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National Safety News

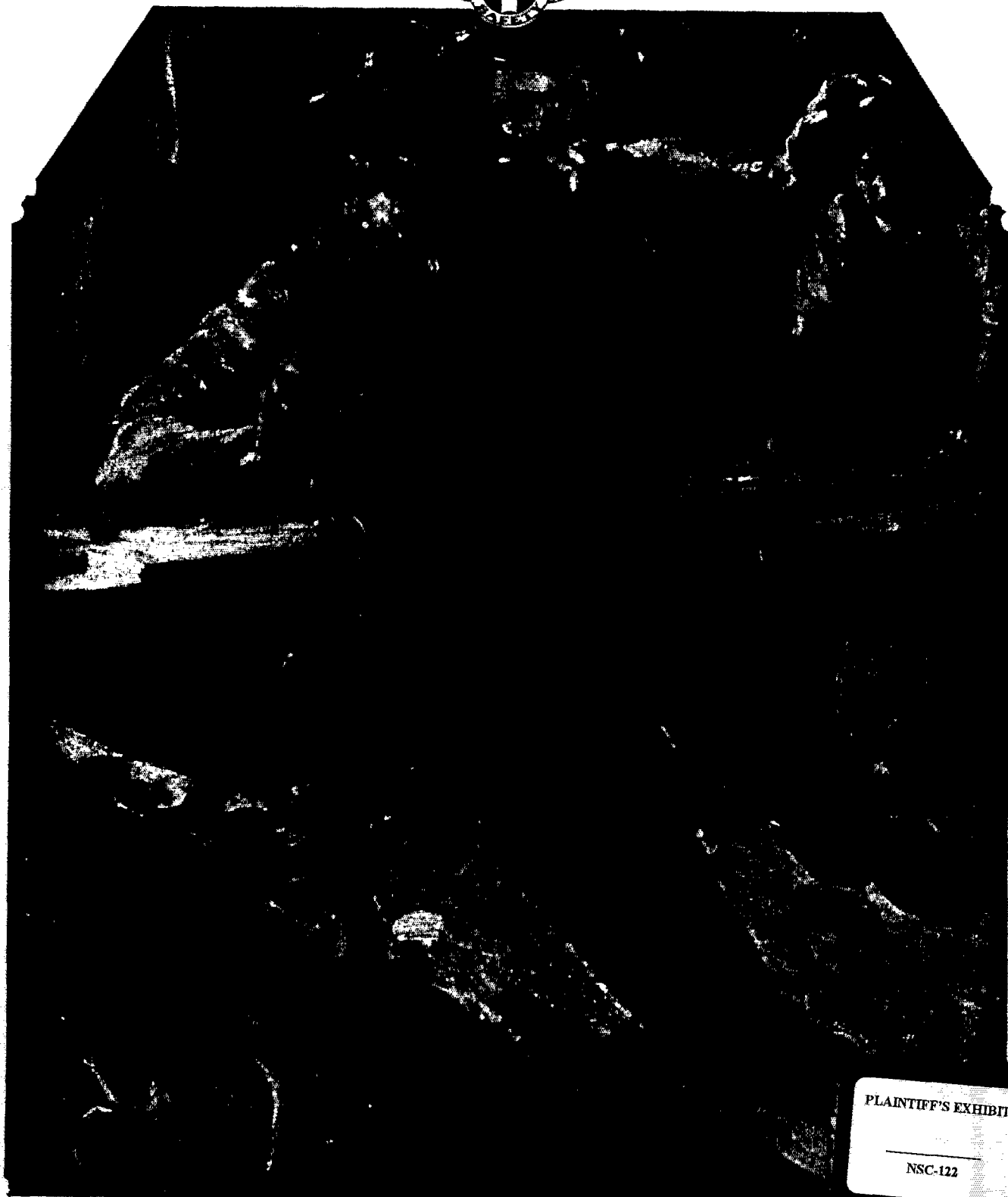
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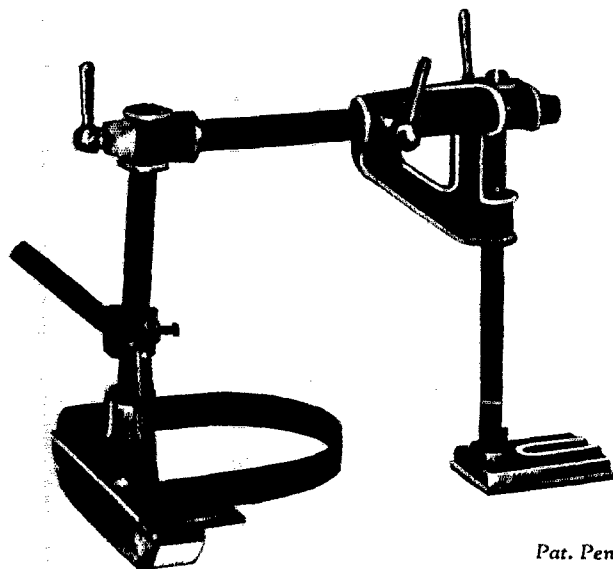
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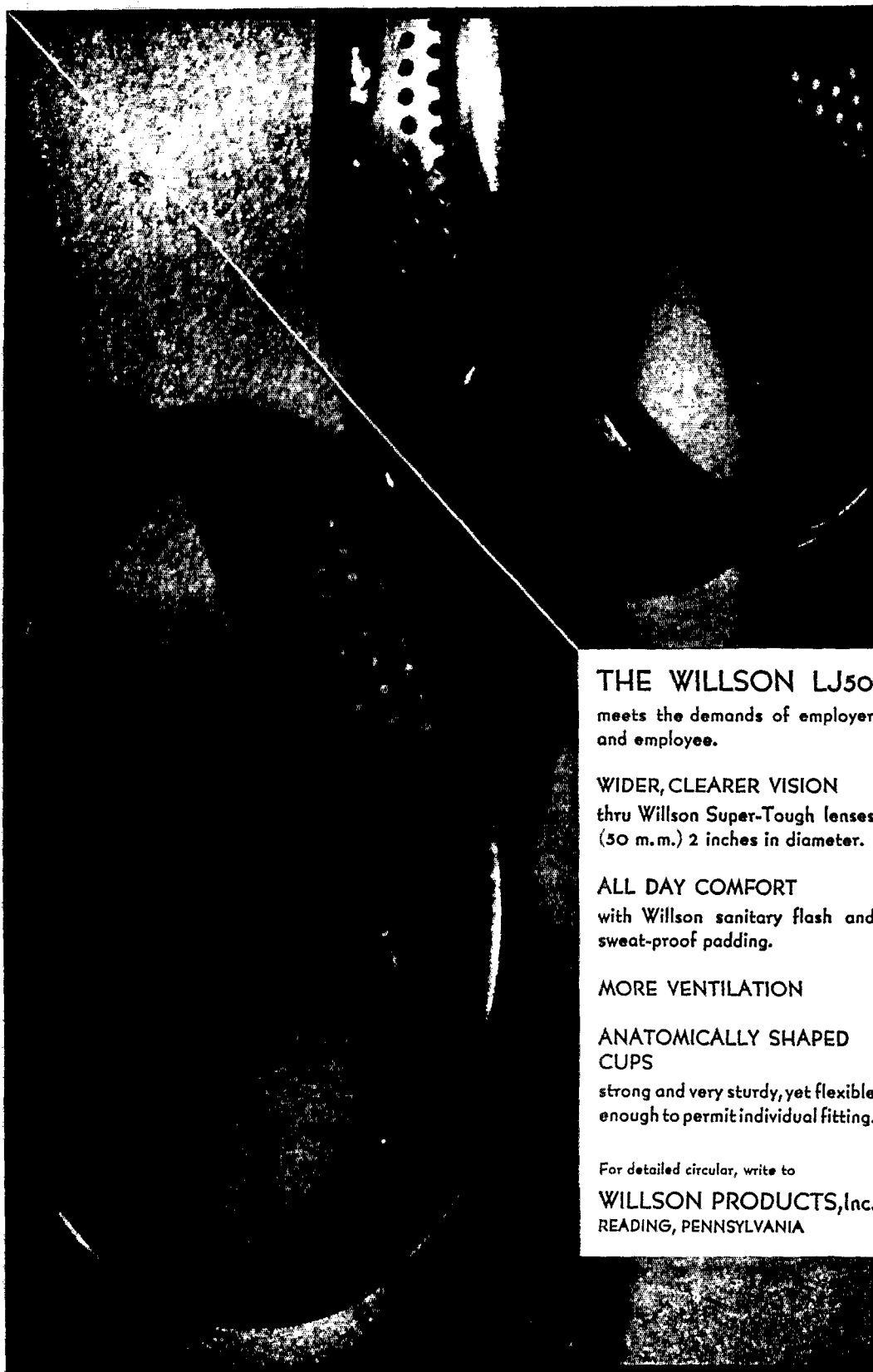
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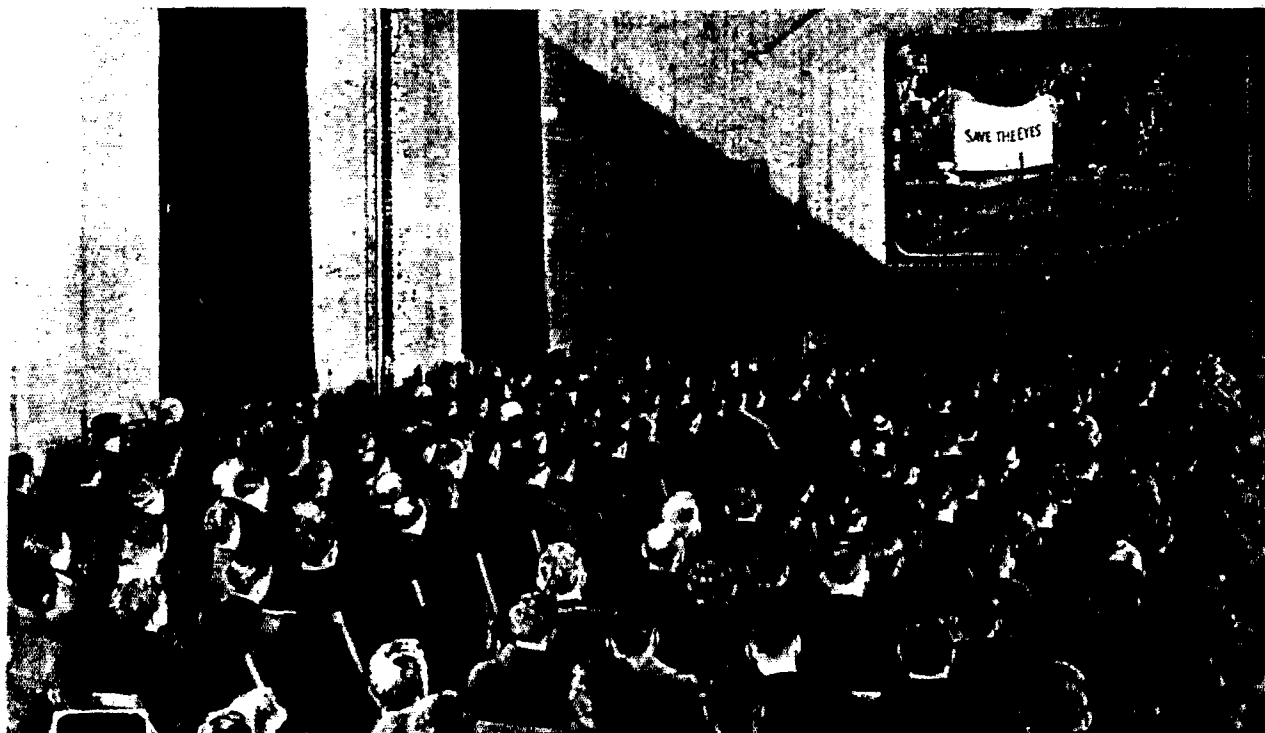
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National Safety News

*Published monthly in the interest of accident prevention
and the health of industrial workers*

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VOLUME XXI

March, 1930

NUMBER 3

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*Contents of previous issues of the National Safety News may be found by consulting
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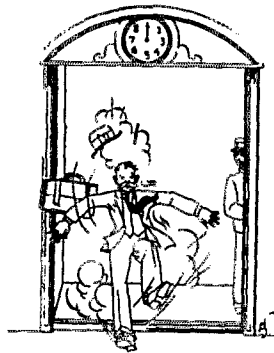
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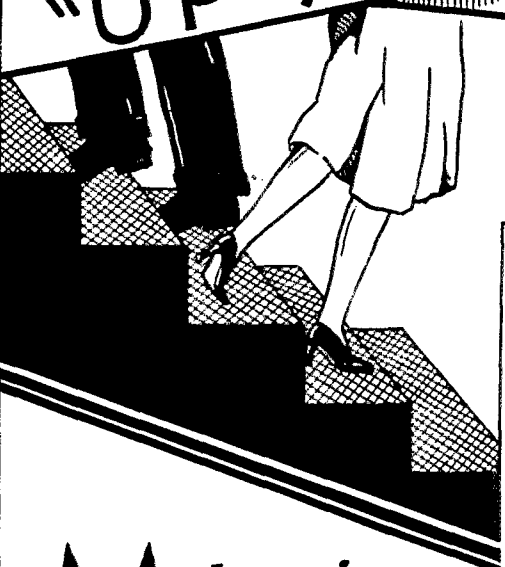
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National Safety News

Published by the National Safety Council

VOLUME XXI

CHICAGO, ILLINOIS, MARCH 1930

NUMBER 3

Our New Home

SOON after this issue reaches our readers the headquarters of the National Safety Council will be in the Civic Opera Building, 20 North Wacker Drive, Chicago. For the sixth time in seventeen years the Council has found it necessary to enlarge its office space to accommodate an increasing staff made necessary by the expansion of its activities.

The new quarters are on the western edge of Chicago's loop district, easily accessible from the business district and from most of the city's railroad terminals. In the new home, as in the old, a cordial welcome awaits all members who call at headquarters.

The Other 25 Per Cent

NO SLOGAN of the safety movement has been misinterpreted more frequently than the familiar statement that accident prevention is "75 per cent education and 25 per cent safeguarding."

The importance of correcting physical hazards and furnishing protective devices can not be measured by any arbitrary percentage. Certainly, 25 per cent is an inadequate figure.

Admitting that 75 per cent of all accidents cannot be prevented by any physical or mechanical means does not weaken the argument for safeguarding. Until physical hazards are corrected, attempts at education are likely to be received with considerable skepticism by employees. The value of a safeguard cannot be measured by the immediate hazard it removes.

Insurance companies, whose rates are computed on experience rather than sentiment, recognize the importance of safeguarding. They realize the importance of organization and education but they also know that an educational program in a plant full of unguarded hazards is built on a shaky foundation.

Many companies started accident prevention work several years ago with a program of safeguarding. Invariably they tell the same experience. Accidents showed little or no reduction. In the light of present knowledge the reason was obvious. Guards were installed but an explanation of their purpose was seldom given. As a result the workmen considered the guards as a nuisance and it required constant supervision to keep them in place. Improved guard design, constant education, and the influx of new workers with more receptive minds into industry have lessened one of the safety man's greatest difficulties.

If we apply the 25-75 ratio to the difficulties involved in the two phases of accident prevention we are on firmer ground. It is easy enough to get the management to O. K. the purchase of a gross of goggles; the trouble starts when the safety man tries to

get some of the harder-boiled workers to wear them.

Trying to evaluate the respective merits of safeguarding and education is like trying to determine the relative importance of hydrogen and oxygen in water. Neither alone will quench thirst.

The Public Has a Conscience

ONE of the indictments of this so-called machine age is that little consideration is given to human life. Like all blanket indictments, it is far from accurate.

There are some unpleasant aspects of our progress. One of them is the mounting automobile death toll which is a problem peculiar to the present age. Another is the much discussed and little understood unemployment problem, particularly as it affects the older workers. Unemployment, however, is by no means a new economic disease.

To say that people are becoming callous toward loss of human life is to exaggerate. They are appalled by fatalities on the streets and highways but they have a feeling of helplessness, coupled with a tolerant attitude toward violations of safety laws.

In most respects, however, this age compares favorably with any previous period. It is not necessary to go back a century or more when property was valued above human life and penal codes prescribed death for petty thefts. Within the memory of most of us, killing and maiming were regarded as inevitable in industry. That attitude is gone, and while we may seem to be groping blindly toward the solution of many problems, the past two decades have witnessed an awakening of the public conscience and a growing desire to end the conditions which menace human life, health and happiness.

What Is a Good Frequency Rate?

MANY a safety engineer finds considerable satisfaction in knowing that the frequency rate of his company is below the average of the industry. Such a state of mind is not conducive to progress. The higher rates in the group boost the average too high to make a safe standard by which to measure experience.

Standards are never good enough. The company which is satisfied to follow literally the minimum standards of safeguarding and organization established by state departments and insurance carriers is not likely to establish a new low rate. An average has come to be accepted as a standard, but a standard is something to pass, not merely equal.

After all, comments the News-Letter of the Petroleum Section, a frequency rate is never really good because a perfect frequency rate means no frequency at all.

Records Should Answer the Question

By GORDON WILSON
Director of Safety, The Management
and Engineering Corporation

"Why Do Men Get Hurt?"

Detailed information that gets down to real causes and avoids generalities is a real help in stimulating and guiding interest in safety.

ANYONE interested in accident prevention work is firmly and painfully impressed with the fact that accidents will happen, but effective measures cannot be taken for the reduction of deaths and injuries until it is known how and why they happen. A safety man cannot get very far by talking generalities, but when he is able to support his messages by facts and figures, he stands a reasonable chance of attracting the kind of attention that is going to serve as a basis for constructive action.

In every safety organization, large or small, there must be some central point where a study can be made of the causes and conditions which result in personal injuries. The materials for such study must be assembled in a standardized uniform way, so that consistent and comparable figures may be obtained. The study of the personal injury causes in a large group of public utility companies, with its associated coal mining and industrial activities, has given us an opportunity of working out this problem, and of testing the solution. It is the object of this article to explain as briefly as possible, how we find out about our fatal and lost-time injuries, and what we do with the information.

A "preliminary report" is received on every fatal or lost-time personal injury case occurring among any of our associated companies. This is simply a carbon copy of the report that is sent to the insurance company or the state commission, and serves principally as a basis for the assignment of a case number and the opening of a record on that particular accident. Having received the preliminary report, we expect to re-

ceive within a reasonable time the "investigation report," which is illustrated herein.

The investigation report is printed on two sides of a letter-sized sheet, and asks all the questions which we have found should be answered before an adequate study can be made, either of individual personal injuries, or of injuries in groups. In designing this report, particular efforts

were made to create a form that would be helpful to any operating executive who is sincerely interested in reducing his accident rate, so that we feel justified in asking for this information from the operating departments of the companies with which we are associated. The questions on this report are numbered, and reference to them will be made by number.

FORM 2000 (Rev. 12-29)

THE MANAGEMENT AND ENGINEERING CORPORATION COMPANY _____

INVESTIGATION REPORT

ON FATAL OR LOST TIME PERSONAL INJURY CASE No. _____ REFERENCE _____

A copy of this report, in its complete and accurate form as possible, should be forwarded, by the Safety Director of the Company involved, to the Director of Safety, The Management and Engineering Corp., 227 So. LaSalle St., Chicago, as soon as the necessary facts can be ascertained and verified.

INJURY DATE _____ TIME _____ M.

- Parts of body affected.
- Description injury.
- Present condition of patient and revised estimate of disability period.
- Fill out lines necessary to describe CHARACTER OF INJURY, and number in sequence of relative importance.
 - Asphyxiation by _____
 - Bone broken by _____
 - Bruised by _____
 - Burned by _____
 - Crushed by _____
 - Cut or pierced by _____
 - Dislocation due to _____
 - Eye injured by _____
 - Rupture caused by _____
 - Frozen while _____
 - Heat prostration while _____
 - Infection of _____
 - Electric shock from contact with _____ Voltage of circuit _____
 - Sprain or strain due to _____
 - Poisoned by _____
- When was injured party last examined physically before being injured?
- What organic troubles did examination show?
- Number, in sequence of relative importance, all words or phrases below which describe CAUSE OF ACCIDENT. ("Employee" refers to injured party, unless the letter "X" is shown after the assigned cause.)

...A1 Employee not instructed at all.	...H1 Danger points inadequately guarded.
...A2 Instructions not enforced.	...H2 Danger points not guarded.
...A3 Instructions incomplete.	...I1 Material improperly piled, loaded or stored.
...A4 Instructions erroneous.	...I2 Untidy or otherwise dangerous passages or work spaces.
...B1 Employee inexperienced.	...I3 Clearances insufficient for safe work.
...B2 Employee not skillful.	...J1 Defective materials.
...B3 Employee ignorant.	...J2 Defective tools, scaffolding or tackle.
...B4 Employee used poor judgment.	...J3 Defective machines.
...C1 Disobedience of rules.	...K1 Defective insulation.
...C2 Interference by others.	...K2 Unsafe condition of building.
...C3 Feeling.	...K3 Unsafe condition of lines.
...D1 Attention distracted.	...L1 Improper ventilation.
...D2 Inattention.	...L2 Improper light.
...E1 Taking chances.	...L3 Inadequate supports, guys or braces.
...E2 Short cuts.	...M1 Method of doing work improperly planned.
...E3 Haste.	...M2 Unsafe layout of plant.
...F1 Employee sluggish or fatigued mentally.	...N1 Proper personal safety equipment not available.
...F2 Employee excited or angry.	...N2 Defective personal safety equipment.
...G1 Employee physically defective.	...N3 Clothing loose or otherwise dangerous.
...G2 Employee fatigued physically.	...Z1 No person and no reasonable safeguard or precaution could have prevented this accident.
...G3 Employee not strong enough physically.	

The object of this report is to help us find out how and why men are injured, so that steps may be taken, whenever possible, to prevent similar injuries. HELP US TO HELP YOU.

The blanks in the upper right-hand corner on the front of the form are principally for identification purposes. Question 1, "Parts of Body Affected," and Question 2, "Description of Injury," are partly for classification purposes, though I hope to be able to show later in this article how these elementary questions have contributed to the effective direction of our accident prevention work. The object of Question 3 is primarily to enable us to judge the seriousness of the injury, and to let us know when we should receive a "settlement report," which comes through when the patient has recovered, and is able to return to work.

The object of Question 4 is quite plain, and the usefulness of this information as a guide toward reducing accidents is apparent. Questions 5 and 6 are providing some very in-

teresting information regarding the extent to which we should go in the physical examination of employees, both before and during employment.

Question 7 represents one of the most important features of this investigation report. This represents our effort to find out why the accidents occur, and a great deal of the effectiveness of our accident prevention work has been found to depend on the procuring of intelligent, honest, and carefully considered answers to this question.

Too much stress cannot be laid on the quality of answers to Question 7, because it happens very often that supplying the correct answer requires a correct point of view, analytical ability, and a certain determination to face the facts, which are a little bit more than can be expected of the average human being. There is a universal disinclination to be a

squealer, and a desire to avoid making trouble for anyone, which are commendable enough as a general proposition, but which must be subdued if the answers to Question 7 are going to be of their fullest possible value.

In our early experience with this report, we sometimes found a strong inclination to report the accident as unavoidable (Z. 1), and let it go at that. Sometimes the makers of these reports reported an accident as unavoidable, but nevertheless went into details when answering Question 14, regarding the action that would be taken to prevent future accidents of the same kind. A disposition was noted in some quarters to answer Question 7 by stating that the injured employee used poor judgment (B. 4), but this inclination has been corrected to a considerable degree by bringing out the fact that certain operating foremen or other heads were apparently not exercising good judgment in the selection of the men that they hired, because, apparently, a large percentage of their force consisted of blockheads.

Stress has also been laid on the fact that when an employee is of the type likely to use poor judgment, additional responsibility is thrown upon his immediate superior to guard him against the accidental injuries to which poor judgment may contribute. In other words, the use of poor judgment by the injured employee may be an acceptable explanation of an accident, but it cannot be accepted as an excuse. To facilitate the proper assignment of the accident causes enumerated under Question 7, a detailed definition of each cause has been prepared, which will be found as an appendix to this article.

The purpose of Questions 8 to 13 inclusive is clear enough. We want to know what apparatus, tools, or materials were connected with the accident, and whether proper physical safeguards were supplied and used. When an employee is injured as a result of lack of personal safety equipment, such as goggles, this should be known. We want to know if the equipment was available, whether it was in good condition, and if it was being used. The records of accident prevention work are full of cases where men have sustained serious eye injuries because their goggles were in their pockets instead of on their eyes, or of electrical workers who have been the victims of electric shocks that would have been prevented if the rubber gloves had been on the hands of the

8. What apparatus, tools or materials were connected with accident?.....	
9. What safety equipment should have been on machinery, apparatus, etc.?.....	
10. What was condition of this safety equipment and was it in place?.....	
11. Was injured party PROVIDED WITH all necessary personal safety equipment? (If not, give details.).....	
12. What was condition of this personal safety equipment?.....	
13. Was injured party USING all personal safety equipment which his work required? (If not, give details.).....	
14. What action will be taken to prevent future accidents of this kind? (Check class.)	
CLASS: Additional safeguards.	NEW personal safety equipment.
Changed or new tools or equipment.	ADDITIONAL personal safety equipment.
Change in plant layout.	Discipline.
Improved inspection methods.	Special, as per details below.
DETAILS of any class of action to be taken.....	
15. Name and title or position of immediate superior of injured party?.....	
16. Date, Case No. and Character of last previous accident occurring under his supervision?.....	
17. How far was nearest first aid kit from scene of accident?.....	
18. Was it used?.....	
19. What treatment was given by fellow workmen?.....	
20. By first aid workers from outside organization?.....	
21. Who were these outside workers?.....	
22. Name and address of doctor who treated case?.....	
23. Name and address of hospital where case was treated?.....	
24. When and where was last safety meeting attended by injured party?.....	
25. What printed safety instructions has he received?.....	
Noted.....	Signed.....
Date.....	Title or Position.....

injured men instead of in their pockets or belts.

Coupled with Question 7, and ranking with it in importance, is Question 14—"What action will be taken to prevent future accidents of this kind?" This question is predicated on the assumption that, while the first accident of any type may reasonably be regarded as an accident, subsequent accidents of the same type become more and more somebody's fault. No industry has arrived, as yet, at the point where it is entirely free from personal injuries, but it will arrive more speedily and more certainly if there is a general determination never to waste an accident. If an accident is allowed to occur without steps being taken to prevent a recurrence of an accident of the same kind, that accident is wasted. If, on the other hand, an accident inspires the determination that no man in the organization shall ever be injured again from the same cause, and leads to the taking of steps to carry out this determination, such an accident, unfortunate as it may be, represents one of those cases where good may come from evil.

Preventive Action Suggested

Certain classes of preventive action are suggested under Question 14, not only to assist in answering the question properly, but to suggest the various kinds of action that may be taken to prevent the recurrence of accidents of any type. One of the objects of going into this detail has been again to assist in overcoming certain inherent weaknesses of human nature. In our earlier experience with this form we found that many people were satisfied to answer Question 14 by the statement that "the employee would be warned to be more careful in the future." There was an inclination to give this answer even when the record of the case evidently called for more effective action along other lines.

Questions 15 and 16 are designed to build up a record of local accident frequencies. If there are epidemics of accidents in any one particular part of the organization, this should be known, so that special assistance may be given to the head of that organization unit.

Question 17 has been found to serve a constructive purpose, and the replies to it have been instrumental in procuring a more general and more effective distribution of first-aid kits. The answers to Questions 18 to 23, inclusive, are necessary to a complete record and a careful study of the case, and the an-

swers to Questions 24 and 25 have also been found to be of constructive value.

Having told what we want to know about a personal injury case, the next question that will naturally occur to any intelligent person is, "What do they do with all that information?" The first and obvious answer is that we study each accident individually, and also tabulate the information on these reports, so that we are able to judge trends and tendencies, both in different parts of the organization, and in the organization as a whole.

A study of the answers to Question 1, for instance, has developed some very helpful and constructive information. In summarizing the record of 570 lost-time injuries, it developed that 74 of these injuries were to the foot and ankle. In certain parts of the organization most of these foot and ankle injuries occurred when some heavy weight was dropped, and that suggested the immediate need of a campaign for the use of safety shoes and foot guards, and of instruction regarding the best methods of lifting and carrying such articles.

Sixty-seven accidents involved the fingers, and 49 other accidents the hands. Hands and fingers are hard to protect, but these figures will show what can be done in the way of lowering accident frequency rates by a campaign for the better protection of this exposed part of the body. Fifty-five accidents, or nearly 10 per cent, represented eye injuries. Some of these injuries occurred where it was not at all reasonable to require the use of goggles but enough of them took place under conditions which indicated that goggles and eye-shields are not yet being generally used.

Broadening First-Aid

In some parts of our organization it has been found that the men were letter perfect on prone pressure treatment, but had not been giving the necessary study to bandaging, bleeding control, and the care of broken bones. Studies of this kind have indicated how, where, and to what extent the first-aid training of the men should be broadened out. Less than one per cent of the personal injuries involved in this study were due to electric shock. This does not mean that prone pressure treatment should be neglected, because the ability to administer prone pressure, when required, means the difference between life and death. It does mean, however, that training in prone pressure should be supple-

mented by the necessary training to enable proper care to be taken of many of the injuries that constitute over 99 per cent of the cases studied.

The two classes of personal injuries that always lead a safety man to think about fraud are sprained backs and hernia. It is becoming evident from this study that a proper plan of physical examination is an effective safeguard against fraudulent hernia cases, but the lame back problem is still far from being solved. Fifty-three cases out of those included in this study were sprained backs. It appeared that a number of them were due to improper methods of lifting, but a certain interesting group of these injuries look as though they require investigation by a detective, instead of a safety man.

Preventing Infection

One of the most interesting products of a study of the answers to Question 4 is the location of cases where infection follows bruises, burns, crushing, cuts, or eye injuries. These cases are most frequently found to be curable by proper disciplinary action, as they are generally the result of a violation of a rule requiring the immediate treatment of any wound, no matter how slight. The information gained from a study of Question 4 has been found exceedingly valuable as a guide in planning first-aid work, and the character of first-aid equipment to be distributed.

The information derived from the answers to Question 7 is likely to be more useful locally than generally, as it usually serves as a basis for immediate action for the prevention of similar accidents in the future. The tabulation of this information shows certain interesting trends. One of them is that, as time goes on, a larger proportion of accidents is due to the human element, and a smaller proportion to physical conditions. This means that we are succeeding in eliminating from our plants and equipment defects which might make for unsafe working conditions, and that the problem of avoiding accidents is being, to a corresponding degree, put up to the men who are likely to be hurt. I am saying what every safety man knows when I say that our big problem in accident prevention work is education—more education, and better education—but a study of the answers to Question 7 enables us to measure the results of our work for the betterment of working conditions along educational lines, so that we will know where and how progress is being made.

The answers to Questions 8, 9 and 10 have been of substantial value in directing the improvement of physical conditions from an accident prevention point of view. Some time ago we found that, in one part of our organization, there were relatively more accidents in which ladders were involved than there were elsewhere. A special study of the situation indicated the desirability of scrapping a great many unreliable ladders, and of enforcing, through training and discipline, the proper use of good ladders.

Neglect Is Revealed

We have already discussed the value of the information regarding personal safety equipment that is called for under Questions 11, 12, and 13, but I believe it can safely be said that the general use of such equipment as goggles and rubber gloves is encouraged by the knowledge that this information will have to be supplied whenever an accident does occur as a result of failure to use them.

This same mental reaction has been observed in the case of Questions 15 and 16. There are varying degrees of interest in accident prevention work, and many a man sincerely believes that he is doing everything he can to prevent accidents among his subordinates, when his interest in the matter cannot really be classified as much more than passive. There is a disposition to blame accidents on Providence, just as there is a disposition to blame misgovernment on politicians, overlooking the fact that both Providence and politicians can be assisted to give more satisfactory results if we all take an active interest.

Regardless of the accidents in which Providence may be involved, no man likes to know that there is a report to the effect that, in addition to this accident, another accident occurred under his jurisdiction a short time previously. It may safely be stated, therefore, that Questions 15 and 16 have proved to be an active factor in inducing certain minor executives to take an active and personal interest in the protection of the men under their jurisdiction.

No report is more reliable than the man who makes it out, and its value depends entirely on the man who receives it. An analytical study of personal injuries, such as we have described, is worthless unless everyone who contributes to it is enthusiastically interested in the prevention of accidents. It is best that such reports as we have been considering should be made out by

a local committee, so that they will represent a broad, unbiased, and competent point of view. However, they should be signed by some executive under whose supervision the accident occurred, if only because he has the authority to take the steps that will prevent future accidents of the same kind, and in signing the report should feel that he is pledging himself to take such action. Any man so signing a report should be man enough to sign it, even though he may consider that it is, in part, a reflection on his management. We try to encourage this point of view by beginning to apply pressure only when accidents of a certain type show a tendency to repeat.

The major executives who get these reports should study them, both individually and collectively, with a full realization that accident prevention is one of their greatest responsibilities, and that it is their duty to take the action called for by the reports, or to see that such action is taken. We have been very fortunate in receiving the sincere and effective cooperation of operating executives in our accident prevention work among the companies associated with Utilities Power & Light Corporation. They have done much to spread the safety spirit among the men, and this teamwork has been a most effective means in the reduction of accident frequency rates. We believe, however, that an important factor, both in stimulating and guiding this interest, has been the availability of full and detailed information as to why men get hurt.

APPENDIX Analysis of Causes of Personal Injuries

Listed below are the causes of accidental injuries as set forth under Question 7, Form 5800, "Investigation Report on Fatal or Lost Time Personal Injury." Following each is a brief explanation of the wording used, which we hope will be helpful in obtaining accurate, consistent analyses of accident causes.

No cause should be assigned to an accident until all the possible causes have been carefully studied and considered, and it is certain that the case is going to be accurately described. Don't try to put all the blame on the injured man, but size up the situation in a fair, square way and tell the complete truth as you see it.

Often an accident results from a combination of causes, in which case several phases may have to be checked. In such cases, the primary cause should be checked by using the figure "1." The other causes should be numbered in the order of their relative importance as contributors to the accident. If there should be any doubt as to which cause ranks first, select, for the first, the cause which good management would be the first to correct.

- A1. **Employee Not Instructed at All.** The employee had never been warned against the hazards incidental to the work he was doing, nor had he been told how to protect himself and fellow workers against those hazards.
- A2. **Instructions Not Enforced.** The accident was due to the failure of the employee to follow some safety instruction which he had received, but which had not been rigidly enforced, either in his own case or in the case of his fellow employees. This cause will be assigned in all such cases, regardless of whether or not the employee's immediate superior was aware of the disobedience of safety rules at the time of the accident.
- A3. **Instructions Incomplete.** The employee had not been given all the instructions necessary to prevent the accident. He might have been warned, for instance, about the maximum allowable inclination of ladders; but this cause would apply, in the case of a ladder slip, if he had not also been warned to have the foot of the ladder properly secured, by lashing or otherwise.
- A4. **Instructions Erroneous.** The safety instructions given the employee did not apply to the hazards to which he was exposed. If an employee had been educated to use rubber gloves in handling the lower voltages, but had not been cautioned about their limitations in the case of the higher voltages, this cause would apply to shock by high tension lines.
- B1. **Employee Inexperienced.** How many men get hurt just because they are plain greenhorns, and therefore incapable of understanding or applying the instructions which they have received? This cause will be used to describe cases where men are injured because, while they may be skillful, alert workmen along some lines, they have been assigned to work that is new and strange to them.
- B2. **Employee Not Skillful.** Some men are naturally clumsy and unable to handle themselves or their work with the skill that is necessary to avoid accidents. A punch press operator of several years' experience may, nevertheless, be unable to keep his hands out of danger. If he should get hurt, as a result of his clumsiness, this cause would apply.
- B3. **Employee Ignorant.** To understand and apply safety rules a man must have a certain foundation of education and knowledge of the English language. Some men get hurt because they just can not understand the conditions under which they are working.
- B4. **Employee Used Poor Judgment.** A man may be experienced, skillful, intelligent and fully instructed regarding the precautions that he should take; but nevertheless, when a condition arises which forces him to choose between the right way and the wrong way, he may deliberately select the wrong way. Please note the distinction between cases of this kind and cases where a man's judgment is warped by haste, mental fatigue, anger or excitement.
- C1. **Disobedience of Rules.** Sometimes, in spite of warnings and reprimands, and for no apparent reason, a man will disobey a safety rule, and an accident will result. Many cases of infection, due to neglect of small cuts and scratches, will come under this classification. Often rules thus broken are general rules, rather than those which apply specifically to a man's own work, and his disobedience is the effect of indifference or a generally lawless attitude of mind. This cause will be assigned to such cases.
- C2. **Interference by Others.** This cause is assigned to cover the cases where a man may be injured through no fault or shortcoming of his own, but as a result of an action taken by some other person. It may cover a wide range of cases, involving physical interference, such as that of the man who is shocked when a dead wire on which he is working is charged by someone else, without warning to him; or the man who is pushed or crowded into a dangerous position. This cause will apply in cases where the foolish action of some bystander results in an accident to one of our men.
- C3. **Fooling (Horseplay).** An unfortunately large number of avoidable accidents may result from this cause. It is important that they should be identified and controlled.
- D1. **Attention Distracted.** A man should be allowed to keep his mind on his work. When he is prevented from doing this by some cause beyond his control, without being physically interfered with, and an accident results, this cause will apply.
- D2. **Inattention.** There are times when a man is less interested in his work than in what is going on around him, though nothing is happening which should really distract his attention.

(Continued on page 108)

Reducing Noise and Vibration in Buildings

By F. R. WATSON

Professor of Experimental Physics,
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NOISE is one of the modern evils. A busy street in a large city is so noisy that thunder cannot be heard. Automobile horns, street cars, elevated trains, riveting machines and other devices all contribute to the pandemonium of noise that must be suffered. Inside of buildings the situation is not much better. Typewriters are found in almost every room, while adding machines and other computing instruments, elevators, motors and ventilation systems add to the general disturbance. In factories, a serious annoyance arises when heavy machinery sets up vibrations in the floors and walls.

In all of these cases, the physical welfare of employees is affected. Clerks become nervous and irritable; their efficiency is less and they make mistakes, which means a financial loss. Factory employees do poorer work, and are more liable to have accidents. Generally speaking, the smooth, efficient operation of business is seriously disturbed.

Systematic studies have been made to reduce these defects, with some beneficial results. The acoustic problems in buildings may be grouped in two classes—the control of sound in rooms and the reduction of transfer of sound and vibrations from one part of a building to other parts. The two problems may thus be called the Acoustics of Rooms and the Insulation of Sound.

Acoustics of Rooms

When a sound operates in a room, it spreads out in spheres from the source until it strikes the walls, ceiling and floor, where it is partly reflected, partly absorbed and partly transmitted.

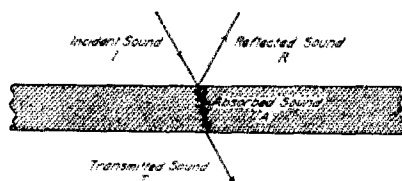


Fig. 1. How sound is reflected, absorbed and transmitted.

Buildings of massive and rigid construction and rooms lined with sound-absorbing materials help to reduce harmful noise.

ted, as shown in Fig. 1. At plaster walls, for example, 95 per cent or more is reflected, and this progresses to other surfaces where the reflection is repeated. In a bare room with such surfaces a sound may suffer 200-300 reflections or more before it dies out. Furthermore, since sound travels very rapidly—as fast as a rifle bullet—these reflected sounds cross and recross so as to fill up every part of the room in a small fraction of a second; but it may take several seconds for it to become inaudible.

To correct this trouble, it is necessary to install sound absorbing materials so that the sound dies out more rapidly. Any such material should absorb at least 20 per cent of the incident sound, and many products are now available that will absorb more than this. With the introduction of material, or any articles, such as furniture, rugs, etc., the acoustics show a marked improvement so that occupants of the room are relieved and show immediate improvement in their work.

Loudness of Sound.—To understand fully the action of sound on people, it is necessary to consider the loudness of sound. The ear is extremely sensitive to faint sounds, but has a mechanism that protects it against very loud sounds. In mathematical language, the ear responds logarithmically to the intensity. This means that while 100 violins are ten times as intense as 10 violins, they are only twice as loud ($\log_{10} 100 = 2$, $\log_{10} 10 = 1$).

On this basis of loudness, a new scale of hearing units (decibels) has been made, as shown in Fig. 2. It is seen that there are 108 units on this scale, extending from 0, a sound that is barely heard, to 108, for which the sound is so loud as to be painful.

For acoustic comfort in a room, the loudness may vary from about 30 to 40. If it rises to 70 decibels, as in a stenographic room, the occupants are decidedly disturbed by the noise.

The introduction of absorbing material in a room will not reduce the loudness very much, from 5 to possibly 10 units, depending on the amount of material, but the relief for occupants in rooms is quite marked, not only because the loudness is reduced, but also because the sound dies out more quickly. In large offices, it is desirable to house the typewriters, adding machines, etc., in a separate room with glass partitions, although substantial walls are more effective. The sound is thus confined in a small space which can be quieted effectively, thus leaving the larger room comparatively free from disturbing noise.

It is usually sufficient to cover the ceiling of a room with an efficient sound absorber. Absorbing values of various materials are given in Table I, on page 15.

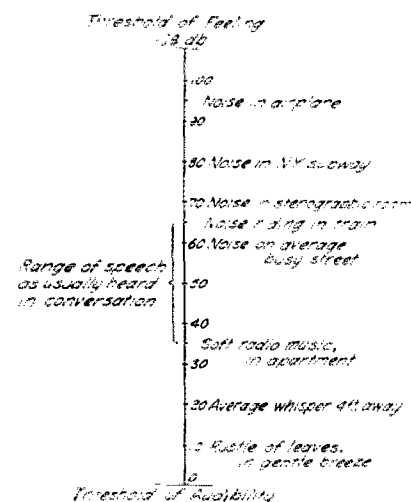


Fig. 2. A scale of loudness. (Waterfall). The hearing unit is the decibel. Zero represents a sound that can barely be heard, and at 108 the sound becomes so loud as to be painful.

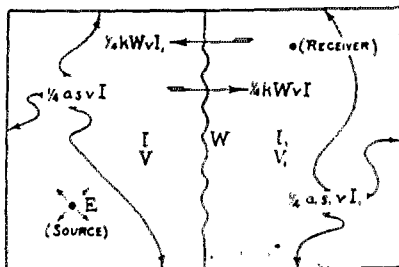


Fig. 3. How sound in one room is partly absorbed by the walls, with some transmission into an adjoining room.

Insulation of Sound

It is a difficult matter to stop sound from passing through the walls of a room. Fig. 3 pictures the case where sound generated in one room is partly absorbed by the walls, while some is transmitted through a partition into an adjoining room. What is desired is to reduce the transmitted sound to a loudness which is not objectionable. For example, if the second room is a bedroom in which a person is trying to sleep, the transmitted sound should be reduced to about 35 decibels (Fig. 2). Absolute quiet (zero loudness) is practically impossible to obtain, nor is it desirable, since people prefer a certain amount of loudness.

If the loudness of the transmitted sound reaches a value of 30 decibels or more, people in the second room begin to notice it. However, if the second room has a competing sound such as typewriter noises, conversation, radio, etc., the transmitted sound is not so noticeable and may rise to a considerable value before becoming objectionable.

Numerical Example.—Suppose radio music in one room has a loudness of 60 decibels (Fig. 2). The furnishings of the room absorb enough sound to reduce this approximately 5 units to 55 decibels. On passing through the partition, the sound is further reduced say 30 decibels to 25 units, where the furnishings of the second room reduce it to 5 units more to a final value of 20 decibels. This sound would not be objectionable; but if the original loudness were 80 instead of 60, the reduction would be only to 40 decibels and this would be loud enough to be disturbing. If a radio were operating in the second room, the transmitted sound would not be so objectionable.

Transmission of Sound Through Partitions

Sound waves may get through a partition in three ways: first, through ventilation ducts or other air passages; second, by setting the partition in vibration so as to create sound waves

on the further side; and, third, as an elastic wave motion in which the pressures and rarefactions of the sound waves are transmitted from particle to particle in the partition and are communicated to the air on the further side.

Experience shows that the escape of sound is greatest through the ventilation ducts, so that, unless these vents are arranged in some manner to hinder the transmission, it is a waste of effort to install sound proof constructions. Next in importance is the vibration of the partition. Sound pressures and rarefactions set the partition in mechanical vibration, which, in turn, sets up sound waves on the further side.

TABLE I.—SOUND-ABSORBING COEFFICIENTS FOR PITCH 512

(Copied largely from Table VI, Watson's "Acoustics of Buildings")

Material	Coefficient Per Sq. Ft.
Open window	1.00
Acoustex	0.37
Akoustolith (artificial stone)	0.16
Ambler sound-absorbing plaster	0.14
Balsam wool, bare, 1 in. thick, 0.36 lb. per sq. ft.	0.44
Brick wall	0.032
Brick wall, painted	0.017
Brick, set in cement	0.025
Cabot's quilt, two layers of triple ply, with decorative membrane	0.51
Calacoustic Plaster	0.19
Carpet, unlined	0.15
Carpet, lined	0.20
Carpet, with 1/2 in. Oxite hairfelt	0.25
Carpet rugs	0.20
Celotex, unperforated, 71-16 in. thick	0.20
Acousti-Celotex, type A, unpainted	0.25
Acousti-Celotex, type B, painted or unpainted	0.47
Acousti-Celotex, type BB, painted or unpainted	0.70
Acousti-Celotex, type C, painted or unpainted	0.30
Corkoustic, 1 in. thick, 0.875 lb. per sq. ft.	0.30
Corkoustic, sprayed with cold water paint	0.30
Corkoustic, 2 in. thick, 1.6 lb. per sq. ft.	0.35
Cork tile	0.03
Curtains in heavy folds	0.40-0.75
Fibroblock, unpainted, 1 1/4 in. thick	0.42
Flaxlinum, bare, 1 in. thick	0.61
Flaxlinum, 1 in. thick, with unpainted membrane	0.61
Flaxlinum, Acoustic Tile, 1/2 in. thick, with wooden casing and metal screen	0.42
Flaxlinum Acoustic Tile, 1 in. thick, with wooden casing and metal screen	0.54
Gimco Rock Wool, bare, 1 1/4 in. thick, 1.44 lb. per sq. ft.	0.57
Glass (single thickness)	0.027
Hairfelt, bare, 1 in. thick, 0.75 lb. per sq. ft.	0.58
Linoleum	0.03
Marble	0.01
Nashkote A, 1/2 in. thick	0.31
Nashkote A, 1/4 in. thick	0.41
Nashkote B, 1/2 in. thick	0.37
Plaster on wood lath	0.034
Plaster on metal lath	0.033
Plaster on tile	0.025
Sabinite Acoustical Plaster	0.21
Stage opening, depending on stage furnishings	0.25-0.40
Ventilators	0.75
Wood, plain	0.06
Wood, varnished	0.03
Acoustic Zenthern (cork granules cemented with plaster 1.14 in. thick, 2.07 lb. per sq. ft.)	0.33
U. S. G. Acoustical Tile, 1/4 in. thick	0.56

Individual Objects	Coefficient Per Sq. Ft.
Adult person	4.7
Plain wood seats	0.15
Church pews, per seat	0.2-0.5
Seat Cushions, per seat	1.00-2.00
Opera chairs (see details in separate report)	
(a) Plywood seat and back, no upholstery	0.24
(b) Padded seat and back, covered with Pantasote (imitation) leather	1.6
(c) Various padding, covered with velvet or mohair	2.3-3.5

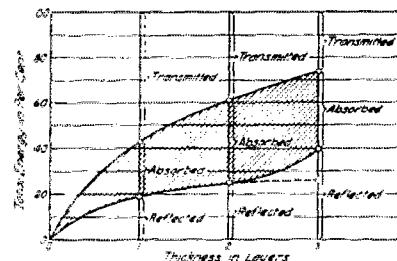


Fig. 4. Relative amounts of sound reflected, absorbed and transmitted by hair felt.

The transmission as an elastic wave is usually very small and can be disregarded practically.

Musical sounds are usually more difficult to stop than speech. The radio in apartment houses has introduced a new problem, for it is practically impossible to stop loud radio sounds.

Experimental Measurements on Transmission of Sound

As shown in Fig. 1, sound incident on a partition is reflected, absorbed and transmitted. In one set of experiments,* measurements were made on the relative amounts of sound that were reflected and transmitted by one, two and three layers of material. Fig. 1 shows the results for hair felt. For any particular thickness, the sum of the reflected, absorbed and transmitted sound equals 100 per cent. For instance, for 1 layer, the reflection is 19 per cent, the absorption 23 per cent and the transmission 58 per cent. For greater thickness, the transmission decreases, the absorption increases, and the reflection approaches a maximum value.

Interesting results were obtained for partitions made of paper lined hair felt. In this experiment, two layers transmitted more sound than one layer—an unexpected and surprising result. Further investigation showed that a resonant vibration was set up by the two layers, so that the increased motion of the double layer created larger sound waves on the further side of the partition. Fig. 5 pictures the results. It is to be noted that for any thickness, the sum of the transmitted, absorbed and reflected sound equals 100 per cent. For example, for two layers, the transmission is large, 55 per cent, but the reflection is correspondingly small, 22 per cent. The absorption increases for each added layer.

To reduce the transmission of sound, it is desirable to use partitions that are as massive and stiff as pos-

*"Soundproof Partitions," by F. R. Watson. Bulletin 127, Univ. of Illinois Engineering Experiment Station.

sible. A brick wall plastered on both sides will greatly reduce any sound, but such a wall is not practicable in buildings. The question then arises as to the construction features of usual partitions that will give reasonably satisfactory results.

A large number of tests have been made on different types of partitions. What is done is to measure the intensity of the incident sound I' and also the intensity I'' after transmission. (Fig. 3). The ratio I'/I'' gives the "reduction factor" of the partition; but the results are usually expressed as $10 \times \log \text{arithm } I'/I''$, which gives the loudness units of Fig. 2. For example, an incident sound with $I' = 1,000,000$ units of intensity may be reduced by transmission to $I'' = 1,000$ units. The intensity is thus reduced 1,000 fold, but the loudness reduction is $10 \times \log (1,000,000/1,000) = 30$ decibels.

This result was also obtained at the Bureau of Standards (Research Paper No. 48) for a large number of partitions.

Regarding partitions, Waterfall writes:

With an average reduction factor of 25 db., normal speech can be understood quite easily and distinctly through the partition.

With an average reduction factor of 30 db., loud speech can be understood fairly well if conditions are quiet.

With an average reduction factor of 35 db., loud speech is audible, but not easily intelligible under quiet conditions.

With an average reduction factor of 40 db., normal speech is not audible, loud speech can be faintly heard, but not easily understood, and for all practical purposes the partition can be considered as "sound proof." Separating partitions between apartments should have a factor of about 40.

For piano rooms, organ rooms, etc., a better partition is sometimes needed. Higher factors than 40 are desirable for such cases.

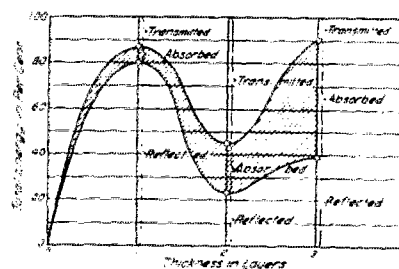


Fig. 5. Results for a vibrating partition in which two layers transmitted more sound than one layer.

