

Current Safety Topics in the

METALS INDUSTRY

*as presented in sessions of the Metals Section
at the 41st National Safety Congress*

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Current Safety Topics in the

MINING INDUSTRY

*as presented in sessions of the Mining Section
at the 41st National Safety Congress*

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2. Educate employees to the weight hazard which of course means foot protection.
3. Get the safety message into the home.

The first objective was reached by showing the film, *The Eyes Have It*, as well as making posters of all the *Eyes Saved* stories. Plus the fact that the committee members went back into their divisions and preached eye safety.

The second objective was reached by reviewing with the committee all of the foot injuries which could have been prevented had safety shoes been worn. Armed with this information, each of the representatives went back to their divisions and started to keep a record of the number of employees wearing safety shoes, and the reasons why the others were not wearing them. This particular type of promotion decreased our foot and toe injuries from an average of 18 per month for a nine-month period to three per month over a seven-month period.

The third objective was attained when the management sponsored a hobby show. The safety committee planned a booth in which

we displayed the drop ball test for safety lenses, a homemade safety shoe testing device using an oscillograph to record the foot pounds of energy delivery on the safety toe, displayed pictures of all of our "eyes and feet" saved, as well as all of the personal and protective equipment which was available in our Safety Store. This booth was a tremendous success.

Conclusion: This program worked so successfully that our management has adopted it as the standard method of training supervisors. Our methods program is now underway and supervisors are scheduled to spend one week with the methods department usually doing the work. A short time back, supervisors were scheduled into the standards department the same way. We find the best training method is in letting the trainee actually do the work instead of listening.

Whenever we need a so-called "shot in the arm," we use this training method on our top management, and believe me it blossoms out with the desired results.

Job Training at the Butte Mines of the Anaconda Copper Mining Company

By L. F. BISHOP

Research Eng., Anaconda Copper Mining Co., Butte, Mont.

When a mining operation is faced with a shortage of underground miners the obvious first choice is to try to obtain more miners. If this is not possible the remaining choice, is to obtain the manpower available and by training to develop this manpower into a competent group of miners.

The training of this group will have a three-fold objective: safety, quality, time; the men must be trained in the shortest time possible to do quality work with safety. Therefore, the training must be organized to accomplish this end with as little lost motion as possible. The training methods of the Anaconda Copper Mining Company at Butte are organized with this objective.

A primary step in training a man in this work is to find out what he already knows. This is done at the Butte Mines Employ-

ment Bureau. Here, the prospective miner is interviewed. If he has a previous employment record in Butte, his record will immediately indicate his capabilities and he is given a permit to apply for a mining job at any one of the mines. If he is a newcomer, he is interviewed carefully as to his experience in mining or related work in other districts. If he is a "green" man he will be referred to a mine foreman for training in a "Student Stope."

The student stopes are actual producing stopes in which student miners learn by doing safely all the fundamental operations in connection with stoping. They do the various jobs necessary to the process of excavation, timbering, handling ore, and filling, in a two or three man stope under the guidance of a shiftboss or instructor. The shiftboss

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and sloughing of small pieces of roof from over the gob area. In the other cases the falls occurred in places where there had been no obvious indication that bad roof was developing. Apparently, with little or no previous indication of weakness, the roof can develop a condition rapidly that may cause it to fall.

Although none of the roof failures caused an injury, we realize that any such condition is a potential hazard, and this stresses the need for frequent and careful roof inspection. It also points out the need for continued study of the subject of roof bolting, that we may be better able to anticipate a dangerous condition.

Our workmen are being taught to look for and to recognize the signs that usually precede such failures, so that they may find a bad condition early, protect themselves against the danger and call it to the attention of a supervisor.

In an effort to control roof conditions that possibly could develop into a failure, we intend to use 44 inch bolts in the headings instead of 32 inches, continue to supplement the bolts with wooden posts under wet or damaged roof, as described previously, and consider various modifications of other mining practices, such as width of entry and location of loading points.

Roof support costs, as a result of roof bolting, have increased more than 100 per cent, but the advantages that have resulted otherwise have more than justified the cost.

