

A3424 / B1. 38.2

Education
of
Miners

The logo for Croxley features a highly decorative, calligraphic monogram at the top, consisting of several overlapping loops. Below this monogram, the word "Croxley" is written in a classic, elegant cursive script. A registered trademark symbol (®) is positioned to the upper right of the letter 'y'.

A - Z (203 x 127mm)

JD 1430

Education - About Dust - Posters on Mines -

Aug. 1915.

TCM, File M27, M.P.P.C to FCM, 12 Aug. 1915.

Education

Posters for Use in Dust Prevention on Mines. Dutch as well. - 3000 copies.

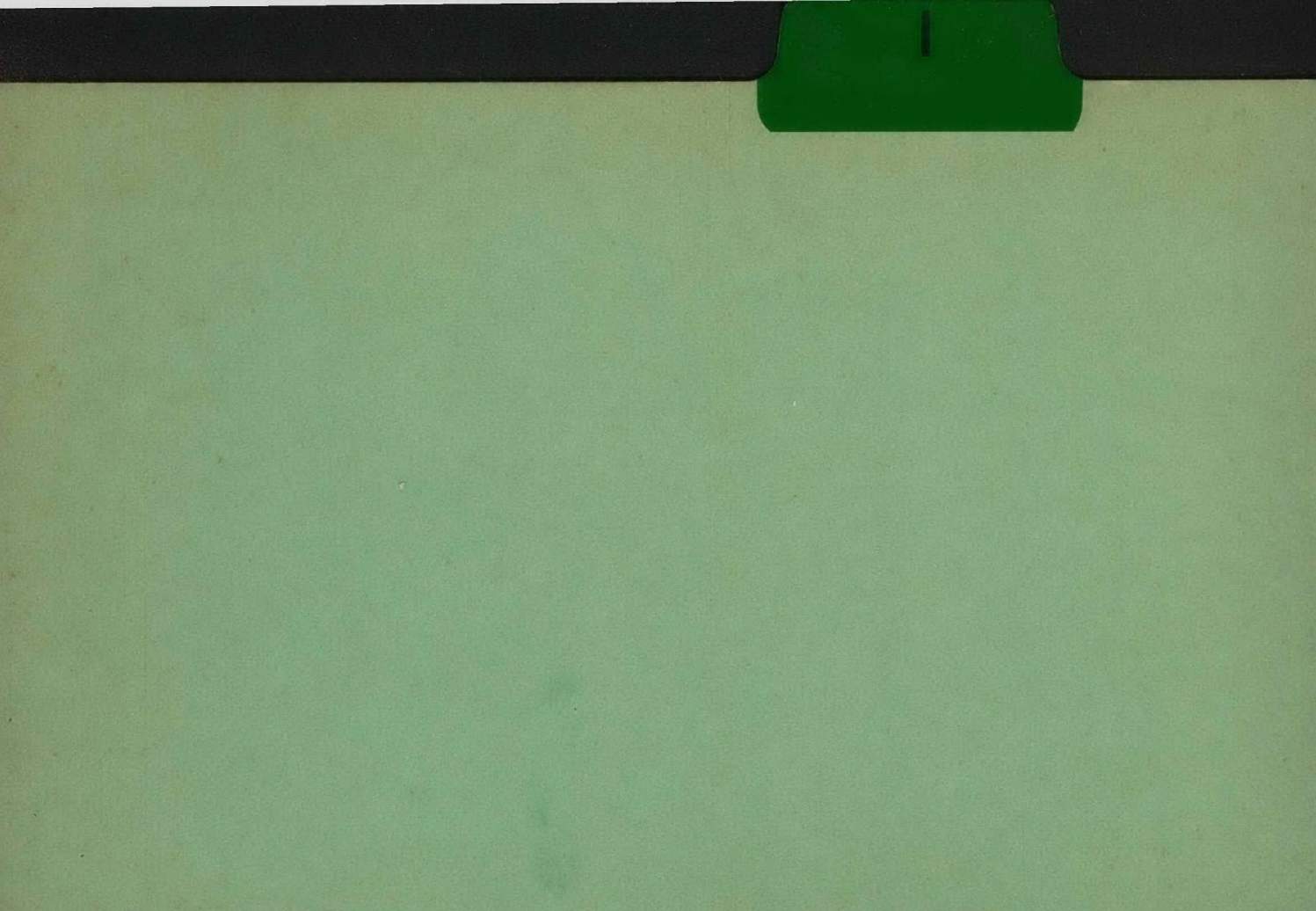
Sec COM to Sec. Miners Prevention Com^e. 25 April 1916.

Aching
Sec. Mines & Industries to Sec. Miners' Affairs Prevention Com^e. 13 April 1916.

Blondell.

G

H



IMPROVEMENTS.

Miners Phthisis Prevent Com^e - Excellent Work - Regⁿs.

Report 1916.

1900.

SAMA, 11 Nov. 1916, p. 331, J. Pratt Johnson.

In 1912 the Miners' Phthisis Prevention Committee, consisting of Government representatives, consulting engineers, mine managers, medical men and practical miners, commenced its sittings. This Committee was instructed "to inquire into, by experimental or other investigation, and to report from time to time upon the improvement of the methods for the prevention of miners' phthisis in the Witwatersrand Gold Mines, and to advise upon the introduction of a systematic and uniform policy, and the amendments to the Mining Regulations which may be necessary for combating the disease." The Committee is doing excellent work, as is evidenced by their Report, which was published in March, 1916. Several of the regulations promulgated under the Mines and Works Acts were passed on the representations made by this Com-

Serum anti typhoid → War
S.A. Clinical Research Lab - supplies generously 33,000 doses 1915
(M.J. of S.A., July 1915, p. 228)

When Mr. Jourdan originally came out to the Nourse Mine to discuss this subject of dealing with the dust evil, he had asked Mr. Barry personally to write a paper on their methods, which he (Mr. Barry) declined on the ground that he considered it would come very much better from some disinterested person like Mr. Jourdan, because it would not look then as if anybody was trying to push himself forward and score personal benefit in such a matter. This was not the object with regard to their attempted removal of this dust nuisance; he believed that every interested person was trying to do what was his duty, and that was to stop the mortality which existed owing to the excessive dust in their mines. He thought something had been done and he thought more would be done, and certainly they were in no wise allowing the matter to drop either in the mine which he had the honour to be particularly interested in (the Nourse Mines, Ltd.) or in their group.

