

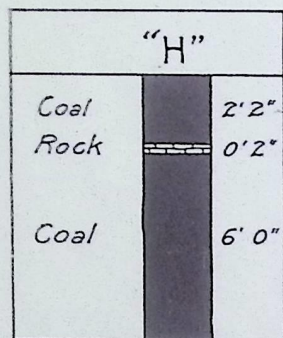
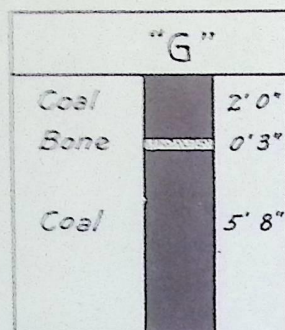
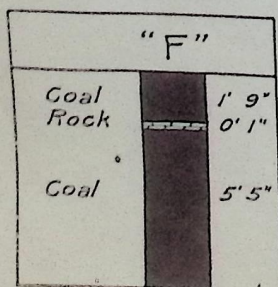
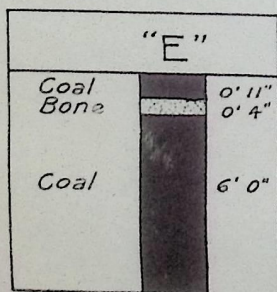
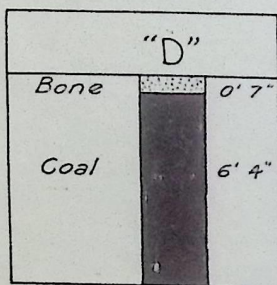
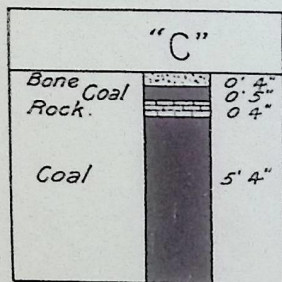
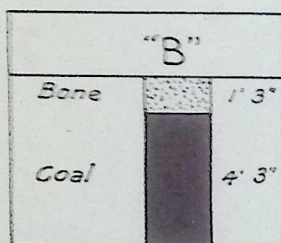
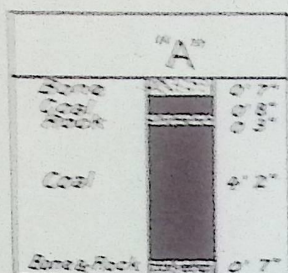
SHEET OF DIAGRAMS

SHOWING

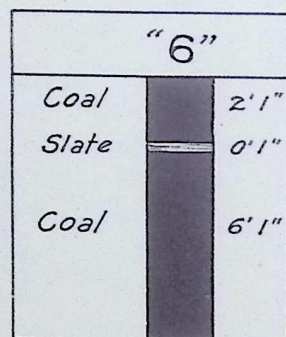
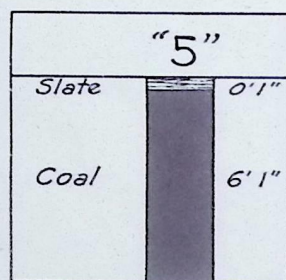
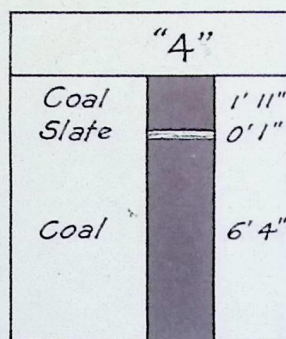
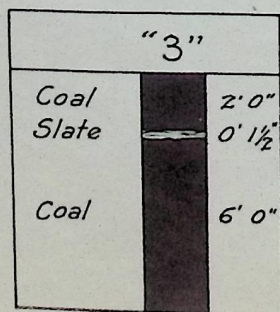
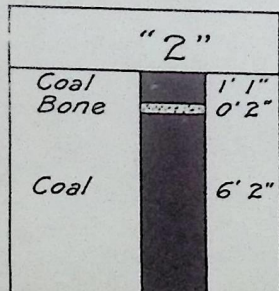
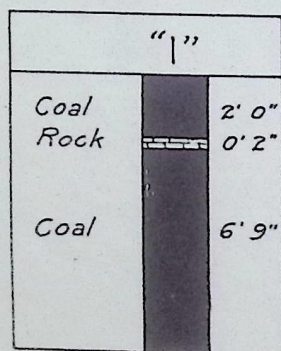
SECTIONS OF COAL SEAMS IN D, C & A MINES

