

# Trying to Diminish the Many Horrors of Mines

UNCLE SAM WILL ESTABLISH AN EDUCATIONAL INSTITUTION TO TEACH DANGER OF EXPLOSIVES AND RESCUE OF LIFE

BY JOHN ELFRETH WATKINS.  
THE experiment station for the lessening of horrors of coal mine explosions to be at once erected near Pittsburgh by the United States Geological Survey, may be a unique educational institution, so far as the Western Continent is concerned. Coal mine explosions, like railroad accidents, are increasing in this country from year to year. Last year in Pennsylvania alone 250 human lives were lost in such catastrophes while in West Virginia 88 deaths were due to the same cause. In the latter state 103 such deaths have occurred since last New Year day. Years ago England and Belgium reduced these horrors by establishing such stations as that now to be erected here. The Belgian mines are notorious for the deadly fire damp, but now enjoy a wonderful immunity from explosions. Our states have been negligent in the matter of making laws limiting the kinds of explosives to be used by the coal miner. Many mining states have no laws of the kind whatever. While the Federal Government cannot compel the adoption of such laws it can educate the miner and mine operator, and this it proposes to do forthwith.

### Will Explode Artificial Mine.

An artificial mine while filled with gas or coal dust will receive a charge of each of the explosives commonly employed in the coal mines of the United States. Operators and miners will view the effect through the thick glass portals of a fortified observation house near by. Another artificial mine will be filled with such smoke as hovers after an explosion and men wearing novel rescue apparatus not hitherto seen in this country will perform rescue drills within the stifling caverns. The various lamps used by American coal miners will have currents of explosive gas blown at them from all directions, and the miner will see what sorts of lamps endanger his life and which are safe. There will be also a laboratory for the testing of the powers of all sorts of explosives and here will be demonstrated that some which are safe in gas and coal dust are none the less lacking in effect upon the coal to be mined.

### To Watch Explosions.

Like a giant cannon, the "explosive gallery" in which the effects of different dynamites and powders upon gas and dust are to be noted, will stretch out horizontally and with open mouth. It will be a tube of boiler-plate 100 feet long and six in diameter. It will be fitted with fire-damp and air or coal dust and air, previously mixed by large electric fans. In the closed end of the big tube there will be a mortar backed by a base of concrete 12 feet square, and in this the various explosives will be set off by an electric current controlled from an observation house near by. Along the top of the tube there will be a row of safety valves, which will open on their hinges and allow the escape of gas following the explosion. Before the fans fill the tube with the fire-damp or coal dust mixed with air, a sort of drum-head of stout paper will be stretched across the open end, and this will readily blow out when the explosion takes place, thus reducing the shock and preventing destruction of the plant—a provision somewhat important. That those witnessing the experiments may see the flash of the explosion a series of port-holes, covered with half-inch plates of glass, will be arranged along the side of the big tube. These will be on a level with a row of horizontal sills, covered with heavy plate glass, in the fortified observation house 50 feet to the side of the tube. Through these sills the flash of the explosion will be watched as it flashes down the line of port-holes or blazes from them all simultaneously. In order that operators and miners at the peep-holes may clearly note the time of explosion the lid of one of the safety valves will be opened and laid across the mouth, will be stretched a diaphragm of oiled paper, which, when the explosion occurs, will blow out and allow a piece of gun cotton, suspended upon a bracket above, to ignite.

The fire-damp will be fed to the big cylinder through a tube and gas meter, which latter will measure the amount admitted. The fire-damp will be introduced from the tube until thoroughly mixed with air. This will be effected by the electric fans, which will suck both air and gas out of one end of the cylinder, and which, after energetically churning them up, will force the mixture back into the other end, this circulation being repeated until the gas is thoroughly distributed in the entire "explosive gallery" will be modeled after—and a slight improvement upon—that of the Belgium administration of mines at Frameries. Clarence Hall, the geological survey's explosive expert, who lately returned from a tour of inspection of such stations abroad has placed at the writer's disposal the accompanying picture of the Belgian plant. It gives some idea of how our own will appear.