Reduction of Sound by Wood Stud Partitions. (P. E. Sabine.)

Lath	Plaster	Coats	Lbs./sq. ft.	$10 \log I'/I''$
Metal	Gypsum	S & B	17.4	27.0
Wood	Gypsum	S & B	18.0	27.3
Wood	Gypsum	S, B, F	18.6	28.0
Wood	Lime	S, B	17.4	35.4
Wood	Lime	S, B, F	18.0	35.2

The data in the last column are averages for 17 tones from 128 to 4,096 vibrations per second.

Sabine comments:

1. There is no important difference in the sound insulation afforded by gypsum plaster laid on metal lath and the same material laid on wood lath.

2. Compared with similar tests on masonry partitions, the wood stud construction gave the same sound reduction as an all-masonry wall of equal weight.

3. Oral tests showed that speech of conversational loudness could be heard and understood easily through all these partitions.

Vibration of Floors

A serious defect, particularly in factories, is the vibration of floors set up by motors and other machinery. Employees who are shaken up and down all day by these floors are unable to do satisfactory work. Manu-

Results indicate that the acceleration of the floor has the greatest effect, the velocity of the floor comes next and the actual displacement is least noticed. The case is somewhat similar to riding an elevator in a building, where people experience discomfort when the elevator is suddenly started up or down (accelerated), but not affected much when the elevator is in steady motion.

For example, Eason (The Prevention of Vibration and Noise, Chap. 11) states that an acceleration equal to 1 per cent of gravity is noticeable, and if it reaches 4 to 5 per cent, the result is distinctly unpleasant. This would be the case if the floor vibrated 10 times a second with a total up and down displacement of .01 inch; or 5 times a second with a displacement of .04 inches, etc. That is, the displacements do not have to be large to produce trouble. In many factories, the displacements are much greater than the values quoted, so that the nuisance is greater.

The reduction of this defect is found in two ways. First, the structure of the building should be as massive and rigid as possible, so that it cannot easily be vibrated. Second, it is desirable to adjust the machinery so as to reduce the vibrations. Motors can be balanced so that they run smoothly. It is also of benefit to mount the machine in special manner to minimize any vibrations that may get into the building structure. Sometimes it is sufficient to use a padding of cork, or flax, etc., under the machine; otherwise special devices may be used.

Conclusion

The constructive features of buildings that minimize noise and vibrations are heavy and rigid walls and floors, with sound-absorbing materials lining the rooms. Heavy machinery should run with as little vibration as possible, and perhaps be mounted on special materials. Buildings which have these features throughout will show a marked improvement over the usual type of structure.

Sound Reduction for Plaster Partitions. (P. E. Sabine.)

Partition	Lbs./sq. ft.	$10 \log I'/I''$
2" Gypsum Tile, unplastered.....	10.4	23.6
3" Hollow Tile, unplastered.....	11.1	24.2
1½" Plaster on Metal Lath.....	13.9	25.3
3" Solid Gypsum Tile, unplastered.....	14.2	26.7
2" Hollow Gypsum and ½" Plaster.....	15.0	27.2
4" Hollow Clay Tile, unplastered.....	17.0	28.3
2" Gypsum and 1" Plaster.....	19.6	29.5
2" Gypsum and 1¼" Plaster.....	21.4	30.5
4" Clay Tile and ½" Plaster.....	22.0	30.7
2¼" Plaster on Metal Lath.....	23.2	32.4
3" Solid Gypsum and 1¼" Plaster.....	25.4	32.8
4" Hollow Clay Tile and 1" Plaster.....	27.0	33.6
4" Hollow Clay Tile and 1¼" Plaster.....	28.8	34.6
3½" Plaster on Metal Lath.....	32.5	36.0
4½" Plaster on Metal Lath.....	41.8	38.2

These partitions were 3'2" x 6'2" in area, built in between two entirely separate rooms. It is to be noted that the reduction of sound is proportional to the weight of the partition, the heavier partition thus stopping more sound.

factured products are likely to show imperfections, and accidents occur more frequently.

Investigations have been to determine what features of the vibrations have the most serious effect on people.

The Four Essentials of Fire Protection

By GEORGE P. HODGES
American LaFrance & Foamite Corporation

Fire Protection can't be obtained by merely buying an extinguisher. The equipment must be selected for the hazard, placed correctly, charged properly, and operated with confidence.

USE of an open flame to discover how much gasoline remained in the tank of his automobile, nearly cost John Jones of 83 Blank Street, his life last night."

Hardly a day goes by but what, in some section of the country, newspaper readers read something which has the same theme as the above. Unfortunately, however, these news items are often of an even more serious nature. Despite their seriousness, such items invariably bring an incredulous smile to the faces of their readers. It is like the old jingle, "John Jones looked

into his old shot-gun to see if it was loaded. It was!"

The same persons, who pride themselves on having "too much sense to do such foolhardy things," are often guilty of foolish acts that may have serious and even tragic consequences.

They are the men who are inclined to overlook the need of fire protection because they have never had a fire, or who install fire-fighting equipment as a necessary evil which must be had, promptly forgetting that it exists and allowing the men under them to do likewise. They are the men who argue that their buildings are adequately covered by fire insurance. They lose sight of the fact, however, that fire insurance will not pay for lives lost, nor will it compensate for lost business while the plant is shut down. In this connection it is also significant to note that, according to carefully compiled statistics, 30 per cent of all industrial fires result in business failure.

They are the men who rely entirely on their city fire department for protection. But, efficient as they may be, fire departments are not infallible. Accidents may happen—congested traffic conditions, open bridges, train blockades are only a few of the handicaps that may delay them. Or, they may be at another fire. The man who relies wholly on the fire department for protection is taking great chances. It will be only when someone discovers a way to tell when and where and to whom fire will come that property owners can ignore adequate first-aid fire protection equipment.

Fire protection is a complex subject and men who have devoted their lives to the study of fire control are almost daily learning something new. They have learned that fires are not all the same, that fire hazards differ, that different types of fire extinguishing methods apply to, or do not apply to, the different kinds of hazards that are to be safeguarded. They know that correct fire protection cannot be obtained by simply buying a "fire" extin-



After the right type and size of extinguisher has been determined, the next step is to supervise the installation to make sure that the devices are correctly placed.

guisher. The problem isn't as simple as that.

A fire protection engineer bases his recommendations for fire protection on four basic essentials, namely, The right extinguisher, correctly placed, properly charged, and confidently operated. If these four essentials are put into actual practice, our annual fire loss would not amount to one-half billion dollars a year.

The theory upon which the first essential of correct fire protection is based is "Fires are not all alike—nor are all fire extinguishers." To the average person one fire is just like another, but there are many different kinds of fires. For instance, there are fires in ordinary materials, there are electrical fires, there are oil fires, and there are the extra-hazardous fires in flammable materials. There isn't any one type of fire extinguisher that is a "cure all" for all kinds of fires. One type of fire extinguisher may put out one kind of fire and yet prove almost useless on another kind. This explains why so many fires gain destructive headway, interrupting business and causing losses that fire insurance can never repay.

The owner of a printing plant had been persuaded to install some carbon tetrachloride extinguishers in his press room. He was given to understand that he could depend on these devices for protection. But when fire broke out in the web of a press, the extinguisher failed to put out the flames and a serious loss was



The first step in fire protection—a detailed study by a trained fire-protection engineer to determine hazards and the best methods of protection. On this property a thorough housecleaning would be the first remedy suggested.



Instruction of employees in the proper operation of the extinguishers gives them confidence in themselves and their equipment should an emergency arise.

only narrowly averted by other means. Naturally this man, who had believed that any "fire extinguisher" was a fire extinguisher, came to question the value of all extinguishers. He did not realize until it was explained to him, that a carbon tetrachloride extinguisher depends for its efficiency on the smothering action of a gas heavier than air, which gas, being free, would probably fall away from the burning web before it could have any effect.

Hundreds of other unfortunate instances could be cited where people placed faith in extinguishers that were not adequate for the risks they supposedly safeguarded. Misapplication can be made with almost any type of fire extinguishing equipment. Fortunately, there is a type of fire extinguisher which will control each kind of fire. However, the kind of fire protection best suited to handle the particular fire risks present in a property cannot be determined by guesswork. Facts determined from a detailed study made by an experienced engineer, who has studied fire in all its various forms and who knows the advantages and limitations of each type of fire extinguisher, of the particular hazards existing is the right way to find out what protection is necessary to safeguard the business against these hazards. Correct protection means the right extinguisher for each kind of fire risk.

And that brings us to the second

essential of correct fire protection—"Correctly Placed." Fire comes when least expected, it is always a surprise and therefore always brings with it a certain amount of confusion. When a fire extinguisher is needed it is needed quickly and that means that it must be readily accessible—so that a man can get his hands on it immediately.

Fire extinguishers are generally located in proportion of one unit for every 2000 or 2500 square feet of floor area. The real measurement, however, of fire protection, so far as correct placing of extinguishers is concerned, is the distance to be traveled from any point to reach the nearest extinguisher. This varies with the kind of hazard to be encountered and the size of the extinguisher used. The extinguishers should be conspicuously located and in buildings where they are likely to be obscured by piles of stock, it is desirable to paint some sort of sign of sharply contrasting colors on the walls above the devices. These signs become familiar to the occupants of the building, bringing the extinguishers into distinct prominence, and thus tend to save valuable time in case of emergency.

It can be seen from the above that the correct placing of fire extinguishers is an exacting job and should only be entrusted to men experienced in the class of work. For, a fire extinguisher which cannot be quickly reached in time of excite-

ment is of no more value than the extinguisher which is not suitable for the risk to be protected.

The third essential, "Properly Charged," is also important, for, even if an extinguisher is of the correct type and is properly installed, what good is it if it won't work? And it won't work properly unless it is properly charged.

As a concrete example, let us relate an actual happening. A fire inspector with a local industrial fire chief was making an inspection of the fire-fighting equipment of a large factory. The various devices showed evidences of having been well cared for as outward appearances were concerned. The record tags showed that the extinguishers and engines had been recharged about six months before.

Just as an extra precaution a 40-gallon soda-acid engine was taken out in the yard and operated. Imagine the surprise of the factory's fire chief when this engine discharged a stream for a distance of only five or six feet. Investigation proved that the man who charged the engines had used some other kind of acid in place of sulphuric acid which should have been used. Fortunately, this was discovered before the devices were called upon to put out a fire. When fire breaks out an extinguisher is needed and needed badly—and there isn't time to stop and see if it is properly charged.

It is part of the Underwriters' requirements that certain types of fire
(Continued on page 98)



Regular inspections of equipment to make sure that it is always ready for operation is another requisite in the complete plan of protection against fire.

State Safety Requirements in Industry

This is No. 94 of the Series of Safe Practices Pamphlets. Reprints of these Pamphlets are obtainable from the headquarters of the National Safety Council in Chicago.

1. Practically every state in the United States has in force certain safety requirements for industry which employers in that state must follow. Every employer should familiarize himself with the requirements for his operations. He can do this by studying the state publications which may be secured by writing the proper authorities of his state.

2. The National Safety Council receives so many inquiries from its members on this subject that this pamphlet has been prepared, not to quote these requirements in detail, but to help the employer secure state publications and to study the requirements.

3. For this purpose the pamphlet is divided into two sections:

- (a) A subject chart (See pages 20 and 21).
- (b) A publication list (See pages 22 to 26 inclusive).

Subject Chart

4. In the vertical column at the left of the chart is an alphabetical list of 84 common subjects on which various states have industrial safety requirements.

5. In the horizontal line at the top of the chart is an alphabetical list of the 48 states.

6. This chart can be used in several ways:

- (a) To determine what states have safety requirements on given subjects.
- (b) To determine the subjects on which a given state has safety requirements.
- (c) To determine whether a given state has safety requirements on a given subject.

7. The code letters on this chart indicate the nature of each state requirement. "S" indicates "Statute." "R" indicates "Rule or Regulation." "A" indicates "Advisory."

8. The code numbers on this chart refer to the corresponding numbers on the publication list, thus enabling the reader to determine the title of the state publication in which requirements on a given subject may be found.

Publication List

9. The publication list is arranged alphabetically by states. The publications listed under each state are also arranged alphabetically.

10. The subjects in quotation marks are the exact titles of specific publications.

11. The subjects not in quotation marks are those on which requirements are specified in two or more publications of a given state.

12. The publication list of each state gives the names and addresses of the state departments from which these publications can be secured.

Examples

13. *To determine what states have requirements on a given subject.* Suppose you want to determine what states have safety requirements on anthrax. First turn to the subject list on page 20; run down the left hand column to anthrax. Then check across the page. You find that Massachusetts and New York are the only states that have requirements on this subject.

14. *To determine the titles of state publications containing safety requirements on a given subject.* Continuing

the above example; R2 is the reference symbol for anthrax in Massachusetts. Turn to the Massachusetts publication list on page 23; R2 is found to refer to a pamphlet entitled "Rules and Regulations Suggested for the Prevention of Anthrax." Copies may be secured by writing to the Department of Labor and Industries, Division of Industrial Safety, Boston, Mass.

15. Here is another example: Suppose you want to secure the Arkansas publication containing safety requirements for boilers. Turn to the subject chart on page 20; run down the left-hand column to "Boilers;" check across the page to "Arkansas;" the reference symbol is S1. Now turn to the Arkansas publication list on page 22; S1 is found to refer to two publications, S2 and S3, entitled "Boiler Inspection Rules and Laws" and "Labor Laws of the State of Arkansas." Copies of both publications can be secured by writing to the Arkansas Bureau of Labor and Statistics, Little Rock, Ark.

16. *To determine on what subjects a given state has industrial safety requirements.* Suppose you have a plant in Georgia and want to determine on what subjects this state has industrial safety requirements. Turn to the subject chart on page 20, check across the top line to Georgia, then on down that column. You find statutes on "Building Exits," "Labor Laws," and "Workmen's Compensation Act."

17. *To secure copies of all publications of a given state containing safety requirements for industry.* Suppose you have a plant in Rhode Island. Turn to the Rhode Island publication list on page 25. This state has two publications entitled "Work-

SUBJECT CHART—ALABAMA TO MONTANA

	Ala.	Ark.	Calif.	Colo.	Conn.	Del.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kans.	Ky.	La.	Maine	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
Abrasive Wheels		R1	R1	21	23					22	210			29				21	26	21		21	
Anthrax				21	21					22	210			29				21	26	21		21	
Bakeries	21		21	R2	23	21			21	23	210	24	21	R1		21	21	22	21	22		22	26
Boilers				R21																			
Brewing & Bottling																							
Building Exits		R8		23	23			21		22	21	22	22	R4	21	21		24	26	211	21	23	22
Canneries			R21											29									
Cannery Labor Camps																							
Ceramics			R21							22		23								A1			
Chemicals			R21																				
Compressed Air Equipment		R2		R4	R2													R8					
Construction Work		R2		R3	214					22	22					21					211		
Conveyors				R29	219																		
Cranes, Derricks & Hoists	21	21		24	25				21	22	22	24	23	23			25	R12	26	23		26	26
Dredges			R7																				
Dry Cleaning & Dyeing				25							22			R1	R4					23			
Dust Explosions, Prevention	21			R24	26									24	23								
Electrical Installation	21	R4		R8	27				21	21	24	24	25	24	24	21	22	R13	24	24			24
Elevators and Escalators				26						22	22	24	25	25	21	21	22	R14	26	25			24
Engines	21		R11	R2							23	24	25	A1						A1			24
Excavations		R2		R12							22	22						25					
Exhaust Systems		R1		R3						22	22	22	26	25				25	26	R3	26		
Explosives	21	22		R13	29				21	22	22	24	26	25				25	27	29		25	21
Fire Drills														R4									
First Aid	S1	23	23	R15	S11	24				23	S12	24	29	S7			25	28	22	A1			26
Flammable Gases		R7		23	S12						R2		29	S11			25			A1			24
Flammable Liquids				23							R2			28				R19	R3	A1			
Floor & Wall Openings, Railings & Toe Boards		R8		R16	S13					22	22			A1				R20	27	27			
Forging and Stamping														R4			23	R21	26	28			
Foundries			27															R22	25	R2			
Garages			A2																				
Gas Installations																							
Gas Masks & Respirators			R30	R3								24					23	R30					
Head & Eye Protection		R2		R17														R17		29			
Labor Camps			S8											29									
Labor Laws			23	28	S14	25	22	22	21	22	S10		27	29	21	21	23	S10	26	S10	21		23
Ladders		24		R18	S15			21	21	22	S10							R25	R1				
Laundries				R19	S16	23				22	S10		R3					S10	R2				
Lead																							
Lighting: Industrial		25	23	29	S17	R1				22	S11	24	R4	S10			25	S11		S12			26
Lighting: Protection																							
Lithophone Manufacture		R9																					
Logging & Saw Mill Machinery																							
Metal Working			R22							22	S10		R2			21		R37		S17			
Metallurgical Works														A1		S1				S13			
Milling Industry																							
Mining	S1	26	23	S10	S18				21	23	S12	24	28	S11	21		24		22	S14	26	26	
Needle Trade																							
Oil Drilling			23	R25						23													25
Painting			R21															S12					
Paper & Pulp Mills																							
Petroleum Safety Standards				R25																A1		25	
Plant Railways				R26	R2																		
Plate & Sheet Metal			R21																	S13			
Potteries																							
Power Control: Electrical		R10		R9						22	25								R31		S15		
Power Control: Mechanical				R29	23					22	S10	23	S10					R28		S16			
Power Presses																							
Power Transmission Apparatus		R11		R27	24					22	S10			A1		21		R32		S18			
Pressure Piping																		R28	R2	R3			
Printing			R21								S10												
Quarries			R28																				
Refrigeration: Mechanical											S13	25		R4	21			R10		R3			
Rubber Machinery																							
Safety Organization			A4											A1						A1			
Salt Refining																							
Sanitation: Industrial		27	23	S11	225	26	22			24	S14	26	S11	S12	21	21	26	S13	26	S20	21	28	26
Scaffolds & Staging	R2			S12	S14	25				22	22			R2			23	R33		S21		29	
Shipbuilding				R30																			
Silicosis																							
Smelting Ore		26								22													
Spray Coating																							
Stairways		R13		R31	226					22	S15	27	S12	R2	23	21		R34	27	S22	21		27
Steam Shovels				R32																			26
Steel Mills																							
Tanneries																							
Tunnels				R21		27																	
Vats				R34																			
Ventilation	S1	26	23	S13	S27	R1	22			25	S10	28	S13	S13		21	25	S14	28	S19	S1	26	26
Walkway Surfaces																							
Window Washing				R36																			
Woodworking Plants			23	R38																			
Workmen's Compensation Law	22	28		S14	S28	28	23	23	22	26	S17	29	S14	S14	22	23	23	R37	S24	S10		28	

SUBJECT CHART-NEBRASKA TO WYOMING

	Neb.	Ne.	N. H.	N. A.	N. M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ark.	Cal.	Ill.	Ind.	I.	K.	La.	Mich.	Mo.	N. J.	N. Y.	Pa.	R. I.	S. C.	S. D.	Tenn.	Texas	Utah	Vt.	Va.	Wash.	W. Va.	W. Vir.	Wyo.
Abrasive Wheels	R1	R1	R1			R11			R1	R3	R8	R1														R9		R4		R1	R2	R22		
Anthrax						R2																												
Bakeries				R13		R1				R1	R8	R1	R1													R1		R4						R3
Boilers	R1	R1	R1	R1		R21			R1	R7	R1	R4														R12		R1		R1	R2	R2		
Brewing & Bottling																										R12								
Building Exits		R1	R1	R1		R1		R1	R1	R1	R1	R1	R1													R2	R1		R1	R1		R3	R1	
Canneries						R10																				R1								
Cannery Labor Camps						R1			R10		R1	R1	R1													R1								
Ceramics		R1			R4	R21					R1	R1	R1													R12						R1		
Chemicals																																		
Compressed Air Equipment	R1	R1		R13		R1			R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Construction Work		R1				R13			R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Conveyors	R1	R1		R19	R1	R13	R1	R1	R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Cranes, Derricks & Hoists	R1	R1				R13	R1	R1	R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Dredges																																		
Dry Cleaning & Dyeing						R14			R1	R1	R1	R1	R1													R2	R1		R1	R1		R1	R1	
Dust Explosions, Prevention						R15																				R1								
Electrical Installation	R1	R1		R15		R17			R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Elevators and Escalators						R19			R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Engines						R19			R1	R1	R1	R1	R1													R12	R1		R1	R1		R1	R1	
Excavations	R1	R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Exhaust Systems						R17			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Explosives						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Fire Drills						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
First Aid		R14	R1	R1	R1	R18	R1	R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Flammable Gases						R14			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Flammable Liquids		R1		R12		R19			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Floor & Wall Openings, Railings & Toe Boards		R1		R12		R19			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Forging and Stamping						R1			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Foundries						R1			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Garages						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Gas Installations						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Gas Masks & Respirators						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Head & Eye Protection						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Labor Camps						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Labor Laws	R1	R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Ladders	R1	R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Laundries	R1	R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Lead						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Lighting: Industrial						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Lighting: Protection						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Lithophone Manufacture						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Logging & Saw Mill Machinery	R1	R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Metal Working						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Metallurgical Works						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Milling Industry						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Mining		R12			R18	R1		R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Needle Trade						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Oil Drilling		R13				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Painting						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Paper & Pulp Mills						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Petroleum Safety Standards						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Plant Railways						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Plate & Sheet Metal						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Potteries						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Power Control: Electrical		R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Power Control: Mechanical						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Power Presses						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Power Transmission Apparatus		R1				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Pressure Piping						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Printing						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Quarries		R11				R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Refrigeration: Mechanical						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Rubber Machinery						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Safety Organization						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Salt Refining						R18			R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Sanitation: Industrial	R1	R15	R1	R1	R1	R15	R1	R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Scaffolds & Staging	R1	R1				R15	R1	R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Shipbuilding						R15	R1	R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Silicosis						R15	R1	R1	R1	R1	R1	R1	R1													R1		R1	R1		R1	R1		
Smelting Ore		R16			R1																					R1	</							

men's Compensation Law" and "Factory Inspection Law." Copies of the latter publication may be secured by writing to the Office of Factory Inspectors, State House, Providence, R. I., while the former may be secured from the Commissioner of Labor, Providence, R. I.

The Publication List

18. The following publication list is referred to in paragraphs 9 to 12:

ALABAMA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the office of the State Mine Inspector, Birmingham, Ala.

- S1 "Mining Law of the State of Alabama."
S2 "Workmen's Compensation Law."

*Copies may be secured from the Workmen's Compensation Bureau, Birmingham, Alabama.

ARIZONA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Industrial Commission of Arizona, Phoenix, Ariz.

- *R1 "Abrasive Wheels, Safety Code for the Use, Care and Protection of," No. 436.
R2 "Construction Industry, A Safety Code for the Workers in the."
*R3 "Electrical Equipment and Lines, Safety Rules for Operation and Use of," No. 8.
R4 Electrical Installations; see R3, R5, R6 and R7.
*R5 "Electrical Supply and Communication Lines, Safety Rules for the Installation and Maintenance of," No. 10.
*R6 "Electrical Supply Station, Safety Rules for the Installation and Maintenance of," No. 6.
*R7 "Electric Utilization Equipment, Safety Rules for the Installation and Maintenance of," No. 7.
R8 Floor and Wall Openings, Railings and Toe Boards; see R2 and R6.
R9 Lightning Protection; see R6 and R7.
R10 Power Control, Electrical; see R6 and R7.
R11 Power Transmission Apparatus; see R6 and R12.
*R12 "Power Transmission Apparatus, Safety Code for Mechanical," No. 463.
R13 Stairways; see R2 and R6.
S1 Cranes; see S6, R2 and R7.
S2 Explosives; see S6 and R2.
S3 First Aid; see S6 and R2.
S4 Ladders; see S6, R2 and R12.
S5 Lighting; see S6, R2, R6 and R7.
*S6 "Mining Code."
S7 Sanitation; see S6 and R2.
S8 "Workmen's Compensation Law."

*This publication has been adopted by the Industrial Commission of Arizona, and copies may be secured from the United States Bureau of Standards, Washington, D. C.

*Copies may be secured from the State Mine Inspector, Phoenix, Arizona.

ARKANSAS

The quoted subjects listed below are the titles of publications and can be secured by writing the office of the Bureau of Labor and Statistics, Little Rock, Ark.

- S1 Boilers; see S2 and S3.
S2 "Boiler Inspection Law and Rules."
S3 "Labor Laws of the State of Arkansas."

CALIFORNIA

The quoted subjects listed below are the titles of publications and can be secured by writing the State of California Department of Industrial Relations, Industrial Accident Commission, San Francisco, Calif.

- S1 Bakeries; see S8 and R21.
S2 Boilers; see S3, S8, R3, R20, R21, R22, R24, R30 and R32.
S3 "Clothes, Cleaning and Spotting & Sponging Establishments."

- S4 Cranes; see S8, R6, R25, R29, R32 and R35.
S5 Dry Cleaning; see S3, R21 and A3.
S6 Elevators; see S8, R6, R10 and R21.
S7 Foundries; see S8 and R21.
S8 "Labor Laws, State of California."
S9 Lighting; see S2, R7, R21, R24, R30 and R37.
S10 Mining; see S8, R21, R23 and R24.
S11 Sanitation; see S8, R7, R24 and R35.
S12 Seafolding; see S8, R6, R30 and R35.
S13 Ventilation; see S3, R23, R24, R30 and R35.
S14 "Workmen's Compensation Law."
R1 Abrasive Wheels; see R7, R21, R28, R29 and A2.
R2 "Air Pressure Safety Orders."
R3 "Boiler Safety Orders."
R4 Compressed Air Machinery; see R2 and R21.
R5 Construction; see R6 and R21.
R6 "Construction, General Safety Orders."
R7 "Dredges, Gold, Safety Rules for."
R8 Electrical Installations; see R7, R9, R21, R24 and A2.
R9 "Electrical Safety Orders."
R10 "Elevator Safety Orders."
R11 "Engine Safety Orders."
R12 Excavations; see R6 and R33.
R13 Explosives; see R14, R24, R28 and R35.
R14 "Explosives, Storage and Use Relating to General Construction Safety Orders."
R15 First Aid; see R7, R24, R25, R28 and A1.
R16 Floors; see R6, R7 and R29.
R17 Head and Eye; see R7 and R30.
R18 Ladders; see R6, R7, R25, R29, R35 and A2.
R19 Laundries; see R20 and R31.
R20 "Laundry Safety Orders."
R21 "Lighting Safety Orders, General."
R22 "Logging and Saw Mill Safety Orders."
R23 "Mine Fire Control Safety Orders."
R24 "Mine Safety Orders."
R25 "Petroleum, General Industrial Safety Orders."
R26 Plant Railways; see R22 and R30.
R27 Power Transmission Apparatus; see R7, R20, R29, R32 and R37.
R28 "Quarry Safety Rules."
R29 "Safety Orders, General."
R30 "Shipbuilding Safety Orders."
R31 Stairways; see R6, R37, R21, R29 and R30.
R32 "Steam Shovels and Locomotive Cranes, Safety Orders."
R33 "Trench Construction Safety Orders."
R34 Tunnels; see R28 and R35.
R35 "Tunnel Safety Rules."
R36 "Window Cleaning Safety Orders."
R37 "Woodworking Safety Orders."
R38 Woodworking; see R21 and R37.
A1 "First Aid, Instructions for Employees in Industry."
A2 "Garages and Automobile Service Shops."
A3 "Hazards in the Dry Cleaning Industry."
A4 "Safety Committees, Organization of."

COLORADO

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Bureau of Labor Statistics, Denver, Colo.

- *R1 "Loading Machines, Rules Governing the Use of Electrically Driven, in Mines Using the Carbox Cartridge."
**R2 "Mine Safety Standards."
R3 "Spray Painting."
S1 Abrasive Wheels; see S19 and R2.
S2 Bakery; see S10 and S10.
S3 Building Exits; see S14, S10 and R2.
*S4 "Coal Mining Laws," 1929.
S5 Cranes; see S14, S19, S4 and R2.
S6 Dust Explosions; see S4 and R1.
S7 Electrical Installations; see S4, R1 and R2.
S8 Elevators; see S10 and S14.
S9 Explosives; see S19, S4, S21, R1 and R2.
S10 "Factory Inspection Law, (Amended 1911 and 1919)."
S11 First Aid; see S4 and R2.
S12 Flammable Gases; see S4 and R2.
S13 Floor and Wall Openings, Railings & Toe Boards; see S14, S19 and R2.
S14 "Labor Laws, The, Compiled for the State of Colorado," 1929.
S15 Ladders; see S19 and R2.
S16 Laundries; see S10 and S14.
S17 Lighting; see S4 and R2.
S18 Mining; see S4, S19, S20, S21, S22 and R1.
**S19 "Mining Laws, Bulletin No. 7, Federal and State."
S20 "Mining Laws, Supplement No. 2 to Bulletin No. 7."
S21 "Mining Laws, Supplement No. 3 to Bulletin No. 7."
S22 "Mining Laws and Amendments to Laws, Supplement No. 4 to Bulletin No. 7."
S23 Power Control, Mechanical; see S10, S14 and S19.
S24 Power Transmission Apparatus; see S10, S14 and R2.
S25 Sanitation; see S10, S14, S19 and R2.
S26 Stairways; see S10, S14 and 19.
S27 Ventilation; see S4, S10, S14 and R1.
S28 "Workmen's Compensation Law."

*Copies may be secured from the State Coal Mine Inspector, Denver, Colo.

**Copies may be secured from the Bureau of Mines, Metall, Denver, Colo.

CONNECTICUT

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor and Factory Inspection, Hartford, Connecticut.

- R1 "Sanitary Code."
S1 Bakeries; see S3 and S5.
S2 Elevators and Escalators; see S3 and S5.
S3 "Factory Inspection, Labor Laws and Regulations Relating to the Department of," (July, 1928, issue).
S4 First Aid; see S3 and S5.
S5 "Labor Laws," (Revision of 1920).
S6 Sanitation; see R1, S3 and S5.
S7 Textile; see S3 and S5.
S8 "Workmen's Compensation Law."

DELAWARE

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Labor Commission of Delaware, Wilmington, Delaware.

- *S1 "Boiler Rules, Board of."
S2 "Sanitary Law for Female Employees."
S3 "Workmen's Compensation Law."
*Copies may be secured from the Board of Boiler Rules, Wilmington, Del.

FLORIDA

No regulations.

GEORGIA

The quoted subjects listed below are the titles of publications and may be secured by writing the State of Georgia Department of Commerce and Labor, Atlanta, Georgia.

- S1 "Building Exits Laws."
S2 "Laws of the State Applying to Child Labor and Factory Inspection."
S3 "Workmen's Compensation Law."

IDAHO

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the State Mine Inspector of Idaho, Boise, Idaho.

- S1 "Mining Laws of the State of Idaho."
S2 "Workmen's Compensation Act."

*Copies may be secured from the Industrial Accident Board, Boise, Idaho.

ILLINOIS

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Division of Factory Inspection, 608 South Dearborn Street, Chicago, Ill.

- S1 Electrical Installations; see S2 and S3.
S2 "Laws of the State of Illinois Enforced by the Department of Labor."
*S3 "Mining Laws, General."
S4 Sanitation; see S2 and S3.
S5 Ventilation; see S2 and S3.
S6 "Workmen's Compensation Law."

*Copies may be secured from the Department of Mines and Minerals, Springfield, Illinois.

INDIANA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing to the Administrative Building Council of Indiana, Indianapolis, Ind.

- *R1 "Explosives, Rules and Regulations of."
*R2 "Inflammable Liquids and Gases, Rules and Regulations of."
S1 Building Exits; see S2, S3, S10 and R2.
S2 "Building Rules and Regulations."
S3 "Dry Cleaning Law."
S4 Electrical Installations; see S2, S3 and S5.
S5 "Electrical Rules and Regulations."
S6 Elevators; see S2, S3 and S10.
S7 Explosives; see S12 and R1.

- S 8 Floor and Wall Openings; see S2 and S10.
- S 9 Garages; see S5 and R2.
- **S10 "Laws, Industrial Board of Indiana."
- S11 Lighting; see S5, S12 and R2.
- ***S12 "Mining Laws of Indiana."
- S13 "Plumbing Rules and Regulations."
- S14 Sanitation; see S3, S10, S12 and S13.
- S15 Stairways; see S2, S10 and S12.
- S16 Ventilation; see S2, S3, S12, S13 and R2.
- S17 "Workmen's Compensation Law."

*Copies may be secured from the Fire Marshall Department, Indianapolis, Ind.

**Copies may be secured from the Industrial Board of Indiana, Indianapolis, Ind.

***Copies may be secured from the Inspector of Mines and Mining, care Industrial Board of Indiana, Indianapolis, Ind.

IOWA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the State of Iowa Bureau of Labor, Des Moines, Iowa.

- S1 "Elevator Law, Passenger and Freight."
- S2 "Fire Escape Law."
- S3 "Health and Safety Appliances Laws."
- ***S4 "Mining Law."
- S5 "Plumbing Code."
- S6 Sanitation; see S3 and S5.
- S7 Stairways; see S2, S4 and S5.
- S8 Ventilation; see S4 and S5.
- S9 "Workmen's Compensation Law."

*Copies may be secured from the Office of Inspector of Mines, Des Moines, Iowa.

KANSAS

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing to the Commission of Labor and Industry, Topeka, Kans.

- S1 Boilers; see R2 and S9.
- S2 Building Exits; see S7 and R2.
- S3 Cranes; see S9 and R2.
- S4 Dust Explosions; see S9 and R2.
- S5 Elevators; see S7 and R2.
- S6 Explosives; see S7, S9 and R2.
- S7 "Labor Laws of Kansas."
- S8 Mining; see S7 and S9.
- S9 "Mining Laws of Kansas."
- S10 Power Control, Mechanical; see S7 and R2.
- S11 Sanitation; see S9, R2 and R5.
- S12 Stairways; see S7 and R2.
- S13 Ventilation; see S9, R2, and R5.
- S14 "Workmen's Compensation Law."
- ***R1 "Dry Cleaning Establishments, Rules and Regulations for."
- R2 "Kansas Statutes Governing Inspectors."
- R3 Laundry; see R2 and R5.
- R4 Lighting; see R2 and R5.
- ***R5 "Women Workers in Kansas."

*Copies may be secured from the Mine Inspection Department, Commission of Labor and Industry, Pittsburg, Kansas.

**Copies may be secured from the Department of State Fire Marshal, Topeka, Kansas.

***Copies may be secured from the Public Service Commission of Kansas, Topeka, Kansas.

KENTUCKY

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Department of Labor, Louisville, Ky.

- A 1 "Industrial Housekeeping."
- R1 Boilers; see R4 and A1.
- R2 Spray Coating; see R4 and A1.
- R3 Stairways; see R4 and A1.
- R4 "Standards of Safety."
- ***S1 "Board of Health, State of Ky., Bulletin of."
- S2 Cranes; see S11 and A1.
- S3 Dust Explosions; see S1 and R4.
- S4 Electrical Installations; see S11, R4 and A1.
- S5 Exhaust Systems; see S9 and A1.
- S6 Explosives; see S11, R4 and A1.
- S7 First Aid; see S9, S11 and A1.
- S8 Flammable Liquids; see S11, R4 and A1.
- S9 "Laws and Rules of Interest and Pertaining to Children-Labor-Safety-Industry."
- S10 Lighting; see S9, R4 and A1.
- ***S11 "Mining Laws."
- S12 Sanitation; see S1, S9 and A1.
- S13 Ventilation; see S9, S11, R4 and A1.
- S14 "Workmen's Compensation Law."

*Copies may be secured from the Auditor's Office, Department of Fire Prevention and Rates, Frankfort, Ky.

**Copies may be secured from the Board of Health of Kentucky, Louisville, Ky.

***Copies may be secured from the Chief Inspector of Mines, Lexington, Ky.

LOUISIANA

The quoted subjects listed below are the titles of publications and can be secured by writing the Commissioner of Labor and Industrial Statistics, New Orleans, La.

- S1 "Labor Laws of the State of Louisiana."
- S2 "Workmen's Compensation Law."

MAINE

The quoted subjects listed below are the titles of publications and can be secured by writing the Commissioner of Labor and Industry, Augusta, Me.

- S1 "Labor Laws of Maine."
- S2 "Safety Code and Rules for Inductive Coordination of Communication and Supply Lines."
- S3 "Workmen's Compensation Law."

MARYLAND

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Commissioner of Labor and Statistics, Baltimore, Md.

- S1 Boilers; see S3 and S5.
- S2 Electrical Installations; see S3 and S5.
- S3 "Labor Laws."
- S4 Mining; see S3 and S5.
- S5 "Mining Laws."
- S6 Sanitation; see S3 and S5.

*Copies may be secured from the Maryland Bureau of Mines, Baltimore, Md.

MASSACHUSETTS

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Department of Labor and Industries, Division of Industrial Safety, Boston, Mass.

- S1 Abrasive Wheels; see S10 and R17.
- S2 Boilers; see S3, S5 and R3.
- S3 "Boilers, Law Relative to Inspection of Steam."
- S4 "Buildings Which Are Subject to the Provisions of Chapter 143, General Laws, The Inspection of."
- S5 "Engineers and Firemen, Licenses of."
- S6 Exhaust Systems; see S9 and R21.
- S7 Explosives; see S9, R9, R16 and R18.
- S8 First Aid; see S9, R6 and R15.
- S9 "Health and Safety to Employees."
- S10 "Laws Relating to the Work of the Division of Industrial Safety."
- S11 Lighting; see S4, S9, S10, R4, R14, R17, R21, R23, R24, R27, R29 and R36.
- S12 Painting; see S10 and R32.
- S13 Sanitation; see S9, S4, S10, R2, R7, R15, R21 and R36.
- S14 Ventilation; see S4, S9, S10, R6, R15, R21 and R36.
- S15 "Workmen's Compensation Law."
- R1 "Air-Tank Regulations."
- R2 "Anthrax, Rules and Regulations Suggested for the Prevention of."
- R3 "Boilers and Tanks, Massachusetts Standard."
- R4 "Building Operations, Rules and Regulations for the Prevention of Accidents in."
- R5 "Buildings, Erection, Alteration, Inspection and Use of."
- R6 "Care of Employees Injured or Taken Ill in Industrial Establishments, Requirements for the."
- R7 "Common Drinking Cup and Common Towel in Factories, Etc., Rules and Regulations for."
- R8 Compressed Air Machinery; see R1, R3 and R9.
- R9 "Compressed Air Work, Rules and Regulations Governing."
- R10 "Compressor Safety Valve Rules, Ammonia."
- R11 "Conserving Children in the Industries of Massachusetts."
- R12 Cranes; see R4 and R14.
- R13 Electrical Installations; see R4 and R27.
- R14 "Elevator and Escalator Regulations."
- R15 "Explosives, Rules and Regulations Suggested for Safety in the Manufacture of Benzene Derivatives, and."
- R16 "Explosives, Rules and Regulations Governing the Keeping, Storage, Etc."
- R17 "Eyes, Protection of, and the Prevention of Accidents."
- R18 "Fireworks, Keeping, Storage, Transportation, Manufacture, Sale and Use of."
- R19 Flammable Liquids; see R15, R23, R24, R26 and R29.
- R20 Floors; see R4, R14, R21 and R28.

- R21 "Foundries, Safe and Sanitary Working Conditions in, and the Employment of Women in Core Rooms."
- R22 Garages; see R23 and R24.
- R23 "Garages, Rules and Regulations Governing the Construction of, Etc." (These regulations apply only outside of the Metropolitan Fire Prevention District.)
- R24 "Garages, Rules and Regulations Governing the Construction of, Etc." (These regulations apply only in the Metropolitan District.)
- R25 Ladders; see R4, R9, R28 and R30.
- R26 "Light Fuel Oil Burners, Rules and Regulations Governing."
- R27 "Lighting Code for Factories, Workshops, Manufacturing, Mechanical and Mercantile Establishments."
- R28 "Machinery Standards, Safety Rules and Regulations and."
- R29 "Oil, Prohibiting the Discharge of Into or On the Waters of the Commonwealth, and Governing the Transportation or Handling and Delivery of."
- R30 "Painting Business, Revised Rules and Regulations Pertaining to the."
- R31 Power Control, Electrical; see R14 and R28.
- R32 "Power Press Tools, Rules and Regulations for Safeguarding."
- R33 Scaffolds; see R4 and R30.
- R34 Stairways; see R4, R21 and R28.
- R35 "Tank or Containers, Construction, Use and Maintenance of."
- R36 "Toilets, Rules and Regulations for, in Industrial Establishments."
- R37 "Woodworking, Rules and Regulations for Safeguarding Machinery."

*Copies may be secured from the Department of Public Safety, Boston, Mass.

MICHIGAN

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor and Industry, Lansing, Mich.

- S1 "Boiler Rules, Board of."
- S2 "Coal Mines, Regulation Operations of."
- S3 Dry Cleaning; see S8 and R3.
- S4 Electrical Installations; see S2 and R3.
- S5 Garages; see S8 and R3.
- S6 "Labor Laws."
- S7 Stairways; see S4 and R1.
- S8 "Ventilation." (Act 46 and Act No. 183); see S2 and R3.
- S9 "Workmen's Compensation Act."
- R1 "Fire Escapes, Uniform Specifications and Regulations for."
- R2 "Laundries, Machinery and Operations, Rules and Standards for."
- R3 "Spray Coating, Etc., Rules and Standards on."

MINNESOTA

The quoted subjects listed below are the titles of publications and can be secured by writing the Industrial Commission of Minnesota, St. Paul, Minn.

- R1 "Exhaust Systems for Buffing or Emery Wheels, Minimum Requirements Governing the Installation."
- R2 "Garages, Carbon Monoxide Gas In."
- R3 "Refrigerating Plants, Safety Regulations for."
- S1 Abrasive Wheels; see S11 and R1.
- S2 Boilers; see S11 and A1.
- S3 Cranes; see S11 and S17.
- S4 Electrical Installations; see S11 and A1.
- S5 Elevators; see S11, S19 and A1.
- S6 Exhaust Systems; see S11 and R1.
- S7 Floor and Wall Openings, Railing and Toe Boards; see S11 and A1.
- S8 Foundries; see S11 and S19.
- S9 Head and Eye Protection; see S11 and S19.
- S10 Labor Laws; see S11, S19 and A1.
- S11 "Labor Laws, Revised, 1929."
- S12 Lighting; see S11, S19 and A1.
- S13 "Metal Polishing Plants, Safety Code Applying to Operations of Electroplating, Tinning, and."
- S14 Mining; see S11 and A1.
- S15 Power Control, Electrical; see S11, S13, S17, S19 and A1.
- S16 Power Control, Mechanical; see S11 and S19.
- S17 "Power Driven Machinery, Standard Requirements for Guarding (Sold and Offered for Sale in Minnesota)."
- S18 Power Transmission Apparatus; see S13, S17 and A1.
- S19 "Safeguarding of Machinery and Dangerous Conditions of Employment and Protection in Case of Fire."
- S20 Sanitation; see S11, S13, S19 and A1.
- S21 Scaffolding and Staging; see S11 and S19.
- S22 Stairways; see S11 and A1.
- S23 Ventilation; see S11, S19, R2 and A1.
- S24 Woodworking; see S17 and A1.
- S25 "Workmen's Compensation Law."

MISSISSIPPI

The quoted subjects listed below are the titles of publications and can be secured by writing to the Department of Factory Inspection, Jackson, Miss.

S1 "Factory Inspection, Legal Notice of."

MISSOURI

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Missouri Workmen's Compensation, Jefferson, City, Mo.

- S 1 Abrasive Wheels; see S6 and S7;—Sec. 6786, page 2138, Stat. 1929.
- S 2 Boilers; see S6 and S7;—Sec. 6851, page 2152.
- S 3 Building Exits; see S6 and S7;—Sec. 6791, Page 2140; Sec. 6790, Page 2140.
- S 4 Dust Explosions, Prevention of; see S6 and S7;—Sec. 6826, Page 2146; Sec. 6798, Page 2141; Sec. 6840, Page 2150.
- S 5 Explosives, Common Use of; see S6 and S7;—Sec. 6793, Page 2141.
- *S 6 "Mining Laws, General (1927)."
- S 7 "Missouri Statutes."
- S 8 Sanitation, Industrial; see S6 and S7;—Sec. 6825, Page 2146; Sec. 6801, Page 2142; Sec. 6800, Page 2141; Sec. 6794, Page 2141.
- S 9 Scaffolds and Staging; see S6 and S7;—Sec. 6802, Page 2142.
- S10 Woodworking Plants; see S6 and S7;—1919 Stat., Sec. 6787, Page 2139.
- *S11 "Workmen's Compensation Law."

*Copies may be secured from the Bureau of Mines, Joplin, Mo.

*Copies may be secured from the Department of Labor and Industrial Inspection, Jefferson City, Mo.

MONTANA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Industrial Accident Board, Helena, Mont.

- S1 Explosives; see S2 and S6.
- *S2 "Fire Marshal and Matters Pertaining to Fire Regulations for Public Safety, Duties and Powers of," (1927).
- S3 "Laws Affecting Women in Industry Administered by the State Department of Agriculture, Division of Labor, Helena, Montana."
- *S4 "Laws of the State of Montana," Supplement to the State Fire Marshal Laws of 1927.
- *S5 "Oil and Gas on State and Private Lands in Montana, Operating Regulations to Govern the."
- S6 "Safety Provisions of Workmen's Compensation Act Operations and Inspection of Quartz Mines, Coal Mines, Stationary Boilers, Examining and Licensing Engineers."
- S7 Stairways; see S2 and S6.
- S8 "Workmen's Compensation Act of the State of Montana."

*Copies may be secured from the State Auditor and Fire Marshal, Helena, Montana.

*Copies may be secured from the Board of Railroad Commissioners, Helena, Montana.

NEBRASKA

The quoted subjects listed below are the titles of publications and can be secured by writing the Bureau of Compensation, Lincoln, Neb.

- S1 "Labor Laws."
- S2 "Workmen's Compensation Law."

NEVADA

The quoted subjects listed below are titles of publications, and except where otherwise noted, can be secured by writing the Commissioner of Labor, Carson City, Nev.

- S 1 Boilers; see S8 and S11.
- S 2 Cranes; see S8, S13 and R1.
- S 3 Dust Explosions, Prevention of; see S8 and S13.
- S 4 Electrical Installation; see S8 and R1.
- S 5 Explosives; see S11 and S8.
- S 6 Gas Masks; see S8 and S11.
- S 7 Labor Camps; see S8 and R2.
- S 8 "Labor Laws, 1925."
- S 9 "Labor Laws, Supplement, 1925."
- S10 Ladders; see S8 and R1.
- *S11 "Mines, Laws Relating to the Inspector of."

- S12 Mining; see S8, S9, S11 and S13.
- *S13 "Mining Laws, State and Federal."
- *S14 "Nevada Industrial Insurance Act."
- S15 Sanitation; see S8, S13 and R2.
- S16 Smelting Ore; see S8 and S9.
- S17 Ventilation; see S8 and S11.
- S18 "Workmen's Compensation Law."
- *R 1 "General Safety Orders."
- *R 2 "Labor Camps, Rules for."

*Copies may be secured from the Inspector of Mines, Carson City, Nevada.

*Copies may be secured from the Secretary of the State, Carson City, Nevada.

*Copies may be secured from the Nevada Industrial Commission, Carson City, Nevada.

*Copies may be secured from the State Board of Health, Carson City, Nevada.

NEW HAMPSHIRE

The quoted subjects listed below are the titles of publications and can be secured by writing the Bureau of Labor, Concord, N. H.

- S1 Building Exits; see S2 and S4.
- S2 "Factory Inspection Standards, Bureau of Labor," Nos. 1-18, Inc.
- S3 Labor Laws; see S4 and S6.
- S4 "Labor Laws."
- S5 Lighting; see S2, S4 and S6.
- S6 "Safety and Health of Employees, Chapter 17, Public Health Laws of New Hampshire, 1926."
- S7 Sanitation; see S2 and S6.
- S8 "Workmen's Compensation Law."

NEW JERSEY

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor, Trenton, N. J.

- S 1 Boilers; see S2 and S13.
- S 2 "Boiler Code."
- S 3 Building Exits; see S13, R11, R19 and R13.
- S 4 Dust Explosions; see S13, S19 and R19.
- S 5 Elevators; see S13, R6, R7 and R8.
- S 6 Exhaust Systems; see S13, R2, R9, R13, R15 and R26.
- S 7 Explosives; see S8, S13 and S19.
- S 8 "Explosives, an Act Relating to the Manufacturing, Keeping, Storage, Transportation and Sale of."
- S 9 First Aid; see S12, S13, S19 and R25.
- S10 Flammable Gases; see S19, R3 and R13.
- S11 Foundries; see S12, S23 and S13.
- S12 "Foundry Law."
- S13 Labor Laws; see S13 and S23.
- S14 "Labor Laws."
- S15 Lead Poisoning and Other Occupational Diseases, Etc."
- S16 Lead; see S13, S15 and R16.
- S17 Lighting; see S12, S13, S19 R13 and R17.
- S18 Mines; see S13, S19 and S23.
- S19 Mines, Bureau of, Laws."
- S20 Potteries; see S15 and R26.
- S21 Sanitation; see S12, S13, S15, S19, S23, R3, R9, R13, R16, R19 and R26.
- S22 Ventilation; see S12, S19, R15 and R26.
- S23 "Women and Children, Labor Laws Governing."
- S24 "Workmen's Compensation Law."
- R 1 Abrasive Wheels; see R2 and R26.
- R 2 "Abrasive Wheels, Safety Standards."
- R 3 "Antiline, Instructions for the Inspection of Plants."
- R 4 Chemicals; see R3, R6 and R19.
- R 5 Electrical Installations; see R6 and R13.
- R 6 "Electrical Safety Rules."
- R 7 "Elevators, Passenger, Etc."
- R 8 "Elevators, Standard Specifications for."
- R 9 "Felt Hatting Industry, Sanitary Standards for."
- R10 "Fire Alarm Signal Systems."
- R11 "Fire Towers, Fire Escapes, Etc."
- R12 Flammable Liquids; see R13 and R19.
- R13 "Lacquers, Shellacs, Enamels, and Japans, the Use of."
- R14 Laundries; see R15 and R26.
- R15 "Laundry Machinery and Operations, Safety Code for."
- R16 "Lead Corroders and Lead Oxidizers, Safety Standards for, Etc."
- R17 Lighting Factories, Mills and Other Places, Code of."
- R18 "Lithophone, Sanitary and Industrial Standards, Etc."
- R19 "Nitro and Amido Compounds, Safety Standards for."
- R20 Power Control, Mechanical; see R22 and R24.
- R21 "Power Presses and Foot and Hand Presses, Safety Code for."
- R22 "Power Transmission Apparatus, Safeguarding of Mechanical."
- R23 Rubber Machinery; see R24 and R26.
- R24 "Rubber Mills and Calenders."
- R25 "Safety Education, Standards for the Promotion of."

- R26 "Sanitary and Engineering Industrial Standards."
- R27 Woodworking; see R26 and R28.
- R28 "Woodworking Plants, Safety Code for."

