NATIONAL
PUBLISHED BY THE NATIONAL SAFETY COUNCIL INC.
SAFETY NEWS
AUGUST 1932

AN OPEN LETTER

NATIONAL SAFETY COUNCIL

INCORPORATED

For Safety—at Work—on the Street—in the Home

CIVIC OPERA BUILDING - 20 NORTH WACKER DRIVE

Chicago

TO ALL READERS OF THE
NATIONAL SAFETY NEWS.

August

1932

Gentlemen:

There has been a unanimous approval of the 1933 Safety Calendar. The outstanding improvements of this edition have been commented on in hundreds of letters. Here are a few quotations:

1. "The most beautiful calendar you have produced."
2. "The 'Progress of Safety' idea certainly gives us an inward feeling of satisfaction for our accomplishments and stimulation to continue our effort."
3. "We like the larger, colorful illustrations. They are certainly great!"
4. "The allegorical illustration is most interesting and a very significant story in one picture."
5. "The safety material on the reverse side of each sheet is the best ever."

The above is true, but this wonderful safety educator will be a total loss to the Safety Movement if it is not distributed. It cannot save lives unless it reaches workers and their families.

I appeal to every member of the National Safety Council to seriously consider and if possible secure approval for the distribution of this 1933 Safety Calendar at Christmas time. I would not put it on this basis were it not for the fact that the annual Calendar has definitely proved its worth many times over. There is at present no other medium for getting safety into the home that can compare with the Calender. Your distribution will pay for itself in safety dividends and contribute to the general National Safety Movement.

Can we count on this help from your company?

Respectfully yours,

W. H. Cameron
Managing Director

SAFETY COUNCIL IS A CO-OPERATIVE, NON-PROFIT INSTITUTION RENDERING ACCIDENT PREVENTION SERVICE TO MEMBERS

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for Scientific Prevention of

INDUSTRIAL DUST DISEASES

The Willson Dustite Respirator, No. 2, has long been popular with workmen for obvious reasons such as the anatomically shaped mask which affords close face contact with but little headband pressure. The long fibre, cotton filter excludes even fine dusts from the system but does not labor breathing or interfere with speech. Exhaust valves on either side of the respirator permit easy release of exhaled air and seal themselves automatically the moment intake starts.

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IT's the "hidden assets" that produce the fine results accomplished by Willson Dustite Respirators in industrial dust disease prevention. Two respirators may resemble each other in exterior quality as closely as "peas in a pod" and yet one of them can be efficient enough to be used at the most hazardous job and the other might be good for only the least hazardous, or none at all. And that brings up the reason why so many industries are glad to pay a few cents more for Willson respirators, because with it they get the assurance of a hazardous problem being scientifically and correctly solved. In every Willson respirator goes the practical and scientific knowledge that has required years of time and thousands of dollars to acquire.

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TO KNOW THAT YOUR DUST PROBLEM IS BEING SCIENTIFICALLY MET---CONSULT WILLSON

WILLSON PRODUCTS, Inc., Reading, Pa.

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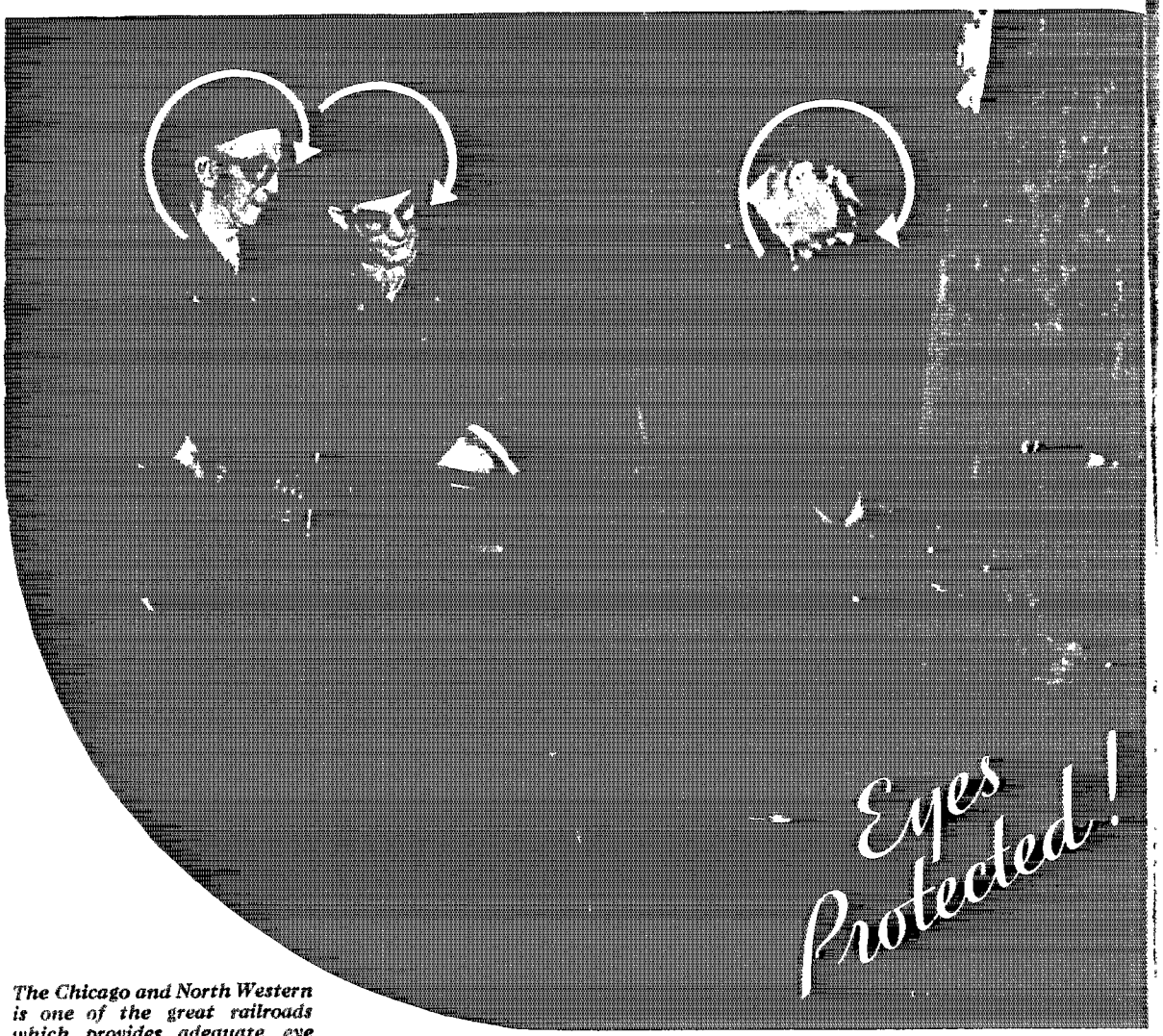
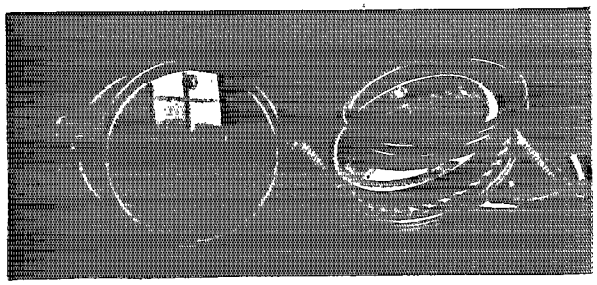
Our BUSINESS *is*



The Chicago and North Western is one of the great railroads which provides adequate eye protection against potential eye hazards. The picture shows American Optical Company eye protection against the hazards created in busting off heads of mudring rivets on fire box of locomotive boiler, in one of the boiler shops of the Chicago and North Western Railway Company.

American

DURALITE "50" GOGGLES



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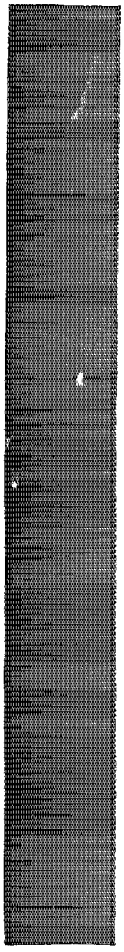

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HAVE YOU TAKEN adequate steps to assure eye safety in your plant? Why not let us demonstrate the efficiency of our Safety Goggles and their application to your specific hazards? We gladly offer our Engineering Service to help you on all problems of Head and Eye Protection. Our Branch near you is listed below—a phone call will bring a representative of our Safety Division.

The GOGGLES in the picture are
DURALITE "50's"

A product of American Optical Company, which for 100 years has specialized in products that have to do with good eyesight. In this boiler shop of the Chicago and North Western Railway Company each man's eyes are thoroughly protected by Duralite "50" Goggles. Men like these goggles—they are cool and comfortable. Check them point for point—lenses, the hardest known to optical science—lens rings, eyecups, bridges—all designed and built for extra strength, safety, comfort, and durability.

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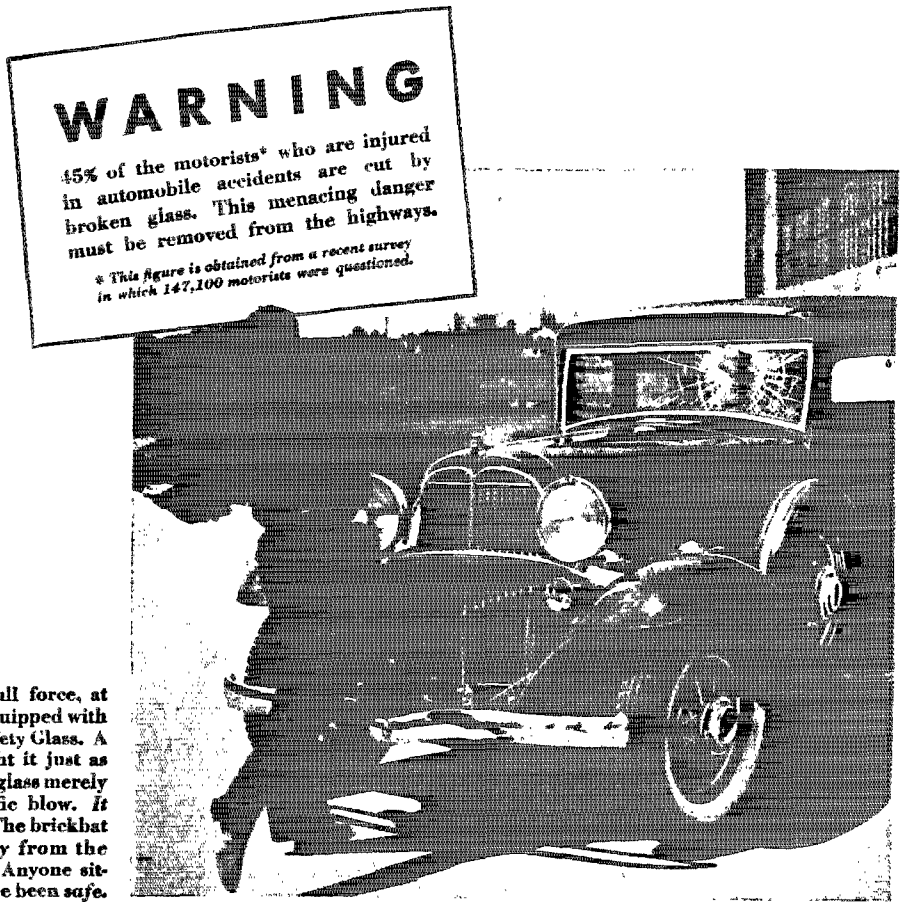
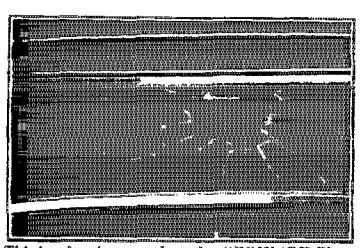
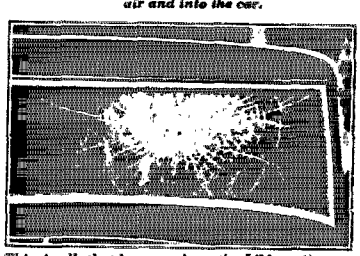


We threw a brickbat, full force, at the windshield of a car equipped with Libbey·Owens·Ford Safety Glass. A high speed camera caught it just as it struck. Notice how the glass merely *cracked* under the terrific blow. *It did not shatter and fly.* The brickbat actually *bounced away* from the Safety Glass windshield. Anyone sitting in that car would have been *safe.*

THIS AMAZING TEST PROVES THAT LIBBEY·OWENS·FORD SAFETY GLASS will protect motorists



This is what happened to the ORDINARY Plate Glass Windshield. The brickbat went right through it. The great, gaping hole shows how the pieces of broken, flying glass were scattered through the air and into the car.



This is all that happened to the Libbey·Owens·Ford Safety Glass Windshield. The patented transparent adhesive and the thin, clear pyroxylin plastic between the two sheets of fine glass prevented it from flying.

After this dramatic exhibition of the terrific impact that L·O·F Safety Glass will resist *and still protect,* an *ordinary* Plate Glass windshield was substituted in the car. When the brickbat struck the *ordinary* glass, there was a terrifying crash and jagged, razor-edged, danger-dealing chunks showered the interior of the car. Those are the flying daggers that cause so many injuries . . . *needless* injuries that often have very serious, even fatal, results. Could anything prove more convincingly that L·O·F Safety Glass will put an end to this menacing danger? Can anyone in authority over highways and traffic ignore the sweeping, widespread benefits that the general adoption of Safety Glass will bring? Can anyone dispute the fact that the universal use of Safety Glass will make motoring appreciably safer? Insist on Safety Glass in your own new car . . . and advocate its use wherever else you can. L·O·F Safety Glass is used by Packard, Graham, Studebaker, Franklin, Reo, Willys, Willys-Knight, Ford, Cadillac, LaSalle, Lincoln and Nash.

LIBBEY·OWENS·FORD GLASS COMPANY, TOLEDO, OHIO, manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tenn.

LIBBEY·OWENS·FORD SAFETY GLASS

NATIONAL SAFETY NEWS

PUBLISHED MONTHLY IN THE INTEREST OF ACCIDENT PREVENTION AND THE HEALTH OF INDUSTRIAL WORKERS

AUGUST, 1932 VOL. XXVI, No. 2

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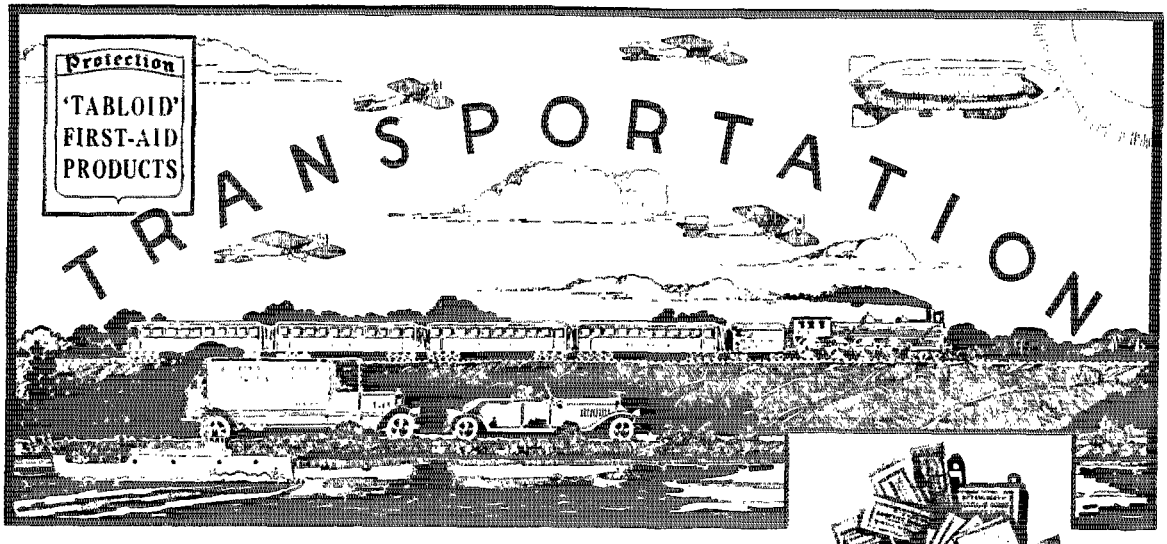

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NATIONAL SAFETY NEWS

PUBLISHED BY NATIONAL SAFETY COUNCIL, INC.

VOLUME XXVI. AUGUST, 1932 NUMBER 2.

"Thanks to Safety!"

LIFE insurance companies as well as casualty companies are recognizing the value of organized accident prevention work. Companies writing life insurance on both the ordinary and industrial plans are benefiting from the safety programs carried on by industry. In an article in this issue, H. W. Heinrich, of The Travelers Insurance Company, points out several examples of industrial processes which have been made safer.

Individual policyholders have also enjoyed the benefits of reduced ratings which were formerly imposed because of the hazards of their occupations. Recently an officer on an oil tanker reported that the successful safety efforts of his company had enabled him to secure a substantial saving in his life insurance premiums.

Another case is reported by a yard foreman in the employ of the Pullman Company whose premium was recently reduced from the semi-hazardous to the standard rate at a saving of $4.50 per thousand dollars of insurance.

"An investigator called at the yard," he wrote to the district superintendent. "He got no further than my office where the safety awards for 1930 and 1931 are displayed. When I explained what they meant, and that, so far, our record for 1932 was clear, he was satisfied and did not wish to be shown around the yard.

"Yesterday I received a new policy issued at the standard rate. Along with it was a check covering the difference in rates for the past ten years.

"Thanks to safety!"

