MINING ARTIFACT COLLECTOR

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Mining Artifact Collector

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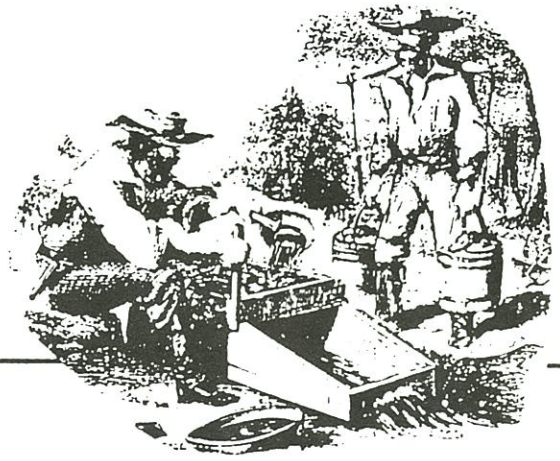
Notes from the Editor



A NEW MAC EDITOR

Deric English of Boron, California, has joined the *MAC* staff as our Miscellaneous Editor. Deric is a school teacher and lives in that famous mining town known for producing borax of twenty mule team borax fame. Deric has an excellent collection of mining artifacts, many of which he has collected underground himself. Like many others, he has long sought a quality forum for sharing the history of mining artifacts. Looking back, Deric has been involved in just about every issue of the *MAC* over the last three years, usually in the form of research and giving updated material on past articles. Deric's expertise in miscellaneous mining artifacts will be a valuable addition to the *MAC*.

Deric's interest in mining was almost a foregone conclusion as mining has been in his family for over three generations. He has a wealth of family heirlooms related to mining that were given to him by his father, mainly in the form of original photographs. You will have a chance to read about some of his grandfather's mining adventures in this issue of the *MAC* and in many more to follow.

The *MAC* is in its sixth year of publication and if you have been with us from the start, you have noticed a substantial turn toward the miscellaneous articles. We feel it has really broadened our capacity to offer information on the history of mining artifacts, and that's why we are excited about Deric joining our staff. We are very aware of the fact that our readers want to read about all types of mining artifacts and not just the rare and obscure lamps that the majority of collectors will never have a chance to own.

HISTORIC VIRGINIA AUCTION

If you are a collector of mining artifacts from the famous Comstock Lode of Virginia City, Nevada, you should have been at the Grand Hotel across from Disneyland in Anaheim, California, on May 22 & 23, 1994. The estate of C.H. MacKay, son of John W. Mackay, the most famous miner and mine owner on the Comstock, was auctioned for two days and nights. I have to admit, most of the items were Victorian, European and antique American furnishings and fine art. But the Virginia City mining items that were offered were excellent.

My favorite mining item to go under the gavel was an original leather bound 1871 copy of Dan De Quille's *Big Bonanza* that went for $400.00. But the item that drew the most excitement was a fantastic, large blue and gold parade banner from the Gold and Curry Mine that went for a mere $3,200.00. Other great items included a fancy, carved miners' candlestick once owned by the infamous saloon magnet Lonky Smith--$800.00. An original matted 11 x 14 photograph of Adolpf Sutro in his famous pose of swinging a pick--$300.00. An ingot mold from the Gold and Curry Mine for $275.00. An enormous collection of over 160 leather bound ledgers from the Gold and Curry Mine--sorry you had to buy them all--$3,500.00. A cloth over-lay colored map dated 1873 of the Sutro tunnel showing how the tunnel was to connect with all of the Virginia City mines four miles away--$550.00. The most unusual item was a fantastic, very early, black leather mine rescue head mask complete with solid, nickel plated fittings that looked like something right out of a Jules Verne movie. It went for $350.00, and I'm still kicking myself for not buying it.

Of course there were a number of common candlesticks that went for around $100.00 each. And loads of checks, stocks and letterheads. There seemed to be something for everyone unless you were a carbide collector; the Comstock is a little to early for those.

I thought that the going prices were very fair, even considering that you had to pay a 10% buyer's fee. Had there been more serious mining artifact collectors present, I'm sure a lot of the key items would have gone for quite a bit more. I've seen what happens when two or more collectors get into a horse race at an auction. Believe me, I've been there, done that.

A Pocket Memo

by **Alix and Russell Filer**
Yucaipa, California

The Philadelphia Smelting and Refining Company was one of the many complicated long-lived financial enterprises of Meyer Guggenheim and his sons. The company was established in 1888 to process the refractory ores--largely sulphide lead, silver and zinc ores--being produced from Meyer Guggenheim's two mines, the A.Y. mine and the Minnie mine, on Iron Hill at Leadville, Colorado. The works of the Philadelphia Smelting and Refining Company was located at Pueblo, Colorado. There were many financial set-backs before a cost-effective and high yielding metallurgical process was perfected.

The item from the Philadelphia Smelting and Refining Company shown here is an ivory colored celluloid-covered pocket memo with black printing. The back of the pocket memo, also printed in black, has an engraved illustration of the Philadelphia Smelting and Refining Company's smelter. This pocket memo measures 3 $^{3}/_{4}$ inches long and 2 $^{3}/_{8}$ inches wide. The memo has two thick paper inserts for writing messages on.

THE HOMESTAKE CLAW HAMMER

by **Keith Schillinger**
Lead, South Dakota

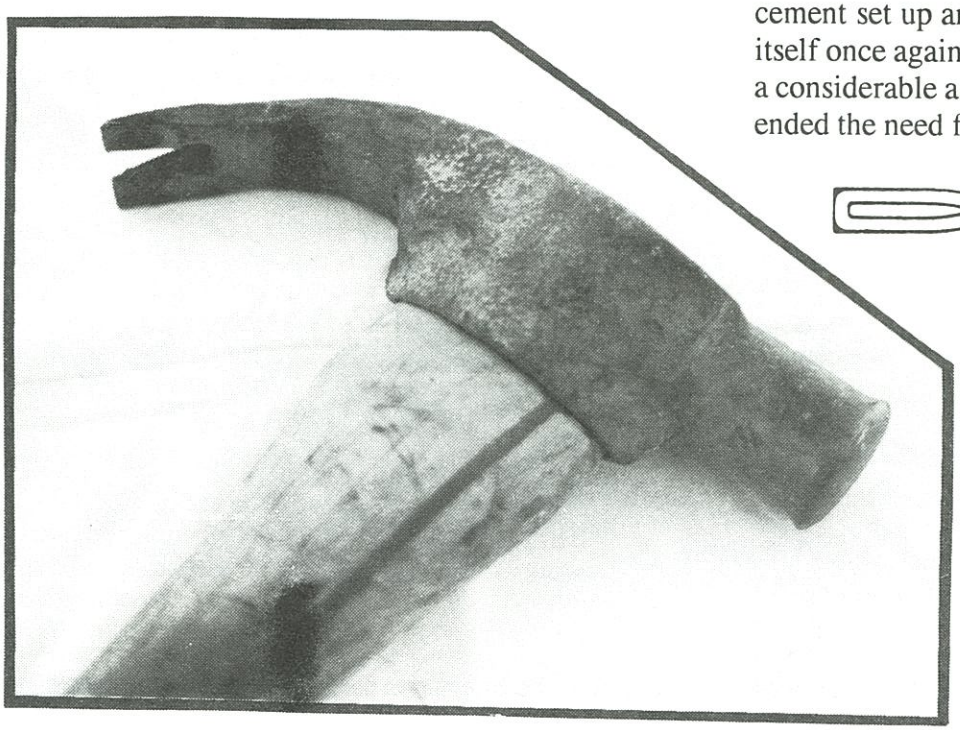
This very large claw hammer was used in the Homestake Mine at Lead, South Dakota, from 1936 until 1966. The hammer head was made at Homestake's very own foundry and it used a 36 inch axe handle.

In 1936 the sand backfill method was started at the Homestake Mine. This consisted of running the mill tailings through rubber lined pipes back into the stopes. The mill tailings, "a fine sand material," was used to support the walls and prevent ground movement. It also provided a work platform for the miners to work on when taking a ten foot slice of ore out of the back of the stope.

The miners faced one problem with the sand backfill method however. When the rock was blasted from the back, it would sink into the sand becoming diluted and lowering the ore grade (or value). This occurred particularly during the "slushing" operations. To solve this problem, it became necessary to construct a floor with two inch planks. This was no small feat by any means as some of the stopes reached 200+ feet in length and 40+ feet in width.

This floor provided a very good work platform to work on and to slush the rock to the ore bins. The miners mined away the back in ten foot lifts. Once the entire back was mined and the ore was removed, the plank floor had to be removed so that the stope could be backfilled again. This is where the Homestake claw hammer came in. It was used to remove the thousands of spikes in the floor and then used again to drive the spikes back in when replacing the floor for the next lift. (Thirteen lifts were taken between levels which were 150 feet apart.)

It was reported in 1966 that well over one million board feet of lumber was used each year for this process. The procedure was replaced in 1966 by adding cement to the sand backfill. Cement provided a smooth and hard surface for the miners to work on. After a few hours, the cement set up and the mining cycle could repeat itself once again. This procedure saved the mine a considerable amount of labor and materials and ended the need for the Homestake claw hammer.



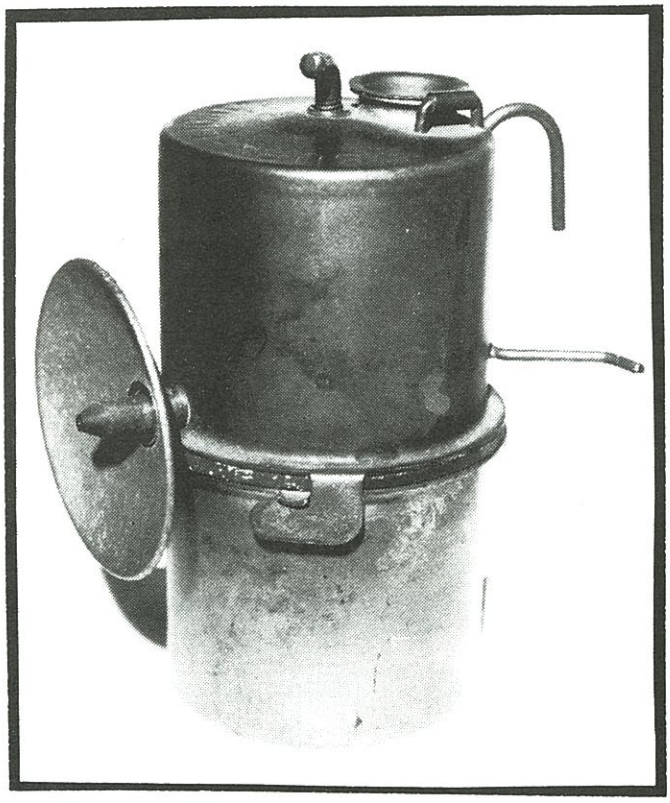
The head of a Homestake claw hammer that was made by the Homestake Mine in its foundry. (Chuck Tesch collection)

THE "SURE-LIGHT" CARBIDE CAP LAMP

by **Mark Bohannan**
Oro Grande, California

For many years, the inventor of the "Sure-Light" carbide lamp was unknown. Even if it was a U.S. manufactured lamp was of some question for many years. Then, while looking through a group of carbide lamp patents, I noticed one that I thought resembled the "Sure Light" lamp in some ways. The main feature that attracted my attention was the way that the lamp's top and bottom was locked together.

On December 6, 1911, Joseph Haskins of Catlin, Illinois, applied for a patent for a "certain new and useful Improvement in Generators. . ." with the patent being granted to Haskins on February 24, 1914.



A photograph of the "Sure-Light" carbide lamp. Note the water control valve and reflector with the brass insert and the locking device. (Dave DesMarais collection and photo)

There are many similarities between Haskins' patent and the "Sure-Light" carbide lamp. The main points are as follows:

In Haskins' patent, the water feed mechanism is a "shaft B^7 screw threaded in the sleeve B^6 terminates at one end in the thumb screw B^8 and at the other in the needle valve. . ."

In the "Sure-Light," the water control mechanism is also a needle valve, but it appears that the thumb screw has been eliminated as well as the complicated water and gas control device between the bottom of the needle valve and the water chamber.

On Haskins' patent, the gas discharge "pipe D^4 extends outwardly from the chamber D through the wall of the housing B, and is closed at the outer end by the cap D^5 having the burner hole D^6 through which the gas to be consumed escapes."

The burner tube on the "Sure-Light" is also basically a pipe that penetrates the lamp's wall and is soldered to the wall on the inside. The other end of the pipe is tapered with a small hole at the end for the gas to discharge. Also, note the length of the gas pipe in the patent as compared to the gas pipe on the "Sure-Light."

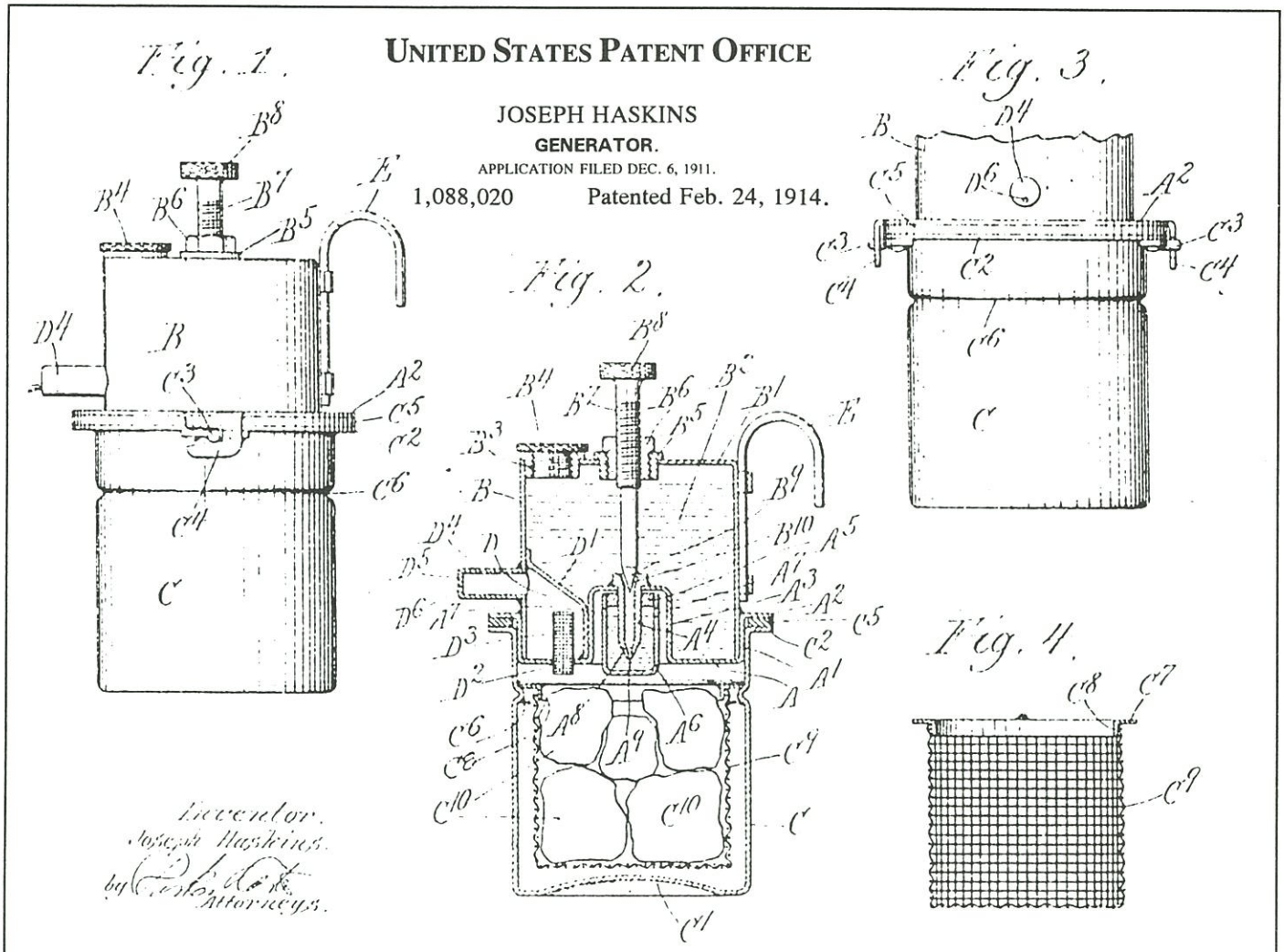
One of the two main features that is very similar between the "Sure-Light" and Haskins' patent is found in the carbide compartment. In Haskins' patent, the carbide chamber was provided with an "inwardly extending annular ridge or shoulder" located slightly below the top of the carbide chamber. A basket--shown in Figure 4 on the patent--with a collar rested on the ridge or shoulder. The patent states that: "The use of the basket within the pot forms a more convenient cleansing of it and permits freer circulation of the gas about the carbid. And,

moreover, since the basket and its contents are out of contact with the pot, there is less danger of heating of the pot and reservoir by the heat formed when the gas is generated. The use of a removable basket prevents the packing of the moistened and consumed carbid in the bottom of the reservoir, and thus permits convenient and effective cleansing of the generator chamber. Moreover, since the carbid mass is open at all points thereabout, it may more evenly be consumed, and will discharge its gas in a more even and regular manner than it otherwise would."