NEW MEXICO

The quoted subjects listed below are the titles of publications and can be secured by writing the State Inspector of Mines, Gallup, N. M.

- S1 "Mining Laws of New Mexico."
- S2 "Workmen's Compensation Law."

NEW YORK

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor, 124 East 28th Street, New York, N. Y.

- S 1 Bakeries; see S9, R5 and R21.
- S 2 Boilers; see S9, R7, R8, R14 and R21.
- S 3 Building Exits; see S9, R14, R19, R24, R26 and R36.
- S 4 Compressed Air; see S9 and R12.
- S 5 Cranes; see S9, R8, R20, R40 and R48.
- S 6 Elevators; see S9, R8, R20, R24 and R39.
- S 7 Explosives; see S9, R12, R40 and R48.
- S 8 Foundries; see S9, R21 and R31.
- S 9 "Labor Laws."
- S10 Ladders; see S9, R8, R40 and R48.
- S11 Laundries; see S9, R21 and R33.
- S12 Lighting; see S9, R8, R12, R14, R21, R22, R31, R33, R39, R40, R41 and R48.
- S13 Mines; see S9 and R40.
- S14 Quarries; see S9 and R40.
- S15 Sanitation; see S9, R3, R5, R6, R8, R10, R12, R14, R22, R31, R33, R35, R37, R40, R42, R44, R45 and R48.
- S16 Scaffolding; see S9 and R8.
- S17 Tunnels; see S9, R12 and R48.
- S18 Ventilation; see S9, R5, R12, R14, R16, R22, R33, R40, R44 and R48.
- S19 "Workmen's Compensation Act."
- R 1 Abrasive Wheels; see R16 and R49.
- R 2 "Anthrax, How to Avoid It."
- R 3 "Arsenic, For Workers in."
- R 4 "Automatic Sprinkler Systems."
- R 5 "Bakeries and Confectioneries."
- R 6 "Benzol, For Workers in."
- R 7 "Boilers, Installation of."
- R 8 "Buildings, the Erection, Repair, or Demolition of."
- R 9 "Canneries, Rules Relating to Employment of Women."
- R10 "Cannery Labor Camps."
- R11 "Chromic Acid and Its Salts for Workers in."
- R12 "Compressed Air, Work in and Tunnel Construction Work."
- R13 Conveyors; see R14 and R39.
- R14 "Dry Dyeing Plants and Dry Cleaning Plants."
- R15 Dust Explosions, Prevention of; see R16 and R39.
- R16 "Dust Gases and Fumes, Removal of."
- R17 Electrical Installations; see R14, R20, R23, R33, R39, R40, R41 and R48.
- R18 Exhaust Systems; see R6, R11, R14, R16, R31, R37, R39 and R44.
- R19 "Exits, the Enclosure of Interior Stairways."
- R20 "Factories and Mercantile Establishments, Construction, Guarding, Equipment, Etc."
- R21 "Factories and Mercantile Establishments, Lighting of."
- R22 "Factories and Mercantile Establishments, Sanitation of."
- R23 "Fire Alarm Signal Systems."
- R24 "Fire Drills."
- R25 "Fire Escapes, Existing."
- R26 "Fire Escapes, Etc., Specifications of."
- R27 "Fireproof and Fire Resisting Materials."
- R28 First Aid; see R14, R22, R31, R33, R41, R45 and R48.
- R29 Flammable Liquids; see R14, R40 and R48.
- R30 Floor and Wall Openings, Railings and Toe Boards; see R8 and R49.
- R31 "Foundries, Equipment, Maintenance, Sanitation, Etc."
- R32 Gas Masks; see R2, R3, R11, R35, R37 and R42.
- R33 "Laundries, Construction, Equipment, Etc."
- R34 Lead; see R16 and R35.
- R35 "Lead and Antimony, For Workers in."
- R36 "Mercantile Establishments, Construction, Equipment, Arrangement, Etc."
- R37 "Mercury, For Workers in."
- R38 Milling; see R21 and R39.
- R39 "Milling Industry and Malt House Elevators."
- R40 "Mines and Quarries."
- R41 "Needle Trade, Arrangements and Guarding of Sewing Machines, Etc."
- R42 "Painters, How to Avoid Lead Poisoning."
- R43 Power Transmission Apparatus; see R41 and R49.
- R44 "Printers, How to Avoid Lead Poisoning."
- R45 "Sanitary Material, List of Approved."
- R46 "Smoking in Protected Portion of Factories and Special Classes of Occupances, Rules Pertaining to."

- R47 Stairways; see R4, R19, R36 and R48.
 R48 "Tunnel Construction."
 R49 "Rats, Pans and Elevated Runways, Guarding of Machinery."
 R50 Woodworking; see R21 and R49.
 R51 "Wood Alcohol and Derivatives, For Workers in."

NORTH CAROLINA

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor and Printing, Raleigh, N. C.

- S1 "Labor Laws of North Carolina (1925)."
 S2 "Workmen's Compensation Act."

NORTH DAKOTA

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Agriculture and Labor, Bismarck, N. D.

- S1 "Construction Work," Article 2 A, Chapter 42 No. 1, Laws of 1921.
 S2 "Doorways in Public Buildings," Chapter 34, Laws of 1905.
 S3 "Labor Laws," Chapter 174, Laws of 1918.
 S4 "Mining," Chapter 168, Laws of 1919.
 S5 "Workmen's Compensation Law."

OHIO

The quoted subjects listed below are the titles of publications and, except where otherwise specified, can be secured by writing the Industrial Commission of Ohio, Columbus, Ohio.

- S1 Boilers; see S5, S14, R9 and A1.
 S2 Building Exits; see S5, R9 and R11.
 S3 Electrical Installations; see S5 and A1.
 S4 "Explosive Law."
 S5 "Factories, Mercantile and Office Buildings, Workshops," (August, 1927).
 S6 Floors; see S14, R3, R9 and A1.
 S7 Ladders; see S14, R3, R20 and A1.
 S8 Lighting; see S5, R9 and A1.
 S9 "Plumbing Code."
 S10 Power Transmission Apparatus; see S14, R9 and A1.
 S11 Sanitation; see S5, S9, R9, R12 and A1.
 S12 Stairways; see S5, S10, R3, R9 and A1.
 S13 Ventilation; see S5, R9, R20 and A1.
 S14 "Workshops and Factories, General Safety Standards for," (1924 issue).
 S15 "Workmen's Compensation Law."
 A1 "Accident Prevention and First Aid Suggestions."
 A2 "Rubber Industry, Recommendations for Accident Prevention in the."
 A3 "Safety Organization."
 A4 Safety Organization; see A1 and A3.
 R1 Abrasive Wheels; see R2, R15 and A1.
 R2 Blowers and Exhaustors.
 R3 "Building and Construction Work."
 R4 Cranes; see R5, R9 and A1.
 R5 "Cranes, General Safety Precautions for Traveling."
 R6 "Dry Cleaning and Dyeing Establishments."
 R7 Elevators; see R8, R9, R20 and A1.
 R8 "Elevators."
 R9 "Factories, Laws Governing and Building Inspection."
 R10 Fire Drills; see R9 and R11.
 R11 "Fire Drills in Factories and Lots, Specific Requirements for Conducting."
 R12 "Foundries and Core Rooms, Specific Requirements in."
 R13 "Laundries."
 R14 "Metal Working Machinery, Specific Requirements for."
 R16 "Potteries, Specific Requirements for."
 R17 Power, Foot and Hand Presses; see R14 and A1.
 R18 "Refrigerating Systems, Tentative Specific Requirements Covering the Installation, Maintenance and Operation of Pressure Piping."
 R19 Scaffolding; see R3 and R9.
 R20 "Standard Devices."
 R21 "Steel Mills, Specific Requirements for."
 R22 "Woodworking Machinery."

*Copies may be secured from the Department of Health, Columbus, Ohio.

OKLAHOMA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, copies can be secured by writing the Department of Labor, Oklahoma City, Okla.

- S1 Bakeries; see S9 and R7.
 S2 Boilers; see S3, S9 and R7.
 S3 "Boiler Construction Code."

- S4 Building Exits; see S9, R4 and R9.
 S5 Cranes; see S12, R4 and R9.
 S6 Electrical Installations; see S12, R1, R4 and R9.
 S7 Elevators; see S9, R1 and R7.
 S8 First Aid; see S12, R4 and R9.
 S9 "Labor Laws."
 S10 Ladders; see S12, R4 and R9.
 S11 Lighting; see S9, R7 and R9.
 S12 "Mining Laws, Oklahoma."
 S13 Sanitation; see S9 and S12.
 S14 Scaffolding; see S9 and R4.
 S15 Stairways; see S9, R4, R7 and R9.
 S16 Ventilation; see S9, S12 and R3.
 S17 "Workmen's Compensation Law."
 R1 "Elevator Safety Code."
 R2 Engines; see R3 and R9.
 R3 "Factory Inspection, Bureau of, Bulletin No. 7-A."
 R4 "Factory Inspector, Compliance with Orders of the."
 R5 Floor and Wall Opening; see R3 and R4.
 R6 Head and Eye Protection; see R3, R4 and R9.
 R7 "Lighting of Factories and Mercantile Establishments, Industrial Code Rules Relating to."
 R8 Oil Drilling; see R4 and R9.
 R9 "Petroleum Safety Standards, Bulletin No. 11-A."
 R10 Power Transmission Apparatus; see R3 and R9.

*Copies may be secured from the Department of Mines, Oklahoma City, Okla.

OREGON

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Oregon Bureau of Labor, Salem, Ore.

- S1 Boilers; see S5, R1 and R8.
 S2 Electrical Installations; see S4, S5, R3, R4 and R8.
 S3 Elevators; see S4, R3 and R8.
 S4 "Factory Inspection Law."
 S5 "Labor Laws, Handy References to Oregon," 1929.
 S6 Lighting; see S5 and R8.
 S7 Logging; see S5 and R12.
 S8 "Workmen's Compensation Law."
 S9 "Boiler Safety Orders."
 R1 Compressed Air Machinery; see R9 and R10.
 R2 "Electrical Code."
 R3 "Fire Marshal, State Department of, (Annual Report, 1929)."
 R4 "Flammable Liquids; see R3 and R4.
 R5 Garages; see R3 and R4.
 R6 "Health, State Board of Regulations."
 R7 "Industrial Lighting in Places of Employment, Code Governing."
 R8 "Power Transmission Apparatus, Mechanical, Safety Standards for."
 R9 "Pressure Vessels, Rules for the Construction of Unfired."
 R10 Sanitation; see R7 and R8.
 R11 "Wood Saws, Portable Circular Power Driven."

*Copies may be secured from the State Industrial Accident Commission, Salem, Oregon.

*Copies may be secured from the State Department of Fire Marshal, Salem, Oregon.

*Copies may be secured from the State Board of Health, Salem, Oregon.

PENNSYLVANIA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Department of Labor and Industry, Commonwealth of Pennsylvania, Harrisburg, Pa.

- S1 Bakeries; see S16 and R2.
 S2 Boilers; see S11, S16, S20, S21, R3, and R12.
 S3 Building Exits; see S11, R19, and R21.
 S4 Compressed Air Machinery; see S16, R8, R35, R48, and R56.
 S5 Cranes; see S20, S21, R10, R12, R15, R35, R46, R51, and R56.
 S6 Dust Explosions; see S21, R6, R31, R36.
 S7 Electrical Installations; see S16, S21, R12, R14, R48, R52, and R56.
 S8 Elevators; see S11, S16, R6, R15, R31.
 S9 Exhaust Systems see S11, S16, R1, R6, R21, R30, R32, R44, R52, R54.
 S10 Explosives; see S21, R13, R18, R19, R35, S20, R46, and R56.
 S11 "Factory Laws, General."
 S12 First Aid; see S20, S21, R10, R19, R35, R36, R46, R51, and R56.
 S13 Flammable Gases; see S20, S21, R19, R35, R48.
 S14 Floor and Wall Openings; Railings and Toe Boards; see S20, R10, R19, R36, R47, and R51.

- S15 Foundries; see S16, R21, and R31.
 S16 "Laws, Administered by the Dept. of Labor and Industry."
 S17 Lead; see S16, R30, and R52.
 S18 Lighting; see S16, S21, R2, R6, R13, R19, R21, R31, R40, R44, R48, R49, and R56.
 S19 Mining; see S20, S21, R18, and R35.
 S20 "Mining, Anthracite."
 S21 "Mining, Bituminous."
 S22 Plant Railways; see S 30, S21, and R38.
 S23 Power Control, Mechanical; see S11, S16, and R40, R41.
 S24 Sanitation; see S16, S20, S21, R2, R5, R10, R13, R19, R21, R30, R35, R36, R44, R49, R51, R52, R56, R58, R25.
 S25 Stairways; see S20, S21, R10, R31, R51, and R56.
 S26 Ventilation; see S20, S21, R2, R4, R5, R19, R21, R25, R29, R35, R37, R49, R54 and R56.
 S27 "Workmen's Compensation Law."
 R1 "Abrasive and Polishing Wheels, Regulations for."
 R2 "Bakeries, Regulations for."
 R3 "Boilers, Regulations for."
 R4 "Brewing and Bottling, Regulations for."
 R5 "Canneries, Regulations for."
 R6 "Cereal Mills, Maltheouses and Grain Elevators, Regulations for."
 R7 Chemicals; see R19, R36 and R54.
 R8 "Compressed Air Apparatus, Regulations for."
 R9 Construction; see R10, R31 and R56.
 R10 "Construction and Repairs, Regulations for."
 R11 Conveyors; see R10, R32 and R48.
 R12 "Cranes and Hoists, Regulations for."
 R13 "Dry Color Industry, Regulations for."
 R14 "Electrical Safety Regulations."
 R15 "Elevators, Escalators, Dumbwaiters and Hoists, Regulations for."
 R16 Engines; see R17 and R46.
 R17 "Engines, Stationary, Regulations for."
 R18 "Explosives, Handling, Storing and Use of in Pits, Quarries and Mines other than Coal Mines."
 R19 "Explosives, Regulations for Plants Manufacturing or Using."
 R20 Flammable Liquids; see R35, R36, R48 and R52.
 R21 "Foundries, Regulations for."
 R22 Gas Masks; see R24 and R52.
 R23 Head and Eye Protection; see R24, R46 and R48.
 R24 "Head and Eye Protection, Regulations."
 R25 "Labor Camps, Regulations for."
 R26 Ladders; see R4, R10, R26, R31, R32, R46, R51, R56 and R57.
 R27 "Ladders, Regulations for."
 R28 Laundries; see R29 and R31.
 R29 "Laundries, Regulations for."
 R30 "Lead Corroding and Lead Oxidizing."
 R31 "Lighting, Industrial, Regulations for."
 R32 "Logging, Sawmill, Woodworking, Veneer and Cooperage Operations, Regulations for."
 R33 "Machine Tools, Regulations for."
 R34 Milling; see R6 and R31.
 R35 "Mines Other Than Coal Mines."
 R36 "Nitro and Amido Compounds, Regulations and Suggested Practices for the Manufacture of."
 R37 "Paint Grinding, Regulations for."
 R38 "Plant Railways, Regulations for."
 R39 Power Control, Electrical; see R15, R40 and R41.
 R40 "Power, Foot and Hand Cold Metal Presses."
 R41 "Power Transmission Apparatus, Mechanical."
 R42 Power Transmission Apparatus; see R31, R33, R41 and R54.
 R43 Printing; see R31 and R44.
 R44 "Printing, Allied Industries, Regulations for."
 R45 Quarries; see R18 and R46.
 R46 "Quarries, for Pits and."
 R47 "Railings, Toe Boards, Open-sided Floors, Platforms and Runways, Regulations for."
 R48 "Safe Practices Recommendations."
 R49 "Sanitation, Industrial Regulations for."
 R50 Scaffolds; see R10, R51 and R57.
 R51 "Scaffolds, Regulations for."
 R52 "Spray Coating."
 R53 Textile; see R31 and R54.
 R54 "Textile Industry, Rules Affecting."
 R55 Tunnels; see R46 and R56.
 R56 "Tunnel Construction and Work in Compressed Air."
 R57 "Window Cleaning."
 R58 "Women, Regulations Affecting Employment of."

*Copies may be secured from the Department of Mines, Harrisburg, Pa.

RHODE ISLAND

The quoted subjects listed below are the titles of publications and, except where otherwise indicated, can be secured by writing the Office of Factory Inspectors, State House, Providence, R. I.

- S1 "Factory Inspection Law."
 S2 "Workmen's Compensation Law."
 *Copies may be secured from the Commissioner of Labor, Providence, Rhode Island.

SOUTH CAROLINA

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Agriculture, Commerce, and Industries, Columbia, S. C.

S1 "Labor Laws (March 19, 1933)."

SOUTH DAKOTA

The quoted subjects listed below are the titles of publications and can be secured by writing the Industrial Commissioner, Pierre, S. D.

S1 "Workmen's Compensation Law."

TENNESSEE

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Department of Labor, Nashville, Tenn.

- S 1 Bakeries; see S7 and R12.
- S 2 Cranes; see S11 and R12.
- S 3 Exhaust; see S7 and R9.
- S 4 First Aid; see S11 and R12.
- S 5 Flammable Gases; see S11 and R12.
- S 6 Flammable Liquids; see S11 and R12.
- S 7 "Labor Laws."
- S 8 Laundries; see S7 and R12.
- S 9 Lighting; see S7, S11, R4 and R12.
- S10 Mining; see S7 and S11.
- *S11 "Mining in Tennessee, Laws Governing the Regulations of."
- S12 Sanitation; see S7, S11, R4 and R12.
- S13 Ventilation; see S7, S11, R2 and R4.
- S14 "Workmen's Compensation Law."
- R 1 Electrical Installations; see R2 and R12.
- *R 2 "Fire Prevention Rules and Regulations, Department of."
- R 3 Floors; see R7, R8, R12 and R15.
- R 4 "Foundry Bath, Regulations for Toilets, Washrooms, and."
- R 5 Head and Eye Protection; see R8, R9 and R12.
- R 6 Ladders; see R7 and R8.
- R 7 "Machinery Standards, Safety Rules and Regulations."
- R 8 "Metal Machinery, Specific Requirements Covering the Operation of."
- R 9 "Polishing and Grinding Machines, Specific Requirements Covering."
- R10 Power, Foot and Hand Presses; see R8 and R12.
- R11 Power Transmission Apparatus; see R7, R8 and R12.
- R12 "Safety Standards, Handbook of Industrial."
- R13 Stairways; see R7 and R12.
- R14 Woodworking; see R12 and R15.
- R15 "Woodworking Machinery, Specific Requirements Covering the Operation of."

*Copies may be secured from the Mining Department, Nashville, Tenn.

**Copies may be secured from the Department of Fire Prevention, Nashville, Tenn.

TEXAS

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor of the State of Texas, Austin, Texas.

S1 "Laws of Texas Relating to Labor."

UTAH

The quoted subjects listed below are the titles of publications and can be secured by writing the Industrial Commission of Utah, Salt Lake City, Utah.

- R 1 "Boiler Code."
- R 2 "Elevator Code."
- R 3 "Laundries, General Safety Orders."
- R 4 "Safety Orders, General."
- R 5 Steel Mills; see R1 and R4.
- S 1 "Coal Mines, General Safety Orders."
- S 2 Electrical Installations; see S1 and R3.
- S 3 Explosives; see S1, S7 and A1.
- S 4 First Aid; see S1, S7 and A1.
- S 5 Gas Masks and Respirators; see S1 and S7.
- S 6 Ladders; see R5 and S7.
- S 7 "Metal Mining Operations."
- S 8 Mining; see S1, S7 and A1.
- S 9 Sanitation; see S1 and S7.
- S10 Smelting Ore; see R1, R4, S2 and S11.
- S11 Ventilation; see R3, S1 and S7.
- S12 "Women and Children, Employment of."
- S13 "Workmen's Compensation."
- A 1 "Safety, How to Organize."
- A 2 "Safety Rules for Metal Miners."

VERMONT

The quoted subjects listed below are the titles of publications and can be secured by writing the Office of the Commissioner of Industries, Montpelier, Vt.

S1 "Labor Laws."

VIRGINIA

The quoted subjects listed below are the titles of publications and can be secured by writing the Commonwealth of Virginia Department of Labor and Industry, Richmond, Va.

S1 "Labor Laws of the Commonwealth of Virginia."

S2 "Workmen's Compensation Law."

WASHINGTON

The quoted subjects listed below are the titles of publications and can be secured by writing the Department of Labor and Industries, Olympia, Wash.

- S 1 Boilers; see S11 and R1.
- S 2 Cranes; see S4 and R1.
- S 3 Dust Explosions; see S11 and R1.
- S 4 "Electric Construction, Rules for."
- S 5 Electrical Installations; see S4, S11 and R1.
- S 6 Elevators; see S4, S9 and R1.
- S 7 Explosives; see S11 and R1.
- S 8 First Aid; see S11 and R1.
- S 9 "Labor Laws."
- S10 Lighting; see S11 and R1.
- S11 "Mining Laws, Coal."
- S12 Mining; see S11 and R1.
- S13 Safety Organization; see S11 and R1.
- S14 Ventilation; see S9, S11 and R1.
- S15 "Workmen's Compensation Law."
- R 1 "Safety Standards."

WEST VIRGINIA

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writing the Bureau of Labor, Charleston, W. Va.

- S1 Cranes; see S4 and S6.
- S2 "Factory Inspection and Child Labor Law."
- S3 First Aid; see S4 and S6.
- S4 "Labor Laws, Amendment 1929."
- S5 Labor Laws; see S2 and S4.
- *S6 "Mining Law."
- S7 "Workmen's Compensation Law."

*Copies may be secured from the Department of Mines, Charleston, W. Va.

WISCONSIN

The quoted subjects listed below are the titles of publications and can be secured by writing the Industrial Commission of Wisconsin, Madison, Wis.

- R 1 "Acetylene Charging Plants, General Orders on."
- R 2 "Boiler Code."
- R 3 "Building Code;" see also "General Orders on Existing Buildings."
- R 4 "Buildings, General Orders on Existing."
- R 5 Building Exits; see R3 and R4.
- R 6 "Construction, General Orders on Safety in."
- R 7 "Electrical Safety Code."
- R 8 "Elevator Code."
- R 9 Excavations; see R22 and R27.
- R10 Exhaust Systems; see R14 and R23.
- R11 Explosives (Use); see R3, R18, R20 and R27.
- R12 "Fire Prevention, General Orders on."
- R13 Garages; see R3 and R14.
- R14 "Heating and Ventilating Code."
- R15 Ladders; see R6 and R22.
- R16 Laundries; see R12 and R22.
- R17 "Lighting Code, Industrial."
- R18 "Mines, General Orders on."
- R19 "Plumbing Code, Wisconsin State."
- R20 "Quarries, General Orders on."
- R21 "Refrigerating Plant Code."
- R22 "Safety, General Orders on."
- R23 "Sanitation, General Orders on."
- R24 Sanitation, Industrial; see R19 and R23.
- R25 "Spray Coating, General Orders on."
- R26 Stairways; see R3 and R4.
- R27 "Tunnels, Caissons and Trenches, General Orders on."
- S 1 "Cleaning and Dyeing Law of Wisconsin."
- S 2 Dry Cleaning and Dyeing; see S1, R12.
- S 3 "Workmen's Compensation Act."

WYOMING

The quoted subjects listed below are the titles of publications and, except where otherwise noted, can be secured by writ-

ing the Commissioner of Labor and Statistics, Cheyenne, Wyo.

- S1 Building Exits; see S2 and S3.
- S2 "Fire Escape Law."
- S3 "Labor and Statistics, Creating Office of, (Act of 1917)."
- *S4 "Mining Laws."
- S5 Stairways; see S2 and S3.
- S6 "Workmen's Compensation Law."

*Copies may be secured from the Office of the State Geologist, Cheyenne, Wyo.

ACKNOWLEDGMENT

This publication was prepared by R. H. Ferguson, safety engineer on the staff of the National Safety Council. Officials of each state reviewed the material for their particular jurisdictions. The pamphlet was reviewed by the Safe Practices Conference Committee and approved by the Executive Committee.

Bureau Offers Fellowship in Home Safety

A GRADUATE fellowship of \$1000 is offered for the academic year 1930-31 by the National Bureau of Casualty and Surety Underwriters for a study of home safety as an index of good home management. Although the home is responsible for one quarter of the annual toll of 100,000 accidental deaths in the United States, no work has been done so far in this field that is comparable with that done in the industrial and traffic fields. Studies of industry and traffic indicate that safety is immediately correlated with efficiency of production and of traffic movement. Safety will undoubtedly turn out to be similarly only one aspect of a well-managed home. To study this situation in detail is the objective of the fellowship.

The work will be under the general direction of an advisory committee containing representatives of the American Home Economics Association, the National Safety Council and the National Organization for Public Health Nursing. The work may be carried on at any university having a properly qualified home economic department. A candidate should be able to complete the work for the doctor's degree within the year and the study should furnish the subject matter for the thesis. Applications may be made to Albert W. Whitney, National Bureau of Casualty and Surety Underwriters, One Park Avenue, New York City. This is the seventh of a series of graduate fellowships in the field of safety education that is being maintained by the Bureau.

Wider Duties for the City Fireman

By B. J. HOUSTON
Chief, Cincinnati Fire Department

Cincinnati Firemen are being trained in the practice of first aid as well as in the methods of extinguishing fires.

WHEN the fire department protects life and property from direct loss by fire, it is usually credited with having performed its duty. Fireman training, therefore, has emphasized the extinguishment of fires and their prevention. Although clearly understood that the first duty of the fireman is to save life, the training he has received in this phase of his work has covered only the rescue of persons from burning buildings.

But it is our belief in Cincinnati that municipal fire departments should also be trained to render that invaluable service made famous as far back as Biblical days by the story of the Good Samaritan. To the best of my knowledge, our department is the first among all large city fire departments to train its men completely in first aid and rescue work, to provide first-aid facilities on all apparatus, and to standardize on methods of first-aid

training as outlined by the American Red Cross.

Early in 1929 it was decided by Hon. C. O. Sherrill, City Manager, and the officials of the Cincinnati Fire Department that all firemen should have this training and that all departments should be equipped with first-aid material for emergency use. Every man, from the chief down, took the course. This includes the sterile dressing of both minor and major wounds, controlling arterial bleeding, transportation of the injured in cases of bone fracture and dislocation, the different types of lifts and carries, and approved methods of artificial respiration in cases of gas poisoning, suffocation, electric shock, and drowning. Most of the men have qualified for Red Cross certificates of proficiency in this first aid work.

A first aid kit of substantial character, both water and dust proof, was selected, and all fire apparatus was equipped with it, including the automobiles of the fire chief, the assistant chief and the fire marshals. These kits contain compress bandages for the quick application of sterile dressings to wounds of all sizes, picric acid gauze for the temporary dressing of burns, wire splints for the support of bone fractures, triangular bandages,



Col. C. O. Sherrill, city manager of Cincinnati, trying on an all-service gas mask.

slings, tourniquet for the stopping of arterial bleeding, and eye dressing materials. The kits also contain liquid ammonia and liquid mercurochrome, carried in ampoule form and packed against spillage or breakage through rough handling or jolting.

The Service rendered by Life Saving Squad No. 52 of the Cincinnati Fire Department is well known. This squad has responded to approximately 1,400 calls per year and it is thoroughly equipped for rescue and first aid work in practically any emergency. It is understood by all Fire Department men that the Life Saving Squad is to be called in all serious accidents or emergency cases. But it is also understood that all possible assistance and service are to be rendered by any and all members of the department before the Life Saving Squad arrives. All first aid or emergency work, however, shall in no way supersede or interfere with the duties and responsibilities of a registered physician, and we have been particularly careful to emphasize in our training of firemen that this service is, as the name connotes, first aid or temporary relief only, until a physician arrives or the patient is taken to a hospital.

In the near future the Cincinnati Fire Department will be completely equipped with all-service gas masks. Our Life Saving Squad No. 52 has been equipped with this mask for several years and also with self-contained breathing apparatus which permits men to enter any kind of atmosphere.

We have realized that with the wide use of automobiles, electric refrigerators, and the more general manufacture and use of poisonous chemicals

(Continued on page 112)



Edward Franks, marshal of the First District of the Cincinnati Fire Department, always carries a gas mask and first-aid kit in his car.

THE SAFETY EXCHANGE

Everybody's Page

The Safety Exchange is a round table in print. It is a medium for the exchange of ideas that have proved helpful in accident prevention. If you have developed some useful device or method, send in a description, with sketch, blueprint or photograph if possible. Comments and criticisms regarding devices described on these pages are invited.



PAINTERS' SWINGING SCAFFOLD MADE OF ALUMINUM

Of special interest to construction men and painters is this swinging scaffold used on the plant of the United States Aluminum Company. It is made entirely of aluminum except for the iron rings into which the pulleys are hooked. We do not possess facts as to the weight of this platform, but knowing how light aluminum is, it is quite reasonable to suppose that two men can lift the platform about with little trouble. Safety advantages are obvious.

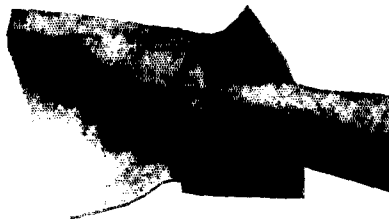
PROTECTION AT THE SHOP ENTRANCE

Wherever trucks and tractors are required to run in and out of shops there is always danger of collisions with pedestrians who have occasion to walk past the entrances. A simple way of overcoming this danger is to construct iron pipe railings on either side of each entrance projecting out sufficiently far to make it necessary for the pedestrian to walk away



from the entrance a short distance and thus get a better view of approaching trucks. In the accompanying illustration not only have railings been provided but also warning signs.

AN EASILY MADE HAND PROTECTOR



It would seem that one need never be without protection for the hands when handling materials. It is such an easy matter to take a rectangular piece of leather, canvas or even an inner tube from a tire and cut a slit in it to get over the wrist, as shown in the accompanying illustration.

SPELLBINDERS FOR SAFETY TALK TO CAR PATRONS

During a safety drive staged in Vancouver, B. C., 30 men, among them a number of public officials, volunteered their services to take the message directly to the street car patrons of the city. Coached in a speech which had been prepared in the offices of the B. C. Safety League and revised to include special street railway features, the speak-

ers, each armed with a megaphone, boarded the cars of the British Columbia Electric Railway during the rush hours and proceeded to "spellbind" their audiences. While the results are difficult to determine, it is certain that speakers and passengers alike enjoyed their unusual experience, according to general expressions of opinion after the campaign. It would have been extraordinary had not a number of amusing incidents arisen during the drive. One speaker stated that he noticed an elderly lady listening with close attention to his impassioned address, part of which included instructions as to the right and wrong ways of boarding and alighting from street cars. As he finished the old lady arose to leave the car. "Now madam," he admonished, "don't forget what I've told you. Get out the safe way." Thus advised, the lady proceeded to get off the car, doing everything that she had been told not to do.—Aera.

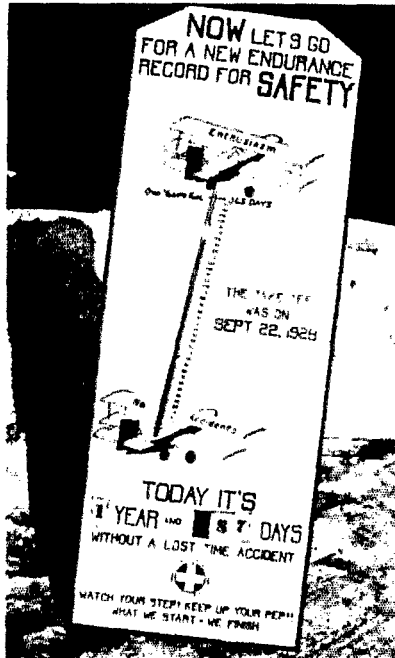
CANVAS CHIPPING SCREEN IS MOUNTED ON SHADE ROLLER

The Walworth Company of Kewanee, Illinois, has furnished the accompanying photograph showing a canvas chipping screen mounted on a shade roller, which is in turn supported by a swivel bracket fastened to the rear end of the vise in which the work is held while the chipping is done. The bracket which supports the screen is made of pipe, and the screwed fittings make it possible to swing it into any desired position to afford proper protection. When not in use the screen is easily rolled up out of the way.



NOVEL BULLETIN BOARD HELPS SAFETY CAMPAIGN

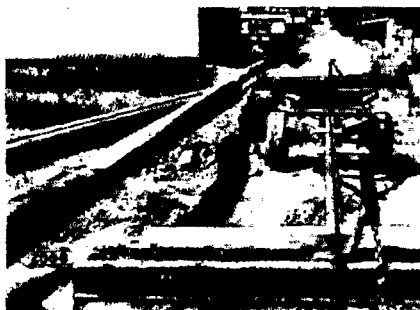
Those aeroplane flights for the endurance record have had an interesting reaction in the safety world, as instance the accompanying picture. A "Safety Board" is shown as photographed in the plant of the American Carbolic Company, Inc., Duluth, Minn. Two aeroplanes, "No-Accidents" and "Enthusia-m" are flying as a safety team. They are connected by a long re-fueling line which is a glass tube in which a dark fluid rises day by day to indicate the mounting no-accident record.



The tube is graduated alongside into 365 periods, and the dark fluid rises each day as additional fluid is added. In this case the fluid is potassium permanganate solution. The board is placed alongside the time clock and attracts wide attention.

POLE TRUCK LOADER HANDLED BY TWO MEN

Is it advantageous for two men to be able to load long and heavy electric transmission poles onto a pole truck and trailer? This can be done with simple equipment, as shown in the accompanying illustrations from the plant of the San Diego Consolidated Gas and Electric Company, San Diego, Calif. The truck is equipped with a winch and wire cable, and both the truck and trailer body are fitted with special skids having adjustable chocks to prevent the poles from rolling too far and to hold them



in position when loaded. The loading operation consists of running the cable through a snatch block, then around the pole to be loaded and up to the truck or trailer body, where it is attached with a hook. A tug on the cable with the winch causes the pole to roll up the detachable skid and onto the truck or trailer bed, one end at a time.

ROLLER PLATFORM WITH RAMP FACILITIES



This simply constructed steel roller platform with ramp facilities leading up to it is used by the Universal Portland Cement Company at Buffington, Ind., for running steel cable off the reels on which it has been received. Such a platform is easily constructed and may be made from spare parts without great expense.



OILING PLATFORM ALSO GUARDS SKELP MILL

Two unusual photographs from the National Tube Company illustrate a great contrast between a set of unguarded skelp mill gears and the same gears completely protected with heavy guards built in the form of an oiling platform. Heavy angle iron and steel plate are the materials of which the guards are built, and suitable openings equipped with covers have been provided to give access to the various bearings for oiling.

SAFETY

TAKES PRECEDENCE OVER
ALL OTHER REQUIREMENTS

MAKE THIS A
NO ACCIDENT JOB

MR. FOREMAN

YOU ARE RESPONSIBLE
FOR THE
SAFETY

OF YOUR MEN. STUDY
THIS JOB FOR HAZARDS
AND WARN YOUR MEN

EACH BLUEPRINT CARRIES SAFETY MESSAGES

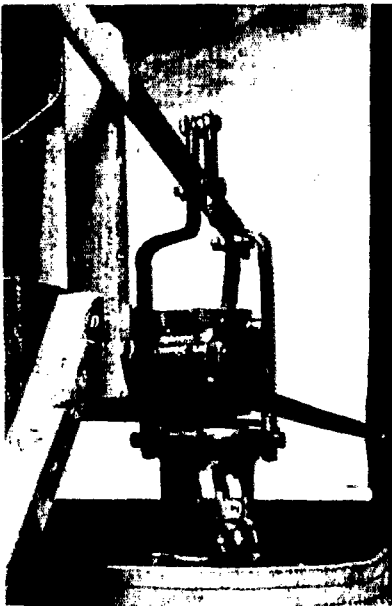
The engineering department of the Empire Construction Company, affiliated with the Georgia Power Company, Atlanta, Ga., is wide awake to the importance of safety as applied to engineering and construction work. All blueprints given out to the men on the job have stamped on them strong safety messages—such as the two shown with this item. The messages are stamped on with rubber stamps.



TELLTALE ROPES WARN OF LOW DOORWAYS

There are numerous places in many plants where the truck operator may be injured if he is not properly warned against a low doorway or some other obstruction interfering with adequate head room. Therefore the universal practice of railroads in installing telltale ropes at low bridges can be used to good advantage. Here is an outstanding example, as seen in the Hartford Rubber Works Company plant of the United States Rubber Company. It is obvious that these ropes give effective warning of danger.

THIS CLUTCH LEVER KEEPS THE PUMPER OUT OF DANGER



This photograph shows the details of a clutch lever which makes it unnecessary for the pumper to be near the clutch arm or the shaft when handling the clutch. This lever was developed

by O. F. Crook, employed by the Ohio Oil Company in the Gibsonburg, Ohio, field. The various parts of the device can be easily and inexpensively made in any blacksmith shop.

SCREEN PROTECTS LOCOMOTIVE CRANE OPERATOR

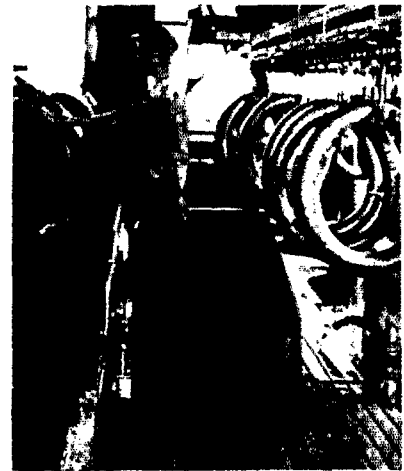


Sometimes locomotive cranes are used to perform operations which expose the operators to the dangers of flying pieces of

metal, concrete, and the like. To protect the crane operators against these flying particles, the Carnegie Steel Company, at its Edgar Thompson works, Braddock, Pa., has installed wire glass screens in heavy metal frames. Note in the accompanying picture that they are placed sufficiently far from the cab window openings to permit of ample circulation of air in hot weather.

"CHARIOT" IS SUBSTITUTE FOR RUBBER BOOTS

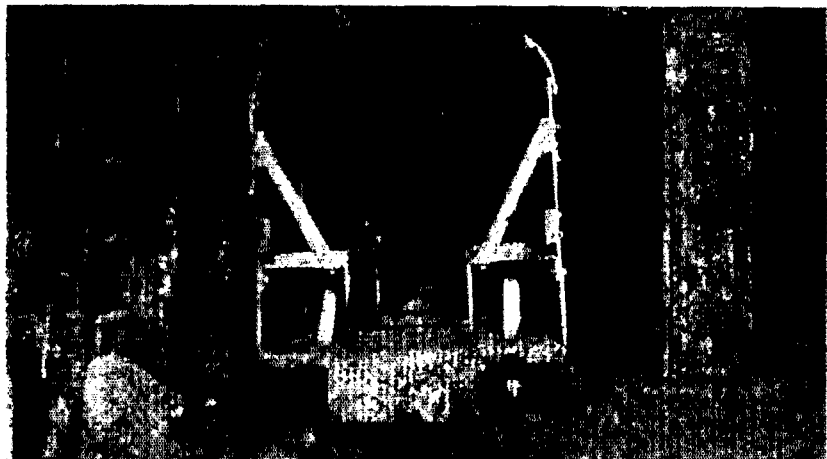
In the plant of the Fisk Rubber Company, Fisk Division, Chicopee Falls, Mass., the men who remove wet tubes from the spindles of the tube test tanks are furnished with small movable plat-



forms to stand on. These platforms, which resemble chariots, afford adequate protection against splashing of water. It is said that the men find these chariots far more comfortable to work on than if they had to wear rubber boots all day long.

THIS MAN CAR FOR MINES IS PROTECTED

Much of the danger involved in transporting men into the mines has been overcome on the properties of the Miami Copper Company, Miami, Arizona, by special equipment for the man cars. The picture, furnished through courtesy of the U. S. Bureau of Mines, shows a man car equipped with overhead and side guards made of steel frame and covered with chicken wire. Details of the construction are apparent in the photograph.



ANOTHER GOOD USE FOR OLD AUTO TIRES

A protective apron, for use while handling material having sharp edges, can be made out of the treads of old automobile tires. Cut out sections of the treads and rivet them onto a heavy canvas or leather backing material, as shown in the accompanying illustration.



Such an apron will withstand a great deal of abuse, not to mention the protection it is capable of affording the wearer.

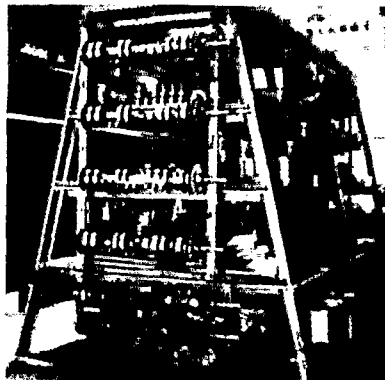
CINDER NOTCH SHIELDS FOR GLASS FURNACES

Here are two interesting ways of affording protection against flying sparks and hot metal at the blast furnace cinder notch. The chain shield is suspended from a wire rope and may be raised or lowered to give the proper protection under all conditions. The other shield,



shown in the second picture, is of sheet metal and is pivoted to swing out of the way when not actually in use.

A STORAGE RACK FOR CONTROLLER PARTS



This picture illustrates an unusually substantial storage rack which is used by an eastern railway company for the storage of controller parts in their repair shop. It is constructed of angle iron, and the triangular end-frame construction gives it unusual rigidity.



COUPLING FOR ELECTRIC TRUCK AND ANNEALING BUGGY

A convenient and unusual method of coupling onto annealing buggies has been developed by the Youngstown Sheet & Tube Company, as illustrated in the accompanying photograph. Note the device at the rear of the electric truck used to transfer the annealing buggy from place to place. The special coupling hooks up under the frame of the buggy. It is raised and lowered by the lever which is shown at the right of the operator. It will be noticed that his foot is on the lever, holding the coupling in the engaged position.

A SAFETY LADDER FOR THE HOPPER CAR



To discourage men from entering hopper cars to push down coal, ore, etc., the Bessemer and Lake Erie Railroad Company has developed a safety ladder shown in the accompanying illustration. This is a short steel ladder with hooks at the top to hook over the side of the car, and a platform about three feet from the top on which a man can stand. In this position he can remain comfortably and use both hands in working down the material with a long rod.

"Stop Accidents or Close the Shop"

These alternatives confronted the management of the Baxter Corporation but the shop is still operating—without accidents

By **ALFRED B. LINNEY**

Safety Engineer, The Aetna Insurance Companies, Duluth, Minn.

ASASH and door plant has within its walls some of the most hazardous machinery in industry. Many plants of this type are small and give comparatively little attention to the prevention of accidents. For the benefit of those who think that small plants seldom have accidents, and for those who think that safety work cannot be conducted in these plants I should like to relate the experience of one company in this industry employing an average of 40 men.

For many years this company had considered accidents a regrettable but inevitable part of woodworking operations and accidents continued to occur with alarming frequency. Here was an apparently hopeless situation but a change of attitude and the introduction of energetic safety measures brought a steady improvement in the situation, and at the time of writing the plant has operated 20 months without a lost-time accident.

The company in question is The Baxter Corporation of Duluth, Minn. When Donald Baxter became active head of the company some four years ago, he was startled by the accident experience. "Why all this unnecessary suffering, loss and waste?" he asked himself. He was sure there must be some solution for the problem, and he felt that it was a question of either preventing accidents or closing up the shop.

Mr. Baxter readily became convinced that modern methods of accident prevention were fundamentally sound and practicable. His first move was to take out a membership in the National Safety Council, and after studying the data received he decided that a practical program for his own plant could be worked out.

In a visit with Mr. Baxter it was decided that there are two prime factors to be considered—the men and the



Members of the safety committee of the Baxter Corp. Left to right: Joe Mankowski, Gust Wesselin, Henry Blanchard, John Germeroth, superintendent, Donald G. Baxter, president, John Sands, and S. K. Duff, manager of the Safety Bureau, Duluth Chamber of Commerce. In the background is the plant bulletin board on which is mounted a safety plaque awarded by the Chamber of Commerce.

machinery. Realizing that the problem could not be tackled alone, he called a group of ten of the older employees, the superintendent and the foremen into a meeting. At this meeting it was apparent that some were antagonistic to safety work. They admitted that accidents were bad but they were among the evils that existed in all industries and that there was no remedy.

Notwithstanding this apparent setback Mr. Baxter was determined to go ahead with the program. To assist him he appointed a committee of six workers. The education of this committee was the first problem and it took some time before it could function properly. In the meantime Mr. Baxter installed guards for machines, improved the plant layout, light and ventilation, and corrected numerous hazards in and around the plant.

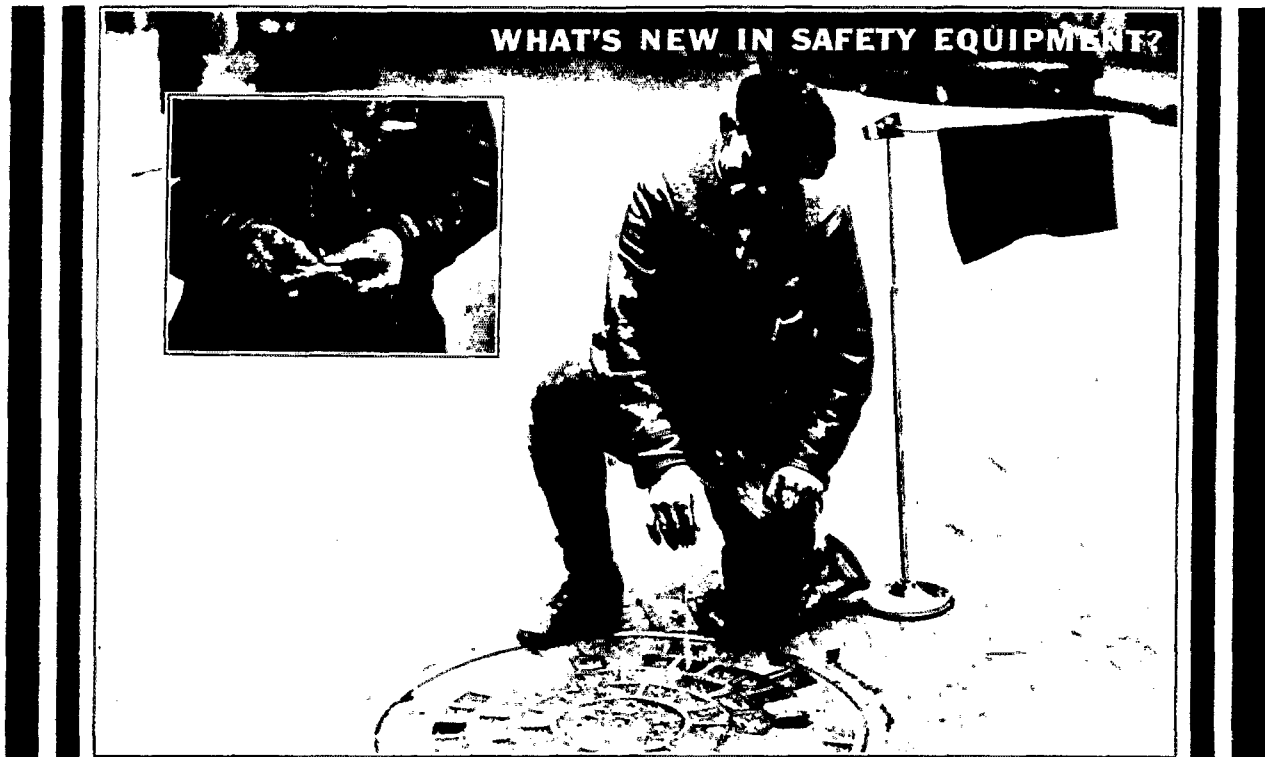
Many of the workers resented being compelled to use the guards but as they became used to them there was a noticeable reduction in accidents. By this time the members of the committee had become sold on the safety program and one of the important resolutions was that the chairman of the committee should retire after three months and a new member be appointed to give all employees an opportunity to become familiar with the work of the committee. A plant safety inspector was appointed to make weekly inspection; suggestions began to come in from the employees, and several rec-

ommendations had been made and carried out by the committee, but the reduction in accidents had been considerably less than had been hoped for.

It was then decided to hold semi-monthly meetings of all employees on the company's time. At each meeting some part of the safety program was to be discussed, a speaker would explain the program from the standpoint of both the employer and the employee, and the benefits to be derived through the cooperation of both. Various hazards, the guarding of machinery, the use of goggles, and other subjects were discussed. These meetings produced a further reduction in accidents but still the results were not satisfactory.

At one of the committee meetings the topic for discussion was, "What, if any, is the difference between accidents and injuries?" The result of this discussion proved that 90 per cent of the so-called accidents in the plant were in fact self-inflicted injuries. This basic cause of the bad experience was immediately taken up, and each employee learned to realize that an unintelligent machine was not capable of doing anything, least of all inflicting an injury, without human intelligence behind it. That intelligence was supplied by each worker to his machine, and the more intelligence in operating the machine the more likely it would be to do what was expected of it. In plain terms, it was agreed that the

(Continued on page 99)



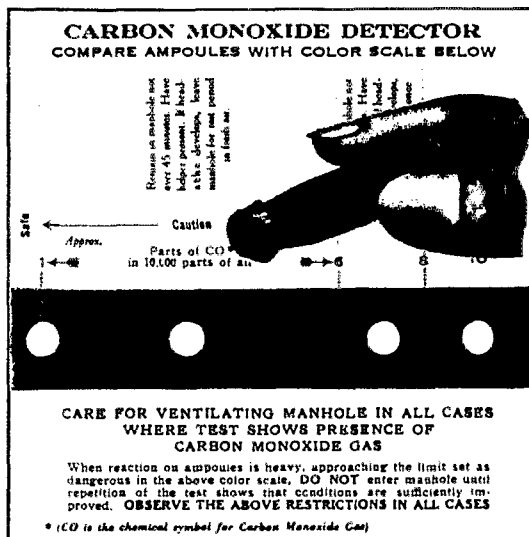
Public Utility Company Employee Testing Manhole with M-S-A Carbon Monoxide Detector Ampoule.
Inset—Crushing Ampoule Containing Palladium Chloride Solution and Wrapped with Absorbent Cotton.

M-S-A CARBON MONOXIDE DETECTOR AMPOULE

Developed for Practical Field Use in Testing Manholes and
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MANUFACTURED UNDER LICENSE ARRANGEMENTS WITH
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Many of these Carbon Monoxide Detectors are used
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STANDARD COLOR CHART
One Color Chart is enclosed with each carton containing Ten Ampoules. Prices and Descriptive Literature on Request

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THIS SIMPLE, INEXPENSIVE TEST

Crush Ampoule which is wrapped with Absorbent Cotton and filled with Palladium Chloride Solution. Suspend Crushed Ampoule in Manhole or other Atmosphere for a minimum time of ten minutes. In the presence of Carbon Monoxide, the Cotton turns gray to grayish-black in color depending upon concentration of Carbon Monoxide in Atmosphere under test. Place discolored Ampoule under holes in Standard Color Chart comparing Color of Ampoule with Graduated Color Scale on Chart. Concentrations as low as .03 percent and upwards are readily indicated.

MAKE A TEST FOR YOURSELF
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MINE SAFETY APPLIANCES CO.
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for which kindly send me two M-S-A Carbon
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Clenden Key Stone
Engineer

External Conditions Cause Most Falls

By H. WEAVER MOWERY

THE subject of falls is not new, but until recently there has been little appreciation of their relative standing in the field of accident causation and cost in lost time and compensation.