Lessons from Sport

NO big league catcher would think of taking part in a game without mitt, mask, chest protector and shin guards. All of his protective scenery is taken for granted. Yet not so many years ago Roger Bresnahan almost started a riot at the Polo Grounds when he came out on the field wearing a pair of shin guards. The comments of fans and fellow players were far from complimentary.

Bresnahan was not afraid of getting hurt nor did he fear criticism. But he realized that he needed his legs in the game and that protecting them would prolong his baseball career and his income. Foul tips and the flashing spikes of sliding base runners had retired many a catcher before his time.

These protective measures actually speeded up the game. Players could make the plays with more confidence knowing that they were protected against physical injury. Protection in sport preceded protection in industry and its introduction in the latter field aroused similar opposition.

Goggles, respirators, safety shoes, and other devices were ridiculed or cursed by the men. Foremen were frequently hostile and management had none too much confidence in them. There was more or less suspicion that they would interfere with production. Now it is quite generally recognized that the worker who is in constant fear of injury cannot work effectively. When he has confidence in the efficacy of his protective equipment he will do more and better work, but gaining his confidence sometimes requires highly skilled salesmanship.

In This Issue

WHEN the insurance carrier notified them that their plant was an undesirable risk, officials of the Bussmann Manufacturing Company started a safety campaign with themselves before they tried to "educate" the employees. The result was a worth-while saving in insurance costs (Page 11.)

When real interest is aroused, records and results will take care of themselves. Through its safety committees the Atlantic Cost Line Railroad aroused the interest of employees and the result was a casualty rate of 1.10 in 1931, a reduction of more than 95 per cent from the 1923 rate. (Page 12.)

Professor Alvhh R. Lauer contributes another helpful article on the physchological factors involved in the selection and training of commercial drivers. His classifications of the accident-prone types, however, apply almost equally to other occupations. (Page 16.)

Foot protection has been Nils Juell's hobby for many years and he has discovered many interesting and important facts in his research. Real foot protection, he points out, involves far more than buying a stock of safety shoes in assorted sizes. (Page 18.)

A man treed by a dog is an amusing spectacle to everybody but the man. Family pets do more than anything else to make life exciting and sometimes perilous for meter readers, delivery men and others who have business at the back door. R. H. Ferguson has been investigating the methods used by public utility companies in dealing with this problem and presents some helpful hints from their experience. (Page 23.)

Safety's third fundamental—engineering—has not made as much progress as might be expected. Purchasers claim that a machine guarded adequately by the manufacturer is a rarity. The manufacturers contend that it is impossible to satisfy all the state codes, to say nothing of the individual buyer's own ideas, and that few are willing to pay the price for real protection. Nevertheless, some machines have been improved greatly from the standpoint of safe operation as G. M. Briggs points out in the first of a series of articles. (Page 25.)

THE MANAGING DIRECTOR'S PAGE

"Just Another Association"

WILLIAM JAMES, possessor of one of the keenest minds America has produced, observed one day, "There is very little difference between individuals after all." It was a profound remark, but more profound still was the reply of the carpenter to whom he was speaking. The carpenter said, "Ah, but that difference is extremely important!" We know that we are separate identities and we don't like to have our personalities dumped into a bushel basket like so many potatoes and labeled to indicate that we not only look alike but we *are* alike.

Associations as well as individuals suffer from this classifying process. Executives, feeling the pinch of depression, have too often hastily said: "Economize. Cut off all the contributions we make to associations!" Unfortunately, the worthy and the less worthy sink together, and the indiscriminate action does not reflect credit on the business executive. It smacks of panic and is capable of overthrowing our most prized institutions.

On the other hand, one of the largest employers of labor in the United States typifies the more intelligent attitude held by some. This concern holds memberships in 46 national associations, the aims and accomplishments of each one of which were subjected to the most painstaking investigation before the membership was taken out.

This is the type of member the National Safety Council prizes. Encouraging was a public statement made by the president of the corporation a few weeks ago: "If we were forced to cancel all of our 46 memberships except one, the National Safety Council would be retained because it is a thoroughly practical, serviceable and effective association rendering an abundant service worth many, many times the annual dues."

The National Safety Council is *different* from most other associations. Its ideals are humane; its goal specific; its methods have been proved effective thousands and thousands of times. It is unfair and unjust to use it as an ingredient for a beef stew! Any employer, public carrier, indeed, any community which wishes to prevent accidents can get the value of its membership cost hundreds of times over during the year by the use of the ideas and services sent to him automatically and on request as a member. The council provides its safety commodity at cost. A single safety poster represents the average annual dues, and five hundred posters are placed before the member each year. A safe practices pamphlet frequently contains the fruits of years of research. More than two hundred are available to members. The organization is proud of these and its many other services.

Accidents can be prevented. In preventing accidents any employer, large or small, can save money. Even in a depression, accidents cost a lot more than intelligent prevention. Accidents multiply the evils of hard times.

Next fall at its Annual Congress, the Council will observe its twenty-first birthday as a force in the upbuilding of America. In this twenty-first year the organization needs your support as it has never needed it before. The organized safety movement must have the continued help of industry and the increased aid of the public. Its goal is the saving of 99,000 lives a year. The Council is organized and equipped to carry on with unequaled efficiency. We must carry on.

NEWS OF THE MONTH

SIX industrial sectional contests ended June 30. Three new sectional contests started July 1. These contests run on a six months' basis. Approximately 700 industrial units and 200,000 workers are competing in these contests.

Forty-three cities have enrolled in the September Law Enforcement Month campaign sponsored by the Council's Street and Highway Traffic Section.

Eleven cities have formed community safety organizations inspired by the National Traffic Safety Contest.

More requests for reduced railroad fare certificates for the Congress have been received than on the same date in 1931. Hotel reservations equal those made to date last year.

Eighty-four newspapers requested illustrative charts of the "Balanced Program for the Prevention of Traffic Accidents" last month.

One hundred and five prominent Washington citizens have accepted invitations to serve on the Congress Sponsoring Committee.

The Press Is Interested

A SPECIAL newspaper release summarizing the interesting data from "Accident Facts—1932" has been sent to practically all daily newspapers in the United States. Special stories were also sent over the wires of the big newspaper syndicates—Associated Press, United Press, and International News Service. Perhaps no other single publication or announcement finds such wide and valuable publicity uses for safety as does "Accident Facts."

Never has there been a more intense interest in the accident problem among metropolitan newspapers. Following the July 4 week-end the *Chicago Tribune* devoted front page headlines and a feature news story to the week-end accident toll. All other Chicago newspapers gave generous and prominent attention to accidents.

* * *

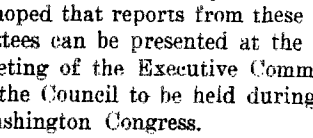
Forty-three cities have enrolled in the September Law Enforcement Month Campaign sponsored by the Council's Street and Highway Traffic Section. The results of this campaign will be announced at the Washington Congress.

* * *

During the past three years 2,307 industrial units reporting to the National Safety Council reduced their combined accident frequency rate 38.4 per cent. These same companies also enjoyed a reduction of 19.3 per cent in their severity rate.

* * *

The Technical Committee's report of the National Study on Health Protection in Sand Blasting Metallic Abrasive Cleaning is still under consideration by the Reviewing Committees of the six Foundry Associations and the National Safety Council. It is hoped that reports from these committees can be presented at the next meeting of the Executive Committee of the Council to be held during the Washington Congress.



This Campaign Was for Employers

By THOMAS W. PARRY, Jr.

For years officials of this company had prided themselves on "No serious accidents." But one day they found that "minor" accidents had made the company an undesirable insurance risk

SAM HARMON was a good machinist. He had been with the Bussmann Manufacturing Company twelve years, and when it came to turning out fuses, the principal product of that company, Sam clicked off his end of the job in record time. And he'd never had an accident. Not a scratch in twelve years. That is why everyone around the plant was so surprised the morning Sam nicked the tip of his finger on a punch press.

Joseph Bussmann, one of the officials of the company, was making his morning round of the plant. He stopped at the punch press to talk to Sam. They'd known each other since they were youngsters.

"How are things clicking?" Bussman asked.

"Gathering more speed every day," Sam threw back as he shoved a piece of metal in the press. As he turned to say something else to Mr. Bussmann his foot came down on the pedal.

Whack! Sam jerked his hand out of the press, but he left a tiny bit of skin from the middle finger under the punch.

"Well, I'll be —!" he exclaimed. "I've been operating that thing so long it's become second nature to me. I didn't think it was possible to get hurt on a hand-power press. Wow! It's a good thing I didn't have my whole hand under there."

"Better go upstairs and have it dressed," Mr. Bussmann suggested.

"Oh, it's nothing," Sam returned. "Just a little nick. It'll heal up in a week. I suppose a man shouldn't expect to go more than ten years without a little accident."

"No, that's too good a record to last," the other agreed.

When Mr. Bussmann returned to his office, he contemplated that remark, "Too good a record to last." But why should it be? Were minor accidents a necessary evil? And just about that time the telephone rang. It was the insurance company.

"Your insurance expires in two months," the representative told him. "We won't be able to renew it. Simply wanted to let you know in plenty of time to make other arrangements."

"But we've never had a serious accident in any of our plants," Mr. Bussman protested.

"No, but you have a good many minor ones. Cuts, scratches, bruises. And we have to set up a reserve to take care of those. Some of them might become bad infected cases, you know. Why don't you start a safety campaign among your employees?"

That day the officials of the Bussmann Manufacturing Company got together. Scrutiny of their insurance costs over the past few years convinced them it was time to eliminate these trifling but costly accidents. They decided to launch a vigorous safety campaign, not among employees, but among employers.

That was five years ago. As a result of that campaign—or, rather, consistent, determined effort—insurance costs of the Bussmann Manufacturing Company have decreased from approximately $2.46 per hundred dollars of wages in 1926 to about 88 cents in 1931, and minor accidents have been virtually eliminated.

"The safety of factory workers," Mr. Bussmann says, "has not been effected through the posting of signs aimed at employees throughout our shops or by any system of penalizing employees who were responsible for accidents. It has been effected simply by means of a change in viewpoint, and that change had to start at the top — among employers — not among employees.

"Years ago this company, like hundreds of others throughout the country, was an undesirable risk for insurance. It was simply because we had never considered seriously the question of safety, because in our entire history we had had only one accident that might even approximate seriousness.

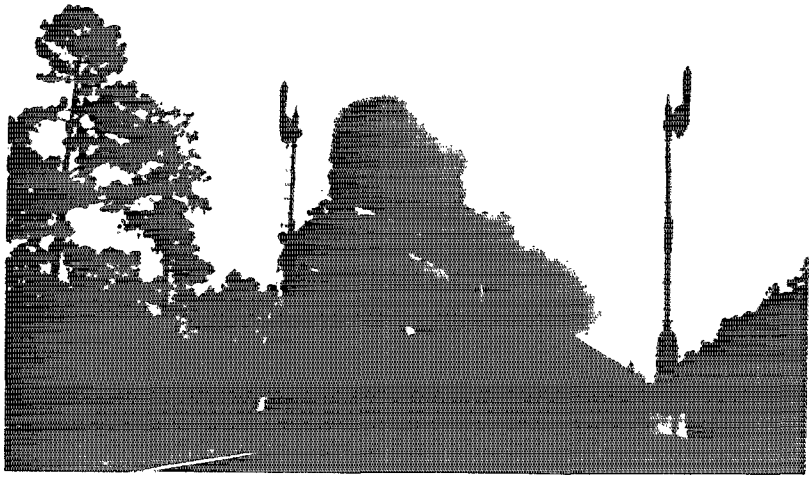
"However, we had had many little ones. Workers would get cuts, bruises, bits of material in their eyes. For each of these accidents, no matter how trivial, the insurance company had to set up a reserve against any possible claims in the future.

"The first converts to the cause of industrial safety were the officers. Then we went to our superintendents and foremen and stressed the necessity of extreme care in the plants. And some of those superintendents—men who had been working in shops for years without a serious accident —were inclined to laugh. Little things like cuts and bruises, they contended, were simply bound to happen, and they didn't amount to much, anyhow. Those fellows were the

(*Please turn to page* 62)

"I suppose a man can't expect to go ten years without some little accident."

"Your insurance expires in two months. Sorry we won't be able to renew it."



Supervisory control is an essential in the safety program but some force less easily defined is usually responsible for outstanding achievements. The Atlantic Coast Line Railroad found an expression to describe it

•

By

CARMAN T. FISH

"Super-VISION" Brought Safety

IN the railroad station at Wilmington, North Carolina, I was impressed by several large green and white posters carrying safety slogans distributed prominently throughout the concourse. Displaying safety posters in passenger stations is not a general practice, but having been acquainted with the safety work of the Atlantic Coast Line at long distance for several years, I was not astonished.

One message in particular stood out:

"Super-VISION Prevents Accidents."

At first thought this slogan might seem to be merely a clever play on words, but its message stuck. Here, perhaps, was the key to the enviable record which the Atlantic Coast Line Railroad Company had established in recent years. Not merely the familiar supervision by officials and foremen, not merely control or authority, but a highly developed faculty of attention and watchfulness, the power of foreseeing accidents that might interfere with safe working and safe living.

That, in part, was the explanation of the slogan given by Robert Scott, director of insurance and safety for the Coast Line. And this force had been developing in the organization and bringing increasing results for many years before a word was found to describe it.

The present safety organization dates back to the dark days of 1918, when, strangely enough, the destruction of man-power on the firing line directed attention to human conservation at home. When the railroads passed under federal control as an emergency war measure, the railroad administration mapped out a plan of safety organization, but each railroad had to supply the motive power to make the organization function.

In search of help in getting a program started, Mr. Scott came to Chicago and spent several days at the headquarters of the National Safety Council. He also conferred with Ralph C. Richards, of the Chicago & North Western, whose efforts on behalf of the safety movement on the railroads and nationally helped to make safety history. With this help and his own convictions of the possibilities of accident prevention, Mr. Scott went into the work with his characteristic energy.

The plan of organization adopted in 1918 has continued and been found highly effective. An elaborate system of safety committees—a general safety committee, three division committees, also local, shop and district committees—has been the principal medium for carrying on the work. The general idea has been to establish a committee wherever a dozen or more employees are at work. To many safety men this type of organization would seem cumbersome, and it probably would not fit the needs of every company. But this intensive committee set-up has helped to make the whole 20,000 employees of the Atlantic Coast Line feel that they were part of the safety movement.

"We couldn't have reduced employee casualties 95 per cent since 1923 without the aid of these committees," declared Mr. Scott. "We have worked on the principle that when real interest is aroused, records and results will take care of themselves. Our records show that to date the safety committees have submitted more than 26,000 recommendations which have been approved. More than 20,000 of these related to physical conditions and the remainder to working practices."

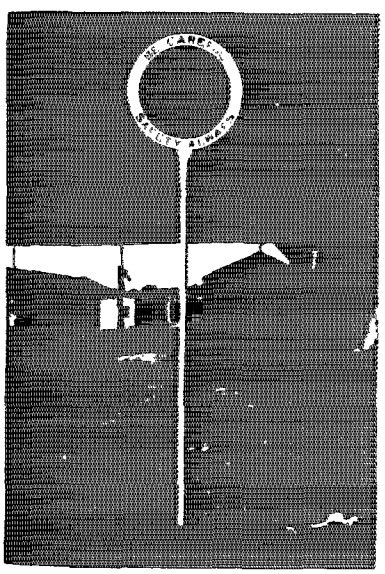
These green posters are issued monthly and posted all over the system where both employees and the traveling public can see them.

Safety committeemen from every branch of the service are paid for any time that may be lost from their regular work while attending safety meetings. This has strengthened the feeling in the minds of employees that safety is regarded as an important part of the Atlantic Coast Line's program.

For more than ten years Mr. Scott has held annual meetings of all safety committee chairmen and the secretaries who are supervising officers of these committees. At these meetings every phase of accident prevention is discussed. They are marked by an "intelligent enthusiasm" and are looked forward to with the keenest interest.

Meetings of district and local committees are often community events. Sometimes a school, town hall or church is chosen for the meeting with a local pastor and prominent citizens participating. Public safety is discussed in addition to those problems which are directly concerned with railroading. These meetings have brought the railroad and the public much closer together, and the Coast Line has come to mean more to these southern communities than a means of transportation and an employer of labor.

No account of the railroad's safety work would be complete without special mention of the negro employees. They have responded wholeheartedly to the safety appeal and



One hundred of these "Sentinels of Safety" have been erected at conspicuous points on the Atlantic Coast Line system.

One of the grade separation projects recently completed along the Atlantic Coast Line route.

their leaders have developed the safety spirit almost to the point of religious fervor.

For several years past classes of instruction have been held among foremen on various parts of the system. Foremen have been impressed with the vital necessity of seeing that every employee is not only instructed

Robert Scott, Director of Insurance and Safety, Atlantic Coast Line Railroad.

in his job, but also inspired with the need for "Super-VISION"—looking beyond the obvious in an effort to foresee the unexpected.

No elaborate safety rules have been promulgated on the Atlantic Coast Line. By training and discipline the strict observance of the standard book of rules has been featured in connection with the safety program. The subject of safety has a prominent part in all operating rule meetings held by supervisory officers.

It is quite axiomatic that safety can make little progress without official approval and encouragement. The safety program of the Atlantic Coast Line has enjoyed this official support ever since its inception. The late Henry Walters, who developed the Atlantic Coast Line System to its present proportions and was for many years chairman of the board, had a genuine appreciation of the safety program. Lyman Delano, executive vice-president and successor to Mr. Walters as chairman of the board, has aided the cause of safety consistently by his official and personal interest. The operating official who makes a good record in his jurisdiction is sure to receive a note of congratulation from Mr. Delano. During the past three years, when every possible economy has been important, he approved expenditures needed for the effectiveness of the safety program.