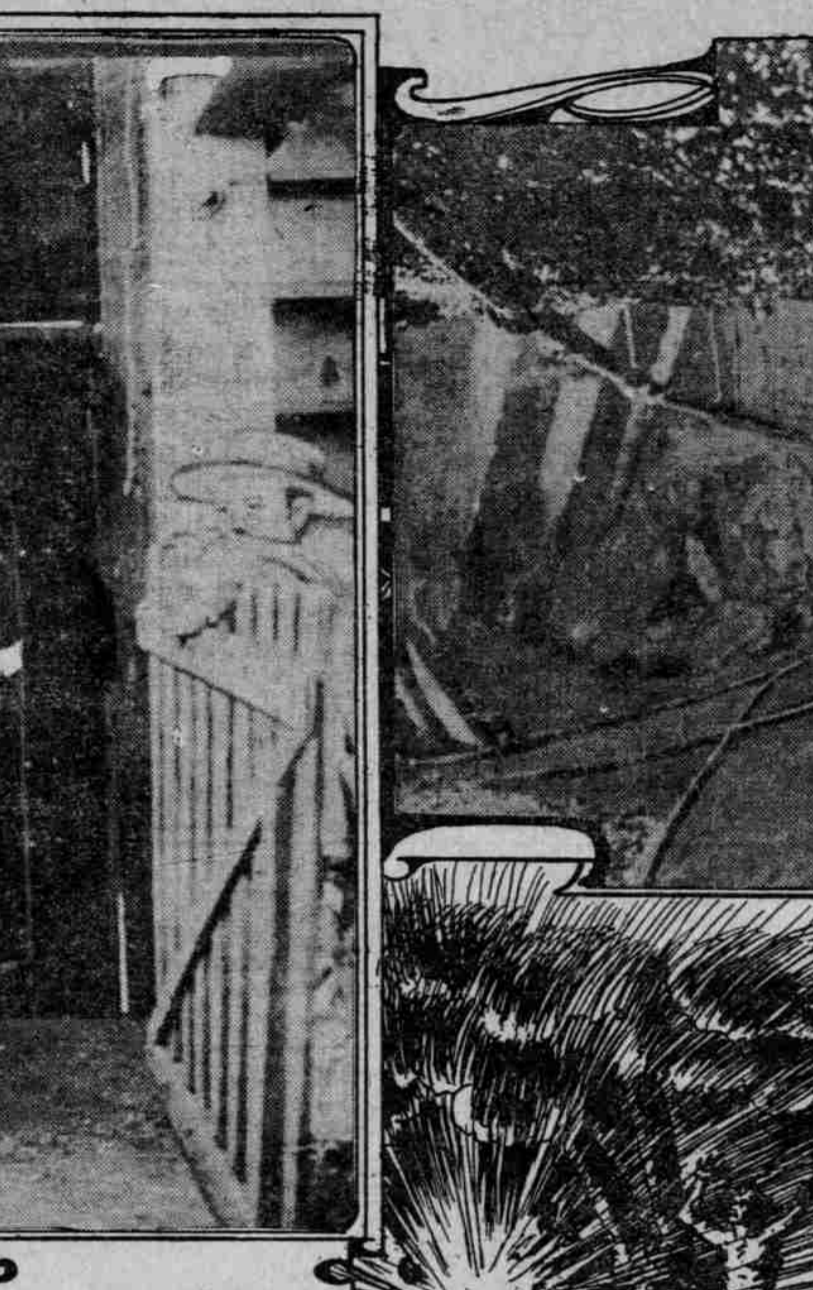


MINER STARTING DOWN SHAFT.

Dynamite, black powder and the various "safety explosives"—including the ammonia nitrate class—will be exploded in this great tube. Of course, any of those if used in sufficient quantities will ignite fire-damp or coal dust. But the tests will determine the maximum charges which can be used in mines without causing fire-damp or coal dust explosions. These will be listed by the Government as "unsafe explosives," and adoption of such standards will be urged upon mineowners. As a result of such experiments in England, Mr. Hall noted a number of "very miserable explosives," which, and no others, must, by law, be used by the miners in blasting coal. England also prescribes a "limit charge" which must not be exceeded on pain of severe penalty.