According to the New York State Industrial Commission:

Not only are falls causing the most serious accidents and the ones that result in the greatest total cost to industry, but they are also increasing more rapidly than any other kind of accident. *It is indeed cause for alarm when the most serious and most costly accidents are increasing at the greatest rate.* The situation is surely serious enough to justify the spending of time, effort and money in the prevention of Falls.

Think of 100,000 workers in New York State suddenly and forcibly removed from employment for five and one-half weeks. Add to that a levy of \$6,515,137 to be paid by its industries. That's just what falls cost annually in the industries alone of the State of New York. The situation surely is alarming.

The U. S. Bureau of the Census records show that, of the 83,000 accidental fatalities per year from all sources in the United States, over 17,000, or approximately one-fifth are from falls. Careful analysis of source records in many different fields indicates that not less than one-half of the falls occur in connection with walkway surfaces.

It has become increasingly evident that, if there is to be further important progress in accident reduction and prevention, the problem of falls must be answered correctly.

Human Deficiencies

There has been a feeling that falls are the result of human deficiencies and that the condition of the walkway surface has little to do with the actual causation of the fall. This idea is evidenced by the fact that at many places we see signs such as "Watch Your Step," "Be Careful," etc., while the hazard is permitted to remain.

Before the Fifth Annual Safety Lecture Course of the Newark, N. J., Safety Council for Executives, Engineers and Supervisors

Physical and mental disabilities figure frequently in falls but the direct cause is usually an external hazard.

Are falls the result of pathological and other human physical deficiencies or are they almost wholly caused by external hazards?

Among the pathological or other human deficiencies, we must include vertigo, poor eyesight, fatigue, impaired reflexes, relaxed tissues, and last, but not least, carelessness, and even the wearing of high-heeled shoes, as possible causes of falls.

A physician with over 45 years of extensive practice is authority for the statement that our modern life is rapidly reducing the physical quality of our bodies. Our muscular and nervous reflexes are no longer as quick and accurate as they were when our very existence was dependent on them. The vast increase in the number of cases of enlarged tonsils and adenoids is evidence of our physical deterioration. Unquestionably, these and other human deficiencies are responsible in some measure for falls, but are they sufficiently serious to warrant further consideration in this problem?

The external causes of falls may be considered as slippery ramps, floors, step treads, door saddles, etc., and other unsafe walkway surfaces, tripping hazards of various kinds, lack of hand rails and guards, etc. Without doubt, these and other unsafe external conditions also are involved in any honest effort to learn the truth about the causes of falls.

Which of these two general causes, human physical deficiencies, or external conditions, is the one to which we should direct attention because it is largely or almost wholly the cause of the greatest number of casualties and economic waste?

Unfortunately, in this, as in many

other phases of accident prevention activities, there is little accurate data available. We can only determine the truth through definite information as to exposure, frequency, and severity. However, some facts have been unearthed which can be interpreted in only one way, which is, that the external hazards, for which the person injured has no responsibility whatever, are almost entirely responsible for the tremendous number of casualties resulting from falls.

The Transit Board of New York City reports that 55,944,891 fares were paid at the Interborough Subway Station at Times Square during the year ending June 30, 1929. It is, therefore, safe to assume that more than double this number used this station, because approximately the same number left the station as entered it, and furthermore there is a large volume of transfer traffic and a considerable number that do not pay fares but use the station as an underground passage from one side of Times Square to the other. Therefore, the total exposure is in the neighborhood of 114,000,000 persons per year.

A Low Frequency Rate

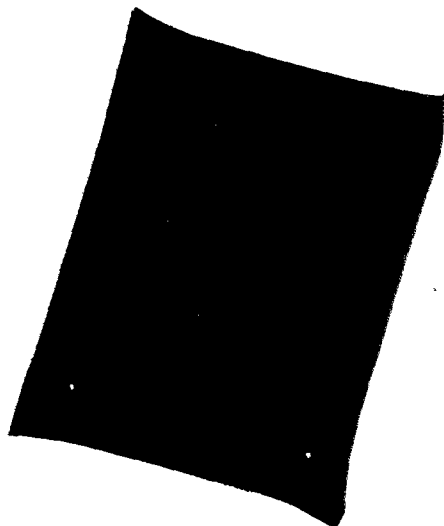
During the period stated there were only 115 reported accidents, and these were all due to falls on stairs. That is only one accident per million exposures, and it is probable that less than one-tenth of these resulted in serious injury, as the figures include all reported falls, even including those where the individual falling thereafter immediately got up and walked away without having received injury. The frequency rate, in spite of the tremendous traffic, therefore, is the astonishing low figure of 1.25 determined by the same formula used for industrial accident frequency and allowing only five minutes for individual exposure, as compared to from 12.00 to 64.00 for the various branches of industry.

Forty stairways, with some consid-
(Continued on page 92)

SAFETY SERVICE

DAVIS HOT PAD

Generates Own Heat with $\frac{1}{2}$ ounce Cold Water



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Troublesome Hot Water Bags

Maintains Constant Heat
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IN THE EVENT OF INJURY
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DAVIS HOT PADS

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The Davis Hot Pad is made of high grade rubberized flannel, size 7x8½ inches. Rubber on the inside, flannel on the outside which comes in contact with the patient.

The Davis Hot Pad is absolutely safe and dependable. It is harmless, cannot leak, smoke, burn, or explode, and is so simple in operation that a child can use it.

Maintains its heat long enough to get results.

The Davis Hot Pad, including insert, one half-ounce bottle, and extra insert, is packed in a rubber cover size 6x8 inches, making a neat and compact package.

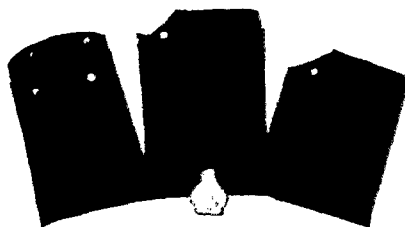


Illustration above shows the complete
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Safety First or Safety Always?

By T. B. FARRINGTON

General Manager, Factory Service Department,
B. F. Goodrich Rubber Company

THERE are two common phrases used in safety work that I don't like and never use when I can avoid them. I understand their meaning and appreciate their value, but I don't like them.

The first one is "safety first." To me, that much-used slogan is lacking in punch. Every time I hear it I always ask, "What after the first?" First implies a second, third, fourth, and so on. We intend it to mean safety shall always receive the first consideration, but does it bring out what we are all striving for—"safety always"?

The second expression I don't like is used not only with safety work but also with production, quality, industrial relations, and, in fact, with almost everything and all too generally. That expression is "50-50 cooperation." How many of us are satisfied with half-way measures? What good is the organization that works on a 50-50 basis? What we want is 100 per cent cooperation and functioning, and more men who are striving for the 100 per cent goal.

This may seem like a strange opening to a discussion of the management's side of safety, but that is exactly what I am talking about. There is too much of the "safety first" and not enough of the "safety always" in management. There is still too much of the 50-50 idea left in management, particularly as it applies to safety. Management's duty is safety always, and no half-way measures.

Spasmodic Safety Effort

When I say there is too much "safety first" and not enough "safety always" in management, I mean that in too many cases safety effort is spasmodic, it goes in cycles. We make a start, we employ a safety engineer, we start campaigns, we buy posters, we get up slogans, we push out safety efforts until we get a start. After we are started, we die on the vine; and because a job is well started, we think it is going to last. We get driving on another line, pushing for more production, for reduced

Before the Third All Ohio Safety Congress.

"Safety First" too often implies merely a good start in safety work; "Safety Always" means constant pressure to keep up the work.

costs, for better quality, or some other thing, and safety goes into the background for a while, with a result that accidents creep up in frequency and severity until something happens—usually a serious accident. Our attention is again focused, and we go all over it again to regain the lost ground. Just as soon as we get in that condition, safety is no longer first, and it's a long way from "safety always."

Just as soon as we get in the position described, what are we doing instead of "safety first"? We are trailing behind, continually trying to catch up. It's the old, old story of the locked door on the barn; it's the old story of correcting conditions and correcting practices after they have occurred, instead of the continual drive, drive, drive, the continual bringing pressure, the continual insisting on a proper safety performance, the continual asking, "Can accidents occur from this condition or that condition? Can accidents occur with this practice in effect? Are we functioning properly to make it a case not only of "safety first," but "safety always?"

With safety always, the pressure is constantly there, and when we are making a good record or good performance on safety, it's a case of still striving to better that performance; and when we have departments which are making a perfect record, it's a case of holding that record and avoiding the occurrence of an accident to break it.

You are more familiar with ways and means, and are more conversant than I with many situations; but to my mind, nothing in the way of safety committees, safety posters, safety slogans, safety drives or any other method can accomplish safety always or near it, if management from the top down is not sold on safety, sold to the point

where it thinks safety and demands it as a function of operation, and where this function of operation is as essential as quality production. I don't for one moment belittle safety committees, safety slogans, accident prevention drives, or any of those things. They are all necessary tools, but without the proper backing of management, the proper punch behind them, they don't fill the bill. Don't forget that one of the best tools you have to work with is the backing and publicity of your local papers that help to carry your message into the homes of your employees.

Why has management been so slow in seeing the advantages of safety? Why can we still go into some plants anywhere in the country, and find them in disorderly condition, or at least not orderly? Why do we find, coupled with plants of this kind, the usual high accident rate and the high turnover? It would seem that safety, orderliness, cleanliness and system would sell themselves without argument, but there are many, many cases where safety has never been sold, or at least not properly sold, to management, and management is still waiting to reap the benefits of safety and all that safety means. Experience in hundreds of plants over this country has indicated beyond all question of a doubt that safety and efficiency go hand in hand. The results are there for the taking.

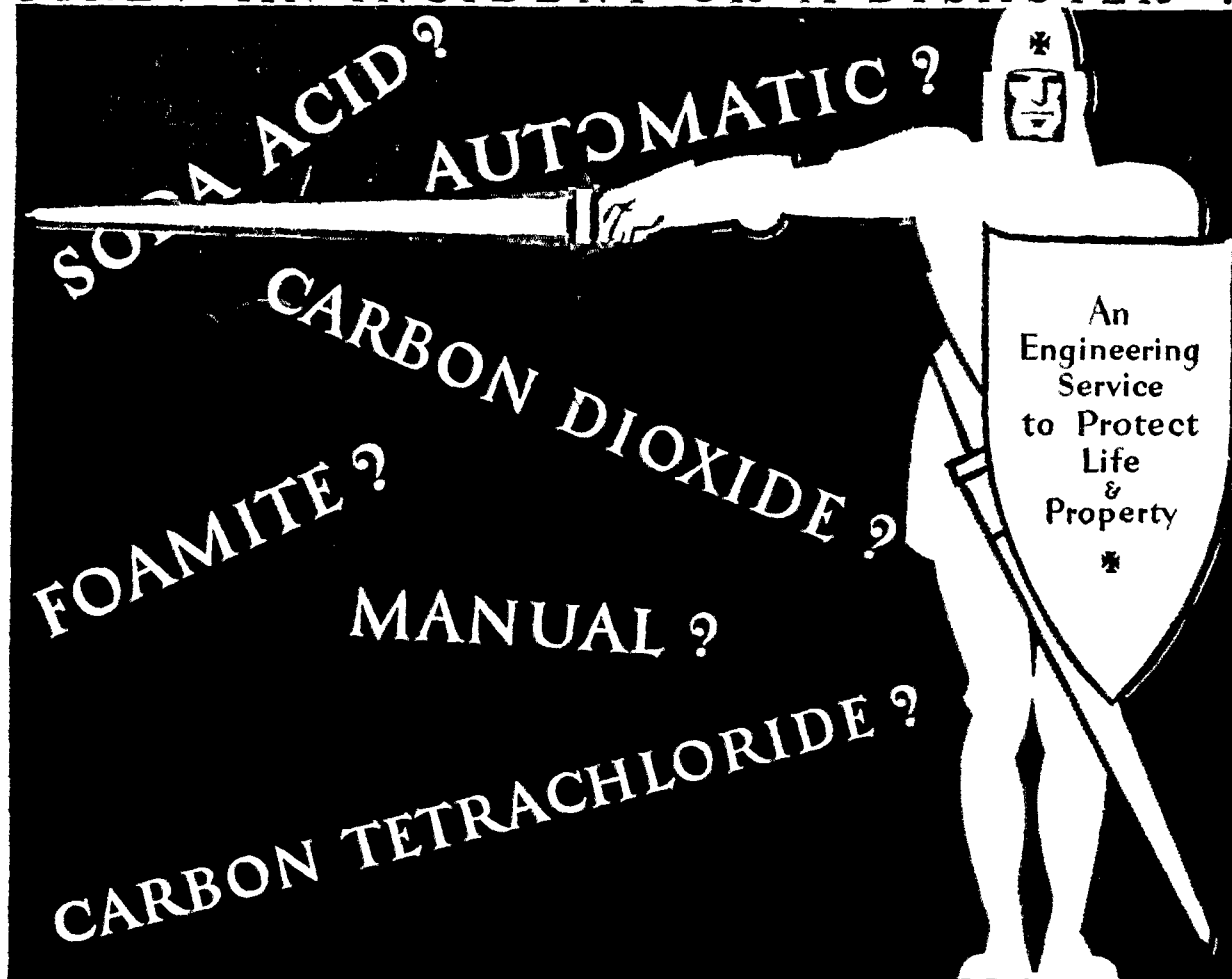
Dodging Responsibility

There have been many cases where safety has not been properly sold to industry, to management. I can recall instances of a number of plant managers and plant superintendents telling me the safety idea was a lot of bunk, that safety was up to the employees, and if the employer did his part and kept his machines and his buildings in a fairly decent state of repair, it was up to the employees to look out for themselves.

I can also recall instances of so-called safety committees of employees misusing the time given them by the management, for going around the departments and through the plant with

(Continued on page 36)

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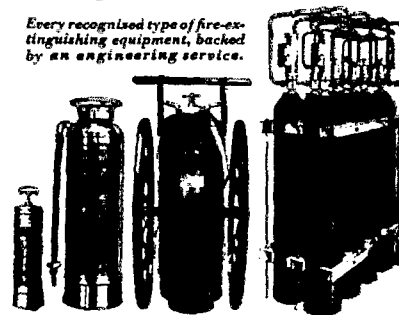
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Engineering Must Precede Traffic Regulation

By C. C. COTTRELL

Manager, Highways Bureau, California State Automobile Association

THE whole problem of traffic control is, in my opinion, essentially an engineering problem. Proper traffic legislation, whether by state, city or county bodies, should be the result of engineering determinations and careful surveys of conditions, rather than of snap judgments. Publicity, so far as traffic control is concerned, should be for the purpose of educating the public in what is expected and how best to comply with the necessary regulations. Enforcement is for the purpose of demanding a compliance with the regulations from those who either are unwilling to be educated or are not in sympathy with the control methods.

So it would seem that even legislation, education and enforcement are parts of the big general problem, and as such are closely related to engineering.

If, at the suggestion of some layman, you were to recommend a traffic signal at a certain intersection, that, of course, would not be engineering. Neither would your hasty inspection of that point. If, on the other hand, you were to measure the traffic flows, turning movements, and consider all the other elements that have a bearing on the situation, and from those investigations were to reach your conclusion, that would be good engineering. Engineering demands a recommendation only after all the facts have been considered.

Not an Exact Science

Now, it would be fine if every traffic control problem could be reduced to an exact engineering basis; we might then have an exact solution, the same as we have in bridges, buildings and similar structures. But in traffic matters we have the so-called human equation, and that factor cannot be reduced to an exact science. It is only through the exercise of good judgment with respect to the human element, and the application of good engineering principles to the balance of the problem,

Abstract of an address before the Municipal League of California.

Good Judgment with respect to the human element and application of sound engineering principles to the balance of the problem are needed in solving the traffic puzzle.

that we shall obtain a satisfactory solution of our traffic puzzle.

We have had neither opportunity nor time to solve it properly. We have the desire for speed, but we are confronted literally with hordes of vehicles upon the streets and highways that never were designed for any such situations. The problem of redesigning these streets and highways is slow, so we must do the best we can with what we have.

The first principle of sound traffic control should be the putting into effect of no regulation without more than ample justification. I believe that if ample justification cannot be proved, it is better to refrain from regulatory measures. If such a policy were adhered to we would secure a quicker and greater respect from the public; for I think that disrespect for laws can be attributed to the fact that we have too many laws. In short, our biggest traffic problem today is too much poor control and the tendency in that direction. When we successfully combat this tendency and solve our problems on the basis of proper investigations and by sound deductions, we will have applied good engineering and will have overcome our biggest hurdle.

To comprehend this one must understand human psychology. For example, persons residing near a certain intersection become convinced that they have a traffic problem, and the more they think about it the more are they convinced it is worse than at neighboring intersections. They make an appeal to the officials and suggest nothing less than the very latest traffic control device. A few years ago this

was left-turn prohibitions; later the fad became boulevard stop signs; just now it seems to be automatic traffic signals; and tomorrow it may be something else.

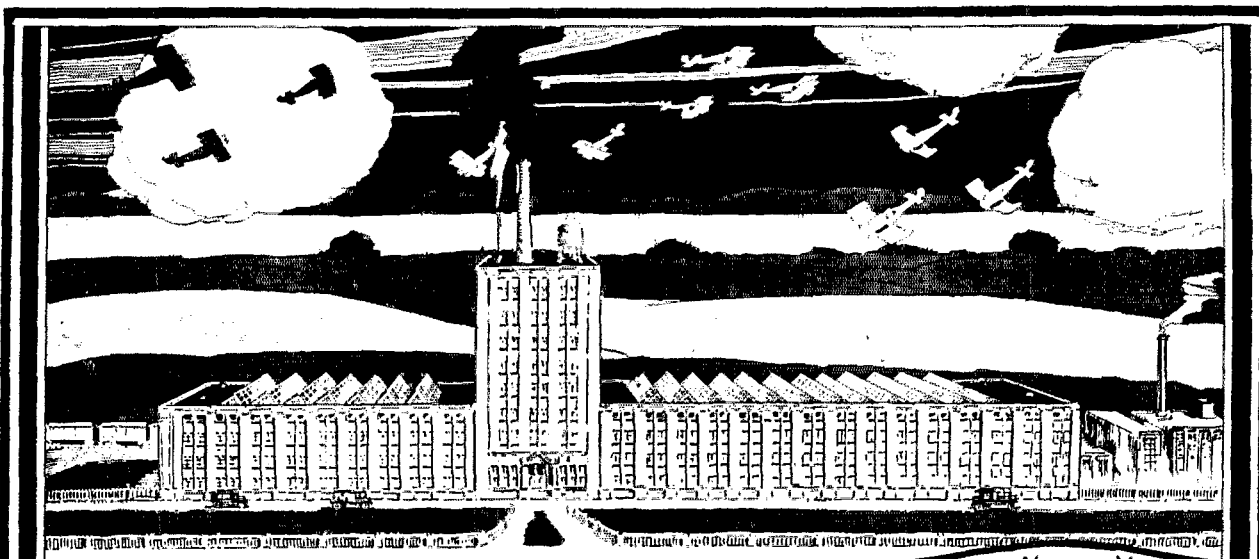
These devices have their legitimate fields of operation. Each performs a highly specialized function and is justified in the proper place. But to say that any one of them is a panacea for all traffic ills is not only foolish but breaks down the whole system of traffic control.

Let me analyze a few of our regulatory measures and devices. Although I have studied the boulevard stop situation thoroughly, I still have some conflicting opinions regarding its merits or demerits. Of one thing, however, I am certain: the minute a boulevard is created, that minute a condition is set up which encourages the motorist to break one law (which police officers knowingly permit him to do), and at the same time another law is brought into effect that is not understood by the public and cannot be enforced.

Boulevards were established primarily to relieve traffic congestion by controlling intersecting travel. Except in a few instances, particularly in the environs of some of our largest cities, there is no such congestion. Most boulevards have been established for an altogether different purpose.

Inconsistent Regulation

Suppose a boulevard is established through a residential section, as is generally the case. The speed limit there is 20 miles per hour, with 15 miles at intersections. The minute that boulevard is established, up goes the speed to 30 miles and over, with little or no attention paid to intersections; and police officers condone it. (That may be right—I will not argue it.) The point I want to make is that either our motor vehicle act is wrong as regards its speed limitations, or else the reason for the establishment of the boulevard is wrong. The one should be corrected or the other not be put into effect. You cannot expect to en-



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force one law completely and encourage the violation of the other.

Certainly, one traveling on a street or highway protected by stop signs has a feeling of security, and of less responsibility. Does the state law give him this? It does not. The motorist seeking to cross a boulevard must stop his car and yield the right-of-way to all vehicles within the intersection or approaching closely from his left. Having so yielded, he has the right to proceed then across the boulevard, and all vehicles approaching the intersection from the left or right must yield to him. This obligation upon the driver on the through highway is just as important as the obligation imposed upon the motorist who is crossing such a street.

Limited Benefits to Motorists

You will thus observe that the benefits to the motorist traveling along the boulevard are limited. But who of the motoring public know this, and is a police officer always available to protect the rights of the one coming in from the side street? Can you imagine the chaotic conditions that would result and the attending hazards if motorists who enter our boulevards should take advantage of their rights as written in our statutes?

The value of boulevards for safety is a debatable question. Certainly a boulevard that becomes known as such in the daytime, but at night is not discernable because the signs are unlighted, is really a more dangerous point in the darkness than if the designation had not been made. Motorists who are continually required to stop at boulevards when there is no through-traffic soon lose their respect for the regulation and eventually ignore it altogether.

An effective means recently employed to increase the capacity and safety of our highways is that of marking off lanes by colored stripes. Where intelligently used, this has increased the capacity of highways fully 20 per cent, perhaps more. I believe it impractical, however, to divide anything less than a 30 foot pavement into three lanes. To do so has a tendency to force traffic in the outside lanes onto a shoulder often none too stable, with its attendant dangers; this has been definitely proved on a 24-foot pavement.

The use of a stripe to mark the edge of a pavement is a remarkable aid to traffic, particularly in those sections of our state having fog and considerable rain. A distinctive stripe, of a different color, probably broken in character, might be used on sharp curves where no passing at all was

permitted. An objection is that such a stripe might indicate permission to pass at other points, regardless of vision, nature of pavement, hazard and traffic conditions.

An example of the sort of traffic signal not respected by the public is the wig-wag signal at railroad crossings. Many times we come upon a wig-wag signal going full blast, only to find after stopping that it indicates a box car or a freight train standing still, or perhaps a slow-moving train that would not reach the crossing for considerable time. Respect for such a signal is not increased by this experience. A motorist is a restless person and any unnecessary delay is obnoxious to him.

The trouble lies in the fact that engineers have not yet developed the proper type of signal for this situation, although reports indicate it is on its way. At present the signal is set in operation by an oncoming train at a fixed distance from the crossing. The solution doubtless lies in using a definite "time" element instead of that of "distance."

This brings to mind the problems of lights. Those who are well informed know that red should have but one meaning—that of stop. You have only to go a short distance on any of our streets and highways to see it employed merely as a caution. Amber is the color which should indicate caution. It is no wonder that so many red signals are ignored because of the promiscuous use of that color.

What I have said about some of our traffic regulations applies to all others. If we are to get public cooperation in parking, loading zones, left-turn prohibitions, respect for slow signs, and, in fact, everything dealing with traffic control, we must first justify the necessity for such regulations and then be prepared to enforce them.

Traffic Control Signals

And now comes probably the greatest of present-day problems, that of the traffic control signal. There is nothing so effective as an automatic traffic signal, provided it be placed where the conditions warrant, properly adjusted and operated only when needed. I can do no better than quote from Dr. Miller McClintock, a nationally known expert:

"Notwithstanding the possible advantages of traffic signals, they, as other remedial measures, have their limitations. When properly used they can give a very real and important service. When improperly used they may result not only in a waste of the

investment made in their installation and operation, but also in a great loss through inconvenience to street users.

"In other words, a stop-and-go signal is by no means a panacea for all traffic ills. It has a highly specialized function. In considering traffic signals it should always be remembered that they stop as well as pass traffic. They alternate the opportunity for travel upon the two or more streets which enter the controlled intersection. Thus a previous legal freedom for a driver to move at any time is reduced by approximately 50 per cent. Unless there exists at any particular intersection where signal installation is contemplated, a condition of traffic congestion which, without control, causes more delay and inconvenience than will result under signal operation, there is a presumption against this type of control. On the other hand, where there is a real congestion resulting in inconvenience and delay of traffic, the signal performs a useful service by passing the average driver with less delay than he would otherwise experience."

Lack of Uniformity

In California we have an unfortunate lack of uniformity with respect to signals. We have the semaphore type, the two-light type, the three-light type, and others. We should adopt one type that would be uniform throughout the state, to which all motorists would accustom themselves. The next, and more important thing, is that we should never permit a signal to be installed unless there is a real need for it.

Just what are the justifications for the installation of a traffic signal? Generally speaking, there is only one, and that is to facilitate the movement of traffic.

Efforts are continually made to convince local officials that a traffic signal should be installed from the point of view of safety when volume of traffic does not justify it. That is a hard argument to combat, for who is there who would not go the limit to protect life and property? My own opinion is that signal installations are not justified purely on that basis. Dr. McClintock says on this point:

"The use of signals for purely safety purposes would have serious consequences. If hazard alone were to be considered, practically every intersection would be thus controlled, for all are potential producers of accidents. In fact, many of the more serious accidents take place at lightly traveled crossings."

It has long been a theory of mine
(Continued on page 42)



Giving After-Accident Infection a running start! The man shown above is "dressing" a small cut with a bit of dirty rag. His carelessness may cost him much painful suffering—and shoot your production costs skyward

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A Department of Commerce Bulletin* gives the average cost of infected small wounds—wounds caused by handling rough and sharp objects—as \$204 per wound in 1927-28. The same bulletin shows the average cost of similar wounds NOT INFECTED was only \$86 per wound. That's a *big* difference, especially when you consider the astoundingly large percentage of small wounds that become infected. Read these figures*:

TYPE OF WOUND	PERCENTAGE INFECTED
Striking against small objects . . .	52.2 per cent
Handling sharp and rough objects . .	67.7 per cent
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Hand tool injuries	31.0 per cent

The difference between an infected and a non-infected wound is \$118. Think of it!

There is no need for such losses. Let Bauer & Black show you why and point the way to what may be a money-saving disclosure.

Quality costs less than Infection

*Department of Commerce Bulletin, October, 1929

Is there a Weak Link in Your FIRST AID System?

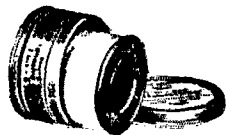
There can be no doubting of the statement, "the First Aid System is only as safe as the materials used in dressing wounds." Even the most extensive plans of Relief, Protection, and Repair fail if the actual gauze, cotton or bandages used are not pure, sterile, clean and "handy to use."

Infection is a dreadful enemy of health. Given half a chance infection makes a minor cut a serious, painful and expensive wound . . . and does it quickly, too. It's not the wounds alone that keep your men away from their jobs, break down morale and disorganize your crews—it's the infection that follows poorly dressed wounds and wounds dressed with improper materials.

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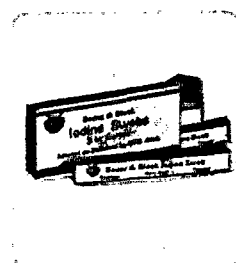
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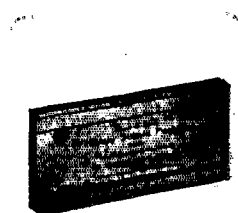
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California Sets Standards for Labor Camps

By R. W. KEARNEY

Chief, Division of Housing and Sanitation,
Department of Industrial Relations,
State of California



CALIFORNIA is a pioneer in legislation for sanitary living conditions in labor camps. It is one of the few states in the Union which has passed such an act for the health and well being of its workers. Due to its industries and the variety and extent of its agricultural developments, there is a large population to be found in these camps. During the last year, in the 2,366 camps inspected, there were 85,928 persons of 35 different nationalities.

The first labor camp sanitation law was passed in 1913 and became effective on August 10 of that year. Its enforcement was placed with the State Board of Health, but no special funds were provided for carrying on the work. This same legislature created the Commission of Immigration and Housing. Among other powers given the Commission was the right to inspect labor camps.

Shortly after the Commission was organized and before the labor camp act became effective, a riot occurred on a hop ranch at Wheatland. Senator Hiram W. Johnson, then Governor of the State, called upon the Commission as the natural agency to make the investigation, as most of the laborers on the ranch were foreign born. Housing and sanitary condi-



Large numbers of Mexican agricultural workers were formerly housed in shacks similar to the one in the illustration above. These have been replaced by the cottages of the type shown below.

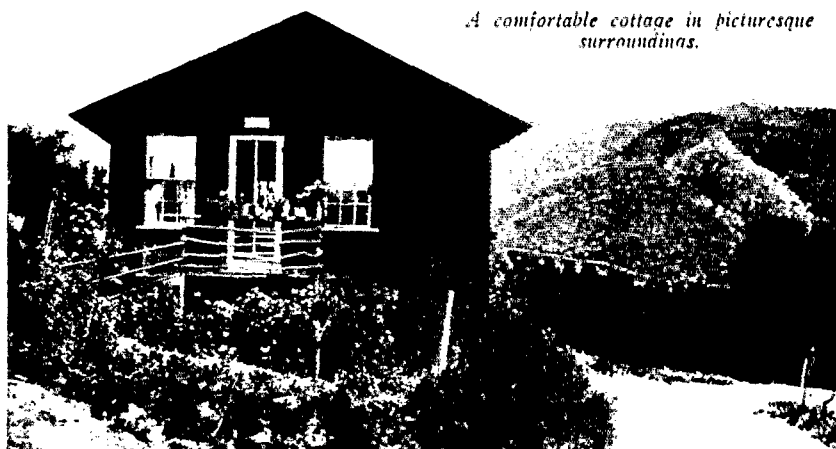
tions on the ranch were unspeakably bad. That, however, was found to be the rule rather than the exception in all camps, and the Commission, with the consent of the Board of Health, assumed the responsibility for improving conditions.

The 1913 law set forth, in general terms, that the bunkhouses, tents and other sleeping quarters, and the grounds about the camps should be kept clean. It also provided, in general terms, that there should be sufficient air space in the sleeping quarters, and beds or bunks made of

sanitary material so constructed as to afford reasonable comfort to the occupants. There were no requirements for toilets or bathing facilities, nor for the disposal of garbage, kitchen waste and other refuse which made many of the labor camps unfit for human habitation and a menace to health.

The Commission, in cooperation with the State Board of Health, drew a set of rules to serve as a minimum standard for living conditions and endeavored to secure compliance with them. In 1915 the act of 1913 was completely revised and contained in its provisions many of the features which had been established by rule and found to be practicable. The power to enforce this law was placed in the hands of the Commission of Immigration and Housing. This same method has since been used in amending the act, until we now have the present law, which, though not ideal, affords reasonable comfort to the occupants.

To aid in the establishment of good camps the Commission published an advisory pamphlet on camp sanitation which gave all necessary information for their construction in a practical way. This pamphlet has received international recognition. In addition



A comfortable cottage in picturesque surroundings.



Attractive cottages of poured concrete construction provided for Mexican citrus workers.

to this the Commission has always given operators the benefit of the advice of its experts whenever called upon. In the last year 59 camps were built with their aid. At present there is a cannery camp under construction, which, when completed, will contain one hundred houses with all of the necessary sanitary units in each house. These include kitchen sinks, toilets and showers, all connected to a centralized sewer system.

The act applies to all camps where in five or more persons are employed and has, in brief, the following requirements:

1. Bunk houses, tents or other suitable sleeping places must be provided; they must be so constructed as to afford shelter for the occupants against the elements and dampness in inclement weather, and must be kept clean and free from vermin.
2. The grounds also must be kept clean and free from accumulations of dirt, garbage and other deleterious matter.



Living conditions like this are less frequently found than formerly.

3. There must be sufficient air space in the sleeping places to insure an adequate supply of fresh air for each occupant. Suitable bunks or beds built

of sanitary material so constructed as to afford reasonable comfort for the occupants must be provided and a space allowed between each bunk of at least twenty inches extending from the floor to the ceiling. Upon request a mattress or some equally comfortable bedding must be supplied, for which the employer may make a reasonable charge. Ticks or containers must be supplied if straw or other substitute for a mattress is furnished.

4. Mess houses, dining-rooms, kitchens, or other structures where food is cooked, prepared or served must be kept in a clean and sanitary state and the windows, doors or other openings must be screened. All dishes, cooking utensils, knives, forks, spoons and other implements used in the cooking of food must be kept in a clean, unbroken and sanitary condition.
5. Every camp must provide convenient and suitable bathing and toilet facilities. These must be kept in a clean and sanitary condition, definite provisions

sions being made for the construction and maintenance of privies other than water closets.

6. All garbage, kitchen wastes and other rubbish must be deposited in suitable covered receptacles, which must be emptied at least daily and the contents burned, buried or disposed of in other sanitary manner. Drainage from the kitchen sinks must be carried through covered drains to covered cesspools or septic tanks, or disposed of by some other sanitary method.

7. A responsible person must be appointed to assist in keeping the camp clean.

A law of this kind, when properly enforced, prevents the use of ragged tents, brush shelters and barns, formerly used as stables, for the housing of employees. It insures the worker against the "ground for a floor and sky for a roof" type of sleeping place which had frequently been his lot. It prohibits the use of platform bunks and discourages the double deck bunk.

(Continued on page 82)



Workers on construction jobs are frequently housed under canvas.

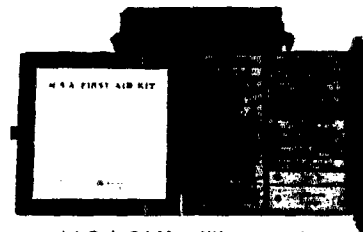
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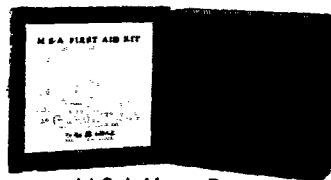
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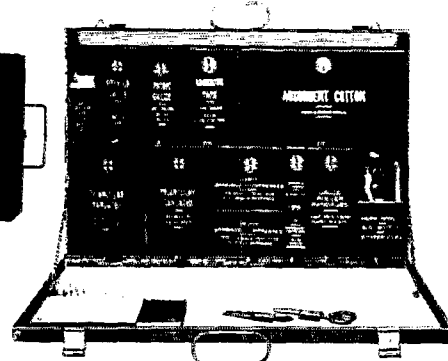
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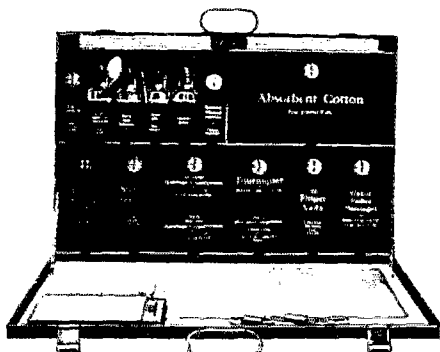
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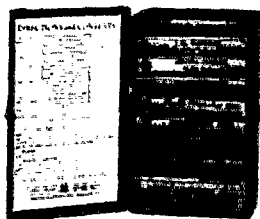
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Councils Improve Rates in Industrial Contest

*Industrial Members of Territorial Councils
Reduce Frequency and Severity during
Last Half of 1929*

TWELVE territorial councils of the National Safety Council enrolled in the Second Inter-Council Industrial Accident Contest were remarkably successful in lowering the industrial accident rates of their members during the last six months of 1929.

The most successful in the group was the Blackstone Valley Safety Council, carrying on its accident prevention activities in Pawtucket, R. I., and adjacent territory.

The Louisville Safety Council at Louisville, Ky., received second place in the contest and the Chattanooga, Tenn., Safety Council was a very close third.

All councils were competing against their own past records, either the six months or the twelve months ending June 30, 1929, being set up as the "bogey." The improvement is measured in two ways—by accident frequency rates and accident severity rates. All councils enrolled in the contest are obtaining sufficient information for the compilation of both of these rates and make regular reports to the National Safety Council.

The extent of the improvement is shown by the fact that in December, 1929, the last month of the contest, eight out of the twelve councils had rates which were a substantial improvement over those before the contest started. In the case of four councils, their frequency and severity rates in December were less than half those

of the six months or the twelve months preceding the opening of the contest July 1, 1929.

In five out of the six months the winning council, Blackstone Valley, had frequency and severity rates far below those of the previous period. In two of the six months their rates were less than half those in the base period.

Louisville, the second place council, showed improvement in every one of the six months of the contest but the reductions were not so great in several instances as were those of the Blackstone Valley Council.

In the case of Chattanooga, which missed second place by only a hair's breadth, there were two months in which the industrial concerns in the Chattanooga territory failed to equal the frequency and severity rates which they had previously made.

The Richmond Safety Council received fourth place in the contest by an excellent finish during the last three months, in which it ranked first or second in each month. The Chicago Safety Council maintained a consistent record of improvement throughout the contest to capture fifth place. The Providence Safety Council, which ranked sixth in the contest, had the additional honor of tying with Chattanooga for occupying first place the largest number of times in the monthly standings.

The accompanying table shows the frequency and severity rates for each

participating council in each month of the contest and the rates previously established among the council's members which were the goals in the present contest. The cities are arranged in the order of their final standings in the contest.

In the first Inter-Council contest, which ran during the first six months of 1929, the winner of the present contest was not entered. That contest was won by the Kansas City Safety Council, with the Delaware Council second, and the Richmond and Springfield Councils tied for third place.

Plans are being made for the third contest, to run during the first six months of 1930. It is expected that 13 councils will be entered in this contest.

The awards to the winner of the first three places in the contest just closed will be made at the conference of territorial safety council managers to be held in Birmingham, Alabama, March 28, 29 and 30.

Why Roofs Fall in Some Coal Mines

CERTAIN instances of a lack of discipline in the matter of promptly setting supports under mine roof material which has an official chalk mark calling for a prop have been noted by the mining engineers conducting a study of roof control in coal mines for the United States Bureau of Mines.

This lack of discipline is not confined to the workmen at the face, but it extends to some of the foremen who overlook the neglect on the part of the workman, who places his judgment against that of the foreman. In many well organized mines it is the practice for the foreman to remain to see the post put in place or the dangerous roof material pulled down by the use of a bar.

Accident Rates of Territorial Councils Enrolled in the Second Inter-Council Industrial Accident Contest

Council	Monthly Accident Rates													
	Base Rates*		July		August		September		October		November		December	
	Fre- quency	Se- verity	Fre- quency	Se- verity	Fre- quency	Se- verity	Fre- quency	Se- verity	Fre- quency	Se- verity	Fre- quency	Se- verity	Fre- quency	Se- verity
Blackstone Valley	12.59	.90	10.88	.13	9.28	2.98	10.88	.15	12.92	.15	8.95	.15	9.19	.23
Louisville	31.81	.82	27.34	.29	26.82	.27	24.00	.47	28.44	.48	21.52	.62	18.23	.30
Chattanooga	15.41	.52	13.55	.29	11.42	.79	14.16	2.49	11.89	.12	13.41	.15	9.19	.08
Richmond	18.73	1.19	20.89	3.61	20.26	3.48	19.67	.16	18.15	.20	12.68	.13	13.20	.11
Chicago	26.54	.85	17.21	.88	15.54	1.03	12.02	.62	11.96	.91	9.10	.57	7.29	.79
Providence	18.02	1.27	18.05	.67	15.78	.27	13.83	.28	21.91	1.37	14.99	2.48	13.94	1.41
Delaware	15.26	1.01	20.80	.26	24.12	.29	17.94	2.09	16.91	.19	16.52	.28	10.52	2.32
Wheeling	17.62	1.83	15.05	2.22	24.35	4.46	17.87	.18	19.00	.46	20.13	2.66	12.91	2.54
Kansas City	23.58	1.07	30.29	.34	32.03	.32	30.08	2.20	30.09	.89	21.23	5.64	18.38	.23
Worcester	9.35	.50	10.74	1.43	9.47	.16	11.24	2.62	10.97	.15	11.65	.17	9.86	.17
Detroit	20.56	1.05	23.55	1.32	24.79	1.19	21.93	.65	14.66	.90	18.38	.60	15.21	1.74
Springfield	17.37	.79	18.24	.37	18.88	4.56	18.98	.40	15.05	1.56	13.51	.76	14.45	1.85

*Average rates for either six month or twelve month period prior to the contest.



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Each of the 24 operating companies of the Bell System is attuned to the needs of its area. Each is local to the people it serves and backed by national resources in research,

methods and manufacture. Each has the services of the staff of the American Telephone and Telegraph Company, which is continually developing improvements in telephone operation. Each has the advantage of the specialized production of the Western Electric Company. This production embodies the results achieved by the scientific staff of the Bell Telephone Laboratories, one of the great industrial research institutions of the world.

Your telephone company is in a position to offer you the service which you have today because the Bell System is organized to meet your growing communication needs with increasing satisfaction and economy.



INDUSTRIAL HEALTH

A Non-Technical Symposium for Physicians and Laymen

By C. O. SAPPINGTON, M. D., DR. P. H.

Director, Industrial Health Division, National Safety Council

Mutual Benefit Associations

THE subject of mutual benefit associations is one to which an increasing amount of attention has been paid by industrialists.

Plans for such associations vary so widely that it is sometimes difficult for a company to decide what regulations shall be adopted for a particular group of employees.

The memorandum recently prepared on the subject "Mutual Benefit Associations," by the Industrial Relations Section of Princeton University, Princeton, New Jersey, will probably fill a long-felt want in this field.

A hasty perusal of the subjects submitted in this report will show its extent.

Subjects Covered

1. Purposes.
2. Membership:
 - (a) Compulsory or optional
 - (b) Age limits
 - (c) Other requirements
 - (d) Waiting period
 - (e) Initiation fee
 - (f) Physical examination
 - (g) Termination of membership
3. Dues and other income:
 - (a) Members' dues
 - (b) Payroll deduction of dues
 - (c) Payment of dues during disability
 - (d) Assessments
 - (e) Company contribution to operating funds
 - (f) Other sources of income
4. Sickness and accident benefits:
 - (a) Rates per week
 - (b) Waiting period
 - (c) Length of time for which sickness and accident benefits are paid
 - (d) Accident benefits and workmen's compensation
 - (e) Benefits for employees on salary
 - (f) Medical and hospital care
 - (g) Mutual benefit associations and health preservation
5. Follow-up
6. Death benefits
7. Administration of the association:
 - (a) Company participation in management
 - (b) The executive board
 - (c) Officers
 - (d) Committees

Discussion

The Industrial Relations group which sponsored this material has very wisely included a discussion of the following questions:

1. Is not the inauguration of a plan an undue extension of employer paternalism?
2. What are the advantages of mutual benefit plans over company financed relief?
3. Why not allow group insurance to cover all risks, including sickness as well as accident and death?
4. Can a small company safely inaugurate a mutual benefit association without reinsurance?
5. Should the reserve or the assessment plan be followed?
6. Is a mutual benefit plan to be managed by the employees?

Other Features

A short but very comprehensive bibliography is given especially for those "who have but little time to give to research on the subject."

Primarily, the whole report is an analysis of one hundred selected and well-developed plans taken from the files of the Industrial Relations Section.

Not the least of the interesting features of the report is a tabular analysis of twenty-five selected mutual benefit association plans which are considered under the following headings:

1. Company.
2. Company contribution to the plan.
3. Employees' dues.
4. Length of time after sickness begins before benefit payments start.
5. Amount of disability benefit in case of sickness or accident.
6. Amount of death benefit.
7. Are benefits paid when employee concerned is eligible to workmen's compensation payments?
8. Remarks.

Summary

This report represents an attempt to standardize administrative procedures in mutual benefit associations.

The Industrial Relations Section of Princeton University has reserved all rights to this material.

No arrangement has been made to distribute copies through the National Safety Council, but it is possible that the Industrial Relations Section at Princeton might accede to request for additional copies of this interesting report.

A New Booklet on Health

"The Healthy Worker" is the title of a new booklet on personal health just published by the National Safety Council. It is addressed to the worker and it is intended to guide him in his thought about his own physical welfare. It is written in simple, non-technical language, presenting the value of health and the methods of conserving it. "The Healthy Worker" is



a companion volume to the two previous booklets, "Shop Safety," and "Safety in the Home."

The booklet stresses health rather than illness and it deals with the preservation of health rather than the curing of diseases. Chapters are devoted to the care of the eyes, ears, nose, throat, skin, teeth and feet, also to posture, exercise, diet, sleep, recreation, clothing, mental health, and periodic health examinations.

There are also helpful chapters on avoiding such common ailments as headache, constipation, colds, indigestion and nerves.

The booklet contains 48 pages and is freely illustrated with appropriate sketches. Sample copies and prices for quantities may be obtained from the National Safety Council.

INFECTIONS

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CAUSE GREAT SUFFERING TO WORKERS
AND SERIOUS LOSS TO THE MANAGEMENT

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Improving First Aid in the Small Plant

By JOANNA M. JOHNSON, R. N.
Employers Mutual Liability Insurance Company

Lack of proper first-aid facilities is one reason for the high frequency and severity rates in many small plants.

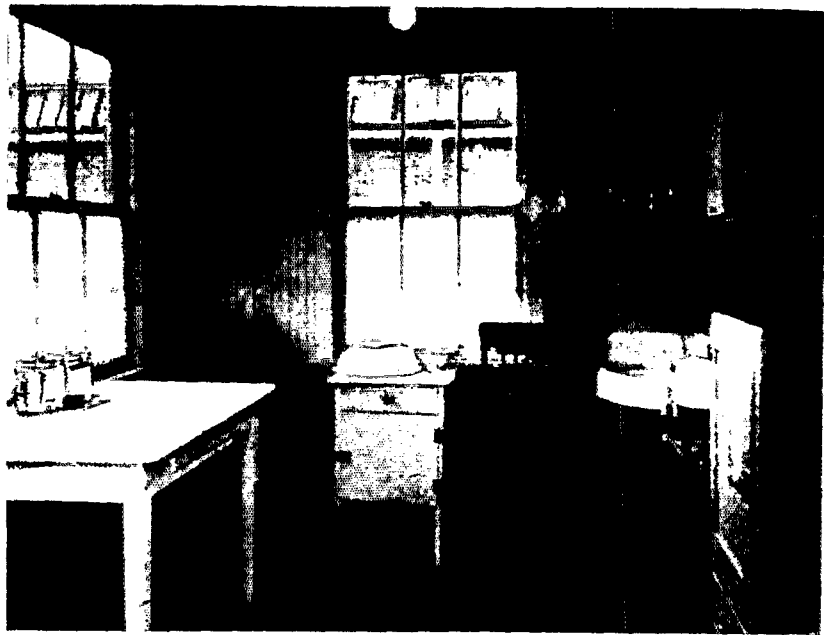
THERE are many reasons (or excuses) why adequate first aid is seldom practiced in the small plant. To the industrial nurse making a first visit in many of these plants the conditions often appear very discouraging. But I have found that such conditions and a lack of appreciation of the importance of first aid are due usually to lack of knowledge, and that when opportunity to improve conditions and supply reasonably expert first aid is pointed out, the management frequently is ready enough to make a trial.

In my long experience of industrial first aid work I have found it most interesting to go into plants of all kinds and assist them in organizing for the proper care of minor wounds. In no instance have I found that the work failed to reduce those serious factors of desperate illness and lost time due to infections. Perhaps no phase of accident prevention work, therefore, is more important today.

Would you like to accompany me through several small plants and learn just what can be accomplished through education and repeated efforts?

The following shop employs approximately 225 workers engaged in the manufacture of automobile radiators.

We call on the manager and explain the purpose of our work. He in turn refers us to the plant superintendent, who after a friendly welcome shows us with profuse apologies a very inadequate and disheveled first-aid cabinet located in the employment office. While we are learning just how far the employment man's knowledge of first aid extends, several workers come in, help themselves to ointment, applying this well over the



A first-aid room for a small plant need not imitate a hospital in the amount and variety of equipment. This room has been equipped at a moderate cost but the quarters are attractive and scrupulous cleanliness prevails.

bruise or injury and bandage as well as they can. We ask if we may not be of some assistance, whereby they turn gratefully and thank us for a neat and well applied bandage.

Repeated calls are made to this shop. To our dismay we find that the employment manager cannot be taught even the rudiments of cleanliness or interest in prevention of skin irritations which so frequently occur as a result of handling acid solutions. There is no one else who can be assigned to do this work in this particular shop, and, after various attempts at stimulating interest, we decide there must be a change made if the workers are to receive the proper attention and our suggestions followed.

Why wouldn't a trained nurse who had some employment experience be the solution to the problem here? Just such a nurse was found. The management agreed to give her a trial, not without the suspicion

that perhaps a nurse would be out of place among the type of workers who might come in seeking employment. Since that time, a number of months have passed, and instead of disabilities due to infection, which numbered all the way from five to fifteen a month, they have passed through a period of six months with no surgical aid cases and no lost time.

Needless to say, the employees as well as the management now are thoroughly sold on the nurse's accomplishments.

For our second visit, here is a metal stamping shop with an average employment of 125.

We meet one of the officials of the company and finally gain admittance to the shop proper. The plant superintendent shows us a very inadequate first-aid box, which contains a quart bottle of strong iodine, several bandages and ointment. The



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Lux gas kills the flames quickly... and without damaging parts or dirtying equipment.

20 SECONDS ... and FIRE in the Finishing Shop is OUT

BEFORE fire can endanger the rest of the plant... before it can spread beyond the affected spray booth or dip tank, the Lux Extinguisher will snuff it out.

Lux Gas is volumetric—3 dimensional—in its action. It expands like steam, when discharged, penetrating over and around obstructions. Neither parts in process nor draft from the ventilating fans can hinder its fire-killing action.

Lux ends both the flames and the fire interruption of work in 20 seconds. For after the Lux Extinguisher has been used, there is no mess of chemicals to be cleaned up... no material destroyed by the extinguishing agent.

Lux gas, carbon dioxide, is bone dry, clean and absolutely harmless. It is removed by a few minutes ventilation.

Over 15,000 Lux Extinguishers are in service today. Experience has proved them very efficient first aid protection for hazards where paint, lacquer, varnish, etc. is applied.

Lux protection will remove the danger of fire in your finishing shop—probably the worst hazard in your plant. By extinguishing fires without mess or after effects, it will reduce interruptions in work to the very minimum.

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Plenty of natural light is desirable for a first-aid room but adequate artificial light and liberal use of white paint help to offset disadvantages of location.

plant itself is a model of housekeeping and is well guarded.

The superintendent is thoroughly sold on the first-aid room, but has never been able to impress the management sufficiently with the importance of one. It is necessary to make a number of calls here before a location is decided upon. No available space could be spared in the shop proper, which would permit of proper lighting and ventilation. It was finally decided to annex a little room and provide it with all the necessary equipment to care for the minor injuries, which take place daily.

Now that we have the room all equipped, to whom do we go for service? Is there anyone who has had first-aid training, either in boy scout work or through previous plant experience? Apparently not. Two bright looking young girls, operating kick presses, were chosen so that if one were absent, the other would be there to carry on. Instructions through practical demonstrations were given them, also reading material incidental to their work.