The basket, as shown in the patent , was probably quickly realized to be of a greater nuisance than a help. It was probably difficult to get out (it looks to me like you would have to turn the whole carbide chamber over into your hand to retrieve the basket!) and the holes of the basket would probably clog up fairly quickly.

It appears that in the "Sure-Light," this basket has been eliminated and replaced with a disc and tube device that rests on the bottom of the carbide chamber. The tube has four holes in it at the bottom for the discharge of water into the carbide. (The water feed pipe from the water reservoir extends down inside the tube.) Used carbide is removed by lifting the disc and tube device out of the carbide chamber.

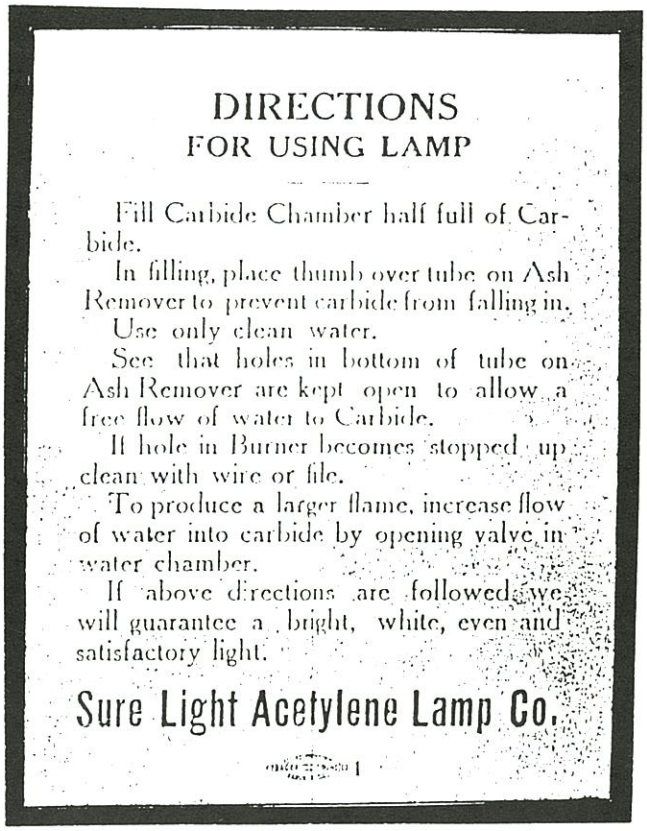
The main feature that caught my eye on Haskins' patent was the lamp's locking device. This locking device is described in the patent as follows: "The gas or generating pot or chamber C, provided with the closed bottom C^1 and the annular flange C^2 about the open top is in slidable engagement with the collar A^1 and is provided with the lug C^3 in opposition to the inclined holding hook C^4 projecting from the flange A^2. The packing C^5 is compressed between the flanges C^2 A^2 when the pot C is



The original patent drawings for Joseph Haskins' carbide lamp patented on February 24, 1914. Note the carbide basket in Figure 4 and the locking device shown in Figure 1 on the patent.

provided with the lug C^3 in opposition to the inclined holding hook C^4 projecting from the flange A^2. The packing C^5 is compressed between the flanges C^2 A^2 when the pot C is rotated to cause the lug C^3 to ride up on the inclined hook C^4." This is basically the exact same type of locking device used on the "Sure-Light." The "Sure-Light" is the only lamp that has this unique type of locking device (the Lu-mi-num carbide lamp uses a bayonet type of locking device) and the Haskins' patent is the only carbide lamp patent that I know of that features this type of locking device.

Although the patent does not show a reflector, most "Sure-Lights" have a tin reflector 1 $^7/_8$ inches in diameter with a brass insert as shown in the photograph. This does not mean that <u>all</u> "Sure-Light" carbide lamps were sold with a reflector. About fifteen years ago, Ted Bobrink bought an unfired "Sure-Light" in the box with instructions that was without a reflector. The lamp box was a plain cardboard box with no writing anywhere on the box.



DIRECTIONS
FOR USING LAMP

Fill Carbide Chamber half full of Carbide.

In filling, place thumb over tube on Ash Remover to prevent carbide from falling in.

Use only clean water.

See that holes in bottom of tube on Ash Remover are kept open to allow a free flow of water to Carbide.

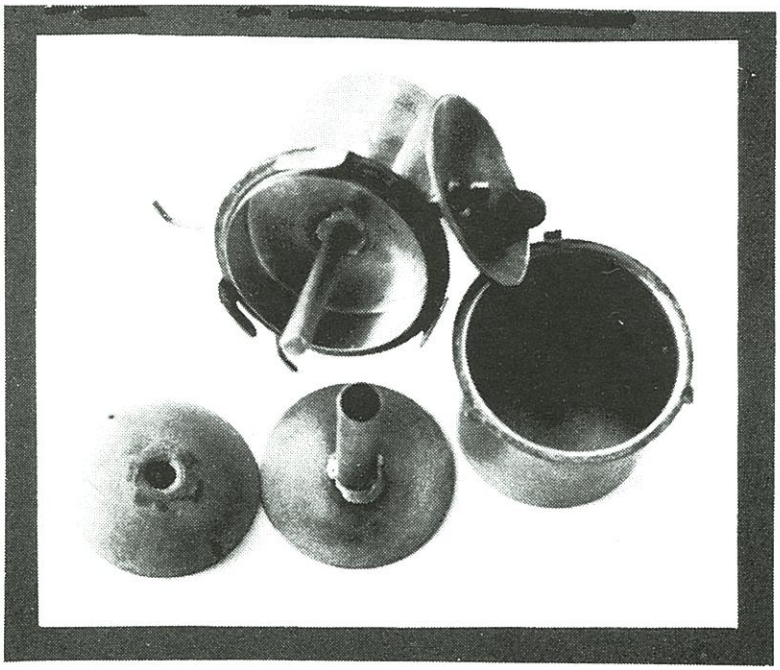
If hole in Burner becomes stopped up, clean with wire or file.

To produce a larger flame, increase flow of water into carbide by opening valve in water chamber.

If above directions are followed we will guarantee a bright, white, even and satisfactory light.

Sure Light Acetylene Lamp Co.

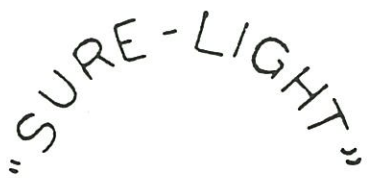
A copy of a direction sheet for the "Sure-Light" carbide lamp from the Sure Light Acetylene Lamp Company.



A photograph of the insides of the "Sure-Light" carbide lamp. The item at the left foreground is a hard, red rubber gasket that fits up into the bottom portion of the water reservoir to help keep carbide particles from entering the gas tube. The disc and tube device is shown in the middle foreground. (Mark Bohannan collection)

The "Sure-Light" carbide lamp is 3 $^5/_8$ inches tall (4 $^1/_4$ inches to the top of the water valve) and is 1 $^{15}/_{16}$ inches in diameter. Around the outer edge, on top of the water reservoir, the words "Sure - Light" in quotes is stamped with incuse letters.

There is almost nothing known at this time about the Sure Light Acetylene Lamp Company. All that is known from the company are the instruction sheets that came with the lamps.



The incused lettering found on the top of the "Sure - Light" carbide cap lamp.

ANOTHER GRAND-DADDY CANDLESTICK

by **Ted Bobrink**
Redlands, California

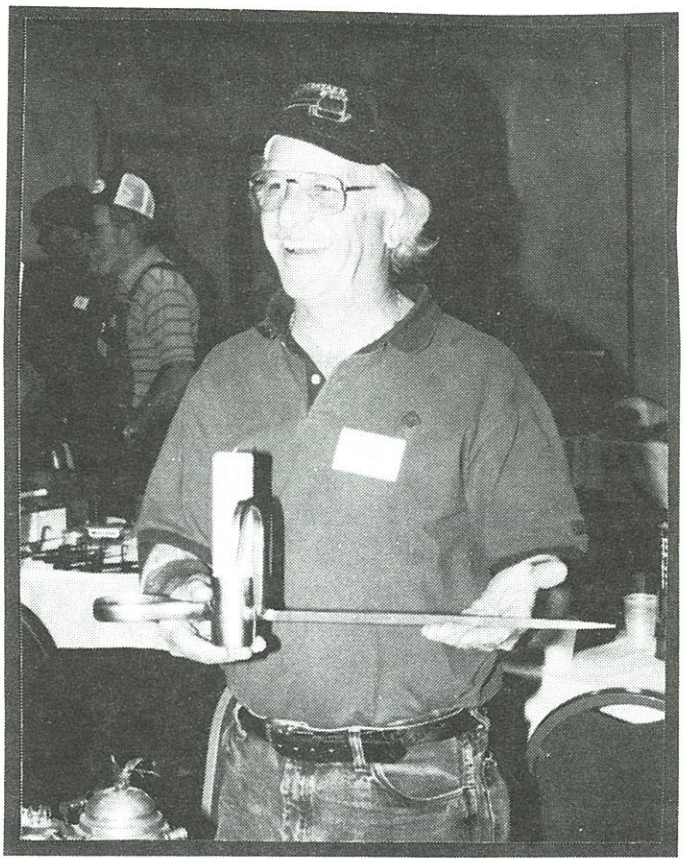


Figure 1. Roger Peterson holding his grand-daddy candlestick at the Black Hills Mining Collector's Meet.

Back in issue Number 17 Winter 1993, I wrote an article on a very unique large three thimbled candlestick that a friend of mine labeled the grand-daddy of them all. At the Northern Mining Artifact Collectors Meeting up in Lead, South Dakota, in May, Roger Peterson of Morrison, Colorado, had on his table the largest candlestick I have ever seen. As you can see by the photos, it could very well qualify also to be called a grand-daddy though to be fair to the first grand-daddy, this candlestick was obviously made for show or to be used as a prop for advertising--whereas my candlestick holds standard 3/4 inch mining size candles and was intended to be used.

Roger's stick is superbly made with all features done to exact scale and proportions. In Fig. 2, the candlestick is lying next to a full size 11 inch Varney that gives you a little better idea of it's enormous 23 inch size. The use of the split thimble follows the patented candlestick known as the Kindelan, though the thimble passes through the bottom like the early Comstock sticks such as number 95 in Wilson & Bobrink's *A Guide to Miners' Candlesticks*. The fact that the maker of this candlestick used the unique and difficult to make split thimble design leads me to believe that this giant may very well have been made by Kindelan or the maker of the Comstock version. After all, who would have the most to gain by making such a large version of a rare and unique candlestick?

Roger told me he picked this beauty up in an antique shop in Prescott, Arizona, and that he didn't buy it at first because he wasn't sure of it's age or authenticity. After giving it some thought, he decided to take a chance. I'm glad he did because I can tell you there is no doubt in my mind about its being authentic.

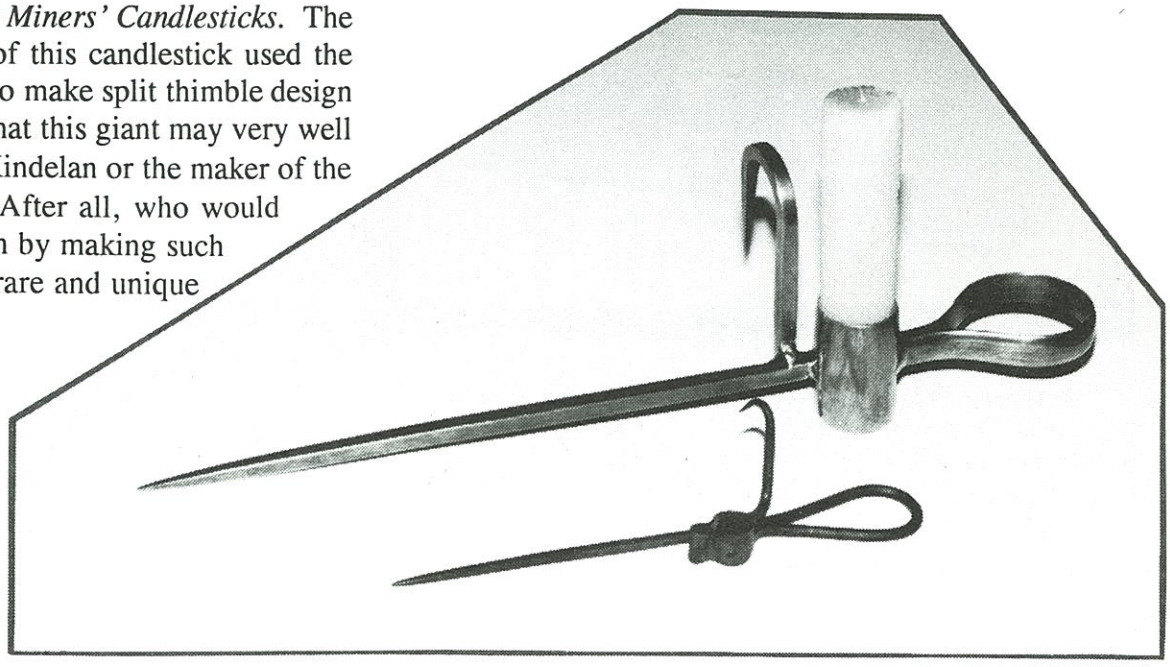


Figure 2. Roger Peterson's grand-daddy candlestick next to a Varney candlestick showing the difference in size.

ANEMOMETERS (AND AIRMETERS)

by **Tony Moon**
Sandy, Utah

Mine ventilation is of critical importance to the mining engineer. One measurement that is monitored on a routine basis is the quantity of air flowing at various locations within the mine. Anemometers and airmeters are the small, portable instruments that the engineer or fireboss would use to measure the air flow. Not all anemometers were used in mines, however, as they were used wherever ventilation was important such as in tunnels, sewers, and even large buildings.

Figure 1 shows three anemometers that are typical of those used in mines. This style of anemometer is known as a Biram anemometer and the most popular sizes were 3 inch, 4 inch, and 6 inch diameter. The instrument consists of a number of small vanes which are made up into a fan wheel which is fixed onto a central shaft which in turn drives a series of recording indicators through gears. All of those shown in Figure 1 have one large indicator dial and one smaller dial, but instruments with up to five smaller dials can be found. Most instruments that the author has examined are calibrated in feet and are set up such that 100 revolutions of the fan wheel is one revolution on the large indicator with smaller indicators in hundreds, thousands, hundred thousands, and millions of feet. Most instruments have a small lever or clutch which allows the recording indicators to be thrown in and out of gear with the fan wheel by the user. Some recent models even have a zero setting lever to reset all the indicators.

Figure 2 shows two anemometers, one of which is the style normally described in catalogs as an airmeter. The three pages reproduced from the 1909 Keuffel and Esser catalog show both types of anemometers and airmeters described previously. Also shown is a small 2 inch diameter pocket watch style anemometer and a self timing anemometer complete with stop watch. Anemometers with hourglass sand timers were also available as were models which read the air velocity directly (feet per minute instead of feet).

