# Trying to Diminish the Many Horrors of Mines

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

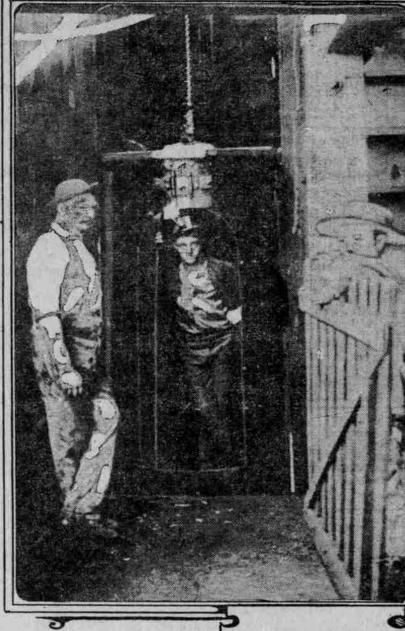
BY JOHN ELFRETH WATKINS. HE experiment station for the lessening of horrors of coal mine explosions to be at once erected near Pittsburg by the United States Geological Survey, will be a unique education al institution, so far as the Western Conlike railroad accidents, are increasing in this country 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 100 such deaths have occurred since last New Year day, Years ago England and Belglum 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 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 ginss 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 cav erns. 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 horizon tally and with open mouth., It will be tube of boiler-plate 100 feet long and six in plosives 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 fans fill the tube with the fire-damp or coal dust mixed with air, a sort of drumhead 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 witness ing the experiments may see the flash of feet to the side of the tube. Through these slits 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



and gas out of one end of the cylinder. tube of boiler-plate 100 feet long and six in diameter. It will be filled 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 and significant to the square of the cylinder, and gas out of one end of the cylinder, 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. This entire "explosive gallery" will be modeled after—and a slight improvement upon—that of the Beigium administration of mines at Frameries. Clarent energetically churning them up, will force the mixture back into the other end, this circulation being repeated until the gas is thoroughly distributed. This entire "explosive gallery" will be modeled after—and a slight improvement upon—that of the Beigium administration of mines at Frameries. Clarent energetically churning them up, will force the mixture back into the other end, this circulation being repeated until the gas is thoroughly distributed. This entire "explosive gallery" will be modeled after—and a slight improvement upon—that of the Beigium administration of mines at Frameries. ence Hall, the geological survey's explo-sive expert, who lately returned from a tour of inspection of such stations abroad will be a row of safety valves, which will has placed at the writer's disposal the open on their hinges and allow the escape accompanying picture of the Belgian of gas following the explosion. Before the plant. It gives some idea of how our

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 Ing the experiments may see the flash of the explosion a series of port-holes, cov-ered with half-inch plates of glass, will be standards will be urged upon mineowners arranged along the side of the big tube. As a result of such experiments in Eng-These will be on a level with a row of land, Mr. Hall noted a number of "per-perimental siles covered with heavy plats horizontal slits, covered with heavy plate glass, in the fortified observation house 60 miners in blasting coal. England also

A "rescue-room," resembling the inminers at the peep-holes may clearly note | terior of a mine, will be another adjunct the time of explosion the lid of one of our new station. There will be appathe safety valves will be opened and ratus for filling this with smoke and a across the mouth will be stretched a dia- course of instruction in the art of rescuacross 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 clyinder through a tube and gas meter, which latter will measure the amount admitted. The fire-damp will fall to the bottom of the tube until thoroughly mixed with air. This will be effected by the electric fans which will suck both air cures back for hours, while their comfans, which will suck both air cuers back for hours, while their com-



own will appear.

Dynamite, black powder and the various 
"safety explosives"—including the ammonia nitrate class—will be exploded in this prescribes a "limit charge," which must not be exceeded on pain of severe penalty. The Rescue-Room.

LIFE SAVING APPARATUS FOR COAL MINERS. Company is back of our securities and the Searchlight Investigation and Expert Engineering Association has made a detailed that the entire \$100,000 had been spent in Searchlight Investigation and Expert En-glneering Association has made a detailed examination and analysis of our proper-ties and stands sponsor to the world for them. In the first three months of opera-tion 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

These are only a few of the most deceived by them, what chance do you think a workingman—whose financial experience is confined, usually, to making the contents of his pay envelope glaring statements contained in the 'confidential" circulars and letters, displayed in advertisements, and made by solicitors, cover the household bills-has to see through the mysteries of the proposi-

There are a few of these financial semaphores, however, which every wageworker should know how to read and can know. At first glance they seem to show a clear right-of-way, to give the signal to "come on" at full speed, with your savings account in your hand; but when you know the rules of the road, you can see a red light a danger signal, swinging from

creased 50 per cent since our fiscal agents put the first block of development stocks on the market, 60 days ago; they will be advanced 20 points on the first day of next month and you must act promptly and somit at once if you wish to take

"We need only a limited amount for immediate development work and in order to secure the requisite sum without delay, we are making the confidential offer of a honus of one share of preferred stock

stockholders that this dividend will be substantially increased in the next three months, owing to the increased facilities of production made possible by great ad-ditions to our working equipment."