His own personal experience of the matter was that when they first started installing their particular system they fell into the error of putting in pipes of too small size, but these were gradually being remedied; the size of pipes had been increased and the supplies of water had been improved.

When the paper was originally brought forward he had the pleasure of making a few remarks, and he did not know that anything more could be added thereto. Undoubtedly the biggest undertaking in connection with any such scheme was endeavouring to induce a body of very conservative men—although most of them belonged to the Labour Party they were conservative in their methods—to take radical steps which they had never before been asked to take. This was a matter of education, and he thought those connected with the industry were probably to blame in that they had not at an earlier date, started to educate these people up to the necessity of saving themselves from themselves. They had the extent of this phthisis evil brought home more forcibly every day. Although he did not think that one could say that the system they had started at the Nourse Mines would entirely

Barry's Reasoning Efforts on Nourse - Jourdan's system - 1911
J. of the SMIE, Jan 1912, p. 173, Jourdan The Prevention of Dust -
Dissemin R. Barry.

eradicate phthisis he thought it would go far towards lessening it, and in this connection he would like to point to what he believed was happening at a number of the Gold Fields mines to-day, where they had installed a system of water blasts along their levels in order to lay the dust and thoroughly moisten the air during the off-shift, when nobody was in the mine. On these mines they were greatly helped by the fact that they were on a single shift which a great many of the mines could not carry out owing to a variety of reasons. He believed that the single shift was one of the greatest factors in stopping phthisis. The single shift was one of the first things they should go for. Then he thought the water blast system was an excellent one if properly installed in conjunction with a good ventilating system right through the mine. They intended shortly to experiment with a similar water blast system and atomiser at the Nourse in connection with their underground fan so that all the dust would be laid and the air cooled before it passed through the fan, which he thought most important. There was no doubt that a great deal of dust was created as a result of blasting operations, and undoubtedly everybody breathed dust right through the mine, and some steps must be taken in conjunction with the use of water at the faces to lay the dust generally through the mine after blasting. Finally, he would suggest as the best remedies, for immediate adoption, the single shift, the use of a good water system laid on to each face, and some water blast system, such as atomisers, which would act in conjunction with the general ventilation of the mine, which must be thoroughly good.

Nourse Mines Dust Prevention System. — Adopted

— March 1912.

~~No~~ R.D.M. 11 March 1912 'The Dust Demon' — Mr. Jourdani's views, Govt. Mining Inspector.
before Institute of Mining Engineers.

dust problem

Water pipes + pipe filters
~~plate~~ ~~tappers~~ inspection no waiting for pipe filter.

large kinks too.

larger pipes where reqd.

+ attention to ventilation

adopted Village Deep & Robinson Deep. — success of it.

drill back holes now faster than front holes.

^{leaving}
dismissal of judge. — V. Cr. manager.

replacement improving on matters.

Oct. 1912.

Inspectors - 4 new ones - 186 applicants for them - ~~20~~ Mine Employees -

(Drummond Chaplin to JXM. 28 Oct. 1912.)

Press & Publicity — see Publicity.

— Consolidated Gold Fields. Group.

Summer: Deep — Improvements — beyond scope of Govt. legis. 1912.

J.M. papers, Amendments to Miners Pensions Bill, 1912, No. 213., incl. Proposed Evidence
by A. McArthur Johnston. (Manager of Summer Deep.

1912 + 1913
Phthisis - Precautions vs - Post improvements - Consolidated G. Fields

(M.C., 1912, Chaplin to J.X.M. 21 Sept 1912. (147))

M.C. Sir W.H. Solomon to J.X.M. 28 June 1913)

Phthisis — Improvements — Noarse — Non-Improvements often
[M. C. Barry to G. X.M. 15 Dec. 1911, (No 9)]

I had just received an onslaught by a certain Dr. Aymard at a Public Meeting, since followed up by letters in the Public Press when your kind letter came which cheered me greatly.

I have been particularly anxious not to make a personal matter of our attempts to get the better of Phthisis here, as people are always ready to be jealous of any personal credit that may accrue in such matters, but I have gone far enough now to know that the proper use of water in the Mine will go very far towards lessening Miners' Phthisis and I am determined to persist in my efforts.

People have been slow to realise what ravages this disease has made and is making, and even today the efforts to eradicate it on a great many mines are of the very flimsiest nature.

We cannot entirely absolve the Miner from blame, but we who are supposed to know better, should have started upon a serious campaign of education on practical lines long since.

I hope, myself, to see both owners and miners made to feel a personal interest in eradicating the disease as far as possible.

The terrible thing to think of is that it will take at least 7 years from the date upon which the whole community seriously starts trying to really achieve any noticeable results since as things stand today, we are perpetually manufacturing fresh victims who will be with us for some such period as 7 years.

(2) Blasting: By far the greatest amount of dust is formed by blasting, and this is probably the most dangerous too. The arrest of the dust so formed is also a very difficult if not well-nigh impossible matter. The tendency today is to have as few persons as possible underground when the blasting takes place, which is generally about 3,30 p.m., and to give the mine as long time as possible to be ventilated before the next shift comes on. This is in some instances at 7 p.m., but very frequently not till 7 a.m. next day.

→ p. 243 .

Van Nieuw, pp. 243 ff .

Saturation with water . — Single — shift . — 1912 .
cm .

As far as the development-faces are concerned, the ~~dust~~ from blasting can be comparatively easily arrested by the use of a very efficient type of water-blast. A water-blast, according to the Regulations, is a continuous spray of water projected by means of compressed air. As the space is confined, a powerful water-blast intelligently directed to meet the draught of dust-laden air as it emerges from the face where it is formed arrests practically all the dust and smoke.

In stopes and other large areas it is impossible to apply water to meet the dust formed, and ventilation alone must be relied on to replace the vitiated air by pure air from the surface. It is the practice, however, to place atomisers and sprays in convenient positions in all travelling ways to saturate the air as much as possible. These wet surfaces act to some extent as depositing areas for a certain amount of dust. The remaining dust eventually finds its way out of the mine through the upcast shaft. Great care must be exercised to keep the air constantly saturated, or these surfaces, where the dust has been deposited, are liable to become dried up and to liberate dust which will be carried away in suspension by the air-currents. The ideal procedure today is to have no one underground after

blasting at 3.30 p.m. until the following morning. The mine will then have had fifteen hours to get ventilated. This, however, for many technical and economic reasons, is not always practicable. It is satisfactory to know, however, that in most mines in which the new shift commences at 7 p.m., the condition of the atmosphere by that time is practically pure.