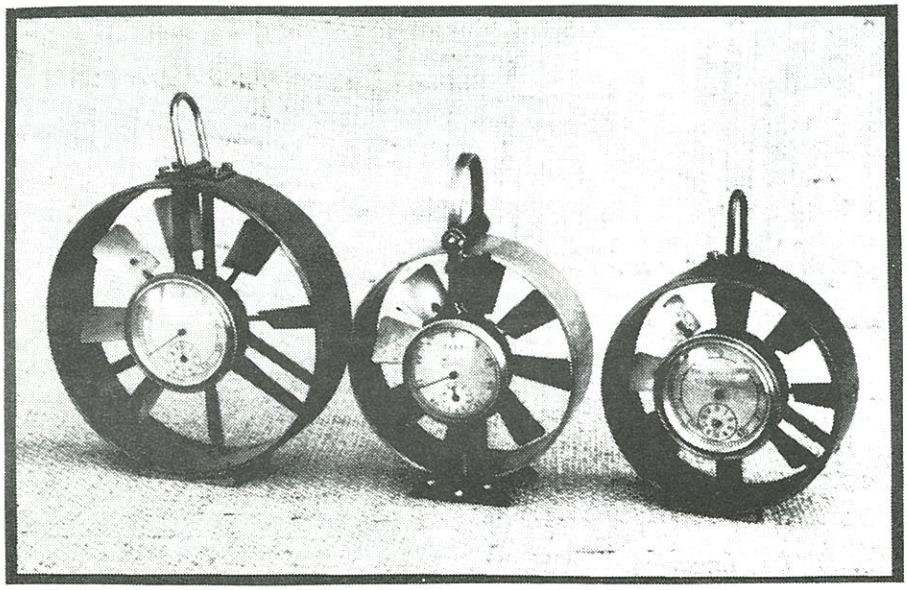


Figure 1. Left to right: 4 inch diameter anemometer by "The Everhart Brass Works, Scranton, PA," and two 3 inch units, one unmarked and the other by "The M. Cole Co., Columbus, O." This style of anemometer is known as a Biram anemometer and also came in a 6 inch diameter size. All of those anemometers have one large indicator dial and one smaller dial, but instruments with up to five smaller dials can be found. All from the author's collection)

To make a measurement with an anemometer, the instrument is held in the air current with the fan wheel at right angles to the air flow direction. The instrument is usually held a arms length or on an extension rod and is moved slowly over the area of the tunnel opening. The fan wheel is allowed to turn and the initial reading is taken with the clutch disengaged. The clutch is then engaged and the test period is started. At the end of a fixed period of time, usually one minute, the clutch is disengaged and the indicators are read. Several readings are generally taken and averaged. The average reading is then divided by the average test period to give the velocity in feet per minute. The volume of air (cubic feet per minute) moving can be calculated knowing the cross-sectional area of the tunnel.

Anemometers were made by several manufacturers, some of which are as follows;

-Davis & Son, London and Derby

-John Davis & Son (Derby Ltd)

-Davis Instrument Manufacturing Co., Baltimore (still being sold in the 1950's by Mine Safety Appliances)

-Keuffel and Esser Co., New York

-Negretti and Zambra, London

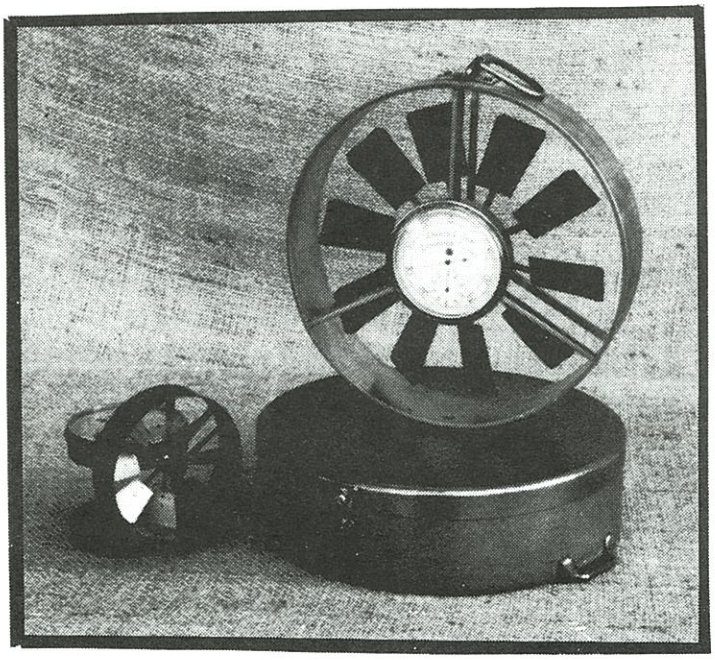


Figure 2. Small 2 $^{1}/_{2}$ inch diameter airmeter by "Davis & Son, Derby" and a 6 inch diameter anemometer with aluminum carrying case by "Davis & Son, London & Derby." (From the author's collection)

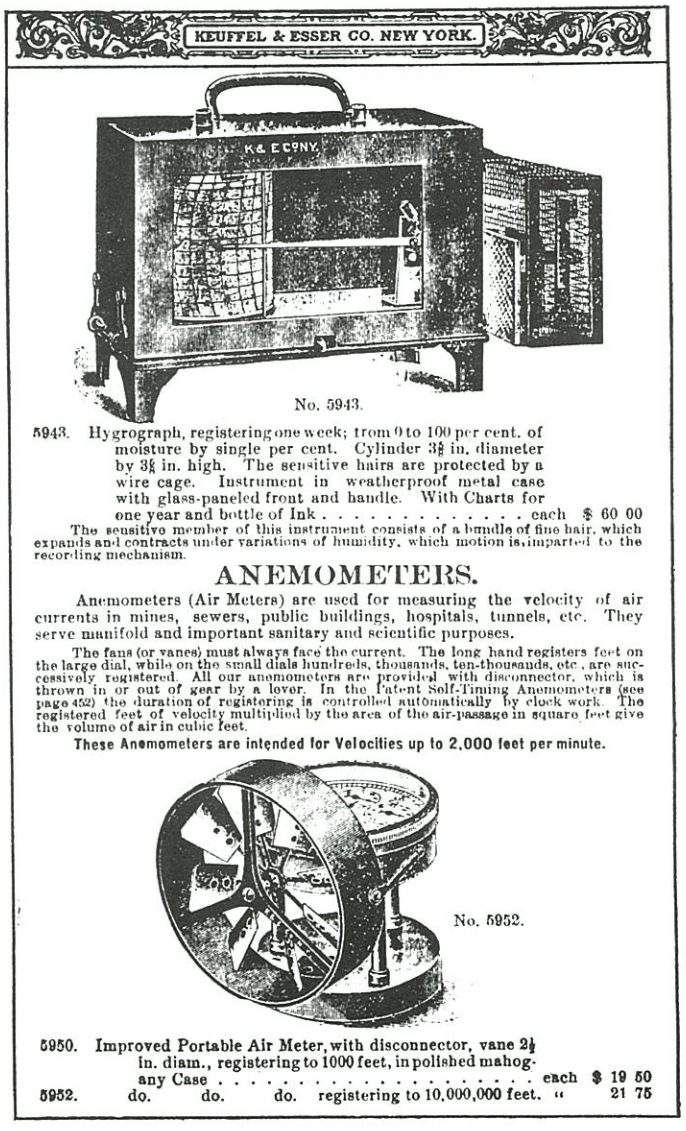
-Short and Mason Ltd, London (sold by Mine and Smelter Supply)

-Taylor, Rochester, NY (still being sold in the late 1950's by Mine Safety Appliances)

Most anemometers have a brass frame with a blackened, polished, or varnish finish, and lightweight aluminum vanes. However, aluminum frames are also known. Modern anemometers have a painted finish with black, grey, and green being popular.

In the next issue of the *MAC*--hygrometers and barometers--the other instruments of the ventilation engineer.

Figure 3. Three pages from a 1909 Keuffel and Esser catalog showing both types of anemometers and airmeters that are described in the text.



KEUFFEL & ESSER CO. NEW YORK.

No. 5943.

5943. Hygrograph, registering one week; from 0 to 100 per cent. of moisture by single per cent. Cylinder 3⅛ in. diameter by 3⅛ in. high. The sensitive hairs are protected by a wire cage. Instrument in weatherproof metal case with glass-paneled front and handle. With Charts for one year and bottle of Ink . . . . . each $ 60 00

The sensitive member of this instrument consists of a bundle of fine hair, which expands and contracts under variations of humidity, which motion is imparted to the recording mechanism.

ANEMOMETERS.

Anemometers (Air Meters) are used for measuring the velocity of air currents in mines, sewers, public buildings, hospitals, tunnels, etc. They serve manifold and important sanitary and scientific purposes.

The fans (or vanes) must always face the current. The long hand registers feet on the large dial, while on the small dials hundreds, thousands, ten-thousands, etc., are successively registered. All our anemometers are provided with disconnector, which is thrown in or out of gear by a lever. In the Patent Self-Timing Anemometers (see page 452) the duration of registering is controlled automatically by clock work. The registered feet of velocity multiplied by the area of the air-passage in square feet give the volume of air in cubic feet.

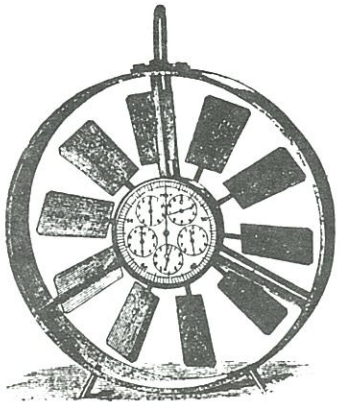
These Anemometers are intended for Velocities up to 2,000 feet per minute.

No. 5952.

5950. Improved Portable Air Meter, with disconnector, vane 2½ in. diam., registering to 1000 feet, in polished mahogany Case . . . . . each $ 19 50

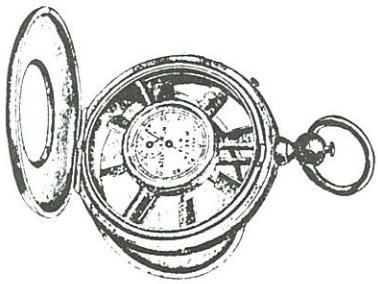
5952. do. do. do. registering to 10,000,000 feet. " 21 75

KEUFFEL & ESSER CO. NEW YORK.



No. 5965.

5953. Biram Anemometer, 3 in. diam., reading to 1000 feet, with disconnector, in polished Mahogany Case . each $ 18 50
5957. do. 4 in. diam., reading to 1000 feet, do. " 19 00
5958. do. 4 " " " " 100,000 " do. " 21 00
5963. do. 6 " " " " 1000 " do. " 21 00
5965. do. 6 " " " " 10,000,000 " do. " 30 00



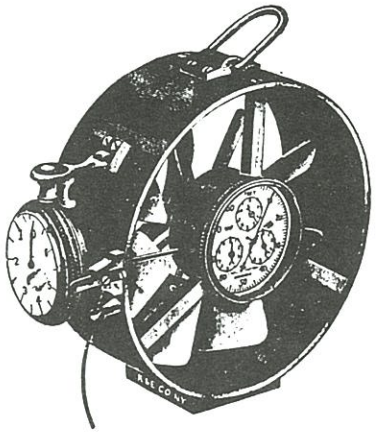
No 5968.

5968. Watch-pattern Anemometer, 2 in., registering to 1000 feet; nickel plated hunting case, with disconnector. The two covers, when open form a base for the instrument. In velvet lined morocco Case . . . . . each $ 30 00

KEUFFEL & ESSER CO. NEW YORK.

SELF-TIMING ANEMOMETERS.

(Patented.)



No. 5958 T.

5953T. Biram Anemometer, Self-timing, 3 in. diam., reading to 1000 feet, with disconnector, in polished mahogany Case . . . . . each $ 33 50
5957 T. do. 4 in. diam., reading to 1000 feet, do. " 34 00
5958 T. do. 4 " " " " 100,000 " do. " 36 00
5963 T. do. 6 " " " " 1000 " do. " 36 00
5965 T. do. 6 " " " " 10.000.000 " do. " 45 00

The self-timing anemometers are set to register by clock work, during a stated number of minutes up to six minutes (by half-minutes). After being placed in position they are started by means of a cord attached to the lever and they stop automatically when the set time has expired. They therefore register for a definite period of time, while in the old style of instruments the registering begins when the air current strikes the vanes and continues until the disconnecting lever is shifted by hand.

TESTING.

We have the best possible appliances for testing anemometers and furnish with each anemometer a table giving a number of comparisons. A much more complete table of this kind, covering the range of the instrument will be furnished to order. The price of such testing is according to the conditions of the test.

As we manufacture anemometers, we have the best facilities for repairing them, whether of our make or other

AN UNUSUAL OIL WICK LAMP

by **Tony Moon**
Sandy, Utah

The oil wick lamp shown in the accompanying illustration has one of the most unusual spout arrangements that the author has seen. The spout is almost vertical and essentially comes out of the side of the oil vessel. The lamp is tin and is 3 inches high at the lid and 3 $^{3}/_{4}$ inches high to the top of the spout. The only marking is "PAT. APRIL 16. 95" on the side. This is a valid patent date but the author has been unable to locate any patent relating to miner's lamps on this date. If any reader can help, it would be appreciated.

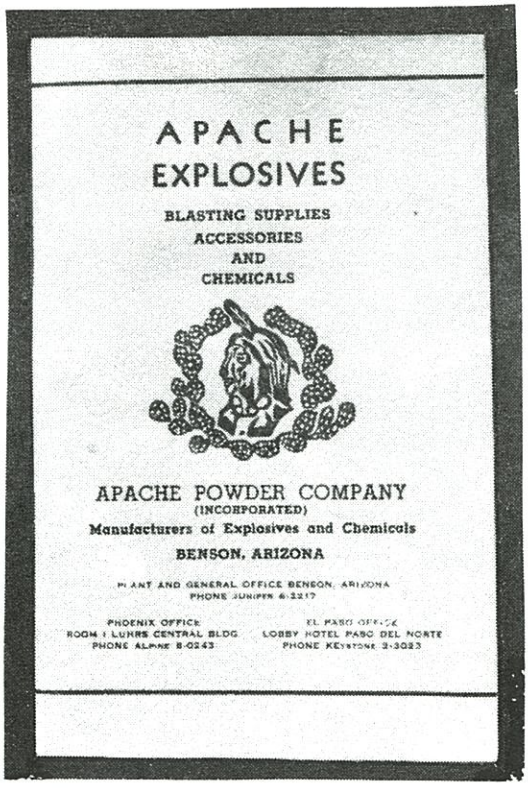
THE APACHE POWDER COMPANY

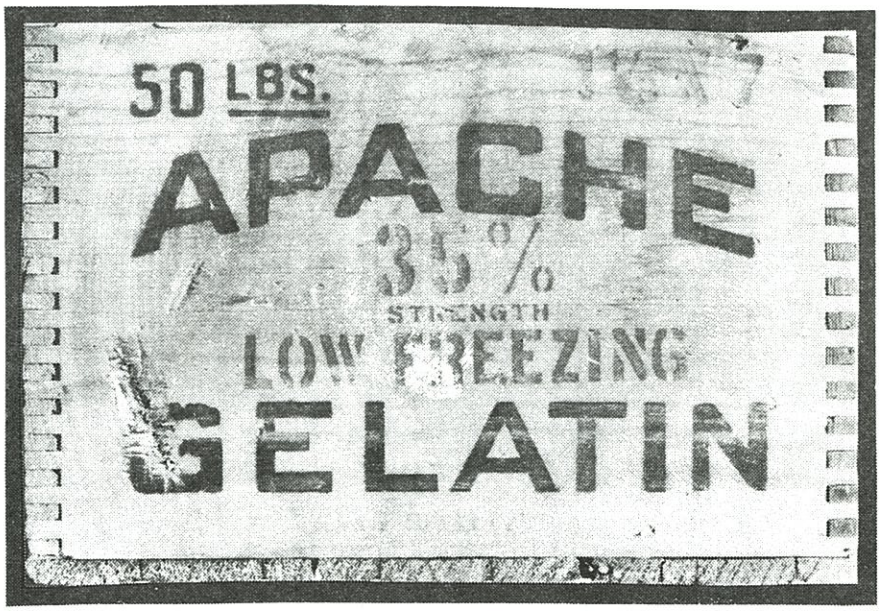
by **Steve Eady** Safford, Arizona
Bruce Johnson Tucson, Arizona
Mark Bohannan Oro Grande, California

The Apache Powder Company was promoted by Walter Wallace Edwards, formerly of the Aetna and General Explosives Companies. He interested Charles E. Mills, previously of the Anaconda Copper Company, and a group of copper mining companies known as the Phelps-Dodge interests in becoming partners. The location for the dynamite plant was selected near Bensen, Arizona, early in 1920, and the dynamite plant began manufacturing dynamite in 1921. Mills became the president, and Edwards became general manager of the company. The plant manufactured the usual grades of dynamite and had an annual capacity of about 18,000,000 pounds per year. Its principal trade was in the copper mines of southern Arizona and adjacent territory.[1]

The company originally shipped dynamite from a rail stop known as Curtis, Arizona. Boxes were marked with "Curtis, Arizona" until the mid 1930s when they were changed to read "Bensen, Arizona."

In 1956, the Apache Powder Company was listed as the largest producing single facility of explosives in the country. They produced 52,000,000 pound of dynamite per year as compared to American Pennsylvania, Atlas Missouri, and Atlas Giant explosive companies at 30,000,000 pounds per year each. Apache Powder Company products included eleven types of dynamite known as Nitroglycerine, Standard Dynamite, Special Dynamite, Blasting Gelatin 100%, Gelatin, Special Gelatin, Amogels, Quarry Dynamite, Ditching Dynamite, Special Stumping Dynamite, and Stumping Dynamite. They also produced one type of safety fuse with





Shown above is an early Apache powder box end. (Steve Eady collection)

Shown to the left is an Apache Powder Company catalog. The catalog is green with black lettering and is 7 by 4 $^{1}/_{2}$. (Ted Bobrink collection)

Shown to the left is the side of the Apache powder box shown at the bottom of this page and the previous page. (Steve Eady collection)

Shown below is packer's slip found inside Apache powder boxes. The packing slip is 3 inches high by 5 inches wide. (Mark Bohannan collection)

differing colors depending on the application. Although there are blasting caps with the Apache Powder label, they were produced by the California Cap Company.