### The Rescue-Room.

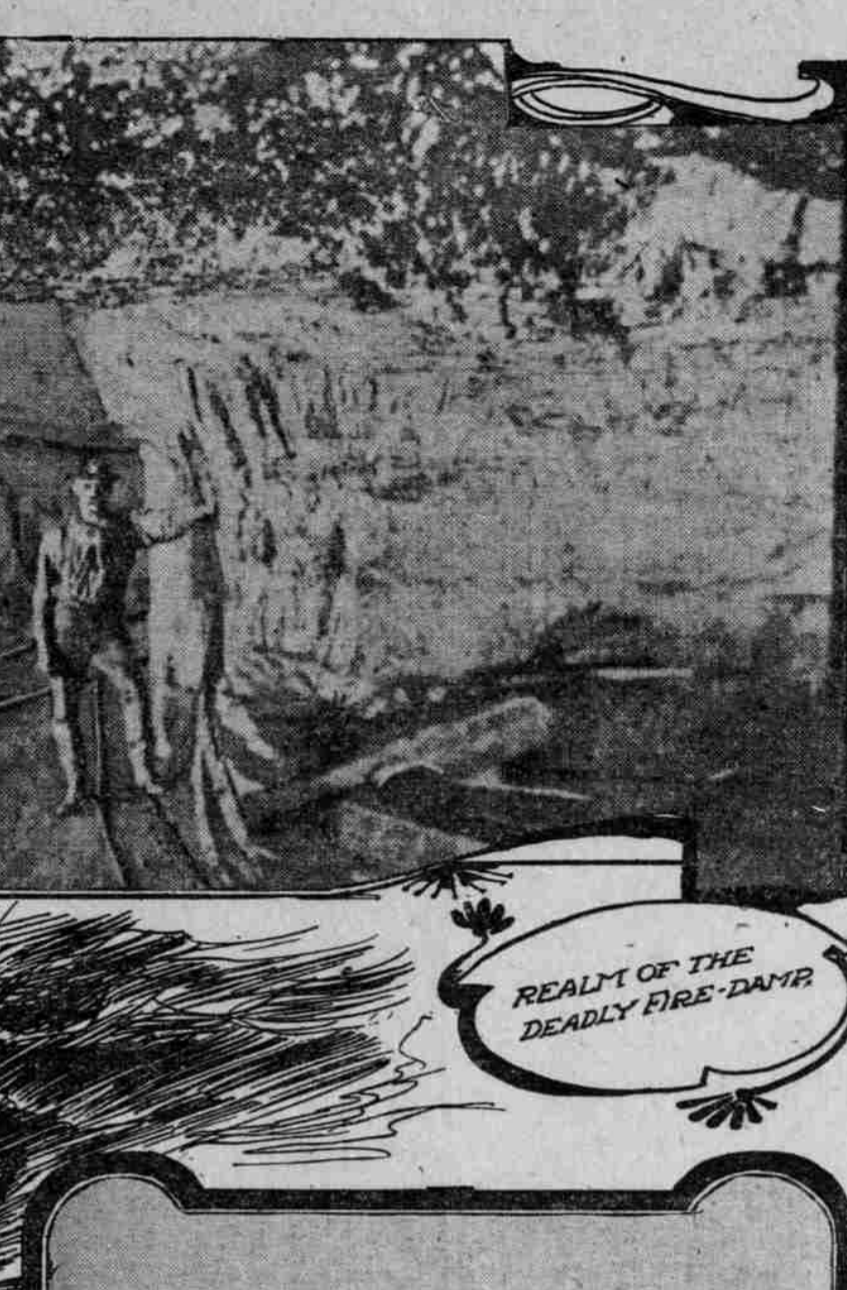
A "rescue-room," resembling the interior of a mine, will be another adjunct of our new station. There will be apparatus for filling this with smoke and a course of instruction in the art of rescuing miners will be given. The efficiency of all sorts of inventions for sustaining life after mine explosions, will here be seriously tested. The rescue-room will be several hundred feet long, and will be divided into several compartments, as they are abroad, were it possible for the rescue parties to penetrate the smoke or gas after an explosion. Under present conditions in this country the deadly fire damp often holds the rescuers back for hours, while their com-