The tendency nowadays is to arrange that blasting will be done in such order that no one will be exposed to the dust and fumes, either whilst travelling from the working-place towards the shaft, or whilst waiting for a cage or "Skip" to be taken to the surface.

.....

(8) Lashing: Freshly broken ground is of necessity

covered with dust. This can be arrested by saturating the broken ground before handling it, and by constantly applying water as lower surfaces are exposed. The roof and sides in the vicinity of lashing operations must, according to the Regulations, also be kept continually wet. It is by this means possible to almost entirely eliminate dust from this source.

The amendment of the Mining Regulations, which has been under consideration of the Mines Department for many months past, has excited more than usual interest for two reasons: firstly, because of the trouble between the mine owners and the Miners' Association, which led to the sitting of a Conciliation Board; and, secondly, because of the alarming state of affairs revealed by the investigations of the Miners' Phtthisis Board.

The amendments and the new regulations proposed have now been issued in draft form, and they cover practically the whole field of debatable points as between worker and employer. They are largely devoted to removing the possibility of ambiguity; but quite a lot of new matter is introduced having an important bearing.

In the first place the restriction of skilled mining to whites is extended to Natal, leaving the Cape as the only Province in which coloured men may be banksmen, gangers, or onsetsers. And it is made perfectly clear that only white persons can be in charge of a cage, skip, "or any other means of conveyance" for human beings underground. More responsibility is placed on the miners, engine drivers, etc., in the matter of seeing that the regulations are carried out.

Coal mining receives a very large measure of attention. Ventilation is dealt with in a new sub-section, which insists on return airways, and voluminous sub-sections govern the question of inflammable gases, lighting, roof sounding, timbering, etc.

The necessity of restricting the charging of holes and the firing of same to white holders of certificates is emphasised. Anyone who "permits" non-certificated coloured men to do so is made guilty of an offence. The miner, too, is made responsible for his explosives, and must take all possible and reasonable precautions to prevent anyone from taking explosives to the surface.

MISFIRES

There are special provisions for guarding against drilling into misfires. In shaft sinking or in any vertical shaft all the ground within three feet of a hole is to be blown over by compressed air or by water under sufficient pressure to expose any misfires or sockets, and a sketch plan must be made for reference. In winzes and drives a shift boss must see the face for himself—must make a personal inspection during the shift—to see that the same process of clearing the face to expose misfires has been properly carried out.

More stringent precautions are taken for sounding the hanging wall within 30 feet of the working face. The manager may, on written instructions, insist on a greater distance. No hole is to be drilled less than six inches from a misfire or likely to come within six inches of the line of the misfire.

The presence of five per cent. of nitrous fumes (NO₂) in the combustion of tchisha sticks (lighting torches), as previously explained in the "Mail," is to be tolerated.

THE CONTRACT AGREEMENT

Important provisions are made as to the contents of contract agreements for underground work. The contract is to be accompanied by a plan, divided into sections representing a fathom each, showing the face of the stope and also each line or point from which measurements to the face have been taken. The contract must also state the price per unit and the charges to be made for the chief items of stores and labour. These, it will be noted, are among the chief points for which the miners were contending before the Conciliation Board.

On this question of measurement two other important concessions are made to the miners. An additional section makes it clear that the contractor (miner) "or his representative" should have the right to inspect that portion of the mine plan which covers his own work at all reasonable times. A further addition states that in the event of a miner being dismissed for other than a conviction in a competent court for a breach of the regulations, or a serious breach of discipline the manager should either stop the work and have the place surveyed within 24 hours or should permit the miner to continue work until a survey of his working place has been made, and until 24 hours after the cost sheet has been delivered. The miner then has twenty-four hours to demand a check survey. A miner convicted in a competent court or who refuses to exercise his right to continue work, loses his right to a check survey.

R.D.M. 26 March 1913 (New Mining Regulation)

Contract Lond'n's - hrs. checked on surface - Ventilation deferred
New Mining Reg'n's. Text: Colours (gan gangers) Mated. H.P.P. Com. MACHN
1913.

Typhoid (see under Enteric Fever).

FUMES AND DUST

It is to be obligatory on the mine-owners to cause blasting operations and shifts to be so arranged that no workman is exposed to the fumes and dust from blasting. Again, in no case should a miner have charge of more places than can be visited without undue haste in the course of forty minutes.

An important provision is that a record must be kept by the mine overseer or shift boss of the time of the departure from and arrival at the surface of every white person working underground. If this provision is workable it will provide most important evidence on the question of the time the miners have to spend underground.

Speaking generally, there is evidence, throughout the whole of the proposed amendments and additions, of a keen desire to lower the terrible accident rate, and to enforce provisions which will have the effect of reducing miners' phthisis. Additional regulations to prevent dust and to provide pure air are held over until the report of the Dust Prevention Committee has been dealt with.

Copies of the new regulations are in the hands of the Chamber of Mines and the Miners' Association, and suggestions from these bodies must be completed before the middle of next month.

Influenza

Barry disliked — because of efforts to M. Phthisis — 1914.
good work - slow - M.P.P.C.

Barry to JXM 5 July 1914.

I am also thoroughly & disliked for my ~~eff~~ efforts
re Miners Phthisis be ~~are~~ are doing good work as
the Prevention Committee is somewhat slow.

Barny Attests to Improvements on Mines before Select Com^e 1914.

but in pure correspondence.

SC. 2. 1914, pp. 172-173
99. 1048-1062.

House Mines Good.

Member of M.P. P. Committee

Liquor to Africans — See African Box — (L)

Defects

BLASTING

Year 1912 - Medical Commission - Blasting - affects all - re-emphasis on Ventilation.

Mines Dept. Annual Report ... 31 Dec. 1912, UG 40 1913, p. 167.

Prothesis + Precautions VS - Blasting

Prothesis + Regulation of Blasting

[9 AM R - Bang to GUM Sept. 10 1913 - M.C.]
men expected to blast fresh holes & then
retest that same shift & blast the balance of the round.
Bang trying to stop this

Phthisis & Precautions Vs.