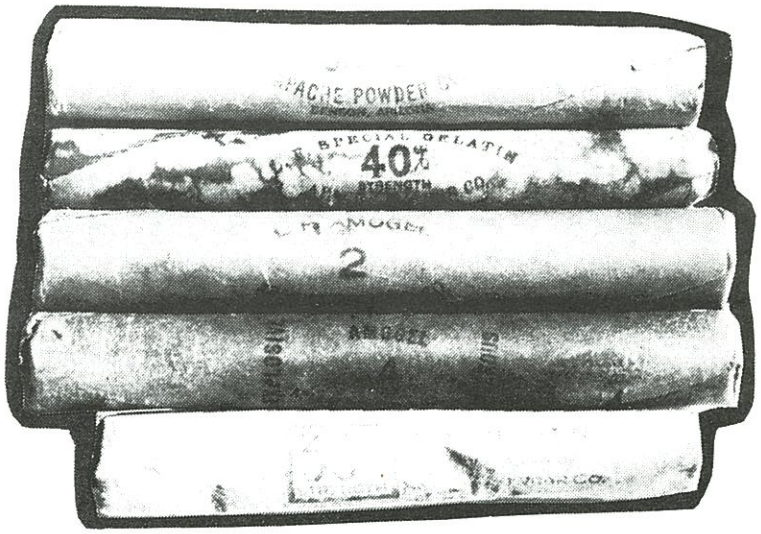
Today the company is owned by Southwest Energy of Tucson, Arizona, and is named Apache Nitrogen Products Inc. They no longer produce dynamite. This was stopped in May 1984. Their product today is ammonium nitrate which is an intermediate blasting product which, when mixed with diesel fuel, becomes an explosive known as "prill." The facility is still south of Bensen, Arizona, and occupies an isolated 1,000 acre area surrounded by low hills for protection.

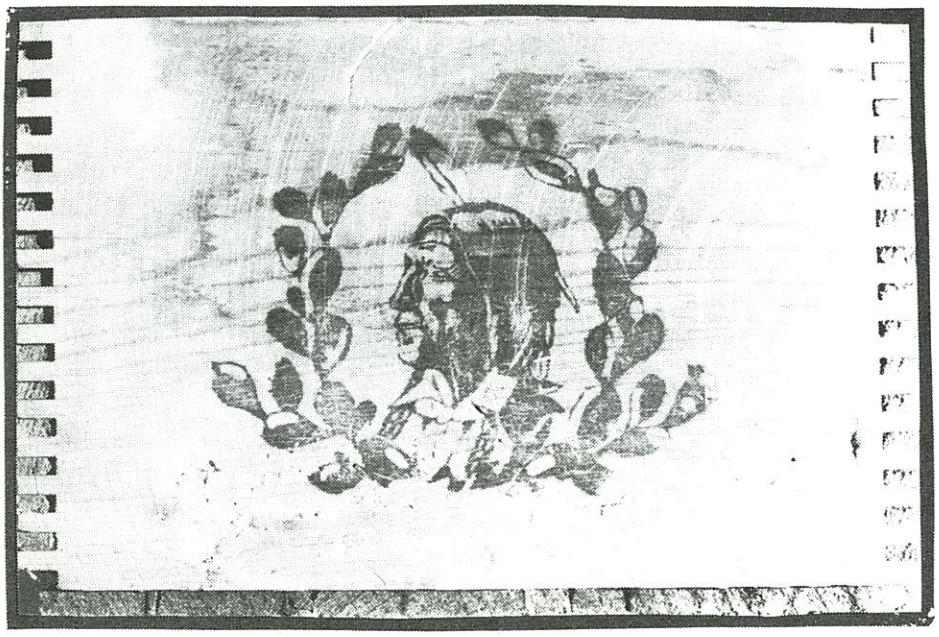
It was the practice of the company to produce calendars for many years. New catalogues were produced only when new products were introduced. Like all companies, they probably produced other give-aways, but no official record was kept of them.

APACHE POWDER COMPANY
CURTISS, ARIZONA

The contents of this case were carefully inspected before leaving this plant. Kindly return this slip if it is found necessary to register a complaint of any kind.

Packer No. .....





Shown above are examples of five different dynamite sticks from the Apache Powder Company. From top to bottom, they are: a shell for blasting powder or--more likely--for stemming material; a stick of 40% Low Freezing Special Gelatin dated Aug. 11, 1941; a stick of #2 Low Freezing Amogel dated July 10, 1944; a stick of # 4 Amogel dated Aug. 3, 1864. This is a misprint and should be 1964; a stick of 35% L. F. Gelatin dated Dec. 10, 1934. This stick is the type that would have come in the powder boxes shown in this article. (Mark Bohannan collection)

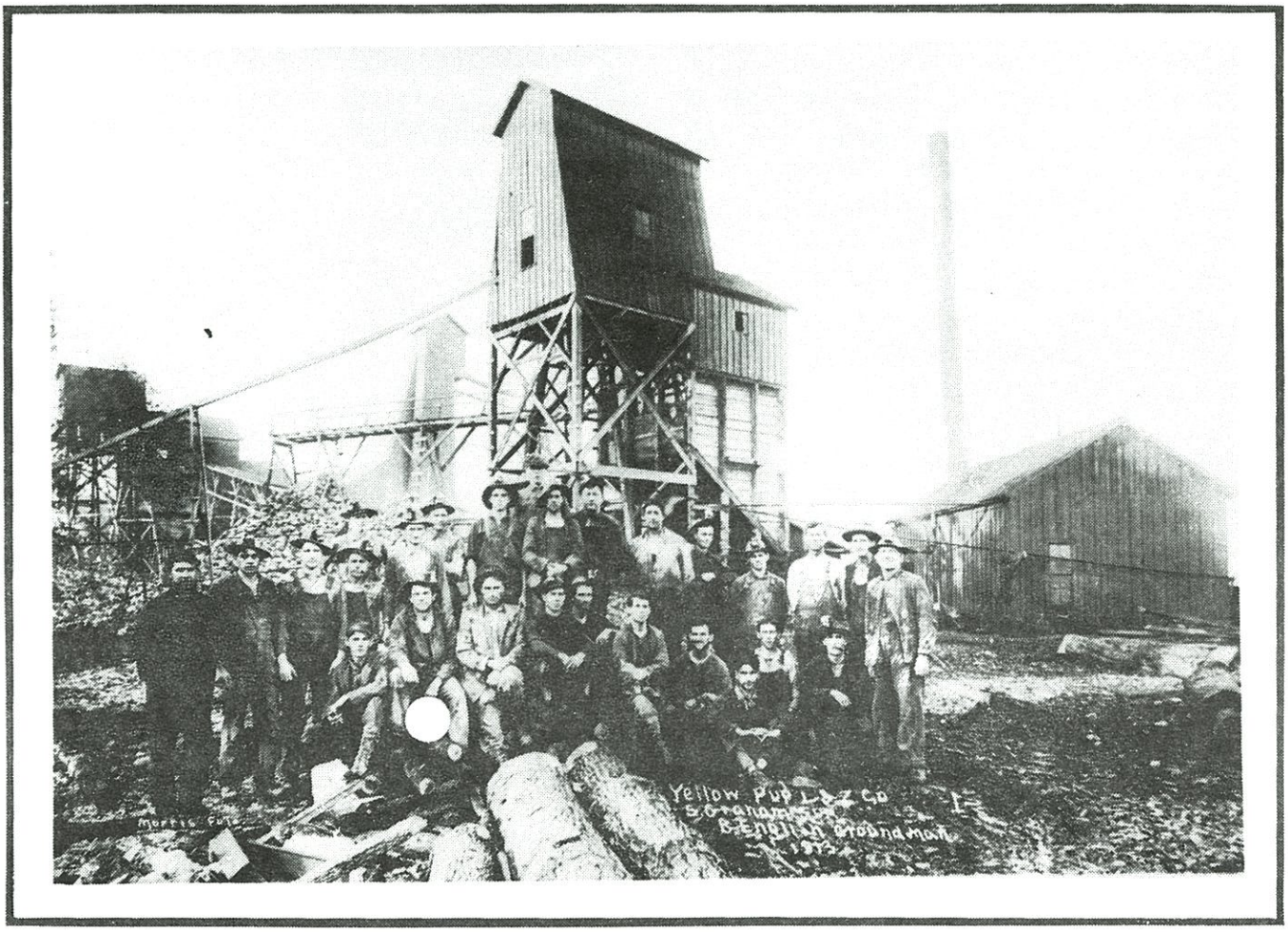
Shown to the left is the logo end of the Apache powder box shown at the bottom of the opposite page. (Steve Eady collection)

TRI-STATE TREASURES AND GREAT-GRANDFATHER

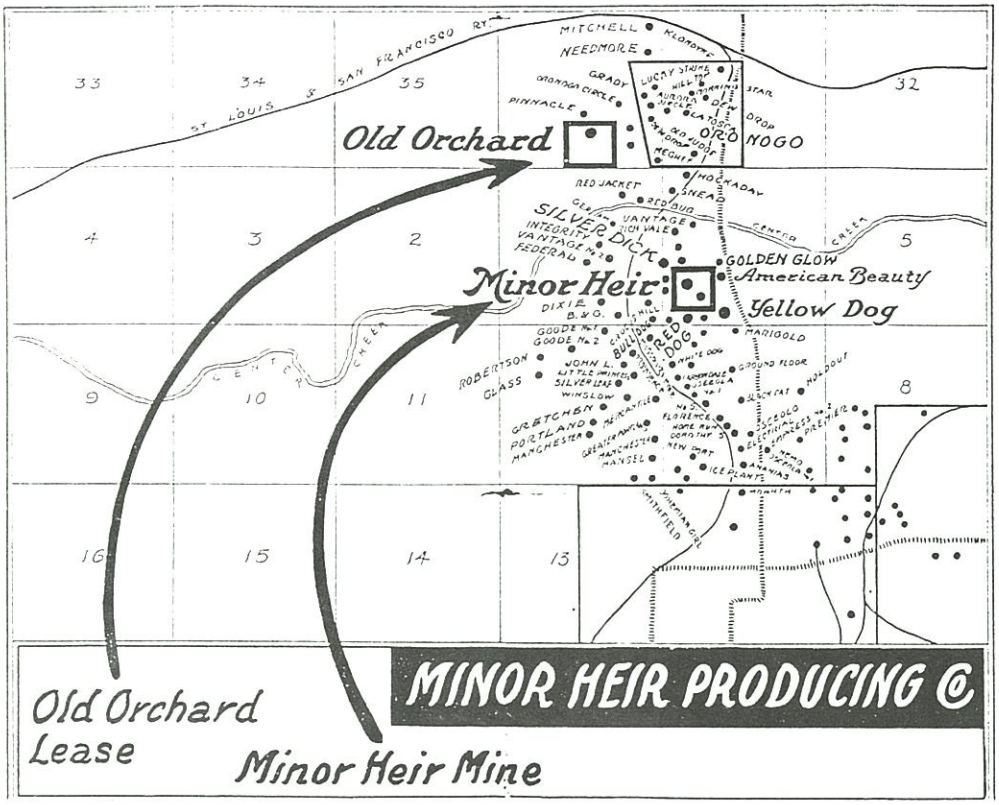
by **Deric English**
Boron, California

There are a myriad of reasons for collecting mining artifacts and we all experience some enjoyment from it or we wouldn't be doing it. Some collect for the friendships they form along the way, some do it for money, others collect items from favorite regions, and others collect to amass the most prestigious collection of a particular artifact. As for myself, I have found great enjoyment in collecting artifacts that pertain to the mining districts where my ancestors once worked.

Approximately five years ago, when my father passed down the family (mining) photographs, I became a mining artifact collector--the bug had bitten me. It seems that paper collectibles, photographs and letters, seem to endear themselves to the sentimental collector. I think we all have at least one item in our collection that money can't buy. Many times I have sat and pondered over these photographs; journeying into the past and experiencing a mining camp at the turn of the century.



Photograph of the Yellow Pup Lead and Zinc Company's mine. The writing in the foreground reads: "Yellow Pup L & Z Co., S. Graham, Sup., B. English, Ground Man, 1913." Bert English is the second man from the left in the front row (white dot).



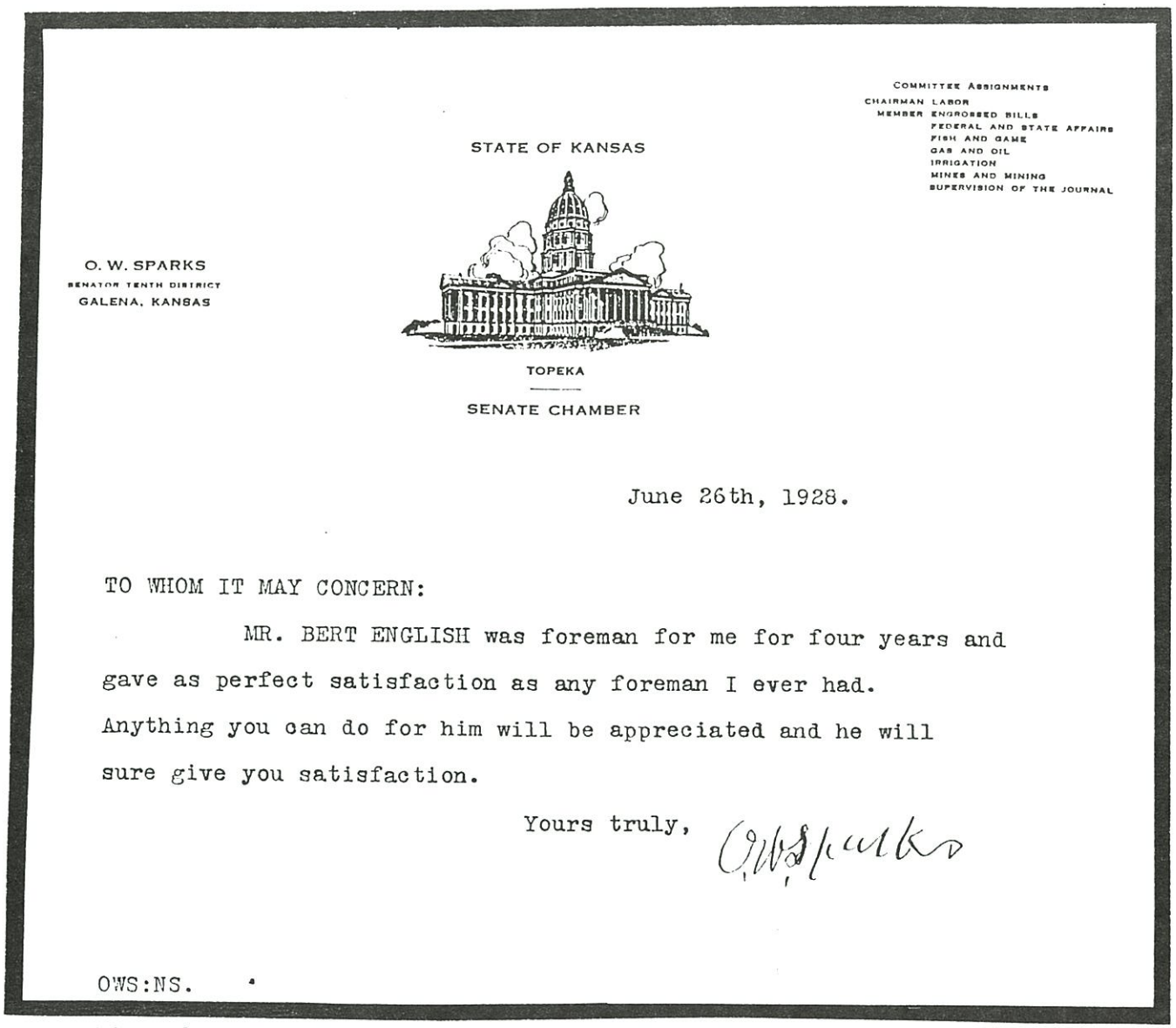
At left, a map from the Minor Heir Producing Company's prospectus. The Yellow Dog and Red Dog mines mark the general vicinity of "Dog Country." "Dog Country" was an area around Webb City, Missouri, just north of Joplin in the Tri-State District. The Tri-State District comprises parts of Missouri, Kansas and Oklahoma.

Shown below is a photocopy of O.W. (Ol) Sparks from the *Tri-State Tribune*, August 9, 1990.

