

BULLETIN

July 1995

INSIDE:
*1869 Avondale Mine Disaster
Sample safety audit checklist
Monster loader at PDMI
Protect yourself in the sun*

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We welcome *any* materials that you submit to the Holmes Safety Association *Bulletin*. We especially need color photographs (8" x 10" or larger—color negatives are acceptable) for our covers. We cannot guarantee that they will be published, but if they are, we will list the contributor(s).

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The Holmes Safety Association Bulletin contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters, and other health and safety-related topics. This information is provided free of charge and is designed to assist in presentations to groups of mine and plant workers during on-the-job safety meetings.

PLEASE NOTE: The views and conclusions expressed in "HSA Bulletin" articles are those of the authors and should not be interpreted as representing official policy of the Mine Safety and Health Administration.

KEEP US IN CIRCULATION—PASS US ALONG

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WELCOME NEW MEMBERS

NAME	CHAPTER NO.	LOCATION	NAME	CHAPTER NO.	LOCATION
Herzog Stone	11054	Mena, AR	Mountain Green	11079	Ausable Forks,
Table Rock	11055	Branson, MO	NYHatchet Mill Mine	11080	Owensboro, KY
Sharon L. Haley	11056	Falls City, OR	National Lime & Stone Co.	11081	Delaware, OH
Crystal Fuels	11057	Matewan, WV	Rivereagle Corp.	11082	Pikeville, KY
Sycamore Fuels	11058	Matewan, WV	Pyro-Chem	11083	Beckley, WV
P.M. Charles Shop	11059	Matewan, WV	Town of Roxbury	11084	Roxbury, NY
Sprouce Creek Plant	11060	Matewan, WV	Diaz Ambulance Service	11085	Saugerties, NY
Rocky Hollow Mine	11061	Matewan, WV	Dryden Oil Co. Inc.	11086	Stone Ridge, NY
Bel-mar Coal	11062	Fayetteville, WV	S.A. Manufacturing Co. Inc ...	11087 ..	Campbell Hall, NY
Western Mingo, #1	11063	Naugatuck, WV	Operating Engrs. Local #825b	11088	Saugerties, NY
Western Mingo, #2	11064	Naugatuck, WV	Black Bear Mining Inc.	11089	Gilbert, WV
Western Mingo, #3	11065	Naugatuck, WV	Dapper Coals Inc.	11090	Varney, WV
P.M.I. Coal Co., Inc. #2	11066	Red Jacket, WV	Lake Energy, Inc.	11091	Gilbert, WV
Hampden Coal Co., Inc.	11067	Gilbert, WV	Gardner Pit & Mill	11092 ..	Santa Barbara, CA
Justice Mine Service	11068	Justice, WV	Bee Rock	11093 ..	Santa Barbara, CA
Daniels Branch Coal Co. Inc. .	11069	Gilbert, WV	Buellflat Rock Co.	11094	Solvang, CA
Last Chance Leasing Inc.	11070	Gilbert, WV	J & H Enterprises, L.L.C.	11095	Betsy Layne, KY
Chesterville Sand & Gravel	11071	Chesterville, OH	Southwest Ready Mix Inc.	11096	Taft, CA
Columbus Gravel Plant #210 .	11072	Columbus, OH	Stollings Trucking Co. Inc.	11097	Mount Gay, WV
Columbus Limestone #221	11073	Grove City, OH	Loyal Creek #4	11098	Ford City, PA
No. 10 Surface	11074	Charleston, WV	Latrobe Construction	11099 ..	New Florence, PA
J.M. Hamilton & Sons Inc.	11075	Marion, OH	Energy Fuels Coal, Inc.	11100	Florence, CO
Central Ohio Dist. Council	11076	Columbus, OH	U.S. Quarried Slate Products. .	11101	Fair Haven, VT
OG&E Electric Services	11077	Ft. Smith, AR	Ground Water Technology	11102	Schenectady, NY
Lake Placid Blue	11078 ..	Ausable Forks, NY	Standard Labs	11103	Gillette, WY

Cancer in the workplace

by Jim Armstrong, ONRSA Industrial Hygienist

Far from being a twentieth century disease caused by industrial pollutants and other environmental factors, cancer is one of the oldest diseases known to man. In fact, cancer cells have been discovered in the fossilized remains of dinosaurs. Descriptions of cancer can be found in the writings of ancient Egypt and Babylonia. About 2,400 years ago, Hippocrates noted claw-like extensions on a tumour and thus described the disease as "carcinosis", the Greek word for crab. The Romans adopted the term to describe the disease and their word for crab, "cancer", was merged into our language. The first cases of cancer identified as being occupationally related were those found in the scrotums of chimney sweeps in eighteenth century Britain.

We have all heard and used the term cancer but do we know what it is and why the disease is so insidious? Our bodies are made up of trillions of cells. Cells range in size but can be one thousand times smaller in diameter than your baby fingernail. Cells of the body have various functions including transmitting electrical impulses (nerve cells) and carrying oxygen to other cells (red blood cells). They are specialists, maintain their position in the body (except for blood cells) and carry out the single function for which they were designed. For example, brain cells transplanted to the bone would die. Throughout our lives our cells grow and divide to replace those that die or are lost in other ways. Cells are structured in such a way that division starts and stops at a chemical signal from within. New cells created by the division carry

the exact same complex codes (called DNA) which give the cell its instructions for functioning. DNA is also responsible for our individual characteristics such as eye colour. A cancer-causing agent, called a carcinogen, can enter the body and ultimately the cell and alter the DNA codes. The result is a cell carrying a new code which no longer receives the messages to carry out a specific function or the message to stop dividing. These cells, unlike normal cells, have no useful function and have the ability to travel to and flourish in any tissue or organ of the body. These are cancer cells.

They invade tissue and steal the life-sustaining nutrients from the normal cells making up that tissue. With the ever increasing number of cancer cells in the tissue, fewer and fewer normal cells survive to carry out their intended function.

Despite our technology, research methods and extensive studies, cancer remains very much a mystery to modern man. Not nearly enough is known about what can cause or promote it; but we do know at least some of the influencing factors. Research carried out mostly since the early 1950s has determined that the development of cancer in a person can depend upon their individual characteristics (such as age, sex, and genetic make up); their behavioural habits (such as diet and smoking); and their on- and off-the-job environmental exposures to physical agents (such as ionizing radiation) and chemical agents (such as benzo(a)pyrene, a constituent of the soot which affected chimney sweeps). Biological agents including

certain viruses (such as hepatitis B) can also cause cancer. To complicate matters even more, cancer can also result from combinations of various agents which may not be highly carcinogenic on their own.

Not everyone develops cancer, but the statistics are somewhat alarming. In 1971, about one person in four could be expected to develop cancer during their lifetime. By 1988, the odds had become one in three, according to statistics prepared in 1993 by the Canadian Center for Health Information. At least part of the increase can be accounted for by our increased life expectancy, as the likelihood of developing cancer increases sharply after the age of 55.

Exposures to environmental factors in the form of chemical and physical agents which can cause or promote cancer, can occur in the workplace. Estimates of the percentage of cancers that are occupationally related vary widely and range everywhere from 1% to 40%. The long latency period of 5 to 40 years for most cancers causes difficulty in gathering accurate data. Regardless, carcinogens do exist in many workplaces and do pose a risk to workers. For example, asbestos is a confirmed human carcinogen according to the International Agency for Research on Cancer (IARC). IARC is a recognized international authority for classifying substances according to their carcinogenicity (cancer-causing ability). They regularly assess results of research, and based on the evidence found, classify agents into five categories:

Group 1—agents carcinogenic to

humans
Group 2A—agents probably carcinogenic to humans
Group 2B—agents possibly carcinogenic to humans
Group 3—agents not classifiable as carcinogenic to humans
Group 4—agents probably not carcinogenic to humans.

Although there are other agencies with other classification systems, IARC's listings are the most widely accepted as a guide for exposure to carcinogens in the workplace.

The federal *Controlled Product Regulations*, which support WHMIS, include criteria in the "Poisonous and Infectious" category which require that known, probable and possible human carcinogens in a product be identified. The information is provided in the "Toxicological Section" of the product's Material Safety Data Sheet. Other carcinogens must be identified by careful analysis of workplace raw materials and processes. Some carcinogens are more hazardous than others. The presence of a carcinogen in the workplace does not necessarily result in cancer. It should, however, be cause to exercise caution and to ensure appropriate exposure controls are in place. When assessing the risk of exposure to known or suspected carcinogens, a number of factors should be considered:

- the strength of evidence that the agent is a carcinogen;
- how the substance enters the body—i.e., breathing, swallowing, or absorption through the skin;
- the potency of the substance as a carcinogen;
- the likelihood that people will come in contact with the agent;
- the duration and concentration of exposure (the greater the exposure, the greater the risk);
- the presence of other agents such as tobacco smoke which multiplies the risk. (On its own, tobacco

smoke causes about 80% of lung cancers.)

When cancer-causing agents have been identified in the workplace, it is of the utmost importance that employees be protected against exposure. Some of this responsibility lies with the joint health and safety committee. Several steps must be taken to minimize risk. One essential component of overall protection is information and training. Employees must know about the characteristics of the cancer-causing agents, how they can minimize their own exposure, and the measures and procedures in place to minimize the exposure of themselves and their fellow employees. Early diagnosis (and therefore early therapy) is very important in successfully treating cancer. Employees should be aware that health surveillance provides a check for early detection.