Blasting & Shifts. 1913

Acting manager City Deep to Inspector of Mines City Deep
Minutes, 9 June 1913.

No 2 shaft	(bottom)	Blasting	at 3 ^{pm}	-	shift	at 3.30 pm
"	"	"	3pm	"	"	5 pm.
No 1 shaft	(top)	"	2.30			4.30 pm

Phthisis & Blasting 1913

~~Mines Contractors see Mines Contractors.~~

hours of need control re Barry 1913 [M.C. Barry to J.K.M.
236 10 Sept. 1913)

Greater Emphasis on Ventilation - focus on dust from blasting -

1912

Mines Dept. Annual Rept. 31 Dec. 1912, p. 167. UG. 40, 1913 - M. Fergusson - Bookkeeping Inspector

Ventilation - Since it has been made clear by the report of the Medical Commission that not only machine developers, but all classes of employees, including officials, are liable to contract the disease of m.p.d., the question of ventilation has become very much more serious, since the underground atmosphere is apparently permeated with dust, and therefore in a condition dangerous for any person to breathe.

It is probable that a great deal more dust is raised and carried along with the air currents at blasting time than is the case at any other period of the shift, so that it becomes doubly necessary to carry out the regulations which requires persons to be exposed as little as possible to fumes, the result of blasting, which are heavily laden with the fine dust responsible for causing the disease.

Many of the mines have made adequate provision for the immediate raising of workment to the surface as soon as blasting takes place; others are in the fortunate position of being able to so arrange their currents that the main shafts are down cast, but at some mines, where there is considerable development going on in the lower sections and only one shaft is available for feeding that section, considerable difficulties arise at lasting time and change of shift. this matter, however, is at the present time under investigation.

Blasting - Short Shift - Putting off evil day. - Expense - Blasting. Sept 1913

10 Sept 1913 Phthisis is a far bigger factor in all this than even the men are aware of - & though we have moved a long way ahead of where we were 18 months ago when you had my friend Schumacher on the rack, yet much remains to be done "Control of blasting hours" is or should be the cry - but to control efficiency means loss of footage in many mines & so the evil day when the position must be faced is postponed. Saturday Short Shift is another thing which should be sympathetically considered & dealt with even at some considerable loss - if we are to do the right thing in the matter of health & safety etc.

Relationship betw Health & labour efficiency? }
national productivity? }
national prosperity? }

for June 1914 report?

Miners' Philharmonic Com^e. requests information on blasting. 1913
(City Deep Minutes Acting Manager G. ~~Stor~~ Sherwell to
Consulting Engineer City Deep) date?

blasting the cut & the round simultaneously not been tried here. From my own experience I have found it is by no means an efficient method on account of the possibility of having the sounds hung up, besides the fact that it is diff^t to get the same footage per round when blasted simultaneously. This naturally increases very considerably the cost of explosives.

Improvements - Blasting - Inspections - not really -

1912.

UG 40, 1913, p. 147. Mines Dept. Annual Report... 31 Dec. 1912. Mining Hygiene.

A particularly serious and difficult matter to remedy is the large amount of dust created by blasting. If all men were out of the mine at blasting time, and if they were kept out until the dust had either subsided on the damp surfaces in the mine or had been cleared out by the ventilating current, no harm would result. It frequently happens, however, that blasting takes place before all persons on the outgoing shaft have been hoisted; that it is impracticable to hoist all persons in the downcast shaft; that the persons actually doing blasting are unable to get away from the resultant fumes and dust, or that the oncoming shift is brought down before the air is sufficiently clear. Now that dust at other times has been done away with by the abundant use of water, the deplorable conditions just mentioned are probably the chief remaining cause of phthisis and the Department has been devoting particular attention to them. Considerable irritation has on several occasions been caused by what was thought to be an excessive use of its powers by the Department in stopping shifts when conditions were found to be bad, but the Department holds that it would be lacking in its duty if it were to do otherwise. While ready to assist the mines in every possible way to tide over the difficulties created by its action, the Department has insisted upon the cessation of these bad conditions as far as practicable. In this matter it has, to a large extent, had the support of the controllers of the industry, but it has been a disagreeable surprise to find even on some mines on which remedial measures are carried out in an excellent manner that action was only taken under pressure from the Department. With the universally expressed desire of seeing m.p. stamped out, and after the measures to be taken had been clearly indicated in the preliminary report by the Miners' Phthisis Prevention Committee, it would have been thought that such pressure was unnecessary.

HEALTH ON MINES

The Albu group, under the direction of Mr. George Nathan, seems to be making the most praiseworthy efforts to improve conditions on the mines under its control, and is thus setting an example to other groups which, however excellent their intentions, are not always very enterprising or quick to adopt suggestions. When the suggestion that a system of electric blasting from the surface was practicable was first put forward by the "Mail," it found many hostile critics. It was the Meyer and Charlton mine, under the control of the Albu group, that first appreciated the advantages of the suggestion from a health point of view, and decided to give it a practical trial. How the experiments were first initiated, and what progress has been made with them, has already been told in the columns of the Press. To-day it looks as if the system were a proved success in the gold mines of the Rand, and its universal adoption can only be a matter of time, unless some defect in it is revealed which has so far remained undiscovered. It is only fair to say, in this connection that, whatever credit may be due to the originator of the suggestion belongs by right to Mr. E. J. Moynihan, on the strength of whose advice and technical knowledge the "Mail" acted. To Mr. Nathan, however, belongs the credit of having been the first to make a practical trial of the proposal. Again, the Albu group is to be congratulated on its decision to post in various places throughout its mines a notice, of which the terms are published in another column. This notice seeks to impress upon underground employes the necessity of preventing accidents, and looking after their health. The most significant sentence it contains is the last—"Suggestions in these connections are welcome."

It may seem a small matter, but it is just the spirit, in which this notice is written, that does more than anything to help to convince the miner that his employer regards him as a sensible human being, and not as a machine, to be used so long as it will work, and then scrapped. If this spirit, together with a little tact, is allowed to influence and is once known to influence the other groups, a much better feeling will soon prevail between masters and men on the Rand mines.