Anthony Colbert (Bert) English, my great-grandfather, was a miner, timberman, and ground boss in the Tri-State lead and zinc mines of the Joplin district. From the late 1890s to the late 1920s, he worked in the Silver Dick, Gibson, Barnsdall, and the Yellow Pup. The Yellow Pup mine, located in "Dog Country," was similar in name with other mines in the area--the Bulldog, Red Dog, Yellow Dog, and the White Dog. "Dog Country" was an area around Webb City, Missouri, where the Underwriters Land Company had erected a mill and painted it yellow. Even though the company named it the Golden Rod Mill, the miners nicknamed it the "Yellow Dog" mill and because of that, the area was known as "dog Country."

Senator O.W. (Ol) Sparks was the developer of the Yellow Pup mine, where my great-grandfather worked for four years. Oliver W. (Ol) Sparks was born in 1863, came to the Galena, Kansas, mining field as a young man, and became a leading mine operator. He was active in the Democratic party, being mayor of Galena, Sheriff of Cherokee County, Kansas, and Kansas state representative. Despite his wealth and prominence, O.W. Sparks was a friend of the miner. During times of low grade

O.W. (Ol) Sparks



STATE OF KANSAS

COMMITTEE ASSIGNMENTS
CHAIRMAN LABOR
MEMBER ENGROSSED BILLS
FEDERAL AND STATE AFFAIRS
FISH AND GAME
GAS AND OIL
IRRIGATION
MINES AND MINING
SUPERVISION OF THE JOURNAL

O. W. SPARKS
SENATOR TENTH DISTRICT
GALENA, KANSAS

TOPEKA

SENATE CHAMBER

June 26th, 1928.

TO WHOM IT MAY CONCERN:

MR. BERT ENGLISH was foreman for me for four years and gave as perfect satisfaction as any foreman I ever had. Anything you can do for him will be appreciated and he will sure give you satisfaction.

Yours truly, O.W. Sparks

OWS:NS.

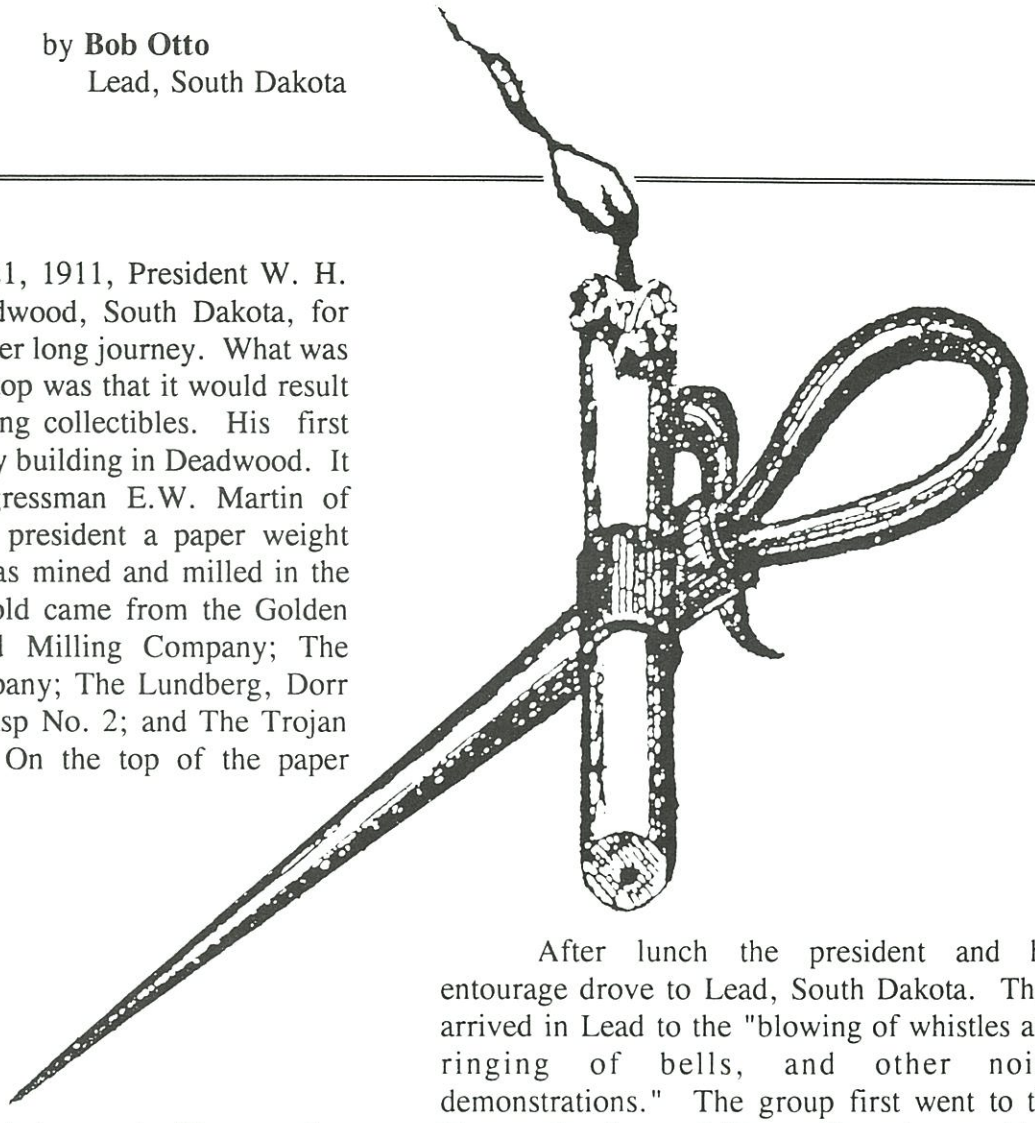
A letter of recommendation from O.W. Sparks, senator of the tenth district, to Bert English. This letter was drafted shortly before Mr. English relocated to the Coeur d'Alene district.

ore, O.W. would have to lay off workers, but not without going to the Galena merchants and telling them to extend credit to his men. He made good on those debts when paydirt was hit. He would put up capital to pump out wet mines, even when these mines were not the best producers, so that the men of the district would have work. O.W. Sparks died June 30, 1932 of a heart attack while inspecting a mine he was dewatering.

Four years before the death of O.W. Sparks, Bert English left the Tri-State for the Coeur d'Alenes and became an agent for the Hecla Mining Company of Burke, Idaho. Because of his familiarity with the Joplin district, he was called upon to recruit and transport strikebreakers from the Tri-State to the Coeur d'Alenes. I have always heard that finding strikebreakers in the Tri-State was not that difficult. In the November, 1901 issue of the *Miners' Magazine,* the official organ of the Western Federation of Miners, Joplin, Missouri, was called the "Scab Incubator." On April 2, 1907, the *Socialist News* of Carl Junction, Missouri, described Joplin as "that great scab market." Regardless of the ease of recruiting strikebreakers, my great-grandfather's participation in this aspect of mining was a real point of contention with his son (my grandfather), but I guess the Coeur d'Alenes and union busting is another story.

A "Golden Candlestick" For President Taft

by **Bob Otto**
Lead, South Dakota



On October 21, 1911, President W. H. Taft arrived in Deadwood, South Dakota, for another stop on another long journey. What was different about this stop was that it would result in some unique mining collectibles. His first stop was at the county building in Deadwood. It was here that Congressman E.W. Martin of Deadwood gave the president a paper weight made of gold that was mined and milled in the Black Hills. The gold came from the Golden Reward Mining and Milling Company; The Mogul Mining Company; The Lundberg, Dorr and Wilson; The Wasp No. 2; and The Trojan Mining Company. On the top of the paper weight were engraved the words, "Presented to William H. Taft, President of the United States, Deadwood, South Dakota, October twenty-first, nineteen hundred eleven." While the front and back were both engrave with the words "Black Hills." This little knickknack was made and engraved in Deadwood from fifteen ounces of gold and was worth $300 in 1911. After the usual round of speeches all the dignitaries went to the Franklin Hotel for lunch. Each guest received a gold stick pin with a miniature gold pan at the top, across which were laid a shovel and pick. The pin was attached to each persons place card.

After lunch the president and his entourage drove to Lead, South Dakota. They arrived in Lead to the "blowing of whistles and ringing of bells, and other noisy demonstrations." The group first went to the Homestake Assay Office. Here the president watched the pouring of the large gold bricks that were sent to the U.S. Mint in Denver each month. The president's entire group then went on to the Ellison Hoist directly above the old Assay office and descended into the mine on the double-deck cage. Mine-Foreman O'Brien led the tour to the 1100' Level where they visited the underground horse stables, the pump station and "other machinery." They then went to the Star Hoist where they were hoisted back to the surface. The following are some quotes from the Lead Daily Call newspaper where all the information for this article came from.

"When in the mine, the president, turning to one of the party accompanying him, remarked: 'I can see big buildings, battleships and armies when ever I want, but it is only once in a lifetime that a person has an opportunity to see such things as these,' pointing to the different workings through which the party was passing."

"It was a weary, sweaty, gasping president with soiled clothing and wilted collar that climbed into the cage with a acetylene miner's lamp in one hand and a chunk of gold-bearing quartz, picked up in the mine, in the other. Perspiration poured from his face as he stepped from the cage with a sigh of relief when it reached the surface, but he gasped: 'It was fine--a great sight."

The president went on to the steps of the Hearst Free Kindergarten where he was introduced by Lead Mayor Howard. The crowd was estimated to be close to fifteen thousand people. Then, in the words of the Lead Daily Call, "E.R. Rostinshear, a miner, on behalf of the men working in the mines, presented the President with the golden candlestick. The President expressed his gratification and pleasure on receiving the beautiful gift, and made a few remarks complimentary and approving of men who worked and delved in the depths of the earth."

According to the newspaper, the "golden candlestick" was manufactured from Homestake gold by Frank Thorpe, a Black Hills jeweler. "It is an exquisite piece of work and of regulation size." The illustration shown in this article is a copy of the illustration that the paper ran with a picture of President Taft. Is it an accurate picture of the gift or just a generic picture of a candleholder? Who knows? At present, there is no record that any of these gifts still exist. I don't know about you, but I wouldn't mind receiving any one of these items as a gift.

BLACK HILLS MINING COLLECTOR'S MEET

by **Brad Ross**
Gillette, Wyoming

I might be a little prejudice, but from all reports the first annual Black Hills Mining Collector's Meet (or convention) was a great success! This get together was a little--no--a lot different than most of the events that have taken place in the past. The focus of the Black Hills Meet was to have a chance for many collectors to gather to buy, sell, and trade and an opportunity for collectors to experience what mining is all about with tours of the Black Hills Mining Museum, surface and underground tours at one of the most famous gold mines in North America, and even a traditional miners lunch. More details of all of these as I go.

As with most get togethers, this one started out on Friday night with many of the collectors that came in early getting together to discuss latest finds and maybe a little trading and buying. People came from all over, even two other countries were represented (Seigbert Zecha and Karin Seelbach from Germany, as well as Udo Matern from Canada). Al Winters had a reception at his house for many of the collectors. Later that night a few of the collectors found their way to Deadwood (a mere three miles away) for dinner. I'm sure none of them had time to participate in the legal gaming after their meal.

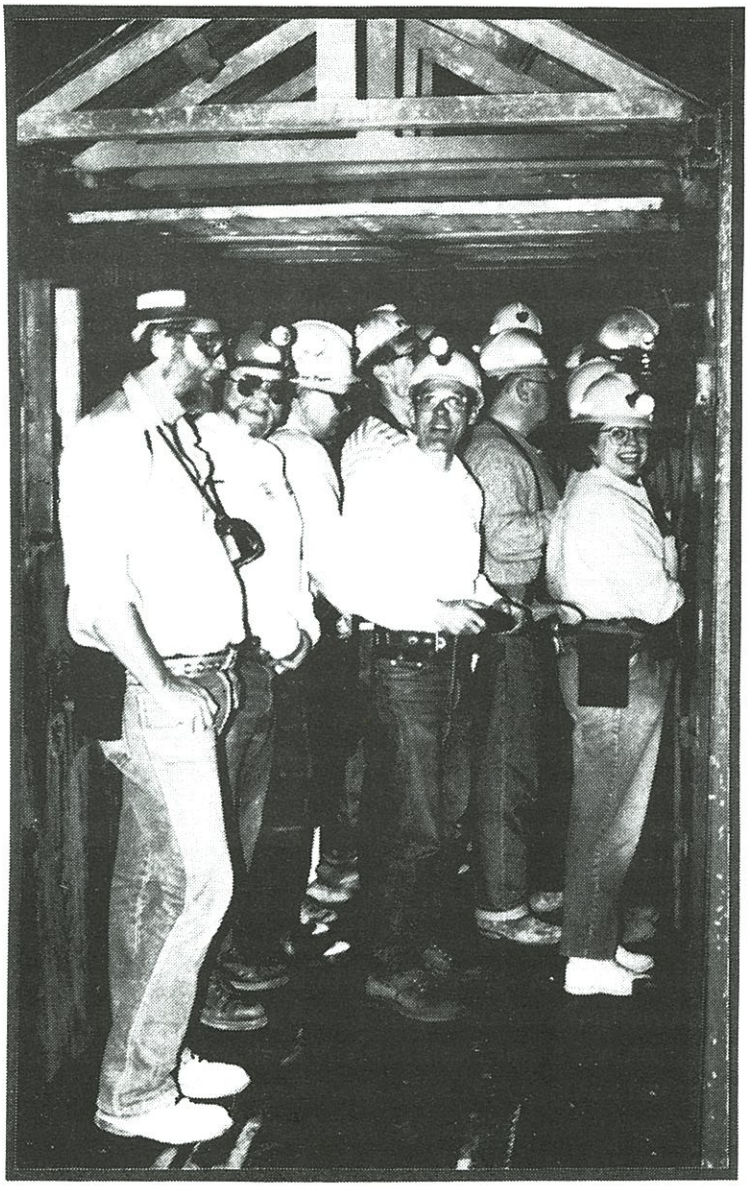
Saturday morning started out with a tour of the Black Hills Mining Museum. For those that have not been to this museum you need to make sure to put it on your must do list. Not only does it have a number of exhibits that include a blacksmith shop and assay office but it also has a guided underground mine exhibit that is very realistic.

After the Black Hills Mining Museum tour it was time for the surface tour of the Homestake Gold Mine. During this tour we were able to see the headframe of the Yates Shaft as well as the mill. The tour guides were very knowledgeable and the only scary part may have been the ride up the hill on the bus.

Lunch was served at the Golden Hills Resort before or in some cases while everyone was setting up their tables for the trade and sale. There were forty tables filled with all sorts of mining artifacts. There were far too many tables to describe them all, but a couple highlights include Paul Johnson's, after all how often do you have a chance to buy an Ever-Ready and a Duplex at the same time. Al Quaman had several good carbides including a couple of nice Elkhorns. Besides the items he brought for sale or trade Tony Moon brought some great candle sticks for everyone to be envious about. Roger Peterson also brought some neat candle sticks to trade. Of course Dave Gresko and Keith Williams brought their usual assortment of goodies.

After the trade and sale, over seventy collectors and friends met for dinner and an auction. The food was very good and the auction was even better. The highlight of the auction was a large amalgam scale from the Homestake Gold Mine. Chuck Tesch, long time Homestake employee was high bidder for the scale. Another highly contested item was a collection of 10 different cap tins put in the auction by Keith Williams. Bob Schroth was the winner of that bidding.

The most exciting part of the Lead show was an underground tour of the Homestake Gold Mine--the largest underground gold mine in North America. The morning started early with 50 artifact collectors meeting at the Golden Hills Resort at 5:45 A.M. to head for the Yates Shaft area for some safety training. Then it was off to the Ross Shaft for the trip underground. One of the many interesting parts of the tour was the "cage" trip down. I wonder if the guys that work at Homestake are used to that many wise crack remarks at one time? After a very quick trip, 3,500 ft straight down in less than three minutes, we found ourselves in the underground world of a gold mine. It had been over fourteen years since I was last underground at Homestake and I was amazed at how much it had changed. Both the mining methods and equipment had been modernized. Instead of old fashion



One of the most interesting parts of the underground tour was the cage trip down to the 3500 foot level of the Ross mine. About 35 people could fit on each deck of this double deck cage. This one is almost full with only a few more spaces available. Shown in the front from left to right are Mark Bohannan, Paul Johnson, Roger and Jane Becksted.

slushers, Homestake used mobile load-haul-dump machines to move the ore underground. During the tour everyone that wanted to had a chance to try a little mining themselves with a jackleg drill. It was fun to watch the different people try their hand at the jackleg. Most were pretty good (including both men and women) but nobody on the tour showed how it can be done like Dave Gresko. Some of his past employment in the copper mines of Arizona definitely showed through. Everyone had a chance to look for high-grade ore while underground. Although it is fairly uncommon to find high-grade gold at Homestake, our tour guides must have know where the good spots are--just ask Jane Becksted, Nick Theis or some of the other participants. Kind of made you feel like we should of brought along a highgrader's candlestick or two!