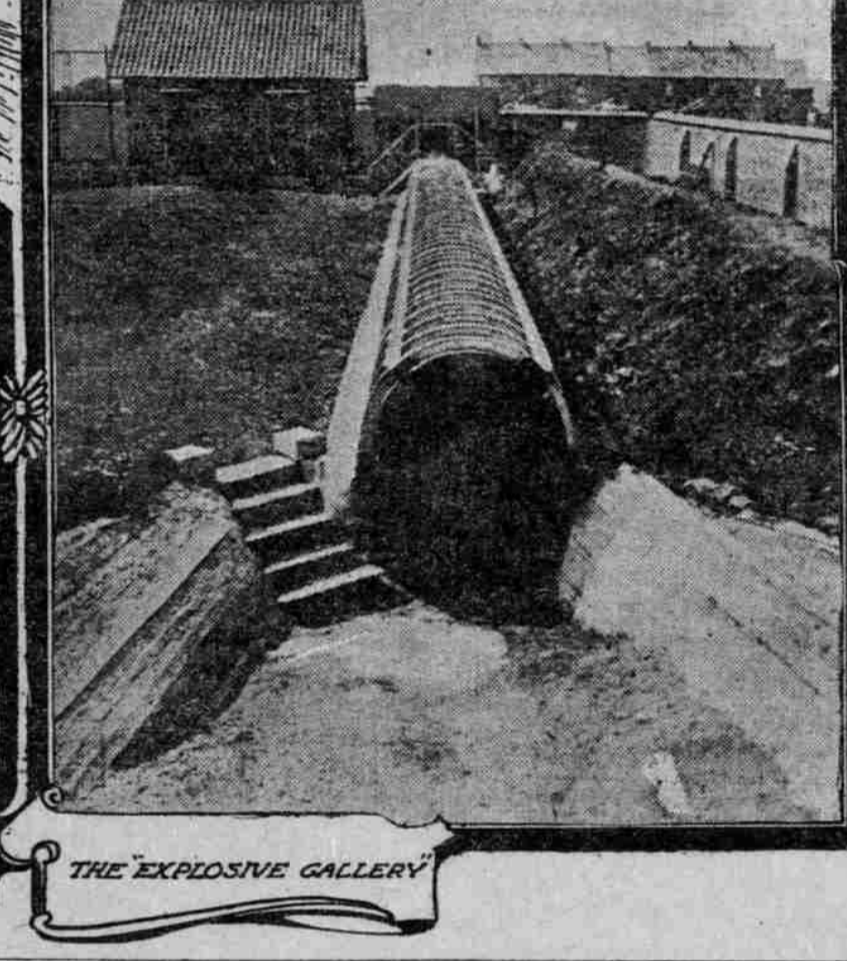
LIFE SAVING APPARATUS FOR COAL MINERS.



THE EXPLOSIVE GALLERY.



REALLY OF THE DEADLY FIRE-DAMP.



TESTING POWER OF EXPLOSIVES.

rades are being slowly suffocated or burned to death. The chief horror of such catastrophes is that it often requires eight or ten hours to get slowly to die following a severe explosion.

### Lifesaving Apparatus.

An apparatus which when worn by members of a rescue party, enables them to explore a mine filled with gas or smoke was studied by Mr. Hall, while in Europe. This will be used in the miniature mine to be erected by the government. It is a canvas jacket equipped with cylinders of compressed oxygen, connected with the wearer's mouth by a flexible, rubber-lined metallic hose. The oxygen supply is varied by a pressure gauge and the breath of the wearer passes out through lungs of potassium hydroxide, which absorb all of the carbonic acid gas given off by the lungs. The exhaled breath, after being thus purified, is then received with oxygen and breathed over again repeatedly. Wearing such a jacket a rescuer could enter a mine immediately after an explosion and undoubtedly save many lives. If these tests prove as satisfactory here as they have abroad, mine-owners will be urged to keep a supply of the jackets always ready in the mines as well as at convenient places above ground. Up to date such apparatus does not appear to have been adopted by any American mine-owners. Smokes and fumes helmets are manufactured, however, in this country and some of our coal mines are equipped with ambulance cars, while in many more the miners are drilled in first aids to the injured—in producing artificial respiration, methods of carrying the disabled, bandaging wounds, etc.

The miniature mine wherein these rescue experiments are to be made will have drifts, headings, rooms and ladders. After it has been filled with smoke miners will be instructed to enter these compartments, as if searching for injured companions.