Rand Daily Mail - 24 September 1913

Electrical Blasting From Surface - Health - Idea Moynihan - Practiced by - Sept. 1913

Albu Group

(Ippre appreciably more expensive

p. 281.

lightning accidents

fell into dipper in vogue again (1913)

Barry.

Improvements Nouse - Blasting - Manager's notice - letter Madew.

April 1912.

17 April 1912 ...The reports we get are not very A.!: but on the whole I gather that there is a genuine spirit abroad that we must now tackle this thing & knock it out...

I note however that Malan stated that though dust in the working face might now be stopped yet we were still subject to the dust created by blasting. I append for your information a copy of a letter which I have addressed to Madew, my consulting engineer, who is on the Miners' Phthisis Prevention Board "Committee" & which I would ask you to treat as confidential...

My point is that there is really but little necessity to expose any considerable number of men and boys to the evils of the fumes & dust created by blasting if we are prepared to regulate our blasting hours & prevent men from committing suicide by returning, as they do frequently today, shortly after blasting through all the smoke & fumes in order to obtain some high rate of advance in some particular development face.

Whenever you read of some "record development" you can know that this is secured only at a sacrifice of health and life - both white and black.

Single Shift (i.e: getting all your work done on the day shift) is a tremendous factor also in this business & it is especially necessary that blasting at odd hours throughout the mine should be disallowed. Of course there are times and conditions when such rules must be pushed aside. e.g: The general ventilation of the mine may call for some particular connection to be pushed at an abnormal rate.

But these are exceptions & I think pressure should be brought to bear to prevent unscrupulous and greedy men whether controller or workman from allowing such things to happen at the expense of life.

.since your last letter & my reply I have made some further enquiries re Natives & Phthisis. Information is very scant & not too reliable but I believe that about 12 natives per 1000 employed underground are admitted annually to the Mine Hospitals suffering from Phthisis & that of these some 6 die on the mines - but the balance probably do not live long even at home.

Enclosure and covering memorandum to Madew: 17 April 1912.

BLASTING RULES

Please note that in no case is any man allowed to blast his cut and thereafter return to his working face to blast his round during the same shift, except only with the special permission of the Manager and under the conditions laid down by him for each special case.

Blasting during shift hours is not allowed except during the general blasting hour at the end of the shift.

If any blasting whatever be necessary at any but the proper recognised time, special permission must first be obtained from Shiftboss or Mine Captain. SGD R.A. Barry Manager.

C I admit that the effort (the single shift & no pronounced blasting & blasting only at end of shift) would entail loss of time, in some cases, and considerable inconvenience, and possibly expense, in others.

Phthirus & Gases see

Silicosis & Precautions vs. Gases Overriding Features

Warnings to M.M.A.

shd.
Mine Managers give developers 2 or more faces.

~~Gout. considering regulating on Cut & Round Blasting - Dec. 1913.~~

(TCM file M27, AMM circular letter 24/13, 9 Dec. 1913)

∴ avoid blasting cut & round on one shift.

if not water blasts.

all sorts of directives to Mine Managers.

Warning that dust sampling ^{tests by} inspections Mines may be ranked according to
rent.

Improvements. — Barry Pioneer — laughed at.

1915.

R. Bang to JXM. 1 Aug. 1915.

All my efforts to lessen M are now bearing fruit & enough huge committees have sat & much money has been spent for some years, & many learned discourses written. The net result is just what I wrote to you years ago—"The efficient use of water where ever rock is drilled, moved or broken * and the proper control of blasting hours, is the pith of the business, & it needs determined effort on the part of all concerned to enable us to reduce the plague by 50 or 60%.

Of course it is foolish to expect recognition.

There are scores of fellows now, who, skilled in self advertisement, preach these doctrines — I am thankful for it, but one does feel amused when they try to climb on the shoulders of those who had the greatest difficulty in getting them interested at all— & when they from the exalted height of the Seats of the Mighty start to preach to me the very doctrines I was called mad for forwarding, years since, well it makes me smile!

Such is life & I am not such an ass as to grow bitter.

Blasting — Recommendations to Regⁿ. — 1910 — 1919.
Promiscuous — gave 1919.

W.G. 1937, p. 11 (alt. 1)

Miners' Phthisis Prevention Com^e. 1912 — well represented of mining ind.

Interim Report. — trial of singleshift blasting
but not prepared to advise a regⁿ.

Ind. adopted recomⁿ.

trial successful.

March 1913 next report. advised it by regⁿ.

Mines + Work Act, 1913, Regⁿ. 106, Section 33.

only blast at end of shift, except where nec. + then only
with per of the mine-overser or shift boss.

But. insuff. to clear mine between shifts when 2 worked
- the same
in 24 hrs.

1919 + Final Report of MPPC.

Regulation 60, Section 1 — blasting only once 24 hrs.
in subshift.
Promiscuous abolished.

Preventive Measures - Cut & blast adopted by 75% -
Bany.

25 May 1914

21 May 1914

One does however see evidence of how evn the most stubborn opposing & widespread ignorance & indifference to yield to treatment.

As a samll instance, look at the MP business.

A little more than 2 years ago when I was writing to you on the subject & before your report had its effect (select committe on the bill), I was dubbed a fool, impracticable, unneccessarily fussy etc etc. today it is quite a common thin for me to have a long lecture read by on of "the weight movers" of our little life, upon the excellence of certain preventive dust measures which apparntly they have invented, thogh I had them in use 3 years before the law made their use compulsory. One year ago I took up the parable at our Miners' Phthisis Prevention committee, & advocated control of blasting hours, abandonment of the Cut & Round system & such like obvious improvement.

I was nearly choke by the protagonist of the "things are good enough" theory.

Yesterday we had a meeting at which the same views I advocated were adopted by 75% of those present.

In Change of rec. with MPPC. ^{harm!} Cut & Round - Bad odour - Community do him 10 Sept. 1914.

Bang to JOM. 10 Sept. 1914

I was largely responsible for a rec. with the Preventive Com^e. adopted with regard to dealing with certain abuses in connection with control of blasting. We have set our faces sharply against the system... Cut & Round.

I have got myself into bad odour amongst certain members of the community who will do me much harm if they can.