These advantages include the following:

- More assured control of roof.
- Little retimbering cost.
- Increased tons of ore loaded per man day.
- Less contamination of loose ore.
- Lowered haulage cost per ton.
- Lowered preparation cost.
- Improved clearance on haulages.
- Ease of moving loading equipment.
- Availability of bolts for support of electric cables, snatch blocks, etc.

In short, the operation is safer more economical and more efficient.

In four years only two accidents have occurred in connection with roof bolting. A single roof-fall injury occurred when a helper was struck by a falling piece of loose roof he had failed to observe and pull down, and a roof-bolting stoper operator sustained an injury when he took hold of a revolving drill steel, loosely, to steady it, while collaring a hole. The steel broke as he held it, causing his hand to be squeezed between the stoper and the roof. The driller should have been holding the drill instead of the drill steel.

Our experience has led us to believe that when a roof-bolting program is evolved that is suitable to local conditions, the safety and efficiency of an operation is improved. We feel that the bolting has been applied in a logical manner to the conditions existing at Ruffner Mine, and although we have experienced some failures, satisfactory results have been obtained.

Rock Bolt Developments in Butte Mines

By V. D. O'LEARY

Mine Supt., Mt. Con Mine, Anaconda Copper Mining Co., Butte, Mont.

Roof bolting, the term used in coal mines to designate place and method of binding stratified rock together to provide support on the simple beam principle, is called rock bolting in Butte because all the surrounding granite, or rock, is bolted and not just the roof. A comparatively recent development on a large scale, Butte, nevertheless, experimented with rock bolting at the Belmont mine some 14 years ago. This original ex-

periment is still in a position to be observed, and the rock bolts are every bit as good now as when first installed.

Beginning in 1950 a new rock bolting program was inaugurated, and, with all mines participating, some 50,000 rock bolts have been installed to date. They have been successfully used in drifts, cross-cuts, tunnels, stopes, raises, shafts, pockets and large underground rooms. In addition to ground

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*as presented in sessions of the Power Press Section
at the 41st National Safety Congress*

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Current Safety Topics in the

RUBBER INDUSTRY

as presented in sessions of the Rubber Section
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Rubber Industry Safety Data, 1952—Awards and Results—1952 Trends

By WILLIAM J. DOOLING

Safety Dir., Hood Rubber Div., The B. F. Goodrich Co., Watertown, Mass.;
Chairman, Statistical Committee

When injury rates are compiled in accordance with the standard method, they can contribute immeasurably to the success of safety work in many ways. The principal quality of such rates is that they can be compared one with another, a procedure which is important in measuring safety performance. One rate, even though compiled in accordance with the standard method, contributes little helpful information. For example, if a company had a frequency rate of 15.0, this still does not tell too much about the company's safety performance. True, it indicates the current rate at which disabling injuries are occurring, but it does not indicate whether that rate is good or bad, or whether it is getting better or worse.

However, if injury rates are available for other companies doing similar work, the rate of 15.0 assumes significance by comparison. And, if the previous year's rate for the company is available, or the rates for several previous years, then the rate of 15.0 assumes added significance by identifying the trend of injury experience.

Records of accidents are just as fundamental to efficient control of accidents as control over men, equipment and materials are for the efficiency in the operation of an industrial organization.

Interest in safety is created among supervisors when they are furnished with information about the injury records which are guideposts to them. Decreasing rates show that the safety program is producing results, while increasing rates indicate that something is wrong and requires investigation.

Accident records help to determine the major accident problems so that efforts may be directed where the largest reductions in injuries may be expected.

Statistics are also valuable for providing supervisors and safety committees with information about the most frequent unsafe practices and conditions so that they can utilize their time and efforts to the greatest advantage.