Measures that can be put in place either individually or in combination to reduce or prevent exposures include:

Elimination—the removal of the carcinogen from the workplace.

Substitution—the use of a less hazardous substitute agent.

Isolation—isolating the carcinogen by distance or by enclosing operations to reduce or eliminate contact with employees.

Ventilation—the use of general and/or local exhaust ventilation with enclosures and partial enclosures.

Reduced exposure time—the planning of work around exposure to the carcinogen.

Monitoring exposure—the use of special testing equipment to ensure the agent is not entering the workplace environment.

Personal Protective Equipment—the use of equipment such as respirators, gloves and coveralls. PPE should not be used as the primary means of protection.

It is stated in *Canadian Cancer Statistics, 1993* that "An estimated

116,200 new cases of cancer and 59,700 deaths from cancer will occur in Canada in 1993." Advertising tells us that "Cancer can be beaten!" It will be a glorious day in the history of mankind when this goal is realized. Until it is, scientists will continue their pursuit of the answers through research, including animal testing and epidemiological studies. Each of us can do our part in the struggle by controlling those elements of our lifestyle such as diet, exposure to the sun and smoking, which increase our risk of developing cancer. We can also reduce our risk by being aware of the known and potential carcinogens in our workplaces and implementing the appropriate control measures to avoid exposure.

Examples of carcinogenic agents

GROUP 1—Carcinogenic to

Humans:

- Asbestos
- Chronic infection with hepatitis B or C virus
- Solar radiation
- Tobacco smoke
- *plus 56 others

GROUP 2A—Probably Carcinogenic

to Humans:

- Formaldehyde
- Crystalline silica
- Ultraviolet radiation
- Polychlorinated biphenyls (PCBs)
- *plus 46 others

GROUP 2B—Possibly Carcinogenic

to Humans

- Ceramic fibres
- Lead and lead compounds
- Pentachlorophenol
- Urethane
- *plus 205 others

Reprinted from the issue of Ontario [Canada's] Natural Resources Safety Associations' Health & Safety RESOURCE.

Training, attitude provide framing for PDMI's mine division's safety program

Mine safety is not something that is turned on when it's convenient and shut off when it's inconvenient. In a much broader sense, it is interwoven into every aspect of Phelps Dodge Morenci Inc.'s (PDMI) mine operation. Mine Manager D.J. Quinn discusses how the importance of safety contributes to the mine's success.

"Our theme is safe production; safety is ahead of production," Quinn said. "If you have a safe operation, you have an efficient operation, both in production and cost. We have reached 4 million employee-hours in operations without a lost time accident, which I am sure is a world record."

How is such a safety goal achieved? One contributing factor is the training of the employees in their respective jobs. "Over the last few years, PDMI has essentially tripled their production," Quinn said. During the training process, the employees were extensively trained for their new jobs, "and at the same time, they were given a safety attitude to go along with the training. That's what has made the operation safe."

"This safety attitude is built around a lot of people working together successfully through training, the TEAMS effort, Development Dimensions International (DDI) training, and new equipment that offers more advanced safety features," he said. "It's the combination of all of these people's ideas that have made the mine a very safe operation, a very productive

operation, and a very cost-effective operation."

Forty-one year PDMI truck driver AA Joe Benitez provides this assessment on PDMI's mine safety: "I've been here a long time, and I have noticed a difference in the cooperation of the employees and their supervisors. They show more of a willingness to watch out for each other." And, the new employees will ask questions, no matter how simple the questions may seem.

"We try to help them in every way we can," Benitez said.

To provide a better understanding of how haul trucks and shovels operate and why certain procedures are followed on the equipment, the mine's equipment training allows for the following exchange: truck drivers experience what it is like to operate a shovel and shovel operators experience what it is like to operate a haul truck Benitez said.

A comprehensive training program that interfaces with the importance of safety would not be complete without a specialized segment that trains employees to operate equipment at night.

Visualize driving a haul truck in darkness; Benitez said the truck driver must be able to locate the switches on the truck's panel and also turn off the haul truck's lights when loading or dumping to prevent blinding other truck drivers. In addition, he said the truck driver must know at all times where the bridges, electrical cables and disabled equipment are located.

As a housewife with no prior

operating experience on heavy equipment, Truck Driver AA Pam Byrd, who recently completed the mine's haul truck training program, is a true test of the program's effectiveness. "I thought the training program was great," Byrd said. "You train in the (truck) simulator first, learning all the gadgets and later, your training continues at an on-site training area within the mine property. At this location, Byrd continued her training with the haul truck and also received night training.

"The crew was just great and the people really helped me," Byrd said. "I needed a couple of more nights of training, and they were real good about giving me the extra time needed to train for my job." In addition to the safety aspects stressed in her training, Byrd said her questions were always answered, and she never felt uncomfortable during any training aspect. "There was no time limit for grasping the training; the crew was fantastic."

Thirty year IPCC Supervisor Jim Goodman offers his evaluation of safety and training at PDMI: "I feel our whole training program is geared around safety; everything you learn has something to do with safety." As an equipment trainer for the Mine Division, Goodman said all the training programs offer basic training for operating various equipment within the operation.

As part of the 10-day haul truck training program, trainees receive experience in the truck simulator, eight hours of class-

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room instruction and a haul truck manual to learn the parts of the truck. In addition, training participants have the opportunity to maneuver the truck around a shovel positioned at the on-site training area. "We spend a minimum of eight hours at the training site," Goodman said.

Later, the trainees will practice driving the haul truck for four or five days, and at the conclusion of the training, a final test is administered. "So far, we have had good results on the test," he said.

A similar 28-day training program emphasizing safety is provided for dozer operators, as well as training programs for employees operating shovels, loaders, blades and rubber tire dozers. In addition, 16 hours of refresher training is provided for shovel operators and truck drivers. In January 1995, shovel training and dozer training programs will be upgraded to provide more personalized instruction that will include assistant supervisors. Goodman said the employees have provided good training ideas that have been incorporated in the training programs.

As Mine Shift Supervisor Chan

Farrington looks back at 19 years of employment at PDMI, he pinpoints several factors that have improved safety. One factor is the company's dedication to full-time trainers in the Mine Division. Another factor is the equipment. "In my mind, the equipment we are operating is the safest available in the mining industry," Farrington said. Truck runaways are now a thing of the past, he said

Drug and alcohol testing and improved road maintenance over the years have also improved safety, Farrington said. Narrow spots in the haul roads or other road conditions that may compromise the driver's safety are readily fixed. "We also brief truck drivers on changes in the pit and the use of different haul routes."

After each shift finishes work, tailgate safety meetings are held to discuss any activities that may have an effect on the incoming shift. "We want to make everyone aware, so we don't repeat the same mistake," Farrington said.

"At Phelps Dodge, we are in the people business because without people, we have no business," Operations Supervisor Kenny Hill said as he discussed

the importance of safety.

"I think we do three things here: we plant; we grow; and we harvest. And, what I mean by planting is that we hire people that will fit into our atmosphere," Hill said.

During the growing period, "we train our employees and use their ideas because a lot of the training comes from their ideas," he said. "We also listen to our employees and have a tremendous amount of patience in our training. If we put someone on a piece of equipment that they don't want to run or can not run, then we've defeated the entire purpose. We've jeopardized everyone's safety."

"I think the harvest is the world's best professional operators; I know they are better trained than anywhere else," Hill said. "One of the biggest harvests is that we are 'world class.' And, the biggest harvest we get out of all of this is that I consider this operation to be the safest in the world."

Reprinted from the January 1995, Volume 3, Number 1, issue of PDMI's Copper Today.

August 2, 1913; East Brookside Mine (anthracite), Tower City, Pa.; 20 killed

The section of the mine in which the accident occurred was idle, except for 7 men mucking in a tunnel face. Two assistant foremen, a foreman, the district superintendent, and a bottom man were also in the mine. At 11:20 a.m., a rush of coal from pillars killed the two assistant foremen and released gas with explosive force. A rumbling was heard, and dust came out through the upcast fan stack. A rescue party of nine men went into the mine and

reached the tunnel when a gas explosion occurred. The seven men from the mucking crew were coming out, and 1 of them ignited the gas generated by the crushing coal with his open light. The district superintendent and the foreman had also reached the danger area and were involved. A second rescue party then entered the slope and heroically recovered 3 living victims, 2 of whom died before reaching the surface, the other a few days later. Trained

crews and rescue equipment soon reached the colliery, and apparatus crews were formed to assist in the work. The superintendent was found alive and removed by a rescue party not wearing apparatus, but he died a few hours later. The caved area extended 284 feet along the gangway. It was recommended that locked flame safety lamps or approved miners' electric lamps should be used.

From Bureau of Mines report, by Chas. Enzian.

More than 125 years ago...

Boys died in their fathers' arms in Avondale mine disaster

110 were victims of suffocation as fire swept breaker, head-house situated directly over the shaft

Boy, 12, who begged his dad to take him into mine, died along with 4 teenagers

By Bill Luksic, *Sunday Independent* staff writer

September 6, 1869, the entire coal region of Pennsylvania was startled by the telegraphic announcement of a fire at the coal breaker, head-house, and other building over the shaft of the Avondale Mine, situated one mile below Plymouth.

Before the final smoke cleared away, 110 lives were lost. Many of the dead were in their prime of life.

The disaster left 72 widows and 153 orphaned children.