SUPERIOR WYOMING

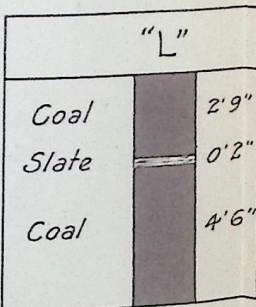
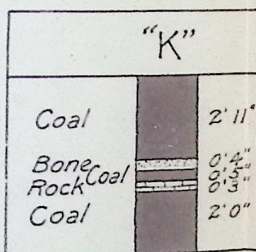
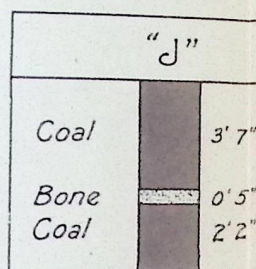
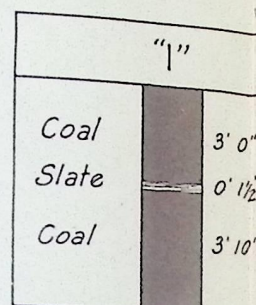
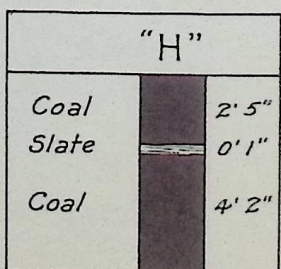
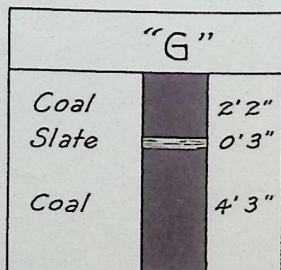
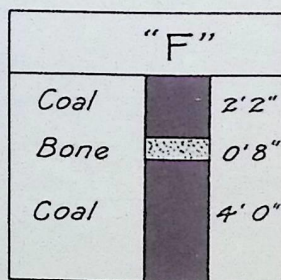
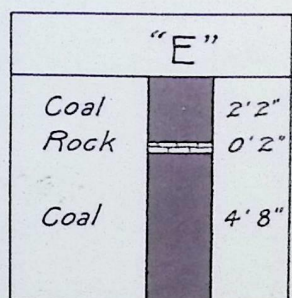
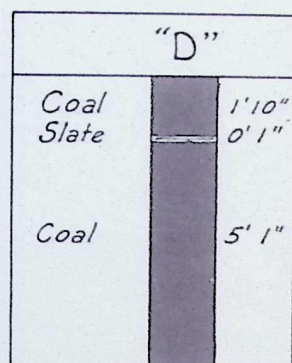
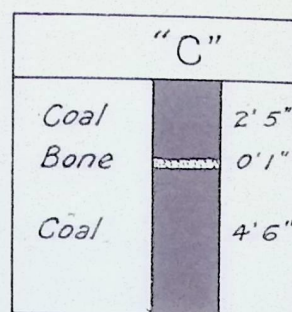
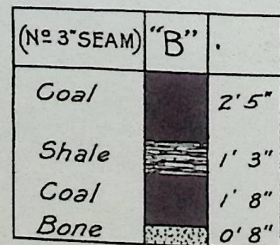
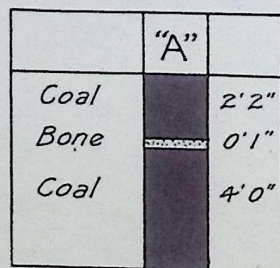
D MINE



C MINE



A MINE



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McNeil, M. E.
Consulting Engineer
Equitable Building,
Denver, Colo.