In the 1930 annual report to stockholders of the company more than a page was devoted to the activities of the safety department, stressing the economic importance of organized effort in accident prevention, and pointing out that the total payments to all persons injured during 1930 was 52.7 per cent below the average for the previous ten years.

The safety program has been under the energetic leadership of Robert Scott since its beginning back in 1918. Mr. Scott is widely known in railroad safety circles, and has held many offices in safety organizations. He was president of the Railroad Fire Protection Association, 1918-19; chairman of the Steam Railroad Section, National Safety Council, 1919-20; and chairman of the Safety Section, American Railway Association, 1925-26. He also served as a member of the executive committee of the National Fire Protection Association for three years.

At the annual meeting of the Safety Section of the American Railway Association at Salt Lake City in 1924, Mr. Scott proposed that the railroads set for themselves a reduction of 35 per cent in employee casualties

A district safety committee in session.

from the 1923 total. The year 1930 was set for the attainment of this goal. The suggestion was received with enthusiasm, and each railroad set about in earnest to make the necessary improvement in its casualty rate. At the end of 1930 the railroads had exceeded their original mark and they have continued their progress.

Mr. Scott is also editor of the employee magazine, *Atlantic Coast Line News*, and consequently this means of maintaining safety interest is used effectively. Abstracts from talks given at committee meetings, timely articles by operating men, and reports of the records of the various units are published regularly. The magazine is not devoted entirely to safety, however, and covers a wide range of employee interests. The magazine has been a medium not only of instruction but also of helpful and friendly contact between the employees and the safety department. Mr. Scott is also a member of the advisory committee of the relief department, and a member of the pension board, also chairman of the committee which awards service emblems, all of which strengthen the friendly relations between the employees and the safety department.

The investigation of accidents is properly stressed, and Mr. Scott states that he "goes on the theory that accidents involving destruction of persons or property represent operating failures, and the prevention of these accidents is an operating responsibility."

In 1928 the company adopted the contest plan, giving the National Safety Council credit for the idea. This movement was backed by Mr. Delano because of its unquestioned value in stimulating the heads of departments, supervising officers and men in the ranks. The plan has been thoroughly justified by the results.

The safety department has realized that it must continually tell employees things they already know but do not know well enough. One of the methods of accomplishing this has been by a special series of what is known as the "green poster," carrying a special message each month from the director of safety. These posters, which are displayed in waiting rooms as well as at terminals and in the shops, have attracted much favorable attention from the traveling public.

The company maintains and services 185 glass covered bulletin boards on its properties. At frequent intervals these boards receive fresh posters and these safety messages receive the same interested attention as when the service was established.

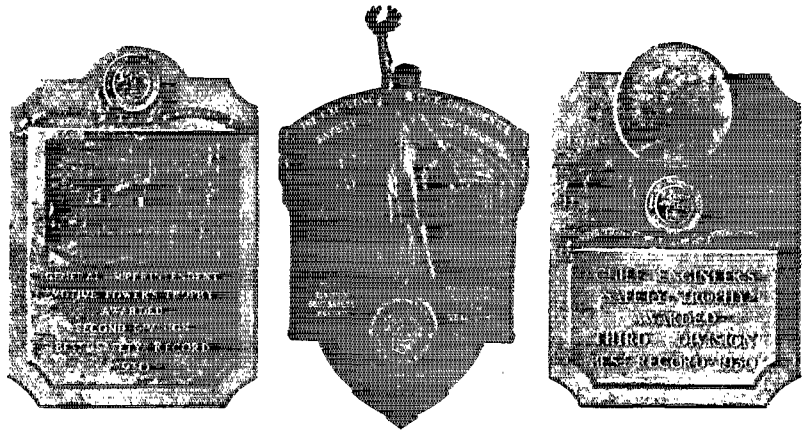
"Early in our program we saw the value of membership in the National Safety Council and have maintained our interest in all of its activities," said Mr. Scott. "Since 1918 we have purchased more than 100,000 copies of posters and other literature made available by the Council."

Since 1923, the year from which real safety progress has been measured on American railroads, casualties (injuries involving the loss of three or more days) of all kinds to employees on duty have been reduced on the Atlantic Coast Line 95.92 per cent. Here is the record of casualties per million man-hours:

1923	26.95
1924	22.50
1925	21.96
1926	17.74
1927	14.05
1928	11.21
1929	7.38
1930	1.66
1931	1.10

Admitting that the outcome of an accident and the severity of any injury are largely fortuitous, fatalities are still regarded by many as the real measuring stick for the effectiveness of accident prevention work. In this respect, the Coast Line's record is also outstanding, the reduction in fatalities being 83 per cent for the period covered in the above table.

The Atlantic Coast Line was awarded the National Safety Council's trophy for employee safety in Group B of the Class I railroads in 1930. It again established the lowest casualty rate in 1931 but the rules of the contest did not permit the award of the trophy to the same railroad for two consecutive years. This achieve-

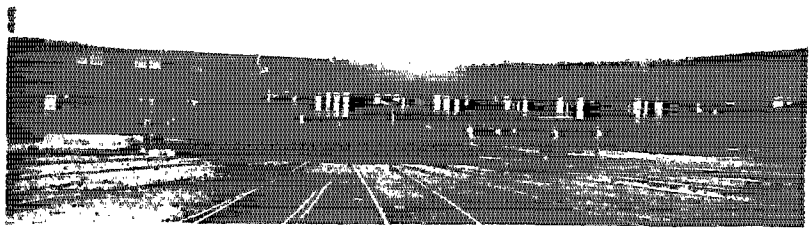


Some of the system safety trophies that have stimulated extra effort in bringing down the accident rates.

ment is proclaimed to the traveling public on the railroad's passenger train time-tables.

The traveling public, however, is more interested in passenger safety and here too, the record has been exceptional. In 1925 the number of passenger casualties was 265, which declined to the low mark of eight in 1931—a reduction of 97 per cent.

A modern locomotive shop at Tampa, Florida.



Source of power, the roundhouse at Florence, S. C.

Summing up the methods which have advanced safety on the Atlantic Coast Line, Mr. Scott stresses the following:

1. Improved locomotives and cars
2. Improved rails, roadway and bridges
3. Improved signal system
4. More and better safeguards
5. Physical examination of employees
6. Stricter employment requirements
7. Better rules and regulations
8. More thorough training
9. Stricter supervision
10. Improved discipline
11. Policing
12. Safety education

While safety education comes last in this list it is not rated last in importance. But the company does feel that the physical improvements in the company's equipment have paved the way for effective safety education.

Increasing stress is being laid on the physical examination of employees. In addition to the pre-employment examination, reexaminations are held regularly for those in exacting occupations.

Since the coming of the automobile no problem has given the railroads greater concern than grade crossing accidents. By grade separation and consolidation of crossings in cooperation with municipalities many crossings have been removed, but physical improvements alone are too slow and too costly to remedy the situation over night.

Considerable thought has been given to the part which the enginemen can play in preventing crossing crashes. As with other roads greater attention has been given to sounding the whistle at crossing approaches and the whistle cord has been extended to the fireman's side in all locomotive cabs for emergency use.

One method which has been used to reach the public has been a mimeographed form letter signed by the engineer which he tossed from the cab to motorists who waited at the crossing for the train to pass. The letter expressed the engineer's appreciation and pointed out what it meant to him. The unusual sight of an engineer throwing something out of the window, apparently for him, proved sufficient to arouse the motorist's curiosity and he would get out of his car to see what the paper contained. Many commendatory letters and many newspaper stories expressed the approval of the public at this educational scheme.

A distinctive feature of the Atlantic Coast Line's program for greater safety at grade crossings is the organization of special committees whose duties are to give this subject careful consideration. There is a general grade crossing committee at headquarters, three division committees, and other committees on each of the thirteen operating districts.

By this plan every accident occurring at a grade crossing is thoroughly investigated on the ground to determine the cause and find a remedy if possible for preventing similar accidents. A special report form which includes every possible detail of the physical conditions at the scene of the accident and the actions of train and automobile at the time provides complete details for a study of these accidents.

Equally meritorious has been the public safety missionary work of the Atlantic Coast Line. Many of the small communities traversed by the road have no large industries to serve as a nucleus for public safety activities, and both officials and rank and file employees have got their neighbors interested. To date officers and employees have made 1,713 addresses reaching audiences of more than half a million, most of whom were school children. Outstanding in this line of activity has been the work of Conductor Walter F. Eaton of Waycross, Georgia, who has made 132 public speeches, reaching some 30,000 persons.

Falling in line with the national accident prevention program of the American Legion, representatives of that organization were invited to many of the Coast Line's safety committee meetings. As a result of this movement, 21 speakers from the Legion attended some of the company's largest safety gatherings during the past year.

In several communities Atlantic Coast Line officials have taken the initative in having school safety patrols organized and these patrols have proved to be an excellent starting point for other community activities.

The safety of school buses is a problem which has caused school authorities and parents concern in many rural districts. The Atlantic Coast Line has concerned itself with the problem not only because of the possibility of a violent meeting of train and bus at the crossing but also for its interest in the children of employees and neighbors. In several instances unsafe driving was taken up with the boards of education which appre-

(*Please turn to page* 62)

What Types of Persons Have Accidents?

By ALVHH R. LAUER, Ph. D.*

In the last article of this series Dr. Lauer dealt with methods of diagnosing accident-proneness. In this article he has classified the various types of persons who have accidents, with practical suggestions for correcting their difficulties

IT may be well to state at the onset that our studies have definitely indicated an accident-prone group. A study of 357 drivers showed that about 33 per cent of the drivers had all the accidents. About 7 per cent of the drivers had half the accidents. In one commercial company approximately 12 per cent of the drivers had all the accidents. Some men had driven as long as 17 years with the company without accident while others had as many as 8 or 10 accidents a year.

Having verified the findings of other investigators, the next step was to determine the types of individuals who have accidents. Consequently, this article will be confined more to a description of such types rather than the methods whereby these types were classified. Neither will it deal with specific disabilities as the latter topic will be treated in another paper.

The "Ne'er do Well." Companies should beware of cheap help and the employment of "ne'er do wells." The study of a man's employment record should serve reasonably well as a key to whether or not he is to be placed in charge of a truck, passenger car, or other vehicle. Persons of such type are usually not familiar with machinery, nor are they mechanically inclined. If trained in such work tools usually suffer at their hands. In most cases a visit to their private shop or garage would convince the most optimistic personnel man that his applicant should not be placed in charge of a car. Our studies have shown many such persons are accident-prone.

The Paranoic and the Hot-headed. Students of abnormal psychology are familiar with paranoic tendencies present in many persons. When so affected, the person thinks everyone is trying to get the best of him. His landlord desires to see him in the poor house, his wife tries to make life hard for him, the children purposely destroy his personal belongings, the neighbors do not respect him, the foreman gives him the unpleasant jobs, and his salary is not adequate for a man of his caliber.

When such a person is also easily angered, a very bad combination is found. The employment officer should insult every applicant to see "how he takes it." The paranoic is always angered by something and thus is always on a strain. He may be vindictive and deliberately stop his car suddenly to "show" the driver behind him. He is full of alibis and is equally full of trouble.

Drivers Need Confidence

The Timid Soul. Women are generally to be classed in this group, especially the more delicate ones. The effeminate man is likely to have trouble at one time or another. In his effort to compensate for lack of physical vigor he shoots back out of a parking area into the path of a moving vehicle. Several such cases have come to our attention.

This type is somewhat different from those suffering from extreme timidity but the results are the same. The person who lacks confidence is likely to have trouble. Experience will help many persons of this nature if they have not begun to drive too late in life. Rugged and active persons have less trouble, providing they do not become extreme in the other direction. Timid persons should not drive where traffic conditions are bad and where there are many emergencies arising. Any employer should examine such applicants very carefully before assigning them for duty in heavy traffic.

The Drug Addict. Little need be said about the drug addict. He is often oblivious to danger and, unless he possesses unusual manipulative capacity, is likely to cause trouble. It goes without saying that alcoholics are highly accident-prone.

Insanity. Many readers may wonder that insanity is mentioned. Psychologically, the term is more significant than is implied in the ordinary sense. One is not sane or insane. He may be partially insane. Insanity is a matter of degree. Several types of insanity come on gradually and may cause the person to show very poor judgment at times. One of these types is paresis. It is an after effect of syphilis and usually becomes very obvious in the later stages. Two or three cases of such nature have come to our attention. While cases studied have not revealed the presence of insanity this problem needs no elaboration. A good physical examination will usually reveal the symproms of troublesome cases. A few other types are common. (See reference No. 1.)

Relation to Age. In this research two age groups were found to be accident-prone. The older man who is losing out physically tends to compensate by added momentum of his powerful car. This is one type. Another is the driver whose blood pressure goes up and who finds he cannot manipulate well. He becomes nervous and under a strain. Some very good drivers thus lose their "nerve" and become accident-prone. Again a medical examination will do much to eliminate the unfit. Any marked cases of

*Department of Psychology, Iowa State College, Ames, Ia.

DRIVING FIELD PERFORMANCE

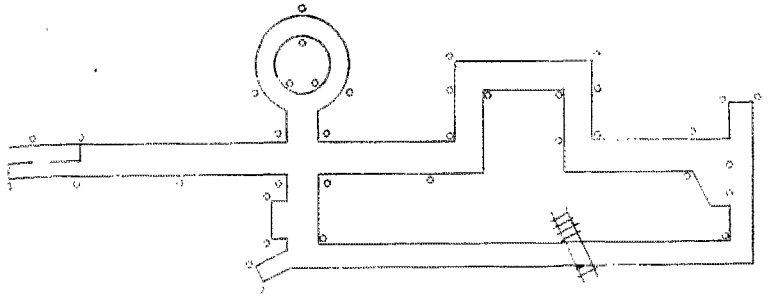
Research Project under auspices of National Research Council carried on by Department of Psychology at Iowa State College

1. Number..... Man.. .... Woman.. .. Date.. 1932
Name..... Age ....Wt.....Ht.....Ft. .....in.
Years of driving passenger cars. ..... commercial cars, trucks, etc.....
2. Number of kinds of cars you have driven ..... Car used in test,
Model..... Year..... Make .....
3. Number of accidents experienced while you were driving, (accident defined as need for garage repairs of car or medical attention to driver, passenger or other persons)... ..... Describe each:..... .....
. . . . . .
. . . . . .
6. Visual acuity ....20 . . . Percent ... .Field of vision in degrees .....
7. Colors read wrong..... Physical defects if any... ....

Scheme of Field

Legend:

A=lines of contact.....
O=missed signal.....
B=backed unnecessarily.....
S=failed to stop.....
D=directions necessary.....
M=excess movement... .....
L=right signal.....
R=left signal.....
T=time . . ..
K=killed engine.....
C=corners cut.....
W=wide turn..... .....
Lr=failed to look right or left .....
J=jerks when starting. ... .



Parking time.....sec.
Stopping distance.....Speed.....miles per hour.
Time of trip in min.....sec..... Error score.....Average T.....Errors.....

(A) To improve your driving, save your car, and for greater safety *you* should:

1. Drive more carefully.
2. Get more experience driving in traffic.
3. Keep on right side of road *all the time.*
4. Take corners slowly.
5. Keep attention on your driving.
6. Watch others at stop lights.
7. Try to be calm and at ease when driving.
8. Keep a sharp look-out at sides.
9. If driving slow stay at extreme side of road.
10. Allow 150 feet before 'cutting in' on a car.
11. Start and stop gradually.
12. Use horn and rear view mirror.
13. Observe signs more carefully.
14. Look out for stop light.
15. Shorter turns at corners.
16. Do not 'cut' corners.
17. Look both ways at a railroad or intersection.
18. Practice backing.
19. Learn state traffic laws.
20. Watch movements of other drivers.
21. Have vision corrected.
22. Give standard hand signals for turning *at all times.*
23. Keep brakes and lights adjusted properly.

(B) Your most probable rating as a driver is (put circle around):
A=Excellent B=Superior C=Average D=Fair E=Poor F=Very bad

arterio-sclerosis and heart disturbances should be rejected as drivers.

Younger people also get into trouble. Because of infantilism, some never actually grow up. Commercial drivers below the age of 23 or 24 are likely to take unnecessary chances in order to accomplish their duty or ends. Accidents frequently occur to such persons.

Undue Mental and Physical Strain. Loss of sleep, extreme fatigue, worry over business, and similar conditions cause many accidents. Chronic illness of the driver or unpleasant home conditions, due to illness or domestic relations, has accounted for a certain number of accident-prone individuals. The driver became accident-prone after such conditions developed.

During the depression there are a number of accident-cases on record which seem best explained on the basis of preoccupation. A man rushing about to keep his business going not only uses excessive speed but at the same time his efficiency is decreased considerably through worry. Accidents of this type are frequent. The old proverb "When it rains, it pours" is especially true in this connection. One thing brings on another.

Intelligence and Accidents

It would hardly be proper for a psychologist to discuss accidents without mentioning the relation to intelligence. A definition may be in order. When a man is dexterous, has a great deal of strength and uses it efficiently, he is said to be athletic. In the same way a person who has mental ability and can use it efficiently is said to be intelligent. It is measured by means of standard tests which are known to almost everyone. Reliable indices are quickly calculated. One of the common methods is to compare the adult's intelligence with that of a child of corresponding mental age. The average child of nine has a mental age of nine. In many adults the mental growth stops at 7, 8, 9, 10 or may continue on up to 24 years of age. The average person is supposed to reach intellectual maturity at the age of 16 years. This is used as a basis or standard of comparison.

The I.Q. is the intelligence quotient or ratio of the mental age to the chronological age. To obtain it, one divides his actual age (adults considered as 16 years) into the age score he makes on a standard intelligence test which would be made by the average person of a given age. For example, John Doe is 24. He attained mental maturity at 16. He passes tests made by the average 12 year old child. His I.Q. is 12/16 or .75. This is usually multiplied by 100 and he is said to have an I.Q. of 75.