This was the Avondale Mine Disaster.

Mining officials called it the worst disaster in the early history of the industry.

A collection for funds for the widows and orphan children taken at the fire raised \$700. This was implemented by an organized drive extending from Sept. 8 to Oct. 2, which netted \$155,825.10.

Eye-witness report

On this 98th anniversary [this article was originally published in 1967] and because of its historical importance, the *Sunday Independent* is publishing in part an account of the tragedy written by a newspaperman on the spot.

"The fire was first discovered by people," the account reads, "issuing from the top of the head-house, but before that time, Alexander Weir, the engineer, had been startled by its fury and with a sound not unlike that of an explosion.

"So rapidly did it carry on its work that he was merely enabled to blow the whistle and arrange matters to prevent a boiler explosion, being obliged finally to make his exit without securing his hat.

"In an almost incredibly short space of time everything combustible about the entire works was in flames—a line of fire extending from the Bloomsburg Railroad track below, to the head-house above. The sight was grand beyond description.

"Imagine a plane of fire running up at an angle of about 35 degrees toward the hill above, and after it had accomplished that distance, see it shoot up in one immense column into the air, while dense clouds of smoke envelop all surrounding objects and the reader can have a faint idea of the spectacle.

Frantic mothers, wives

"But there was another phase of the scene at this time which harrowed up the very soul. Surrounding the fire on every side were hundreds of men, women and children, the female portion of whom were making the air resound with their frantic cries of distress.

"Wives were wringing their hands and wailing 'Oh! my Jimmy;' 'God have mercy;' 'Who'll take care of my children?' and using every expression of endear-

ment and of woe.

"Mothers were crying out for their sons as only a mother can cry, and feeling only as mothers can feel. Fathers were bewailing the loss of their first born or the sons of their later years. Brothers and sisters were mourning the loss of brothers and sweethearts were frantic over the immolation of fond lovers, who only the evening previous, perhaps, had pressed them to their bosoms and whose kisses were yet burning on their lips.

"This state of things continued for hours, when most of the bereaved relatives became more calm as they saw every possible effort made to extinguish the fire.

"During the early progress the fire, great fears were entertained that all the miners' houses which are situated on the side hill, both ways from the fire would be consumed, and accordingly all household goods were removed to a place of security.

"As some headway was made extinguishing the fire, preparations were made to rig a derrick to descend into the shaft first. A small dog, enclosed in a box, also a lighted lantern, were lowered as far as possible to see if the air was foul enough to kill the dog or extinguish the light.

"Ten minutes later the box was raised to the surface—the dog was living, but the light in the lantern was out. To ascertain



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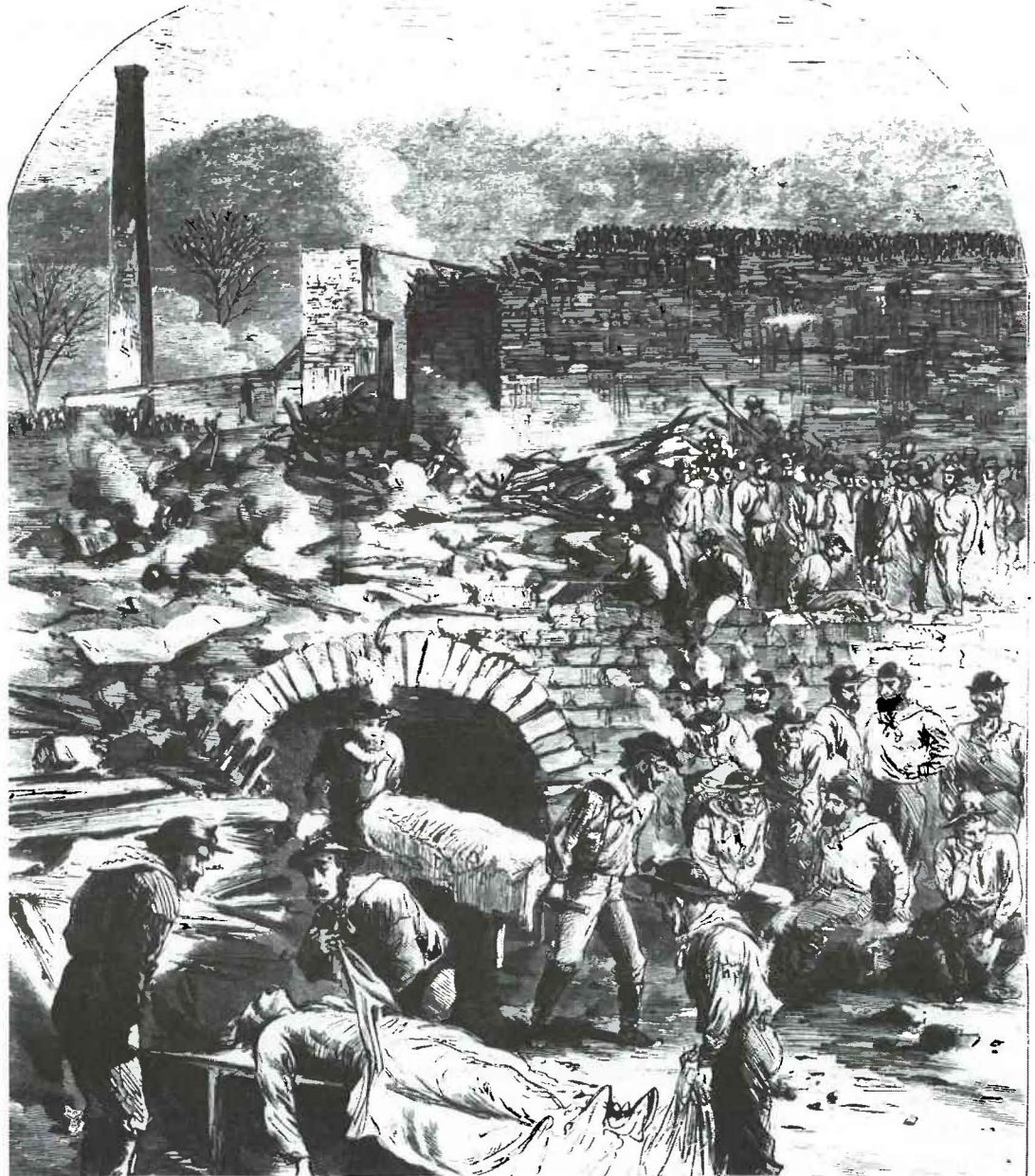


Photo reproduction and enhancement of page from the September 25, 1869 issue of "Harper's Weekly—A Journal of Civilization"

Courtesy of: Pennsylvania Historical and Museum Commission, Bureau of Historic Sites and Museums, Anthracite Museum

THE AVONDALE COLLIERY DISASTER—BRINGING OUT THE DEAD—SKETCHED BY THEO. R. DAVIS.

the actual condition of the men in the mine, a volunteer was called to descend the shaft.

"All honor for this heroic effort went to the stout-hearted Charles

Vartue of the Grand Tunnel Colliery. In the prime of life, 35 years, with a glowing future, he stepped forth, (perhaps to his early doom), hooked on his lamp

and prepared to descend.

"Fourteen minutes later he was pulled to the surface. He reported the air was perfectly good and not much heated; that two

men would have to go down and work to clear the debris.

"Several volunteers responded. Charles Jones of Plymouth, and Stephen Evans of the Nottingham Shaft were selected. Nine minutes later they emerged from the shaft gasping for fresh air. They reported they went 70 or 80 yards into the gangway, finding two dead mules. They finally came to a closed door upon which they pounded but heard no response.

"Two more volunteers were called. Thomas W. Williams of Plymouth and David Jones of Grand Tunnel entered what subsequently appeared to them to be the pit of death.

"After waiting some time and not hearing from the men, two more men were found ready to risk their lives. Both Williams and Jones were found lying insensible. Two more brave men had now perished.

"The fire started on Monday but it was not until Wednesday afternoon at 3 that two dead bodies were found. At 6:30 P. M. Williams, and D.W. Evans, John Williams and William Thomas went down and made the most extensive exploration. Breaking through a closed brattice which the men erected to shut themselves if possible from the foul air, their gaze was met by a view which appalled the stoutest heart among them.

"Grouped together in every possible position, lay the dead bodies of 67 men and boys, some appearing as if they had quietly dropped asleep, while others seemed to have struggled with their impending fate.

"Some of these boys lay with their faces buried in coal dust on the floor in the vain attempt to find a current of fresh air. Others' hands were clasped by their father's arm while a third was lying between his father's legs,

with his head resting on his father's breast.

"Another father, Mr. Hutton, lovingly embraced a young son, and all appeared as if sweetly sleeping. Evan Hughes, the inside boss, was sitting down with his head bent forward upon his breast, and with his hands clasped in front of him, while another body was reclining a few feet distant with face turned to Mr. Hughes as though he had been engaged in conversation with him but a moment previous to drawing his last breath.

"Preparations were now made to send down the reliefs of miners which had been organized to carry to the surface the dead men.

These reliefs were thus composed:

1st, Evan Parry, T. L. Jones, William Nevins, Edward Germon, William Thomas.

2nd, William Richards, William H. Morgan, Thomas Bengoch, J. L. Harris.

3rd, Reese W. Reese, Henry Atherell.

4th, Timothy Thomas, Lewis Davies, Thomas Williams, Griffith Abraham,

5th, Ira G. Thomas, Thomas O'Keefe, Mark Evans, Thomas Bonns.