WORK, EXAMINING AND REPORTING ON
PROPERTIES A SPECIALTY.

TWENTY-FIVE YEARS EXPERIENCE IN COLORADO.
TEN YEARS AS STATE INSPECTOR OF COAL MINES.
CLASS 1884.

R E P O R T

On

THE WORKING CONDITIONS

And

SAFETY OF EMPLOYEES,

In

"D", "C" AND "A" MINES,

Of

THE SUPERIOR COAL COMPANY,

At

SUPERIOR, WYOMING.

By

JOHN McNEIL, M. E.,
Consulting Engineer,
Equitable Building,
Denver, Colorado,
MARCH, 1911.

To: D. O. CLARK, ESQ.,
Vice-President & General Manager,
Superior Coal Company,
Omaha, Nebraska.

Dear Sir:

I n t r o d u c t o r y:

In compliance with your instructions, I made an examination of the underground workings of "D", "C" and "A"

Mines at Superior, Wyoming, and I herewith present to you, this, my report on the same.

As I have, in my report on "B" and "E" Mines (of even date), referred to the geological characteristics of the field; the quality of the coal; history of the mines; the power plant, etc., etc., I deem it superfluous to repeat the same here. So, in this, I shall confine my remarks to a general description of the mines, and such salient features as may bear directly on the same.

"D" Mine: is operated on "No. 1 Seam" and consists of a drift opening. See map of the underground workings attached at end of this report.

The entrance of the drift is on Section 20, which comprises a portion of the land that under some pretext reverted to the Government, after considerable coal had been mined therefrom, and as will be seen by the map, operations on quite a number of pillars and rooms were stopped by the Government Feb. 28th, 1909.

This and the annulment of filing rights to Section 18 was indeed a serious set-back to your pre-arranged plans of development at this mine, and it is to be hoped that some amicable adjustment may be made, with a spirit of fairness, by Government officials and that these and other lands shall, in some manner, be returned to and enjoyed by your company.

To have prohibited the working out of the pillars referred to, was, to say the least, a silly command, for, if not taken out within a reasonable period, the coal will be lost to all concerned.

Your company is not under any obligations to maintain the timbering of roof in the workings developed within canceled territory, and the "conservation" of it may be of a too practical nature to be in accord with the present Government policy.

A "right-of-way" has been obtained from the Government upon ground on which improvements have been made; also a right-of-way has been given of 325 feet (162-1/2 feet on each side from the center of the main drift) from the entrance of the mine to the section line of 19, which is property of the company.

A right-of-way has also been given, of 400 feet wide, to admit the passing of the slope through the corner of Sec. 18 (see map) into Sec. 17 (property of the company), where good mining conditions exist and from which a large tonnage of coal will doubtless be mined.

It will be noticed, on the map, that the main "drift" on approaching the Section line (of 18) is turned in its direction and run as a "plane" parallel with the section line, leaving for safety, a margin of 50 feet of the coal seam.

From this plane, entries are turned at intervals and worked back towards the surface outcrop of the coal.

For Sections Of The Coal Seam, see Sheet of Dia-
grams in front of this report:

For Sec. of seam at face of No. 2 Plane,-----	see Dia. A
" " " " " " " " 10 Room, 4 S.E, " " "	B
" " " " " " " " 5 Room, 3 S.Entry " " "	C
" " " " " " " " 1 North Entry,-- " " "	D
" " " " " " " " 11 Room, 1st N.E. " " "	E
" " " " " " " " 2 North Entry,-- " " "	F
" " " " " " " " Slope,----- " " "	G
" " " " " " " " 3rd So. Entry,---- " " "	H

The Haulage Of The Coal, on planes and slope, is operated by electric hoists, which deliver the coal to the main drift, and between the plane and the tippie on the main drift, the haulage is done by a ten-ton electric locomotive.

The Ventilation, is produced by a fan and a "furnace".