## All Spell Bunco.

I'm in debt for small loans that were needed to tide

Me over unforescen demands for a ride
On merry-go-rounds, on chutes and the seas
(Somehow, on vacation, girls think kids
John D's.)

And all the mean drudgery our rest bid us

stop:
Back to the old den where our boardinghouse Miss
Has pinned up fresh art views from "Black
Cat" and "Cis."

The office boy's chin and the porter's back Chinese laundry bills, and the eating-house

In spite of all this, when the long Winter's gone.
And old Summertime comes a-waitzing along.
I'll be off 'though sworn 'bout the house to lay round.
For vacation fever, but one cure's been found. catastrophes is that it often requires eight or ten hours for men slowly to die ollowing 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 lumps of potassium bydroxide, which absorb all of the carbonic acid gas given off by the of the carbonic acid gas given off by the langs. The exhaled breath, after being thus purified, is then refreshed 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 hero 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 have been adopted by any American mine-owners. Smoke and fume 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 dis-abled, bandaging wounds, etc.

The miniature mine wherein these res-

ue 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 com-

### Testing Miners' Safety Lamps.

Many mine explosions are caused by lefects 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 cur-rents are horizontal, but are quite un-safe when such draughts are vertical or oblique, in which latter cases they ex-plode the surrounding fire damp in a few seconds. In the testing gallery various lamps will be subjected to different velocities of explosive mixtures of gas puffed in different directions—horizontal, vertical and oblique. In Belgium Mr. Hall wit-nessed such a test in which the lamp used mostly in the mines of the United States behaved the worst and ignited the gas each time. A self-igniting lock-iamp made in Germany made the most satis-factory showing. The gas used for the factory showing. The gas used for the tests at the Belgian station is obtained from an abandoned coal mine of the Com-pagnie 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 "explosives laboratory," another interesting adjunct of the new station. A standard quantity 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. 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 next 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 pearshaped cavity produced in the lead will be filled with distilled water kept at a 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. Flashes from different explosives will be

photographed at night just as are lightphotographed at high just as are light-ning flashes, and this test will be for the comparison of lengths of flames. The camera will be posted at a standard dis-tance and the different explosives fired into the air always from the same mortar and the same angle. The duration of the flame will at the same time be measured by an electrical apparatus. Thus it will be seen to what fine points the science of explosives has been brought. The experiments at the new station will be under the direction of Dr. J. A. Holmes, chief of the Technologic branch, Geological Sur-

Washington, D. C.

## How the Swindler Works the Wage-Earner

PRESIDENT UNITED MINE WORK-ERS OF AMERICA. ONSPICUOUS 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

BY JOHN MITCHELL.

to be to attack the workingman 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 at-tention 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 workingman engages in a struggle to advance the cause of organized labor, he feels that he is doso he is; but if he turns over to the fake investment sharpers all the con-

crete results of the advantage thus

i, how far ahead is he? How 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 awaken to the fact that they are being systematically swin-dled by the small investment brokers, and swindled out of millons of hard-earned dollars every year. Unless they arouse themselves and protect their they might about as well go back to the old labor conditions, since there is not much practical choice be-tween giving the fruits of honest toll to an over-reaching and unjust employer and handing them over gratis to a systematized project for swind-

read it from investing their savings | most expensive aids in the way of without first making a thorough investigation of the proposition offered, I should feel that I had rendered a service to the wage-earners that I could look back upon always with satisfaction. If there is one sacred duty resting more heavily than another upon the shoulders of the workingman, it is that of conserving instead of scattering the small surplus which be-longs to his family. It is a most serious responsibility and any man who is sensible of its weight will proceed cautiously, will sift the situation down to a hard and cold business basis, be-fore he surrenders, those savings to any one, particularly to an unknown promoter of an investment "sure to bring large returns within a brief

There are several ways by which one can tell whether or not an investment offered him is sufficiently solid to warrant his putting his savings sober common sense you have, and this with a realization of the fact that as you cannot bargain advantageously as you cannot bargain advantageously of this sort which are very deceptive who hires hundreds of men and is ex-perienced in the art of getting the most for his money, neither can your untrained common sense be a safe guide when it comes to dealing with men whose business is to disser Go to a man whom you know to be an honest man conversant with money and corporation matters and who can detect an investment fraud at a glance. Common sense — the shrewd, natural ability to form accurate judgments—is always at disadvantage unless one has the best information upon which to act, and about the most 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 wageworkers have slowly and patiently put away in the family sharpers have evolved. They know the start of the same than the family sharpers have evolved.

crooked lawyers to defend them and to advise investors and unscrupulous advertising agents to prepare booklets, prospectuses and "confidential" let-When these baits are so skillfully set that hard-headed and experienced business men (who themselves know some of the tricks of the trade), are

Big Financial Semaphores.

at first glance:
"This company is going to be kept in
the hands of the common people and out
of the hands of the capitalists."
"The shares of this company have in-

to draw money from the pockets of the wage earners. There are scores of other and more subtle and clever baits in every mode of expression, but they all spell one word, and that is B-U-N-C-O. How do I know tt? How do I dare make so broad a statement? Because we 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 under-stand values. These men command large sums, and in order to secure all the money required for a solld 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 past them any chance to make 33 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 blare of trumpets to secure money from the wage workers, the proposition it has to offer is not only not worth consider-ation, but it should be left severely alone. If it were sound to the core, idle capital would be put into it before the "confiden-tial" letters to prospective wage-earner investors could be printed.