6th, William F. Halliday, John Tisel, Reese T. Evans, Thomas Davies.

"The bodies of the 110 dead were delivered to surviving relatives and friends. A number of them were taken by Lackawanna and Bloomsburg Railroad trains to Plymouth and Scranton. Two trains, one loaded with about 3,000 and another with 4,500 people, went eastward to Scranton, the last train carrying 11 coffins containing the remains of the unfortunate victims to be buried at that place.

"In addition to those buried at Scranton on the 9th and 10th, a

number were buried in Shupp's Cemetery, Plymouth, and in the Catholic Cemetery, Wilkes-Barre. Several were buried at Pittston, two at Forty Fort, one at Harvey's Lake, and one at Pottsville.

"An inquest was held from Sept. 11 to Sept. 14 with the following members of the jury: E. C. Wadhams, justice-of-the-peace, acting as a coroner; Josiah W. Eno, justice-of-the-peace, acting as a coroner; William J. Harvey, Charles Hutchinson, Samuel VanLoon, James George, Martin McDonald, Thomas Patton.

"The verdict in part: That the cause of the deaths was the exhaustion of atmospheric air, and the prevalence of sulphuric and carbonic acid gases caused by the burning of the head-house and breaker, thereby destroying the air courses leading from the mine through the shaft.

"That the fire originated from the furnace in the mine, taking effect on the wood brattice to the up-cast air course leading from the bottom of the shaft to the head-house.

"The jury regard the present system of mining in a large number of mines now working by shaft as insecure and unsafe to the miner, and would strongly recommend in all cases where practical, two places for ingress and egress, and a more perfect ventilation, thereby rendering greater security to the life of the miner under any similar accident."

"On Tuesday, Sept. 7, Rev. T. P. Hunt of Wilkes-Barre, appeared at Avondale and made a few remarks to those assembled in relation to the propriety of raising money to be applied to the relief of the families of those men who were in the mine.

"He proposed that E. C. Wadhams, James McAlarney, J. Fuller Reynolds, George Evans,

Doctor Richards, Jacob Roberts, J. W. Eno, H. J. Yapple, Harry Hakes, Samuel Shafer, B. J. Woodward, Robert Boston, John Y. Wren, Nathan VanHorne, H. H. Harvey, Frank Turner, Richard Stillwell, and John B. Smith be appointed a committee to receive subscriptions.

"Small books previously prepared were handed to all the committeemen present, and a canvass of the immense multitude commenced.

"The following committee was

appointed to take charge of the funds: W. L. Wilson, cashier of the First National Bank of Plymouth; Theodore Strong, president of the First National Bank of Pittston; W. W. Winton, president of the Second National Bank of Scranton; Rev. T. P. Hunt, and Col. H. B. Wright, of Wilkes-Barre, and George Coray of Scranton."

As the first relief corps entered the mines, a coroner's jury was impanelled to review the bodies as they were brought out of the tunnel, deposited on the ground

before the jury, who then and there reviewed the remains. Those who brought them out legally attested to the fact of bringing them from the mine and as to their identity. This same course was pursued with each body as recovered.

A list of victims accompanied the original article but, in the interest of brevity, has been deleted from this story.

Reprinted from the Sept. 3, 1967 edition of the Wilkes-Barre Sunday Independent.

Sample safety audit checklist

The following checklist is meant only as a starting point. It is not intended to serve as a complete guide.

General Policies and Procedures:

- Does the company have a safety policy?
- Does each department have specific safety rules, and are they enforced?
- Does the company have a safety committee with representatives from each operation? Are meetings published and open to all employees?
- Do supervisors hold regular safety meetings?
- What is the company's history with MSHA?
- Are employees and supervisors trained in safety? Are special training sessions held to introduce new procedures or equipment?
- Are all injuries, accidents, and/or near misses investigated?

Specific Work Areas:

- Are housekeeping rules in

place and enforced? Are floors clean? Are stairways and aisles clear of obstructions?

- Are machines in safe operating condition and properly maintained, and do they have guards in place?
- Is all equipment safe from an electrical standpoint?
- Are lockout/tagout procedures in place and enforced?
- Is there adequate lighting, ventilation, heating, and air conditioning?
- Is personal protective equipment (PPE) being provided in good condition and used?

Emergency Equipment and Procedures:

- Does the company have an emergency response plan in place? Do all parties involved know their parts in the plan?
- Is there someone in each work area trained in first aid? CPR? Do other employees know who that individual is?
- Are fire extinguishers regularly inspected? Do workers know where they are and how to

operate them? Are fire exits clearly identified and accessible?

Hazardous Substances

- Are all hazardous materials clearly labeled as required? Does each have an accompanying MSDS?
- Do employees understand their "Right to Know," and are they trained in handling specific hazardous material, in their work area?

General

- Is there a sanitation policy in place?
- Are all MSHA standards being followed, especially written record regulations?
- Is there a policy governing safety audits?
- Is management kept informed of all pertinent information regarding company safety policies and procedures?

Reprinted from the April-June 1995 issue of the Texas Mine Safety Program's Texas Mine Safety Update.

Surface haulage safety alert

Did you know...

1. Today, most mining deaths occur in surface accidents.

In the past 5 years, accidents have claimed the lives of 548 American miners. Of these, 312 fatal accidents occurred on the surface and 236 occurred underground.

2. The most common type of fatal surface mine accident involves mobile haulage equipment.

In the past 5 years, 92 miners died in surface accidents involving mobile haulage equipment.

- Trucks (73 deaths)
- Frontend loaders, scrapers, etc. (19 deaths)

3. In addition, many nonfatal mining injuries involve mobile haulage equipment on the surface. Last year, 1,156 miners were seriously injured in mobile haulage accidents on the surface.

4. In coal mines:

- **Independent contractor employees are at special risk** (20 out of 33 deaths in the past five years).
- The most frequent common factor is bad brakes (8 deaths in the past 5 years).

5. In metal and nonmetal mines:

- **Most of these accidents involve employees of the mine operator** (47 out of 59 deaths in the past 5 years).
- **The most frequent cause is bad brakes** (10 deaths in the past 5 years).
- **The greatest number of these fatal accidents occur in stone, sand and gravel, and surface gold mines** (57 in the past 5 years).

To prevent surface haulage accidents, equipment operators should:

- Check brakes regularly and keep them in good shape.
- Check the equipment at the start of a shift.
- Use equipment within design specifications.
- Travel at speeds consistent with road grade and conditions.
- Don't overload trucks.
- Wear seat belts.
- If you lose control of the vehicle, stay belted in and do not jump.

To help prevent accidents, mine operators can also:

- Design haulage roads to minimize steep grades and visual obstructions.
- Maintain all berms and roadways in safe condition.
- Make sure all mobile equipment operators on mine property have adequate safety training.
- Provide miners with safety training.
- Establish and enforce safety rules, including traffic signs and signals.
- Implement a regular maintenance program.
- Select equipment suitable for mine conditions.
- Provide escape ramps and barriers.

Questions about surface haulage safety?

Contact your local office of the Mine Safety and Health Administration (MSHA), United States Department of Labor.

Reprinted from the April-June 1995 issue of the Texas Mine Safety Program's Texas Mine Safety Update.

February 3, 1926; Horning No. 4 Mine, Horning, PA; 20 killed

A clay vein was being cut about 10 am, when there was a sudden increase in the flow of gas from the undercut. The foreman had the open-type machine stopped and backed out from the cut a short distance when the gas ignited. None of the men were burned, but the feeder continued to burn. Attempts to put out the

fire with permissible explosives and wet clothes and water failed. After several hours, brick seals were started. At 3:55 pm, an explosion killed 20 men working on the sealing job, including 7 officials.

A second explosion took place during recovery operations about 8 hours later. No one was injured,

but it was decided to seal off the entire section, in which 17 bodies remained. Apparatus was used extensively. The first explosion was propagated by coal dust but was localized by rock dust. The seals were opened and the bodies recovered 10 days later.

Reprinted from Bureau of Mines Bulletin 586.

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Phelps Dodge acquires new monster loader

By Mark Smith



▲ The new "944" loader, with its 21-cubic yard bucket, can load a 240-ton capacity haul truck in only 7 or 8 passes.

Upper right, when parked alongside a pickup, the huge size of the new loader becomes readily apparent.

Phelps Dodge Morenci mines has acquired a big, powerful—and expensive—new "monster" loader.

The mine's new "994" weighs in at a whopping 375,000 pounds and is just over 57 feet in length. It also sports a 21-cubic-yard capacity bucket that has no problem loading even the largest 240-ton-capacity haulage trucks. This can be accomplished in only 7 or 8 passes.

Since the 994 is a true "production" machine, it offers many advantages for the opera-

tion. It can be used to mine low-bank areas, thus leaving the larger shovels to mine the higher banks.

It can also be used as a back-up in case a priority shovel experiences a breakdown.

This loader does everything in a big way. With a price tag approaching \$2 million and tires costing \$28,000 (that's each), it is the most expensive machine, other than a shovel, ever to come onto the property.

It is equipped with a Caterpil-

lar 3516 V-16 diesel engine rated at 1,250 horsepower. It also has oil-cooled multiple-disc brakes, and a lockup torque converter. Controls are arranged for operator comfort and productivity.

This machine will definitely give even the mine's shovels a run for their money.