After we returned to the surface we were treated to a real Cornish Miner's meal--pastys. These pastries, filled with meat and potatoes, really hit the spot after exploring underground for a couple hours and working on the jackleg. During lunch there was a drawing for some door prizes. The luckiest people in the group must have been Harold and Ann Bailey since both of them won a prize. After lunch everyone started heading their own way. Hopefully many took the time to visit some of the Black Hills and other sites in the area. It's a great place to take a vacation.

Many thanks to the tour guides Al Winters, Chuck Tesch, and Keith Schillinger. The three of them represent a vast amount of experience and knowledge about Homestake and could answer any question that came up about the mine. Also thanks to the Homestake Gold Mine for allowing us to go underground and providing the surface tour free of charge (usually there is a charge for this tour). And special thanks to Kristi Schillinger for putting so much time into the organization of this event. With so much to do and see, even the spouses had a great time!

We are already thinking about next year. I don't know if we can top this year, but it might be fun trying. If you have any ideas that would help us, please let me know.

Shown below is a photo of the 50 collectors on the 3500' level of the North "G" Limb of the Ross Pillar where Jane Becksted, Nick Theis and Randy Marcotte found gold. On the opposite page is are photos of the activities meet.

THE "FLEMINGS SPECIAL" CARBIDE LAMP

by **Tony Moon**
Sandy, Utah

Some twenty two years ago the existence of an 8-hour carbide lamp labelled "Flemings Special" surfaced and three were offered for trade by Rich Finch[1]. Some ten years ago the author acquired the unfired example shown in Figure 1 which was in Chuck Young's collection. It is a well made galvanized steel lamp some 6 inches high to the water door with both superintendent handles, and a hook and bail. The lamp has a screw type brass water feed, a brass threaded water door complete with chain to prevent its loss, and brass threads on both the carbide chamber and water chamber. The reflector brace is also brass and the lamp has a 4 inch nickel plated reflector. The lamp is marked "Made in Germany" on top of the bail and there is a brass plate soldered to the side of the water chamber with the words "Flemings Special" as shown in figure 2.

The lamp remained a mystery until a few weeks ago when Mr. Ludwig Strah, a retired mining engineer from Canada, provided some additional information. The lamps were manufactured in Dresden, Germany, in the early 1920's for Mr. P. M. "Paddy" Fleming of Haileybury, Ontario, Canada, five miles north of the famous Cobalt Silver Camp. The two models were made to special order for sale throughout Northern Ontario and Northwestern Quebec thought the P.M. Fleming Engineering and Sales Ltd. The other model has a lever style water deed. "Paddy" Fleming was, in earlier years, superintendent of the Kerr Lake Mine in Cobalt, Ontario.

I have looked through my German reference books and have been unable to identify the manufacturer of a similar looking lamp. Maybe some of our German readers can help.

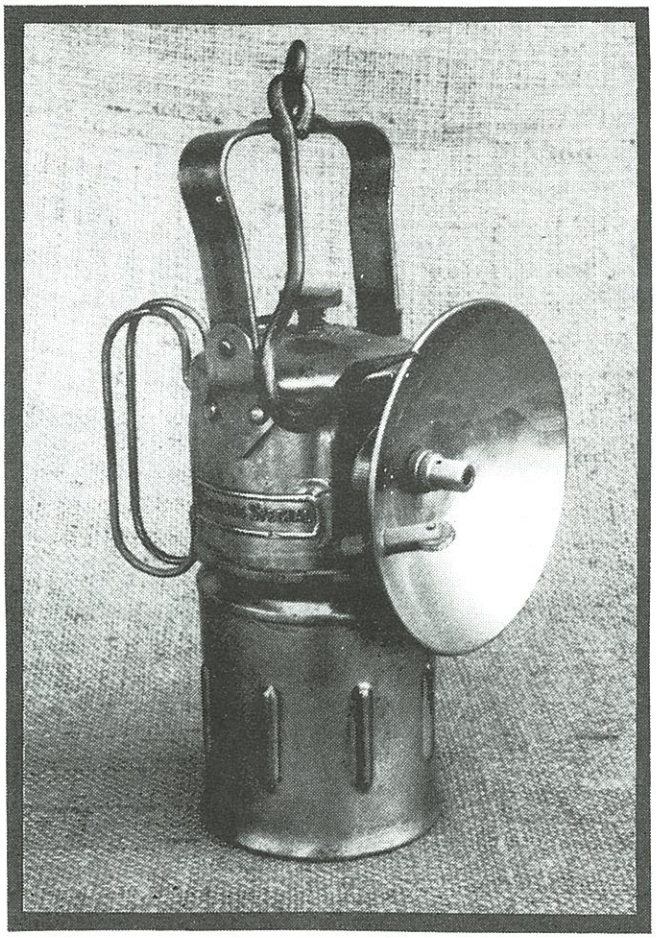


Figure 1. The "Flemings Special" 8-hour carbide lamp.

All too often the human side of the story behind the artifacts we collect is lost forever. In this case Mr. Strah knew the late Mr. Fleming and continues to be a close friend of his son Richard. In his letter to me Mr. Strah provided some details of "Paddy" Fleming's career as follows:

"'Paddy' was born in Cantley, Quebec, son of Irish immigrants to Canada (mid-1850's). He started his mining career as a miner at the Wright Mine: highgrade (Pb) Galena ore. The mine is located directly across Lake Temiskaming from Haileybury, Ontario. After a couple of seasons at the Wright Mine, and having gained some experience, he migrated to the Coeur d'Alene's in about 1897. He worked in the Kellog-Wallace area as a stope miner, shaftsman, raiseminer, until about 1905 when there was a mass migration of experienced miners to Cobalt from Coeur d'Alene, Tonopah, Comstock-Virginia City, and Butte. The surface outcrops and open cuts at Cobalt had been mined out between 1904-1906, and it was necessary to go underground.

"He started in Cobalt as a miner and believe it or not, was the secretary of the Western Federation of Miners in the Cobalt camp. His talents as a shaftman, etc., were recognized and he was made a shaft captain and then superintendent of the Kerr Lake Mine.

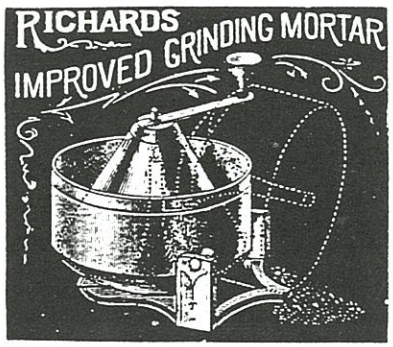
"He left the Kerr Lake Mine and went into business in Haileybury. He entered into the mining equipment field, built a shop and represented numerous companies - Shell Oil, Michelin, Goodyear V-Belts, Hose, etc. With the opening of the Kirkland Lake, Timmins, Noranda, Val d'Or Camps, he prospered. Simultaneously with his brother, they owned the Vendome Hotel in Haileybury.

"'Paddy' sold his Shell Oil distributorship throughout northern Ontario and northwestern Quebec to BP when they first got into the Canadian market in the late 1950's. His son kept the BP bulk distribution business into the mid 1970's.

"All in all, 'Paddy' was a very interesting individual and a true product of another mining era. If my memory serves me right, I believe he passed at a ripe old age in 1963."

1. Pohs, Henry, *Underground Lamp Post*, Vol I, No. 8, Spring 1972.

Figure 2. The name-plate tag of the "Flemings Special" that is soldered to the side of the lamp.



ASSAYING

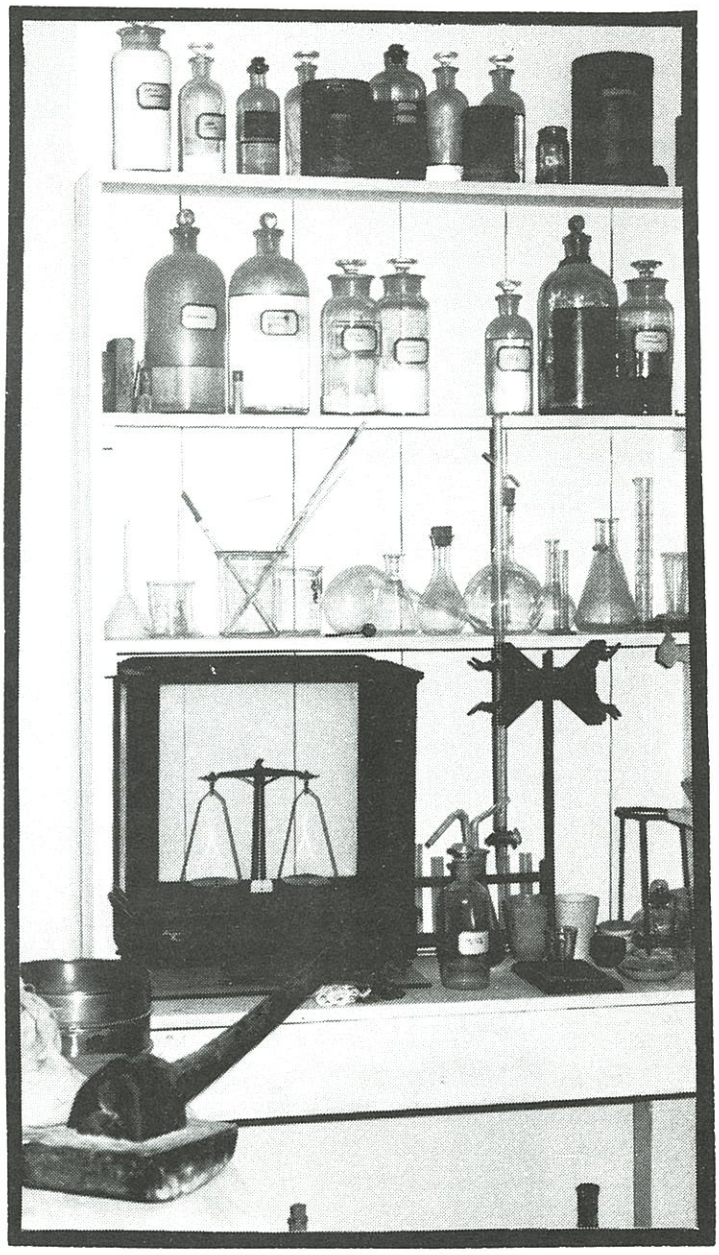
by **Jim Steinberg**
Pasadena, California

In Webster's dictionary assay is defined as follows: 1. in metallurgy, the determination of the quantity of any particular metal in an ore or alloy; especially, the determination of the quantity of gold or silver in coin or bullion.

While the most common definitions of the word assay do revolve around the determination of gold or silver in ore or alloys, assay is itself a much broader subject which involves the quantitative analysis of chemical substances both organic and inorganic. The primary interest of this article (likely quite obviously) is the assay of metalliferous ores. Because even this is a broad subject which has filled a large number of full-size books, I am here going to explore some of the highlights of fire assay by the scorification process in more ordinary gold bearing ores.

The miner must collect some of the ore in question from his prospect or mine. This is submitted to the assayer, often in an ore bag. The bags for ore assay vary somewhat and while they are occasionally made of paper, most ore bags found in collections are made of cloth or canvass and have the name of the assayer marked on them. Some ore bags have tags on them which make it much easier to keep track of the information specific to the ore being tested. Such as: the mine it is from, what part of the ore body it was removed from and when it was taken. This is especially important to larger mining operations which may constantly be taking samples of ore for assay. Once the ore has been submitted to the assayer for analysis, the actual steps of the assay may begin.

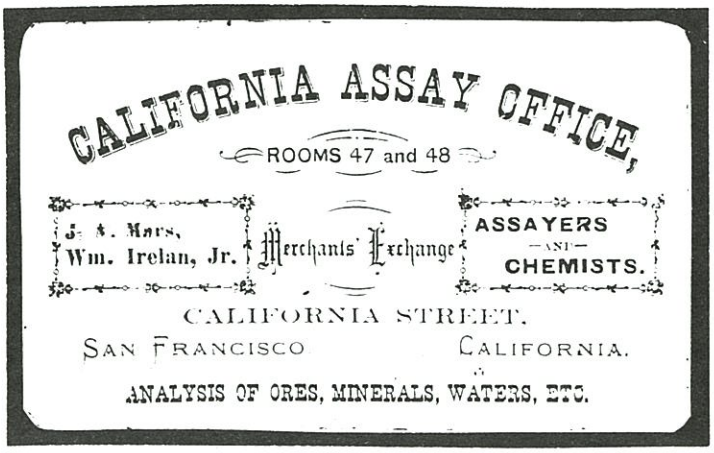
It is appropriate to interject here that in some mining areas the number of persons



A photograph of assay equipment and chemicals typically found in an assay office. Items include an analytical scale, a mullar, classifying screens, chemicals and glassware.

engaging in the assay business appears to be quite large. Just check the advertisements in older newspapers in mining towns, and you will see how many there often were. The situation is often a result of a successful mine having high grade ore with visible gold it. The key word here is "high grade." Many collectors are familiar with the practice of high grading among miners, and have seen some of the deviously clever miners' candleholders designed to assist them in this practice. Well, it is quite one thing to collect gold out of the seam in the mine and hide it with mud or wax in the handle of your candleholder, but once on the surface, you must now convert your ill gotten gold into cash. Here is where the overabundance of assayers in mining towns becomes clear. In complicity with the high grading miners, the assayers would buy the high grade from them and refine it in their shops. Of course it was all "legal" because miners bringing in high grade claimed to be prospecting on the side, so this was ore from their own small claims. Needless to say, the mine operators were quite aware of high grading and the collusion of assayers in it, and this created plenty of friction.

Initially, the ore sample must be reduced to a powder so that it can be sampled and tested. This powder is often called "pulp" and in some catalogs, the scales to weigh it are called "pulp scales." The assayer would start by running the ore through a crusher or simply smashing it with a sledge hammer. With many crushers, the fineness of the output was adjustable. The ore was still not sufficiently fine after initial crushing, so the assayer would then put it onto a "buck board" for further pulverization under the muller which rubs the material into a finer state with a sliding motion. Harder ores are made finer sometimes using a device called a "rocker" which uses a heavier weight upon the ore being pulverized. Assayers doing a smaller volume of work might use an iron mortar and pestle, although it requires considerably more effort.



This is the business card of an assayer

As the pulverization of the ore sample proceeds, the assayer mixes and then divides the sample into smaller and smaller quantities until he has reduced the amount of the sample to the size which he will actually process. This can be done manually or by using devices designed to assist in the sampling process. This is done to assure a uniformity within the sample and to increase the accuracy of the assay to be performed.

When the sample has been sufficiently pulverized, it must be run through sieves of the appropriate size. That material which does not pass through must be further ground until the entire sample will pass through the sieve. What has then passed through the sieves must be carefully mixed and then stored in a marked container. The contents of these containers should not be shaken or agitated as this can cause the materials to begin stratifying according to their masses and upset the accuracy of the process.

From various parts of the container, selected portions of the sample are taken and weighed. This step in the process uses scales that, while they must be accurate, are not anything more than analytical scales which could have been used to weigh anything in a laboratory. Many scales found marked "gold scales" at antique shows and flea markets are of this type. The most particular characteristic of these scales is that their pans (the place where items are actually weighed) are usually 1 $^1/_2$ inches or more in diameter. They are not specifically "gold scales."

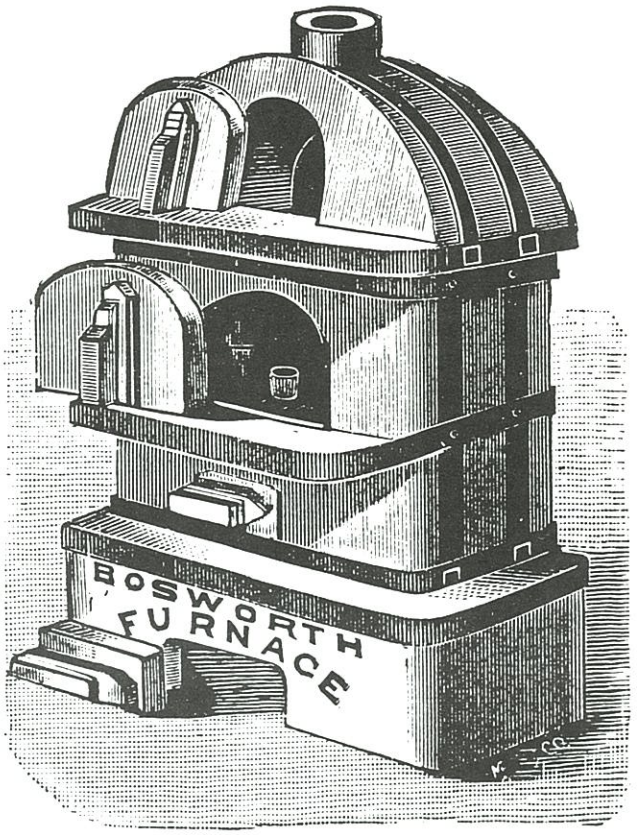
The weighed sample is then placed in a scorifier which is a dish that can sustain the heat of the assayers oven. Along with the sample are included litharge (a form of lead) and various chemicals which will assist in allowing the metals in the sample to separate from the slag.