The average person has an I.Q. of 100. A genius will have an I.Q. of from 150 to 200. Our studies have shown that the following ranges of I.Q. ratings are prone to accident: below 75 or 80 and from 110 to 125. The explanation is as follows: Those with low I.Q.'s are very slow to understand a situation. They use poor judgment and get into trouble. The group with I.Q.'s between 110-125 are quite intelligent and can move in the

(*Please turn to page* 64)

He Won't Wear Safety Shoes!

By NILS JUELL*

When an employee objects to wearing safety shoes has he a reason or is he merely stubborn?

ARE we passing from the horse-and-buggy age of foot protection into an era from which we shall smile back at all our former efforts?

Much has been written about accident prevention for the feet, and much excellent propaganda has been issued by the shoe manufacturers in favor of safety shoes as the only solution. Safety posters have taught the workers the value of cooperation with their safety departments.

Industrial management has been ready to believe that the secret of foot protection was a stock of safety shoes ranging in sizes from 5 to 12, width E. In many cases this did suffice. But if one of our boys insisted that he "couldn't wear the darned things," and then a heavy die, a motor, or a steel rail dropped on his foot, we were just out of luck! We have all met people who seem unable to wear safety shoes. How many of us have been guilty of accusing such fellows of a phobia, a fixed idea without adequate reason?

The result was that too often in the accident report, under the caption "Could the Accident Have Been Prevented?" we have had to write: "He refused to wear safety shoes."

I became very much interested in this subject several years ago, and proceeded to make foot-prints and amateur plaster casts, and a study of the comparisons made me determined to get more light on these "phobia boys," if possible. It seemed reasonable to believe that in getting proper shoes people with defective arches had similar troubles to those of men who suffered from defective eyesight and yet had to be fitted with protective goggles.

If we accept the statement of army authorities that 52 per cent of recruits suffer from defective feet, and if the ordinary movements of walking about consist of a series of prevented falls, then is it not logical to argue that to establish proper balance for the worker is of the utmost importance in accident prevention?

One day I delivered a brief talk before our employees and alluded to the type of worker who has tender and difficult feet. The following day Lawrence McDowell, one of the boys in our metal stamping department, came to me with an interesting story. He had had a great deal of trouble in getting shoes of any kind to fit him, but at last had found a certain shoe merchant whom he claimed to be a wonder. I made a careful investigation by means of medical and other sources and realized that I had located the man for whom I had been seeking.

Lawrence McDowell, of the metal stamping department of the Hayes Body Corp., has discovered some of the fine points of foot protection.

John M. Anderson conducts a store at some distance from the center of Grand Rapids where he practices shoe fitting as a fine art. His father had been a maker of shoes in the old country, and the boy had learned under a critical master. He realizes that human feet differ in as many characteries as human faces and he bases his work upon that knowledge.

Manufacturers of shoes, it seems, too often recognize only the differences of length and width in a given pair of feet. It is very important, of course, that these differences be noted; most feet actually are fitted with shoes that are too short and too wide. But in addition to this, there are great differences among feet in the matter of arch elevation.

"Can't you see," says Mr. Anderson, "that in order to have foot comfort and foot safety it is necessary that the shoe provide a firm but elastic support at all points upon which the foot rests—just exactly similar to the soft earth upon which rests the foot of a savage."

With the aid of carbon impressions, plaster casts and careful examinations, Mr. Anderson has segregated three general classes of feet which have such unusual arch elevation as to make it impossible for them to be correctly fitted by the common run of shoes. They are:

1. Feet with naturally high or normally contracted arches.
2. Broken or fallen arches.
3. The naturally flat foot, where normal arch elevation is negligible.

There are many people with quite naturally high or contracted arches. Such feet, on a flat surface, will produce a circular imprint without continuous impression from heel to toe. In many cases there will be no impression at all under the arch. This indicates that the weight of the body must be borne by the heel and the ball of the foot, with no support in a poorly fitted shoe under the arch of the foot. Such a condition will invariably cause great discomfort and

(*Please turn to page* 59)

*Safety Director, Hayes Body Corporation, Grand Rapids, Mich.

Congress Programs Completed

All Signs Point to a Large Gathering at the Capital Despite Universal Retrenchment

ADVANCE programs for the Twenty-first Congress of the National Safety Council, to be held in Washington, D. C., October 3-7, will be ready for mailing to members and delegates on August 15. They will carry assurance of the most outstanding event in the history of the safety movement.

More than 350 speakers will appear before the 101 sessions of the congress. The great majority of these are recognized leaders in the worlds of safety, industry, general business and of government. They will cover every activity in the triple fields of accident prevention, giving the fruits of their experience and pointing out new paths to safety accomplishment.

All signs point to a tremendous gathering of interested men and women in the nation's capital during the congress week. Many more reduced fare certificates have been requested this year than had been issued up to this time for the congress last year. Reservations have been heavy for the Wardman Park and Shoreham, the two official congress hotels, and also for many other hotels. Reduced fare certificates may be had by application of the Council headquarters offices in Chicago.

Most of the sectional congress programs are already complete. Every one contains some striking features. The accumulated successes of all past congresses are being reproduced.

At the Annual Meeting of Members, on Monday morning, the chief speaker will be E. J. Mehren, president of the Portland Cement Association, Chicago, whose subject will be "Good Will Dividends from Safety Work." In addition to regular features of this outstanding session, the National Safety Council trophies will be unveiled, which later will be awarded to many contest winners in the various sectional meetings.

The General Round Table session on Monday afternoon will be especially notable. "Why Do Some Employees Have More Accidents than Others?" will be explained by W. Graham Cole, director of safety service, Policyholders Service Bureau, Metropolitan Life Insurance Company, New York City. "An Effective and Economical Safety Program for the Small Plant" will be described out of the varied experience of A. D. Lynch, The Ohio Brass Company, Mansfield, O. In addition, a striking practical demonstration is to be produced, entitled "Teaching Safety to the New Employee," the scene being the interior of an industrial plant in operation.

The Advanced Safety Engineering session will be directed by Dr. M. G. Lloyd, of the U. S. Bureau of Standards. A. S. Regula, executive secretary of Industrial Relations Counselors, Inc., New York City, will discuss "Capitalizing on Our Failures." Dan L. Royer, chief engineer, Ocean Accident and Guarantee Corporation, Ltd., New York City, will describe "The Safe Design, Construction and Operation of Fire Pressure Vessels." Dr. Leonard Greenburg, Yale Medical School, New Haven, Conn., will speak on "Dust—An Engineering Problem."

On Tuesday night a special technical session of this engineering body will be held to discuss the controversial points encountered in the work of preparing safety codes. John A. Dickinson, U. S. Bureau of Standards, Washington, will describe "Researches on Safety Features of Elevators."

Everybody who attended recent congresses remembers with pleasure the lighter touch associated with the All Congress Luncheon, which has become an annual affair on Monday noon. This year the single speaker will be that southern humorist and genial story teller, Sherwood Brockwell, safety director of the North Carolina Insurance Department, Raleigh, N. C.

HOTELS AND RATES

Quotations are for rooms and bath only

HOTEL	Single	Double	
Wardman Park ...	$4.00	$6.00	Additional Parlor—$6.00
Shoreham	4.00	6.00	
Meridian Mansions.	4.00	6.00	2-room suite—$12.00 and up
Roosevelt	3.00	4.00	Twin beds—$5.00 2-room suite; four persons—$10.00
Chastleton	2.50	4.00	
Cairo	...	5.00	2-room suite—$8.00
Grafton	...	6.00	
Martinique	2.50- 3.50	4.00- 5.00	
Colonial (New)....	3.00- 3.50	4.00- 5.00	
Burlington	3.50	5.00	
Mayflower	4.00- 5.00	6.00- 7.00	Twin beds—$8.00-$9.00-$10.00
Blackston	3.00- 3.50	5.00- 6.00	Two-room suite (3 persons)—$10.00
Carlton	4.00	6.00	Parlor, bedroom and bath, $10.00 and up
Ambassador	3.50	5.00	Twin beds—$6.00
Hamilton	3.00- 3.50	5.00	Twin beds—$6.00-$7.00
Powhatan	3.50	6.00	Twin beds—$7.00-$8.00
Washington	4.00- 5.00	6.00- 8.00	Twin beds—$7.00-$8.00-$10.00
Willard	4.00- 6.00	6.00- 7.00	Twin beds—$7.00-$8.00
Annapolis	3.00	5.00	
Ebbitt	2.50- 3.00	4.00- 5.00	
Harrington	2.50- 4.00	3.50- 5.00	Twin beds—$4.00 to $8.00
Raleigh	3.00	4.50	Twin beds—$6.00 to $9.00
Houston	2.50- 3.00	4.00- 7.00	
Dodge	3.50- 5.00	5.00- 7.00	
Driscoll	3.00	5.00	
Winston	3.50	5.00	
Continental	2.50- 3.00	4.00- 5.00	Twin beds—$5.00-$6.00
Capitol Park	2.50- 3.00	4.00- 5.00	
Commodore	2.50- 4.00	4.00- 6.00	

Each morning during the Congress, at 8:30 o'clock, M. J. Kane, plant training engineer, the American Telephone and Telegraph Company, New York City, will conduct one of his well known classes on "Safety in Foremanship by the Conference Method." The four subject divisions are, "The Purpose of the Conference Process," "The Principles of the Conference Process," "The Application of the Conference Process to Accident Prevention," and "Its Use and Technique."

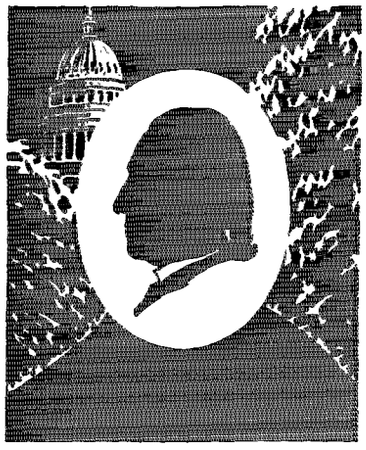
The Automotive Section has developed an interesting program for both Tuesday and Wednesday sessions, which will be devoted to a two-act playlet entitled "Selling a Safety Program." The purpose of the playlet is to sell a safety program to the Board of Directors of a large corporation, the audience being the board, and the various speakers being department heads in charge of safety, medical service and various other executive divisions.

The Delivery, Taxicab and Bus Section will have the following speakers: Major Charles H. Ruth, superintendent, the Evening Star Newspaper Company, Washington; Captain W. C. Thee, Q. M. C., officer in charge of the Second Corps Area Motor Repair Shops, Ft. Hancock, N. J.; Harold G. Hoffman, Commissioner of Motor Vehicles, New Jersey; and C. V. Wells, Pillsbury Flour Mills, Minneapolis, Minn.

The Food Section will have as speakers, David J. Price, chemical engineering division, U. S. Bureau of Agriculture, and A. L. Mann, New York State Department of Education. An interesting joint session of the Food Section with the Delivery, Taxicab and Bus Section will have as speakers, G. S. Frost, treasurer and general manager, the New York Pie Baking Company, and W. C. Washburn, safety director, the Sheffield Farms Company, Inc., both of New York City.

For the Meat Packing, Tanning and Leather Industries Section, John J. Callahan, of The Turner Tanning Machinery Company, Peabody, Mass., will tell "What the Manufacturer of Tanning Machinery Can Do to Promote Safety in the Tanning Industry." Dr. C. L. Ferguson, medical director, the Selby Shoe Company, Portsmouth, O., will describe "The Accident Prone Employee."

The Metals Section has the two following well known speakers: G. A. Davis, manager, department of safety and relief, the Illinois Steel Company, who will speak on "Think It over"; and Thomas P. Kearns, superintendent, hygiene and safety, Industrial Commission of Ohio, Columbus, O., whose subject is "National and State Foundry Codes in Relation to Accident Prevention."



SHOW THE SAFETY "SPIRIT OF '32" AT WASHINGTON • • OCTOBER 3-7

In the Paper and Pulp Section, W. H. Brydges, president, The American Pulp and Paper Mill Superintendents Association, will speak on "Lessons Learned from Near Accidents in Paper Mills." H. K. Williamson, general superintendent, Nekoosa-Edwards Paper Company, Port Edwards, Wis., will describe "Special Hazards of Fourdrinier Machines and Their Elimination."

Three leading speakers in the Power Press Section are the following: J. W. Bland, chief of machine construction and repair division, Hawthorne Works, Western Electric Company, Chicago, who will speak on "Inspection and Maintenance of Power Presses for Safe Operation"; G. A. Kuechenmeister, personnel manager, Dominion Forge and Stamping Company, Walkerville, Ontario, whose subject is, "Securing the Cooperation of the Worker in Accident Prevention"; and Louis Boraks, safety engineer, Liberty Mutual Insurance Company, Boston, Mass., who will talk on "Reducing Power Press and Machine Shop Hazards Through Engineering Revision."

The Street and Highway Traffic sessions will again offer a high spot of interest through numerous speakers. Robbins B. Stoeckel, State Commissioner of Motor Vehicles, Hartford, Conn., will speak on "Drivers License Examinations—Present and Future." Captain Laurence A. Lyon, district superintendent, State Department of Public Safety, Lansing, Mich., has the subject, "Examinations by Local Officials." Dr. F. R. Gomila, Commissioner of Public Safety, New Orleans, La., will discuss "Problems of Public Relations." Franklin M. Kreml, director, Accident Prevention Bureau, Evanston, Ill., will talk on "Enforcement and Accidents." John B. Blandford, director of safety, Cincinnati, O., will describe "Traffic Accident Record Problems of the Police Department."

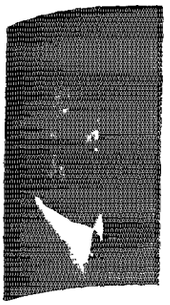
Minor Hazards May Cause Major Injuries

MANY lost-time accidents are caused by so-called minor hazards, usually allied with unsafe practices in performing work. Two examples were cited recently by one of our Council members in a general bulletin to the employees of the plant.

While assisting in placing in position a steel I-beam to be used for an overhead rail, an employee was standing on a short ladder equipped with swivel foot plates to prevent slipping. He reached too far to one side in attempting to tighten the bolts and the ladder tipped, causing him to fall about 15 feet. He struck a projecting part of a machine, fracturing two ribs, one of which penetrated his heart, and he died an hour after the accident.

The department head reported, "This is a common hazard, in that men generally are more careless in working from short ladders than when high in the air; serious accidents often occur from short falls, especially if there is any obstruction which a man is liable to strike on the way down."

The second accident, while not as serious, occurred even though standard safety equipment was being used. The employee was wearing safety shoes provided with a heel plate covering the entire outer edge of the heel. In attempting to move a heavy revolvator, he slipped on the concrete floor and sprained the muscles and ligaments of his right knee.



The Safety Engineer Aids the Life Underwriter

By H. W. HEINRICH*

• Life insurance companies as well as casualty companies have benefited by accident prevention work in industry

ENGINEERING science was first applied to insurance coverages in order to reduce the hazards which tend to destroy property, as in marine and fire insurances. Subsequently, the insurance engineer was required to extend his investigations to the industrial hazards which tend to destroy the lives and health of individuals.

The safety engineer has come to be a most essential function in the sound conduct and development of the casualty insurance business.

It cannot be said, however, that the results of his efforts are confined to the particular insurance interest which employs his services. For example, a lessening of the hazards for the employees of a certain factory or quarry not only results in the betterment of the compensation experience on them but also must automatically decrease the claims under the personal life or accident and health insurances any of them may be carrying as individuals. Again, if the operation of a particular elevator is made safer by the efforts of an engineer, it is obvious that the improvement benefits all who use the elevator, regardless of the kinds of insurances carried.

It is clear therefore that a definite relation exists between safety engineering for casualty insurance and life insurance experience. It is equally certain that the value of the engineer's service to the casualty underwriter and to the life underwriter varies only in degree.

Five examples are submitted. The many ways in which engineering service serves the life underwriter by reducing the probability of injury and death may be shown better perhaps by illustration than by discussion of generalities.

Example No. 1 shows the effect of engineering revision applied to one operation in a specific industry.

Pig iron tonnage in the United States *increased* 266 per cent from 1912 to 1926, while in the same period of time fatal accidents *decreased* 79.6 per cent per 1,000,000 tons produced.

Behind this record lies a story of applied engineering revision. Coke, ore, and flux in 1912 were thrown into blast furnaces; the molten iron was drawn off in ladles and poured into individual pig iron molds. During these operations furnace men, heaters, ladlers, pourers, molders, foremen and unskilled workmen were exposed to the dangers of hot metal, sparks, and congested working spaces.

Recognizing these hazards, the engineers devised the automatic pig casting machine. This consists of an inclined conveyor on which the individual pig molds are mounted. As each mold in turn comes to the furnace it is filled automatically. The great length of the conveyor permits time for chilling so that when the filled mold reaches the bottom of the incline it may be dumped mechanically into waiting steel freight cars. Practically no hand operations are required and the exposure is greatly reduced as shown by the records.

Is it possible that life insurance experience on these workmen has not improved as a consequence?

Example No. 2 illustrates the effect of installing machine guards.

In the State of Massachusetts the number of accidents from machinery was 18,490 in 1919; in 1929 the number was 7,817. Records showing the number of machinery fatalities are not available but it is clear that fatalities must have undergone some decrease in the same period.

This record is typical of many other states and is a direct reflection of the intensive drive which has been made by accident prevention engineers during the last decade on the provision of guards for machinery and machine tools.

Further evidence of success in reducing mechanical hazards to industrial workmen is indicated by the lesser importance today of schedule rating in compensation insurance. This form of rating attempts to credit or penalize individual plants because of the existence of guarded or unguarded machinery. It is predicted that schedule rating has outlived its usefulness.