Barry - M.P.P.C. - Cut & Round - Progress - Slow. Emphasis on Silicosis
C of M. TB,
hoist with petard

5 July 1914.

5 July 1914

I am also thoroughly disliked & suspected for my efforts re M.P., but we are doing good work on the Prevention Committee is somewhat slow. We have gained much ground & are now fighting the "cut & Round" system of blasting. The chamber of Mines is busy drawing a red herring across the trail by trying to prove that all the blame really lies at the door of Tuberculosis and not Silicosis. They will get hoisted with their own petard though - for this move enables us to attack Tuberculosis which undoubtedly exists to a very serious extent, but will not take off our attention from Silicosis.

Improvements - Barry - Water - Blasting - Macey speed
etc.

1 Aug. 1915.

1 August 1915

All my efforts to lessen M are now bearing fruit & enough huge committees have sat & much money has been spent for some years, & many learned discourses written. The net result is just what I wrote to you years ago - "The efficient use of water where ever rock is drilled, moved or broken * and the proper control of blasting hours, is the pith of the business, & it needs determined effort on the part of all concerned to enable us to reduce the plague by 50 or 60%.

Of course it is foolish to expect recognition.

There are scores of fellows now, who, skilled in self advertisement, preach these doctrines - I am thankful for it, but one does feel amused when they try to climb on the shoulders of those who had the greatest difficulty in getting them interested at all - & when they from the exalted height of the Seats of the Mighty start to preach to me the very doctrines I was called mad for forwarding, years since, well it makes me smile!

Such is life & I am not such an ass as to grow bitter.
1 August 1915

Promissuous Blasting - Oppⁿ on M.P. Prevention Com^e. Consulting Engineers - 1945
Expenses.
Reply to J.X.M. 20 Nov. 1945.

I would no longer insist upon the men paying a contribution as they do now.

Whether the government should bear a hand in this direction is a matter for argument, but that men should subscribe now, when every one has had time to organise and educate their people is, <i think, irritating without being really helpful. Individuals will continue to fail in the observance of regulations, but such failures will become increasingly scarce as the controllers realise the necessity of strengthening their organisation, so as to enforce health requirement.

There is still a considerable tendency to try and dodge expense rather than to really wipe out mp, and I become increasingly convinced that the only way of grappling with the trouble effectively is to make its existence both difficult and expensive.

The more effective control of blasting hours is, I beleive, now the most important point in the administration of prevetive measure. Sterner measures to lessen the practice of what is known as the "cut and round" systems are, I think, vital....(definition)

I made a very strong report on this subject to the Miners' Phthisis prevention Committee, coupled with some pretty strenuous recommendations. My report met with tremendous opposition on the part of Lawn, Leslie and one or two other consulting -engineers, coupled with a great deal of personal abuse; but I got the report adopted by the very great majority of the Prevention committee.

Opposition, however, did not stop there, and finally the Minister was induced to make certain important alterations in order, I think, to keep cert<in interests in hand.

This sort of thing only shows how people, even today, are apt to consider other interests rather than those of really dealing with the big evil. The subject is so full of technical detail that I fear...

Prizes - see Philthesis - Precautions Vs - Inventions.

ures, takes up the attitude that "the legal and moral responsibility" for carrying out these regulations "is a joint one, and falls equally on employers and workmen. The management of the mine is responsible for the provision, maintenance, and continued supervision of an adequate water supply, and of efficient appliances; on the workmen falls the responsibility of putting these appliances in use in all cases where their employment is called for." Examination of the regulations relating to the prevention of miners' phthisis shows that considerable responsibility is thrown on the managers and the shift-bosses of the mines, and it appears to be the policy of the Government Inspectors to supplement their lack or absence of supervision by tactfully soliciting the help and co-operation of these mine officials.

It is now proposed to examine the evidence available as to the efficiency of the system whereby the Government delegates its responsibilities to the mine officials, whose time is, naturally, taken up with the object of their appointments—the winning of gold. The most illuminating and valuable evidence is available in the extracts of the reports from the inspectorates of Johannesburg and Boksburg in Annexure "C" of the Government Mining Engineer's Report, 1914-1915. These documents represent the official report of the Government on the actual conditions obtaining in these mines to-day. The Johannesburg Inspector of Mines, after referring to the shortage of skilled men existing in the mines, states that "the knowledge of this shortage has unfortunately affected the demeanour of the workers, as now, if miners or gangers commit offences that require reprimanding by the officials, they as often as not take their discharge on being reprimanded or reported for breaches of the Mines Regulations, knowing that they can immediately get a job elsewhere. This has a tendency to cause shift-bosses to overlook and gloss over irregularities that should properly be logged in the shift-bosses' report books, inasmuch as the loss of men leaving on short notice considerably upsets the working of the mine. There are some officials who will risk these irregularities being observed by an Inspector of Mines, to the detriment of their own position and the good name of the mines when the Inspector, during the course of his inspection, encounters breaches of the regulations in almost every place entered." Further, he states, regarding shift-bosses that "the efficient carrying out of the regulations regarding safety and health rests almost entirely on the shift-bosses, but it would appear that on many mines these officials look upon the regulations as a secondary responsibility, and pay insufficient attention to their observance; consequently the Inspectors find a general slackness all round. When a miner is raised to the position of shift-boss on the same mine, he finds himself still among his 'pals,' and he naturally has a reluctance in reporting men for non-observance of the regulations, and when this condition exists, that the miner soon gets into a bad disciplinary state." His remarks in regard to ventilation are:—

Defects in System.

Double shift.

SAMR. 11 Nov. 1916, p. 334.

Pratt Johnson.

1915.

"The ventilation of the mines in this district on the whole is satisfactory, and where trouble is experienced it is invariably associated with development ends and other close places." "Unfortunately it is on development work that night shifts are mostly employed, and it is to these places and times that the senior underground officials should give their personal attention. Complaints have been received during the year that the atmosphere in some instances, at the commencement of night shift, is not as it should be, and these complaints have mostly been found to be justified. The chief fault appears to be lack of proper supervision. The whole question of health conditions is frequently left entirely to a shift boss, who as often as not is continuously on night shift, and owing to there being little or no personal supervision by a superior official, this shift boss takes things easy, and in one instance it was found that this official, after seeing his shift down, usually went to bed. When unsatisfactory conditions of this sort have been brought to light, on investigation it is found that the shift-boss has reported to the mine overseer that everything is satisfactory. The mine overseer, on the strength of this, reports to the underground manager, and that official in his turn reports similarly to the manager—the three last-mentioned officials failing to verify the shift-boss's report by occasional personal inspection: had they done so, the trouble could have been easily and immediately remedied."