The Slope Inlet, has passing in 27,000 cu. feet of air per minute, and the outlet at the fan (capacity 40,000 cu. ft.) 21,000 cubic feet per minute.

No. 2 Inlet, has passing in 22,680 cubic feet per minute, and at the outlet (furnace shaft) 26,400 cubic feet per minute.

The ventilating furnace has air passages between the fire arch and the rib of the passage, and well protected against fire. I would advise, however, against the use of furnace

ventilation. It is only where they have a long heating column (deep shaft) that they really give efficiency.

The mine is well ventilated.

There are 156 men employed.

Number of mules in the mine, 10.

An Escape-Way is driven to the surface in proximity to the head of No. 2 Plane.

A Fairly Good Sprinkling System, was observed, and a degree of natural moisture was found in the slope workings.

The Coal Seam Is Undermined, either by pick mining or machines and no coal is permitted to be shot from the solid.

The Tons Of Coal Mined per Keg of Powder Used, is 105. Here all narrow work is undermined with machines and the tonnage of coal produced with one keg of powder averages 52 tons.

The Daily Production of The Mine, is about 800 tons of run-of-mine coal.

The Stabling of Mules, is on the surface, and precautions against fire are well observed.

"C" Mine: Consists of a slope opening, driven on the true dip of the coal seam.

The portal of the slope is on the outcrop at the surface in Section 20, which is land that also reverted to the Government.

A right-of-way to the area upon which the tipples and improvements are on, was obtained from the Government, and also a 325 ft. right-of-way was granted from the slope entrance to the line of Section 21 (see map) to admit of haulage operations through the slope.

Here, also, a good deal of development in entries, rooms, and pillars was stopped by the Government's order of Feb. 28th, 1909.

For Sections Of The Coal Seam, see Sheet of Diagrams in front of this report for "C" Mine, numbered from 1 to 6 inclusive.

For Sec. of seam at face,	6th North Entry,	-----	see Dia.	1
" " " " "	7th " "	-----	" "	2
" " " " "	of Slope,	-----	" "	3
" " " " "	6th South Entry,	-----	" "	4
" " " " "	5th " "	-----	" "	5
" " " " "	#52 Room, 4th So. Entry,	" "	" "	6

The Haulage, on entries, is principally done by small electric mine locomotives delivering the coal to the slope.

A 4-ton locomotive operates in the 3rd South Entry,

" 3-ton	"	"	"	"	5th	"	"
" "	"	"	"	"	4th	"	"
" "	"	"	"	"	6th	"	"

From the 6th South Entry, panel slopes are being driven 600 feet apart and the haulage is done by small electric engines of about 20 H. P. One of these hoists is now situated at "No. 1 Panel", see map.

A small 20 H. P. electric hoist I found in use in proximity to the 7th North Entry, which is used to hoist coal from the slopes to the entry switches, thus obviating the necessity of the main slope hoist from pulling coal (by single cars) from the face of the slope as development work progresses, which is indeed an admirable plan.

The Pumping Of Water From The Slope, face, is done by an electric rotary pump. As to the growth of water in gallons per minute, I have no definite knowledge, but the volume is, however, an immaterial quantity.

The Mining Of The Coal, is done chiefly by machines. The driving of the slope, entries and other narrow work is done (and to very good advantage) by machines, but some pick mining is also done.

Absolutely no shooting from the solid is permitted.

The Tonnage Of Coal Mined To Each Keg Of Powder Used.

gives us a most excellent showing here. It is indeed refreshing to record it.

Pick Mining: In pillar work, shows 220 tons
Produced to each keg of F Powder
used.

Machine Mining: Gives 120 tons per keg of F
Powder used.

Machine Mining: Furnishes 8.25 tons of coal for
each pound of Monobel permissible
powder used, or, in other words,
206 tons for each 25 lbs. of
powder used.

The above, taken as an average, is certainly a pace for
other mines to follow.