This is roasted in the assayer's oven until the melted slag completely covers the lead bead that forms in the scorifier.

The sample in the scorifier is next poured into the cup of the scorification mould. Here it is allowed to remain until it is stone cold. Once cold, the sample is removed from the mould. It is cone shaped with the metal at the apex of the cone and the slag forming the bottom. The metal part or lead button is detached from the slag. This button may then be hammered into a cube shape with no sharp corners.

The "button" is placed into a cupel of appropriate size. Cupels are comprised of a material called bone ash. While cupels were available from supply houses, some assayers made their own. This cupel is placed into the assayer's furnace. When it has come up to heat, the button is place in the cupel. In this process, lead and other impurities within the button are both oxidized and driven into the material of the cupel itself. A good cupel is capable of absorbing its own weight in litharge (the lead in the sample). Collectors may note that used cupels are sometimes quite heavy for their size. That is due to the lead that they have absorbed. The metal in the cupel melts and will be observed to become smaller as the process proceeds. Towards the end of the process, the surface tension of the metal will draw it into the shape of a bead, it will appear to be in rapid motion and at the moment the process is complete, an optical energy release will sometimes be visible as a "flash" or "blick." At this point, the cupelation is complete and the cupel with its bead may be removed from the oven.

Now the bead is removed from the cupel. The composition of the bead should now be gold and silver. The bead is weighed in a type of scale made specifically for this task in mineral assay. It is called a button scale, and may truly be considered to be a gold scale. The most obvious characteristic of a button scale is that while the entire scale is as large as an analytical scale, it has remarkably tiny pans (the place where the button is weighed). These pans are less than an inch in diameter, and always concaved. There is a reason for this. The item



An example of an assayer's oven.

being weighed is small, in fact, the "button" is sometimes so small that it is difficult to see. Button scales, because they are measuring something so small, must also be very accurate and are thus always enclosed, while analytical or pulp scales do not always require enclosure. Weighing the bead has shown how much metal is there, but has not told how much is gold and how much is silver.

The next step of assaying is called "parting." In this step, the gold and silver are separated from each other by solution. The weighed bead is flattened, placed in a porcelain capsule and treated with a solution of water and nitric acid. Once reaction begins, the capsule is warmed. Silver in the bead forms a solution of silver nitrate which is carefully washed away until only the gold, if any, remains. This is gently dried in the porcelain capsule and then removed.

The final sample of gold is again weighed in the button balance, unless it is too small to be weighed, in which case it is simply described as

a "trace" or "color." From the weight of this bead the assayer will then calculate the gold and silver ore value per ton of ore. The assayer may use a special set of assay ton weights when weighing the gold to more easily calculate the assay value of the ore.

The realm of collectible artifacts in the field of assaying can become quite large. The one thing to watch for in these types of items is their vintage or age. Assaying is a process that is still being done for mining, and assaying supplies are still available new. Among some of the marked artifacts, gold and silver moulds with such names on them as Taylor, Denver Fire Clay Company, The Braun Company (still in existence) are especially desirable.

Among scales, while antique dealers tend to call all scales "gold scales," the only true gold scales--and therefore the most desirable--are the button balances with the tiny pans. The next most interesting scale, but not always certain to have been used in assaying, are the analytical balances used for weighing the "pulp."

Cupels and crucibles, while neither expensive nor terribly valuable, make any display on mining more interesting. Crucibles are seen most often in the round design, but the triangular style can be found also. Cupels come in a variety of sizes, and I like to have some that are used and some that are not in my displays. Speaking of cupels, don't forget the iron cupel trays. Most have a number inside each depression to keep the cupels organized. The trays are easier to find than the handles, which clip onto them. With respect to crucibles, special tongs just for grasping crucibles are not terribly hard to find.

The variety of scorification moulds to be found seems at times to be endless. Just about the time I think that I've seen all the designs that there are, I see another different design. Some have wooden handles, but on others, the handle is just another molded part of a one piece iron body. One thing that is certain however, if it is a scorification mould, the cavities of the moulds are all the shape of inverted, sharply pointed pyramids.

Mullars of any type are not seen often and should be seriously examined when found. The most likely small crushing device which you will see is the rotary muller, which is usually cranked around and around with a handle to pulverize the ore. The buck board type muller, which uses an axe handle, is found less often. Also seen fairly rarely are the small ball mill and jaw type crushers.

Iron mortars and pestles come in a wide variety of sizes. The smallest that I have seen would drop into a shirt pocket and usually are from portable assay kits. The largest mortars that I have seen are heavy enough to present awkwardness in lifting with pestles like small, but heavy, iron clubs that can exceed seventeen inches in length.

Retorts are an occasionally seen device that was used by assayers--and also miners--to separate mercury from gold to recover the (expensive even in those days) mercury. It can be thought of as a mercury distillation apparatus. The mercury/gold amalgam is heated until the mercury vaporizes and escapes through the tube. From the tube the mercury is cooled, condensed and collected for future use. Only the metal gold remains in the retort. I have seen retorts that would just about fit into a shirt pocket--obviously for portable assay or refining kits--and also retorts of much larger sizes weighing fifteen pounds or more.

While many chemicals are used by the assayer, one of the few used just in assaying is litharge. Litharge is a lead compound and thus very heavy (having a high specific gravity). In my own collection I have a bag that, while not being physically very large, is marked as containing 50 pounds of litharge. The litharge box in my collection is larger than the bag, but for its size is very heavy--even when empty. It is heavily reinforced so that it would not break apart during shipment.

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U.S. Bureau Of Mines' Safety Lamp Collection, Pittsburgh Research Center

by **Hank Edenborn**
Pittsburgh, Pennsylvania

The Pittsburgh Research Center of the U.S. Bureau of Mines (USBM) is located on 250 acres in Allegheny County, Pennsylvania, about 13 miles south of Pittsburgh. The land was purchased in 1910, the year the Bureau was created, to allow large-scale underground research to be carried out in a coal mine located on the property and to provide the mining industry with safer coal mine explosives. In 1979, the USBM research activities in the Pittsburgh area were centralized on the site. The original Experimental Mine (now on the National Register of Historic Places) is still in use, as is the Safety Research Coal Mine, where new mining equipment and procedures are evaluated before transferring them to industry. Other unique research facilities on the site include the Mining Equipment Test Facility (METF), which includes the mine roof simulator, capable of exerting three million pounds of force for load tests of various roof supports. Research is also conducted at the Wire Rope Research Facility to improve safety in the hoisting of personnel and materials in underground mines. Active areas of research at the Center include subjects in the fields of electrical and electronics systems, environmental technology, explosives, fires and explosions, ground and methane control, and dust control and ventilation.

The Pittsburgh Research Center has a small, but impressive collection of 44 mine safety lamps on display in the lobby of one of its main administrative buildings (see photograph on opposite page). These include a wide variety of lamps, ranging from the well-known (e.g. Clanny, Ackroyd & Best, and Wolf) to the more obscure (e.g. Naylor, Cremer, Chesna, and Szombathy). Examples of special gas detection lamps include a Gray lamp with Clowes's hydrogen attachment, an Ackroyd & Best lamp with Coyinghame-Cadman indicator, and others such as Hughes Bros., Clanny, Wolf, Davis Deputy, Freimann & Wolf, and Gray. Some carbide cap lamps and other mining memorabilia are located in display cabinets in this and other buildings on the site.

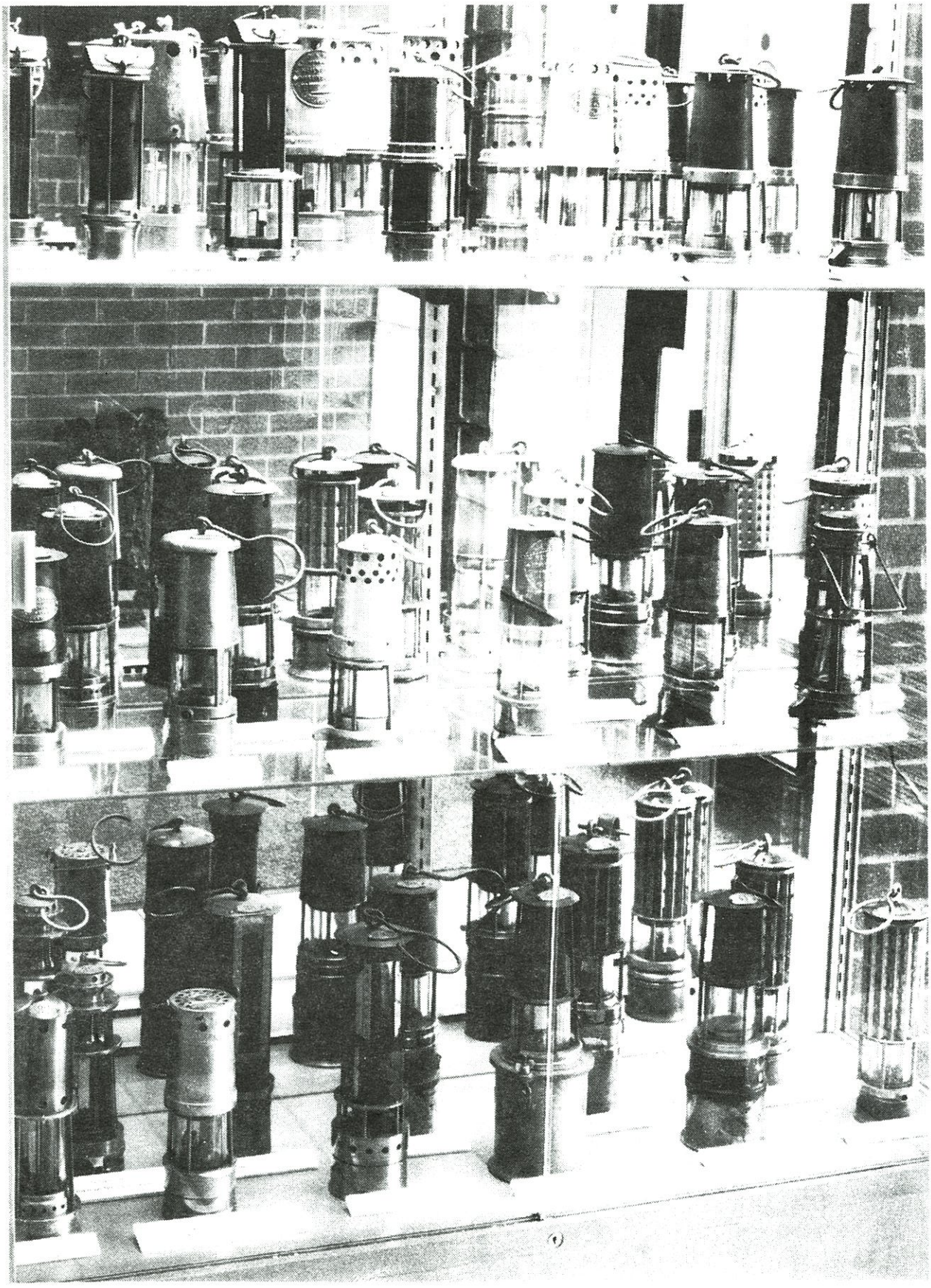
Arrangements to see the Bureau of Mines lamp collection can be made by contacting Jacquie Jansky, Technology Transfer Officer at the Pittsburg Research Center at 412-892-6615, or writing to her at the Pittsburgh Research Center, U.S. Bureau of Mines, P.O. Box 18070, Pittsburgh, PA 15236.

There are 35 lamps shown on opposite page, many of these lamps can be recognized.

Top Row (left to right): The first two lamps are Huges Bros. Davy lamps, a Huges Bros Clanny lamp, and at least two Ackroyd & Best lamps.

Middle Row (left to right): Towards the middle are a Davis Deputy lamp, Wolf lamp, Ackroyd & Best lamp, and a Cremer lamp. The end two lamps are an Ashworth-Hepplewhite lamp and a Kohler lamp.

Bottom Row (left to right): Shown are an Elein lamp, Gray lamp with stokes gas detecting attachment, Ackroyd & Best lamp with a Conyinghame-Cadman gas detector, a special gas detecting lamp, Chesna lamp, an acetylene lamp, Belgium acetylene lamp, Wolf acetylene lamp, Serppol acetylene lamp, Singing flame lamp later design, Wolf Fleissner singing flame lamp.



Oil Wick Lamps With Unusual Brackets

by **Tony Moon**
Sandy, Utah

Two oil wick lamps in the author's collection have strap brackets in place of the normal hook.

The first, a cap lamp size lamp shown in Figure 1, has a bracket that would be suitable for mounting on a leather strap (mule harness?). The lamp, made of tin, is 2 $^{3}/_{4}$ inches high at the lid and is unmarked.

The second lamp, shown in Figure 2, is a much larger lamp some 4 $^{1}/_{4}$ inches high to the screw lid and 5 inches high to the top of the spout. The lamp has a flat base soldered to the oil vessel that allows the lamp to sit on a horizontal surface and also has a horizontal strap that would allow the lamp to be mounted on a vertical tongue or holder, possibly on a coal car or again as a harness mounting. The lamp is made of tin and is also unmarked although similarities in manufacturing techniques around the base of the spout are similar to "Crown" lamps as shown in Figure 3. I believe that this lamp was made by the manufacturer of Crown lamps. The quantity of fine coal dust around the base confirms its use around coal mines and the lamp was found in Pennsylvania.

Both lamps are unusual in their mounting method and the author would be interested in hearing from other collectors who have oil wicks with similar mounting straps.

Figure 2. Large strap mounted on an oil wick lamp.

Figure 1. Small strap mounted on an oil wick lamp.

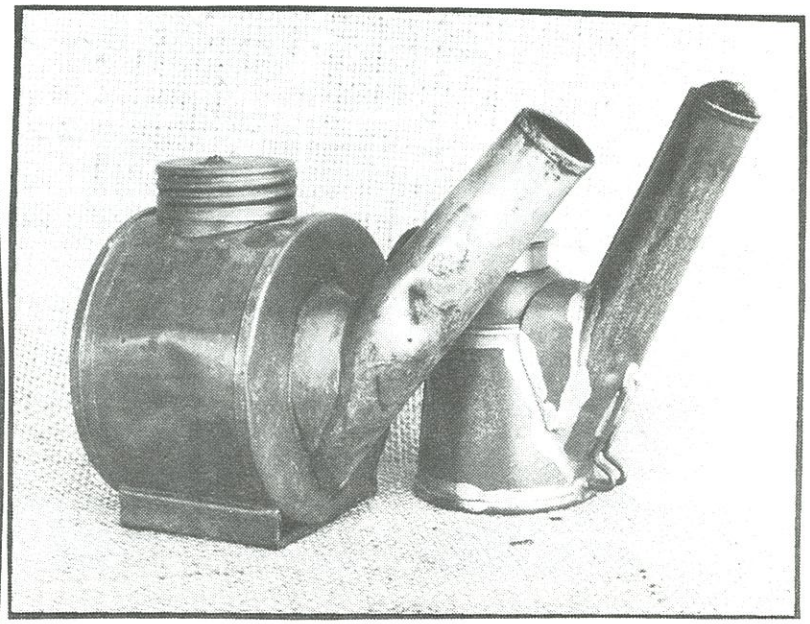


Figure 3. Note the similarity at the base of the spout and the spout construction of these two oil wick lamps.

THE HECLA POWDER COMPANY

by **Mark Bohannan**
Oro Grande, California

Early in 1880, two brothers, Charles A. and George Franklin Morse, and their cousin, Lieutenant Jerome Edward Morse organized the Hecla Powder Company. The company was incorporated in 1880 with an authorized capital of $100,000.

A general office was established at 239 Broadway, New York City, and the location for a small factory was purchased north of Rahway in New Jersey. The Hecla Powder Company manufactured regular dynamite under the trade name of "Miner's Friend."

In 1883, Lamont du Pont of the Repauno Chemical Company acquired an interest in the Hecla Powder Company. A year or two later, when the large profits did not materialize, and additional capital became necessary, the issuance of another $100,000 in stock was authorized. Acting for the owners of the Repauno Chemical Company, William du Pont purchased all of this stock, giving the Repauno Chemical Company a majority interest in the Hecla Powder Company.

In 1886, after arrangements had been made to manufacture the Hecla Powder Company's dynamite at Kenvil, New Jersey, all dynamite manufacturing at Rahway ceased.

