pressure, temperature and power. These were collated into tables where one could lookup the values of these parameters knowing only one of them.

Water boils at 212 degrees F at sea level atmospheric pressure, 14.7 psia. Everyone knows this. But the temperature at higher pressures is not clear without using some sort of data table, in our case a steam table. A steam table tabulates the relationship between pressure and temperature. If we know the pressure, we can look up the temperature. For our steam donkeys, we operate around 125 psig. This is gauge pressure. The absolute pressure is 140 psia, being measured from zero pressure. Looking this up we find a temperature of 353 degrees Fahrenheit. The most common steam tables are based on the "Thermodynamic Properties of Steam", Keenen and Keyes, 1937. (Today, believe it or not, an application for the iPhone can be had with steam data.) Steam tables also tabulate the energy in the boiler in Btu per pound of steam plus additional useful data.

And this is the reason we don't need a temperature gauge. We know the pressure so we can lookup the temperature. On the other hand, why not use a temperature gauge and look up the pressure? A pressure gauge responds to changes faster than a normal thermometer and a rapid response to any pressure change is desired. Boiler safety is based on steam pressure and safety valves are set to the maximum pressure we wish to operate. Therefore, we rely on the pressure gauge.

A BIG THANK YOU FOR THE DONATION OF LOGS

The logs cut into lumber during the Amador County Fair were donated by two sources: Tom Patton and the Plymouth Foothills Rotary Club (see log story pg. 2), and Margaret Blair and her crew, who not only donated the cedar logs but loaded them onto the trailer! Thank you all!

TO THE FRIENDS AND SUPPORTERS OF AMADOR SAWMILL & MINING ASSOCIATION:

We hope you enjoyed reading this newsletter.

Our progress over the past ten years has shown our commitment to developing a note-worthy sawmill display to honor Amador County's sawmill history. Our display is an operating steam sawmill, which looks much as it would have 100 years ago. Each year we cut logs during the Amador County Fair and the lumber is used for various community projects.

Would you please help us with our sawmill improvement and preservation efforts by honoring us with a much needed cash donation? Thank you!

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2009 Amador Fair

(Ignore the picture dates, operator error)

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We don’t need no forklift!