## A Sample Case.

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 wageworkers have slowly and patiently put away in the family and patiently put away in the family stocking. And if I could know that this word of warning would be the means of deterring workingmen who is and that they can afford to employ the suns of the common, as it will be impossible for you are taking no risk, for our guarantees is to cause him to get the for every ten share of the common, as the cost of selling stocks by an "appeal of trying your own case in court if you found yourself involved in litigation. Yet the majority of small law-sulfs are simple in comparison with the devices which the investment withheld from the market except on offering so five common, as it will be withheld from the market except on offering so five common, as it will be 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 extended on this liberal basis, it will be withheld from the market except on offering so five common, as it will be went into the hands of a receiver. Wage earners and people working for small law-stocking. And if I could know that they can reap a golden harvest if their scheme is only presented properly and the family of trying your own case in court if you respond at once. Just as soon as our needs for development expenditures are met by subscriptions on this liberal basis, it will be impossible for you to secure the common, as it will be withheld from the market except on offering working for small law-subscriptions on this liberal basis, it will be impossible for you to secure the common, as it will be withheld from the market except on offering working for small law-subscriptions on the part of the cost of selling stocks by an "appeal to the cost of selling to the cost of selling to the cost of selling to the cost of sell And this feature of the matter stands

## representations and this put a period to their plans by sending them to the pent-tentiary before they were quite ready to

do the actual looting.

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 tain 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. (Copyright, 1907 by J. B. Bowles).

## Vacation Is Over.

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 vamoosed);
The bath houses empty, suits hung up to roost.

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 bilaters
and burns.
My friends are all doct'rin' my troubles by
turns.

Yes, back to the office, the store and the

There is no elevation that they do not backs in portfollos.

## The Alpine Soldiers of France Drill in the Mountains Where Special Battallions Guard Frontier.

French army is the Alpine chas-, ond Chasseurs of Albertville made a seurs, who guard a section of the march on Mont Blanc last year.

eastern frontier. Their service adds to the ordinary hardships and perils of the attended with a mishap of some kind. soldier's life the hazards of mountaineering.

There are several thousand of them,

REALM OF THE

DEADLY FIRE-DAMP

recruited in the valleys at the foot of Mont Bianc and all along the Swiss border. They are organized in groeps of six companies of 150 men each. There are infantry battalions and batteries of artillery. Thousands of mules are used to d'Arrondez. transport the guns, ammunition and camp December

The Alpine soldiers wear a special uniform. For the artillerists the distinction is in a short, tight-fitting jacket; for 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 artillerists are pleked man of powerful frame; the infantry soldlers are short, thickset fellows of great endurance and hardihood.

The ordinary French private carries a weight exceeding 55 nounds when an

a weight exceeding 56 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 6000 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 car-

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 tery at Vyries at about 8000 feet eleva-the mules could not.

the mules could not.

During the Summer months the Alpine

Almost every important expedition is

On December 22, 1903, 11 men under a sergeant were caught in an avalanche. They were in three groups, united by a rope. The two rear groups were caught by the mass of snow and dragged the others after them. A second fall com-pletely buried them, but five men dug their way out. This was on the Col

December 18, 1901, an entire company of the Thirteenth Battalion was crossing the glacier of Baounet, in the Valley of Averole, under guidance of a mountaineer. As they came upon a tract of recent snow the whole slope gave way under them and they seemed on the point of being hurled over a precipice, when a hidden rock ridge stopped the moving mass and men and snow and stones and

ice were heaped up in promiscuous con-fusion. Only one man was killed. All through the season of field exercises the men sleep indifferently in the open or in the villages of the herdsmen in the upper valleys. Rolled in their blankets, they do not feel the cold too much. The tent cloths are stretched over light iron frames to keep out the damp of the Alpine night. Once a week the companies spend a day in some village to rest, wash and repair their clothes and

furbish up their weapons.

Sham battles are carried on in all the passes of the mountains which might tempt an invading force. Large groups are brought together under general officers, and attacking and defending forces

are organized.

During the Winter detachments of the rigors of the climate. There are outposts at elevations ranging from 6500 to 8000 feet. The post at Sollieres is about 7800; that of Acles 7500 and there is a bat-

When the weather conditions permit, 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 then do not strong the country in the country in the country of the country of