Reprinted from the November 1994 issue of the Phelps Dodge Corporation's Morenci Copper Review.

Coal education dream becomes a reality

1995 will be the year some children in western Kentucky climb onto "A shuttle car of knowledge" and embark on a trip toward coal education.

Western Kentucky C.E.D.A.R., Inc.-C.E.D.A.R., which stands for Coal Educational Development and Resources--brought a coal education program to about 3,000 children in Union and Webster counties this past January 1st.

According to Phil Edmondson, Media Relations Manager for Costain Coal Inc. and Chairman of Western Kentucky C.E.D.A.R., Inc. the coal education dream has become a reality.

"Late last year Costain Coal made a push for this coal education program, Edmondson stated, "There was a pilot program going on in Pikeville, Kentucky and we made several trips to eastern Kentucky to study their project."

On one trip to eastern Kentucky, Costain Coal flew the school superintendents of Union County, Webster County, and Providence to a "Coal Fair."

"On the way back all three wanted a similar program," Edmondson relayed, "I knew then we were headed in the right direction."

With the backing of his own coal company, Edmondson made a proposal to the Western Kentucky Coal Association to be the sponsoring body.

"Once we had the backing of such a large organization like the Western Kentucky Coal Association things began to fall into place." Edmondson stated. "We began to raise funds and then we got a big shot in the arm with a donation from the Kentucky Coal Marketing Export Council, which was appointed by governor

Brereton Jones."

With financial backing and support from several coal companies C.E.D.A.R. formed a council made up of coal people, business people, and educators.

Recently 86 teachers agreed to participate in the program which is voluntary. Forty-eight coal study units will be implemented funded by grants from Western Kentucky C.E.D.A.R., Inc.

These coal study units are just a beginning for the project.

Educational material will be provided by the C.E.D.A.R. council as well as field trips, speakers, and technical support.

"It's a big stepping stone for the coal industry here in western Kentucky," Edmondson concluded. "We're teaching our leaders of tomorrow about the benefits of coal today."

The 5 kinds of relationships

According to communication consultant, Robert Bolton, PhD, there are *five* types of interpersonal relationships:

- the *very nourishing* relationships, which contribute a great deal to our life;
- the *mildly nourishing* relationships, which make some contribution to our personal development or enjoyment of life;
- the *noncontributing* relationships, which do little for us one way or another;
- the *mildly toxic* relationships, which slightly lower our self-esteem and our enjoyment of life; and

- the *very toxic* relationships, which are demanding, hostile, nerve-wracking, and depleting.

What makes life really "interesting," says Bolton, is that sometimes a given relationship can be both nourishing and toxic.

Bolton says that when he finds himself in a "toxic relationship" that has depleted either one or both parties over a period of time, his first approach is really important to him.

If it's *not* important, he says, he withdraws immediately and permanently, "because there are so many great relationships in life to spend our time and energy on."

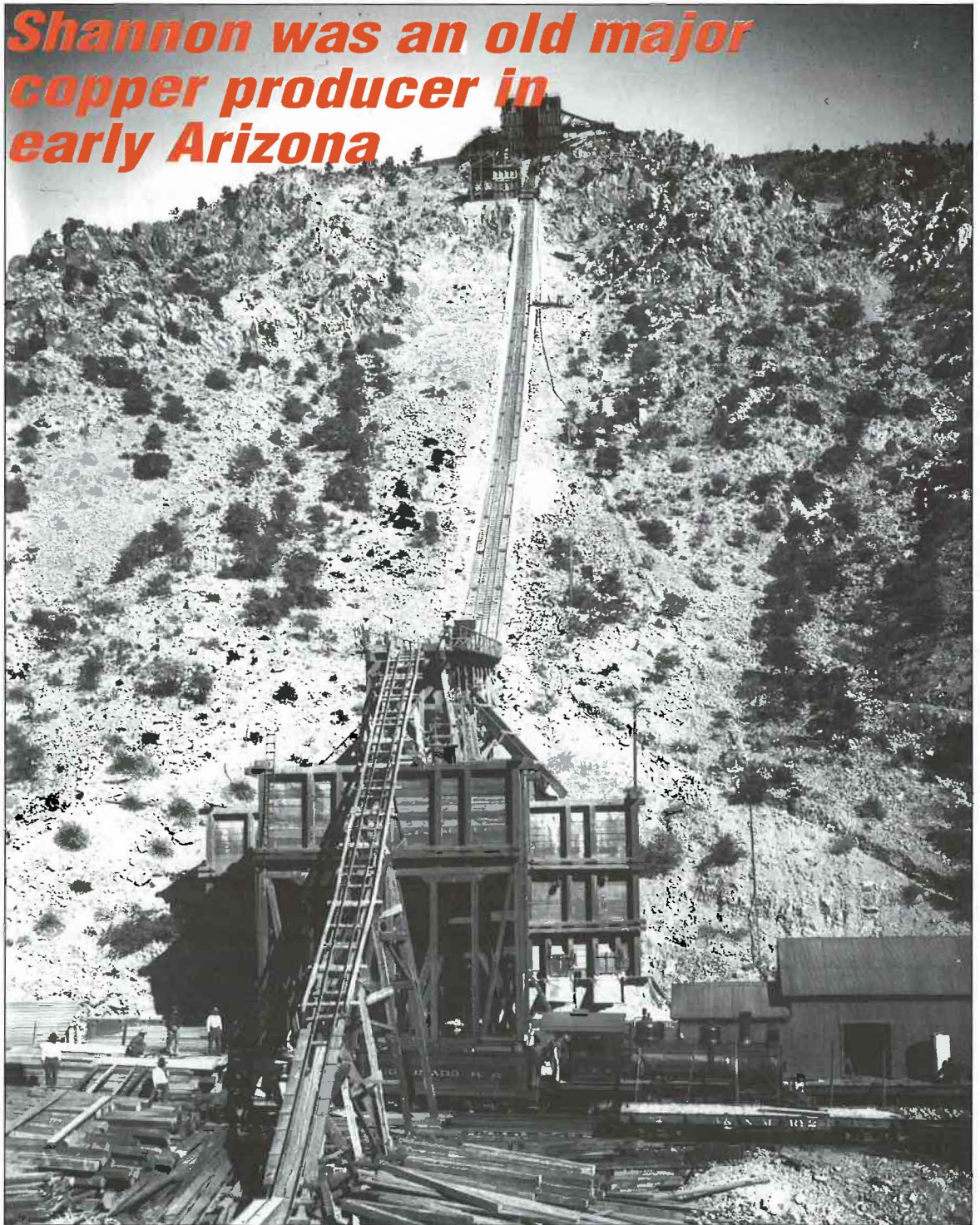
On the other hand, Bolton says if he decides the relationship *is* important, then he does whatever it takes to improve his behavior and communication skills.

What's critical, he says, is that we find the courage to either *improve* or to *end* our toxic relationships. If we don't, our selfhood and all our other relationships will be sure to suffer.

Source: *People Skills*
by Robert Bolton, PhD
Reprinted from the August 1994 issue of
Arch of West Virginia's Health Letter.

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Shannon was an old major copper producer in early Arizona



The Shannon Incline was quite an installation. It lowered ore down, took timbers (stockpile in foreground) and supplies up, and transported people in both directions.

By Bill Conner

The three major copper producers in the Morenci District in the early 1900s were the Detroit (owned and operated by Phelps Dodge), Arizona, and Shannon

copper companies.

Many small companies, such as the King, Queen, Stevens, Standard, New England, Clifton Consolidated, and Markeen copper companies were also active.

Shannon Copper Company,

organized in 1899, purchased property from the Arizona Copper Company. The holdings were located in the mountains on the east side of Chase Creek overlooking the town of Metcalf and the Arizona Copper Company mines.

Founded a town

The mining camp of Shannon was also located in the mountains overlooking Chase Creek, just north of the Shannon mine workings. Some evidence of the little town still remain today.

The Shannon mines consisted of shallow drifts, stopes, shafts and adits in the top of a ridge. The minerals mined were oxide copper ores such as malachite, azurite, and cuprite. Excavated material from the workings are

in Chase Creek Canyon north of the town of Metcalf.

Built own railroad

Originally, the company used the Coronado Railroad owned by Arizona Copper Company to haul ore from the bottom of its incline. Narrow-gauge locomotives running on tracks 36 inches wide hauled the ore to Shannon's mill and smelter located on Shannon Hill in Clifton. Later, the company built its own railroad which

Company.

All the mines which supported the town of Metcalf were shut down by 1920. The townspeople hoped things would get better, but except for a brief revival of the remote Coronado Mine, the underground mines were never to reopen. The low price of copper, high taxation and lower grade of remaining ore combined to force closure of the mines.

Ore cars arrive at the top of the Shannon Incline to be lowered to the railroad far below. The cable wheels at the top are pictured on the next page.



still visible today.

The Shannon Incline was the steepest ore incline in the District. It dropped ore cars hooked onto cables from the mines at the top of the mountain to ore bins at the railroad, located

paralleled the Coronado Railroad along Chase Creek.