In 1896, after the Repauno Chemical Company had acquired the remaining stock of the Hecla Powder Company, the small factory at Rahway was dismantled. At this time, the company's name was changed to the Hecla Dynamite Company and was operated as a selling concern.

On September 30, 1905, the corporation was dissolved.[1]

The advertisement shown here, from a January 3, 1891, issue of *The Engineering and Mining Journal,* is the only item known at this time from the Hecla Powder Company.

1. Arthur P. Van Gelder and Hugo Schlatter, History of the Explosives Industry in America,

MINER'S FRIEND.

The Safest, Strongest, Best Dynamite

BUNKER HILL MINING COMPANY STOCK CERTIFICATES ISSUED TO JOHN HAYS HAMMOND

by **Larry Radford**
Elko, Nevada

From 1890 to World War I, American mining engineers, especially those from California, were in worldwide demand. John Hays Hammond was one of these engineers. He was, perhaps, only second to Herbert Hoover in prominence. He was the son of a '49er and a graduate of Yale and Freiberg; his career would bring him to be offered numerous ambassadorships, meet kings, and know every president from Grant to Hoover--excepting Arthur. His salary in 1896 was $75,000 a year; his salary from the Guggenheims in 1903 was reported to be a million dollars a year. He would consult in Russia, Mexico, China, South America, and Africa. He consulted for Cecil Rhodes in Africa, where he was instrumental in the deep development of the Witwatersrand; together, they would start a war against the Boer government of South Africa.

Figure 1 is a stock certificate issued to John Hays Hammond by the Bunker Hill Mining Company. Stock certificates were also issued to his wife, Natalie Harris Hammond, and to his son, Harris Hammond. Hammond was given 2,500 shares for organizing the company. He then purchased stock and owned 32,962 shares by September of 1892.

The certificates are signed by Frederick W. Bradley, another famous mining engineer. Bradley had first made his reputation in the gold quartz mines of California. It is evident that Hammond was instrumental in placing Bradley

TAFT AND MYSELF

The photograph to the left is of John Hays Hammond (at left) and President William Howard Taft (on the right). William Howard Taft was the twenty-seventh president of the United States from 1909 to 1913. John Hays Hammond was a highly successful mining engineer and knew every president from Grant to Hoover--excepting Arthur.

In 1929, the American Institute of Mining and Metallurgical Engineers presented him with their highest award, the William Lawrence Saunders medal.

with the Bunker Hill Mining Company. In 1896, Hammond guaranteed Bradley $10,000 a year to keep him at the mine. He also was instrumental in supporting Bradley as a manager. When Bradley felt threatened by a consulting engineer, Christopher Corning, Hammond backed Bradley. Bradley was apparently an able manager. He was managing the Bunker Hill during the mining wars of the Coeur d' Alene district. For his part, he may have been the attempted victim of an assassination attempt; his apartment blew up, either through a gas explosion or a bomb placed by Harry Orchard--Bradley survived.

Hammond's and Bradley's relationship appears to have fallen apart in 1900. Hammond secured an option on placer ground on the Yuba River in California; Hammond was enthusiastic. Bradley's initial reports were favorable; however, Hammond eventually dropped the option. Bradley picked up options on adjoining ground. Hammond accused Bradley of unethical conduct and prepared to bring suit over the money Bradley gained on the adjoining ground. Hammond bought an interest in the original property from the person who picked up the option. The property was put into production and evidently made money. Hammond was bitter, as evidenced by his scolding remarks about Bradley in his autobiography.

In addition to Hammond and Bradley, several other notable mining engineers worked at the Bunker hill--Victor Clement, Albert Burch, and Stanley Easton among them. Victor Clement built his holdings in Bunker Hill stock to 36,301 shares.


No. 766 INCORPORATED JULY 20TH, 1887. 127 Shares

Bunker Hill and Sullivan Mining and Concentrating Co.

OF PORTLAND, OREGON.

Capital Stock, $3,000,000. Shares, $10.00 Each.

This is to Certify, That Harris Hammond is entitled to [illegible] Shares fully paid and free from assessments, in the Capital Stock of the

Bunker Hill and Sullivan Mining and Concentrating Company,

transferable only on the books of the Company, in person or by attorney, upon surrender of this Certificate, and subject to the By-Laws of the Company.

Witness our hands, and the Corporate Seal of the Company, at Portland, Oregon, this [illegible] day of [illegible] A. D. 1905.

George F. Holman, Secretary. F. W. Bradley, President.

A stock certificate issued to Harris Hammond, the son of John Hays Hammond, by the Bunker Hill Mining Company. Stock certificates were also issued to John Hays Hammond and to his wife, Natalie Harris Hammond. Hammond was given 2,500 shares for organizing the company. He then purchased stock and owned 32,962 shares by September of 1892. The certificates are also signed by Frederick W. Bradley, another famous mining engineer.

CHRONOLOGY

1879 Hammond leaves Freiberg to work for George Hearst; Hammond reviews estimates of the Camp Bird Mine provided by Bradley and T.A. Rickard; Hammond claims that both have grossly overestimated its worth.

1882 Clement goes to work at a property Hammond is managing in Mexico.

1885 Hammond made consulting engineer of the Empire mine in Grass Valley, California. Noah Kellogg and Philip O'Rourke discover Bunker Hill lode.

1886 Hammond turns down offer to be manager of Bunker Hill--recommends Clement.

1887 Bunker Hill mine sold to Simeon Reed; Noah Kellogg receives $150,000. Victor Clement is made manager. The Bunker Hill & Sullivan Mining and Concentrating Company incorporated. Clement attempts to reduce wages and the miners form the Wardner Miner's Union.

1890 Hammond meets Bradley; Bradley made Clement's assistant on Hammond's recommendation.

1891 Reed enlists Hammond to raise financial backing; Hammond made president of Bunker Hill. Mine Owner's Protective Association formed.

1892 Clement involved in Coeur d' Alene mining wars. D.O. Mills of San Francisco, and James L. Houghteling of Chicago, buy 50,000 shares at $3 each; other investors are W.H. Crocker, Victor Clement, Cyrus H. McCormick, and N.H. Harris (Hammond's wife's uncle).

1893 Clement goes to South Africa with Hammond; Bradley is made manager; Hammond's wife's uncle is made president.

1894 Hammond goes to work for Cecil Rhodes.

1895 Hammond involved in the Jameson Raid.

1897 Bradley made president of the Bunker Hill--holds this position until his death. Hammond consulting in Russia.

1899 Bunker Hill mill is blown up by strikers.

1900 Hammond brings suit against Bradley over Bradley's mismanagement of a California placer property.

1901 Bradley succeeded by Albert Burch.

1903 Hammond goes to work for the Guggenheim Exploration Company. Clement dies. Burch succeeded by Stanley A. Easton.

1905 Guggenheim's buy shares from Clement's widow.

1907 Hammond retires from the Guggenheim Exploration Company--starts to dabble in politics. The 10,000 foot Kellogg Tunnel is completed at the Bunker Hill mine.

1917 Bunker Hill smelter starts operation.

1981 The Bunker Hill mine is closed.

AT THE BUNKER HILL MINE, IDAHO, IN THE EIGHTIES

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MINING ARTIFACT COLLECTOR

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Number 10 Through 21

Compiled by Deric English

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NOTICE TO COLLECTORS:

With *MAC* Number 9 Fall 1990, a separate index for issues 1-9 of the *Mining Atifact Collector* was sent with issue 9. For those who were not subscribers at the time and did not have a chance to receive this index, but would like to, now is your chance. For those who would like to recieve our first index covering issues 1 through 9, just send a check or money order for $2.50 (we'll pay postage) to:

Mining Artifact Collector
12851 Kendall Way
Redlands, CA 92373

Collector's Talk

A B.P.O.E. Medal

In Issue Number 20 Fall 1993 of the *MAC,* Tony Moon presented a medal from Butte, Montana. He wondered if others might have some similar medals with mining themes. Here is an example of a B.P.O.E. (the Benevolent and Protective Order of Elks) medal from Detroit, 1910. The lower medal reads:

"PULL FOR"
JONES

SCRANTON, PA Nº 138

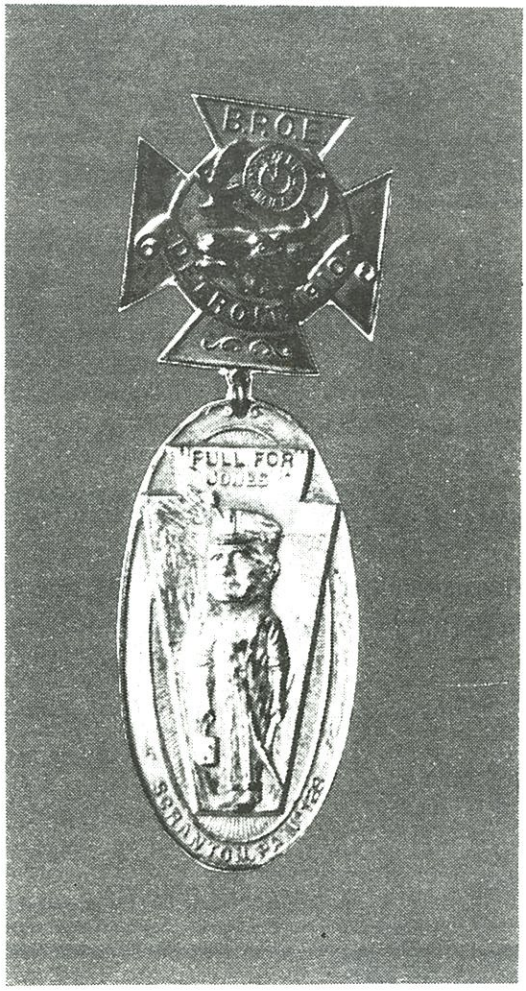
Maybe some *MAC* reader will be able to shed some light on the significance of the coal miner on the bottom medal or who Jones was.

Deric English

Another Delegate Medal

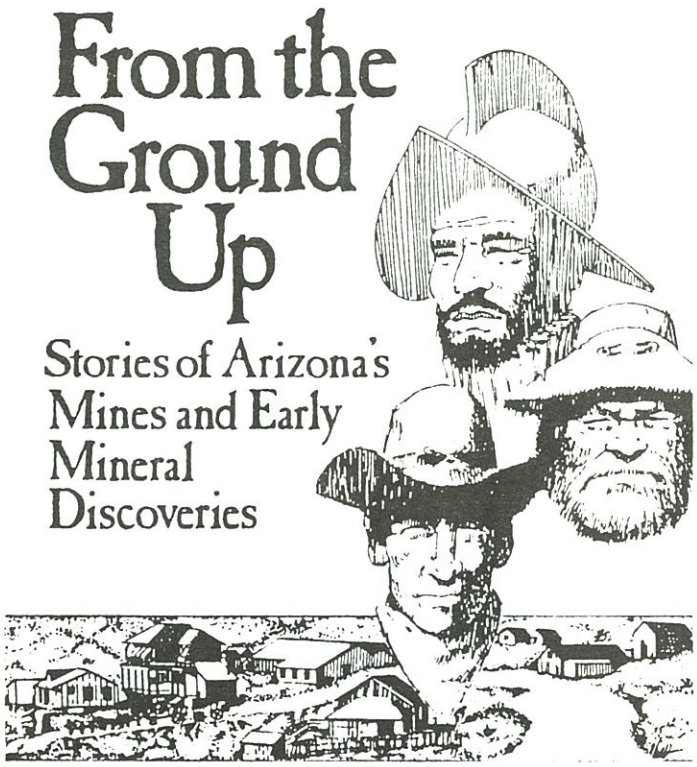
The front of this medal reads: DELEGATE, U.M.W. OF AMERICA, 8 HOURS. This medal is also manufactured by Greenduck Co., Chicago. I am not sure about the significance of the US flag and British flag being draped under the mine scene on the upper medal; maybe it had something to do with our alliance during the war? The lower medal depicts an interesting scene of a young girl hugging a miner (probably a father and daughter).

Deric English



FROM THE GROUND UP

by Governor Jack Williams



"The Apaches had struck during the night and made off with the best horses in the entire ranching area around Silver City, New Mexico. Led by Captain Chase of the United States Army, a band of cavalrymen took off in hot pursuit."

So begins the story of the discovery of the Morenci Mine, one of many colorful early Arizona mining camp tales presented in this book written by former Arizona Governor Jack Williams and originally published by Phelps Dodge. Included are tales of the Vulture Mine, Bisbee, the Harquahala, Crown King and many others.

The Department has updated the stories and, with a donation from Phelps Dodge, has reprinted the 37-page book. Copies are available from the Department for $3.50 or by mail (order form below) for $5.00.

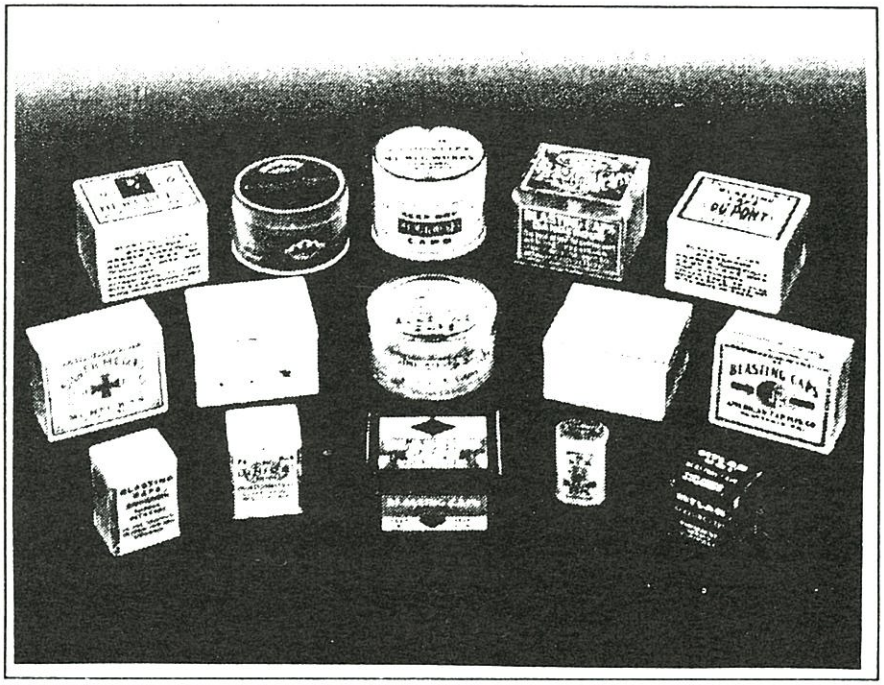
ORDER FORM: From the Ground Up

Please enclose $5.00 total ($3.50, plus $1.50 postage and handling) and mail to :
Department of Mines & Mineral Resources, 1502 W. Washington, Phoenix, AZ 85007

Name _____

Address _____

City _____ State _____ Zip _____
Please allow 2 weeks for delivery.



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Office 304-897-6003

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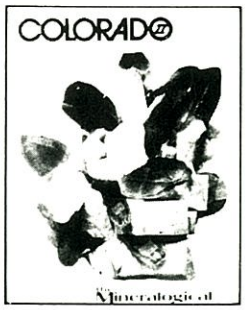

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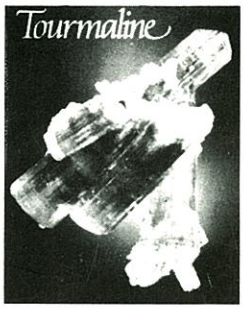

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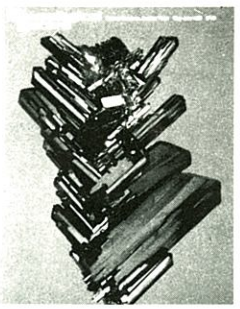

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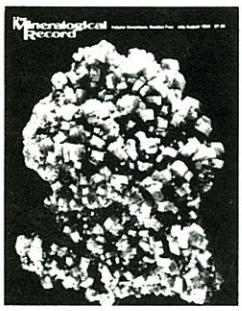

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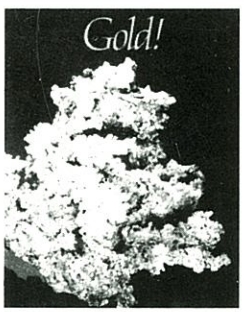

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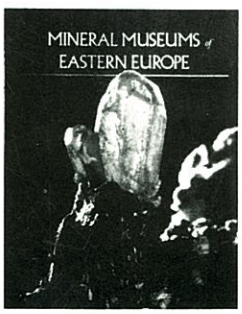

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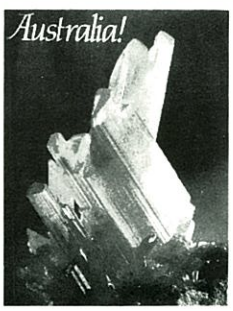

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