The occupational hazard classifications affected include workmen in metal, wood, leather, and textile plants, machinists, mechanics, pattern makers, buffers and polishers, tool and die makers, etc.

Is it too much to assume that the life insurance business, too, has benefited?

Example No. 3 concerns the effect of safety educational work on an individual risk.

An elevated railway company in one of the New England states operated 52,274,776 car miles and carried 604,695,199 passengers in a single

*Assistant Superintendent, Engineering and Inspection Division, The Travelers Insurance Company, Hartford, Connecticut. (A paper read before the Home Office Life Underwriters' Association).

year without causing the death of a single child. Major accidents decreased nearly 50 per cent in three years. Industrial accidents decreased 20 per cent in one year. The cost of industrial accidents was reduced 33 per cent in one year.

All this was accomplished through a combination of psychological research and engineering service expressed in general educational measures.

Occupations Affected

The occupational rating classifications affected are as follows: Subway and elevated railroad motormen, conductors, laborers, repairmen, etc. Incidentally, the hazard to the general public was greatly reduced also.

Probably, as a result, occupational ratings for life insurances have decreased.

Example No. 4 pertains to the effect of safe process study on a specific industry.

A high frequency of fatalities directed the attention of casualty engineers to the hazards of the veneer industry. The facts discovered were as follows:

1. The fatalities were due to drowning and scalding in the open soaking vats where veneer logs were placed prior to the veneer cutting operation.
2. There were no specific violations of customary safe practice and no unusual physical hazards.
3. The hazards were inherent with the particular operation performed and it was clear that improvement must come about through a change in the process.

After much research and experimentation the engineers found that the dangerous hot water soaking operation could be replaced by a much less hazardous procedure. Low pressure steam boxes would do the work of softening the veneer logs fully as well and with no danger from scalding, drowning, or falling into the vats. It was also found that mechanical conveying or lifting apparatus could be used for charging and discharging hot water vats in case a complete change to the use of steam was impractical because of lack of funds.

The engineers proceeded at once to urge one or the other of these changes on each covered veneer manufacturing risk. They succeeded in eliminating the dangerous processes in several of the risks. Better still, a trend toward the adoption of a safer process was begun and still continues.

The good experience in any one plant or any small group of individual plants cannot be measured by rates which differ from the class rate as a whole. Is it not clear, however, that a downward trend in the number of fatalities in the woodworking industry must eventually create more acceptable life risks in that industry, and that until the trend begins to show in statistical records, the likelihood of loss under life policies is reduced?

Example No. 5 is the effect of process research on the hazards of a specific machine.

A dry-cleaning plant had suffered a series of fires and explosions, one of which resulted in loss of life, and the owners were extremely desirous of improving the situation if at all practicable. Processes and methods were studied to find out if some other way of handling the work could be developed that would be safer and equally efficient. This action led to the realization that the use of gasoline or naphtha could be eliminated and that a substitute solvent, having a flash point above 100 degrees F. (about the same as kerosene oil), would do the work equally well and with considerably less hazard. The change was made. The fire and explosion hazards were materially reduced, and the accident record from these causes has subsequently been entirely satisfactory.

It is not hard to believe that the effect has been beneficial to life insurance experience as well.

In many other ways which cannot well be described because of space limitations, engineering service identifies and reduces the life and accident hazards of industry. The consequent benefit to life and accident insurance lies chiefly in the reduction of loss payments.

Interchange of Information

Further service to life insurance, and more specifically to the life underwriter, is afforded by casualty insurance engineers in regard to the identification and rating of specific industrial classifications, revision of manuals, recognition of new hazards, and the elimination of existing hazards.

Long before mortality tables or group experience shows an increase or decrease in the specific occupational classification, the casualty engineers are aware of it. The trend reported to casualty underwriters by the service engineers could likewise be reported to life underwriters.

Casualty engineers, perhaps better than any other class of insurance for knowing intimately the peculiarities and differentiations in hazard in industrial occupations, may be of value as consultants when individual applications are being considered.

The life underwriter likewise may be of real service to the casualty engineer by advising him of mortality data when it exposes variations in the hazards of specific occupations.

In general it may be said that the objectives of insurance require the interchange of information and the casualty insurance engineer, so far as occupational hazards are concerned, is in an excellent position to obtain and pass along such information to the life underwriter. A definite relationship exists. The engineers are eager to be of service. It remains only for practical procedure to be developed whereby this relationship may be capitalized.

Accidents Vary Slightly With Location

FATAL industrial accidents show considerable similarity in type in different regions independent of differences in the industries, unless something happens to predominate. In New York, for example, out of 1,207 classifiable compensated fatalities in 1 only 10 occurred in agriculture and none in logging; while out of the 1 Canadian total of 1,135 deaths, occurred in agriculture and 73 in ging. In spite of these and other marked differences in industries ered the following table shows the of the 5 main classes of accident respond closely in importance. cidents from hoisting apparatus more prominent in New York bec of the metropolitan character of state, with its numerous elevators cranes; while the presence of a extensive mining industry in Can forces up the proportion of accid from falling objects in that cou

Class of Accident	Per Cent of Fatalities New York	Ca
Hoisting apparatus	10.7	
Dangerous substances	13.5	
Falling objects	6.3	
Falls of persons	22.6	
Other	20.0	
Vehicles	26.9	

That Dawg-gone Dog!

By R. H. FERGUSON*

He may be a pet to the family but he is often a real menace to the meter reader and the delivery man

WOOF! Woof! Woof!"

"Nice doggie! Nice doggie!"

I looked up. Out of reach, but perched insecurely in the fork of a small tree, sat the meter reader!

Funny? Yes—but suppose you assume for a moment the position of that meter man treed by a dog. The situation will not appear so amusing, and it might be very dangerous—varying, of course, with the size and serious intent of the dog.

To the uninitiated, the life of the repair, service or meter man is apparently a hum-drum existence—just one service call after another—but to those who know, the job is filled with uncertainties and surprises. If you could get the boys to relate their experiences, some harrowing tales would be forthcoming.

The average service man, of any business, is almost always cautious when entering a customer's premises; he is always expecting the unexpected—or at least he should be—and it isn't often that he is caught unawares.

But in the situation just described this is exactly what happened. The man had entered the yard on this bright summer morning without making the customary check of the route book which he was carrying. Had he looked at the sheet, or had his mind been on the job, he would have recalled that this customer possessed a vicious dog which, ordinarily, ran loose in the yard. When the gate closed behind him things began to happen pretty fast. He was surprised, and then naturally took to the tree, the easiest way out his difficulty.

The prevention of dog bites is a real problem in any organization where employees must enter the customer's premises—and this includes public utility companies. Probably more questions have been asked about what to do to prevent employees being bitten by dogs (and less has been accomplished) than about any other bothersome problem which faces the safety man.

Of course, the real answer to a reduction in injuries through men being bitten by a customer's dog is to develop a thorough educational program. This program should reach not only your service people who must enter the customer's premises, but a portion of it should also be directed to the owner of the dog.

Many experiments have been tried. In some instances, companies have provided meter readers and service men with ammonia guns or similar equipment. While these guns do furnish protection, this is not the real answer. The use of ammonia on the customer's pet certainly does not make for the best of public relations: the liquid is also difficult to handle and an accidental spill is not pleasant. Many companies therefore have discontinued this practice.

In other cases, employees have been furnished with leather puttees or leggings. This furnishes protection for the lower portion of the limbs, but here again this is not the complete answer. While available statistics indicate that a majority of injuries occur below the knees, the records also show that the thigh, hands and arms come in for their share.

More and more, we find the service company asking the customer to cooperate. This is accomplished in various ways. In some cases the meter reader is asked to place a notation on the sheet in his route book indicating that a customer's premises contains a dog. The notation should be placed on the sheet regardless of whether the particular service man believes the dog to be vicious. In many cases a dog will not disturb one man, but he may take a dislike to the next. Where such vicious dogs are known, the service man entering the premises can, of course, be on his guard. He would do well to solicit the customer's aid in either locking up or chaining the dog while the meter is being read or other work finished.

*Safety Engineer, National Safety Council.

Among the organizations which have recently adopted this method, is Ohio Edison Company, of which Glen H. Shaw is safety director. In each case where it is known that a vicious dog is maintained, a personal letter is written by Mr. Shaw to the customer and his cooperation is asked. The approximate time is indicated at which the meter or service man will appear on the premises and the customer is asked to keep the dog tied up until the service man has departed. Excellent cooperation has been developed and this type of accident reduced materially. In some cases it is not necessary to arrange for the service man to appear on the premises at a special time, for the customer understands the seriousness of the situation and the willingness of the company to cooperate in every way possible.

A Dog Fancier's Advice

Another method, used by several members of the Public Utilities Section in calling attention to this problem, has been to issue a notice each month with the invoice for service. In some cases a printed slip was enclosed with the bill, while in others the message was printed on the bill itself. This procedure has proved highly satisfactory. All in all, when the proper approach is made to the customer and the employee is thoroughly acquainted with all proceed ures, little trouble is experienced.

A number of organizations, in addition to securing the cooperation of the customer, have developed a thorough educational program among their employees. Recently one company called in a dog fancier, and among other things he suggested that the men never kick at a barking dog, nor throw sticks or rocks at it, but stand absolutely still at first, keeping their eyes on the animal. This man also suggested that if a hand is held out as though to pat a dog, it should be held palm upward. This is certainly logical, as in feeding a dog from the hand, the palm is always up and not down. If the back of the hand is up, the dog believes that you are going to strike him and this consequently makes him more nervous.

Another company employed the services of a dog fancier, with good results in the reduction of personal injuries from dog bites. The experience of Paul R. Kuhn, of the Penn Central Light & Power Company, indicates success. He asked C. A. Hoofnagle, superintendent of transportation for the Altoona & Logan Valley Electric Railway Company, to discuss this problem with the service men. Mr. Hoofnagle was formerly a president and a judge of the Altoona Kennel Club.

In part Mr. Hoofnagle said: "The chow, shepherd, and the doberman-pincher are three breeds that are keen about strangers. They are a one-family dog. You can, however, walk past these dogs if you do not strike at them or back away as if you are afraid. Never kick or strike at a dog. Just keep walking and talking to him." Mr. Hoofnagle also suggests that you should never put out your hand or snap your fingers, but simply speak and talk and the dog will see that you are not afraid.

In dealing with dogs, it is suggested that the meter reader carry his book or flashlight under his arm and not at arm's length when entering the customer's premises. If this is not done, the dog in many cases becomes nervous and believes that he is going to be struck.

Another interesting point explained by Mr. Hoofnagle is the fact that an animal that is tied up is much more nervous and much more liable to bite than the dog that is running loose in the house or yard. However, from personal experience, we feel about like 99 per cent of the service men who must face a strange dog—we'd much rather have him tied up securely than running loose.

Kind Words Soothe Him

"There isn't any question but that fear enters largely into the proper handling of dogs," says Mr. Hoofnagle. "A dog must be excited before he will fight or bite. Any unusual noise will excite him. Don't be afraid of a dog that barks. He wants to find out if the stranger is a friend or a foe. Just give him a kind word. You must remember that the dog is a part of the property and that it creates the ill-will of the customer if you kick or strike the dog."

If the dog snaps at the service man, of course, it is always the stranger's fault; in the eyes of the owner, he is bound to be wrong. Just as one of the meter readers indicated—"The dog may be *gentle* and still eat off your hand, leg, or foot, or any place." It is not pleasant to stand still with a furious animal growling and barking at you, but nine times out of ten the owner will tell you that the dog will not bite, and probably he is right. The thing to do in that case is to wait until they take charge of the dog.

Quoting further from Mr. Hoofnagle's remarks: "A dog judges a person almost entirely from the tone of his voice. If the tone is kind and approving, the dog knows that everything is all right. If the tone is rough and scolding, he expects to be punished. People who own a dog do not want a stranger chastizing it. Very few dogs will bite without a reason. You must remember that a dog cannot speak, kick, or strike back. A strange dog should never be surprised. Walk up to him when he is looking at you. Speak in a low, kind tone. Do not hesitate, bring your hands up to his face, not down over his head. He wants to see your hand, to smell it, before you touch him. If you pat him from the top of the head, he does not see your hand and does not know just what you are going to do."

Experiences Wanted

All in all, there is a lot of sound logic and excellent advice in Mr. Hoofnagle's remarks. If you are faced with a similar problem, why not secure the services of a man who really knows dogs—undoubtedly there is one near you—and have him speak to your meter readers, inspectors, etc., about the proper method of handling the problem? Every case where this has been followed has met with a reduction of such accidents.

It is possible that there are other methods of handling the vicious dog problem which have not been called to our attention. If this is the case and you have any additional suggestions to make, don't hesitate to send them to the National Safety Council so that we may tell other members about them.

In educational work carried on among your employees, it is very important that careful instructions be given concerning the proper treatment of dog bites. It is essential that first aid be rendered just as soon as possible if rabies is to be prevented with absolute certainty. In many locations the case must be reported immediately to the public health authorities so that the dog which caused the trouble may be placed under observation and kept from biting others. It is advisable to be familiar with local situations that all people may be properly safeguarded.

Safety's Third Fundamental

By G. M. BRIGGS

• The machine manufacturer and industrial management share the responsibility for lack of progress in engineering revision for safety. Nevertheless, many types of adequately guarded machines are being built and will be shown in future issues of this magazine

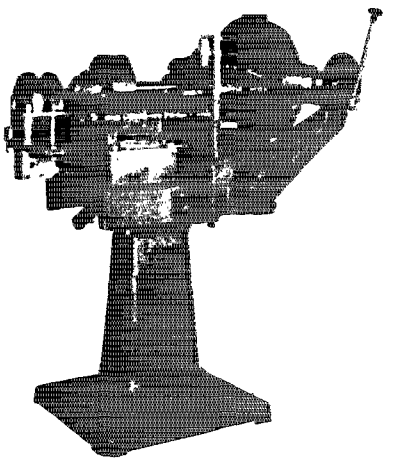
THE pioneers of the safety movement had very definite reasons for the order in which they placed the three fundamental activities of the accident prevention program: safeguarding, education, engineering revision.

Safeguarding must be carried out thoroughly so that the workplace should be free of hazards. The employee must be educated in a knowledge of safe practices and in his responsibility for the use of safeguards. Finally, the machine itself, whenever possible, should be redesigned and manufactured in such form that old hazards would either be eliminated or safeguarded in the process of building.

I am, however, convinced that none of those who laid the foundations of the safety movement considered for a moment that in the year 1932 any progressive industry would still permit itself to operate under the handicap of hazardous machinery and of unsafe plant conditions that were common two decades ago. Those pioneers had a fine faith in the future of the safety movement.

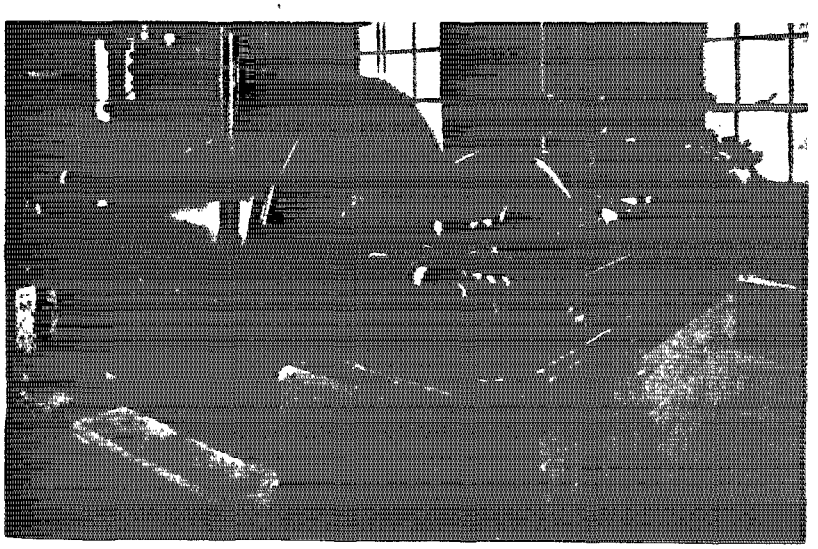
Why, then, is the average plant today using machines that were built with an apparent disregard for safety factors? Are not safe machines now produced, in harmony with the most advanced safety thought and technique? Where lies the fault, if so little seems to have been accomplished through engineering revision to build thoroughly safe machines?

To answer these questions for readers of the NATIONAL SAFETY NEWS, this magazine has been making a study of the problem from two points of view. A wide circle of members of the National Safety Council were first consulted, and one of the questions asked of them was the names of any manufacturers which the member knew were building machines that were adequately safeguarded at time of manufacture. From these manufacturers information was then secured about outstanding examples of their product; and from the two sources a large fund of information was built up, much of which will be arranged here in a series of timely articles.



Courtesy, E. W. Bliss Co.

Example of an automatic thread rolling and beading machine, operating at a speed of 250 shells per minute, from which danger to the operator has been eliminated. The shells are fed automatically into the chute, are worked on and discharged without handling by operator.



Courtesy, General Electric Co.

Two totally-enclosed fan-cooled synchronous motors, rated 100 h.p., each with non-combustible gas-filled interior and coupled to reciprocating compressor. Control has no contacts made or broken in atmosphere. These motors are installed in a gas-gathering plant of an oil refinery.

It was inevitable, of course, that a wide variety of opinions should have been expressed. For example, one casualty insurance representative declared that in twenty years there has been little change in the attitude of manufacturers toward the safeguarding of their machines. "Laundry machinery is guarded; and domestic appliances have been made fool proof. Public opinion and legislative enactment forced laundry machinery guarding because of women employees. But almost all other machinery is not guarded."