With the unsettled economic conditions that followed World War 1, the price of copper fell and in 1919 Shannon Copper Company was sold to Arizona Copper

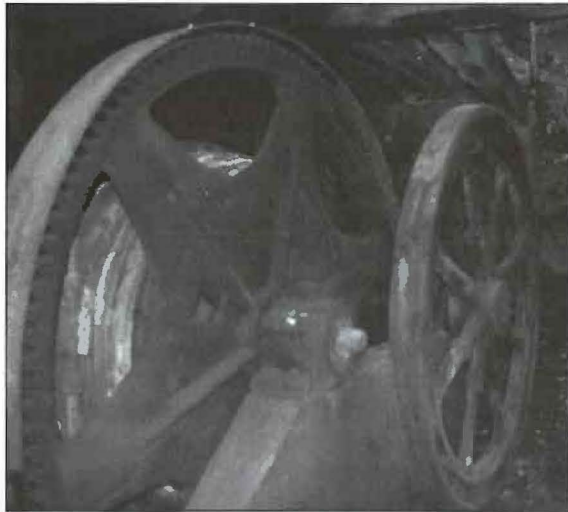
Remains still visible

Today, one can still see abundant evidence of the old Shannon Copper Company operations. The pictures accompanying this article, recently taken by Ted Cogut and John Korolsky, graphically

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Far right, the huge wheels that guided Shannon Incline cables still stand today.

Right, unused for 75 years and hidden in a tunnel, the "tugger" is remarkably well preserved.



John Korolsky emerges from an old tunnel at the top of the incline. The tunnel connected the Shannon mines with the incline.

John Korolsky stands beside the massive steel shaft, located behind the cable-guide reels, that supplied power to the cable operating the incline.



demonstrate that the old Shannon Incline is still very much in evidence.

The pictures show us beefy, heavy-duty machinery parts which powered the hoist and skeletal remains of the incline superstructure.

Along with this, the old workings of the Shannon mines, foundations of the mill and smelter, along with its slag, on Shannon Hill in Clifton all combine to give us silent evidence of a booming mining company that in 1919—76 years ago—suddenly ceased to exist.

Reprinted from the November 1994 issue of the Phelps Dodge Corporation's Morenci Copper Review.

TRAM 22 conference to be held in August

TRAM 22 will be held August 14-16, 1995, at West Virginia University. The Pennsylvania State University and the University of Kentucky are co-sponsoring this 3-day triple-tracked conference for all persons

interested in fine tuning their management/training skills.

The on-going theme for the TRAM conferences is "Training—Current Issues and Future Trends."

The registration fee is \$250 per

person before 7/15, \$300 after.

To reserve rooms at Wilson Lodge in Wheeling, WV, call 800-624-6988. For more information on the conference call Angela Durham at (304) 293-3745.

Recent increase in abandoned mine incidents

By Kelly McCracken

During the latter half of 1994, we had a dramatic increase in the number of incidents involving abandoned mines. The most tragic was the death last September of Mr. Danny Wagenknecht. This disastrous accident occurred one evening while he was driving in the Tonto National Forest. A hidden underground mine working opened up beneath his truck, causing the back end to become stuck in the old excavation. When Mr. Wagenknecht got out to see what the problem was, he fell to his death in a deep mine shaft.

Last December, three incidents occurred. Although all were originally reported as abandoned mine incidents, two did not actually involve abandoned mines. The first occurred in southeast Arizona near Safford. A group of college students was out for a "night of fun," which included throwing gasoline bombs into sink holes. One of the sink holes

collapsed, trapping a student for several hours. Eventually, he was rescued and found to have sustained no life-threatening injuries.

The next day, two treasure hunters near Tubac were injured—one fatally—when the trench they were digging in collapsed on them. This incident was originally reported as occurring in an abandoned mine; however, further investigation determined that the accident did not occur on any type of mining property.

Then, in late December—right after Christmas—the final reported incident of the year occurred. In this case, two men were exploring in an abandoned mine near Gila Bend and became separated underground. While the first one was leaving the mine, he noticed a pile of rocks he did not remember seeing earlier. He panicked and assumed that his

friend was buried under it. He immediately left the mine and went to the nearest house to call for rescue assistance. In the meantime, his friend also left the mine, not having been buried as the other had falsely assumed. While leaving the mine, however, he saw his partner's tools in a pile and falsely assumed that he had been buried beneath the rock.

He, too, went for help. Rescue crews were preparing to leave for the site when they received the second call. Fortunately, no rescue was necessary that day and no one was hurt.

[For Arizona miners:] If you have any questions about abandoned mines, or need warning signs or pamphlets, please contact the Abandoned and Inactive Mine Survey Program at the Arizona State Mine Inspector's Offices.

Reprinted from the April-June 1995 issue of the state of Arizona's MINER details.

Beyond vitamins: Healthy chemicals from plants

Is it a vitamin? Is it a mineral? No, it's "super" chemicals from plant foods such as vegetables and fruits. Evidence is accumulating that "phytochemicals" or "chemicals from plants" may offer protection from diseases such as cancer and heart disease.

Phytochemicals are not nutrients such as vitamins, proteins, and carbohydrates—

components of food that are necessary for the growth and normal functioning of our bodies. Because of this fact, they were overlooked in the past. Scientists are discovering that phytochemicals may help to eliminate toxins from our bodies, prevent cancerous tumors from growing, and lower blood cholesterol levels, among other things.

From broccoli to grapes—the right chemistry for health

Hundreds of phytochemicals have been discovered, thousands may actually exist. Those in citrus fruits and grapes can offset the potentially harmful actions of carcinogens, cancer-causing substances in the body. Chemicals in garlic and onions can help the

body get rid of toxins. And garlic chemicals may lower blood cholesterol levels in people with high cholesterol. Chemicals in soybeans can slow the rate of tumor growth and decrease cholesterol levels. Finally, phytochemicals in cruciferous (a plant of the family Cruciferae bearing four-petaled flowers resembling a cross) vegetables such as broccoli, Brussels sprouts, cabbage, cauliflower, collards, turnips, and turnip greens can also help the body eliminate toxins and slow the growth of cancerous tumors.

The evidence for disease protection takes root

The following are just a few of the recent study findings on phytochemicals and disease prevention. In one researchers

determined that sulforaphane, isolated from broccoli and other cruciferous vegetables, protected female rats from breast cancer. In a recent analysis of five studies on the cholesterol-lowering effects of garlic, researchers concluded that approximately one-half to one clove of garlic per day lowered cholesterol by 9% in people who had total cholesterol levels above 200 mg/dL. Researchers at the University of California are now enrolling women at high risk for breast cancer in a study to see if the phytochemical genistein found in soybeans can protect them from this disease. The protective effects of genistein in preventing prostate cancer are being studied at the University of Alabama. Patients in these studies will be taking 40 grams of powdered soy protein per day.

Let us plant an idea: Eat more plants!

Fruits and vegetables can't take the place of medications for treating certain conditions, such as high blood cholesterol levels. But one thing is certain: everyone should eat more fruits and vegetables—and probably eating garlic and soybeans won't hurt either! Though the National Cancer Institute recommends 5 servings of fruits and vegetables a day, other researchers are recommending up to 8 servings per day—one serving is approximately half a cup.

Reprinted from the Volume IV, Number 4, 1994 issue of Marion Merrell Dow Inc.'s CardiSense® magazine.

What are kidney stones? Who gets them and why?

Women have labor pains; men have kidney stones. Life's never that fair, of course, because women can and do have kidney stones. But men, particularly middle-aged men, are more likely to have problems.

Kidney stones form when a concentration of crystals from the urine build up in the kidney. White people get them more than black people; so do people with irritable bowel syndrome. Stones are more common during the summer when people sweat and their urine becomes more concentrated.

The agony of a kidney stone passing through the urinary tract begins suddenly in the area between the ribs and the hip and moves toward the groin. The pain

is sharp, cramping, acute and intermittent and may cause nausea and vomiting.

Most kidney stones are passed within 48 hours. The doctor will prescribe medication for pain, bed rest and lots of fluids during this time. The patient may be asked to urinate through a strainer so that the stone can be caught and analyzed.

If the pain continues to be severe, if there is persistent bleeding in the urine, or if fever and chills develop, it may mean the stone needs to be removed. The Center for Kidney Stone Disease at Georgetown University Medical Center offers the latest techniques for lithotripsy—kidney stone removal without surgery.

Preventing kidney stones

Kidney stones frequently reoccur, usually within four years. Anyone who's passed a kidney stone is highly motivated to find out how prevent another one. The doctor's advice is likely to be:

- Drink lots of liquids, preferably water. This dilutes the urine and reduces the concentration of stoneforming substances.
- Eat less meat, poultry, and fish. Animal protein increases the amount of acid in the urine.
- Have a glass of orange juice four times a day. It contains citrate which helps prevent stones. So do grapefruit, cranberry and grape juices.
- Throw out the salt shaker. High levels of salt in the diet increase urinary calcium.

THE SUN: Remember to protect yourself!

By Jean Belec, ONRSA translator

Everywhere you turn, you see ads for sunscreen lotions or articles warning you about the risks of skin cancer. Researchers are continually coming up with new (and usually scary) information about the negative effects of tanning—from melanoma, to basal cell carcinoma, to gallstones (yes, sunbathers are more likely to develop gallstones!). And let's not forget all that conflicting information about the ozone layer. Where do you turn? What do you do?

Start simple

Start by looking at what everybody agrees on. The ultraviolet radiation emitted by the sun can cause serious injury to your skin and eyes when you are overexposed to it. There is no doubt about that. The greater the exposure, the greater the risk of developing skin cancer, including malignant melanoma which has a 20% mortality rate. And as for your eyes, direct sunlight will damage your retina, and indirect sunlight (the glare from water and other reflective surfaces) promotes age-related cataracts and can burn the cornea, with no symptoms until hours later when the damage is already done.