During the year 1952 there were 153 concerns in the Rubber Section Safety Contest. These contestants were divided into five Divisions in accordance with the average man-hours worked per month. The Divisions were as follows:

Division	Average Monthly Man Hours
Division I	(Over 400,000)
Division II	(200,001-400,000)
Division III	(50,001-100,000)
Division IV	(50,001-100,000)
Division V	(Under 50,000)

The injury frequency rates for 1952 reveal a reduction over 1951 of 12% for all Divisions. The frequency rate for 1952 was 5.08 for all Divisions as against 5.91 in 1951. However, the following indicates that Divisions I and IV had the best individual percentage decrease for 1952 over 1951:

	1952	Percentage from 1951
All Divisions	5.08	-12%
Division I	3.24	-21
Division II	6.19	+5
Division III	7.95	-3
Division IV	7.41	-32
Division V	12.12	+4

The average frequency rate for Division I was 3.24 for 1952. The three leaders in this Division were:

	Frequency Rate
Goodyear Tire and Rubber Co., England	1.50
The Firestone Tire & Rubber Co., Akron, Ohio, Plant 2	1.60
The Firestone Tire & Rubber Co., Akron, Ohio, Plant 1	1.79

The average frequency rate for Division II was 6.19 for 1952. The three leaders in this Division were three B. F. Goodrich plants as follows:

	Frequency Rate
The B. F. Goodrich Co., Tuscaloosa Plant	1.72
The B. F. Goodrich Co., Oak Plant	1.82
The B. F. Goodrich Co., Akron Aeronautical Div.	1.06

The average frequency rate for Division III was 7.95 for 1952. The three Safety leaders of this Division were the following:

	Frequency Rate
Electric Hose and Rubber Company, Wilmington, Delaware	1.51
Humble Oil and Refining Co., Houston, Tex.	1.62
U. S. Rubber Company, Milan Plant	1.64

The average frequency rate for Division IV was 7.41 for 1952. In this group there were five top Safety leaders that were tied for top honors with perfect records. They are as follows:

	Frequency Rate
The B. F. Goodrich Chemical Co., Port Neches, Texas.....	.00
The B. F. Goodrich Chemical Co., Clarksville Plant.....	.00
U. S. Rubber Company, Naugatuck, Conn.....	.00
The Firestone Tire & Rubber Co., Memphis-Flotation Gear.....	.00
Kentucky Synthetic Rubber Corp., Louisville, Kentucky.....	.00

The average frequency rate for Division V was 12.12 for 1952. There were 11 leaders tied for top honors with perfect records as follows:

	Frequency Rate
Goodyear Tire and Rubber Company, Quebec-Ind. Centre #3.....	.00
The Firestone Plastics Co., Pottstown, Pa.....	.00
The Firestone Tire & Rubber Co., Christchurch, New Zealand.....	.00
The Firestone Tire & Rubber Co., Akron Research Lab.....	.00
Armstrong Cork Co., South Gate, Calif.....	.00
The B. F. Goodrich Co., DuBois Plant.....	.00
The Flintkote Co., Whippany Plant.....	.00
U. S. Rubber Company, Manchester Plant.....	.00
The Flintkote Co., of Canada Ltd., New Toronto Plant.....	.00
U. S. Rubber Co., Durlington Plant.....	.00
Fabric Fire Hose Co., Sub U. S. Rubber Co., Sandy Hook, Conn.....	.00

Three types of awards for outstanding performance in industrial accident prevention are provided for in the "Plan for Recognizing Good Industrial Safety Records" adopted in January 1952 by the Industrial Conference and the Board of Directors of the National Safety Council.

The three types of awards are:

1. The Award of Honor, the highest award, replaces the Distinguished Service to Safety Award. It goes to industrial establishments whose experience meets rigorous statistical standards, even though it may not be injury-free. It also goes to those which complete 3,000,000 man-hours without a disabling injury.
2. The Award of Merit has similar but less exacting requirements. The standards for non-perfect records are somewhat lower, and the minimum number of injury free man hours needed to qualify is 1,000,000.
3. The Certificate of Commendation is given only for no injury records covering a period of one or more entire calendar years and involving exposure of 200,000 to 1,000,-

For qualifying calendar-year experience, all three types of awards are made automatically on the basis of annual reports submitted to the Council by members. The Award of Honor and the Award of Merit may also be made on special application in two types of cases:

1. Where a qualifying total of injury free man-hours is accumulated in some period other than a calendar year.
2. Where a current period of two or more years is to be used in evaluating injury rate improvement.

Eight plants qualified for the Award of Honor, which is six per cent of those reporting. This is considerably more than the corresponding percentage of 3.6 for all industries. Two of these Honor winners were for perfect records and six were on a par-comparison basis.