Note: Pardon me for taking this opportunity to
draw another comparison of powder used
in Hanna No. 2 Mine, producing 28 tons
per keg of powder used, from a 28-ft. coal
seam.

Give your order to mine all coal at
Hanna.

The Ventilation Of The Mine, is produced by a 60
H. P. fan, electrically driven, has a capacity of 60,000 cu.
feet per minute, and is situated at the air shaft, in proximity
to the entrance of the slope.

No. 2 and 3	South Inlet,	11,520 cu. ft. of air per minute,					
" " " "	" Outlet,	11,500 "	"	"	"	"	"
" 4	" Inlet,	12,960 "	"	"	"	"	"
" 4	" Face,	9,600 "	"	"	"	"	"
" 4	" Outlet,	12,000 "	"	"	"	"	"
" 5	" Inlet,	9,360 "	"	"	"	"	"
" 5	" Face,	8,910 "	"	"	"	"	"
" 5	" Outlet,	9,000 "	"	"	"	"	"

There are employed,--- 137 men,

Number of mules,----- 8

Nine mules and horse are stabled on the surface.

The mine is well ventilated.

A Sprinkling System, with pipe lines on the entries, was in fairly good evidence.

Concrete Over-Cast Air Bridges, and rock stoppings of an improved type are being put in place, generally speaking, throughout the collieries at Superior.

The Daily Production Of The Mine, is about 1,200 tons of run-of-mine coal.

"A" Mine: is a slope opening, operated on "No. 7 Seam".

The Daily Production Of The Mine, is about 900 tons per day.

For Sections Of The Coal Seam, see Diagrams on sheet marked "A" Mine, from Dia. "A" to "L", inclusive.

For section of seam at down-throw fault to the north in a room in proximity to the rock man-way from the surface on the north-west corner of the mine (through which I entered to commence my examination, see Diagram "A".

For Section Of "No. 3 Seam", which lies higher in the measures than No. 7 seam, but which is brought down nearly to the horizon of No. 7 by the down-throw fault to the north, see Diagram "B". No. 3 seam, whenever in its normal condition, is from 6 to 7 feet in thickness.

For section of No. 7 Seam at fault, see Diagram "C".

For sec. of seam in #19 Room, 2nd N. Entry, see Dia. D,

"	"	"	"	"	22	"	3rd	"	"	"	"	E,
"	"	"	"	"	3	"	3rd	"	"	"	"	F,
"	"	"	"	"	at	Face of	4th	"	"	"	"	G,
"	"	"	"	"	"	"	Slope,	"	"	"	"	H

For sec. of seam at Face of 4th S. Entry, see Dia. I,
 " " " " " " " 3rd " " " " J,
 " " " " " " " #29 R, " " " " " K,
 " " " " " " " (Entry stumps) " " " L,

The Ventilation Of The Mine, is produced by a fan,
 electrically driven.

Cu. feet of air at	Slope inlet,-----	30,800
" " " " "	Manway inlet,-----	21,000
" " " " "	North Manway inlet,-----	6,500
" " " " "	No. 1 North inlet,-----	4,320
" " " " "	" " " face,-----	3,000
" " " " "	" " " outlet,-----	4,800
" " " " "	2 " inlet,-----	4,590
" " " " "	" " " face,-----	3,600
" " " " "	" " " outlet,-----	4,800
" " " " "	" South intake,-----	4,200
" " " " "	" " " face,-----	4,200
" " " " "	" " " outlet,-----	4,200
" " " " "	3 " inlet,-----	3,760
" " " " "	" " " face,-----	3,000
" " " " "	" " " outlet,-----	3,900
" " " " "	4 " intake,-----	6,000
" " " " "	" " " face,-----	5,250
" " " " "	" " " outlet,-----	6,300
" " " " "	5 " intake,-----	4,800
" " " " "	4 North and slope face,--	4,800
" " " " "	" " " " outlet,	6,000
" " " " "	" Return at fan,-----	51,300

The mine is very dry, there being no natural moisture throughout the workings. Water from the surface in a creek conveniently near by, was let into the mine, with beneficial results, and at the time of my visit, there was considerable water at the face of the slope from this source.