Who does this apply to?

Everybody should be concerned about the effects of overexposure to the sun's ultraviolet radiation. Some people, however, are at higher risk than others. There are four basic skin types. Skin-type

one always burns easily and never tans. Skin-type two usually burns easily and tans minimally. Skin-type three burns moderately and tans gradually. Skin-type four burns minimally and tans readily. If you have blond or red hair, if you have fair skin and blue eyes, or if you tend to freckle, you probably fall into skin-types one or two. People who fall into these categories will burn within 10 to 20 minutes of exposure to the sun when it's at its strongest. On the other hand, people with skin-type four can be exposed to the sun for at least 45 minutes before they start to burn.

Protection

The ultimate protection is simply avoiding exposure to direct sunlight. Of course this is not always practical. Aside from vampires, not many people will avoid going outside when it is sunny. So, the first thing you can do is wear clothing made of tightly woven fabrics in order to cover as much skin as possible. Wear a hat, preferably one with a broad brim to shade your ears and neck. Wear eyeglasses or sunglasses that effectively filter both UV-A and UV-B rays. Apply sunscreen on exposed skin. The sunscreen should have a sun protection factor (SPF) of 15 or higher. If your skin starts to burn after 10 minutes of unprotected exposure to the sun, a sunscreen with an SPF of 15 will allow for 150 minutes of exposure before

you burn. Repeated applications of sunscreen will not provide extra protection for longer exposure. If your skin gets wet because of swimming or sweating, re-apply sunscreen. A waterproof sunscreen, or one formulated for active people would be preferable in these circumstances. Always read the label for instructions about the proper use of the sunscreen.

So, whatever new or controversial information you uncover regarding W-tays and tanning, keep the basic facts in mind and protect yourself and your family (especially young children).

A few simple tips

- Wear tightly-woven clothing covering as much of your body as possible.
- Wear a hat, preferably one with a broad brim.
- Apply sunscreen with a sun protection factor (SPF) of 15 or higher on exposed skin. The sunscreen should be effective in filtering both UV-A and UV-B rays; this information is usually printed on the product's packaging.
- Wear eyeglasses that effectively filter ultraviolet rays. Plastic safety glasses and plastic cosmetic sunglasses have been found to be good UV filters.

Reprinted from the July/August 1994 issue of Ontario [Canada's] Natural Resources Safety Association's Health & Safety RESOURCE.

STRESS: What it can do to us and what we can do about it

The dictionary defines stress as “a physical, chemical or emotional factor that causes bodily or mental tension, and may be a factor in causing disease.” Not all stress is bad. Some of it is caused by new, interesting, challenging experiences—clearly, things that are good for you. But, persistent stress, or repeated episodes of short-term stress associated with anxiety, fear, and lack of control, is dangerous to our health.

Short-term stress can cause long-term problems

Short-term stress, or stress that lasts for a short period of time, activates the body’s “fight or flight” response, a complex system of reactions designed to get a body away from the enemy, fast! The sense of danger causes chemicals, known as “catecholamines,” to be released, setting off numerous changes in the body. Instantly, blood pressure and heart rate go up, and breathing rate increases, helping us to fight or run. The blood will even develop a greater tendency to clot, just in case a wound or injury causes blood loss.

But modern stresses generally aren’t the kind you can physically fight or flee. Health problems arise when the body reacts this way to everyday, short-term stress—setting off the alarm system as many as 30 times a day.

Short-term and long-term stress—different types of poison

Long-term stress, experienced as a

persistent feeling of helplessness, causes the body to release a chemical known as a steroid.* Excess of this steroid, called cortisol, can cause weight gain, increases in total blood cholesterol, and decreases in HDL cholesterol, the “good” cholesterol, among other things.

Both long-term stress and repeated episodes of short-term stress can have negative effects on your health. Excess chemicals released through stress can damage blood vessels. In one study in animals, high levels of these chemicals were shown to cause lesions on the heart and, finally, sudden cardiac death—where the heart stops beating suddenly. Other studies have shown that psychological stress has greater effect on blood clotting than physical stress and can contribute to heart disease through these effects on blood clotting and other mechanisms.

The cool and calm type may be a “hot reactor” —and at greater risk

It is not just the classic “Type A Personality,” the driven, aggressive personalities, who “over” react to stress. Many outwardly calm people are, internally, what experts call “hot reactors.” Their bodies will respond very strongly, and repeatedly, to stress.

Recognizing and coping with stress

If your sleep is disturbed, if you find yourself grinding your teeth or snapping at friends, you may be experiencing stress. Other

signs include driving a car aggressively or feeling frustrated with traffic or stoplights.

If you find you are going through a period of intense stress, your first step might be to seek professional help from a psychologist or social worker. But just increasing your social contacts may help to “destress” you. One study has shown that people who had a social network had a greater buffer from stress and even less heart disease than those who did not.

A relaxation exercise

You may also want to try relaxation exercises. Here’s a simple one. Once a day, sit in a comfortable position and close your eyes. Start to breathe more slowly, and focus on your breathing. Some people choose a word or words to say to themselves as they breathe and relax. Try breathing in on “peace,” out on “fear.” As thoughts come into your mind, just quietly let them go by. Sit like this for as many minutes as you can, up to 20 minutes a day. Your heart rate will go down, as will your blood pressure. You should feel quiet and refreshed, and with time, these feelings will carry through more of your day.

*Steroids can be made by your body and serve important functions in your body. Steroids are also used as drugs to treat certain diseases.

Reprinted from the Volume IV, Number 4, 1994 issue of Marion Merrell Dow Inc.’s *CardiSense*® magazine.

Everyman's disease—a follow up, close and personal!

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By Roger Schmidt, MSHA employee/Bulletin reader

The March 1995 *Holmes Safety Association (HSA) Bulletin* printed an article entitled "Everyman's disease." Few men know about it or want to know about it, and still fewer talk about it, and yet this disease called **prostate cancer** affects many, and the numbers are increasing in the wealthier industrialized countries. Since prostate cancer has become a "close and personal" part of me, I want to share my own experience to help other men make the right decision if they should face this insidious disease.

At the age of 46 I had that feeling of near total invincibility. Up to this time I had never been sick other than a few colds. At the time I sought out the services of a urologist, my symptoms were achy lymph nodes in my groin region and in the neck. After the preliminary and routine medical checks, I had a digital exam of my prostate gland. The diagnosis of the original malady that made me seek a urologist in the first place, was a simple sinus/ear infection that an ear, nose, and throat specialist identified after the urologist made an appointment for me.

The digital exam revealed something else, something that did not contribute any symptoms whatsoever. It was a small nodule on the left apex of the prostate gland, and the urologist told me that it probably was some calcification, but that I should have it checked again in 6 months. Being young and foolish at the time, I barely knew what a prostate was. It wasn't a female part, that much

I knew, and it wasn't anything to worry about—at least that's what I was told. So I forgot about the whole thing after the throat specialist healed my lymph problem.

Two years went by and groin pains once again sent me to my favorite doctor—the urologist. At first I was somewhat put out about symptoms not showing up after the first 6 months as he had mentioned. He checked me out again. The results were basically the same and the groin pains were due to a slight hernia. The urologist made an appointment for me with a surgeon to have the hernia checked. But while I was still with my favorite doctor, and since he showed more concern about that nodule, he wanted to do a blood test, which had been perfected since my first visit, but was not yet approved by the FDA.

Sure enough, the new blood test came back positive, the Prostate Specific Antigens (PSA) test level showed a value of 7.7, which is an indication that something is not right with the gland. Whatever is not right at this stage, can either be benign or cancerous. The next step was an ultrasound picture of the gland, taken from the rectum using a tubular probe—it looked like a long 1/4" diameter tube with a bulb-shape at the end, all of shiny stainless steel. After being told what all the shadows on the picture represented, the nodule on the left apex of the gland was clearly visible. The ultrasound probe became even more sinister as the urologist suggested a

biopsy and described that procedure. I'm sure that no one looks forward to biopsies, but having all this occur in such a vulnerable region was more than I could handle.

Yet one wants to be certain that it isn't cancer! From that probe, spring-loaded, hollow needles were shot into the nodule area of the gland in order to extract cells from the suspect area. That's when the anxious waiting and major worry kicked into a higher gear until the cells were examined and categorized by a laboratory pathologist. In my case, I was diagnosed with prostate cancer, adenocarcinoma, Stage B, Gleason Score 2+2, at the ripe old age of 48. I was told that these cancers are slow growing and that there is no rush to decide which treatment to pursue. But that did not keep me from flipping out and having to seek relief by means of tranquilizers just to get a few hours of sleep every night. The ensuing days and nights were a personal nightmare—not being able to keep that thought out of my mind, and yet having to continue to hold a full-time job.

The urologist told me that the most effective and preferred treatment for someone as young and healthy as I, is surgery. We discussed the down-sides of that procedure. He also made an appointment with a radiation oncologist (cancer specialist), who explained the 5-day, 7-week long procedure with radiation and its side affects. This drove me to yet another clinic 100 miles away,

where those 2 options and yet another I had read about in a health publication, were discussed at length. I was again told that at my age and relative health, surgery is the preferred treatment. But I had never been in a hospital for any length of time, and never even thought that someone would have to cut me open—and the anxiety only got worse, my mind started playing tricks with aches and pains everywhere, while I imagined the tumor had grown from the size of a dust mote to something resembling a basketball.