The names of the two companies that had perfect records are as follows:

Firestone Tire and Rubber Company, Akron Plant #2.

Goodyear Tire and Rubber Company, England Plant.

The other six winners of the Award of Honor on a par-comparison basis were the following:

The B. F. Goodrich Co., Tuscaloosa, Ala. Plant.

Hood Rubber Company, a Division of the B. F. Goodrich Company, Watertown, Mass.

Goodyear Tire and Rubber Company, Gadsden, Ala.

Firestone Tire and Rubber Company, En-tire Company.

Firestone Tire and Rubber Company, Memphis Plant.

Firestone Tire and Rubber Company, All Akron Plants.

Perhaps a word of explanation is necessary about the two awards to all Firestone Akron plants and to their Akron Plant No. 2. The award to all Akron plants was a par-comparison award based on experience for the calendar year 1952. The award to Akron Plant No. 2 was for a no-injury period terminating in 1953, only a couple of months before this study was undertaken.

There were 21 Awards of Merit, twelve for perfect records, and nine on the par-comparison. For all industries, the percentage of Award of Merit winners was about

six per cent, which, on 150 units, would figure to about eight awards.

There were four Certificates of Commendation for 1952. The theoretical number based on the all-industry percentage would have been four or five.

It might be of interest to know how the average frequency rates compare for the first six months of 1953 with the total average of each Division for 1952:

	Year 1952	1st 6 Months 1953	
All Divisions	5.08	4.54	-11%
Division I	3.24	3.05	-6
Division II	6.19	4.80	-21
Division III	7.95	6.74	-15
Division IV	7.41	9.05	+22
Division V	12.12	11.34	-7

It would appear that the rubber industry in all Divisions except Division IV will show a definite improvement when figures are totalled up for this current year.

For the first six months of 1953, the various divisions each had industrial plants that were free from any disabling injuries.

Division I

U. S. Rubber Company, Mishawaka Plant.

Division II

The Firestone Tire and Rubber Company, Des Moines, Iowa.

The B. F. Goodrich Company, Oaks Plant.

Division III

Goodyear Tire and Rubber Company, So. Africa.

Division IV

The B. F. Goodrich Company, Cadillac Plant.

U. S. Rubber Co., Naugatuck, Conn.

Kentucky Synthetic Rubber Corp., Louisville, Ky.

Vulcanized Rubber and Plastics Co., Morrisville, Pa.

The Tile-Tex Div. of The Flintkote Co., Chicago Heights, Ill.

World Bestos Corp., Div. Firestone Tire and Rubber Co., New Castle, Ind.

Goodyear Tire and Rubber Co., Quebec-Ind. Center #5.

Goodyear Tire and Rubber Co., Reclaim.

Division V

U. S. Rubber Co., General Labs., Research Dept., Passaic.

McCreary Tire and Rubber Co., Indiana, Pa.

The B. F. Goodrich Co., Research Center.

The Firestone Plastics Co., Pottstown, Pa.

Firestone Tire and Rubber Co., Xylos Rubber Co. of Calif.

The Firestone Tire and Rubber Co., Christchurch, New Zealand.

The B. F. Goodrich Co., DuBois Plant, University of Akron, Akron, Ohio.

United States Rubber Co., Div. of Naugatuck Chemical, Baton Rouge, La.

General Shoe Corp., Nashville, Tenn.

Canadian Lastex Limited, Montreal, Que., Canada.

U. S. Rubber Reclaiming Co., Inc., Cheektowaga, N. Y.

U. S. Rubber Co., Burlington Plant.

The Firestone Tire and Rubber Co., Akron Retread Shop.

Fabric Fire Hose Company, Sandy Hook, Conn.

According to statistics from *Accident Facts* (I would like to recommend its use and it should be read by all companies), reveals that the Rubber industry stands in 10th place for both Frequency and Severity Rates, and well above the standing of all industries, a performance we all can take pride in.