Another industrial executive says: "Our experience in steel mill work shows that very few machines come from the manufacturer equipped with guards that are suitable in all details. Many manufacturers do equip certain

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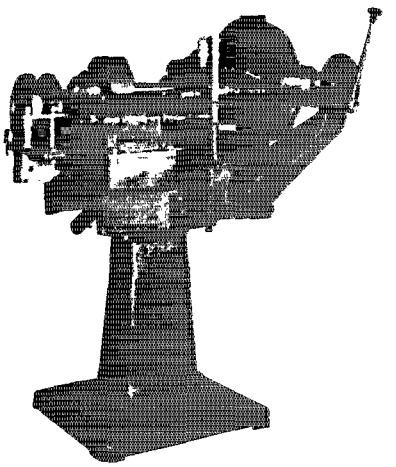
Why, then, is the average plant today using machines that were built with an apparent disregard for safety factors? Are not safe machines now produced, in harmony with the most advanced safety thought and technique? Where lies the fault, if so little seems to have been accomplished through engineering revision to build thoroughly safe machines?

To answer these questions for readers of the NATIONAL SAFETY NEWS, this magazine has been making a study of the problem from two points of view. A wide circle of members of the National Safety Council were first consulted, and one of the questions asked of them was the names of any manufacturers which the member knew were building machines that were adequately safeguarded at time of manufacture. From these manufacturers information was then secured about outstanding examples of their product; and from the two sources a large fund of information was built up, much of which will be arranged here in a series of timely articles.



Courtesy, F. W. Bliss Co.

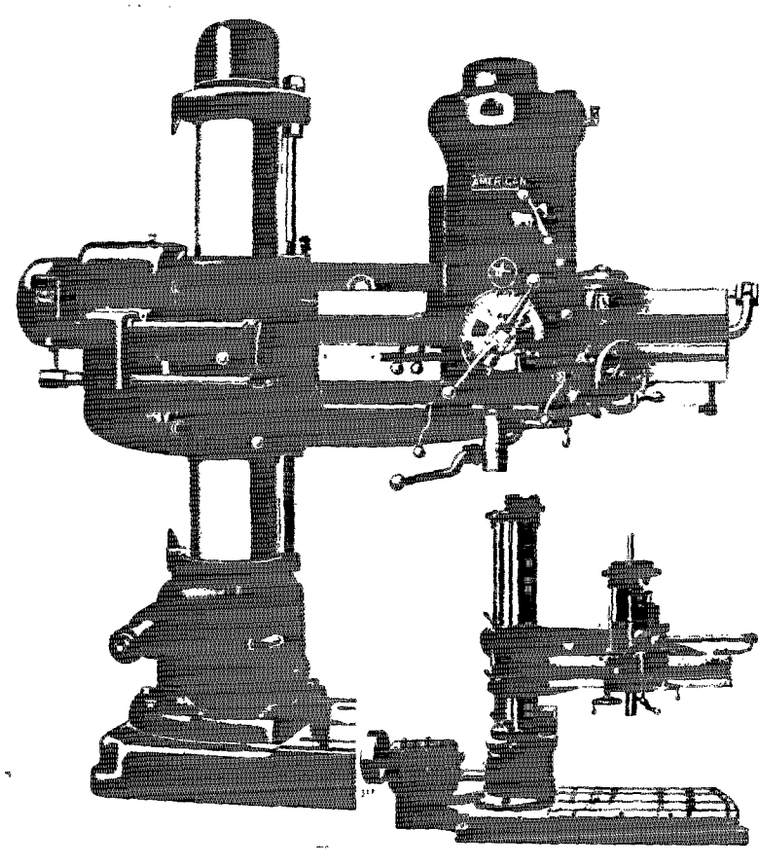
Example of an automatic thread rolling and beading machine, operating at a speed of 250 shells per minute, from which danger to the operator has been eliminated. The shells are fed automatically into the chute, are worked on and discharged without handling by operator.

Courtesy, General Electric Co.

Two totally-enclosed fan-cooled synchronous motors, rated 100 h.p., each with non-combustible gas-filled interior and coupled to reciprocating compressor. Control has no contacts made or broken in atmosphere. These motors are installed in a gas-gathering plant of an oil refinery.

It was inevitable, of course, that a wide variety of opinions should have been expressed. For example, one casualty insurance representative declared that in twenty years there has been little change in the attitude of manufacturers toward the safeguarding of their machines. "Laundry machinery is guarded; and domestic appliances have been made fool proof. Public opinion and legislative enactment forced laundry machinery guarding because of women employees. But almost all other machinery is not guarded."

Another industrial executive says: "Our experience in steel mill work shows that very few machines come from the manufacturer equipped with guards that are suitable in all details. Many manufacturers do equip certain



Courtesy, The American Tool Works Co.

A typical example of the evolution of safety design. Below (inset) the machine as built at the beginning of the century; and (above) the triple purpose radial drill with every possible operating member fully enclosed in permanent housings. Numerous other automatic devices protect the machine and work against accident.

machines with guards, or partly equip them, but usually we have to design and make guards to conform with the set-up. Usually the guards are too light or only partly cover the points of hazard."

From a large unit in the food products industry comes this statement: "None of the companies from whom we have recently purchased machinery have safeguarded their machines 100 per cent. One company has guarded its product only about 75 per cent, while others run about 90 per cent or a little better. In other words, there is always additional safeguarding to be done by the purchaser after installation of the machine."

On the other hand, here are some representative opinions which give another side of the picture. First, from a large shoe manufacturer: "We find that there are quite a number of machines in use in our factories and tanneries that are provided by the manufacturer with adequate guards when sent out. One large machinery corporation is constantly cooperating, developing new guards which, once they have met the adequate standard for such a guard, are then adopted and later the machine is manufactured with this guard as an integral part."

A representative of a large Chicago packing house writes: "Makers of packing house machinery safeguard all machines, providing the buyer so specifies. The great trouble is that buyers try to save money on ordering machinery without guards and then later arrange to install guards which in the long run cost more than ever."

"For several years," writes a representative of the lime and cement industry, "we have specified in all purchase orders and contracts that equipment must be adequately guarded to meet the Pennsylvania State safety requirements." And from the automobile industry, in similar vein, is this: "It is the duty of one man in our plant to take our standard safety blueprint and check all new machines shipped to us. If they are insufficiently guarded, the manufacturer is sent a print indicating the safety requirements for all future shipments."

A large Michigan industrial plant sends this statement: "A great deal of the machinery supplied to us has little or no guarding provided by the manufacturer. In most cases where an effort has been made to supply safeguards, these are inadequate for our purpose, although they might do in other plants. I should think it might be better for the manufacturer to quote on machines both with and without the guards."

This comes from a great paper mill: "The question of guarding by the manufacturers of machines is one of price. I am wondering if the manufacturer could not be induced to quote prices on a machine completely safeguarded and also without guards. It would then be up to the purchaser."

It is impractical because of space limitations to quote from the many other letters received, but the foregoing are representative. Here, however, is a statement from a large machine manufacturer which deserves thoughtful consideration:

"It may sound strange to you, but in our experience in selling mill equipment, we do not recall that any of our customers have ever requested or specified the safeguards that should be used."

There are, then, plainly two types of machine manufacturer: in one case, the executive who has not been interested in safety and who continues from year to year to produce merely efficient machines with little thought as to the hazards connected with them; and in the second case, the progressive minded manufacturer, in familiar contact, doubtless, with industrial plants where the accident prevention movement has taken deep root, who has consciously sought to build safer as well as better machines.

It is a singular fact (yet quite logical) that the cumulative efforts of engineers to produce more efficient, more speedy and more productive machines have also in most cases resulted in safer machines. An outstanding example of this is the individual motor drive. As machines have been developed from the standpoints of efficiency and economy many gears, sprockets and other parts have been eliminated, thus simplifying the mechanism and removing causes of danger. Where gears and other moving parts have not been removed, they have in many cases been enclosed within the

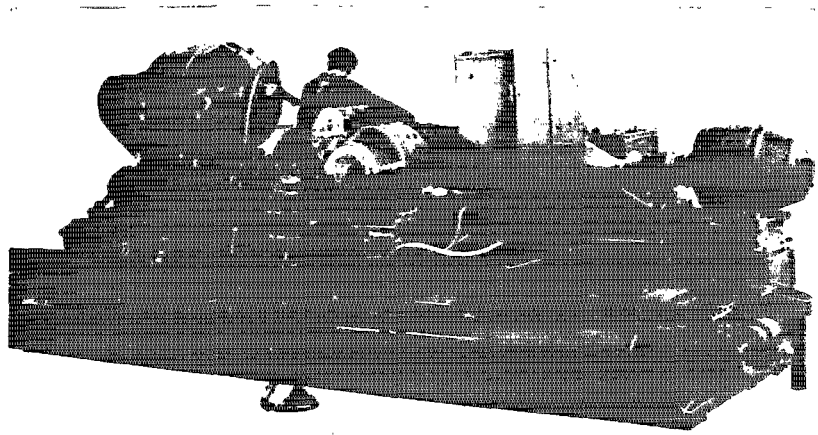
machine body or covered by neat guards, producing a beautiful, smooth machine contour closely approaching the safety ideal.

It must be recognized, of course, that there are many types of machines which are difficult, if not impossible, to make entirely safe in operation. Doubtless this statement should be modified by adding the phrase "difficult at the present time." It is the history of industrial achievement that many things in the safety field which were thought to be impossible a span of years ago are today common matters of routine in many factories.

Not, however, in all factories, as witness the details of the multitudes of accidents to industrial employees that are compiled each year. Unguarded machinery still takes its heavy toll in thousands of plants that have not learned to be safety minded.

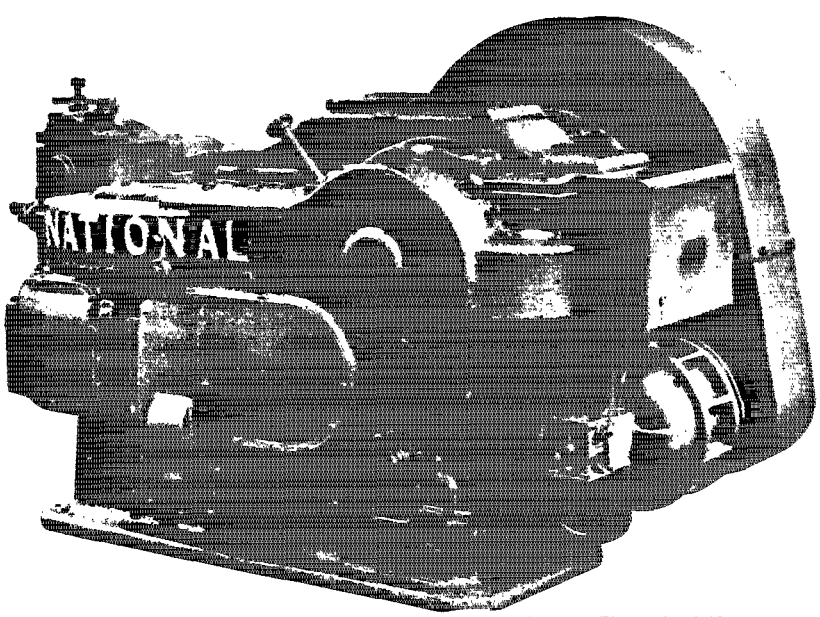
For if there are two types of machine manufacturer, there are also two types of plant manager: one who, through ignorance or disregard of safety fundamentals, or a mistaken idea of economy, continues to operate with obsolete machines inadequately protected with homemade safeguards; and a second type who has sought to make every physical operation and condition in the factory safe for his employees, because he realizes that the prevention of accidents is a vital part of the production program.

It is no more possible to shift the blame for unsafe machines on the shoulders of the manufacturer alone than it is to blame the employee alone for getting hurt by an unguarded machine. If there was sufficient demand for them, every manufacturer in our country would be competing in the production of completely safeguarded machines. We must face the fact that most of the progress made thus far has been accomplished in the effort to improve production and lower costs, and in very few cases have machines been redesigned solely with the thought to reduce the hazard to the employee. Surely the industrial plant executive must at least share in responsibility for this.



Courtesy, General Electric Co.

A heavy-duty roll grinder equipped with six motors and control illustrative of compact, self-contained driving units on machine tools. Mechanical power transmission devices are minimized and protected, and control lines are installed in an approved manner and control equipment is fully enclosed. Some of the safeguards, of course, were installed after the machinery was set up.



Courtesy, The National Machinery Co.

An excellent example of a massive cold header forging machine with well guarded main gear and motor pinion and all other moving parts well guarded. With this high speed type of equipment, it is essential that all moving parts be adequately protected.

Listen to the voice of a well known casualty insurance man: "Automobiles are now furnished with bumpers because the demand for them has grown so universal that they are standard equipment. It would be that way with guarded machines if purchasers could be sold on the advantage of buying them, even if the first cost of the machine were increased one per cent or so thereby. . . . Mechanical safeguarding has been a discouraging problem. At times I feel like giving it up as a bad job; and then I see what some enterprising plant is doing to make its machines safe at the point of operation, and I realize how they operate year in and year out without serious lost-time accidents, and I take heart again!"

Undoubtedly it is these two high types of men who have most influenced the progress of the safety movement; the intelligent plant executive who demands a thoroughly safe plant, and the farsighted machine manufacturer who is continually seeking safer as well as more efficient designs for his product.

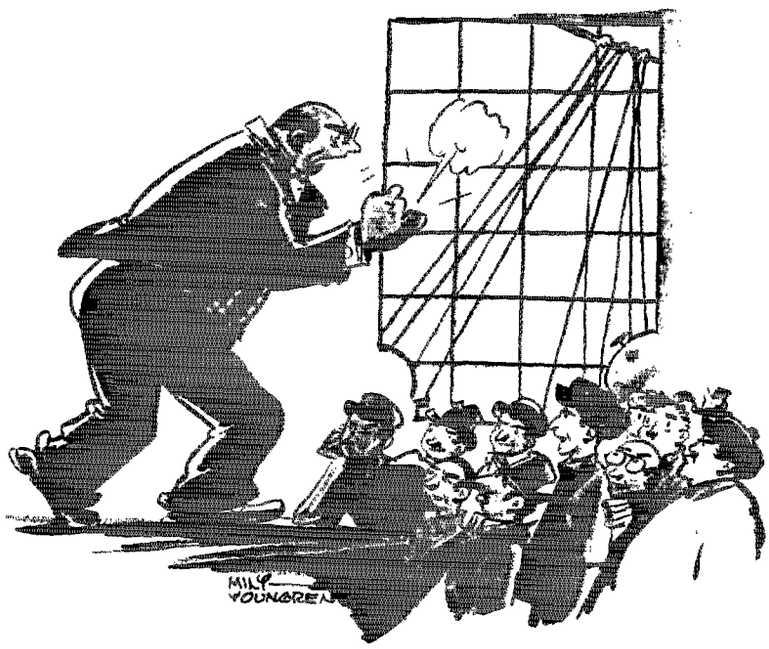
There is, I believe, a very definite danger that many plants engaged in safety work today are drifting to a mistaken understanding of the relative importance of those three safety fundamentals. It has been truly said that no more than 25 per cent (perhaps even less) of all plant accidents can be prevented by applied safeguards and by engineering revision. In short, it is claimed that from 75 to 90 per cent of industrial accidents

(*Please turn to page* 62)

What's the Next Move?

By W. DEAN KEEFE

After making a good start with his safety program Bill seems to be stymied. But Shorty is ready with a practical solution for every problem. This is the third letter of the series



The boss put a punch into his announcement.

DEAR Bill: You're a quitter! What do you mean—you're too busy to drive up here over the week-end? What about me? You must think I've got time to burn—that it's no trouble at all to spend about a day a week pounding out letters to you on the typewriter. And you're fuller of questions than my dog is of fleas—and that's saying a lot.

First, you ask what should be done with all those reports which the foremen are to submit after making surveys of their departments. Can't you get the superintendent to let you review them? That will save his time and likewise give you a chance to classify the recommendations made—and also to check them against the recommendations presented by the state and insurance company inspectors.

There are lots of ways you can classify them. For instance, you can first divide them into three groups: one group of suggestions which you approve for immediate action—a second group which seem plainly impracticable—and a third group which are questionable.

Before going further, you may want to discuss some of the recommendations (the questionable ones at least) with the engineering department or the purchasing agent, or others, to find out just what expense will be incurred in case they are accepted. This information may come in mighty handy in case of argument. Some of these recommendations may then have to be reclassified and you may want to put a few into a "later" group.

Then take up the whole job with your superintendent for OK. All that may be necessary with some of the recommendations is to give the foremen authorization for making the improvements suggested — that is, when the work does not involve other departments. In other cases, work orders will have to be drawn up, approved and signed.

There is one thing to keep in mind, Bill. If you and the superintendent agree that certain suggestions are impracticable, or can't be carried out at once, you or the superintendent should discuss those suggestions with the foremen who submitted them. Otherwise, the foremen may get the idea that you and the boss are not sincere in all your talk about safety. It also may be a good thing to discuss many of these items at another foremen's meeting. This should help a lot in securing a favorable reaction to the decisions that are made.

I guess that's going into a lot of detail which you'll have to work out as you go along. But watch out you don't swamp any one department with a carload of shop orders all at one time. You'll probably find that your master mechanic's gang or the electrical department will have to do a pile of work in carrying out the acceptable recommendations. Perhaps you'll have to help the foremen in those departments to schedule this work so it will not interfere too much with their regular activities.

And then follow them up—that is, make sure they are really doing this work properly and as rapidly as possible. It might be a good idea for you to let some of the slower foremen know that you have to submit weekly reports to the boss on the progress they are making. Of course, as your work progresses, you probably will shift to a report once a month instead of once a week.