### Testing Miners' Safety Lamps.

Many mine explosions are caused by defects of miners' safety lamps. In the "Lamp Testing Gallery" of the new station all safety lamps now used in this country will be tested, not only for their candle-power, but for their relative safety in the presence of fire damp. Some of these lamps are safe in rapid currents of air filled with gases, provided these currents are horizontal, but are quite unsafe when such draughts are vertical or oblique, in which latter cases they explode in different directions—horizontal, vertical and oblique. In Belgium Mr. Hall witnessed such a test in which the lamp used mostly in the mines of the United States behaved the worst and exploded in a gas chamber. A self-igniting lock-lamp made in Germany made the most satisfactory showing. The gas used for the tests at the Belgian station is obtained from an abandoned coal mine of the Compagnie de Charbonnages which owns mines containing the highest percentage of fire-damp to be found in the world.

### Testing Power of Explosives.

The relative powers of different mine explosives will be tested in the "explosive laboratory" of the new station. A standard quantity of each explosive will be fired from a mortar and against the face of a large pendulum weighing several tons in weight. The distance of the pendulum's backward swing caused by the force of the explosion will be recorded by a scale. Each standard sample of an explosive will be placed in a cavity in the top of a cylinder of lead eight inches high and eight inches in diameter. The explosive will be tamped with sand and moist clay and exploded by electricity, after which the resulting pear-shaped cavity produced in the lead will be filled with distilled water kept at a standard temperature and a forward measurement. The larger the cavity the greater will be the volume of this orifice. There will be delicate apparatus for measuring also the pressure and heat generated by each explosive, and for analyzing the products of each explosion.

## How the Swindler Works the Wage-Earner

Noted Labor Leader Warns His Fellow Men to Beware How They Invest Their Savings.

BY JOHN MITCHELL,  
PRESIDENT UNITED MINE WORKERS OF AMERICA.

CONSPICUOUS among the enemies constantly preying upon the wage-earner while he is fighting the battle of organized labor, is the investment swindler. He has all the craft of a wolf, his purpose seeming to be to attack the workman from the rear while his attention is absorbed by the forces facing him. And these promoters of the small investment swindling game have grown so in numbers, in boldness and in cunning that their attacks must receive attention before their depredations amount to quite as much as the losses which might come from unfair wage scales or unjust restrictions upon labor.

When a workman engages in a struggle to advance the cause of organized labor, he feels that he is doing something substantial for himself, for his family, and for his fellows. And so he is; but if he turns over to the fake investment sharpers all the concrete results of the advantage thus gained, how far ahead is he? How much more of comfort can he give himself or his family as a net result of the transaction?

It is time for the wage-earners of America to be aware of the fact that they are being systematically swindled, and swindled out of millions of hard-earned dollars every year. Unless they arouse themselves and protect their savings they might as well go back to the old labor conditions, since there is not much practical choice between giving the fruits of honest toil to an over-reaching and unjust employer and handing them over gratis to a systematized project for swindling.

Going After the Family Stocking.

In my opinion there is no class of people so fit to drink the dregs of human contempt as are those who glut themselves upon the small savings which the wage-workers have slowly and patiently put away in the family stocking. And if I could know that this word of warning would be the means of deterring workmen who

Company is back of our securities and the Securities Association has made a detailed examination and analysis of our properties and stands sponsor to the world for them. In the first three months of operation of our properties, we have been able to pay our stockholders a dividend of 12 per cent, and the splendid ore bodies now in sight warrant us in assuring our stockholders that this dividend will be substantially increased in the next three months, owing to the increased facilities of production made possible by great additions to our working equipment."

All Spell Bunco.

These are only a few of the most glaring statements contained in the "confidential" circulars and letters, displayed in advertisements, and made by solicitors, to draw money from the pockets of the wage-earners. There are scores of other now more subtle and clever baits in every mode of expression, but they all spell one word, and that is BU—N—CO.

How do I know it? How do I dare make so broad a statement? Because we have had times of unprecedented prosperity for so long that millions of dollars belonging to capitalists are lying idle or drawing only small interest. As a result, the sound securities and the solid investments are snapped up by men who understand values. These men command large sums, and in order to secure all the money required for a solid and honest enterprise, it is only necessary for men having real investment "opportunities" to go to them and convince them of the merit of their propositions. They will not permit to slip them any chance to make 20-1-3 per cent, or even 10 per cent, provided the risk involved is not too great. Which is only another way of saying that when a concern must go forth with a clang of trumpets to secure money from the wage workers, the proposition it has to offer is not only not worth considering, but it should be left severely alone. If it were put into the "confidential" letters to prospective wage-earner investors could be printed.