The all industry rates and rubber rates are as follows:

	1951	1952
All Industries		
Free Rates	9.06	8.40
Severity Rates	.97	.88
Rubber Industry		
Free Rates	5.91	5.96
Severity Rates	.38	.42

In conclusion all indications point to 1953 being a year that will at least equal or better the 1952 records if the trend continues with so many perfect records in all divisions as it has been for the first six months.

entiate between the slow buildup and this sudden movement and trips the safety.

Of course, in some cases neither of these devices prevent the man from being caught but they both have such a fast and automatic response, that they will protect against a serious injury. We are now working on an electric eye model that will provide a light beam and eye that will follow the danger side of the bite area during buildup. This model will stop the calendar if a hand gets in the danger area, and thus will prevent the accident.

A few words about the engineer's assistance in a safety program might be in order.

Many of our windup safety projects have been difficult merely because of the peculiar mechanics of the machine. This applies mainly to old machines with high inertia drives, which makes quick stopping difficult, or, to old handwheel clutches that require turning of the handwheel to stop the windup.

Some of these hazards have existed for many years because no one had an economical solution.

An engineer with a good imagination can usually find a simple solution to these problems. We have recently solved a number of knotty problems of long standing by simply inserting an air cylinder and piston in series with an operating bar or shipper rod. A cable operated valve instantly reverses the action of the piston and retracts the bar, which quickly stops the machine until the valve is reset by hand. Failure of air pressure will also render the machine inoperable.

My final admonition to the safety engineer is to take an electronic engineer and a mechanical engineer to the problem job and examine the machine from all angles. Let them know that you and their fellowmen are depending on them to save their limbs, lives and loved ones, and you can rest assured that your confidence in them will bring rich rewards of safer machines.

Mechanical Guards Move Their Place

By N. H. RINEHART

Mechanical Eng., U. S. Rubber Co., New York City

I. General

A. Did you ever see a preacher entangled in a wind-up or let-off unit? No—because clergymen are never near such equipment.

B. Accordingly, the most effective way to avoid accidents is to keep everyone away from critical rolls and "pinch points."

C. This can be accomplished by the following methods of minimizing exposure to accidents and specific illustrations will be shown later.

Methods of Minimizing Exposure to Accidents

1. Eliminate some personnel and exposure to accidents by using automatic and semi-automatic equipment. This method will not only save lives but will greatly decrease costs. Management will be gratified and your safety departments will become stronger.

2. Completely isolate the wind-up and let-off units with electrically interlocked sectional fences, cages and safety mats.

3. Completely enclose critical rolls and nips with "removable-disconnect" type of guards.

4. Arrange critical rolls and pinch points such that they are shielded by other machine parts.

5. Use "disconnect-nip" guards.

6. Use pneumatic safety feeds.

7. Locate safety bars and cables in critical areas.

8. Avoid falling rolls of fabric from accidentally-opened chucks by positive cam type engaging devices or "catch cradles."

The above methods will now be illustrated:

1. The first method is to minimize personnel and exposure to accidents by installing automatic and semi-automatic equipment.

One such piece of equipment is the Simpson Automatic Roll Changing Wind-up for Fabrics.

This unit automatically cuts fabric and starts it on a new roll at speeds up to 100

up so that only those people who are vital to the emergency such as fire brigade members and operators, are at the scene and all others are to stay clear. This procedure was agreed upon 100 per cent by the group.

Housekeeping

It was found that most all of the plants had a regular housekeeping and safety inspection program of some kind during which all departments were inspected.

New Problems in the Tire Plant

(Round Table Discussion)

Presiding: H. L. ANDREWS, Safety Dir., The Firestone Tire and Rubber Co., Pottstown, Pa.

Conference Recorder: J. L. DEAN, Safety Dir., The Firestone Tire and Rubber Co., Memphis, Tenn.

The subject of continuous run-buttons is being brought up. It is one of the extreme hazards in the rubber industry. These continuous run-buttons are those on the semi-automatic machines, not on the automatic machines. As a man was gum-boring the tie he got pulled into the machine. What can be done to eliminate this particular feature of the operation?

It has been suggested by Mr. Cross of Firestone to continue with the old foot pedal where your machine stops when the foot is taken off the pedal. A moving foot pedal is what has been suggested so that the man can use a foot pedal and still be doing some other operations; but when he takes his foot off the pedal, the machine stops.