If any of your recommendations call for guards or equipment that must be bought, I would suggest that you write to the National Safety Council and secure a copy of their Buyer's Guide. This guide has all types of equipment listed alphabetically with the names and addresses of manufacturers and dealers.

On the other hand, if you plan to construct and install some of your own guards and make other improvements, be sure that everything is up to the standards laid down by your state and insurance company engineers. Here again the Council can give you assistance. If you can't find

out what you want to know from the Council's Safe Practices Pamphlets, just write your problem in a letter to their headquarters office. Their consultation service is A-1 and they will go the limit in answering every question you fling at them.

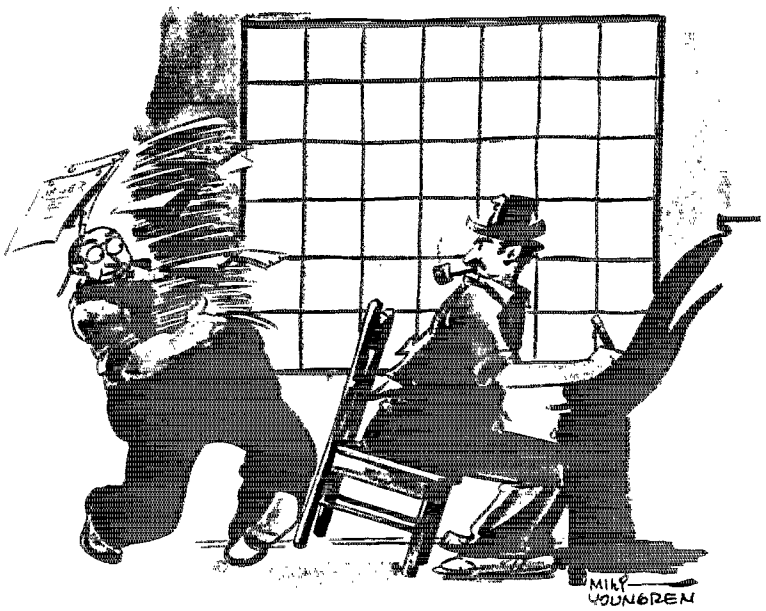
But I haven't said anything about the reason for all this work.

Well, as I see it, this survey business and the job of carrying out a lot of these safety recommendations are absolutely necessary—and they're necessary right at the start. Let me explain it this way. Most of the accidents in industry result either from unsafe practices or unsafe conditions. The management and the workers *jointly* are responsible for unsafe practices—but the management almost *solely* is responsible for unsafe conditions.

All right! Doesn't it seem logical then that the management should do *its* job before asking the workers to do *their* stuff? Otherwise, won't the workers get the idea that the management is trying to slip out from its responsibility and pass the buck to the workers? I'm sure you see what I mean.

After you have made a good start in carrying out the recommendations submitted by your foremen, then it's time to make a general announcement of the safety plans to the entire force. For one thing, put up a permanent bulletin board in each department and another one near the entrance to the plant, and make the announcement in bulletin form. These special bulletins, of course, should be signed by your general manager or plant superintendent.

Put up a permanent bulletin board in every department.



Don't swamp any department with a carload of shop orders all at once.

In addition to this, in the plant across the river from us, the boss called all the workers together in a meeting so he could make a speech and *tell* the gang what it was all about. I heard that speech and it certainly made a hit—it put a punch into his announcement that he never could have got into a bulletin alone.

He started right off by telling them that from now on everybody in the plant was to turn over a new leaf and do everything in his power to prevent accidents. He spoke about the company's accident record for the previous year or two and told them that though their former records were not any worse than those of many other plants in town—nevertheless, they were nothing to brag about. He pointed out the fact that accidents "hit" not only the company, but also the workers, and the community too—and he explained why.

His next point referred to the appointment of the safety director—and in his conclusion, he told what was to be done. Naturally, he explained what I have just talked about in this letter—that most accidents result either from unsafe conditions or from unsafe practices—that the management had already started to correct every unsafe condition which was brought to its attention—that he wanted the workers to report any other conditions which might have been overlooked—and finally that it would take the cooperation of everyone in the company to eliminate unsafe practices. He wound up by expressing his faith in the superintendent, the foremen, the safety man, and the workers—and in their ability to prevent accidents, not only to themselves but also to "the other fellow."

The gang left that meeting all pepped up, and I hand a lot of the credit for their good start and continued good record to their boss who has been behind the work right from the very beginning.

The announcement in your company can also be emphasized by an article in your company magazine, or by letters to your workers over the boss's signature. I know of some cases where such letters were sent through the mail to the workers' home addresses, so the wives and families would know what it was all about, too.

Right along with this announcement, Bill, you should start the use of safety posters. I'm not giving you any penny lecture on that subject for it's all written up in the Council's Safe Practices Pamphlet No. 38 on "Safety Posters and Bulletin Boards"—where it's stated a lot better than I could ever put it in a letter.

There's just one point, however, that needs emphasis: that is, don't

(*Please turn to page* 48)

Safe Electrical Equipment for Explosive Atmospheres

• Dust-tight and explosion-proof motors and controls have made operation safer and more efficient in those industries where gases and dusts are likely to create explosive atmospheres

MODERN industrial developments, particularly in the chemical industries, have brought about many fire and explosion hazards. The increasing use of volatile solvents has extended many of these hazards to other industries. Where flammable gases and dusts are found in the right mixture with air a "mysterious" explosion with heavy loss of life and property damage may occur.

Of course, these explosive mixtures should not be allowed to form. Ventilation should remove the gas or dust at its source, but real safety work does not depend on any one safeguard. For that reason large areas of window space are desirable to vent the force of any possible explosion, while good housekeeping methods and adequate exhaust systems remove many a hazard. For these locations the development of dust-tight and explosion-proof electrical equipment has been important from the standpoint of both safety and operating efficiency.

The National Electrical Code recognizes three general types of hazardous locations:

Class I comprises locations where flammable gases and flammable volatile liquids are manufactured.

Class II comprises locations where combustible dusts are present and likely to be thrown into suspension in the air.

Class III refers to locations where there are easily ignitable fibers or other materials which might be ignited by arcing, overheating, or breakdown of insulation. The distinction between Classes II and III, however, is not sufficient to consider for manufacturing purposes.

Installing the motor in a separate room away from the source of hazard was in the past the only method of protection available. This, however, deprived certain industries of the benefits of individual motor drive without eliminating all hazards. Belts, particularly those driven at high speed, generate static electricity in dangerous amounts. For example, a belt operating at 1800 r.p.m. in dry air will become charged with sufficient electricity to jump two inches.

A gas-tight motor is an impossibility. There must be an opening for the shaft and a tight fit is impossible because of "breathing" within the motor—expansion and contraction due to heating and cooling from intermittent operation. A certain amount of gas will inevitably be drawn into the motor, so the clearance is made as small as possible and the length of the path sufficient to prevent any flame originating in the motor from propagating to the outer atmosphere.

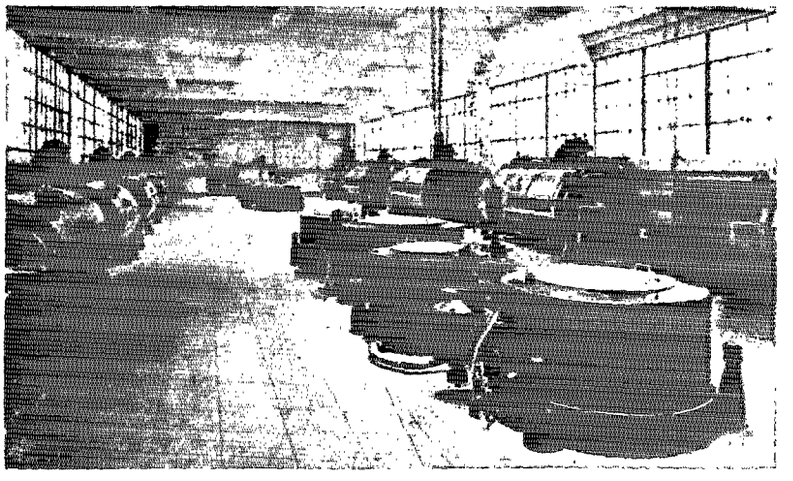
An explosion-proof motor, according to insurance schedules and state laws covering dry-cleaning plants, means a type of motor that is totally enclosed, specially constructed, and tested and labeled by Underwriters Laboratories for use in Class I hazardous atmospheres.

In addition to preventing ignition within from extending to the outside atmosphere the motor casing must be strong enough to withstand pressure from any explosion likely to occur inside the motor. In addition, the motor should radiate heat fast enough so that in case of a burnout in the absence of overload protection, the surrounding gas will not be ignited.

Of course, a properly designed motor is not expected to burn up if protected against overload, low voltage and other abnormal conditions. But no possibility of accident should be ignored.

Explosion-Proof Construction

Motors for Class I vapor hazards must be constructed according to rigid standards. Three classes of construction are permitted: fully enclosed, totally enclosed fan-ventilated, totally enclosed pipe-ventilated. The last mentioned type, however, is seldom used. The simple totally enclosed type is used only in motors of 1½ HP or less. With the larger mo-



Courtesy Louis Allis Co.

Benzine room in the plant of World Cleaners & Dyers, Mt. Vernon, N. Y. Nine washers and eight extractors in this room are equipped with explosion-proof motors.

tors some method of dissipating the heat generated must be provided.

The totally enclosed fan-cooled motor has a jacket around the motor through which cooling air is circulated. The majority of motors used for either gaseous or dusty locations are of this type.

The fan for a fan-cooled motor is of non-sparking metal, usually aluminum. The motor should be designed to draw or force the air by the most direct route. This will provide the fewest possible eddy pockets in which dust can collect. An accumulation of dust might provide a fire hazard should the windings of the motor burn up.

The general construction and the strength of the motor casing are governed by rigid standards. These include a safety factor of five, based on the calculated pressure which would be generated by an internal explosion of the gas for which the motor is to be labeled. The internal explosion pressure is influenced by the size and type of the shell, the free internal volume, and the nature of the gas or gas-air mixture.

The joints in the motor casing or between the casing and the end-shields or coil guards are also important. Long, close clearances of shaft openings are vital in preventing the escape of flames and these are specified to very fine limits. On these depend the safety of the motor.

Class II Hazards

Among the most familiar dust explosion hazards are those found in flour mills, starch plants, and grain elevators, although any organic dust and many mineral dusts will explode under the right conditions. Electricity is, of course, only one of the potential sources of disaster, but manufacturers have rendered important help by providing dust-tight motors and control apparatus.

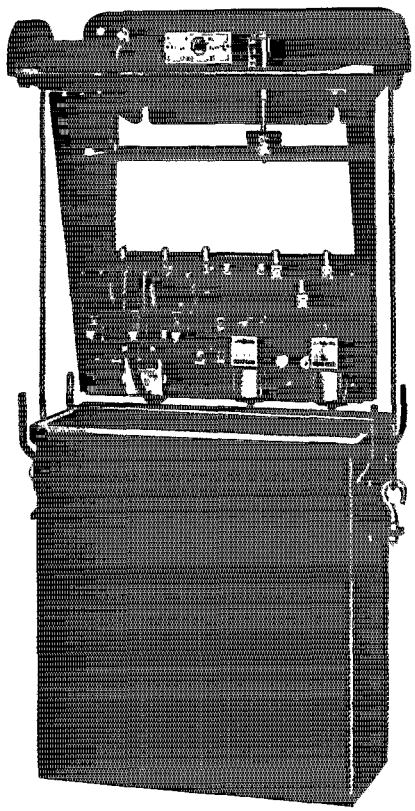
The distinction between "dust proof" and "dust-tight" should be noted. Equipment designated as dust proof is built to function under dusty conditions; it will not necessarily keep out dust. "Dust tight," however, means that dust cannot enter any vital part of the machine.

Dust-tight construction involves a solid motor shell, a solid motor end bracket, dust-tight bearings, and leads sealed to prevent the entrance of dust. Fitted joints should have clearances not exceeding .005 to .004 inch. They must exclude dust particles fine enough to pass through a 200 to 250 screen.

In general the specifications for safety in both Class I and Class II locations are much alike, although the requirements of the former are more exacting.

Courtesy Allen Bradley Co.

Transverse motor driven conveyor controlled by dust-tight reversing switch mounted on column at left in the Continental Elevator of the Missouri Pacific Railroad Company at Kansas City.



Explosion proof across-the-line motor starting switch, all live parts of which are immersed in an oil-filled tank. The tank is lowered, showing the 3-pole switch, two overload magnetic relays, and terminal lugs.

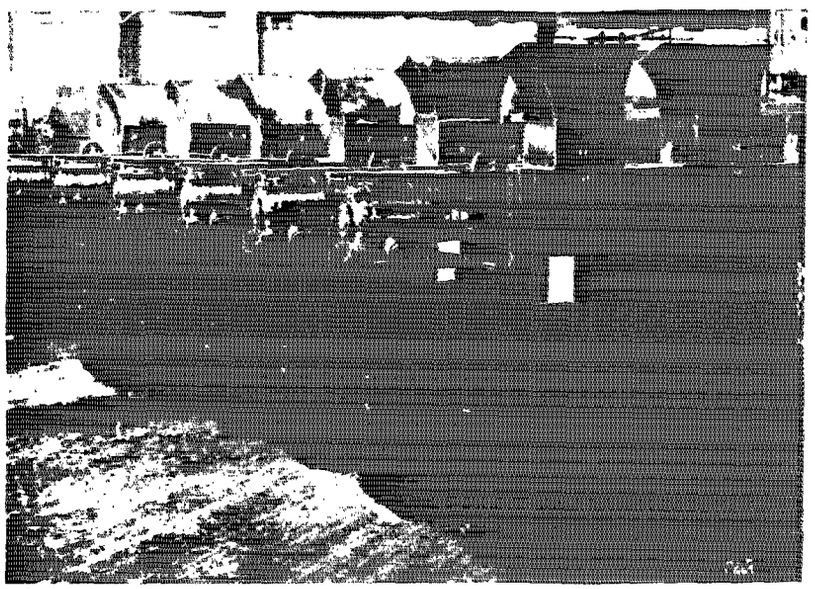
The installation is scarcely less important than the construction of the motor itself. All wiring should be enclosed in rigid conduit. Rats have been known to gnaw the insulation of open motors and wiring, with the danger of fire or explosion attending an arc.

Even where no flammable dusts or gases exist, protected apparatus is often economical. Totally enclosed, fan-cooled motors are often installed on machine tools to protect them from conductive or abrasive dust. This type of motor, though not gas tight, is protected to a great degree from the effects of corrosive gases.

Control Apparatus

The motor itself is not the only potential hazard. Motors must be started and stopped, and sometimes regulated to higher or lower speed. Therefore, the construction of control apparatus is no less important than that of the motor. An arcing switch is a positive menace wherever flammable gases or dusts are likely to be encountered.

The safety of the operator or maintenance men may often require a positive disconnect means right at the motor instead of depending upon a remote switchboard. It is also desirable to provide fuses with some means of disconnecting them from the line before they are removed from the circuit. This would remove the possibility of grounds, pulling the fuse under load, and similar hazards.



Courtesy Louis Allis Co.

Six unit heaters equipped with motors designed for operation in explosive atmospheres containing ethyl acetate, butyl acetate and toluene.

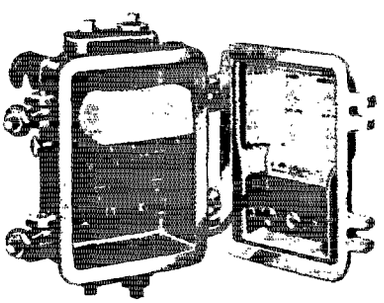
One piece of apparatus which has many desirable features is a combination starter which consists of the regular starting device with a disconnect switch assembled in the same case. The disconnect switch has a control interlock which causes the magnetic starting device to open as soon as the switch lever is moved. It takes the arcing from the switch blade contacts and puts it on the magnetic starter contacts which have magnetic blowouts. This safeguard is particularly important when a motor is stalled.

Overload relays are needed in addition to fuses. It is impossible to protect the average squirrel cage induction motor with a fuse which is large enough to carry the starting current. An overload relay does not function immediately in the case of a momentary overload, as in starting, but provides protection in case the overload is sustained.

Overload relays are usually of an average size for a given horsepower and speed and there are likely to be cases where the heater coils are too large or too small. If slightly large, the motor is not entirely protected against singlephasing, although it probably has adequate protection against extreme momentary overloads or moderate overloads of considerable duration.

Complete protection is obtainable only by selecting the heater coils in accordance with the full load current of the individual motor. This would be possible only in a large plant where the maintenance department carries its own stock of heater coils.

No-voltage protection is another important form of control. In many cases there is a serious hazard in permitting the machinery to start upon the restoration of current after an interruption. One form of protection is a magnetic across-the-line contactor which opens automatically upon failure of the line voltage.



Courtesy Allen Bradley Co.

Explosion proof across-the-line motor starting switch. The cover in which the "start" and "stop" push-buttons are mounted is open showing the 4-pole switch, overload relays and arc hood.

Where the motor is located at some distance from the operator there should be some method of indicating whether the motor is operating or not. In most cases a push-button station with pilot light answers the purpose.

Where a dust hazard exists, a dust-tight starter sealed with a felt gasket is satisfactory. The push button, limit switch, or other control device controlling this starter should also be dust tight if installed in the same room as the starter itself.