The Boksburg Inspector of Mines states that the "sampling for dust as at present carried out is ridiculously inadequate in view of our present knowledge. It has served its purpose, however, in indicating how much the present system is capable of improvement. Practically no samples are taken before ten o'clock, three hours after the shift has started work, and as the dangerous time is at the beginning of a shift, it is obvious that a change in this direction should be made. The worst producers of dust at the present time in a mine are stopes, and strangely enough this question has, up to the present, escaped special attention. Dust pours out of stope openings after blasting, and a good deal of it remains in suspension in the mine air. If this were not so the samples of air taken at up-cast shafts would show higher results. The oncoming shift disturbs this dust in places which are not wet, and throws it into the ventilating currents, which are frequently too sluggish to carry it to the surface before the following shift goes underground."

He states, further, "that there is scarcely ever an inspection made without finding contraventions, and this is borne out by the number of convictions, by inspectors in this district." When it is remembered that the Government Inspectors' visits to the mines generally must be infrequent, it is interesting to note that the total number of all prosecutions in the Transvaal for 1915 was 2,124, of which 1,618 concerned coloured persons. Of these, 868 prosecutions were for "dry" drilling, or failure to use water, 782 being in respect of coloured persons. It would appear that in no case was

Bacteriologist - of Govt. laboratories.
Bacteriological laboratory.
1911 Dr. Mitchell
p. 335.

Ganger- see Mines & Occupations

any mine official successfully prosecuted for a breach of the "dust prevention regulations," and no mine-owner or chairman of a company was prosecuted. The number of breaches of the regulations reported by the shift-bosses to the managers, and the number of fines imposed by these officials, has not been published.

It should further be emphasised that surprise visits by the Inspectors is an impossibility. Sometimes the manager of the mine is warned the day before, and in any case the Inspector is immediately spotted by the banksman, who telephones down and puts the whole mine on the *qui vive*. It is even possible to detain the Inspector at the surface until such time as suits the management. It is therefore obvious that only the unlucky ones get caught, and the Inspector's observations in no way reflect the actual working conditions of that mine.

The Consulting Engineer of the Rand Mines, Ltd. (Mr. E. H. Clifford), stated in evidence: "There is no question about it that the number of breaches of these regulations is very serious. I can give you an illustration. During the monthly survey of the Chamber of Mines which was completed last September, the four dust samplers came across 'accidentally' sixty cases of dry drilling during their survey."

The evidence produced is in accord with the private opinions of individuals who are actually working on the mines. These individuals dare not express themselves publicly before any committee of enquiry, as they would most certainly be "fired" at the first reasonable opportunity.

The onus of securing the carrying out of these regulations is placed entirely on the managers and the shift-bosses. Some managers are conscientious, and take a pride in their mines being, as far as possible, dust-free, but others are only interested in the output and low-working costs, and do as little as possible. It has been proved that the shift-bosses naturally refrain from "running" their pals, and do not make satisfactory records of the working conditions from day to day. This is partly from slackness and partly from the fear of victimisation which may be encountered by any miner who dares to make a complaint.

It would appear that, generally speaking, the majority of the mines are well equipped with watering arrangements and facilities for laying the dust formed the ordinary operations of mining (with the exception of dust produced during blasting operations at the end of shift, at which time it is impossible to effectively lay the dust from stop-blasting). The failure of the present system and its administration is reflected in the numerous breaches of the existing regulations and the lack of uniformity which obtains in enforcing preventive measures generally.

It has been pointed out that the problem of artificial ventilation in the light of recent research is practically untouched on the mines to-day. The accepted idea of officials appears to be that so long as there is enough air to keep the worker alive, and so long as certain poisonous gases do not increase

Foot. Bacteriological Laboratory 1904
p. 228
C Irvine, (1904) mention of Dr. Pales.

p. 335.

A. S. E

reorganisation ~~of~~ after Anglo-Boer War, 30

above a certain percentage, the "ventilation is satisfactory." The efficiency and comfort of the worker and maintenance of his vitality at a reasonable level have ~~not~~ as yet come within their purview.

Even accepting their own standards, are they enforced? In November, 1915, 59 per cent. of the miners were working under conditions of "natural ventilation," which, if judged by the standards of ventilation accepted by hygienic experts to-day, means "no ventilation" in practically all close places where gassing accidents so frequently occur. The regulations provide that the mine managers shall cause samples of mine air to be taken, which shall be examined every three months. No conditions are laid down about the taking of the samples and the qualifications of the analyst, nor is there any guarantee that the correct result is entered. Surely such an important matter is for a Government department. From the analyses of air samples carried out by the Miners' Phthisis Prevention Committee, it would appear that the standards laid down are frequently exceeded in mine air, and yet there has not been a single prosecution for exceeding the standard, and it is doubtful if a sample of mine air has been taken with this end in view.

Furthermore, it is universally recognised that the double-shift system of working the mines is a very potent factor in the causation of miners' phthisis. Although the single-shift system was adopted by some mines as early as 1906, there are still 10 to 12 per cent. of the miners working on the Reef under double-shift conditions. That the importance of artificial ventilation and the single-shift system is now widely recognised is evident from the following statement of the Chamber of Mines before the last Select Committee: *SC. 19, 1915, p. 278 w. L.H. Kellogg, R. D. Dawes*

13 "The Chamber of Mines wishes to draw attention to certain improvements which it considers have an extremely important bearing on the incidence of miners' phthisis, namely, artificial ventilation and the system of single-shift working." *p. 288 3.*

The last Select Committee recommended that "the system be made compulsory on all mines except on those which for sufficient reasons may obtain exemption from the Government Mining Engineer." The onus is very unfairly thrown on an official because of certain "special conditions existing." A large number of men, therefore, are allowed to work under admittedly bad conditions because those in authority will not put their foot down, and because certain mines enumerated by the Chamber of Mines are at the end of their lives, and show a small working profit. It is argued that these mines spend a considerable sum of money in the country. In other words, the health of 10 to 12 per cent. of the workers is to be menaced and sacrificed for the benefit of the country generally. Such an attitude appears to be indefensible, and constitutes a weak policy of "drift."