It was pointed out that a safety was put under some of the heavy duty machines to eliminate the possibility of the man getting pulled by the drum.

Spinner Bars

This is a bar that puts on plies on a big tire building machine. One points out that they blow them on with air. This brings up a number of hazards, also. The bar is attached immediately in a series of short rollers. The bar is operated by a spring being attached to the machine and the man does not have to hold it and make it possible for the bar to fly back and hit him.

One of the U. S. Plants puts a tread on this which is already spliced and this can cause considerable trouble with the bar flying back and hitting the man in the head. Other companies just run the tread on by a continuous-run method.

There is no standard way of putting on

treads or using roller bars or putting on plies.

It seems that there was no direct solution as to how to eliminate the man working with a prodder bar or a roller bar other than constant supervision, very thorough training and follow up work on safety instruction.

(B. F. Goodrich is talking about a bar which looks something like a crank, similar to that of a prodder bar. It eliminates a lot of hazards of a prodder bar. It is still in the experimental stage. The drum rotates when he uses this which eliminates, as we say, a considerable number of hazards.) The advantage to these crank-type bars is that they do not throw a man.

Bagomatics

This new type of equipment was brought out by Mr. Cross of Firestone. There was a discussion as to what kind of accident problems are being caused by it. Mr. Lynch of Firestone described one of the types of accidents he was having. One of the points brought up was that one of the operators of the Bagomatic machines would lay the tire in one mold; then go over and lay a tire in another mold, then come back as the machine was going down on the first mold to lay the serial. This created an extreme hazard.

This definitely calls for a training program and should be eliminated. The operator should lay the tire in one mold and lay the serial and then push the button to close the mold.

On the Bagomatics, when the mold was in process and the safety was hit, the mold

would go back up no matter where the safety was hit. A new installation was put in whereby when the safety was hit, the mold would immediately stop and the lid would not continue to reverse itself and go back up.

Mr. Turner of Goodyear pointed out that when the bag is about to blow in a mold, they put in a strain safety so they will know when the bag is going to blow. This would stop the mold from opening. Knowing that there was still pressure in the bag, it was dangerous to open the mold because the bag would continue to blow. A safety installation was put on a post several feet away from the mold which was a remote switch; when the operator was called away from the mold, this switch was used to open the mold in order to get the tire out. The bag would blow. Since no one was close to the mold, no one would get hurt.

Mr. Croushore of Armstrong has some new Bagomatic machines. He doesn't have any particular trouble with them. He pointed out that the new type of installation where the bottom half of the mold is at floor level would make a much easier handling problem.

Mr. Frame of Goodyear asked a question on how to prevent accidents when molds and housings on the molds break. The only safety that he has on it is a safety block. It was pointed out that the new McNeil molds are counterweighted so the molds cannot fall. On the old type which he is speaking of, the mold can drop out of the top half of the mold. When the transmission housing breaks, the mold will roll and drop. He wants to know what safety devices can be used. He uses a safety block which allows a man enough time to get out of the mold before the top falls.

Mr. Cross of Firestone pointed out the way the safeties at the Firestone plant work. When the mold opens entirely, a pipe-type safety falls in line over the cylinder which holds the molds up and the man has to pull a lever to close the mold when he wants to shut the mold.

The Goodyear man from Toronto pointed out that he had a safety on the back of the mold which was a form of notches. When the mold would drop the safety would fall into the notch, eliminating the possibility of the mold continuing to fall.

Getting the employee to use the safety block is important. It is a matter of con-

tinuous supervision, continuous safety instructions, and pointing out the importance of the safety features to be used.

Mr. Kumpel of the union felt that it should be a rule that every man should be required to use this block for his own protection, that it should even be put into negotiations.

Mr. Carson of U. S. Rubber wanted to know what methods other plants were following for cleaning the molds.

Several of the plants make minor repairs and also clean the mold while the mold is in the jacket. The mold has a safety lock and a red tag is put on the switch before cleaning of the mold is started. No cleaning operator gets into a mold until it is certain that the safeties are locked in place, with the result that the mold can be effectively and safely cleaned by leaving the mold in the jacket. It would be quite an item to be required to take the mold out of the jacket every time it needed cleaning.