Simple records of each day's cases are kept. All injuries of a nature requiring medical attention are sent out. These girls have been much interested, they have attended the first aid school given by the Association of Commerce, and at no time have they been found to over-estimate their ability.

Close supervision was given these workers for several months to keep

up interest and increase their knowledge. The results have been most gratifying. Calls are made at various intervals to keep in touch with their work and to help them with problems as they go along. Upon several occasions employees have expressed their appreciation of such a clean looking station for first aid.

In plant number three we are met with the following reception:

"Nurse, I am so glad you came. You know, I don't know much about this job, but someone has to do it and they can most always find me." Thus spoke a timekeeper in a plant of 200 employees, where skin irritations were frequent and lost time due to this condition, common. "My first aid room doesn't look so well. You see the girls use it for a lunch room and the janitor keeps his dog there. It really needs to be cleaned, but my work keeps me upstairs and I come only when called. We use an ointment for most of the cuts, bruises and everything. It is about all we have, besides bandages."

To be sure, the first aid room did not look well. It really was a lovely, large, light place, but what housekeeping! I feel sure that many of the employees waited until they reached home for some type of dressing, as this place gave them no incentive to take precautions or to apply fresh dressings when necessary.

The shop superintendent agreed to have the place thoroughly reno-

vated, walls washed, fresh covers for the cot, and before long the place took on an entirely new aspect. Tom, the timekeeper, moved his work into the first aid room, and upon my calls, cases requiring dressings were brought into the first aid station, thus giving Tom first hand information as to treatment and proper attention. Our best skin specialist was consulted. He gave us valuable information on the prevention and care of these cases, as he was very familiar with this type of dermatitis; cases requiring medical attention were sent to him.

The ointment, made up of three parts of vasoline and one part of lanolin, is used as a preventive. It is applied twice daily; mornings before beginning operations, and again after lunch, when hands have been thoroughly cleaned.

There is a registered nurse in attendance here now. Cases are watched closely. The shop has excellent ventilating systems. Improved first aid conditions have resulted in a decrease of loss of time as well as improved service for plant workers.

These are but a few of many plants which have improved first-aid conditions. We know many more will follow.

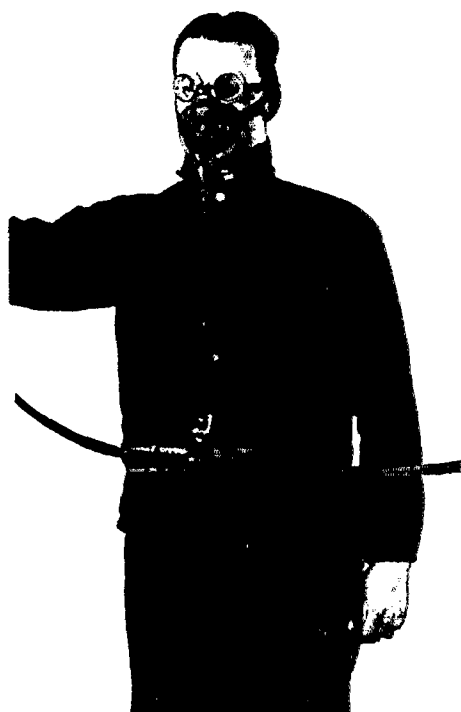
Council Holds Course on Occupational Diseases

OCCUPATIONAL disease in industry is becoming more and more a problem, and because its members were making continued inquiries about various phases of the subject, the Newark (N. J.) Safety Council made a special study of it and found that little up-to-date, practical information was readily available. The council thereupon arranged to conduct a special lecture course, in cooperation with the Essex County Medical Society and the Occupational Disease Clinic of the New Jersey Department of Labor.

The subjects included in this lecture course, which began February 11, were chosen because of their importance in New Jersey industries and because they are included in the State Compensation Law. Some of the poisonous materials are necessary in industrial operations, and development in connection with their use and the protection of workers has been so rapid that much of the information arranged for these lectures is not yet available in any other way.

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Based on the proven duo-pressure principle of the Watters Sandblast Helmet, this new respirator secures a positive and adequate circulation of uncontaminated air.

Fresh air is supplied to the operator at all times and by the duo-pressure system all exhaled air is expelled by suction from the Stasafe respirator without effort on the part of the user.

Extremely simple design allows comfortable and convenient use even in cramped quarters and its efficiency permits its use in hazardous air conditions for an unlimited period of time.

For spray painting the hook-up consists of a T-shaped fitting inserted in the air line to the spray gun. A small valve regulates rate of air flow to the respirator. If desired respirator may be connected direct to air supply.

Trial order is suggested.

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1060 Broad St., Newark, N. J.



Members of Troup No. 4, Chicago Council, Boy Scouts of America, studying the Safety lessons on the back of the National Safety Council Calendar.

Scouts Use Calendar as Safety Text

By J. S. BAKER

Engineer, Public Safety Division,
National Safety Council

THE National Safety Calendar, for many years familiar to thousands of families whose bread winners are in the employ of National Safety Council members, has appeared in a new and unusual role, that of a text on safety for a Boy Scout troop. The interest shown by the scouts and the results of examinations covering the subject matter on the back of the calendar proves again that the back of the calendar is as valuable as the front.

The new use for the calendar must be credited to the Great Lakes Forge Company of Chicago, which included in its annual order for calendars 80 extra copies, one for each member of Troop 4, Chicago Council, Boy Scouts of America. This troop has headquarters at the Association House of Chicago, a neighborhood house and community center at 2150 West North Avenue.

Under the direction of Scout Master Edwin Eells, the boys studied the articles on the calendar and, so far as practical, put into use the knowledge they thus gained. At the end of January an examination was given and the six scouts who had the highest marks were presented with certificates entitling them to select certain amounts

of scout equipment. The awards were presented by G. C. Hodgson, of the Great Lakes Forge Company, at the regular Court of Honor held for this troop.

The examination was of the choice-of-answer type. It consisted primarily of 33 questions, all of which are fully answered by the informative material on the 1930 calendar. The questions were so selected that they indicated fully the familiarity of the scout with the material he had been studying. In addition, it is interesting to note that they illustrate forcibly the wide range of safety subjects covered by the articles on the calendar back—safety at home, in the street, at work, and at play. Here are some of these questions: If you cannot answer them yourself, try the back of the safety calendar.

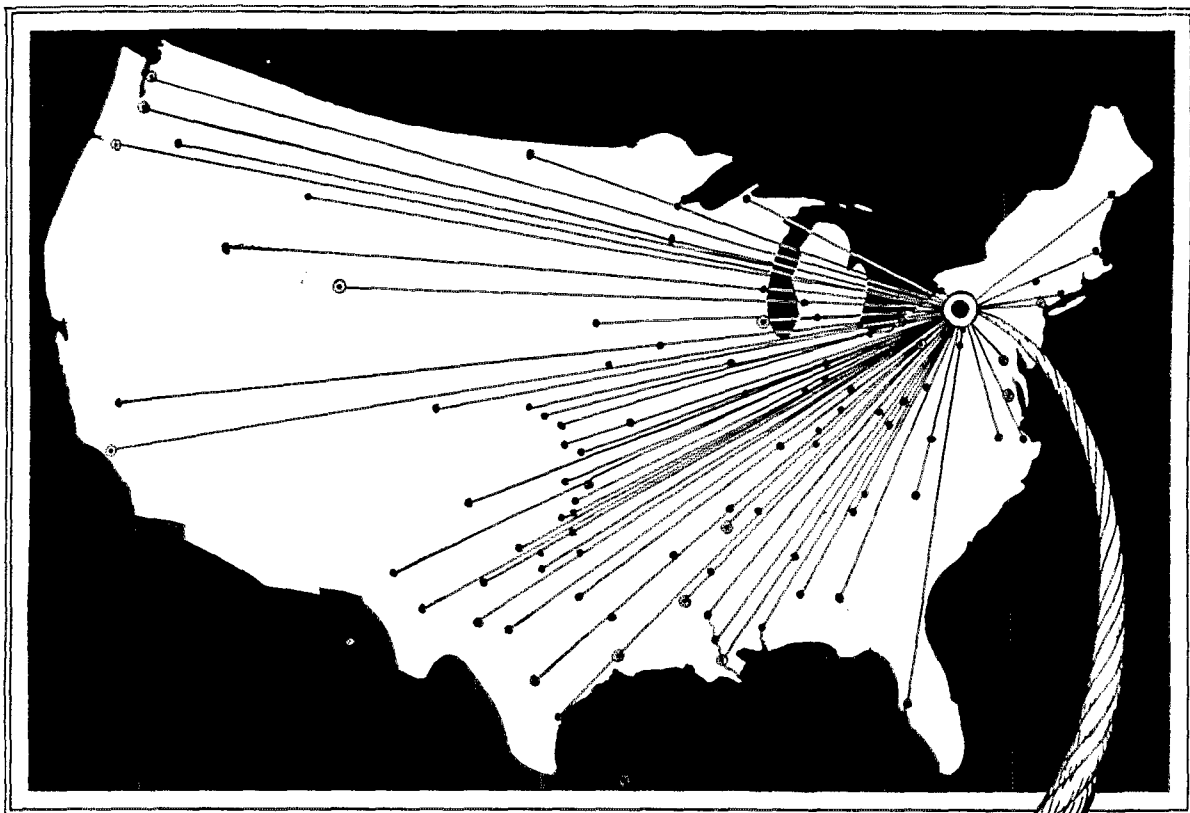
1. The best time to begin to practice "Safety First" is
.....New Year's Day
.....Today
3. The best person to teach safety to boys and girls is
.....The father or mother
.....The school-teacher
7. The number of persons who die in fires in the United States every year is about
.....10,000
.....2,000

10. The loss of a "big toe" cripples a man about
.....25%
.....5%
11. When moving a heavy truck one should
.....Push it
.....Pull it
14. It is more important to prevent accidents than to give "First Aid".
True..... False.....
19. Carbon monoxide gas smells like rotten eggs.
True..... False.....
22. It is good fun to play with compressed air.
True..... False.....
25. "Don't swim on a full stomach" means that if you go swimming right after dinner, it is safer to swim on your back.
True..... False.....
29. A taxicab company found that the driver who went only 25 miles an hour took a great deal more time to get where he was going than the driver who drove as fast as he could.
True..... False.....
33. It is better to collect wages than accident compensation.
True..... False.....

The examination and awards given to this Boy Scout troop must not be confused with the regular scout work for the Merit Badge in Safety. The latter is open only to first-class scouts; whereas the entire troop could compete for the calendar awards. However, the data on the reverse of the calendar is all extremely valuable for candidates for the Merit Badge in Safety.

Several community safety councils have undertaken activities similar to the educational work carried on in this Scout Troop by means of the National Safety Council Calendar. For instance, the Western Pennsylvania Safety Council, with headquarters at Pittsburgh, has conducted Boy Scout First Aid contests for the last two years. At the last contest 51 teams representing more than a score of troops from Pittsburgh and neighboring communities participated. Each team was sponsored by some industrial firm, and awards of Scout merchandise were made. Another council, the New Haven Safety Council, has been conducting examinations for the Scout Merit Badge in Safety, and several other safety councils have from time to time utilized Boy Scouts in safety programs, campaigns, etc.

A general test for safety education, developed by Herbert J. Stack, Fellow in Safety Education, has been published by the National Bureau of Casualty & Surety Underwriters and approved by the Education Division



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A plant, operating 24 hours daily, building quality into Wire Rope and an engineering staff to give the user expert advice and efficient co-operation.

Williamsport Wire Rope Company

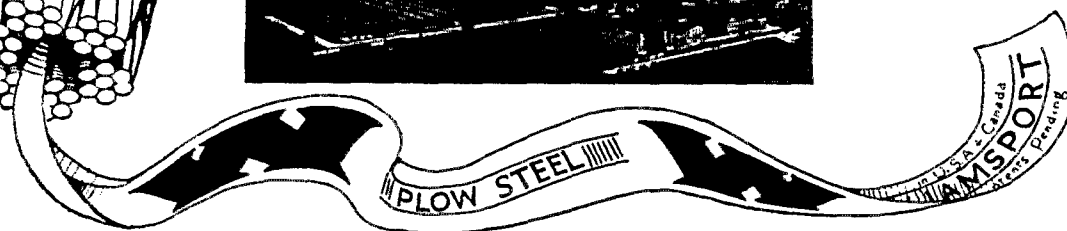
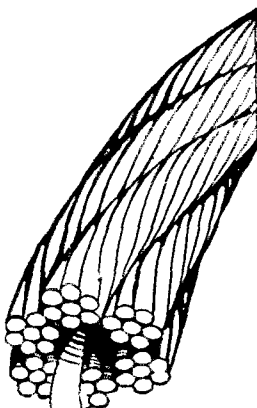
Main office and works:

Williamsport, Pa.

General sales offices: Peoples Gas Building, Chicago



**AERIAL
HAULAGE
is the most
ECONOMICAL**



When writing advertisers, please mention NATIONAL SAFETY NEWS



G. C. Hodason, Great Lakes Forge Company, presenting certificates to the scouts who had passed the safety examination with the highest grades.

of the National Safety Council. This test is similar but more elaborate than the one given to the Scouts who studied the calendars given to Troop 4. It is intended to indicate where stress should be laid in safety educational work and what success is being obtained through safety educational methods. This examination might very effectively be used either in connection with the Council Calendar or other safety activities. The New Haven Safety Council has made use of it in examining scouts for Safety Merit Badges.

The use of the National Safety

Council Calendar as an educational activity among Boy Scouts suggests that adults might profit also by the wealth of information that has been carefully worked out for making the calendar useful for more than ordinary date determining and ornamental purposes. If, when the month is over and a new calendar leaf is brought into view, the back of the old one were carefully studied, by the end of the year one would have a very good conception of the ordinary hazards which surround us in our everyday life and of the most usual methods for avoiding injury or death from accidental causes.

New York City Industries Launch Safety Drive

INSURANCE and casualty officials of New York City have announced their backing of the city-wide safety campaign which is scheduled to begin March 1 under the auspices of the Greater New York Industrial Safety Contest Committee organized by The Merchants' Association of New York, sponsor of the contest.

In the fiscal year ending June 30, 1929, compensation awards by the State Industrial Commission amounted to \$32,122,815. In addition there was a bill of over \$10,000,000 for medical expenses and over \$20,000,000 for administrative expenses connected with compensation work. The figures of the State Industrial Commission indicate that almost two-thirds of the losses were sustained in the New York

City district. Counting in the loss of wages due to preventable accidents the total accident tax on business and labor in the New York City district is estimated by statisticians of the Industrial Commission at around \$60,000,000.

Among those cooperating in the campaign are Lewis A. DeBlois, director, Safety Engineering Division, National Bureau of Casualty and Surety Underwriters; W. Graham Cole, director of Safety Service, Metropolitan Life Insurance Company, Dr. Leonard W. Hatch of the State Industrial Board; J. L. Thompson, superintendent, Engineering and Inspection Division, The Travelers Insurance Company; M. H. Christopher, director of service, State

Insurance Fund; Lew R. Palmer, conservation engineer, Equitable Life Assurance Society of the United States; Harold K. Kramer, district chief engineer, Liberty Mutual Insurance Company; G. B. McAlinsh, district engineer, American Mutual Liability Insurance Company, and Julien H. Harvey, manager, New York office National Safety Council.

Mr. DeBlois is chairman of a committee which has drawn into cooperation about fifteen commercial and trade organizations and a large number of individual representatives of various trades in promoting a safety campaign which will cover the entire city.

The campaign is to take the form of a safety contest in which approximately 50,000 firms are eligible to participate. Through The Merchants' Association and its cooperating organizations invitations will be extended to all of these firms; prizes will be awarded to those firms making the best safety records and certificates will be given to all firms completing the contest without any lost time accidents.

In connection with the campaign an educational crusade will be conducted through the medium of shop meetings and other agencies with a view to impressing upon employees the necessity for care. Along with the efforts to instruct employees there will also be a movement to impress upon employers the desirability of making use of the latest safety methods in their plants. Cooperating insurance companies are asking their clients to join in the contest as a matter of self-interest as well as in the cause of humanity. The following rules have been established by the committee in charge:

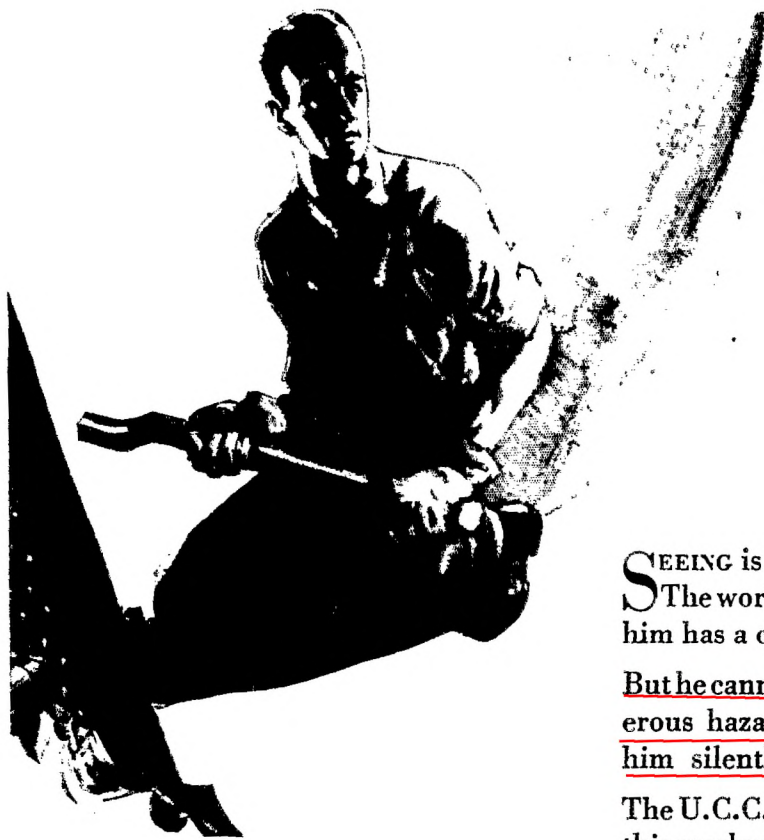
The contest will be open to all employers in New York City (regardless of the number of employees) engaged primarily in manufacturing, installation or operation activities which are included in the industrial groups of the New York State Workmen's Compensation Law, except concerns engaged primarily in the transportation of passengers or material.

Eligible organizations maintaining several plants or major projects may enter each as an individual contestant. Each contestant, however, shall enter in one group all of its employees except office employees not exposed to plant hazard.

Contestants will be grouped first on a basis of comparable hazards as determined by industrial classifications or contracting risks and, second, by number of man hours.

Only accidents occurring and causing lost time during the period of the campaign shall be considered. A "lost-time" accident shall mean "any injury or occupational disease within the meaning of the New York State Workmen's Compensation Law and its interpretation, arising out of and in the course of employment, which results in death, permanent disability or in loss of time other than the remainder of the day, shift or turn on which the injury or disability is incurred."

The Invisible Hazard



SEEING is 99 per cent of accident prevention. The workman who can see the hazards around him has a chance to take safety precautions.

But he cannot protect himself against the treacherous hazard which creeps in and surrounds him silently and invisibly—flammable gas.

The U.C.C. Combustible Gas Indicator protects this workman. It does not depend on samples. It is carried into the atmosphere to be tested, and gives immediate warning of the presence of flammable gases.

Return the coupon below for booklet describing the U.C.C. Indicator and its applications.

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If further information is desired concerning any of the entries on this page, the Librarian will be pleased to assist inquirers.

SHATTERING HEALTH SUPERSTITIONS

Fishbein, Morris, M. D. *Shattering Health Superstitions. An Explosion of False theories and notions in the field of health and popular medicine.* Published by Horace Liveright, Inc., New York, 1930. Price \$2.00.

WHENEVER Doctor Fishbein, who is editor of the *Journal of the American Medical Association*, writes a book for the laity, physicians do not know whether to laugh or weep. Certainly, the American mind, so far as medical and health theories are concerned, is one of the most unusual in the history of civilization. The American will firmly believe almost anything he is told and the fakirs in health propaganda have found this naive and serious person a veritable gold mine.

Taking his cue from "The American Credo" of Mencken and Nathan, Doctor Fishbein takes several of the most current superstitions and deliberately cracks them into small bits with sledge hammer blows of reason and high good sense well sprinkled with the sly wit for which he is famed.

If you do not care to eat oysters in August just because there is no "r" in August, Doctor Fishbein pats you on the back and tells you that the Government has successfully initiated sanitary procedures in the production of oysters for human consumption and that the old fear has been washed away. But, of course, if you wish to forego the pleasure of enjoying the succulent bivalve in August, that is your hard luck.

The discussion of eating parsley for the prevention of halitosis is a wide spread panacea. We are wondering if it could be possible for Doctor Fishbein to have associated this long standing truism with certain advertisements that have been seen by a few of the readers of the public prints lately.

The discussion of the various fears and beliefs relative to the prospective mother are always amusing and Doctor Fishbein has succeeded in reducing them to such absurdity that a reader can scarcely forgive himself for having believed them as being true.

All in all, it is a joyous book, with plenty of laughter thrown in and not a few tears for the inanity of our beliefs and customs.—V. D. Marbaker, M. D.

THE DIAGNOSIS OF HEALTH

Emerson, William R. P., M. D. *The Diagnosis of Health.* Published by D. Appleton & Co., New York, 1930. Price \$3.00.

DOCTOR Emerson has been known to medical circles for a long time as one physician who had something distinctly different to offer in the conduct of treating ill people. Instead of discussing the matter of "Just how sick are you?" Doctor Emerson asked "How well are you today?"

From old-fashioned standards this seemed a little like putting the proverbial cart before the horse but in this gem of a book, Doctor Emerson makes even the hardboiled reviewer feel that there is a wealth of reason in the health approach to disease.

This small book is written in such an enthusiastic fashion that it picks up the mind of the reader and carries it along an upward grade until he really sees health on the horizon for everyone. And yet, Doctor Emerson pictures no Utopia, no phantasmagoric future.

In clean cut and terse phrases, illustrated with pictures that really illustrate, Doctor Emerson presents a system of diagnosis that is bound to be of major importance when it is known better.

The book is a valuable contribution to medical literature. It is written in such an elementary and interesting style that laymen can read it and enjoy it and prosper by the lessons it teaches. Without being dogmatic or didactic, the book is a clarion call for the rehabilitation of our semi-well masses.

It is a book for the desk of the executive industry. If the book is read, and thought about, there is no likelihood that the reader will not put one or two of the ideas expressed into practice because he cannot help seeing some parallels to himself in the book.

It has been the most invigorating medical book that has come to this desk in many a day. We are hoping that Doctor Emerson will tell us more about his ideas.—V. D. Marbaker, M. D.

ILLUSTRATED MIMEOGRAPHING

Edmonds, Elmer V., *Illustrated Mimeographing.* Published by the author, 1627 North Ave., 54, Los Angeles, Calif. 72 pp., illus., index. Price, \$19.00.

THE duplicating machine has come into wide use for the production of safety bulletins and employee magazines. It is a useful and inexpensive method of producing such material but few of those who use it realize the possibilities for attractive and distinctive work. As an artistic medium the stencil has its limitations but a surprising variety of effects can be obtained with a fair amount of practice and experience.

The book is produced by the medium which it was designed to illustrate. It is an excellent clean-cut specimen of mimeographing, both of the typewritten text and the illustrations. It discusses the equipment for mimeographed work, the methods of producing effects. Numerous illustrations, some in two or more colors, illustrate the methods of operation and the results obtainable.

In the preparation of this book the author has presented his experience of five years in direct mail advertising. The book has been prepared with a great deal of skill and ingenuity and should be of considerable value to those who wish to introduce interest and variety into mimeographed literature.—C. T. Fish.

BOOKS AND PAMPHLETS

Ammunition Manufacture:

Small arms ammunition. Published by the Retail Credit Co., Atlanta, Ga., 1930. 12p. (Industry Report), (Pamphlet).

Mines and Mining:

Reducing accidents from falls of roof in coal mines. Published by U. S. Bureau of Mines, Washington, D. C., 1930. Free. (Information Circular No. 6225).

Rice, G. S. and others, Rock dust barriers for coal mines. Published by U. S. Bureau of Mines, Washington, D. C., 1930. Free. (Serial 2977).

Police Reporting:

International Association of Chiefs of Police, Uniform crime reporting. A complete manual for police. Published by the International Association of Chiefs of Police, 261 Broadway, New York City, 1929. 464p. Free. (Book).

Profit Sharing:

Sharing profits with employees. Published by the Metropolitan Life Insurance Co., New York City, 1929. 29p. Free (Pamphlet).

Textile Industry:

Great Britain Home Office. Report on conference between employers, operatives and inspectors concerning fencing of machinery, first aid and other safeguards in cotton weaving factories. Published by H. M. Stationery Office, Adastral House, Kingsway, London, W. C. 2, 1929. 21p. Price 6c. (Pamphlet).

Great Britain Home Office. Report on conferences between employers, operatives and inspectors concerning fencing machinery, prevention of accidents, first aid and temperature in cotton spinning mills. Published by H. M. Stationery Office, Adastral House, Kingsway, London W. C. 2, 1929. 25p. Price 6c. (Pamphlet).

PERIODICAL ARTICLES

Anthrax:

Anthrax as an occupational disease. In *American Journal of Public Health*, February, 1930, p. 155-160.

Automobile Driving:

Hudson, A., Safety campaigns for motor truck drivers. In *Power Wagon*, February, 1930, p. 20-22.

The skidding season is here. In *Travelers Standard*, January, 1930, p. 5-12.

Boilers:

Low-pressure-steam heating boilers. In *Travelers Standard*, February, 1930, p. 32-36.

Bus Driving:

Dow, M. A., You and your driver. In *Power Wagon*, February, 1930, p. 16-18.

Construction Industry:

Safety hints for construction operations. In *Engineering and Contracting*, January, 1930, p. 25.

Explosives:

Runn, J. M., Safety measures in handling dynamite. In *Bureau of Safety. Safety Bulletin*, January, 1930, p. 3-4.

Fire Prevention and Protection:

Consolidated film laboratory fire. In *National Fire Protection Association Quarterly*, January, 1930, p. 243-251.

Fire prevention and protection as applied to hospitals. In *Safety Engineering*, January, 1930, p. 22-28.

Food stuffs and fires. In *Fire Engineering*, February 5, 1930, p. 99-100.

Johnson, H. A., Hazards of oil distribution. In *Safety Engineering*, January, 1930, p. 17-19.

The leather factory fire—a chemical problem. In *Fire Engineering*, January 22, 1930, p. 55-56.

(Continued on page 62)

When an Accident Occurs!

Everyone Loses

The Workman:

loses part of his wages; possibly a part of his anatomy; occasionally, his life.

The Employer:

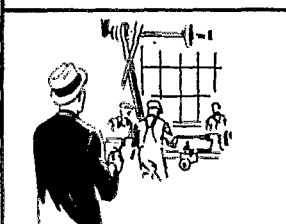
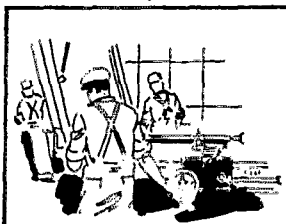
loses four dollars in lost time, spoiled material, overhead and turnover costs, for every dollar paid by the insurance company.

The Insurance Company:

loses the sums paid in Compensation benefits and medical and surgical expenses.

The Public:

is forced to pay these accident costs in the costs of the finished article.



When an Accident is Prevented!

Everyone Gains

The Workman:

receives a full day's pay for a full day's work, and is spared much pain and suffering.

The Employer:

cuts down the overhead and accident costs of his plant, leaving a bigger margin for dividends.

The Insurance Company:

is left with a wider margin to spend on further Safety Engineering activities.

The Public:

frequently benefits from these economies by lower prices for what it buys.

THE Safety Engineering and Inspection Service rendered by The Travelers to its Compensation policyholders has achieved remarkable success in preventing industrial accidents. It has saved the lives and limbs of thousands of workers, and millions of dollars for American employers.

If you are interested in reducing the Accident costs of your plant, send for a copy of the booklets describing Travelers Safety Engineering Service.

THE TRAVELERS

THE TRAVELERS INSURANCE COMPANY

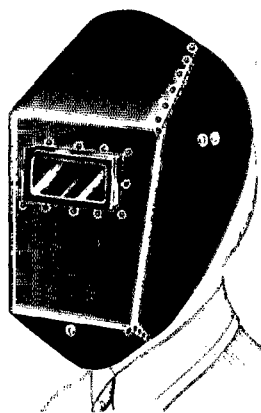
THE TRAVELERS INDEMNITY COMPANY

THE TRAVELERS FIRE INSURANCE COMPANY

HARTFORD,

CONNECTICUT

HERE'S AN UNUSUAL PROTECTION FOR WELDERS



"AS nearly perfect as anything yet developed in the line of welder's helmets," is what everybody says about the six different types of Sellstrom Welders' Helmets that afford unusual protection for this hazardous job, and Sellstrom's five styles of Hand Shields, which are another form of protection that welders must have, give Super-Service and added comfort.

This equipment is comfortable, light-weight and adjustable. Interchangeable lenses, which may be changed without breakage, the general rigid construction and compactness, are other important features.

Sellstrom Goggles are another protection to keep flying objects and spattering liquids out of workmen's eyes.

New illustrated catalog
gladly sent on request

SELLSTROM MFG. CO.

Manufacturers of a large assortment of
Eye Protective Devices.
344 North Ogden Ave.
Chicago

More Life Savers Qualify for The President's Medal

TEN acts of courage and presence of mind have been recognized by the National Safety Council during the past few weeks through awards of "The President's Medal," given to those who save life by application of the prone pressure method of resuscitation.

An outstanding feature of these cases was the skill and thoroughness with which resuscitation was applied. In several instances physicians who appeared at the scene declined to interfere, saying that approved methods of resuscitation were being carried on so skillfully that they themselves could do no more.

Following are recent awards:

Mrs. Myrtle Mae French of North Plainfield, N. J., is the first woman in the state to receive the President's Medal. By applying her knowledge of the prone pressure method of resuscitation learned while attending a safety meeting with her husband, a line foreman employed by the Public Service Corporation of New Jersey, she was able to save the life of Lillian Kline who was apparently dead from drowning.

Among the life savers who qualified for the medal were three employees of the Commonwealth Edison Company, Chicago. Joseph Petted saved the life of Roman Wiese who was apparently lifeless from drowning. Petted worked on the stricken man for an hour and a half before he was able to breathe without assistance. Julius Watkin restored to consciousness Walter Prokresz who had been overcome by carbon monoxide. Claude C. Poenisch saved his neighbor, Mrs. Bertha B. Day from death by asphyxiation. Mrs. Day had been overcome when the food she had been preparing boiled over and extinguished the gas flame.

Clarence Middleton, an employee of the Public Service Corporation of New Jersey at Yardville Heights, saved Mrs. Hettie Andrews of Bordentown who was apparently drowned.

Arthur H. Wanamaker, Brooklyn, N. Y., rushed into the store of Harry Echloedt and revived Echloedt who had ceased breathing because of asphyxiation.

Combining a knowledge of life-saving methods with personal courage, Ephraim W. Decker, West Brighton, Staten Island, pulled nine-year old Dominick Maiello from a third rail and revived him. The boy was badly burned but Decker's prompt work saved his life.

When Walter J. Beeler first attended the course in first aid conducted by the Newark, N. J., Safety Council a year ago, he was so overcome by the lecturer's references to injuries and bleeding that he was obliged to leave the room. His determination overcame his aversion to unpleasant details and he finished the course with a rating of 100 per cent. Last July his knowledge was put to practical use when he restored an unidentified woman who had been brought to the shore apparently drowned. Beeler is employed by the Standard Oil Company of New Jersey as garage mechanic.

Harry H. Hart, colored, a private chauffeur in Williamstown, Mass., resuscitated William P. Burke, who had been rendered apparently lifeless by electric shock.

Richard Quance, an employee of the American Cyanamid Company, Niagara Falls, Ont., saved the life of Joseph Padderatz, a victim of electric shock.

New Publications

(Continued from page 60)

1929 fire losses—U. S. and Canada. In *National Fire Protection Association Quarterly*, January, 1930, p. 215-216.

Nukolls, A. H., Cellulose nitrate and acetate film. In *National Fire Protection Association Quarterly*, January, 1930, p. 236-242.

The Pathe Studio fire. In *National Fire Protection Association Quarterly*, January, 1930, p. 220-226.

Railroad fire hazards. In *National Fire Protection Association Quarterly*, January, 1930, p. 227-228.

Gasoline:

The gasoline-vapor hazard. In *Travelers Standard*, February, 1930, p. 38-40.

Lumbering and Logging:

Braun, F. W., Accidents in logging camps. In *Journal of American Insurance*, January, 1930, p. 5-6, 27.

Marine Industry:

Hobson, F. M., Safety for submarine crews. In *Marine Age*, January 15, 1930, p. 20-22.

Mines and Mining:

Adams, W. W., War against accidents. In *Coal Age*, January, 1930, p. 26-28.

Safety Campaigns:

Haberstick, P. F., Safety and advertising. In *Blast Furnace and Steel Plant*, January, 1930, p. 106-107, 198.

Safety Committees:

Conway, F. P., The value of the safety committee. In *Marine Age*, January 15, 1930, p. 11-13.

Tools—Hand:

Accidents and the tool crib. In *Travelers Standard*, January, 1930, p. 14-20.

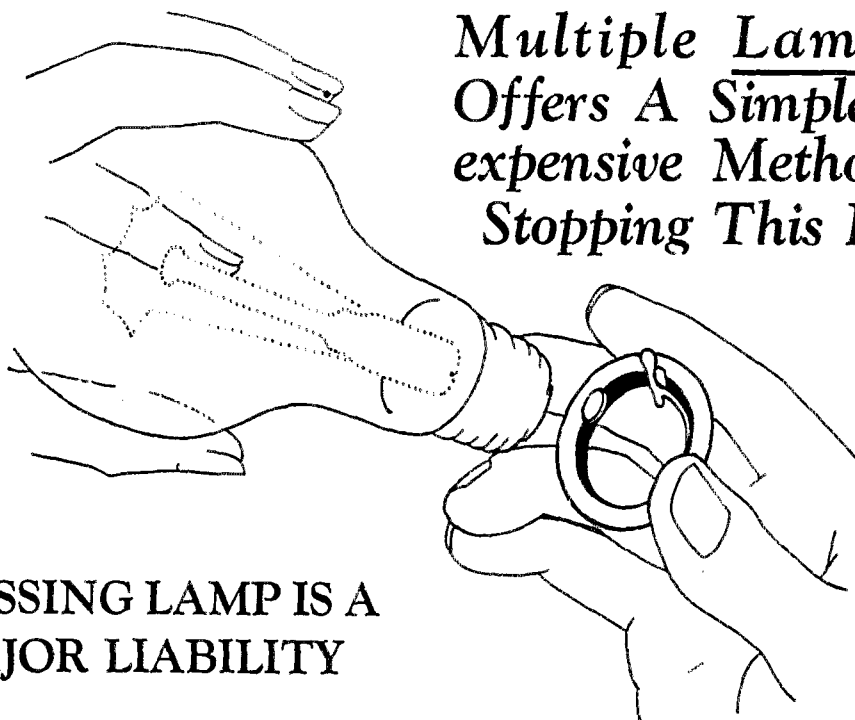
Ventilation and Exhaust Systems:

Hayes, D. F., Jr., Ventilating system in the new paint shop of the Pittsburgh Railways Co., improves working conditions and reduces fire hazards. In *Electric Traction*, November, 1929, p. 589-590.

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ARE YOUR LAMPS BEING STOLEN?

*Multiple Lamplok
Offers A Simple, In-
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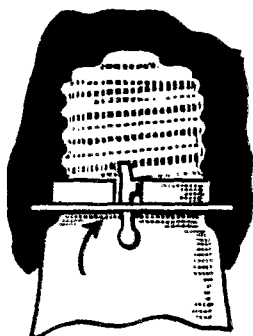


**A MISSING LAMP IS A
MAJOR LIABILITY**

*Multiple Lamplok Locks Lamp Securely
In Socket.*

*Lamp Is Unlocked By Special Tool With-
out Breakage Of Glass.*

*Purpose Of Lamplok Is Economy And
Accident Prevention.*



*Lamplok shown above
is a fixture that will
outlast 15 lamps.*

*"From Lamp to Lamp
From Year to Year."*

MULTIPLE SELLING CORPORATION

354 Madison Avenue, New York, N. Y.

Send this coupon today and secure immediate protection against the lamp thief.

**MULTIPLE SELLING CORP.,
354 Madison Ave., New York City**

Gentlemen:

☐ Please send us.....standard packages (100) Multiple Lamploks at \$15 per hundred.

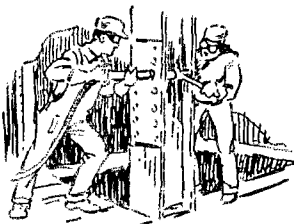
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IRONCLAD



PEER OF INDUSTRIAL GOGGLES



IRONCLADS are new—correctly new—in design, material and appearance. A newness which embodies an array of features seldom found in one industrial goggle.

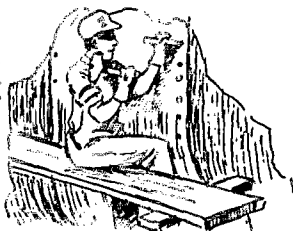
IRONCLAD cups are moulded of a new material and will comfortably fit the contour of the face. The side-screens—interchanging of lenses—chain nose-bridge—and headbands—all combine to make **IRONCLAD** goggles what they are.

Far above the class of “just another goggle,” **IRONCLADS** are worthy of your investigation.

We'll be glad to do our best to convince you by submitting sample pairs for inspection and trial in your own plant.

Manufactured by

**CHICAGO EYE
SHIELD COMPANY**
2300 WARREN AVE.
CHICAGO, ILL.



73 Plants Win Trophies in New York State Drive

WITH new records in reduced accident frequency and with all records shattered in the number of competing firms, the Fifth Annual State-wide Accident Prevention Campaign of the Associated Industries of New York State, Inc., came to a close on November 30.

The drive was completed by 1,184 firms employing a total of 292,571 workers in the manual trades. The accident frequency mark of 4.64 per 100 men per year was set up as against a mark of 5.6 set the previous year by 1,020 firms employing 244,538 workers.

In the three months' drive the larger number of employees competing this year experienced 23 fewer accidents than in 1928, the total being 2,415 as against 2,438 the previous year. A slight increase in severity was noticed, however, due to nine fatalities in 1929 as against six in 1928.

It is indicative of a very encouraging spirit among the contestants that the large number of employees were able to hold the severity rate to a low figure and at the same time reduce the accident frequency rate so materially. Approximately one-half of the participating firms completed the drive with records of 100 per cent, in short without a lost-time accident.

Associated Industries presented 13 mounted trophies to as many winners in the various groups, and upwards of 500 certificates of merit to other firms completing the campaign free from accidents but lacking the necessary man-hour exposure to qualify as group leaders. In addition 15 certificates of honorable mention were distributed.

Most of the awards were presented to the winners at dinner celebrations which were made notable events in the various communities of the state where groups of contesting firms were located. In many cities chambers of commerce, manufacturers' associations and other organizations interested and aiding in the drive have participated in the celebrations which have aroused much interest in the communities. Such affairs have been held or are being held in Utica, Rochester, Binghamton, Jamestown, Troy, Glens Falls, Syracuse, Albany, Newburgh, New York, Brooklyn, Poughkeepsie, Batavia, Auburn, Long Island City, Olean, Dunkirk, Amsterdam, Lockport, Buffalo and Middletown.

Interest in the campaign did not end with its formal closing. Many of the companies which came through the period without accident are now staging endurance contests to see how long their records can be maintained.

Bethlehem Steel Continues Cash Safety Awards

THE awarding of cash prizes for accident reduction will be continued during 1930 by the Bethlehem Steel Corporation. Careful consideration of the results of the contests during the past two years has shown the desirability of continuing along the same lines during the present year.

To the groups making the greatest reduction in lost time due to accidents during each three-month period of the year, quarterly awards will be made amounting to \$1,000, \$500 and \$250 in gold. A special prize will also be given to the group making the best record for the whole year.

The only change in the 1930 contest is the method of establishing the bogie rate for each group. For the past two years the lower of the yearly severity rates of the two previous years has been used. This year it is proposed to use the average severity rate for the last three years.

The annual safety trophy awarded to the group making the greatest percentage of reduction in lost time due to accidents for the year 1929 as a whole was won by the Cambria group. The trophy is a handsome clock mounted on a pedestal and bearing an appropriate inscription. In the 1928 contest the trophy was won by the Steelton group.

Car Icing Plants Make Good Safety Records

SIXTEEN car icing stations of the City Ice and Fuel Company of Cleveland operated through 1929 without a lost-time accident and without a public liability accident. These 16 stations worked a total of 899,161 man-hours during the year. During 1928, eight stations came through without an accident, and six of these were able to continue their good records through the second year.

In addition to ordinary hazards found in the manufacture and storage of ice, car icing calls for men to work on platforms 25 feet or more above ground where the nature of the work makes it impossible to use hand-rails or toe boards, and to work on top of refrigerator cars whose steel roofs are frequently wet or frosty. Under such conditions a slip means a fall to the ground ten or twelve feet below.

Safety work is handled by the company's insurance department in Cleveland supported by the active cooperation of each operating division superintendent. Safety committees are organized at each location to correct unsafe practices, teach new employees, and look out for physical hazards.



"Smashed toes" cost money

The special construction of the box-toe in "Star Brand" Safety Shoes goes beyond the ordinary standards of safety. Within the full vamp and the leather cap toe is a metal reinforcement vulcanized between two layers of strong "tarfelt," which makes a toe-guard with unusual resistance against blows or heavy pressure.

The soft, pliable, glovey uppers of these shoes are strongly fastened with brass tacks to the fine leather soles. The counters are of sole leather, covered by outside counter pockets triple-stitched to the quarters. As sturdily built as they are, these

shoes are light in weight, which makes them comfortable to wear. They are safety shoes worthy of the name.

"Star Brand" Safety Shoes are sold by responsible dealers in practically every industrial community. Names gladly furnished on request.



ROBERTS, JOHNSON & RAND

Branch of International Shoe Co.

St. Louis

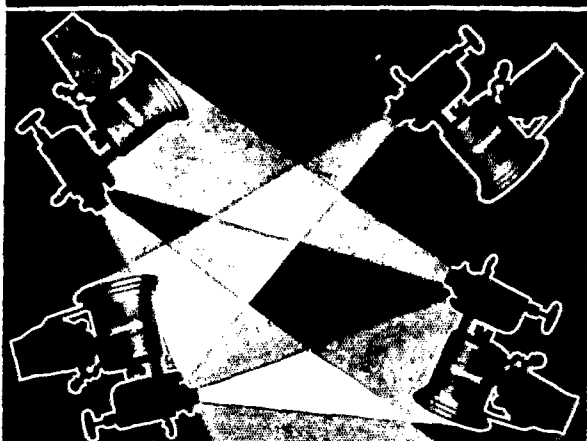


"STAR BRAND

SAFETY SHOES

ARE BETTER"

When writing advertisers, please mention NATIONAL SAFETY NEWS

BURNS IN ANY POSITION

In any position, in any degree of weather, under any condition of service, WALL DREADNAUGHT Blow Torches are positive in operation. In addition, many other vital features make them truly "service-with-safety" torches.

P. Wall

Mfg. Supply Co.
3216 Preble Ave.
Pittsburgh, Pa.

DREADNAUGHT
Service BLOW TORCHES
with Safety



**Other
Features**



Self Cleaning

**Operates in
Any Weather**

**Built for
Severe Service**

**Eliminates
Complaints**



28 Cement Mills Have No Accidents in 1929

TWENTY EIGHT cement mills operated by member companies of the Portland Cement Association completed the year of 1929 without a lost-time accident, according to the report made up from statistics kept by the Association.

The record is by far the best that has ever been made by the industry; in 1928 only 17 plants completed the year without an accident. Since the mills are distributed all over the country—from the Lehigh Valley on the east, to California on the west, and from Irwin, Washington, on the north, to Houston, Texas, on the south—the record completely dispels the argument that "regional" hazards, due to climatic condition, labor or process, have any noticeable influence on the accident record.

Three of the above mentioned 28 plants have to their credit three consecutive years without a lost-time mishap. These are the Ironton, Ohio, plant of the Alpha Portland Cement Company; the Cowell, Calif., plant of the Cowell Portland Cement Company; and the Iola, Kansas, plant of the Lehigh Portland Cement Company.

Six mills have operated two years without accident. These are the Mannheim, W. Va., and Bellevue, Mich., mills of the Alpha Portland Cement Company; the Cape Girardeau, Mo., mill of the Marquette Cement Manufacturing Company; the Dallas, Texas, plant of the Trinity Portland Cement Company; and the Ormrod, Pa., No. 3 plant of the Lehigh Portland Cement Company.

The plants of the Lehigh Portland Cement Company have been highly successful in reducing accidents in the last five years. The only plant in 1924 to win a trophy was the mill at Mitchell, Ind. Every year since, except in 1925, one or more of the Lehigh units have been on the honor roll. In 1928, five of its plants won the award, and four had perfect records during 1929, the fifth plant losing out the last week in December.

Offer Prize for Suggestion on Waste Elimination

AS a means of stimulating active interest of industrial workers in waste elimination, the Advisory Board of the National Industrial Equipment Exposition has agreed to offer a certificate of merit to be

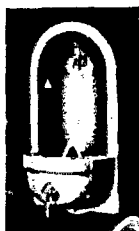


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No. 608



No. 631

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NEW YORK, with its scores of distinguished office structures has none that surpass this magnificent new building. It is an architectural masterpiece, and we are proud to say that Halsey Taylor fountains were installed throughout. The Halsey W. Taylor Co., Warren, O.

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DRINKING FOUNTAINS**



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Heavy vitreous china receptor; steel tubing standard and cast-iron open base for connections, above floor line. Gray finish. Two-stream projector, automatic stream control. One of many desirable types for industry!

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for illustrated catalog showing complete Halsey Taylor line.

awarded to the company whose employee sends in the best suggestion or idea for use in "Waste Elimination." A cash award of \$50 will be presented to the employee sending in the best letter not exceeding 300 words, embodying the suggestion and any other matter pertaining to it.

The award committee will consist of J. D. Cunningham, president, Republic Flow Meters Company, Chicago; John Carmody, editor, *Factory and Industrial Management* and C. B. Auel, Westinghouse Electric and Manufacturing Company. The basis of the award is to be on the practical use of the suggestion to American industry, and second, the quality of the suggestion. Any company is eligible to send in three suggestions from their employees for consideration, the company being the one to decide which suggestions to send in for the competition.

Entries are to be sent to the National Industrial Equipment Exposition, 308 West Washington Street, Chicago, and must be received before midnight, May 30.

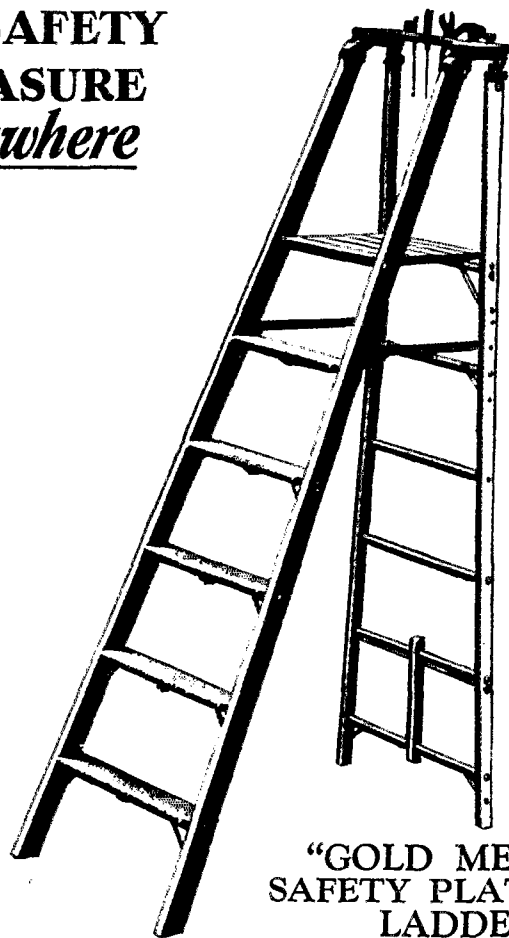
Many Defective Cars in Use on Highways

OF 1,883,000 Pennsylvania motor vehicles examined in a recent inspection campaign, 1,332,000 were found to be in need of repair, according to the Pennsylvania Motor Vehicles Commission as reported by The Automobile Club of Illinois.

Almost 56 per cent of the machines inspected required lamp adjustments, while an additional 10 per cent needed entire lamp replacement. Inspectors reported that they adjusted brakes on 23 per cent of the cars and trucks examined. Relining was necessary on five per cent of the cars.



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N. B. C. To Broadcast Third Universal Safety Series

THAT safety messages by radio reach a responsive and appreciative audience is indicated by the invitation of the National Broadcasting Company to the National Safety Council to cooperate in the presentation of a third Universal Safety Series. The third series will start Wednesday evening, April 16, at 7:15 p. m., Eastern Standard Time, and continue till July 9. The programs will last 15 minutes and playlets will alternate with addresses by prominent speakers. The programs and the stations participating in the series will be announced at an early date.

Requests for copies of the plays and addresses of the Second Universal Safety Series averaged 26,000 a week. These requests included individual fan mail and orders from industrial concerns for quantities of copies. The speeches have been widely quoted in the trade and daily press and the plays have been sought for reproduction by radio and on the legitimate stage by railroads, territorial safety councils, community organizations and other groups.

New Jersey Plants Improve Records in State Contest

SIX hundred and fifty industrial plants completed the second state-wide safety contest conducted by the New Jersey Department of Labor. In the first contest 563 companies were enrolled and the number of employees involved increased from 188,701 to 234,987. The campaign began September 1 and ended November 30, 1929. The number of man-hours' exposure during the second contest was 141,101,472.

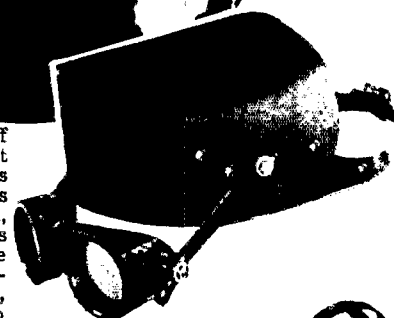
The number of companies reporting no accidents during the campaign was 249 as compared with 183 in 1928. The percentage rating for all plants was 99.695 against 99.714 in 1928. This rating is based on the total man-hours actually lost to the total man-hours worked. The frequency rate for all plants was 15.92 as compared with 17.17 for the campaign period of the previous year.

The certificates were presented to the winners of the contest in their respective groups by Colonel Charles R. Blunt, Commissioner of labor, at a dinner meeting held in Newark on January 22. During the course of the dinner meeting a motion was adopted that the general managing committee prepare for another contest to be held at the convenience of the industries of the state.



To California, from far off Norway, come orders for Helmet Goggles. The last shipment was to the Electric Furnace Products Company, Limited, of Sauda, Ryfylke, Norway, 6,000 miles from Los Angeles. There are perhaps hundreds of other goggles they might have chosen, many of them much closer to their factory. But they have selected Helmet Goggles.