A Sample Case.

And this feature of the matter stands out in its true light when something of the cost of selling stocks by an "appeal to the common people" is understood. Not long ago a Chicago concern which had gone to the "people" for its support went into the hands of a receiver. Wage earners and people working for small salaries had put \$100,000 into the enterprise. When the receiver began his examination of the affairs of the company in order to determine how much those at

the head of it had diverted into their own pockets, he was amazed to discover that the entire \$100,000 had been spent in "getting the great publicity campaign started." They had committed the error of making some particularly flagrant misrepresentations and this put a period to their plans by sending them to the penitentiary before they were quite ready to do the actual fooling.

There is just one thing for the sensible workman suffering from an attack of the investment fever to do, and that is to go to a solid man of financial experience, a trustworthy man, and ask him to ascertain for him who are the men behind this wonderful "opportunity" offered to him. Find out what their records have been in the past, and what they are putting his money into, as well as what there is and who there is behind their "guarantees" and "guarantors." When you have done this you will find, in all probability, that your fever to get rich quick has cooled to the freezing point.

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Vacation is Over.

Exchange.

Vacation is over, I'm back to the grind, The ten months before me I wish were behind; My summer girl's vanished that is, she's vanished; The bath house empty, suits hung up to rot. My hat and myself are both down and both broke, My rag-out is not worth a pig in a poke; My hands, arms and face are all bittern and horns. My friends are all devilin' my troubles by turns. I'm in debt for small loans that were needful to the Me over-ambitious demands for a ride. On merry-go-rounds, on chutes and the seas (Somehow, on vacation, girls think kids John D.). Yes, back to the office, the store and the shop, And all the mean druggery our rest biddin' us; Back to the old den where our boardin' is done, Has lined up fresh art views from "Black Cat" and "Cia." The office boy's chin and the porter's back talk; Chinas laundry bills, and the eating-house chalk; And water, and oatmeal, at fifty per day, With salary at sixty, and back scores to pay. In spite of all this, when the long winter's gone, And one summertime comes a-waiting along, I'll be off 'thout sworn 'bout the house to lay round. For vacation fever, but one cure's been found.

## The Alpine Soldiers of France

Drill in the Mountains Where Special Battalions Guard Frontier.

THE most picturesque group in the French army is the Alpine chasseur; and this fact is reflected in the eastern frontier. Their service adds to the ordinary hardships and perils of the soldier's life the hazards of mountaineering.

There are several thousand of them, recruited in the valleys at the foot of Mont Blanc and all along the Swiss border. They are organized in groups of six companies of 150 men each. There are infantry battalions and batteries of artillery. Thousands of miles are used to transport the guns, ammunition and camp material.

The Alpine soldiers wear a special uniform. The artilleryist's distinction is in a short, tight-fitting jacket; that of the infantry in a peajacket with turned-back collar and cuffs.

All wear cloth caps closely resembling the Scotch Glengarry bonnet, hobnailed shoes and leggings. The artilleryist are picked men of powerful frame; the infantry soldiers are short, thickset fellows of great endurance and hardiness.

The ordinary French private carries a weight exceeding 55 pounds when on the line of march. To this the Alpine chasseur, though he hardly ever treads a mile of level ground, adds an extra blanket and a tent cloth, weighing together nearly five pounds.

Carrying this weight, he climbs mountains at the rate of about 1000 feet an hour. He goes downhill at double that rate. An ordinary day's march will lead a company or a group over a pass 5000 feet above the starting point, to a final halt 7500 feet down on the other side.

There is no place that the infantry go that the artillery do not follow. The guns are packed on muleback, so are the carriages.

Sometimes conditions are encountered when even the mules are unfitted for the task imposed on them. Then the men unload their packs, the guns are put on the carriages and the carriages on wheels. Ropes are attached and the men do what the mules could not.

During the Summer months the Alpine troops are constantly in motion. Some are doing scout duty, studying the country for lines along which an invasion might be made and for strong defensive points. Others are engaged in mimic warfare.

There is no elevation that they do not

Washington, D. C.