Concrete air-bridges and good stoppings were in evidence.

The Coal Is Undermined, and no shooting is permitted from the solid.

The Tonnage Of Coal Mined Per Keg Of Powder Used, by miners, pick mining, is 105 tons.

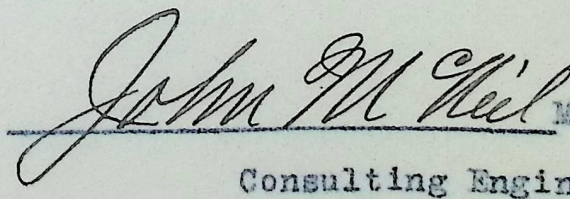
The Stables For Mules And Horses, are on the surface.

Fire extinguishers were in evidence at convenient places, and telephone connections extend through the colliery, and precautionary safeguards are in good evidence, generally.

You will note maps attached for two "A" Mines. The "A" Mine not described in this report was not examined, there being only a small area of coal to work out, prior to its abandonment.

Trusting this report will meet with your approval,
I am,

Sincerely yours,

 M. E.
Consulting Engineer.

A P P E N D I X.

-----0-----

Remarks: It is said, the inevitable risks in American coal mines exact in their toll of accidents, 34% and 66% due to the negligence of employees and employer.

In 1908, 2,450 fatal and 6,772 non-fatal accidents occurred in the mines of the United States. It seems that many deaths occurred from risks taken to save labor, being in too much of a hurry, and ignorance or non-observance of company's special rules.

I would advise that general instructions be frequently given to employees regarding the proper and safe conduct of their work by those in charge at the mines. See to it that all employees understand the company's rules, and demand an uncompromising obedience to the same.

Protect workmen and property against the dangers arising from spontaneous combustion of the "goobs" and ordinary fires in and about the mines with every known precaution.

Have adequate ventilation for the comfort and health of the men at the face of the work.

Prohibit "shooting from the solid"; no shot hole to extend beyond the mining.

Do not allow two or more shots to be fired in one place at the same time, let a sufficient interval elapse between blasts.

Do not permit wooden or other inflammable tool houses, boxes, seats, etc. in the mines; have same constructed with non-combustible materials, as far as practicable.

Remove all coal dust and other debris from haulage roads from time to time, keeping tracks as clean as possible, to prevent such debris from being ground up and carried off in suspension with the air-currents.

Demand an uncompromising obedience to your order, in having inspections made of every working place before the regular workmen enter, to see whether or not gas is generated; and have fire-bosses and mine foremen see that miners who are ignorant or indifferent to their own safety, are compelled to properly timber their working places.

The Organization Of A Class For American Red Cross First Aid Instruction, at each of your collieries, could not fail in its humane object of rendering, at times, incalculable good in the skillful handling and ministering timely aid to injured workmen, in the absence of a doctor.

Such a class might well include the superintendent, pit-boss and clerks at the mine, adding a few conscientious workmen of temperate habits and humane feelings who would find

their reward for services in alleviating the sufferings of their injured fellows. The class could be instructed, from time to time, by your regularly appointed physician.

There would, of course, be a necessary expenditure of money connected with the class, the maintenance of supplies, medicine, stretchers and other paraphernalia, but there might also be created, ways and means by which the general public would gladly contribute to the aid of such a humane cause, and should a tax to your companies reach a mill per ton, it would be a legitimate, as well as a humanitarian charge to the cost of coal.

The opportunity and pleasure was mine to meet 1st Lt. M. J. Shields, Medical Reserve Corps, U. S. Army, but now among coal miners in the interest of the American Red Cross as Medical Director to members of coal mine rescue cars and life saving stations.

In my talk with Doctor Shields, I was deeply impressed with the humane nobleness and vital importance of coal mining rescue work. This generously good and able gentleman kindly presented me with a copy of the American "Red Cross Abridged Text Book on First Aid", of which he is author, jointly with Major Charles Lynch, Medical Corps, United States Army.