And no wonder. No other goggles can even compare with their combined comfort and safety. Made in both Helmet and Skeleton types they offer unusual features. Worn like a cap, they fit like a cap. Swing up and out of the way when not in use, and down over the eyes in an instant, when needed. No elastic head band to irritate.



Helmet Goggles to Norway travel 6,000 miles. Will you send the coupon a much shorter distance for full particulars?

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Gentlemen: Send me complete details.

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For Grinding Service ☐ For Welding Service ☐



No Accidents in 1930

is the goal of every industrial executive and employer . . . but how to attain this goal?

The correct mental attitude of every worker toward safety is a direct route to a no-accident record. Safety trophies, buttons and other awards, given as recognition for meritorious safety work, make your employees proud to possess a safe record.

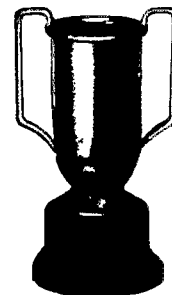
Let us help with your safety campaign plans.

Write for catalogue, original designs and samples.

Clarence J. Williams

Williams Jewelry & Mfg. Co.

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Kleins for Safety

When the spur digs deep into the pole — when the belt tightens around the waist — when unusual effort brings unusual strain — it's well to know that safety belt and strap — climbers and pliers will stand the gaff no matter what the condition. It is the reliance the Lineman has to put in his equipment that has made Klein Tools the unanimous selection of Linemen the world over. Public Utility Companies interested in the safety of their men rely on Kleins.

A national campaign for Safety for Linemen is being conducted by Mathias Klein & Sons to assist in selling the idea of safety to Linemen.

Distributed through jobbers

Four pamphlets of interest to you if you are a lineman or responsible for the safety of linemen. Check the ones you want.

- ☐ Safety for the Pole Climber
- ☐ Specifications on Linemen's Belts and Safety Straps
- ☐ The Safety Factor on Linemen's Leather Goods
- ☐ Pocket Tool Guide

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Hotel Operation Need Not be Hazardous

But Neglect of Common Precautions Often Results in Unfavorable Experience

By WILL COOPER

The Stevens Hotel Company; Chairman, Food Section, National Safety Council

HOW does the hotel business rank among hazardous and non-hazardous industries?

This is the question the American Society of Safety Engineers, in collaboration with the American Hotel Society, has been trying to answer by investigation and research.

We of The Stevens have just finished our tabulation of accidents for the year 1929, and we offer the results for whatever they may be worth to the investigation committee and the hotel trade in general.

While The Stevens was not the first hotel to become actively engaged in accident prevention, it was the first large hotel. Employing, as it does, about 2,000 employees, with an operation embracing more than 5,000,000 man-hours per year, it represents a fair cross section of the conditions in the hotel industry as a whole. Its performance has been watched with a great deal of interest by safety engineers. Two insurance companies have sent men to investigate it.

When it opened, The Stevens became a member of the National Safety Council, and it has enjoyed the benefits of the Council's experience and used the Council's safe practices pamphlets. During its three years' operation accidents have persistently decreased, with the result that, in 1929, there was a decrease of 50 per cent over the preceding year. Our experience, for those years, represents 15,000,000 man-hours of safety work. All in all, we feel we are justified in stating that accident prevention work is not only helpful, but necessary in the hotel business.

We do not mean to say that the hotel business is hazardous as the word "hazardous" is usually interpreted. That is, it is not hazardous *per se*. It is rather that we wish to criticize the tendency of many hotel managers and employees to overlook safety measures because they do not class the hotel as an industrial plant and adopt safety measures just as industrial plants do.

It is this apathy on the subject and not the nature of the business itself that has caused the very bad experience of some insurance companies with

risks of this class. If the average hotel owner were as alert to accident prevention as the average industrial plant owner, basic insurance rates for hotels would not be so high as they are.

Comparisons are impossible when it means making public the figures of other industries that are given to us in confidence, but we can say definitely that we have information that shows that The Stevens was considerably higher in its accident rate two years ago than many of the large industrial plants in the Chicago district that were engaged in manufacturing processes requiring extensive mechanical operations. This year we are lower than they are, and there is no need to think we have reached the irreducible minimum.

Aside from the 50 per cent reduction in the number of accidents for 1929, the outstanding feature of our report is the no-accident record of the mechanical department. The record ran considerably over a year, the 83 employees engaged in this work having gone over 480 days without a lost-time accident. In this record are included all the mechanical trades employed in the maintenance of the building.

In striking contrast to this is the record of the department which may be said to comprise the more characteristic hotel activities, such as the housekeeping department, the chef's, the steward's, and the service departments, which had, with two exceptions, all the accidents during the year. These two accidents occurred in the laundry department, which might also, perhaps, be classed with the strictly characteristic hotel activities.

It is one of the most pernicious of fallacies to think that accidents happen only near, or around machinery. Nothing could be further from the facts. According to Webster, an accident is "some unexpected or untoward event." As such, it can happen with any number of situations in which machinery does not figure. In fact, experience shows that accidents are more likely to happen with other than mechanical apparatus.

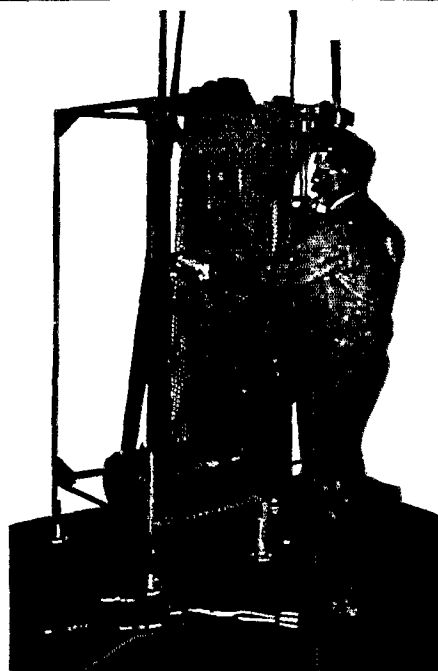
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and MORE THAN THAT

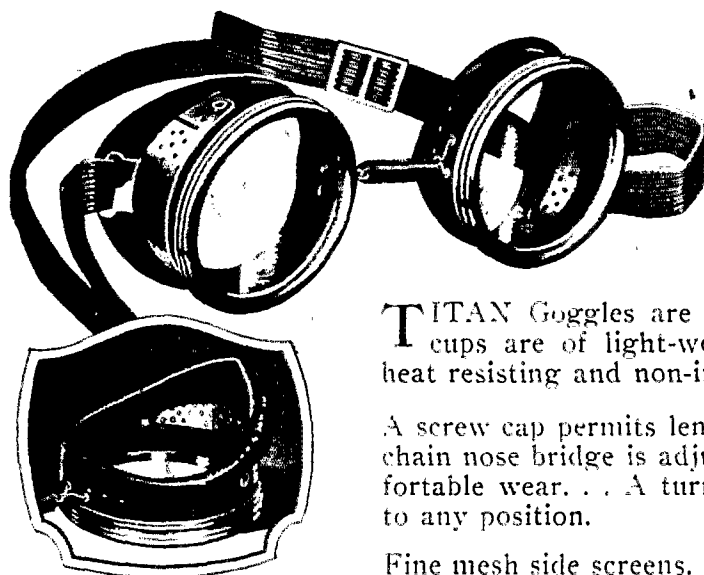
Safety Guards that will last and stand the bumps that guards get in a factory; that will not scratch the hands; that are easy to clean and will not accumulate lint and dust; that are good to look at and look through; all offered you and described in the booklet which we want to send you.

Write for booklet



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TITAN The Protective Goggle

TITAN Goggles are sturdy, comfortable and safe. The eye cups are of light-weight moisture proof material, which is heat resisting and non-inflammable.

A screw cap permits lense changing without aid of tools. . . The chain nose bridge is adjustable and covered with rubber for comfortable wear. . . A turn of the eye cups will adjust the goggle to any position.

Fine mesh side screens, elastic headbands, hardened and annealed lenses are other prominent features of Titan Goggles.

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In Overlooked "Danger Spots"

You may have been missed up to now—but a gauge glass on a steam boiler, pressure tank or cooking apparatus, can "let go" at any moment, sending flying glass into the faces of workmen, engineer, or bystanders. **DON'T RISK THIS**—save someone's eyes by our simple, positive gauge glass protector.

Visible—Water Line Seen From Front and Sides

A unique, new, bent "U" glass protector that SNAPS ON without extra installation costs means protection up to 250 lbs. of steam—yet it enables firemen, tender, or inspector to read water line accurately at a glance.

Write for Bulletin—Use Coupon

We will send you a bulletin describing this protector in full, giving names of firms who have installed it as a safety measure.

THE
WRIGHT-AUSTIN CO.
311 West Woodbridge St.
Detroit, Mich.

KEEP THAT SAFETY RECORD

Do you try to avoid the "unusual" as well as the "usual" accidents? If so, use the coupon below—it may help you keep your safety record in 1930.

WRIGHT-AUSTIN CO.
311 West Woodbridge St., Detroit, Mich.

Please send us your bulletin describing your new glass protector.

Name _____

Address _____

LEERVU
"SNAP-ON" GAUGE GLASS
PROTECTORS

It is comparatively easy to guard machinery, and that is usually the first preventive measure taken. Against the vagaries of a human being it is not so easy to guard. For that forceful educational work is necessary.

Only two of our accidents were with mechanical appliances. The remainder were falls, cuts and burns, listed in order of their importance. To state it in figures, over 50 per cent were falls. Last year not quite 40 per cent were due to this cause, and at that time we stated that we regarded the rubber heel as the greatest source of accidents that we had to contend with. Our investigations of 1929 endorse this statement.

Cuts made up 25 per cent of our accidents. We are sorry to say that most of them, of merely a minor nature, became serious through neglect. This condition might have been corrected through cooperation of department head and employee, and through safety education.

Burns accounted for about 11 per cent of the accidents. There were only two burn cases. These occurred to waiters who were handling chafing dishes. As we have previously mentioned, waiters are particularly susceptible to lost-time accidents because they must always maintain a perfect appearance. In other business, these burns would have caused no lost time.

The few remaining causes were strains from lifting, and a few minor injuries due to falling objects. We had no amputations and no permanent disabilities. In fact, we had no accident that could not have been prevented by proper instruction and supervision.

We gave considerable attention and space last year to minor accidents. This year we are not doing so because we fear to create rivalry between departments and perhaps encourage thereby the concealment of accidents for the purpose of making a record. The minor accident, if properly analyzed, is of importance in indicating unsafe conditions and serving as a general warning that a serious accident may befall if the unsafe condition is not repaired.

There is one minor accident, however, that should be mentioned again: that is the accident due to the discarded razor blade. In 99 per cent of these accidents the fault can be traced to the guests, who throw the blades in the waste baskets, or leave them on the shelves or in other places where the maids come upon them unexpectedly. It is due to the house-keeping department that we have had no lost-time accident due to razor blades, but the carelessness of the guests nevertheless causes a great deal

of needless pain and discomfort to the employees. If publications are seeking a lively subject to exploit, here is one. The reduction of this hazard is entirely a matter of public education. As the public has shown itself educatable in such matters as not throwing lighted matches or cigars from the windows of passenger trains, we do not see why it cannot be similarly schooled in the matter of disposition of cast-off razor blades.

Engineering Must Precede Traffic Regulation

(Continued from page 40)

that where danger is apparent, there is not so much danger of accidents. That is why we have so few accidents on our tortuous mountain roads; it is also why a certain straight stretch of highway south of Bakersfield in California has witnessed more fatalities than any other road in the state, yet no highway looks safer. If an intersection looks dangerous the motorist is going to exercise more than ordinary caution.

When a signal is installed for safety reasons where the volume of traffic does not justify it, the motorist is subjected to obnoxious delays. I have seen intersections where as many as seven cycles out of ten went by without a single vehicle passing through. In such an instance the motorist becomes fretful, and the next time he is going to try to "beat the gate" or else, as is frequently the case, he goes around the signal by traveling an adjacent side street that may be residential and crowded with children.

I know of one signal, not justified by traffic volume, where within a two-hour period a uniformed traffic officer arrested 26 motorists for going through the intersection when the signal was definitely against them. Wilshire and La Brea, in Los Angeles, is a signalized intersection, yet it has the worst accident record of any in the city.

In my opinion, safety at intersections can better be promoted by warning lights, slow signs, cross walks, etc.

Pedestrian traffic is controlled by signals only when one of two conditions exists: first, the presence of a police officer; second, a volume of traffic sufficiently large to prevent crossing a street unless traffic is stopped. Pedestrian traffic in business districts is effectively controlled in that manner. In residential and outlying districts, unless traffic volume first justifies it, I fail to see the great necessity for pedestrian control by signal installation.

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A PRODUCT FROM THE FYR-FYTER RESEARCH LABORATORIES

Fyr-Fyter Research Engineers discovered a new Chemical which suddenly extinguishes fire. The new liquid is called "Karbalo". Tests at Underwriters' Laboratories show that "Karbalo" will extinguish a test panel fire in 11 seconds while old type chemicals require 25 to 30 seconds. This feature alone has allowed Fyr-Fyter engineers to build a new device in 1 3/4-gallon size which, while smaller and easier to handle, is still more effective than the usual bulky 2 1/2-gallon extinguishers.

WE OFFER YOU THE NEW INSTANT LINE OF APPROVED EXTINGUISHERS

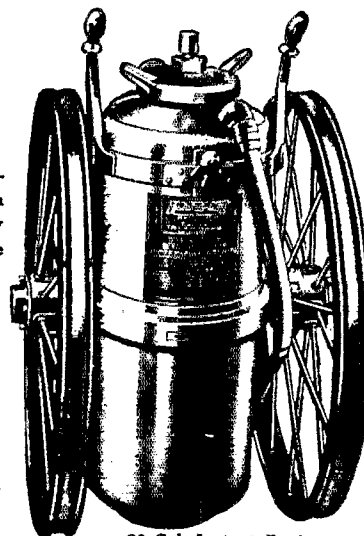
for your inspection and for your observation. Let its performance be your guide. This new "Instant" line will stand alone on merits of performance. If you have never tried and thoroughly tested this device, you have a surprise awaiting you, because the action of the chemical "Karbalo" is almost unbelievable.

Do not underrate this new "Instant" extinguisher. It has many points of definite superiority. Anti-freeze, non-deteriorating charge and many others backed by a 5-Year Guarantee against defective material or workmanship.

We recommend the new "Instant" particularly for all Wood and General fires. Also Gas, Oil and Paint. This combination together with the anti-freeze feature, gives you one of the best fire fighting devices sold today. Exclusively a Fyr-Fyter. Write for additional information and how to get an extinguisher for testing and special observation.

THE FYR-FYTER COMPANY

105-27 Fyr-Fyter Bldg., Dayton, Ohio



20 Gal. Instant Engine

Reducing the Cause of Slips and Stumbles

A clean floor, while not wholly immune from accidents, is less likely to be the scene of slips and stumbles. Regular and thorough scrubbing keeps oil, water, grease and other dangerous elements off the floor. Immaculate cleanliness tends to make employees more careful about bits of waste and rubbish, less likely to leave obstructions in the path of travel. It is a clearly related though perhaps indirect cause of the state of mind which prevents accidents.

Hand methods of polishing or scrubbing will not prove of much avail in developing such an attitude. They almost never get floors really clean and their antiquated methods compared with the up-to-date machine methods in most business and manufacturing operations are most suggestive of carelessness. The FINNELL System is the up-to-date and efficient way to get floors clean and keep them clean. It lifts floor maintenance to the level of other factory operations.

It applies 25 to 60 pounds pressure on the brush—depending on the size—and applies it continuously. The same pressure is applied to the last square foot as to the first. It whirls the brushes at a speed of 150 to 230 revolutions per minute. In waxing it applies the wax evenly and rubs it in—then polishes it to an enduring lustrous surface.

There are eight FINNELL models, a size to exactly fit your needs. It costs nothing to have a FINNELL engineer make a survey and recommend the size which you should have. For further information write:

FINNELL SYSTEM, Inc.

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WAXES

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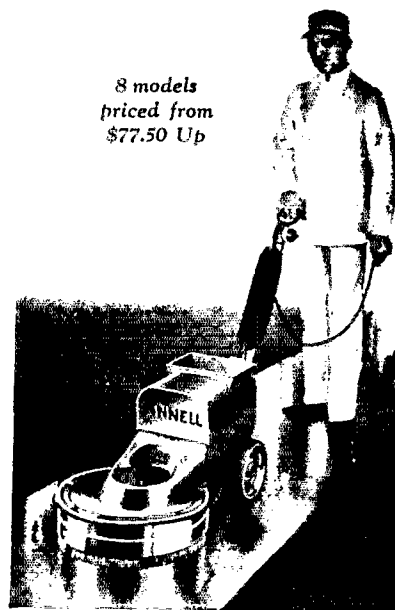
SCRUBS

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8 models
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STOP—

lost time accidents from flying spawls



"HALCO BRAND" Leather Leggings are quickly being adopted by quarries and mines throughout the country.

Leggings furnish protection where it is most needed.

Workmen like to wear them because they are comfortable—sturdy—long wearing and inexpensive.

HELP YOUR MEN TO PROTECT THEMSELVES.

Fill out this coupon and mail for full particulars.

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The Hagerstown
SHOE & LEGGING COMPANY
Hagerstown, Md. U.S.A.

Safety Developments in Metal Stamping Plants

*Much Progress Has Been Made but There
Are Still Many Obstacles to Progress*

By R. A. SHAW

The Murray Corporation of America

THE metal stamping industry is still listed by insurance companies as the most hazardous industry. You perhaps wonder at this, considering the various conventions held at the instigation of the National Safety Council, the Metal Trades Conferences, and the many pamphlets published for the purpose of expounding safety causes. Why cannot the metal stamping industry progress as did the steel industry, which, though it was formerly the most hazardous industry has now a minimum accident rate?

There are several reasons why the metal stamping trades are lingering so far behind other trades. In the first place, although the power press is designed for safety, the special tools for making the forms and stamped parts are made according to the person in charge of the die manufacturing division. The first thing he considers is economy, that is, finding the simplest and most effective way to make the part, considering the presses owned by the company, and cutting the amount of steel down to a minimum, as steel costs a good deal. These experts know the cost of a die as if by instinct, and also the cost of the steel, as well as the time needed to make the die. What they do not realize is the cost of accidents, thus it is that safety receives so little attention at the hands of the average designer.

Too Much Self-Satisfaction

Another reason for the industry's high accident rate is its overabundance of individuality, its self-satisfaction, its ready answer that "we are doing well enough compared with last year." We can go a long way in bettering our records if we will only forget last year's record and the record of the year before that. A record isn't good just because it betters last year's record. What we want to aim at is a 100 per cent record, and consider anything short of that a failure.

Another thing that will help us in the metal stamping industry is a standardized metal stamping code. The industry is just about ready for it. When once we have that as a guide,

the matter of a safety measure will be considered almost universally. Of course we will still have those ignorant of the economical advantages of safety, who will, in their desire for competition, put forth every effort to forestall not only the making of a safety code, but also the adoption of safety measures.

Above all, if we are to progress, we must emphasize the cost of accidents, and make the industry realize that metal stamping plants can be operated 100 per cent. Only then will they be able to operate without accidents.

Improved Dies and Presses

It is encouraging to think that some manufacturers, in fact, most of them, have made decided advances by adopting new designs, and installing many of the simpler safety devices, often at a great cost to themselves, and are now considering other measures, such as the proper piling of material, scrap handling, proper lighting, care of aisles, and so forth.

In die design many decided improvements have been made. We have now automatic improved dies, also specially equipped multiple dies; then there are special chutes for putting the work in and out of the press, and lever controls on the press which permit any kind of die to be used. These improvements have not, however, been adopted universally; in fact, only a limited number of the manufacturers have tried them.

In the matter of power press design, on the other hand, certain improvements have been made and adopted universally. Some of these are the moving of the brake away from the friction clutch, thus eliminating constant repairs and the repeating of the press. On fly wheels of the larger presses brakes have been installed to stop the fly wheel more readily after the power has been shut off.

Still another improvement which the industry approves as a whole is better oiling systems. Also important and universal now are the motor drives for raising and lowering the stroke. The attached brackets for sup-

porting the motor drives have been also universally adopted where needed.

Gears and clutches are completely guarded on all presses, and on the smaller presses the spokes of the fly wheels are carefully screened.

The most recent invention in press design is the vertical method. This provides that everything be placed above, the idea being that floor space, so costly in all factories, should be conserved.

With this good work behind them, and minds alert for new methods, the future for the metals stamping industry looks promising. The year 1930 should be productive of still greater progress toward universal safety.

Dierks Company Celebrates at Safety Banquet

A YEAR of successful effort in accident reduction was celebrated by the Dierks Lumber & Coal Company at the Sixth Annual Banquet for foremen and superintendents held at Texarkana, Ark., on January 25. During 1929 the company had a reduction of 46 per cent in accident frequency as compared with 1928, and a reduction of 84 per cent from the rate of 1924, the year in which the company organized for accident prevention.

The winning plant, Dierks, Ark., had a frequency rate of 3.56 and a severity rate of .39 for the year. Four hundred men worked a total of 843,024 man-hours with only three lost-time accidents. This mill has won the safety trophy for three consecutive years.

The winning logging camp, Harper Springs, Ark., with 426 men, worked 597,455 hours. There were 18 lost-time accidents, making a frequency rate of 30.13 and a severity rate of 1.57.

For all operations, which include six electrically operated sawmills, five logging camps, three railways, one ladder factory, a railway shop, and a planer, there was a total of 8,118,112 man-hours with 212 accidents, involving 24,859 days' lost time.

Three hundred and seventy-five persons, including members of the Dierks organization and their guests attended the banquet. The program ended with the presentation of diplomas and trophies by O. D. Frederick, safety supervisor. The diplomas were presented to the foremen who had graduated from the Wright City foremen's school, and the trophies were received by the Dierks mill and the Harper Springs logging camp.



SAFETY IN CHAIN....

To assure safety and protection, TAYLOR MADE Chains pass through four distinct steps. One—The raw material is given special attention. Two—Workmanship is by master craftsmen. Three—The finished product is proof tested. Four—Each link is given careful inspection.

TAYLOR MADE Chains are made of special grade of triple reeled refined iron, worked hot to avoid straining the fiber, and welded by expert workmen. All chains are proof tested to specifications and submitted to a rigid inspection.



TAYLOR MADE
HAND-ELECTRIC
AND MACHINE
WELDED CHAIN



Send for your copy of "Catalog A"—contains a wealth of practical chain information.

S. G. TAYLOR CHAIN COMPANY
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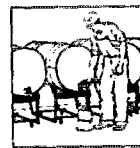
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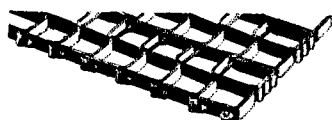
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Save \$41,000 in One Year

*Wheeling Mold & Foundry Company Reduces
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A SAVING of \$41,000 in hospital charges and compensation in one year is conclusive evidence that organized safety work pays. This notable reduction in accident costs was made by the Wheeling Mold & Foundry Company, Wheeling, W. Va., during the fiscal year ending June 30, 1929. The reduction from the accident costs of the previous year was 71.8 per cent.

The Wheeling Mold & Foundry Company employs approximately 900 persons. It makes some of the largest steel castings produced in the world and also works in gray iron. Last year, when the safety record was made production increased to new high levels. The figures from July 1, 1928, to July 1, 1929, show 21 lost-time accidents, a frequency rate of 11.05 for the year. This can be compared with 91 injuries and four fatalities—a frequency rate of 53.5—for the previous twelve months. Lost time has been reduced from 26,000 days to 690 days, and the severity rate declined from 15.3 to .363. Records are compiled from July 1 to correspond with the fiscal year of the West Virginia Compensation Insurance Department. Since last July there has been a still further decrease in the company's accident rates.

The first step in reducing accidents from the previous high level was to enlist the foremen. Each supervisor was won over to the work and made to realize his responsibility. John Beckett was appointed safety supervisor to direct the work of accident prevention and first aid.

E. A. Balsley, vice-president in charge of operations, makes the following comments on the improvement in the company's experience:

"As in most changes within a plant,

no one can infallibly define the reasons for accident reduction. The result is a composite picture of carefully laid plans, unflinching support of supervisory forces, and appreciation of the object in view by the whole force. If I were to place emphasis on the importance of any features of our accident prevention program it would be directed upon the work of our 'safety promoters' throughout the shops, our continual insistence upon goggles, safeguards and protective clothing, and the tireless checks upon plant conditions made early and often on all plant conditions by our safety director, Mr. Beckett.

"Our safety and welfare department, which also cares for first aid and health service, has been a most important factor. Another factor which has been of inestimable value has been the hearty cooperation of the Wheeling Clinic, a local institution operated under the direction of a group of physicians and surgeons second to none in the country. This institution, at our service day and night, gives our employees prompt and efficient attention at a very reasonable cost to us.

"Actual financial saving to the company, after all, is a by-product of the accident reduction. The company is thoroughly aware of the larger factors—the saving of wages, suffering and worry to the whole organization. By continuing this process of making an accident a novelty in the plant, we can remove that dread of injury which makes work miserable for the worker.

"The active assistance of the Wheeling Safety Council and the invaluable service of the National Safety Council cannot be overestimated. Much of our inspiration in this work has come from personal contacts and literature obtained through these two agencies."



The supervisory force of the Wheeling Mold and Foundry Company. John Beckett, safety director, is at the right of the group.

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*1% of this powerful, but harmless
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Sylpho-Nathol is obtainable in 1, 5 and 10 gallon cans, 30 and 50 gallon barrels.

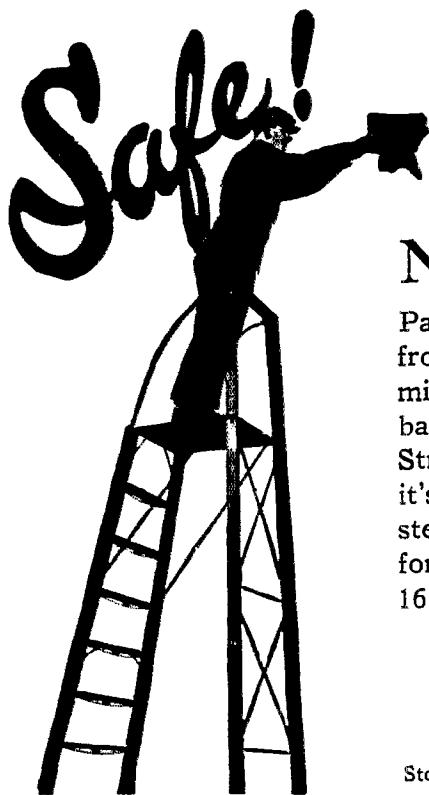
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The "small brother" of Type "A", pictured at left. A general purpose safety ladder, popular priced, in 7 sizes.

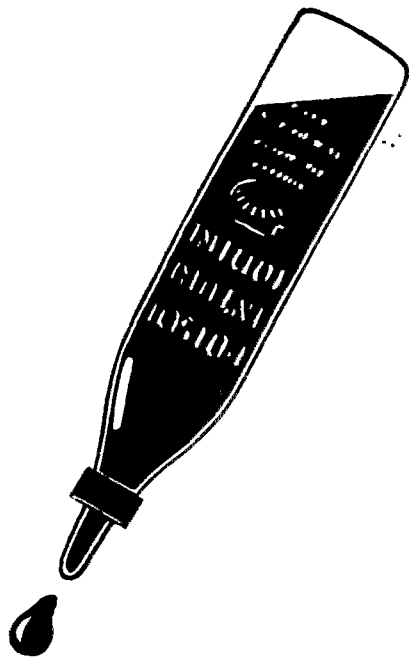
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APPLY direct to the injured part without fuss or smear. One hand is sufficient to open and use the bottle.

FIRST Aid men everywhere are recommending it for use, in and away from the plant. It is packed in a wooden case.

ECONOMICAL—one bottle will draw a line quarter of an inch wide and ten feet long. No evaporation or waste.

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The Slipping Frog

A Modern Application of an Ancient Conundrum

By L. C. ILSLEY

THERE is an old conundrum about a frog who tries to get out of a well. It goes something like this: If the frog is at the bottom of a 20-foot well, and each day climbs up a certain distance, and each night slips back a goodly part of the distance he has gained during the day, how long will it take him to get out of the well?

From a safety standpoint, coal-mine operators in America, taken as a whole, seem to be making progress very slowly. They are the frog in the well of unsafe practices.

There can be no disputing the fact that the coal industry has been doing, and is still doing, certain things to improve safety, and in that respect upward progress is being made. On the other hand, there can be no denial that many very unsafe conditions remain, and there is where the industry is slipping.

It is well known that rock-dusting will prevent major coal-dust explosions, but in many mines this is not done, in others it is done only half-heartedly, and in many others when once applied it is not maintained.

Ventilation is a prime safety factor, yet there are dozens of mines where this safety necessity is almost criminally neglected. Inadequate ventilation is also a type of back-sliding that should not be tolerated.

A third safety feature is the provision for reasonably safe electrical equipment. In the present age of rapid change to mechanized mines, which nearly always means electrically operated equipment, this factor has to be considered from many angles, and can not be set aside as being of secondary importance.

Many operators are willing to purchase permissible type equipment and by that act gain considerable merit, but when they fail to see the necessity of keeping this equipment in a safe condition, they are slipping down the well and their good money has been wasted. The operator who buys permissible equipment to safeguard his gassy mine, and does not provide a workable voltage to operate this equipment, is still groping in the dark as far as safety is concerned.

How about those who never have seen the need of safe equipment? They are like the legendary man with the suspended sword above him, only they

apparently have blindfolded themselves to their real danger. Such men have not even begun to climb out of the well.

Then there are those who are satisfied with substitutes. They believe that any machine with a cover over the spark-producing parts is just as good as one that has been proved safe by tests; good wiring is not necessary; through holes don't count. The man who thus deceives himself is slipping so fast he can't even get a toehold.

Electric shot-firing is an advance in safety, but the use of safe shot-firing devices and the adoption of safe practices for all blasting work are what make for real safety progress.

At the bottom, down in the mud, we find the man who still believes in open lights, who never admits he has gas in his mine till the mine disaster has taken place. Electric lamps for illumination represent progress as well as safety.

No operator can lay claim to be out of the well unless he believes in order and discipline, enforces them, and sees to it that they are strictly enforced by all having authority under him. Just as long as the unsafe practice outweighs the safe one, so long will the coal-mine accident rate refuse to decrease, and just so long will the American rate exceed that of other countries with more adverse conditions.

Post Pullers Prevent Many
Mine Fatalities

IT has come to the attention of engineers of the United States Bureau of Mines engaged in the study of falls of mine roofs that in several instances men especially employed for pulling timber, and equipped with mechanical safety devices, have neglected to use the devices, resorting to an axe for knocking out the props. Subsequent falling roof material caused death to a number of men. For some time the drawing of timber in the process of extracting pillars has been rendered safe by the use of these special men and a mechanical device which permits the men to work at a distance while operating it. Mechanical post pullers should be used in all cases, unless the post is withdrawn by a cable attached to a locomotive.

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Featuring, Extra Wide Vision.



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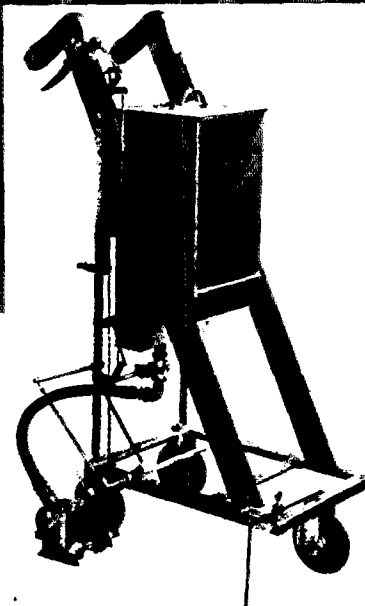
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Winners of Brady Safety Medals Announced by A. E. R. A.

THE accomplishments of three electric railway companies in accident prevention during 1928 have been recognized by the American Electric Railway Association in the recent award of the Brady Safety Medals. There are three divisions in the contest based on the number of vehicle miles operated during the year.

The gold medal for Class A, including electric railways operating more than 5,000,000 vehicle miles, was awarded to the Boston Elevated Railway, with honorable mention to the Louisville Railway Company.

The silver medal for Class B, for companies operating between 1,000,000 and 5,000,000 vehicle miles, went to the Tampa Electric Railway Company, Tampa, Fla., with honorable mention to the El Paso Electric Company.

The bronze medal for Class C, comprising smaller properties, was awarded to the Tide Water Power Co., Wilmington, N. C.

The awards are a memorial to the late Anthony N. Brady and are presented each year for the best records of safety in operation and health promotion made by electric railways. The winners were selected by a joint committee of the American Museum of Safety and the American Electric Railway Association. Lewis Gawtry, president, The Bank for Savings, was chairman of the committee, and the other members were Col. A. B. Barber, manager, Transportation and Communication Department, U. S. Chamber of Commerce; James H. McGraw, chairman of the board, McGraw-Hill Publishing Company, Inc., and Charles Gordon, managing director, American Electric Railway Association.

The Boston Elevated Railway has made an outstanding contribution to safety through its study of the human factor in accidents. Realizing that human failings were responsible for a large proportion of the total number of accidents, the railway engaged the Personnel Research Federation of New York to survey the situation. The survey revealed that half of the accidents happened to less than one-third of the operators and efforts were directed toward these high accident men. These individuals were studied with the result that in a large number of cases their operation was

greatly improved and the total number of accidents was substantially reduced.

The Tampa Electric Company, which also won the Brady Award for 1927, had an even better record for 1928. In the latter year there were 820 car and bus accidents as compared with 1,175 in 1927, 2,843 in 1926 and 3,070 in 1925.

The Tide Water Power Company, the winner in Class C, for three consecutive years, had 45 accidents in 1928 as compared with 46 in 1927. There have been no fatalities on the properties during the past four years.

The Louisville Railway Company operated 17,440 miles per chargeable accident in 1928 as compared with 13,326 in 1927.

The El Paso Electric Railway Company had a much better record during 1928 than in any previous year. The total number of accidents was 435 as compared to 445 in 1927 and 452 in 1926. In 1921, the earliest year for which statistics were presented, the number of accidents was 1,767.

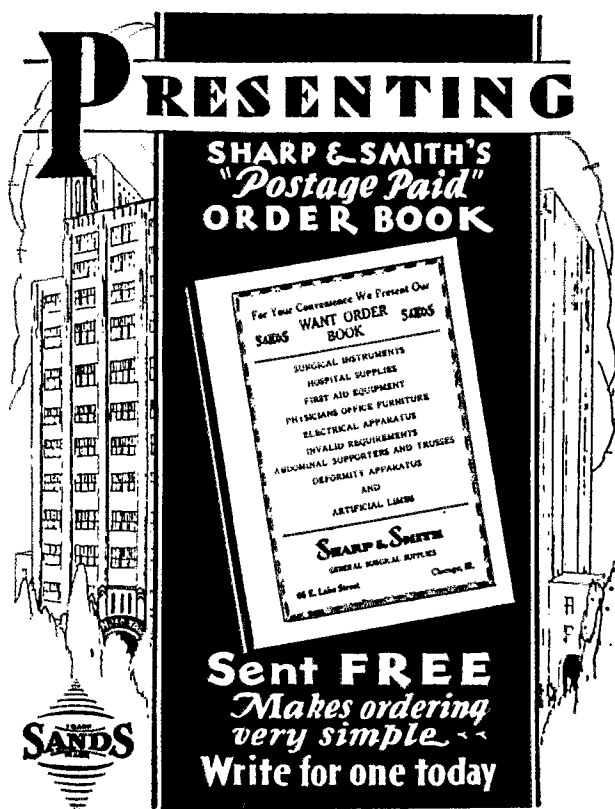
Keeping Down Coal Dust in the Mine

THE total amount of coal dust made unavoidably each working day throughout a mine is very large, but is difficult to estimate precisely and varies with every mine, says George B. Rice, chief engineer, United States Bureau of Mines, in a recent report. The approximate amount may vary from one-fifth of one per cent of the run of mine produced to one per cent or more in mining a very soft, friable coal.

Not all of this is necessarily at the start dry dust which will rise on strong air currents in a cloud. Considerable coal dust becomes covered with gob, and in some of the more progressive mines water on the cutter bars of machines wets the "bug dust" (machine dust), and the face is wet down by the hose. Tight cars are used and the tops of the loads sprinkled by automatic sprinklers. Such mines have less dry coal dust to neutralize by rock dusting. There is practically no coal mine, however, which does not produce a dust cloud of sufficient density to ignite and to propagate an explosion if the coal dust is not neutralized by rock dusting.

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ELIMINATE THE NOISE
 WARNINGS CAN BE HEARD
 MANY ACCIDENTS WILL NOT OCCUR

MAXIM SILENCERS are made in every size from 1½" to 40", for every kind of an EXHAUST, DISCHARGE and SUCTION.

Thousands of installations on Diesel, gas, gasoline, steam and air engines, steam and air blow offs, boiler blow downs, gas pulsations, air reliefs, blowers, fans, air compressors, vacuum pumps and every sort of power noise that comes out of a pipe.

THE MAXIM SILENCER CO., Drawer 2102, Hartford, Conn.

f or REAL SERVICE



RAPID filling and emptying is an outstanding feature of the Protectoseal Service Can. The fill opening has a hinged cap, which serves as an automatic seal and pressure relief—it permits filling from any full size nozzle or faucet. The pouring spout is so constructed that it permits a rapid flow of liquid to other containers.

The Protectoseal fire baffle screen, attached to the discharge spout and fill openings, prevents ignition. A safe feature is provided whether cap is open or closed.

Consistent with Protectoseal standards of manufacture, the Service Can has a shock rim for seam protection at its base. It comes to you in 3 or 5 gallon sizes.

A flexible metal hose, eliminating the use of a funnel, may be obtained with the service can if desired.

*Inquiries Receive Prompt
Attention*

The Protectoseal Company
226 No. Sheldon Street
CHICAGO

California Sets Standards for Labor Camps

(Continued from page 46)

It has eliminated the wooden bunks filled with loose straw, which generally became vermin infested. By screening the windows and their openings in the kitchen and dining quarters, kitchen and dining service has been improved. This and the proper care of the garbage have relieved camps of many flies.

Labor camps in California may be placed under six general headings: Construction, lumber, mine and quarry, railroad, agricultural, and miscellaneous. The agricultural camps include cannery and dry yard, deciduous fruit, citrus, melon, asparagus, cotton, hops, grape, rice, walnut, beet, lettuce, celery, other vegetables, onion and garlic, seed, dairy camps and general ranch camps.

Many construction camp operators make every effort to house their employees in clean, comfortable camps, and if some insanitary condition is found will immediately order a correction of the offending cause. There are others, however, who have no interest in the health and comfort of their men. Frequently we find them housed in barns, stables, abandoned and dilapidated houses, or in improvised shelters. The operator in these cases usually uses the plea that he has taken the job at a low figure, that, as the job will run for a short time, he cannot afford to furnish the proper equipment. Prosecutions are necessary in aggravated cases. One hundred fifty-seven construction camps were inspected during the past year.

Lumber Camps. The major lumber companies, with few exceptions, cooperate fully. Some of them have gone far beyond the requirements and furnish hotel service (this includes the making of beds with sheets), for which a reasonable charge is made. The operators of small mills are usually hard to get in line. They hire neighbors for some of the operations, then contract other parts of the work. The wife of a worker operates the cookhouse, such as it is, and the housing is anything from a few cull boards thrown together or tents to automobiles converted into sleeping quarters. The mill operator disclaims responsibility for the condition of the grounds, unscreened cookhouse, insanitary toilets, etc. The inspectors must be very firm in order to correct such conditions. Sixty-eight lumber camps were inspected during 1929.

Mine, Quarry and Oil Camps. Investigation showed a number of complaints regarding housing and sanitary conditions in some of the small mines and quarries to be well founded. The excuse generally given was that, as the work was of a development nature, the operator could not afford to spend money for camp equipment. The few large mines where camps were operated were in good sanitary condition.

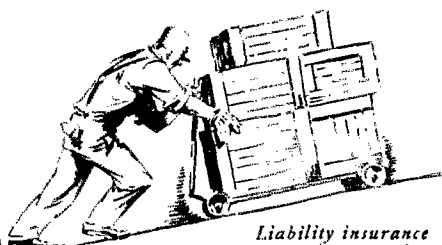
In the oil fields labor camps are gradually being eliminated. The closing down of production and the fact that employees travel to work in automobiles from nearby cities have been the main causes therefor. There are no large oil camps except in remote locations. There are, however, a number of small camps where development work is carried on.

There were 128 camps of this group inspected during the last year.

Railroad Camps. Included in the 413 railroad camps inspected during the year are signal crew quarters, bridge and building outfits, section crew quarters, maintenance of way cars in which the men were housed, and construction camps on new work. Better housing and sanitary facilities are being furnished the employees. This is shown by the new construction being carried on in a systematic manner by the companies—new cars for extra and signal crews, new section houses with modern plumbing, improved quarters for foremen, signal maintainers and others who are engaged in the operating and maintenance of the various units which go to make up a steam or electric railroad. One railroad in particular is reconstructing or rebuilding practically all of its housing, which is requiring a large expenditure. The Commission's contact with the officials is excellent. If a particularly bad condition is noted, temporary improvements are immediately effected until permanent quarters can be established.

Agricultural Camps. In this group are included all labor camps dealing with soil products. On some farms we find camps for Japanese, Hindus, Mexicans, Filipinos and Americans, each with a different standard and method of living. The Mexicans far outnumber the other nationals of the alien group in some agricultural pur-

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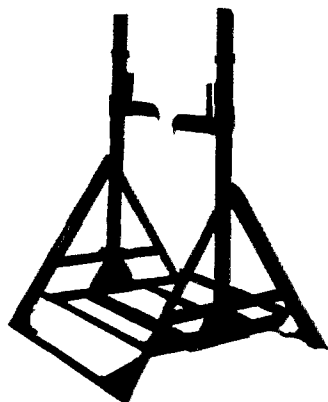
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Ever Hear of the "4 S's"?

SAFETY
STRENGTH
SERVICE
SATISFACTION

Old-time school days are responsible for the "3 R's."

THE SWACO SAFETY HOPPER CAR WRENCH

introduces to you the "4 S's"—

SAFETY for the workman.

A ball-bearing ratchet head that revolves with the car spindle, while the handle remains stationary in the hands of the operator. Therefore, not the slightest chance of an accident on a job that is considered dangerous when the ordinary type of wrench is used.

STRENGTH in the tool.

Made entirely of electric steel castings with a tensile strength of 80,000 lbs. Built to stand up under the rough usage to which it must necessarily be subjected.

SERVICE — Efficient performance. Dependable under all conditions.

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your company in the economy resulting from the use of the SWACO Wrench. Not only does it safeguard the user but it will serve you for years.



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suits, with the Filipino taking second place. Mexicans seem to be preferred in the cultivation and harvest of cotton and sugar beets. Filipinos are in control of the cutting and washing in the Delta Asparagus district. Both the Mexican and Filipino are in demand as laborers in lettuce and melon growing.

Of all agricultural camps those in the citrus district are the best structurally in sanitary arrangement and maintenance. These camps operate for a large portion of the year. Most of the cannery camps are in good sanitary condition. Care, however, must be taken to prevent overcrowding at the peak of the season. The cotton growers of the San Joaquin Valley as a whole have shown more inclination to co-operate with the Commission than any of the other leading crop growers.

Progress is being made in housing in the Imperial Valley, where the field labor is principally Mexican. Here is presented the problem of the absentee landlord and the tenant farmer. The landlord, whose main office is often in another part of the United States, usually is represented by a manager. A number of these managers have just held a conference which will lead to good results.

There were 1,564 camps of this group inspected during the last year.

Miscellaneous Camps. These are the camps which do not come within the classifications listed. There were 37 inspected last year. They are usually of a permanent nature and generally comply with the law.

The general opinion of those who furnish good camps is that good camps aid efficiency; a man with comfortable quarters gets better rest and therefore can do more work; good camps cut down turnover, thus reducing waste of labor; and finally, good camps keep the crew more contented.

In 1925 the California Legislature created the Department of Industrial Relations. It placed the work which was formerly carried on by the Commission of Immigration and Housing in the hands of the Division of Housing and Sanitation and retained the Commission of Immigration and Housing, whose members serve without pay, to control the policies of the Division.

Bulletin Presents Case of Older Workers

THE California State Department of Industrial Relations has published a 35-page bulletin entitled, "Middle-Aged and Older Workers." According to Will J. French, director of the department, the object of the

bulletin is 'to enlist the cooperation of California employers of labor against adopting employment policies based solely upon the employee's age.'

"Middle-Aged and Older Workers" presents views, ideas and opinions of leaders in business and industry and of thinkers in the field of economics and sociology on the folly of eliminating mature and experienced persons from gainful employment. This bulletin, which marks the beginning of an educational campaign begun by the Department of Industrial Relations against personnel policies barring middle-aged and older workers from useful employments, is summarized as follows:

1. The arbitrary discharge of workers because of age, and regardless of their fitness, is becoming a general policy.
2. Because of the development of automatic and labor-saving machinery, the physical stresses and burdens of life are growing less, but our productive period is growing longer.
3. The employment of middle-aged and older workers reduces labor turnover in industrial and commercial establishments.
4. Not age, but experience and capacity and willingness to learn, are important in selecting and retaining employees.
5. Success comes to people after they are 40, for seldom does mature judgment arrive before then.
6. There are jobs in industry which can be graded according to the grades of age, ability, and experience within a community.
7. There is needed a careful, nationwide study of jobs, conducted primarily to determine what positions the older man is capable of filling as well, or better, than the younger man.
8. Workers who have reached the age of 40 or 50 are surrounded by certain conditions in life that make them all the more careful in the performance of their duties.
9. Men over 40 are doing the most important work of the world.
10. Older employees exercise a steady and helpful influence upon younger employees of an organization.
11. If employees know that they will not be fired because of their age, they will give more of their efforts in their younger years.
12. Monotonous clerical work is suited to the placidity of middle-aged women.
13. Older women workers are not more troubled by illness than their younger sisters.
14. Special attention to the problem of older workers by employers is urgently needed. It is the duty of American industry to keep older workers employed, rather than turn them adrift upon a labor market which refuses to absorb them.
15. Group insurance and pension plans need not exclude older workers from employment. The sum of the pension may be fixed as a percentage for each year of service, multiplied by the number of years of service. This would answer the question of taking care of employees entering employment at an older age. Middle-aged and older employees would rather pay the extra group insurance rates due to their ages, or forego the benefits of such insurance, than be refused employment.

When writing advertisers, please mention NATIONAL SAFETY NEWS

**HE CUT HIS FINGER—
AND LOST HIS ARM!**

SMALL injuries, like small fires, often grow into big ones. Those who neglect even a little cut run the risk of serious infection and tragic loss.

STONEHOUSE "First Aid" Signs impress the worker with the importance of caring for small injuries as well as large ones. They help to save labor and industry from preventable losses.

Stonehouse
SIGNS, INC.
STONEHOUSE BLDG. 842 LARIMER ST. DENVER, COLO. U.S.A.

SAFETY SIGNS:

- DANGER** NO SMOKING, MATCHES OR OPEN LIGHTS
- BE CAREFUL** IF YOU ARE INJURED NO MATTER HOW LITTLE TELL YOUR FOREMAN ABOUT IT RIGHT AWAY.
- STOP LOOK-LISTEN** DANGER LOOK OUT FOR CARS
- BE CAREFUL** IT'S HELL TO BE A CRIPPLE
- DANGER** MEN WORKING ABOVE
- CAUTION** NO Clearance
- ACCIDENTS ARE AVOIDABLE** FORGET THE ALIBI
- ALL WIRES SHOULD BE CONSIDERED DEAD DANGEROUS** WIRES MUST ONLY BE HANDLED BY THOSE WHOSE DUTIES REQUIRE THEM TO DO SO.
- SAFETY FIRST** THIS DEPARTMENT 100% NO ACCIDENTS FOR LAST MONTH
- NOTICE TO FOREMEN** CARELESSNESS IS DANGEROUS IF WORKMEN INSIST ON BEING CARELESS DISCHARGE THEM
- NOTE** POSITIVELY NO ADMITTANCE EXCEPT ON BUSINESS
- CAUTION** HANDS OFF
- DANGER** HIGH VOLTAGE
- TO THE FIRE ESCAPE**
- SAFETY FIRST** WATCH YOUR STEP
- FIRE EXTINGUISHER**
- SAFETY FIRST** THEN CLEAN COAL
- HOSPITAL**

THE "DIGGER"— ANOTHER GARDTOE CREATION



No. 250D

CHIPPEWA SHOE MFG. CO.
Chippewa Falls, Wis.

THE "Digger," another Chippewa GARDTOE Safety Shoe, is all that its name signifies. It is built for severe abuse and unusual foot protection—not only from falling objects, but against dampness and cold.

Equipped with reinforced patented box toe, drill lined vamp, steel reinforced shank, double stitched sole and leather heel, the GARDTOE "Digger" is a sturdy shoe for workers in iron mines, stone quarries, zinc and lead mines, or any job requiring weather-proof shoes.

The complete line of Chippewa GARDTOE Safety Shoes provides for every phase of industrial foot protection.

Send the Coupon

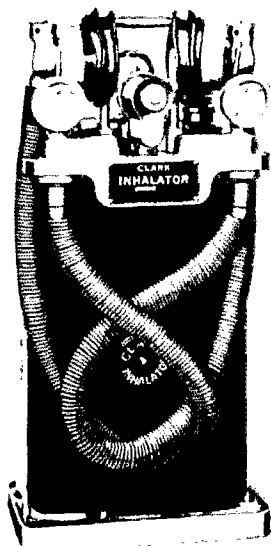
CHIPPEWA SHOE MFG. CO.
Chippewa Falls, Wis.
Gentlemen:

☐ Please send us pairs of "The Digger," No. 250D, GARDTOE shoes, size for ten days' free examination.

☐ Please send us complete details regarding a GARDTOE department.

Company
Address
Name
Position

The Clark Oxygen Carbon Dioxide Inhalator



WITH Prone Pressure, as an aid in restoring spontaneous breathing and for building up a weak or irregular respiration you will find:—

*7% Carbon Dioxide in Oxygen
"Correctly Administered"*

vastly superior to the 5% mixture.

To "Correctly Administer" this mixture you require an Inhalator that delivers all the mixed gas the victim's respiration demands, frequently up to 60 litres a minute.

The Clark Inhalator is built to "correctly administer" this improved treatment. It delivers the necessary volume without waste. Two victims if necessary can be treated simultaneously with the "Clark."

The more progressive are rapidly converting their Inhalator Equipment to "Clark's so they can give this improved treatment.

*Let us quote you on converting
YOUR equipment.*

**MCDONALD ENGINEERING
CORPORATION**

218 Varot Street, Brooklyn, N. Y.

Safety First or Safety Always?

(Continued from page 36)

the idea of accumulating safety suggestions and correcting unsafe practices and unsafe conditions, in killing time and "soldiering" on the job, and coming into safety meetings with lists of conditions made up at the last moment that they thought would get by with the management. Many of these were measures which would cost thousands of dollars and place a burden on management beyond all reason. These same committees, day in and day out, were spending their time seeing, and engaging themselves in, practices that were unsafe, but which they could not or would not correct. These jobs are the 50-50 jobs I talked about.