It is suggested that all manufacturers check with the McNeil mold manufacturer to see if they can work out some uniform safety that could be used which would be effective while making minor repairs and cleaning the mold.

Post Cementing

After material has gone through the calender and then is spread with a post cement, there is considerable fire and explosive hazard. Much has been done. Further discussion was requested on preventive measures to eliminate the possibility of serious injury.

An accident occurred several years ago where the fans stopped in a particular post cementing unit. The fabric continued to be dipped and it accumulated considerable fumes close to the fabric. When an employee came up to touch the fabric, a static spark caused a fire. This has been corrected so that when the fans in the unit stop that is, the ventilating unit, this automatically stops the whole calender unit. There has been a very strict regulation in installation of these particular units in that they are all approved and authorized by the insurance companies and everything is in accordance with them, eliminating the possibility of an explosion or a fire. There are also automatic extinguishers in these units so that there doesn't even have to be a fire, but a certain temperature will set off these fire extinguishing units.

Mechanical Goods Makes Big Strides

(Round Table Discussion)

Presiding: N. C. LONGEE, Safety Dir., U. S. Rubber Co., Passaic, N. J.

Conference Recorder: ARTHUR R. POMEROY, Safety Dir., Ohio Rubber Co., Willoughby, Ohio

The following questions were brought up by members attending this panel:

1. Extrusion and vulcanizers — concerning safe installation.
2. Comments on guarding punch presses and trim operations such as on small molded goods.

Mr. Dooling brought up the problem of multiple deck presses sticking and how the men can be prevented from jumping the gun in going into these presses to unload, not realizing that the top deck has stuck closed, and it would fall on to the operator's hands.

Another problem brought up was in relation to lifting, referring to manual operations, how the men may be instructed, the controls, and various laws that are in effect in different states concerning the load which a man or a woman is allowed to lift.

Other problems posed included monorail systems in tubing divisions and what could be done to prevent head injuries and getting the proper head clearance.

Another problem discussed was back strains, hernias, and the like, that occur in the press rows. The type of man that should be hired to do the job as far as physical qualifications are concerned.

Still another problem had to deal with hoists being used in press rows and molded goods plants and how they should be inspected and what can be done to prevent failures.

Another question brought up was late reporting of accidents which developed into infection cases. The last one was that of people who were injured by simply trying to work too fast in order that they may beat the rates in effect.

In answer to the question on extrusion and vulcanizers, Stanley Wright described the accident which occurred in Inland Rubber and the measures which were taken to prevent a recurrence of an accident similar to that. He offered, upon request, to send a print of the safety devices they have installed on horizontal vulcanizers in their Inland plant.

A summary of other comments made by members at the table would be that these

vulcanizers must be so guarded that you are not able to get steam pressure into the vessel until such time as the door is completely locked and in position. You should not be able to open this door until all steam pressure is out of the vessel.

In answer to the question of how to guard punch presses and prevent accidents when trimming small molded goods, there were a great many comments made by a number of the members at this committee meeting which could be generalized in the following words: that you should, wherever possible, so design and guard your machine that it would not be able to repeat, even if it smashed the machine rather than repeating. A guard should be used, wherever possible, that comes closed before the press actuates. Wherever possible, it is practical to use a double switch where the operator must have both hands on the buttons before the press would actuate or close.

It was also suggested that the real solution to this problem is going to come when we can so design our punch presses, dies, and like machinery so that the operator will not have to place this hand between the dies in positioning the piece which is being trimmed.

In answer to the question by Mr. Dooling of what could be done to prevent multiple deck presses sticking, the top deck falling and crushing the hand of the press operator, Mr. Pomeroy suggested a solution which is being used at the Ohio Rubber. He offered to send prints and photographs of the curtain which the engineers designed and which we feel will do away with this particular hazard.

The last question which we had time to discuss was the problem of inspection of hoists in the press box. Mr. Longee explained that they have one man responsible in their plant for this inspection. He uses a tag system. He is very familiar with the different types of hoists which are made and the possible weaknesses with each hoist. By his experience, he is able to do a very good job in keeping their hoists in good repair. This is a full-time job for him.

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