To make fish of one and fowl of another strikes at the very root of efficiency. It has a very

JHB

Bacteriological work. Work & Value.

p. 336.

Extraction - Ventilation needed - Pratt Johnson.

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Thinking Account - See Under Finances

~~Director and Institute of Govt.~~

p. 336.

demoralising effect on all concerned. Unless each mine-owner is made to "toe the same line," the whole administrative system becomes a farce and a plaything. In public health administration it is impossible to carry on work efficiently unless absolute uniformity is maintained in the interpretations of the various bye-laws. It is true some discretion is allowed officials, but not in essentials—the rich and poor, great and small, must conform with the letter and spirit of the regulations.

It must therefore be accepted that, generally speaking, the dust prevention regulations are not enforced throughout the mines of the Witwatersrand to-day. The present system of administration is consequently a failure. That this is realised by the Department is shown by their evident desire to further amend their system. Recently many of the mines, on the recommendation of the Government Mining Engineer, have appointed a special mine official, whose sole duty is to report to the Manager matters relating to health, safety, and ventilation. This is a step in the right direction in that it recognises that the previous arrangements were totally inadequate. But the lesson of previous years has still to be learnt in that the essential feature of such an appointment is that this official should be a Government official, and not a mine official.

The system appears to depend on tact, sympathy, and good-fellowship between the Inspectors and the officials, whereas the miners often regard the Inspector as a sort of occasional policeman. What is wanted is not sympathy, but force, properly and judicially applied, discipline and organisation.

SATU & WORKER.

c/ SATU & NEWSPAPERS.

NEWSPAPERS (General)

Single - Shift - Blasting → recommended by AMM.
UG 1937 [Att 1], p. 4.

— practice — 1917.

Skilled Miners Gone - Phthisis contracts reqd.

Cut in Price of Wages Tho' Increased Productivity Required

1912.

* Rand Daily Mail - 20 July 1912 - Mine learners

T. Mathews

"Of course," said Mr. Tom Mathews, General Secretary of the Association, "there are a large number of learners underground, but why? The competent miner has been leaving South Africa largely, either through the ravages of miners' phthisis or through being continually cut in the price and getting 'fed up.' A very large number have refused to accept the economic conditions as they find them now on the Rand. A man has to do as much now on single shift as he did at the time of the strike on double shift. Now he has to boss up twice as many machines and break twice as much ground. So while it is a fact that the mining industry is all the time expanding there are fewer white skilled miners to-day underground than a year ago."

The accident death-rate is 3.90 per 1000 as against 4.10 for 1911, and while the slight decrease marks a record death-rate, there still remains a great deal of room for improvement, more especially in accidents due to falls of ground and to the careless use of explosives.

Speaking generally, the following three factors appear to be the chief reasons for the continued high accident rate:—

- (a) Bad health conditions.
- (b) "Speeding up" to secure large outputs.
- (c) Anxiety to reduce working costs.

(a) *Bad health conditions.*—Throughout the whole Witwatersrand the bad effects of miners' phthisis has now reached its climax: many of the best miners are dead, others have left or are leaving before reaching the worst stages of the disease, and a general panic has set in, preventing fresh miners from coming to the Rand from oversea.

The mines now employ largely second rate types of miners of mixed nationality who are short of the standard of experience and efficiency necessary for dealing with huge outputs and for superintending the work of ignorant natives.

A careless and inefficient miner discharged from one property easily obtains work at another mine, and wanders up and down the Reef putting in bad work on a number of mines and assisting to increase the accident rate by his carelessness in dealing with explosives, weakening the strata with injudicious use of heavy machine drills and heavy charges of explosives, and taking little heed of the dangers of badly supported hanging wall.

In some of the deep-level mines a want of systematic artificial ventilation must also affect considerably the health of both white and coloured miners, causing them to be listless and non-observant, and reducing their efficiency and usefulness to a considerable degree.

It does not seem possible that men who at the end of a day's hard work have to sit for an hour at a waiting station thick with dust and nitrous fumes, can day after day put in a good day's work, nor can a native who walks a thousand feet up a stiff incline every day be really physically fit for his work on the following morning.

If health conditions were improved, better men would compete for the comparatively high mining wages on the Rand; both white and coloured would put in a better day's work, and it is reasonable to suppose that more intelligent white supervision would tend to reduce the accident rate.

If these arguments were considered insufficient from a humanitarian point of view, it might be further urged that improved health conditions, by bringing better and more efficient miners, might tend to actually reduce working costs and cause larger profits to be made.

Working under unhealthy conditions the efficiency of the unskilled miner must remain low, and a larger number of persons must be employed to do a certain amount of work than would be under normal conditions.

As regards white miners, the skilled miner with all his faculties clear and in working order breaks more ground and uses less explosives than a mere labourer, and the difference between placing machine holes rightly or wrongly is very great indeed, and has a far-reaching effect not only on the immediate output from the mine, but on the future cost of timbering and supporting weakened excavations.

(b) *"Speeding up" to secure large outputs.*—With increased stamps and mills, and increased depths to wind from, "speeding up" has to be resorted to to secure a large output. From the Consulting Engineer down to the last joined gang of boys, every one is rushed, and so safety measures are apt to get scamped, stopes are not properly inspected or trimmed down, packs are neglected, and the contractor, urged to his utmost by those over him, takes risks which never were intended to be included among "dangers inherent to the industry of mining."

We have cases where the white man gets killed or injured with his boys, thus sharing with them the result of his careless work, or where he strenuously endeavours to protect the natives under his charge, but in many instances these consequences fall only on the natives, the white miner being away at the critical moment or working elsewhere out of the actual danger zone. If speeding up and rushing mining work to extremes is responsible for accidents, the responsibility rests principally with the controllers of the mine who determine the output on a scale which is frequently in excess of the labour complement available and of the capacity of the mine and its shafts, and who have now to live up to the promises made to shareholders. The manager only increases his anxiety and trouble by forcing work to extravagant limits, the mine officials are averse to driving men and boys, and are incessantly worried with accidents to men and plant.

(c) *Reduction of working costs.*—At the present time attempts to reduce working costs are carried too far, and economies in timbering, waste packing, pillar cutting, and other safeguards to underground workers all tend to increase the possibility of accidents. This Department has more than once had to insist on an increase in the safety measures mentioned above, which has certainly for the present added to the working costs of the mine.

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