I know places where safety engineers have had a staff of men working for them all trying to sell safety to the employees, all trying to sell safety to the management from the top down through the foremen, and in many cases succeeding, but in many cases, too, still fighting an uphill fight against odds practically unsurmountable, because again it was only a "safety first" job. A safety idea had been sold to the management, and management had taken the first step by obtaining a safety engineer and had then stopped, leaving it up to the safety engineer to carry out the entire safety program.

We find, too, this condition: safety engineers who are burdened with a task of this kind without the sound backing of management, attempting to sell themselves to the personnel, to the foreman, general foreman, shop superintendent, etc., trying to get their cooperation on safety, using any means they can to obtain at least half-hearted cooperation to get the safety idea across, to get a 50-50 break. Gentlemen, the 50-50 jobs won't work. We all know that it is possible to carry on the safety job in the manner described and accomplish something—and certainly a little good is better than none; but that isn't what we are striving for; that isn't the picture that is before us.

I cannot help thinking of the things that have been accomplished in many lines of endeavor, where work is required under the most dangerous and hazardous conditions, and when I hear the remark made that we cannot get men to follow the safety practices prescribed, I wonder what these same men would do if they were engaged in another line of endeavor.

Think, for instance, of the structural iron worker, the hazards that he encounters day in and day out, the natural hazards of his occupation, and yet

the accident rate in his trade is lower than in some less hazardous industries. Why is it that men can undertake work of this kind, and yet come through working safely? Why is it that we can have men in the electrical industry handling high tension equipment, oftentimes under conditions that are extremely hazardous, where a false move might mean death, and yet see them come through safely? Think of the wonderful strides made by the steel industry in safety, an example all industry could well follow. The safety progress of the railroads has been wonderful these last few years.

There are hundreds of working conditions that from a relative standpoint could be called unsafe, and yet we know from experience that men and women can be taught to work under those conditions in a manner that is safe to themselves and safe to others. It is simply a case of getting the individual so impressed with the need for caution in his occupation that every move he makes is regulated by the necessity of protecting himself and his fellow workers. There are occasional lapses, usually from outside causes, but on a basis of risk many of the most dangerous jobs are the safest.

I cannot help feeling that in many cases management has had the idea that safety work involves continual correcting of conditions, replacement of obsolete equipment, rearrangement of machinery, modern buildings, better lighting, modern sanitation—things which cannot always be achieved immediately. Consequently safety has gone by the board.

All those things are desirable and pay dividends, we know, but the impossibility of their immediate attainment should not discourage efforts to improve conditions and to promote safer practices.

The principal duties and functions of management in connection with safety work, as I see them, are:

1. Let the applicant for a job know before he is employed that you have a safe plant; that you expect him to work safely, to be neat and orderly, to obey safety rules as well as operating rules.
2. Mean what you tell him.
3. See that each employee's foreman instructs him in the hazards, if any, in connection with the plant as a whole and with his own work in particular. Know the hazards and see that everybody else in the plant does too.
4. Instill in the minds of all supervisors the necessity of proper and continuous functioning with regard to safety, just as you do for production.

When writing advertisers, please mention NATIONAL SAFETY NEWS

5. Take good care of your employees when they are hurt. They are human and need to be cared for, and the natural human interest and thought for their welfare brings a prompt reward.
6. See that each accident is properly investigated, the cause determined, and the responsibility placed where it belongs. Use the facts from specific accidents to warn employees. Discipline when necessary.
7. Be prompt to correct the small, needless hazards. Take care of the larger items as rapidly as you can, but while they exist, point them out and protect them as best you can until they can be properly protected.
8. Keep hammering.

What can management expect from its investment in safety? The answer is, you get back in proportion to what you put in. If made wisely, it is an investment; if not, it is a speculation, and you may or may not get a profit. If the investment is wisely made and followed up, the results should be:

1. A cleaner, more orderly, more systematic plant.
2. Reduced cleaning and handling costs.
3. Fewer accidents with a corresponding reduction in lost time and compensation.
4. A more efficient, satisfied and loyal personnel.
5. Lower labor turnover.
6. Better quality of work.
7. Lower costs.
8. The knowledge that you have contributed a sizable chunk of human interest, a share of the happiness of this world, that you have done and are doing your bit.

Get ALL the LIGHT you pay for



Regardless of what illumination costs, how much is it really worth to you? That is to say, what is the value of its use?

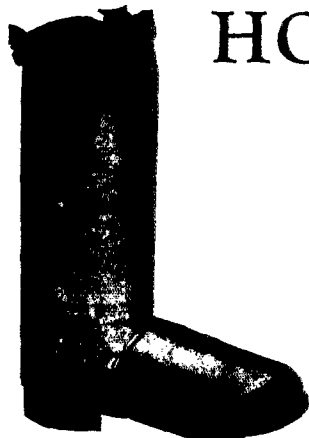
Clean Reflectors save light — dirty reflectors waste it.

—Makes overhead lamps easily accessible for cleaning reflectors and changing bulbs. No climbing or electrical hazards.

Get new 32-page Catalog free upon request. Handled by leading electrical jobbers.

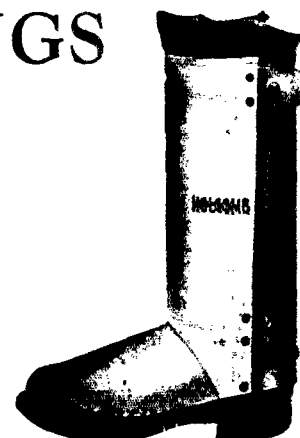
THOMPSON
Safety Lowering
HANGER

The Thompson Electric Co.
1438 W. 9th St. Cleveland, Ohio, U.S.A.



PERFECTED
SPRING FRAME LEGGING

HOLCOMB LEGGINGS HAVE SIXTEEN SAFETY ESSENTIALS



PERFECTED
SPRINGLESS LEGGING

Every Holcomb legging includes the following safety essentials:

Comfort
Foot and Leg Protection
Stay in Place
Simple Operation
Adjusted Quickly and Positively
Removed Instantly

Fit any Leg
Close Fit at Top
Smooth Surface
Wide Flap
Opening Toward Back

Cover Entire Heel
Bottoms Cannot Curl Up
Extra Large Flares
Selected Materials
Careful Workmanship

MADE OF ASBESTOS—FIRE PROOF DUCK—CHROME LEATHER

The patented features of Holcomb Leggings are not found in any other.

Write for samples

HOLCOMB SAFETY GARMENT COMPANY, Manufacturers
118 North Jefferson Street Chicago, Illinois

When writing advertisers, please mention NATIONAL SAFETY NEWS

FIRE!

FIRE prevention is better than protection. Safety methods may be promoted in every factory by the installation of simple fire prevention appliances—devices that forestall that ever-present fire danger due to carelessness in removing oily waste and in handling oil, coming up during the course of daily routine.



Speedy action describes the new "QUICK SERVICE" foot operated oily waste can. Made in capacities of 6 to 10 gallons.



**PROTECTION
Safety Can**

Designed for the storing and proper handling of all volatile and explosive liquids. Can is non-explosive. Capacities from 1 pint to 10 gallons.

Now is the time to reserve YOUR copy of the informative new 32 page "Fire Protection Appliances" catalog. A copy should be included in the business library of every mill supply buyer and safety engineer.

**GEO. W. DIENER
MANUFACTURING CO.**
408 N. MONTICELLO AVE.
CHICAGO

THE HONOR ROLL

Details of No-Accident records in excess of 50,000 man-days, or 200 working days, are invited for publication in this department. Records may be for an entire plant or for a department. Special reporting forms furnished on request.

American Car and Foundry Co.

The blacksmith and forge departments of the American Car and Foundry Company, Chicago, Ill., have operated since January 3, 1928, without a lost-time accident. The plant has had an accident exposure of 26,480 days. It employs an average of 38 men. The record was unbroken at the date of reporting.

The paint department, employing an average of 20 men, has a record of 24,764 man days without a reportable accident. The record, unbroken at the date of reporting, was begun March 23, 1926.

Continental Steel Corp.

On January 17, 1930, the wire drawing department of the Continental Steel Corporation, Kokomo, Ind., completed a period of 308 calendar days without a lost-time accident. This period represents 261 working days, or about 52,000 man-days for a department that averages 200 employees. This record was accomplished by conscientious supervision and the keenest of interest on the part of the employees and safety committees.

Crystal River Rock Co.

The Crystal River Rock Company, located at Crystal River, Fla., and engaged in quarrying lime rock, has completed a period of 361 working days without a lost-time accident. This dates from July 9, 1928, to October 10, 1929, and represents 18,000 man-days. A previous unfavorable accident experience forced the plant to organize for safety. Active interest in the prevention of accidents on the part of a competent safety engineer and the 50 employees of the plant has been responsible for this record. The accident terminating the record occurred to a steam shovel operator who had been employed by the company for several years.

East Ohio Gas Co.

The Youngstown District of the East Ohio Gas Company reports that it has operated from April 22, 1929, without a lost time accident. The period of accident exposure was 489,000 work hours. The last no-accident record of the Youngstown plant dated from July 23, 1928, to April 22, 1929, a period of over 17 months.

Florida Portland Cement Co.

The plant of the Florida Portland Cement Company at Hooker's Point, Fla., had, on January 31, operated 399 days without a lost-time accident. The total exposure was 320,839 man-hours. Frequent safety campaigns and first-aid training have aided in establishing the record, and the company makes liberal use of the National Safety Council posters, calendars, pay envelope inserts and The Safe Worker.

Louisville Car Wheel & Ry. Supply Co.

For more than three years the Louisville Car Wheel & Railway Supply Company has operated without a lost-time accident. On February 1 the record

stood at 1,149 calendar days, or 925 days when the plant was in actual operation. The average number of employees for the period was 45 and the total exposure exceeded 320,000 man-hours.

Pullman Co.

Several shops of the Pullman Company have added to their previous honors in accident prevention by piling up large totals of safe man-hours. Following are records reported as of February 1.

Shop	Ave. No. Emp.	Last L.T. Acc.	No. Man-Hours
Richmond	447	12-17-27	2,244,364
St. Louis	410	4-7-28	2,256,710
Buffalo	1,057	7-9-29	1,308,497
Calumet (Chicago)	1,229	10-21-29	830,173
Atlanta	308	8-26-29	311,512

Union Carbide Co. and Affiliated Companies.

The Jersey City Warehouse of the National Carbon Company, located at Jersey City, N. J., has participated in making a no accident record of 170,438 labor-hours, dating from December 5, 1928, to December 31, 1929. The plant employs an average of 64 men, engaged in the manufacture of flashlights, batteries, and other chemical products. This record entitles the Jersey City plant to the bronze tablet awarded any division completing 1,000,000 work-hours without a lost-time accident. The record was unbroken at the date of reporting.

The hydro-electric power plant of the Michigan Northern Power Company at Sault-Ste. Marie, Mich., with an average force of 62 employees, has operated since December 22, 1926, without a lost-time accident. On December 21, 1929, when the company completed the third consecutive year without a lost-time accident the plant was awarded the second bar to the plaque given by the Union Carbide Company to the affiliated plant which completes a no-accident year. The exposure at that date stood at 458,521 man-hours.

United States Asbestos Division, Raybestos, Manhattan, Inc.

A general campaign throughout the entire plant has been responsible for the 89-day no-accident record of the United States Asbestos Division, situated at Manheim, Pa. This is equal to 42,364 man-days. The plant employs 476 men and is engaged in the manufacture of asbestos textile. The record was unbroken at the time of reporting.

Van Cleef Bros.

Van Cleef Bros., Chicago, manufacturers of rubber goods and chemical preparations, report that 99 employees have worked 401 working days, or 45,243 working days, without a lost-time accident. Safety activities in the plant are carried on through a "safety and social club," with committees on safety, fire prevention, health and welfare. Contests within the plant and with other plants have helped to maintain interest.

Warning Is Too Late

When the feet are injured—Wear Toe
Saver Shoes and have no regrets.

Made and recommended

By

ENDICOTT JOHNSON WORKERS

Dealers Everywhere



Tune in on our radio program. Every Sunday Evening
at 8 o'clock over stations W.O.R.—W.L.W.—W.M.A.Q.

IPCO PORTABLE DANGER SIGNS

ATTRACTIVE—COLLAPSIBLE—SERVICEABLE
MAY BE READ FROM ALL DIRECTIONS

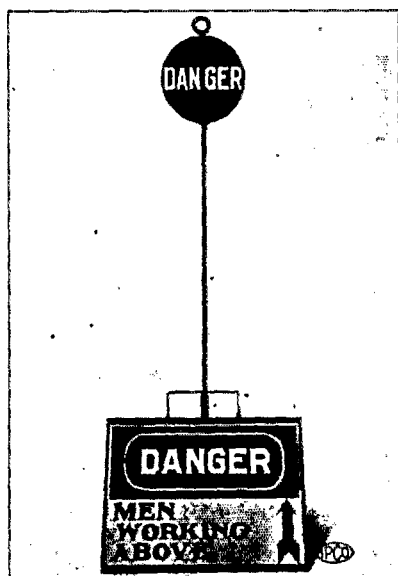


Fig. 3
Pat. Nov. 3, 1925

Recommended for Power, Telephone, Gas and Water Companies, as well as Industrial plants. An efficient sign for streets, highways and general use to warn of overhead or underground danger.

Constructed entirely of metal in two separate units, so that they may be used singly or as one unit as illustrated.

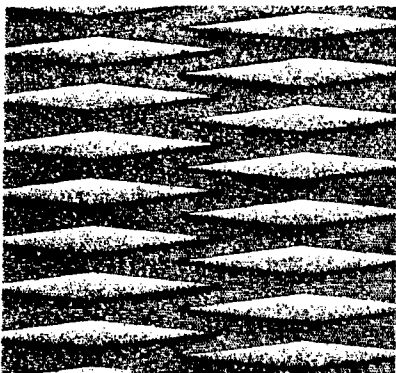
The signs are attractively done in colors, reading the same on all sides. These portables also furnished with stock sign-plates reading DANGER—MEN WORKING ABOVE with arrow pointing up; DANGER—MEN WORKING BELOW with arrow pointing down, and DANGER—MEN WORKING AHEAD.

Stays in position on any surface. Both units collapsible in design, taking up the minimum of space in trucks or store-rooms.

Send for Sign Bulletin "C" describing these portable signs in detail.

INDUSTRIAL PRODUCTS COMPANY
Manufacturers

3729 OLD YORK ROAD PHILADELPHIA, PA.


NEVERSLIP


FLOOR PLATES

We are Pioneers in this field. For 30 years we've made nothing but Floor Plates. We've learned a lot and applied it, during that time. NEVERSLIP Plates come in two patterns: "The Perfect Diamond," and "The Ribbed." SEND FOR SAMPLES AND LITERATURE.

... An Armor of Safety ... for all Footways

—Safety drills and rigorous discipline in safety rules cannot take the place of elimination of danger points in industry.

Slippage surfaces must be MADE safe—sheathed in a protective "armor of safety"—NEVERSLIP floor plates.

NEVERSLIP floor plates are truly an armor of safety; their pattern ("The Perfect Diamond") is assurance against slippage, and they are made from fine open hearth rolled steel, giving great strength and long service life.

For Flooring, Walkways, Traffic Plates, Stair Treads, Platforms, etc., **ALL SURFACES UPON WHICH MEN AND VEHICLES MOVE!**

AMERICAN DRESSED STEEL CO.
Commercial Trust Building—Philadelphia—Penn.

"GENTLEMEN, I HAVE CALLED THIS MEETING—"



A good chair costs less than a tired worker

"to show you that earnings can be increased by spending money in the right place, that preventable tiredness is an expensive economy, that any tool, attachment, device and even a chair that increases production pays dividends just as surely as the wise choice of a good superintendent or foreman."

Please send me Free Hand Book on relation of fatigue to production costs.

Name

Address

City

State

ROYAL
"Seats of Production"
CHAIRS

Royal Metal Mfg. Co.

1134 S. Michigan Blvd., Chicago
Largest Manufacturers of Factory Chairs and Stoves

Safety in the Plant Means Sidewalks for the Town



COWELL, CALIF., now has 4300 feet of concrete sidewalk as a reminder of 43 months of safe operation by the Cowell Portland Cement Company. More than three years ago the company offered to build 100 feet of sidewalk for every month the plant operated without a lost-time accident. The employees responded with enthusiasm and the town is proud, not only of the sidewalks but also of the exceptional accident prevention record which provided them.

During the 43 months that have elapsed since the last accident in the plant, an average force of 225 employees has operated 2,245,122 man-hours in mill and quarry, handling and using explosives, operating heavy machinery and a plant and quarry railroad.

Back of this unusual record of accident prevention has been the active interest and aggressive safety policy of the management.

"Every one of our 19 foremen tells his men what to do and what not to do," says W. H. George, secretary and general manager of the company. "They know that we will not keep a foreman who has accidents in his department."

"We also have a monthly foremen's dinner at which I always make it a point to attend, and all through the year we keep pounding away on this question of safety. We also maintain bulletin boards for safety posters."

The above illustrations show one of Cowell's residential streets with a section of the sidewalk contributed by the company's safety efforts.

When writing advertisers, please mention NATIONAL SAFETY NEWS

Safety Calendar Reaches Many Lands

TRAVELERS in foreign parts are now likely to find the beautiful calendar of the National Safety Council displayed in almost any country of Europe, in some of South America, and even as far away as New Zealand and Australia beyond the far south seas.

Twenty foreign members of the Council have secured quantities of the 1930 calendar, ranging from a few copies to 200, 300 and even 700 copies. This last quantity has been sent by the Union Carbide Company to the Electric Furnace Products Co., Ltd., its foreign connection at Suada, Norway. The U. S. Rubber Company sent 300 copies to Joseph Clerc, its representative in Paris, France.

The Braden Copper Company, at Valparaiso, Chile, South America, has secured 200 copies. A similar quantity went to the Safety Museum, Amsterdam, Holland. Again 200 copies were shipped to the New South Wales Government Railways & Tramways, Sydney, New South Wales. And 144 copies went to the Electrolytic Zinc Company of Australia, Ltd., Hobart, Tasmania.

Other quantities were secured and shipped to such interesting destinations in Europe as the following: Billeruds Aktiebolag, Saffle, Sweden; Kungl. Socialstyrelsen, Arbeturskydds-Arenden, Stockholm, Sweden; Hackman & Company, Wiborg, Finland; Industriidkarenes I Finland; Omsesidiga, Helsingfors, Finland; Betzy Kjelsberg, Oslo, Norway; Henkel & Cie, G. m. b. H., Dusseldorf, Germany; Unfallverhütungsbild, G. m. b. H., Berlin, Germany; Machienfabrick Gebr. Stork & Co., Hengelo, Holland; W. L. Z Van der Vegte, Beverwyk, Holland; Orszagos Tarsadalombizto

Sito Intezet, Budapest, Hungary; and Royal Hungarian Central Bureau of Statistics, Budapest, Hungary.

Then, of course, there is Siebe, Gorman & Co., Ltd., London, England; the Dunedin City Corporation, Dunedin, New Zealand; and the Chile Exploration Company, Chuquicamata, Chile, South America.

Finally, quantities of the calendar were secured by several non-members, among them Chefinspektorat for fabrikktilsynet, Oslo, Norway; Federazione Nazionale, Facista, Rome, Italy; and Nordwestliche Eisen und Stahl, Berufsgenossenschaft, Hanover, Germany.

Redteco

For City Use

—It commands respect of the public.

—It inspires confidence in your workmen.

—It is Redteco (the new warning signal for city use) and Yelteco—the new signal for highways.

May we send you a folder with all details?

THOS. E. COLLINS & CO.
812 Olive St. St. Louis, Mo.

Yelteco

For Highways

This Free Applicator Bottle of MERCURO-CHROME will convince you that it is the logical successor to Tincture of Iodine for First Aid Prophylactic and General Antiseptic Use—

MERCUROCHROME stains as Iodine does, and it is the stain of Mercurochrome, as it is of Iodine, that shows just where and how effectively the germicide has been applied; it fixes the bactericidal agent in the field for a relatively permanent period which prolongs the asepsis or the sterilizing effect, and it provides for demonstrable penetration into the tissues beneath the superficial surfaces. Inasmuch as Mercurochrome is definitely proved an extremely efficient general antiseptic, it is only reasonable to consider it the successor to Iodine in this field, as it is free from the objectionable features of Iodine, for *Mercurochrome does not irritate, burn or injure tissue.*

Sell yourselves first with this free sample:
HYNISON, WESTCOTT & DUNNING
BALTIMORE, MD.



HYNISON, WESTCOTT & DUNNING
Dept. 3, Baltimore, Md.

Please send me free Mercurochrome Applicator Bottle for personal use.

Name

Company

Address

Lessen Your Insurance Rates



Justrite Safety Can
Sizes—1 pint to
5 gallons



Justrite Waste Can
Capacity—5, 10,
14 gallons

Prevent Fire and Explosion

How about YOU?—Your plant?—Your employees? Are you taking the fullest safety precautions against fires, explosions, accidents and other danger risks? Are you using modern, convenient, efficient and approved safety appliances to store your waste, gasoline, benzene, kerosene, turpentine, naphtha, alcohol and other hazardous explosives and volatile liquids? *Play safe*—follow the example of thousands of cautious plant executives—install the latest improved JUSTRITE Safety Appliances TODAY.

Insurance Companies Gladly Lower Rate Premiums

to plants who install approved, up-to-date safety appliances. JUSTRITE Safety Appliances are inspected and labeled by both the Underwriters Laboratories, Inc., and the Associated Factories Mutual Fire Insurance Companies. Protect your plant—your employees—install the latest improved JUSTRITE Safety Devices TODAY. See your dealers or write us for interesting prices and literature.

Justrite

TRADE MARK

Justrite Mfg. Co. 2087 Southport Avenue
CHICAGO, ILLINOIS

External Conditions Cause Most Falls

(Continued from page 34)

erable areas of horizontal walkway surfaces, took care of this enormous traffic unequalled elsewhere in the world in such small area. Conditions, however, had been made as safe as human ingenuity could devise. There were no noticeable external physical hazards. The result is manifest and shows that human physical deficiencies are a minor factor as a cause of falls.

Another illuminating example is that of the main stairway of a large railroad terminal in Philadelphia. At one time, observations were made during a period of six months. During the first six weeks of this period, 141 falls occurred. The exposure, though very large, is not known. After changing the type of tread construction and material, and with no other changes whatever, there was not a single fall in the following three months during which observations were continued. This instance also indicates quite clearly that such accidents are almost entirely the result of hazardous or unsafe external physical conditions, the removal of which brings a cessation of the accidents.

On a sidewalk at a busy street intersection in down town New York, there were nine accidents reported in a single day to one casualty insurance company as occurring on a dangerous coal hole cover. The hazard was removed soon afterward, and, since that time, several years ago, there has not been a single fall at that location, again clearly showing the menace of external hazards and the futility of blaming the human victim for such casualties.

In conclusion, it is admitted that, in our modern life, our tissues have become more or less relaxed, and it is unquestionably true that there are more people who have impaired or sluggish reflexes, suffer with fatigue, poor eyesight, and are perhaps more careless in their haste, but, in spite of these seeming possibilities of cause for accident, we must recognize from the foregoing and numerous similar experiences that, if falls are to be prevented, external conditions must be made safe.

Petroleum Section Reaches World-Wide Audience

THE News-Letters of the Petroleum Section and other safety literature for the industry issued by the National Safety Council have almost as wide a distribution throughout the world as the deposits of petroleum. As an example, this material is distributed to employees of the Vacuum

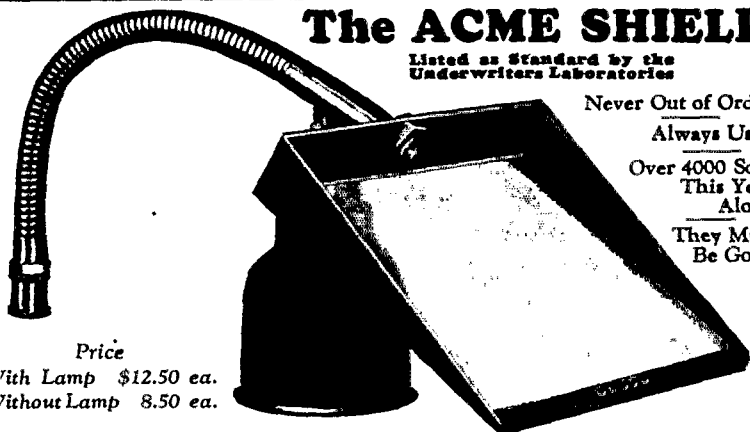
The ACME SHIELD

Listed as Standard by the
Underwriters Laboratories

Never Out of Order
Always Used

Over 4000 Sold
This Year
Alone

They Must
Be Good



Price
With Lamp \$12.50 ea.
Without Lamp 8.50 ea.

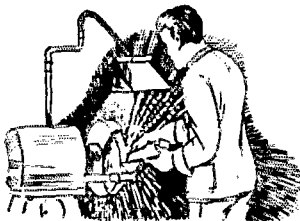
THE Acme Shield in your plant means but one thing: an instant reduction of accidents at the emery wheel from the moment of installation.

The Acme comes to you ready for use—complete with heavy flexible arm, non-shatterable glass shield, and necessary fittings. It may be had with or without the individual work light.

Sold by all machinery supply houses

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Orders for complete sets of Petroleum Safe Practices Pamphlets have been received recently from Sarawak Oilfields, Ltd., Shell Company of Egypt, and United British Oilfields of Trinidad, Ltd.

Fleet Owners to Compile Sectional Statistics

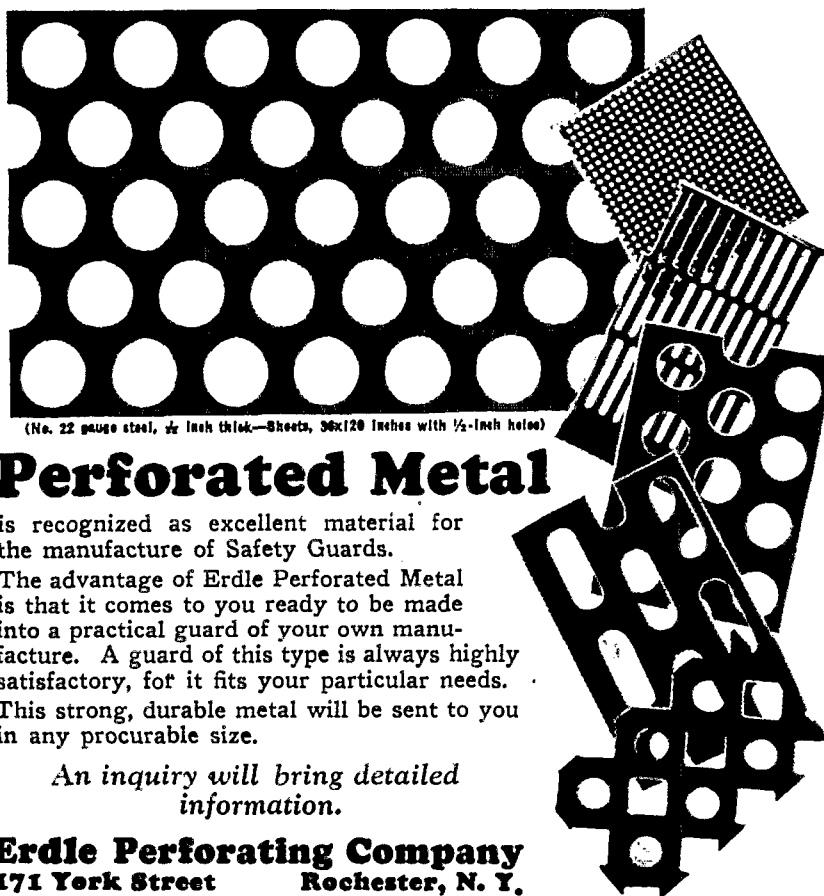
COLLECTION of 1929 accident statistics from members of the Taxicab and Fleet Owners Section was agreed on at the Section's Executive Committee meeting in Chicago on February 7. Tremendous increases in street and highway accidents last year have emphasized the importance of accurate accident records on the part of vehicle operators.

A simple form has been prepared for the reporting of this information to the headquarters office, where it will be compiled and included along with the accident records of other council sections in "Industrial Accident Statistics," 1930 edition.

Following the practice proved effective in other sections the identity of reporting members will not be revealed to anyone outside the statistical staff and key numbers will be used in the printed report to enable each reporting firm to compare its records with those of other companies in the same type of vehicle operation.

Accident rates will be computed on an hourly basis, as well as on a mileage basis where the information is available. Separate classifications will be made for property damage and personal injury accidents, for different types of vehicles, and other significant groupings.

While this activity is under the direction of the Taxicab and Fleet Owners Section, Council members not at present enrolled in that Section are urged to report their vehicular accident experience if possible. The reliability of the information will become greater as the number of reporting firms increases. March 10 has been set as the date for receipt of these reports in the National Safety Council office. Reporting forms will be sent immediately upon request.



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Gas Company Makes 52% Accident Reduction

THE organized program of safety education being conducted among the employees of the Consolidated Gas Company of New York and affiliated gas companies resulted in a 52 per cent decrease in accidents during 1929, according to George B. Cortelyou, president of the company.

There were but 383 lost-time accidents last year, as compared with 596 in 1928, the company records show. The manufacturing department of the gas companies reduced its lost-time accidents from 405 in 1927 to 56 in 1929. The record of this department for 1929 as compared with 1928 shows a decrease of 61 per cent. In the same period the transportation department registered a decrease of 58.7 per cent.

An exceptionally good record was established by the Elizabeth Street branch of the Customers Service Department, which has not had a lost-time accident since January 16, 1927. This branch employs an average of 123 men.

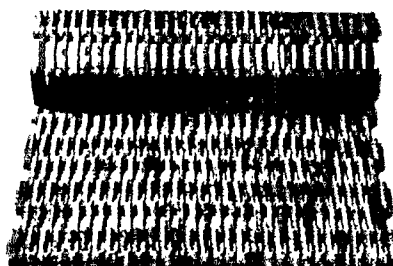
Another high record was registered by the Ravenswood plant of the company, which has not had a lost-time accident for the past 27 months. Both of these records were still intact at the time of reporting.

Mid-West Editors to Meet in Chicago, April 25

THE Mid-West Regional Conference of the Employees' Publication Section of the National Safety Council will be held at Hotel Sherman, Chicago, Friday, April 25. At the morning session H. J. Taylor, vice-president, Jewel Tea Company, Inc., will speak on "The Employees' Magazine and the Management." A luncheon meeting will be held at which the speaker will be Prof. H. E. Harrington, director of the Medill School of Journalism, Northwestern University, who will have for his subject "An Outsider Looks at Employee Magazines."

At the afternoon session the subject will be "Improving the Appearance of Our Magazines." The principal speaker will be W. A. Kittredge, director of design and typography for R. R. Donnelley & Sons Company. At 5:00 p. m. the group will leave for a personally conducted tour through Chicago's Chinatown.

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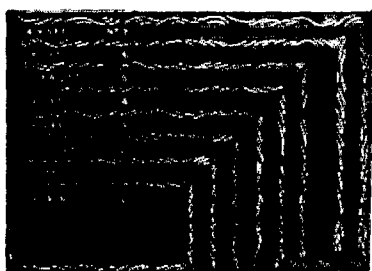
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ACCIDENTAL DEATHS

in the United States

*Compiled by the Statistical Bureau, Public Safety Division,
National Safety Council*

January, 1930

MOTOR VEHICLE DEATHS

AUTOMOBILE deaths are usually from 10 to 20 per cent fewer in January than in the preceding December. January, 1930, exhibited the same downward tendency but the decline was even greater, according to preliminary reports from cities and states with a total population of about 42,000,000.

Only about 75 per cent as many deaths are estimated in the first month of the new year as in the last month of the record-breaking 1929. Furthermore, the January deaths were not much over half the number that occurred in October last year.

One of the most notable January declines occurred in Chicago, where the police department received less than half as many death reports as in the preceding month. New York City also experienced a drop of over 20 per cent in January. Among the states, the Pennsylvania Department of Highways reported a drop from 172 fatalities in December to 124 in January.

The proportion of pedestrian deaths again increased; 71 per cent of all fatalities were in this group. This is a 14 per cent increase from last September when only 57 per cent of all deaths in the National Safety Council's reporting area were pedestrians.

Child deaths, however, were proportionately a little more numerous than in December. This is only a forecast of what is liable to happen in the spring and summer months. Last July, for example, 37 per cent of all pedestrian deaths were of children under 15. While the January percentage was only 17, increases will certainly come unless child safety work becomes more effective.

Motor Deaths Each Day

The following estimates are based on monthly reports to the National Safety Council by cooperating states

and cities. Corrections are made as new information becomes available.

	1929	1930
January	60	59
February	67	
March	65	
April	74	
May	75	
June	85	
July	94	
August	112	
September	101	
October	110	
November	111	
December	81	

Honor Roll

Six cities with a population of more than 100,000 have reported that no motor vehicle deaths occurred in January:

Cambridge, Mass.; Duluth, Minn.; Fall River, Mass.; Flint, Mich.; Fort Wayne, Ind.; Waterbury, Conn.

The following 19 cities of less than 100,000 population also reported perfect records:

Alameda, Calif.; Chicopee, Mass.; Colorado Springs, Colo.; Evanston, Ill.; Fitchburg, Mass.; Great Falls, Mont.; Holyoke, Mass.; Kalamazoo, Mich.; Lakewood, Ohio; Lynchburg, Va.; Malden, Mass.; Moline, Ill.; New Britain, Conn.; Oshkosh, Wis.; Portland, Me.; Quincy, Mass.; Racine, Wis.; Wheaton, Ill.; Woburn, Mass.

HOME FATALITIES

Reports on deaths from home accidents were somewhat less discouraging than a year ago, when they exceeded auto fatalities by 25 per cent. In the January just past these deaths were not quite as numerous as in December, and were 8 per cent fewer than those charged to motor vehicles.

Burns, scalds and asphyxiations were responsible for over half the deaths in homes but were not quite as numerous, proportionately, as a year ago. Falls, on the other hand, were more numerous.

In some cities home deaths were especially important. In St. Louis, for instance, there were 20 accidental deaths in homes but only 11 in motor vehicle crashes. Providence, R. I., had 12 home fatalities, only 4 in auto accidents.

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Third All Ohio Conference Draws Record Attendance

THE third annual session of the All Ohio Safety Congress, held at Columbus, Tuesday, Wednesday and Thursday, January 14, 15 and 16, was the largest in point of attendance and the most enthusiastic in interest yet held by safety workers in Ohio industry under the auspices of the Industrial Commission of Ohio and the management of the Division of Safety and Hygiene.

The registration for the sessions was slightly under 2,000 and the gathering was a remarkable reflection of the interest in accident prevention work in the industries of the state.

The opening general session was presided over by Supt. Thomas P. Kearns of the Division of Safety and Hygiene, general chairman of the committee of arrangements. Mayor James J. Thomas welcomed the delegates on behalf of the city and Governor Myers Y. Cooper greeted the assemblage for the state. Wellington T. Leonard, chairman of the Industrial Commission, explained the aims and objects of the congress and introduced the speakers. President C. E. Pettibone of the National Safety Council, who spoke on "National Safety" and Isaiah Hale, safety superintendent of the Sante Fe railroad, who made a stirring inspirational address.

Tuesday evening, a dinner meeting for employers and plant executives was held with nearly 500 in attendance. L. B. Webster, executive secretary of the Ohio Manufacturers' Association, was toastmaster. Two addresses were made, E. H. Mulpresident of the King Machine Tool of Cincinnati, talking on "Why Safety?" and W. H. Cameron, managing director of the National Safety Council bringing a forcible and interesting safety message. Mr. Cameron substituted on the program for W. C. Culkins, executive vice-president of the Cincinnati Chamber of Commerce, who was unavoidably absent. An interesting feature of the entertainment was a talk by C. A. (Sunny) Sundberg, well-known humorist of Springfield, Ohio.

The general session of Wednesday afternoon was presided over by L. E. Nysewander, labor's representative on the Industrial Commission. Under the general topic "Our Brothers' Keeper," addresses were made by Secretary James J. Davis of the U. S. Department of Labor, who spoke on "Safety for the Worker"; Director W. T. Blake of the State Department of Industrial Relations, whose topic was "The State's Responsibility for Accident Prevention"; Dr. Sidney M. McCurdy, chief of the medical department of the Youngstown Sheet & Tube Co., Youngstown, Ohio, on "Relationship of Safety and Public Health," whose paper was read by J. M. Woltz, Youngstown; Miss Frances Perkins, industrial commissioner for the state of New York, who spoke on the "Cooperation of Capital and Labor in Safety"; and J. P. Brown, district lighting engineer of the Edison Lamp Works, Cleveland, Ohio, who gave an illustrated talk on "Good Lighting and Safety."

The concluding general session, presided over by Thomas M. Gregory, the labor's representative on the Industrial Commission, was devoted to discussion of

the general topic "Specialized Industrial Safety." "Safety in the Steel Industry" was discussed by S. R. Rectamus, acting works manager of the American Rolling Mill Co., Middletown, Ohio; "Safety in Motor Fleet Operation" was the topic of an address by Marcus Dow, manager of the Department of Safety and Personnel, The Motor Transit Management Co., Chicago, Ill.; "Safety and Manufacturing" was discussed by Dr. H. H. Myers, head of the welfare and safety department of the Frigidaire Corporation, Dayton, Ohio; "The Value of Accident Records" was presented by Ethelbert Stewart, U. S. Commissioner of Labor Statistics, Washington, D. C.; and "Safety and Insurance" was the subject of an address by Fred M. Wilcox, chairman of the Industrial Commission of Wisconsin.

The final assemblage of the congress was the get together luncheon at noon Thursday. J. M. Woltz, safety director of the Youngstown Sheet & Tube Co., was toastmaster. Judge Edward T. Dixon of Cincinnati aroused much enthusiasm with a forcible exhortation in which he urged the safety advocates present to return to their duties with a determination to apply the safety messages received from the many speakers. Supt. Thomas P. Kearns of the Division of Safety and Hygiene extended the thanks of the division and the Industrial Commission to all participating in the congress.

The sectional meetings held during the first two days of the conference nearly all showed an increase in attendance over the two previous conferences. The Foremen's Safety Training Section, with more than 700 present, was the largest of these meetings. The Foundry Section came next with an attendance of approximately 300. Other groups holding sectional meetings were: Metals, Rubber, Construction, Paper and Pulp, Small Plants, Public Employees, Woodworking, Public Utilities, Laundries and Dry Cleaners, Fire Prevention, Mines and Quarries, Employees' Publications, and Ceramics.

• Education Useless Without Contractor's Support

DISSEMINATION of safety bulletins and posters, safety talks at frequent intervals to superintendents and foremen, and prize contests for individual results are all essential features in reducing casualties occurring on building construction, said William G. Wheeler, executive secretary of the Committee on Accident Prevention of the Building Trades Employers' Association, speaking before the construction section of the Delaware Safety Council.

Mr. Wheeler stressed the fact that the above activities are useless without the support of the contractor, who must supply a safe place for his men to work. He also emphasized the importance of cooperation between builder and laborer and pointed out that the foreman is the man to hold responsible for accidents on the job, in as much as he is the key man of the industry, maintaining safeguards and standards and teaching safe practices.

THESE outstanding companies can serve you promptly and efficiently with Wheeler Protective Apparel thus assuring you "More Safety Per Dollar."

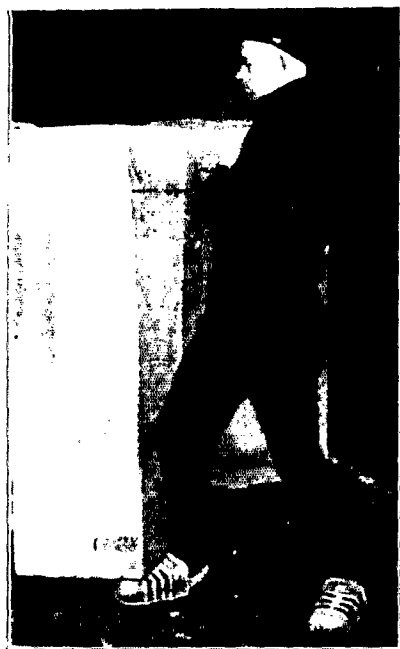
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You as the employer are responsible for the safety of your workmen, but the responsibility of foot protection immediately falls on Sankey Guards when they are put to work—they serve exceedingly well when given this opportunity.

Protected against 300 foot pounds—the maximum load he can carry—your employee has the necessary confidence of foot safety that enables him to work more efficiently.



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The Four Essentials of Fire Protection

(Continued from page 18)

extinguishers be recharged at least once a year. This may seem like an arbitrary ruling, but a little thought will lead to a different conclusion. Most plants don't have so many fires that the fire equipment wears out through use. The trouble with most such equipment is that it wears out through neglect. To avoid this neglect it is important that extinguishers be inspected periodically. The best way to inspect them is to see how they work.

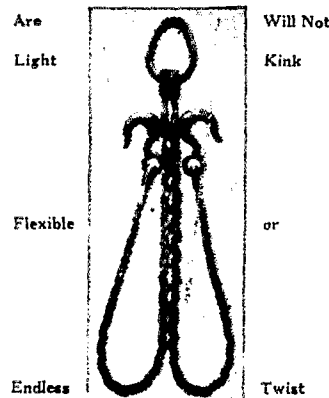
Most employees working in factories, stores, etc., pay but little attention to fire extinguishers. They may casually observe the extinguishers hanging on the wall, but most of them don't know how they operate or how to correctly use them. And, it may be that at the time of fire these same uninformed workmen may be the ones required to use them. The personnel of working forces changes and hence yearly inspections of fire equipment and instruction in their use are necessary.

Everyone who has had experience in fire-fighting knows that, almost invariably, the first few minutes in a fire's life are the ones that count the most. A fire in a waste paper basket is of little consequence if it is speedily extinguished, but let it burn unhampered and it may soon assume the proportions of a conflagration.

This brings us to the consideration of the fourth essential of correct fire protection—"Confidently operated." To prevent panic in time of fire, men who are to operate fire extinguishers must be well trained in their use. They should be so well trained, in fact, that in the event of fire they will act automatically. Men who have had such training will not become panic stricken in time of fire, nor will they run from it. The best way to give men training and confidence in the operation of fire extinguishers is to have regular demonstrations during which all employees are instructed in the use of different types of extinguishers and given an opportunity to use them on actual test fires.

No intelligent person can say that first-aid fire protection and the practice of fire prevention is not worthwhile in view of the hundreds of cases on record where first-aid fire extinguishing devices have quickly and effectively extinguished fires which, unchecked, might have resulted in enormous losses. Of course, it should be realized that

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For Safety Use

Murray Safety Slings:—made in any style and capacity

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THE PROVEN FOUNTAIN



The R-S Drinking Fountain has wide acceptance—it is a proven bubbler. From every angle it is efficient. Besides furnishing clean, refreshing water—each drink is a sanitary one.

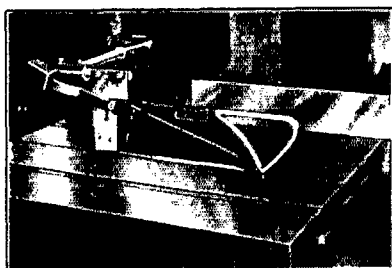
Because of its special design it prevents lips from touching the nozzle—contamination is naturally eliminated. Let us send you illustrated cata-

log showing the complete line of Rundle-Spence drinking fountains.

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for Woodworking Machinery



Superior Saw Guards are made in sizes to fit saws from 6 in. to 36 in. in diameter.

The **SUPERIOR SAW GUARD**, operating absolutely automatically, adjusting itself to the varying thicknesses of lumber with no attention from the operator, leaves the operator free to devote his entire attention to the work at hand. Increased production and satisfaction of the operator are assured.

What the Schools of Buffalo have to say:

"We have made a careful study of Saw Guards with reference to proper safety protection to the operator and one which did not interfere too much with the various operations necessary in school work, and have found that the Flohr Automatic Saw Guards are the most satisfactory on the market."

READ the reasons why:

1. Safety.
2. Sturdy and rigid construction.
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4. Operates on either tilting or non-tilting saw table or tilting saw arbor.
5. Equipped with splitter.
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first-aid extinguishing devices, although often able to put out a fire, in no way take the place of the regular city fire department. They are the "first line of defense," while the fire department is the "heavy artillery."

Keep cool and use your head. This is a prosaic assertion, and yet it is the best advice which can be given to the amateur fire-fighter. Not only must he know how to operate the fire extinguishing devices, but he must be able to judge accurately whether the fire falls within the capacity of his extinguisher or requires outside assistance, this calls for judgment.

In conclusion, it is well to remember that fire *protection* always pre-supposes fire *prevention*. For, unfortunately, due to the frailties of human nature and other ungovernable factors, it is an impossibility to insure against fire by merely taking steps to prevent it. Of course, in a building which is inspected regularly and hazardous conditions removed or remedied, the chances of fire occurring are much less than in the plant where these measures are not taken. However, even the most rigid fire prevention measures do not in any way lessen the need for fire protection and this fact should always be realized.

"Stop Accidents or Close the Shop"

(Continued from page 32)

basic causes of accidents were mental rather than physical.

Considerably more might be written about the experience of this company but it is sufficient to say that the Safety Bureau of the Duluth Chamber of Commerce awarded the company the plaque for 1927 for making the best record in its class, no lost-time accidents being recorded.

An interesting period followed this no-accident year. The members of the safety committee seemed to feel that they had accomplished their purpose, that no further efforts were needed to insure future success. This lack of interest and enthusiasm spread like an epidemic among the workers. As a result of laxity three serious accidents occurred in quick succession.

There was no mystery as to the basic cause of these accidents. Immediately a reorganization was effected, new life and spirit was injected and there was a determination never again to grow stale on the job. The result has been 20 months without a lost-time accident, with all the attendant benefits, including the lowest rate for compensation insurance in the company's history.

KESTER FLUX-CORE SOLDER

FLUX IN POCKETS
SOLDER WELD

Ready to Use

Needs only Heat

SIMPLE

For faster, safer soldering—for greater savings in production and maintenance—simplify your soldering by using Kester, the solder that eliminates the danger of separate fluxes. Kester needs only heat—the perfect flux is in the core of the solder itself. We are prepared to furnish any metal alloy of the tin and lead group. In thirty sizes, cored with eight different fluxes, according to your specific needs. Consult our research and experimental department. Write for booklet—"Facts on Soldering."

KESTER SOLDER CO.
4206 Wrightwood Ave.
CHICAGO, ILL.
Established 1899
Formerly Chicago Solder Co.

KESTER

FLUX-CORE

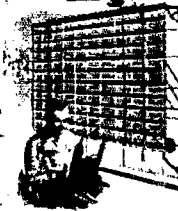
SOLDER

ACID-CORE METAL MENDER
ROSIN-CORE
PASTE-CORE RADIO SOLDER

Sun Heat and Glare



Cool Air and Light



RA-TOX Shades keep out sun-glare and heat, but admit from 30% to 40% more light and air than ordinary shades. They reduce room temperature from 10 to 20 degrees—ventilate without drafts—allow for independent operation of center-swing ventilators in steel sash. Made of attractively colored, permanently stained, or aluminum finished, wood strips woven parallel. They are practically wear-proof and will serve you for twenty years or more. Brackets and fixtures that perfectly adapt this shade to all types of sash have been developed. Send measurements for complete information and estimate.

HOUGH SHADE CORPORATION
(Industrial Division)

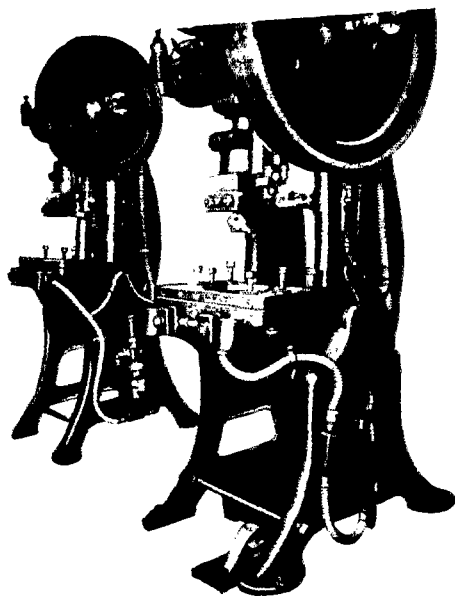
132 N. LaSalle Street—Chicago, Ill.

RAT-OX
OFFSET WOOD FABRIC
SHADES for INDUSTRIAL SASH

HOUGH SHADE CORPORATION
Industrial Division,
132 N. LaSalle Street, Chicago, Ill.

Send complete Ra-tox details at once.

Name
Address City
State Individual
Steel Sash Wood Sash



The Principle of This Guard Is Correct

When the hands are occupied on push buttons they can not be under the descending ram.

The Electro Punch Press Guard has still another feature—it reduces fatigue. Operation by push buttons eliminates the tiring foot treadle process.

Any employer who has punch press operators should be interested in this unusual guard.

Mail the Coupon

Safety Appliance & Machine Co.
904 Donovan Building
Detroit, Michigan

SAFETY APPLIANCE & MACHINE CO.,
904 Donovan Bldg., Detroit, Mich.

Gentlemen:
Please send me copy of booklet: "Taking the Hazard Out of Punch Press Operations."

Name

Company

Address

.....

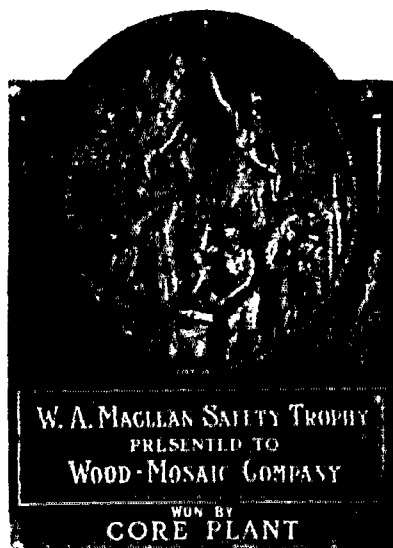
Safety Publicity Suggests New Rat Exterminator

R. B. RUSHING of Augusta, Maine, had tried every known remedy to rid his combination garage and barn of enormous rats. Traps they avoided with the utmost dexterity, and they seemed to thrive on poisons.

One day Mr. Rushing read this line in a National Safety Council bulletin: "Carbon monoxide poisoning kills." This gave him an idea.

He promptly stopped up all the holes in the building with the exception of one large hole. Into this he placed one end of a rubber hose. The other end he placed over the exhaust pipe of the family Ford. He closed the windows, started the engine, and, carefully stepping outside, securely locked the door. After twenty minutes of this treatment, not a rat was to be found; nor did any appear thereafter.

Cut Accident Costs; Win President's Trophy



BY REDUCING its accident cost per \$100 payroll from 14 cents in 1928 to less than 6 mills in 1929, the Core Plant of the Wood-Mosaic Company of Louisville, Ky., won the trophy shown in the above illustration. The trophy was awarded by W. A. McLean, President of the company in a competition between the five plants. The accident costs included in the basis of award included medical attention for minor injuries.

The pattern for this trophy is the property of the Louisville Safety Council and may be borrowed for transportation and packing charges.

PROTECT YOUR FEET



WITH WOODEN SOLES

THICK, wooden soles—dry, comfortable feet—protection from falling objects, acid and extreme heat can result in only one thing—increased production.