After a week of agonizing, which seemed like a life-time, I finally opted for the third method of treatment (650 miles away from home) called brachy-therapy. Essentially it is the implantation of radioactive pellets directly into the gland. To me it sounded like a sure thing, I wouldn't have to be cut open, and I'd be well again once the radiation took care of the cancer cells. The urologist who finally performed this procedure mentioned that I would not need very many radioactive 'seeds', as he compared me with some of his other patients. After an epidural anesthetic (in the mid-spine region) and a light general anesthesia, 46 seeds were implanted in 2 hours time, and I walked out after an 8-hour stay.

My first check-up after 3 months revealed what I had hoped and prayed for—my PSA level had dropped to 3.5 (anything below 4.0 is considered relatively normal). The quarterly check-ups continued and the PSA reading kept coming down. It continued to be low even during my 18 months follow-up biopsy, which revealed the same malignant cancer cells as before. But the PSA kept on coming down—as low as 2.0, and I was a happy camper during that 2-1/2 year period. When my next check-

up revealed a dramatic rise in the PSA levels. My urologist at that time put me on a monthly check for these levels.

He sat with me and my wife to discuss my options. In essence, he said that: First, I can opt for doing nothing since it's a slow-growing cancer, but since I am still very young and healthy, that is not the best or even a very good option.

Second, I can opt for androgen therapy. This is a kind of drug hormone treatment regimen which essentially blocks the male hormone testosterone (one of the goodies, besides red meat that a prostate cancer thrives on). There may be some unpleasant side-affects, which usually occur, but they may only be temporary!

Third, since I had already tried brachy-therapy and it was not successful, it is not advisable to try it again, although the option is there. But there is yet a newer procedure out there that has been catching on, and it is called cryo-surgery: in this procedure the entire prostate gland is frozen solid (and essentially destroyed) with liquid nitrogen, injected by several strategically-placed probes, again on an out-patient basis. The body will eventually re-absorb the resulting dead tissue and eliminate it. And, of course, there may be some unpleasant side-affects, which usually occur, but these may only be temporary!

Fourth is surgery, a radical but nerve-sparing prostatectomy. In my case it was called a salvage prostatectomy since I've already had some type of treatment. This was the one I have been trying to avoid all along. It would take some hours and an additional few days in the hospital. Some unpleasant side-affects do occur, but these "should" disappear!

Being young and foolish, I explored the third option at a university hospital 100 miles away

and, after having yet another digital exam, I was told that that I would be a good candidate—and, once again, I was warned that there may be some unpleasant side-affects—but these may only be temporary! Again I was told that the better option is surgery—get rid of the cancer by getting it out of the body. Valium was once again my best friend while I agonized over my next move.

I finally did opt for the surgery. For that I made an appointment with yet another urologist and his opinion. He greatly empathized with my ongoing mental agony, although he assured me that the adenocarcinoma-type was not very fast nor virulent. Surgery was scheduled shortly after the first of the year, 5-1/2 years after the initial visit and digital identification. There was yet another twist to this procedure, which made me want to flee the hospital before they opened me up. The assisting surgeon hinted that the bladder may have been affected and that it may have to be removed! But not to worry, they shape new bladders with some extras from your insides! I was beside myself while I worried about that possibility.

I did go ahead with the surgery, which took about 4 hours to first remove the lymph nodes, have them instantly dissected while in a frozen state in order to identify any further spread of the disease, and then remove the gland without affecting a multitude of nerve bundles. All this was done with an epidural and a light general anesthesia.

The surgery went very well, especially when one has to consider the scar-tissue that any kind of radiation treatment can leave behind. After a 5-day stay in the hospital I was released to recuperate at home. The final

pathologic report revealed yet another twist in an otherwise successful treatment of this insidious disease: the tumor in the gland was identified to be a rare multi-focal type, in comparison to a solid mass, although it was initially identified as a solid nodule on the left apex of the prostate gland.

Since then, I have promised myself to exercise more, something I have not yet done on a regular basis, especially since I was advised to begin slowly and because I'm too comfortable in my life-style. But I have to follow through with that resolution! I also promised myself to stay away from as much fatty food—especially red meat, something that males crave more than chocolates, flowers, beer, or anything else. It's not something in the water that makes males crave red meats, it's a genetic thing and has something to do with testosterone. I have not taken this stance to the extreme, but I have made it a point to eat many more veggies, especially the cruciferous types—broccoli, cabbage, cauliflower, etc. I have always been diligent about taking vitamins/minerals, and anti-oxidants are now taken on a daily basis along with the multitude of others that I swore by since my early 20s.

There are the inevitable monthly check-ups along with the blood test. The first PSA test revealed a level of 0, and that is a very good sign. The office visits may eventually be spread out to be quarterly or less, but that is down the road a ways.

As for those unpleasant side-

affects, none of the doctors were kidding! There are several that I did not experience, but it's definitely a new adventure for a 50 year old male to try and control a muscle that he has not considered since he was successfully toilet trained. You see, that muscle is hardly ever used in a normal man, because the prostate helps to curtail any flow—except after a 6-pack when that muscle really has to get to work.

Of course there is the sex drive thing, it may also suffer—and it can remind one of the old saying, “if it's not old age, something is sure to get you.” All that falls under the heading: “there may be some unpleasant side-affects, which usually occur, but these may only be temporary!” How temporary depends on each individual.

During my entire ordeal and since my operation, I have been a ravenous reader about this insidious disease, its causes and possible remedies, its likes and its dislikes. And between all the breast-cancer news and endless articles, there have also been some exciting articles about cancer in general and how the enzyme ‘telomerase’ has been identified and how it might fit into the gamut of the cancer

disease equation.

Doctors at Johns Hopkins Medical School in Baltimore, MD, have recently published inspiring information pertaining to prostate cancer patients who have had the gland removed, but where the disease has again raised its ugly head in yet another part of the body. The treatment is based on gene-therapy—at the very essence of the chromosome where gene-splicing will individualize all human defects. The approach is still very expensive. The vaccine stimulates the body's own natural disease fighters. The vaccine is developed by inserting a copy of a gene that makes a protein, called *granulocyte-macrophage colony stimulating factor*, into the patient's cancer cells, and of course this mouthful is then injected into the patient. Thus the immune systems' cells are reconstructed to go on a search-and-destroy mission for a particular defect in the malignant cells.

The 21st Century holds great promise for the final defeat of this disease!



Be safe over the holiday!

THE LAST WORD...

Genius without education is like silver in the mine.— Benjamin Franklin

Sometimes men come by the name of genius in the same way that certain insects come by the name of centipede—not because they have a hundred feet, but because most people can't count above fourteen.—
G. C. Lichtenberg

Genius is the ability to act rightly without precedent—the power to do the right thing the first time.— Elbert Hubbard

Genius begins great works; labor alone finishes them.— Joseph Joubert

It is the neglect of timely repair that makes rebuilding necessary.—
Richard Whately

A little neglect may breed great mischief.— Benjamin Franklin

Negligence is the rust of the soul, that corrodes through all her best resolves.— Owen Felltham

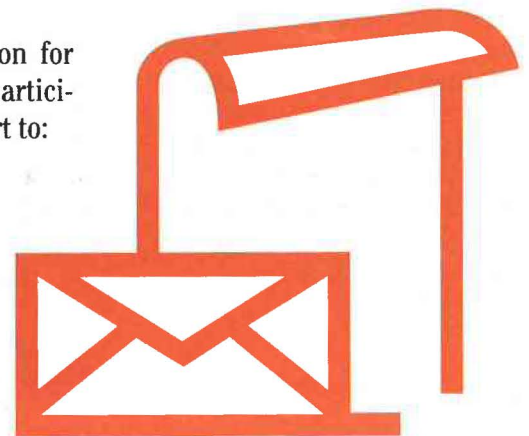
He that thinks he can afford to be negligent is not far from being poor.— Samuel Johnson

NOTICE: We welcome any materials that you submit to the Holmes Safety Association Bulletin. **We DESPERATELY need color photographs suitable for use on the front cover of the Bulletin.** We cannot guarantee that they will be published, but if they are, we will list the contributor(s). Please let us know what you would like to see more of, or less of, in the Bulletin.

REMINDER: The District Council Safety Competition for 1995 is underway—please remember that if you are participating this year, you need to mail your quarterly report to:

Mine Safety & Health Administration
Educational Policy and Development
Holmes Safety Association Bulletin
P.O. Box 4187
Falls Church, Virginia 22044-0187

Phone: (703) 235-1400



Joseph A. Holmes Safety Association Awards Criteria

Type "A" Award – For Acts of Heroism

The award is a medal with a Medal of Honor Certificate.

Type "A" Award – For Acts of Heroic Assistance

The award is a Certificate of Honor.

Type B-1 Award – For Individual Workers

(40 years continuous work experience without injury that resulted in lost workdays)

The award is a Certificate of Honor, a Gold Pin, and a Gold Decal.

Type B-2 Award – For Individual Officials

(For record of the group working under their supervision)

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Type C Award – For Safety Records

(For all segments of the mineral extractive industries meeting adopted criteria)

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(For 10, 20, or 30 years without injury resulting in lost workdays)

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(Mine operators with 25 employees or less with outstanding safety records)

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