Faithful to the request of Dr. Shields, I have carefully read his manual of instruction, with the result that I herewith enthusiastically recommend to your personal and mature

consideration, the adoption of "First Aid" work at the mines of your several coal companies.

Dr. Shields related to me, in part, the life saving value which these classes and organizations of "First Aid" have already proved in the coal mining districts of Pennsylvania.

Allow me, for your information, to herein copy the following brief remarks from the pages of the manual of First Aid:

"To gain the first-aid certificate of the Red Cross, it is, of course, necessary for students in associations to pass the same examination required from those in classes.

"The following course of instruction is recommended:

1. Structure and mechanism of the body.
2. First-aid materials.
3. General directions for rendering first aid. Shock.
4. Injuries without the skin being pierced or broken.
5. Injuries in which the skin is pierced or broken.
6. Local injuries from heat, cold and electricity.
7. Unconsciousness and poisoning.
8. Handling and carrying of the injured.
9. Special injuries of mine or railroad, etc.
10. Lecture by an expert on means for preventing accidents.
11. General review.
12. Sanitary matters, prevention of contagious diseases, such as tuberculosis, typhoid, scarlet fever, etc.

"The lectures should be shorn of all technical terms and half an hour is quite enough for them. Then the medical director or teacher should ask questions and superintend practical work by the class for half an hour. Practical work should be increased as much as possible just as soon as the men can do anything in this direction. After this, if possible, have the men discuss the subject among themselves, telling about recent injuries they have seen, how they have dressed them, etc.

"All the men should, if practical, have date cards for the year with numbers on the margin which are to be punched out at each meeting.....

"Contests in different classes or associations and between such organizations have been found to be one of the best ways to stimulate study of first aid as well as to arouse public interest in this important subject.

"The events in such contests should naturally be those having to do with first aid problems of special interest to the particular organizations concerned. As a sample of such contests, the following is taken from a program of an actual contest in the Pennsylvania mines.

Event No. 1--Man insensible from gas, totally helpless. One man to pick him up, carry him fifty feet to good air; lay him down and perform artificial respiration for one minute.

Event No. 2.--Man injured in lower part of body.
Two men to form four-handed seat and carry him fifty feet.

Event No. 3.--Man injured; leg broken. Three men
to splint his leg with a mine sprag and some straw or hay;
make temporary stretcher out of two mine drills and two coats,
and carry fifty feet.

Event No. 4.--Man injured; wound right side of
temple; one man to open packet and dress wound.

Event No. 5.--General contest of eight teams. Man
unconscious; wounds, simple fracture of right arm between
elbow and shoulder; crushed foot with severe hemorrhage;
apply tourniquet for bleeding, splints for fracture, perform
artificial respiration for one minute, place on stretcher,
carry fifty feet over car loaded with coal, pile of mine rock,
then over fence and place in ambulance.

"An officer in charge, judges, a time-keeper and a
starter will be required for such contests.

"The First Aid Department of the Red Cross will arrange
such contests when desired and will award medals to successful
contestants.

Red Cross Examination and Certificate.

"The Red Cross stands ready to arrange an examination
for its certificate for any class of twenty persons on the
conclusion of a course of instruction in first aid."

In Conclusion, it must not be construed that my enthusiasm for "First Aid" inspires me to the extent that such a class at a coal mine should necessarily have to deal with the prevention of contagious diseases or become students in anatomy, but I do think that such a class should be taught to handle and care for, in a practical manner, injured workmen in and around coal mines.

I have personally known of cases where men, becoming insensible from "after damp" gas, die for lack of medical aid, when, if the principles of "First Aid" had only been known to their fellow workmen, their lives might have been saved.

Again, I have witnessed injured men suffering much unnecessary pain, which could have been alleviated by more skillful handling.

It remains for well-regulated coal companies, such as yours, to be leaders in this humane and most worthy cause.

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