Reece Wooden Sole Safety Shoes are constructed for Industry. Used for forty years, they have proved their effectiveness for general use in factories, refineries, foundries, steel mills, and any place where foot protection is needed.

The Reece New Special Toe Guard, made of heavy aluminum, is lightweight but resistant to falling objects. It may be attached to any Reece regular six-inch shoe.

An inquiry will receive prompt attention.

REECE WOODEN SOLE
SHOE CO., INC.
Columbus, Nebraska

When writing advertisers, please mention NATIONAL SAFETY NEWS

SAFETY POSTER SERVICE



"A TEMPLE OF SORROW"

"The world famous Taj Mahal, one of the most beautiful buildings of all time, was erected at Agra, India, by Shah Jehan, as a burial place for his favorite wife, Mumtaz-i-Mahal. The building was begun in 1629 and finished in 1650 at a cost of \$9,000,000. It is the supreme achievement of Mohammedan art and will endure for countless centuries.

"With all its grandeur it is but a feeble effort to commemorate the worth of one human life. All the riches in the world cannot compensate for the loss of those who are near and dear. Isn't it worth while to be careful, for their sake, as well as your own?"

THE foregoing is the subject matter appearing on one of the 26 new Universal Interest posters which have just been printed by the National Safety Council and are now available to all members.

The Universal Interest posters strike a distinctively new note in bulletin board display. Here is something altogether novel which will bring to your board that desired freshness and originality so necessary to effective safety portrayal.

The posters are for weekly distribution, the complete sets now available containing 26 posters, enough for a half year's supply.

The large photographs command immediate attention because they are entirely different from the ordinary safety posters. They come in two colors with elaborate art borders and reading matter set out in large black type that can be easily and quickly read.

The photos cover a wide variety of subject matter. Actual pictures of scenes in faraway parts of the world; also photos of historic interest; pictures that dramatize the big moments of history; photos of interesting specimens and curios of all kinds; world famous temples; out of the ordinary modern photographs—all these and many others go to complete this most unusual series.

Among historic pictures will be found one about an artist who, although suffering the loss of both hands, has succeeded in developing a brilliant career for himself as a paint-

er. Another one for instance, shows Lincoln's carriage in the presence of a man who was run over by it when a boy. The present shrine of the Declaration of Independence is also photographed and commented on; the sculptured recreation of the first man is another one of the subjects. An x-ray photo of an Egyptian child who lived and died thousands of years ago is another one of the series. Also might be mentioned an interesting street scene in an interior city of India; also one of the five oldest boats in existence; also one of the oldest locomotives. These are but a few of the photographed subjects.

The subject matter not only tells the story of the photo in clear concise language but also impresses a practical safety thought. In a sense the posters are visualized safety editorials that will most certainly command thought as well as interest.

The Universal Interest Series is just what you have been looking for to stimulate interest in your bulletin boards. Do not confuse these posters with the regular series issued each month. They have been printed in the form of a special service for a spe-

cial purpose and if you are interested it is suggested that you write for further particulars.

A Touch On the Elbow

WE have the pleasure of presenting an unusually well written reminder of the part the safety bulletin board plays in preventing accidents. It was prepared by Mr. C. D. Dugas, Safety Department, Standard Oil Company of Louisiana, as an appeal for the better care of bulletin boards. "A Touch on the Elbow" is the fitting title Mr. Dugas has given it and one cannot read it without feeling a pull at the heart-strings.

"A touch on the elbow"—what does it mean to you? Is it a friendly warning of danger? An admonition to be careful?

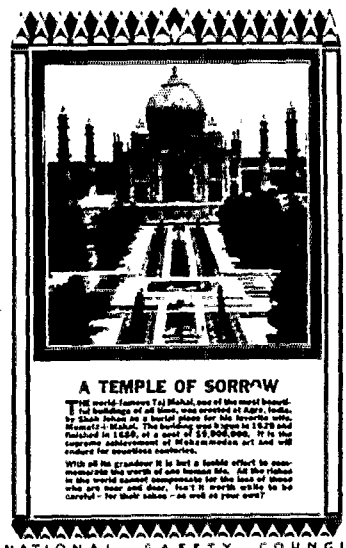
Your safety bulletin board is something in the nature of the touch on the elbow. It is the reminder to all who may glance that way, that life is sweet and the end oftentimes but too soon.

Many pass the safety bulletin board by without a conscious thought. But quite likely, impressed upon the subconscious mind, is the feeling of the "touch on the elbow" and the reaction toward safe thinking is bound to be produced, whether the individual realizes it or not.

The safety bulletin stands for the friendly warning, and as such should be regarded by all. The friend who can not be there in person, but who cautions the worker and the wayfarer.

Will not you who look after the safety bulletin board undertake to see that the bulletins are changed before they become discolored by age and that when they are changed, the old ones are removed, instead of being carelessly covered by the new ones?

Look upon your safety bulletin board as a positive force for good. A helping hand. Regard that sentinel as a lighthouse on the sea of life, sending forth a gleaming ray, like the arm of a friend extended, to give the warning sign—the gentle "touch on the elbow."



NATIONAL SAFETY COUNCIL

POSTERS *for* APRIL

Make your selection from these pages

ON THIS and succeeding pages are shown small single color reproductions of forty-one posters prepared for distribution during the current month. All of these posters will be available to members during the ensuing 90 days in any desired quantity.

Under the terms of membership each active industrial member is privileged to order a certain number

of posters during the year without extra charge. This yearly allotment is based upon the number of employees. It provides for 300 poster units for each \$25 of membership dues. A 9 by 12 poster counts as one unit, and a large two-color poster as four units. The following table shows the complete schedule of dues with allotments of poster units:

Employees	Dues	News	Units
1 to 50	\$ 12.50	1	150
51 to 150	25.00	1	300
151 to 500	50.00	2	600
501 to 1,000	75.00	3	900
1,001 to 2,000	100.00	4	1,200
2,001 to 5,000	125.00	5	1,500
5,001 to 10,000	150.00	6	1,800
10,000 to 25,000	200.00	8	2,400
25,000 or more	250.00	10	3,000

Extra posters will be supplied at cost, under either of these plans:

Plan 1. The member authorizes us to bill him for \$5 for which we establish a credit of 300 poster units to be ordered as needed.

Plan 2. The member authorizes us to bill him for each separate shipment of excess posters at the following prices:

	Small	Large
First 100	\$4.00	\$8.00
Additional quantities, each..	.01	.04

We recommend that members review the miniature illustrations each month, select the posters they

desire and place their order, using our special form, which will be sent on request.

Poster Catalogue

In addition to 47 posters published each month, we have selected 783 posters issued in past years and which have proved so popular that they are carried in stock. Ask for our 1930 Poster Catalogue.

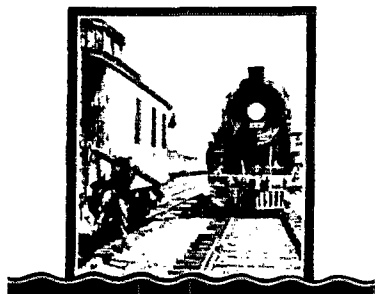
AN UNSUNG HERO



NATIONAL SAFETY COUNCIL

No. 2728B 17x23 in. 4 units

A
MOMENT OF
THOUGHTLESSNESS
MAY GET YOU INTO
TROUBLE FOR LIFE



NATIONAL SAFETY COUNCIL

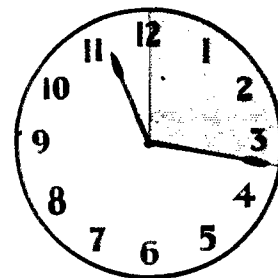
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NATIONAL SAFETY COUNCIL

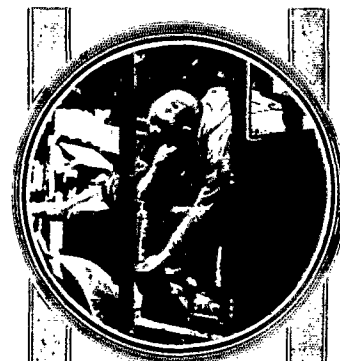
No. 2724B 17x23 in. 4 units
(Three colors)

EVERY 17 MINUTES



ANOTHER TRAFFIC DEATH

No. 2770B 17x23 in. 4 units
No. 2771C 25x38 in. 8 units

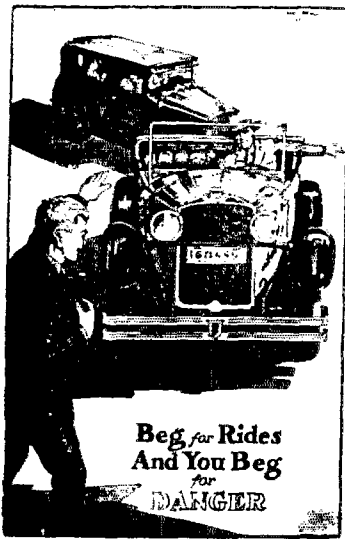


KEEP FIRE EXTINGUISHERS
FILLED
and in
CONVENIENT PLACES

NATIONAL SAFETY COUNCIL

No. 2726B 17x23 in. 4 units

Electrotypes may be purchased from the National Safety Council for \$2 each



No. 2740D 12x18 in. 2 units



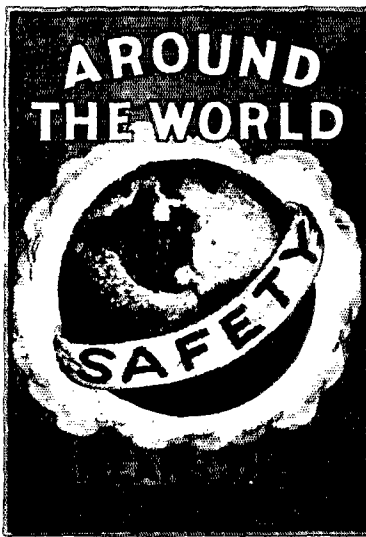
No. 2729B 17x23 in. 4 units



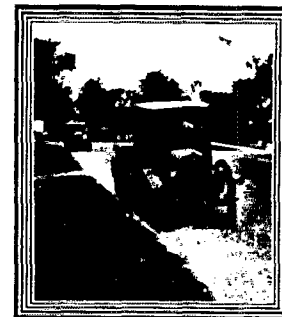
No. 2730D 12x18 in. (Three colors) 2 units



No. 2731 9x12 in. (Three colors) 1 unit



No. 2732 9x12 in. (Three colors) 1 unit



ON HILLS
park with
wheels
turned to
curb

No. 2725B 17x23 in. 4 units



No. 2736 9x12 in. 1 unit



No. 2739 9x12 in. 1 unit



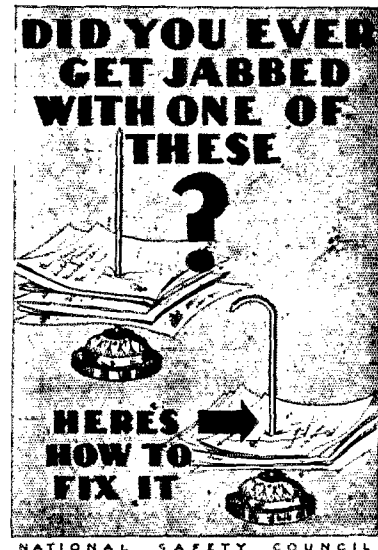
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No. 2737 9x12 in. 1 unit



No. 2734 9x12 in. 1 unit



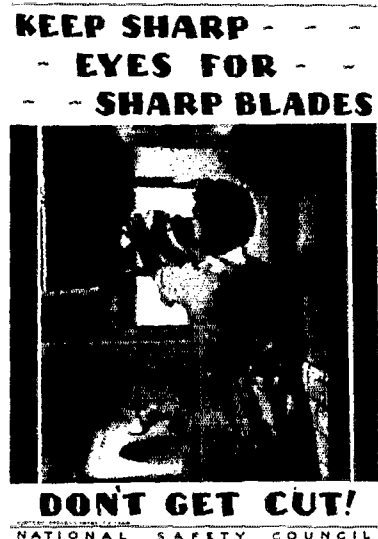
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No. 2738 9x12 in. 1 unit



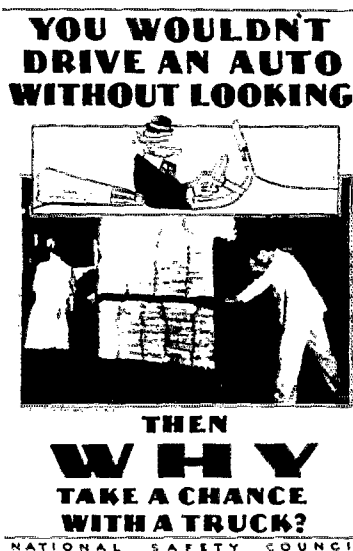
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No. 2742 9x12 in. 1 unit



No. 2744 9x12 in. 1 unit



No. 2741 9x12 in. 1 unit



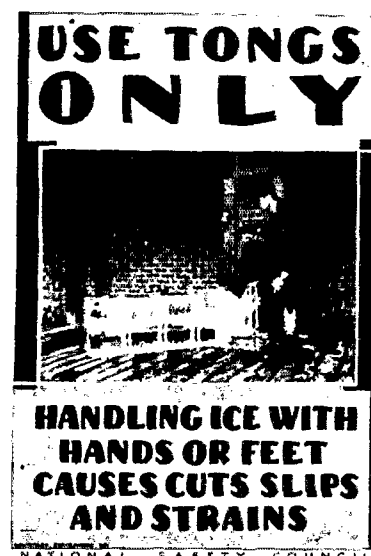
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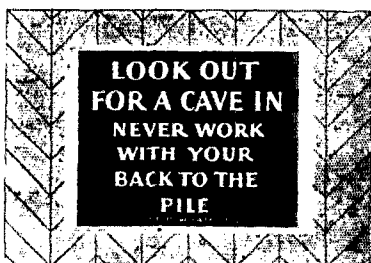
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No. 2750 9x12 in. 1 unit



No. 2765 9x12 in. 1 unit



No. 2747 9x12 in. 1 unit



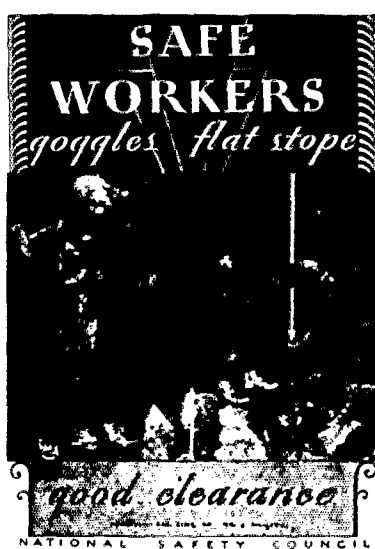
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No. 2767 9x12 in. 1 unit



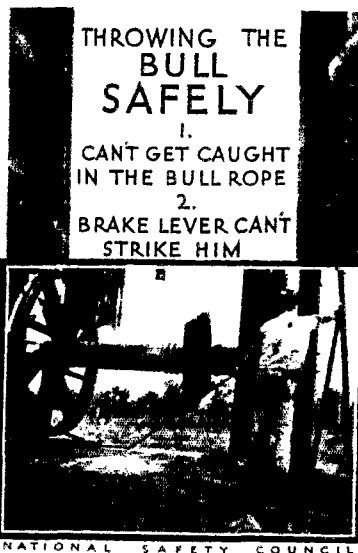
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No. 2756 9x12 in. 1 unit



No. 2757 9x12 in. 1 unit



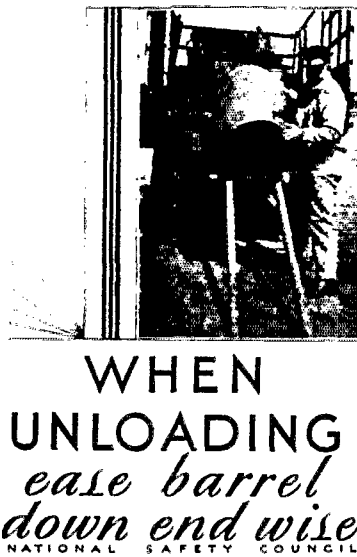
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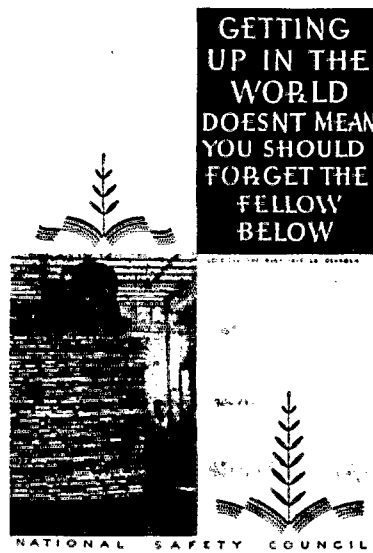
No. 2761 9x12 in. 1 unit



No. 2752 9x12 in. 1 unit



No. 2759 9x12 in. 1 unit



No. 2768 9x12 in. 1 unit



No. 2753 9x12 in. 1 unit



No. 2769 9x12 in. 1 unit



No. 2745 9x12 in. 1 unit



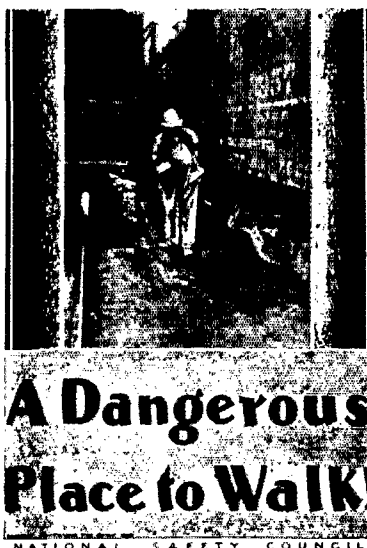
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No. 2751 9x12 in. 1 unit



No. 2758 9x12 in. 1 unit



No. 2749 9x12 in. 1 unit



No. 2746 9x12 in. 1 unit



No. 2766 9x12 in. 1 unit



No. 2748 9x12 in. 1 unit

New Zealand Railways Aid in Safety Education

A recent number of the *Railway Age*, that the Pennsylvania Railroad had issued a new book of safety rules, brought some 50 requests for copies. One of these inquiries came from R. E. Robertson, New Zealand Government Railways, Wellington, New Zealand. With his request, Mr. Robertson enclosed a copy of the following safety pledge which has been issued by the New Zealand Railways and signed by a large number of children in the territory served. The pledge covers not only railroad safety but also precautions to be observed on the streets and in the homes.

Children—Remember:

1. The notices at railway crossings. Stop. Look out for the engine.
2. Before crossing railway lines, stop, look and listen.
3. Never get on or off trains that are moving. It is better to wait for the next train than to put your life in danger.
4. Never cross between the railway cars or wagons. It is dangerous.
5. Never throw glass bottles from railway car windows.
6. Never lean out of the railway car windows or from the car platforms.
7. Never tamper or interfere with any railway appliance.
8. Cross streets only at the proper crossings.
9. Stop, Look and Listen when you are about to cross the streets.
10. Always cross streets in a straight line, and not at an angle.
11. It is dangerous to throw stones or other objects at other children.
12. It is dangerous to throw broken glass on the playground, on the grass or on the benches.
13. Have a place for everything and keep everything in its place.
14. It is dangerous to leave things on the ground for people to fall over.
15. Be sure that there are poison labels on bottles containing poison.
16. Do not leave poison in the way of children, and keep poison away from medicine bottles.
17. Before drinking out of any bottle, smell the contents.
18. Before entering a bath, place your hand, or finger, for a moment in the water to ascertain the heat.
19. Keep kettles, pans and other utensils that contain boiling water, away from the edge of stoves or tables, as these are generally dangerous to children.
20. At railway stations and other places, always cross by the subways or overhead bridges.
21. Never walk on the railway track. Walk a safe distance from the lines.
22. Do not damage electric wire insulators or electric wires. It is a dangerous practice.
23. Do not touch or go near live electric wires. It is death to touch these live wires.
24. When a live electric wire falls to the ground, keep away from it.
25. Petrol, benzine, kerosene and other inflammable liquids are dangerous. Keep lights away from them.
26. Before crossing railways or street crossings, stop, look and listen.

FOR GASOLINE AND OTHER HAZARDOUS LIQUIDS

Swabbing Can—Reservoir tank supplies liquid as needed. A safe and efficient means of moistening swabs and sponges. In case of ignition fire automatically goes out when moisture on top of screen burns away.



Safety Can—Sturdy construction throughout. Heavy cast spout. Shock rim base of 1/4 steel protects lower seams. Leaks practically impossible. Double cylinder screen in base of spout serves as flame baffle. Fire is prevented entering can. Safety present whether cap is on or off.

Wash Can—Wire basket rests in liquid, holds small parts. Several up and down movements thoroughly clean these parts. In case of ignition, close lid and fire goes out.



Bench Can—Efficient and economical for moistening swabs and cleaning small parts. Pressure on screen causes liquid to percolate thru. In case of ignition fire automatically goes out when moisture on top of screen burns away.

Mail Coupon Today for Catalog
The Protectoseal Co.,
226 N. Sheldon St. Chicago, Ill.

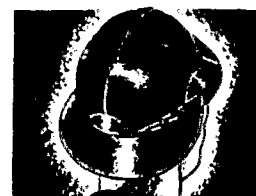
THE PROTECTOSEAL COMPANY,
226 North Sheldon St., Chicago, Ill.
Please send us your catalog "Safety Devices for Hazardous Liquids."

Name
Address

Why Do Men Get Hurt?

(Continued from page 13)

- E1. Taking Chances. When a man deliberately does something which he does not need to do, which does not make his work any quicker or easier, and which he should know to be risky, though it may not be in violation of any specific safety rule, he is taking chances.
- E2. Short Cuts. This covers cases where a man selects the quick and easy, but dangerous, way of doing something, instead of the slower, more laborious but safe way.
- E3. Haste. When a man is in such a hurry that his knowledge and judgment are subordinated to his haste, he is likely to do something which will cause an accident.
- F1. Employee Sluggish or Fatigued Mentally. As a result of worry, ill health, lack of sleep, dissipation, or similar causes, a man will sometimes do things which he would not do if in a normal mental condition. In such cases, his attention is not being distracted, and he may be normally very attentive to his work, but he is, for the time being, incapable of paying proper attention to what he is doing. If an accident results from this condition, this cause will apply. It will also apply to accidents which might have been avoided by reasonably quick thinking in an emergency.
- F2. Employee Excited or Angry. When men get panic-stricken, excited or angry, they sometimes lose control of their judgment and trouble results. This cause will apply in such cases, and also to injuries resulting from fights.
- G1. Employee Physically Defective. This cause will apply to cases where men are injured as a result of undertaking to do work for which they are physically unfit as a result of some organic trouble. Instances of cases of this kind are the man with a defective heart who undertakes to do heavy manual labor, or the man with defective eyesight who undertakes to do work in which keen vision is essential.
- G2. Employee Fatigued Physically. Accidents occur in cases where a man is so weakened as a result of overwork, exposure to cold, etc., that he can not handle himself safely under conditions which would be perfectly safe if he were in his normally good physical condition.
- G3. Employee Weak Physically. A man sometimes gets into trouble for the simple reason that he has not the muscular strength to move himself out of the path of danger, or sometimes because he is not strong enough to do the work which he undertakes. A number of sprains or back injuries may be traced to this cause.
- H1. Danger Points Inadequately Guarded. A barrier or a red flag may be an adequate guard for an open hole in the day time, but not after dark. A gear guard may be safe from in front but not from the side. This cause will cover cases where the accident might have been prevented if the guard had been better designed, better placed, or in better condition.
- H2. Danger Points Not Guarded. This cause will apply in cases of accident due to the absence of such guards, including warning signs, as would be indicated by ordinary prudence and good judgment. This cause will cover accidents due to unguarded projecting set screw heads and similar conditions.
- I1. Material Improperly Piled, Loaded or Stored. Crates, boxes, barrels, reels, crossarms, poles, etc., must be so carefully piled that the piles can not fall over and injure a man, and so that they can be taken out of the pile conveniently and safely. Bulk materials must be stored in bins of proper strength and design, or so piled that dangerous slippages do not occur. When precautions of this kind have not been taken, this cause will apply.
- I2. Untidy or Dirty Passages or Work Spaces. Aisles cluttered with rubbish over which a man might trip, floors greasy or otherwise slippery, ragged piles adjacent to a passage or work space containing materials that might scratch and start an infection, ice on sidewalks or steps, planks from which nail points protrude, etc.
- I3. Clearances Insufficient for Safe Work. Insufficient clearances between exposed circuits, or between walls and charged equipment or moving machinery. Passages so narrow that hand trucks, etc., can not be moved through them without endangering the hands of the truckers. Insufficient spaces between walls, columns, etc., and tracks.
- J1. Defective Materials. This cause will apply to accidents resulting from flaws or defects in materials which are being handled or installed, such as, for instance, the breakage of a stone sill or lintel or of a cast iron pipe, when being properly hoisted or lowered into place.



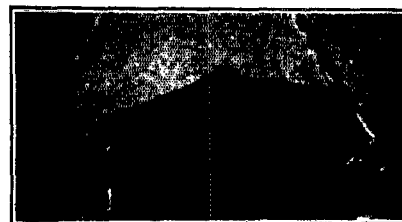
HARD BOILED HATS REDUCE HEAD INJURIES

—and head injuries occur in 2 out of every 5 accidents, according to the U. S. Bureau of Mines. A request will bring full details.

HARD BOILED HAT

BULLARD-DAVIS, INC.

275 Eighth Street, San Francisco, U. S. A.
67 Wall Street, New York.



CLAMPS WITH A CERTAINTY

Hoisting a piece of boiler plate is hazardous unless proper precautions are taken.

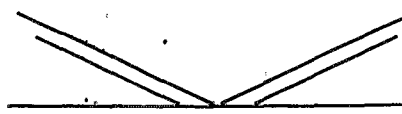
The certainty with which Never Slip Safety Clamps grip a plate saves time in adjusting the hold, or creating a balance.

Made in two types for horizontal or vertical lifting—either clamp may be used for work at an inclination with no possibility of slipping.

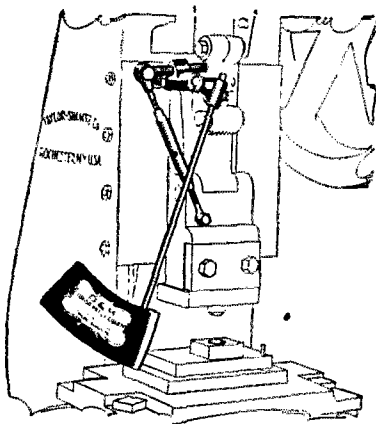
Awarded Gold Medal, Second American Exposition of Safety and Sanitation, Auspices American Museum of Safety, 1914.

Write for details

Never Slip Safety Clamp Co.
51 East 42nd St., New York



When writing advertisers, please mention NATIONAL SAFETY NEWS



Two Hands, Ten Fingers —And All There!

The D & M Automatic Press Guard is a lasting promise to the power press operator that he may keep his hands and fingers intact—even in spite of a rush of work and the temptation to relax his vigilance.

The arm of the D & M Automatic Press Guard sweeps the operator's hand out of danger as the ram descends; the shield prevents his reaching back of the guard before the danger is entirely over.

Simplicity makes D & M Automatic Press Guards completely efficient on any make, style and size of power press. (Try one for 30 days at our expense.) State manufacturer's name, and size and stroke of press, and whether left to right or right to left hand swing is preferred. Order through your machinery supply house or from us direct.

Taylor-Shantz Company
486 St. Paul St. Rochester, N. Y.



Eliminate this accident hazard

It's the grease and oil on shop floors that makes walking unsafe. A properly cleaned floor is never slippery, never an accident hazard.

That's why Oakite cleaning is a definite safety measure. This remarkable material quickly removes all grease, oil, and dirt, then completely rinses away, leaving cement, wood, or composition floors, clean and film-free.

Write for interesting booklet on safe, economical cleaning in your industry.

Oakite Service Men, cleaning specialists, are located in leading industrial centers of U. S. and Canada.

Manufactured only by
OAKITE PRODUCTS, INC.
14D Thames Street, New York, N. Y.

OAKITE
Industrial Cleaning Materials and Methods

- J2. Defective Tools, Scaffolding or Tackle. Including eye injuries and other wounds resulting from the use of mushroomed chisels, injuries due to splintered tool handles, improperly designed, rotted, or damaged ladders, worn or rotted ropes, and any of the numerous other defects in tools or working equipment which may cause accidents if constant care is not used to insure that they are in safe working condition.
- J3. Defective Machines. When an accident is traceable to the defective condition of a machine, or any accessory used therewith, this cause will apply. It will not cover accidents due to absence or bad condition of safety guards (See H1 or H2), but will include boiler and flywheel explosions. "Machines" will include automobiles, busses, auto trucks and street cars.
- K1. Defective Insulation. This cause will be assigned to cases where prescribed insulation had been allowed to become worn or otherwise to get weak or in bad condition, but not to cases where no insulation was specified, or where specified insulation was too light for the regular load. (K3.)
- K2. Unsafe Condition of Building. This cause will apply only in cases where an accident is due to the bad condition of a finished structure or part thereof, including gas holders. It will include cases of collapse, or falls of cornices, chimneys, etc., when such can be traceable to some defect in the construction or maintenance of the building, elevator falls, and the falls or other injuries resulting from defective or missing handrails, and toeboards, or from the bad physical condition of floors, stairs, steam lines, etc.
- K3. Unsafe Condition of Lines. Accidents due to the unsafe condition of power lines, gas lines or tracks, depending on the business handled by the reporting company. In the case of power lines, accidents due to missing or insufficient insulation will come under this heading, and also accidents resulting from failure to provide necessary circuit breakers, etc., and to keep them in good condition. In the case of railroad tracks, defects in switches, signals, crossings, etc., will be included, as well as defects in the track itself.
- L1. Improper Ventilation. A number of accidents may be due to improper ventilation in various parts of our plant, such as manholes, ash pits, etc., where a regular gas hazard is known to exist. This cause will apply in these cases, but not in cases where suffocating gases get into rooms or other places, when such rooms are not regularly exposed to gas entry. It will not apply to carbon monoxide cases in small garages, where there are no regular garage attendants.
- L2. Improper Lighting. Accidents due to lack of light in staircases, passages, etc., or to blinding, glaring lights, or to lights so placed with reference to charged equipment or moving machinery, that they can not be maintained or operated without danger.
- L3. Inadequate Supports, Guys, Braces, etc. The presence of supports, guys or braces gives an impression of security. When they are not strong enough for the loads they have to carry, or have become weakened through exposure, wear, or otherwise, and accidents result, it is very important that this condition should be recognized by assigning this cause.
- M1. Method of Doing Work Improperly Planned. If a crew of men are so distributed that some of them can not work without creating a dangerous condition for others, or if the sequence of operation is so laid out that a dangerous condition results, any accidents resulting therefrom will be covered under this cause.
- M2. Unsafe Layout of Plant. This cause will apply in the case of any accidents due to the unsafe layout of any part of a plant line or mine, or its equipment, excepting conditions already provided for under Causes I3, I1 or I2.
- N1. Proper Personal Safety Equipment Not Available. Personal safety equipment is the portable equipment with which a workman is supposed to be provided for his protection against the hazards incidental to the work he is doing, such as safety belts, rubber gloves, rubber blankets, goggles, gas masks, hard-boiled hats, etc. If a man is injured by reason of the lack of any of this equipment, this cause will apply. If the equipment is available, but is not being used, the cause assigned to the accident will be more in the nature of A2, C1 or whatever may fit the case.
- N2. Defective Personal Safety Equipment. When personal safety equipment is available and being used, but is so worn or otherwise damaged that it fails to prevent an accident which would have been avoided by the use of equipment in good condition, this cause will apply. Frequent and careful tests and inspection of such equipment will prevent accidents from this cause.
- N3. Clothing Loose or Otherwise Dangerous. Loose clothing is dangerous for workers who have to come close to moving machinery. Shoes with nailed soles represent a serious



SPECIFY WHEELER

"MORE SAFETY PER DOLLAR"

APRONS
ARM PROTECTORS
BLANKETS
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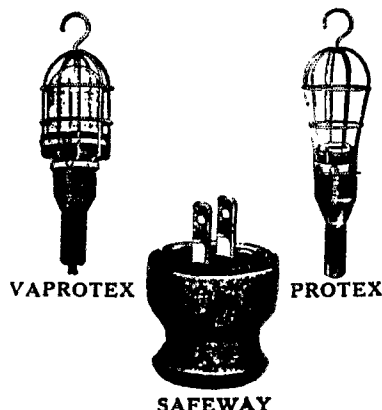
MADE OF ASBESTOS—
LEATHER OR FIREPROOFED
MATERIAL



F. H. Wheeler Mfg. Co.

224-230 WEST HURON ST.
CHICAGO — ILLINOIS

PROTEX — VAPROTEX SAFEWAY



THREE safety items which you should not overlook. How many men in your shops have been burned or more dangerously injured thru electricity when using extension lamps? Why not eliminate this hazard on your properties by installing these "SAFETY FIRST" units.

PROTEX rubber handles not only protect the workman but they also act as a shock-absorber for the filament of the lamp bulb.

VAPROTEX vapor-proof lamps will also serve your purpose economically and safely. This unit also has a rubber handle to protect the workman against electric current. It can be dropped and thrown around without creating the hazards caused by arcs or lamp breakage, AND it is vapor-proof, dust-proof, and water-proof.

SAFEWAY rubber covered plugs are safe and unbreakable. A plug half-apart presents a real hazard. SAFEWAY plugs will reduce your maintenance costs and eliminate all hazards.

Send the coupon for details

Daniel Woodhead Company
15 North Jefferson St.
Chicago, Illinois

=====

DANIEL WOODHEAD CO.,
15 North Jefferson St.,
Chicago, Ill.

Please send us complete details of your "SAFETY FIRST" units.

Name
Position
Company
Address

electric hazard at times. Wet clothing may act as a conductor where dry clothing would insulate.

21. No Person and No Reasonable Safeguard or Precaution Could Have Prevented This Accident. This is the easiest and most comforting explanation, but it is worthless in helping to prevent future accidents. It should never be used until a careful, conscientious effort has been made to identify the real cause of the accident, as a guide for steps to be taken to prevent any more accidents of the same type. Then, if you are honestly convinced that nothing which might have been done by the injured workman, his fellow workman, or the company, could have prevented the accident, and that similar accidents will always have to happen under similar conditions, this explanation may be used.

Coming Events

Associations featuring safety in their programs are invited to send dates of meetings

March 18, Chicago, Ill.

Eighth Annual Midwest Safety Conference. George G. Traver, manager, Chicago Safety Council, 330 South Wells Street, Chicago.

March 24-25 Kansas City, Mo.

Fourth Annual Central States Safety Congress. F. C. Lynch, manager, Kansas City Safety Council, American Bank Bldg., Kansas City, Mo.

March 27 Birmingham, Ala.

Fourth Annual Southern States Safety Conference. Perkins J. Prewitt, director, Birmingham Safety Council, Protective Life Bldg., Birmingham, Ala.

April 15, Newark, N. J.

Sixth Annual Eastern Safety Conference. Fred M. Rosseland, manager, Newark Safety Council, 141 Halsey Street, Newark, N. J.

April 25, Chicago, Ill.

Employees' Publication Section, National Safety Council, Regional Conference, C. E. Kane, Illinois Central Railroad, Chicago.

April 25, Dallas, Tex.

Southwestern States Safety Conference, C. J. Crampton, executive secretary, Chamber of Commerce, Dallas, Tex.

April 30-May 1, Boston, Mass.

Massachusetts Safety Conference, Secretary, Lewis E. MacBrayne, Massachusetts Safety Council, 6 Beacon St., Boston, Mass.

May 6, Madison, Wis.

Rock River Valley Safety Conference. A. E. Gillett, secretary, Association of Commerce, Madison, Wis.

May 7, Louisville, Ky.

Second Annual Ohio River Valley Safety Conference. F. W. Rodenheber, manager, Louisville Safety Council, 425 W. Market St., Louisville, Ky.

June 4, Green Bay, Wis.

Fox River Valley Safety Conference. C. R. Phenice, president, Fox River Valley and Lake Shore Safety Council, Green Bay Wis.

May 14-16, San Francisco, Calif.

Seventh Annual Pacific Coast Safety Conference.

May 27, Erie, Pa.

Northwestern Pennsylvanian Safety Conference. S. M. Lippincott, secretary, Erie Safety Council, Commerce Bldg., Erie, Pa.



A SHOE THAT PROTECTS— COMFORTABLY

FOOT protection is essential, but unless your workmen are comfortably protected, their output is noticeably lessened.

Schiff Safety Shoes serve a dual purpose...they protect...they are comfortable. A Non-Metallic "Protex" toe, quality Kip leather with solid leather counters and insoles, make Schiff Safety Shoes safe, sturdy, attractive.

A complete line of workmen's shoes, equipped with the unusual "Protex" safety toe, is at your disposal.

*Shipment made within
twenty-four hours*

Leon Schiff & Company
108 West Lake Street
Chicago, Ill.

When writing advertisers, please mention NATIONAL SAFETY NEWS

WITH THE MANUFACTURER

Manufacturers are invited to send in announcements of new products, or improved special features. Only items which can be considered as "news" to our readers will be published

LINCOLN SAFETY PUSH BUTTON

A new safety type push button recently developed by the Lincoln Research Laboratories is now being marketed by the Lincoln Electric Company, Cleveland, Ohio, manufacturers of "Linc-Weld" motors and "Stable-Arc" welders.

The design of this new safety push button, which may be seen in the illustration, is a departure from the usual type of push button switch design in that it offers unusual safety features. A ball top "start" button is contained inside a large "stop" button, which projects over the "start"



button. In this manner the "stop" button protects the "start" button from accidental contact. The latter can only be operated by the tip of a thumb or finger inserted inside the "stop" button, which can be operated by a finger or palm of the hand.

Colors of the push buttons are in accord with the accepted standard signal colors for controlling railroad, vehicular and pedestrian traffic. The start button is made of green bakelite with the word "start" in white letters across the ball top face of the button. The surrounding "stop" button is of red bakelite.

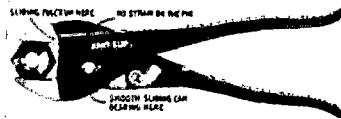
RUBBER TRAFFIC SIGNAL

The Standard Traffic Marker Company, of Wichita, Kan., and Cleveland, announce its 1930 Perfected Rubber Traffic Signal. Thick, inlaid letters, a reinforced center, wedge-shaped base, and a brass anchor plate for ease in refilling are pointed out as the features of the new traffic marker.

This type of marker is placed in the center of a street for through street warning, stop warning, or for any other signal purpose.

KANT SLIP PLIER

A new safety plier has been introduced to the industrial safety market by the Kant Slip Plier and Tool Company, 6036 Wentworth Avenue, Chicago. The sliding fulcrum, which is one of the features of the Kant Slip plier, is said to be an entirely new principle in its operation.



The sliding action of both the cam and fulcrum combine to wedge the operation between the jaws, producing a "can't slip grip."

The structure of the jaws, as shown in the illustration, is such that objects are held firmly. Elimination of any pin strain is a feature stressed by the manufacturers.

HAGER NOISELESS CHECK VALVE

The Williams Gauge Company, 1620 Pennsylvania Ave., N. S., Pittsburgh, has developed the Hager Noiseless Check Valve, which is designed to eliminate noise in power plant equipment.

The Hager Noiseless Check Valve, which consists of five parts—body, disc guide, disc, spring and seat—is simple in construction and uses advanced principles in check valve design. The simple cylindrical design of body gives the utmost in strength and permits a streamline flow of liquids through the line, reducing frictional loss and wear. When installed in service it is bolted between two heavy flanges, which permits easy removal for inspection.

When used in conjunction with a centrifugal pump the check valve acts as a safety valve for the pumping unit, lessening the possibility of broken fittings or castings. The valves are manufactured in all sizes, and are suitable for water, steam, oil and chemicals.

"HALCO" LEATHER LEGGINGS

"Halco" Leather Leggings, manufactured by the Hagerstown Shoe & Legging Co., Hagerstown, Md., have now been placed on the industrial market. Manufacturers of the "Halco" Leggings recommend them especially for workers in mines and quarries, and other outside, rough work.

The possibility of such injuries as bruises, contusions, cuts, fractures, etc., is lessened by the use of the leather legging. It is also a good utility garment for general use.

The general appearance, comfort and lightness are attractive features of the "Halco" legging.

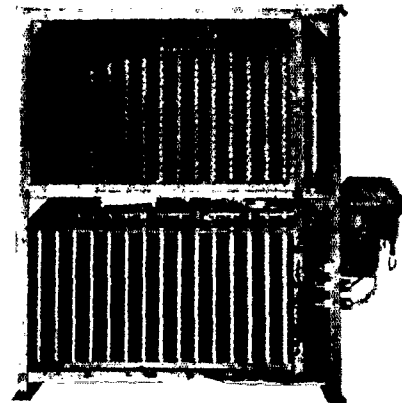
IMPROVED CELL TYPE CAPACITORS

The Electric Machinery Manufacturing Company, Minneapolis, Minn., has recently announced a new line of cell type capacitors for use in power factor im-

provement. These capacitors are built for either indoor or outdoor use. The outdoor type is enclosed in a sheet metal housing.

The E-M capacitor consists of an assembly of capacitor cells mounted on a rugged steel stand. Each cell is a complete capacitor unit, and by connecting two or more cells in parallel, any desired kilo-volts may be obtained.

A feature of the E-M cell type capacitor is the cylindrical roll, which is the "working element" in the capacitor cell. The cylindrical form of construction prevents undue mechanical stress on the tissue.



The individual capacitor rolls are mounted on a supporting rack and sealed under oil in the cell. The cell containers are substantially built of 18-gauge sheet steel, and have welded oil tight joints. Sands for holding the cells are of welded sheet steel construction.

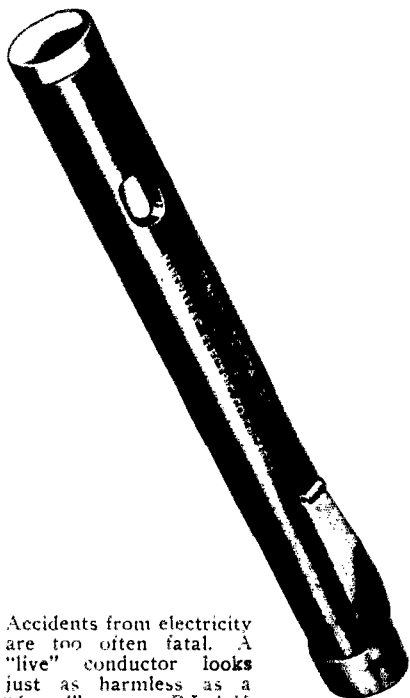
NEWS ITEMS

Bullard-Davis, Inc., 67 Wall Street, New York City, manufacturers of first aid and safety equipment, have added the spur protector to their line of linemen's safety equipment. The spur protector is a piece of safety equipment designed to protect the worker should climbers be thrown or dropped and he is in their path. It also protects the point of the spur from becoming dulled should it be dropped, or something thrown on it.

The Murray Safety Sling Co., Inc., Pittsburgh, has issued a new catalog on its complete line of safety slings. Copies of the catalog will be mailed on request.

Statements published on this page are based on the claims of the manufacturer. While the National Safety News cannot guarantee these statements, they are believed to be accurate.

INDICATES "LIVE" CIRCUIT WITH SAFETY



Accidents from electricity are too often fatal. A "live" conductor looks just as harmless as a "dead" one. **PLAY SAFE.** Use the Statiscopes to determine the actual condition of the electrical circuit.

When placed with the brass cap near a live conductor, a glow will appear in the little window directly over the tube.

Before leaving the factory, each Statiscopes is carefully tested for Positive Operation. It is therefore recommended that a periodical test be made by the user on a known live conductor, as rough usage may affect the instrument.

The Statiscopes is designed to give indication of Alternating Current potentials of 2300 volts and up. Every industry needs it for the protection of its electrical workers. The instrument is so handy (it can be carried in the breast-pocket) that no electrician can afford to be without it. Send in the attached coupon for complete details.

MINERALLAC ELECTRIC CO.
25 N. Peoria Street, Chicago, Ill.

MINERALLAC ELECTRIC CO.,
25 N. Peoria St., Chicago, Ill.

Please send us your circular on the Minerallac Statiscopes.

Name

Company

Address

Wider Duties for the City Fireman

(Continued from page 27)

and artificial gas, that the service to be rendered by a modern fire department is becoming more and more dangerous without adequate protective devices. The Cleveland Clinic fire disaster demonstrated that firemen now have much more than ordinary fire and smoke to contend with. Time seldom permits them to determine what kind of poisonous gas they may encounter when they arrive at a fire. We know, too, that all smoke contains carbon monoxide, the denser the smoke the higher the deadly percentage. Although the day of the "smoke eater" is passed, we expect firemen to exhibit a high quality of courage when necessary, and it is only common sense to provide them with and expect them to make use of adequate protection in meeting danger.

The fire loss in Cincinnati is low, but it is not as low as it is possible to make it, and of course that is our aim. The actual loss by fire usually is much less than the water damage incurred in extinguishing the blaze. Gas masks can be used very effectively in cutting down water damage, because with them dense smoke can be penetrated with safety, the seat of the fire be determined, and water streams used with maximum efficiency and minimum waste.

With the fire department equipped with gas masks it is also readily seen that it can render invaluable service as an auxiliary to the police department if called upon to assist in tear gas or smoke screen riots. This is exactly what it is now expected to do in proper emergencies, for City Manager C. O. Sherrill has endowed all members of the fire department with police powers. Each fire station and all officers have been equipped with arms and ammunition. Since this special power was given to them, early in 1929, fire department members have made hundreds of arrests, ranging from minor traffic violations to arson and even murder.

Bus Officials Adopt Code of Operating Conduct

CLEAN, comfortable and well ventilated buses, trained operators who are familiar with traffic regulations and imbued with the importance of safety, safe equipment, properly maintained schedules and connections made for the convenience of passengers are the primary objectives of the code of operating conduct recently adopted by the National Association of Motor Bus Operators, affiliated with the American Automobile Association.

Bull Dog Safety Shoes

Made on a special high last, giving $1\frac{1}{4}$ inch clearance under the safety box toe, are really comfortable. No trouble from the box toe rubbing the wearer's foot.

For real comfort, combined with high quality and long wear, they have no equal.

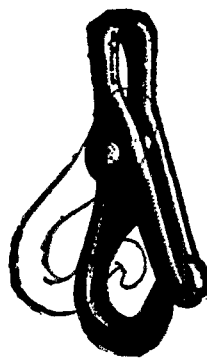
If you are having any trouble with Safety Shoes—try Bull Dogs.

Prices and descriptive folder upon request.

J. D. MacLAURY

Distributor

3030 Euclid Avenue
CLEVELAND, OHIO



Patented

The
**O'Kelly
Safety
Hook**

Locks Automatically
Forms a Link When Closed
Cannot Straighten Out
Quick to Operate
Thousands In Use

Recommended by
Leading Casualty Companies

THE LOAD CAN'T SLIP

Capacities and General Dimensions

Capacity Tons	Length In.	Width In.	Hook Opening In.	Link Opening In.	Weight Pounds
1	7 1/4	3 1/4	1 1/4	1 1/4	2
2	8 1/4	4	1 1/4	1 1/4	3
3	10	5 1/4	2	2	5
5	15 1/4	7 1/4	2 3/4	2 3/4	10
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GREGORY O'KELLY
35 S. Dearborn St., Chicago, Ill.

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DIAMOND DISC Index to Advertisers



(Pat. Jan. 21, 1919)

The Useful Respirator

A sponge in pocket arrangement makes the Diamond Disc Respirator useful when encountering dust fumes and light gases.

Workmen like the Diamond Disc Respirator because it is easily carried in the pocket, small, compact and comfortable.

Manufactured by

The Hygeia Respirator Co.
308 East 94th St. New York City

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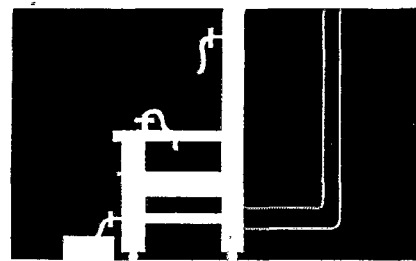
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Don't Invite Death

The electric chair penalty is no worse than taking chances by pulling fuses with bare hands.

Play Safe by Always Using



Fuse Pullers



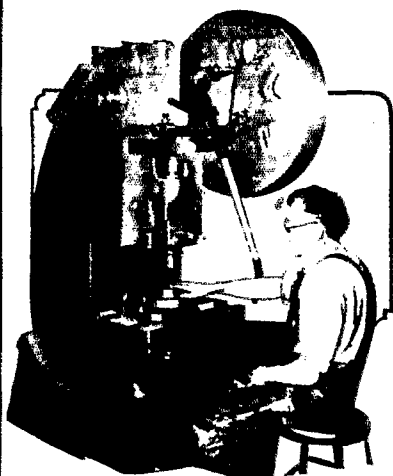
Genuine shock-proof horn fibre—4 sizes.

Ask your jobber or write

TRICO FUSE MFG. CO.

1005 McKinley Ave. Milwaukee, Wis.

LESSEN YOUR



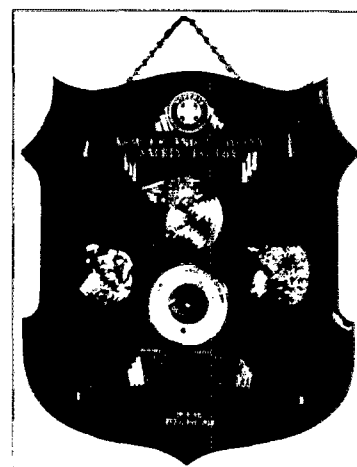
ACCIDENT WORRIES

The Wiesman Safety Guard for Punch Press Operators—now equipped with a second growth hickory guard arm—will speed-up your production with safety.

Both hands of the operator are protected . . . the guard sweeps the entire length of the Bolster Plate on half the downward stroke of the punch. And returns beyond the center on half the upward stroke.

Write for our 30-day free trial offer. Prove it to yourself.

Wiesman Manufacturing Co.
1 South St. Clair St., Dayton, Ohio



THE SPIRIT OF FRIENDLY RIVALRY

Employees in your plant, instilled with the spirit of friendly rivalry, are bound to work more safely and efficiently if a safety contest plan is introduced.

Individual Safety Awards, or an award for the winning unit, department, or team are an incentive for safer practices. Your employees are human—and it's human nature to want to be a winner.

We manufacture a complete line of buttons, badges and trophies.

An inquiry will bring you complete details.

CHAS. A. WINSHIP & CO.

Room 713S 159 No. State St., Chicago, Ill.

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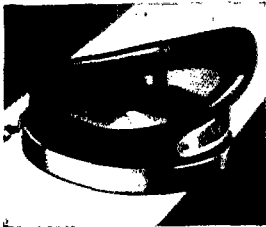
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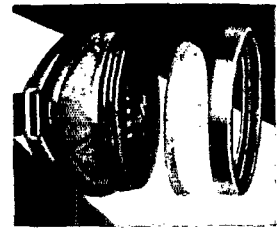
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