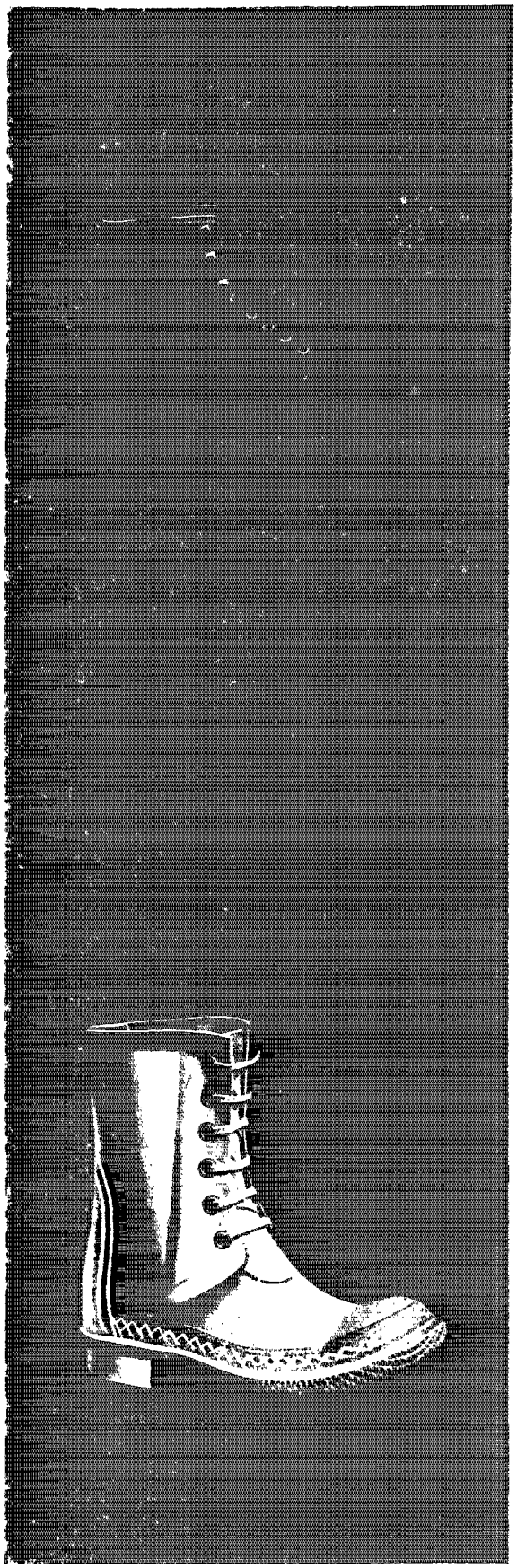
Three types of construction have been devised for gas hazards. The first is an ordinary air-break starter built with a flame-proof case. Gaskets are not permitted, and the cover and case must be machined for a perfect fit, with a sufficient length of path to cool the flame below the ignition point before it reaches the surrounding atmosphere. The covers of these starters are held tight against the box by bolts equipped with standard nuts. Thumb nuts are not allowed as it is too easy to tamper with them. Standard nuts can be removed only with the proper tools and the starter is not likely to be opened by an unauthorized person. This starter contains the usual across-the-line air break magnetic contactor with overload and low-voltage protection. Start-stop-reset push buttons are provided in the face of the starter.

The second type of construction has oil-immersed contacts with a sufficient head of oil above them to make them safe for operation in flammable gases. Care is necessary in the operation of oil immersed switches to prevent the possibility of low level of oil or oil being diluted with water. Six inches of oil are specified by Underwriters Laboratories.

Many of the older types of starters leave much to be desired from the safety standpoint because all the contacts are not under oil, the tripping contacts being usually air-break.

The third type, which is less frequently used, is an oil immersed device with the added protection of length of path to quench the flame.

Electrical interlocks which prevent the operation of the starter if the cabinet is open or the contacts exposed are supplied as standard with many starters designed for hazardous locations. The terminals of these interlocks are connected in series with the hold-in coil of the magnetic switch on the starter panel. When the cover is removed from dust-tight equipment or the oil tank is lowered from its normal position in oil immersed starters, the interlock contacts are open, preventing operation of the starter.



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Before He Has an Accident —Instruct Him

By ROBERT CLAIR*

Sound training is more effective than either bribery or coercion in promoting safety among commercial vehicle operators

TWO articles appeared in the March issue of PUBLIC SAFETY, published by the National Safety Council, one entitled "If He Has Accidents Dismiss Him" and the other "If He Drives Safely Reward Him." The records of two fleets were cited to show that by each system good results were obtained.

Discipline and cash bonuses are as old as the commercial vehicle accident problem itself. No one in his right senses ever honestly maintained that either plan would not produce results of some kind. But there is a third "royal road"—far better constructed and far more pleasant—called "instruction," which, if tempered with intelligent and sympathetically applied discipline, leads to the finest results.

My contention is that both the old methods of reducing accidents are really as old fashioned as kerosene lamps.

In the NATIONAL SAFETY NEWS of July, 1931, I stated that safe driving can be sold to commercial vehicle drivers on its own merits without the hammer of discipline or the lollypop of a cash bonus; that it is unsound from moral, educational and economic standpoints to buy safe service from our commercial drivers by means of additional cash; and that leaders in the field of safe commercial driving are developing more carefully planned, better supervised and highly successful campaigns based on directional, correctional and inspirational instruction.

Since publication of this article, developments in the field of highway safety engineering have emphasized the truth of my statements, and without attempting to repeat them in detail, it seems timely to record a few additional arguments.

At a meeting of the New York Bakers Association, held December 9, 1931, and reported in *Bakers Weekly*, A. L. Brower, vice-president of Bakeries Service Corporation, said that his company has achieved a profit of over 300 per cent on its investment in safety work. One of the most interesting facts in connection with this statement is that *not one cent of this concern's safety investment represents cash bonus payments to operators of their hundreds of vehicles.* Needless to say, the accident record of this large fleet is remarkably good.

Have you ever analysed the theories behind the cash bonus? Suppose I should hire you to transport loads of gravel, in a wheelbarrow, a distance of 100 yards across a swampy field. At one point on your route there is a six foot trench over which you have to walk on a temporary plank bridge. You are to be one of twelve men engaged in doing this work. The gravel which you transport loads a number of motor trucks which are in turn feeding the gravel to a given destination on a time schedule which can not be interrupted without interfering with the progress of an important construction job.

Rewards for the Careful

You go to work. Our agreement is that you are to perform your job for 45 cents an hour. On your first trip across the plank bridge you push your wheel-barrow off the planks and into the trench. On your eighth trip you run your wheelbarrow into a mudhole and become mired. These occurrences not only damage some equipment but interfere with the other barrow-pushers and also interrupt the truck delivery schedule.

I appear on the job and discover the trouble you have been having; and say to you, "Tomorrow I shall pay you 55 cents an hour if you will be more careful."

Does that sound sensible? Yet we do the same thing when we say to our truck drivers, "You are having too many accidents. You are certainly inefficient and careless. I shall increase your pay if you will do your work properly—which means safely!"

Kindly note that in our imaginary employment agreement I did not specify *how many* wheelbarrows full of gravel you should transport in a given working day. This is an important point, as it is necessary to distinguish the payment of a cash bonus for safe work as against a cash bonus for the completion of work above a fixed minimum.

Part of the Job

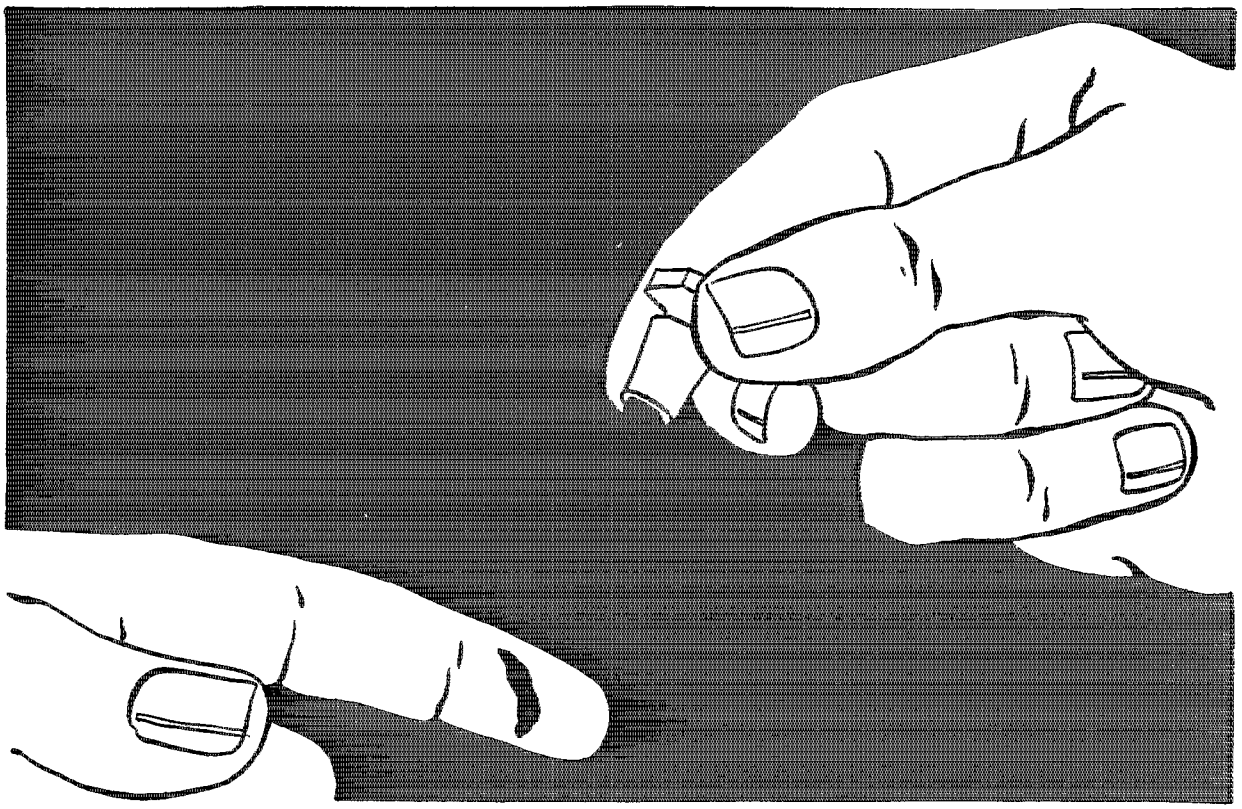
The performance of one's work safely and the *manner* of working are separate considerations, and when an employment contract is made between employer and employee, regardless of the type of work to be done or the volume of work to be produced, one of the most important conditions which should be clearly understood is that *he who works for a set wage must, to be worthy of his hire, work efficiently or in a careful manner.*

If we should progressively extend the cash bonus theory, we would find ourselves in the ridiculous situation of paying drivers more money as their accidents increased!

If a fleet operator or a highway safety engineer decides that he should institute a safe driving contest, the first decision should be that the award will not take the form of money. Contests get results and driver awards in such contests should be anything but cash.

After all, the best prizes obtained by careful drivers are the priceless rewards of confidence in their abilities to hold their jobs, freedom from

*Home Office Supervisor, Engineering Department, Liberty Mutual Insurance Company, Boston, Mass.



First Aid To The Injured—Mercurochrome!

A FEW drops of red prevention (Mercurochrome) will safeguard scratches, minor cuts and skin abrasions from dangerous infections and provide an effective prophylactic treatment. Merchurochrome is for general use as an efficient antiseptic.

Mercurochrome does not burn, irritate or injure tissue in open wounds. The stain shows clearly where the germicide has been applied and also fixes the bactericidal agent in the field for a relatively permanent period.

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injury to themselves, the happiness of their loved ones, and freedom from legal prosecution. These are things that money cannot buy and drivers will operate safely for these considerations alone *if they are brought to appreciate them.*

How About Punishment?

What about the penalty plan?

A penalty system assumes a policy of strict discipline that says: "If a driver is involved in an accident for which he is at all to blame—he will be fired." This means, "If you dare to make a mistake—you will be discharged!"

This indicates that management attempts to *force* drivers into a mode of thought and action. Such procedure cannot build good morale and drivers will harbor resentment against it openly or secretly. A threat of discharge often sets up in the minds of drivers a fear complex which hinders rather than promotes careful driving and sincere effort.

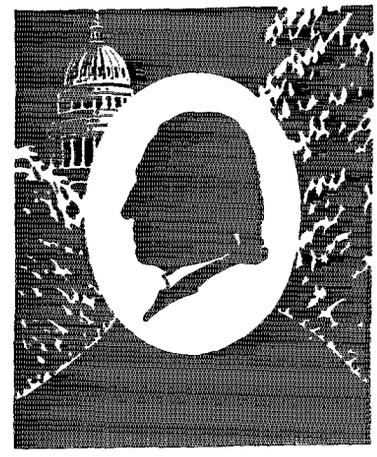
Discharging a driver who has had an accident is costly from the standpoint of labor turnover, and the replacement who is hired may be even less responsible.

In the same way that a child does not learn that a stove is hot until he touches it—many drivers fail to realize how serious an accident may be until they are involved. Therefore, the having of an accident is often one of the most effective lessons in safe driving that can be administered. This has been unquestionably proved by the remarkable accident reductions that have been, and are being made, through intensive correctional work on "accident prone" or "repeating" drivers.

The existence of a sympathetic understanding between an operator and his drivers is highly desirable. Loyalty on the part of a group of drivers is an essential to any profitable business. Without such things, little can be done toward accomplishing maximum results. A penalty system may appear to be achieving results but it is probably also sowing secret seeds of discontent and resentment.

In preference to the use of either penalties or cash bonuses, modern safe driving activities are grouped under educational program divisions briefly as follows:

A. *Directional:* These activities "direct" drivers. If we do not lay down clear and reasonable specifica-



SHOW THE SAFETY "SPIRIT OF '32" AT WASHINGTON • • OCTOBER 3-7

tions for their jobs by explaining their responsibilities and what will be expected of them we cannot hope for intelligent cooperation. Directional work includes the overcoming of ignorance which drivers may have of local safety regulations plus the imparting of general knowledge concerning how to anticipate and correct common accident hazards. All features of a continuous campaign of constructive general information are included under this phase of the work.

B. *Correctional:* Under this heading come methods for handling drivers after accidents. Here we find the friendly and constructive fleet safety committee functioning; studies of accident prone drivers being made; group and individual conferences being held for the purpose of drawing constructive lessons from accidents that have happened, and from the observance of traffic violations. An accident is a mistake, and it is intelligent procedure to correct the mistakes which have led individuals into accidents as well as to give the entire group the benefit of the errors made by a few.

Flag Waving and Tear Jerking

C. *Inspirational:* Many crimes are committed in the name of inspiration due to the fact that clear distinction are rarely made between empty ballyhoo and the real thing.

It is easy to use over-emphasized "flag-waving" tactics and to paint too lurid pictures of human suffering caused by accidents. Such verbal or written propaganda is apt to be depressing. Such appeals may give temporary emotional stimulation but lasting effects will be questionable. The emotions must be played upon during our no-accident campaigns but only occasionally and with discretion. We cannot expect emotional appeals to support our entire program.

The sort of inspiration which we should desire to transmit to our drivers is of the quiet kind, based on an intelligent appreciation of the facts and values of safe driving and its physicial, economic and social rewards. Such inspiration is achieved only through keen, sincere salesmanship on the part of the fleet management and the man conducting the program.

After all, the best sort of inspiration is often contracted from the enthusiasm of others. Enthusiasm is infectious. Enthusiasm overcomes obstacles and makes yesterday's impossibilities the realities of today.

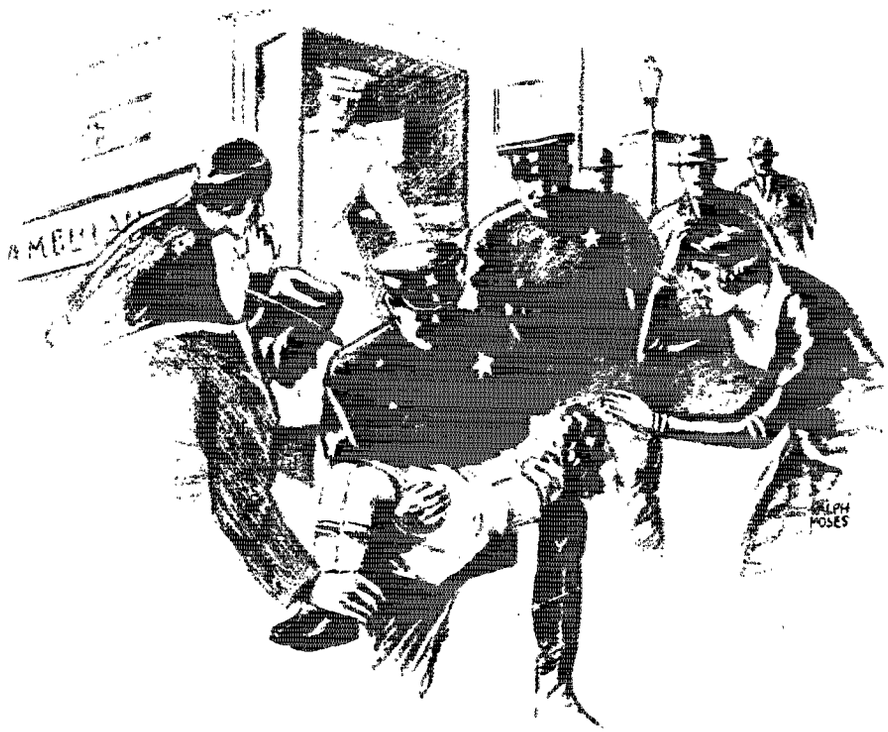
Whether you are the fleet operator or the highway safety engineer, if your safe driving program is "going sour" *don't blame the drivers!* Blame rather the methods you are using, but most important of all, *look to the perspiration you are putting into supervision!* Probably the interest your drivers are showing in being careful reflects *your own* attitude!

Even if your accident record is good or improving, study the fundamentals of your program. You will often be surprised at the further progress yet possible through improved methods.

A new era has arrived in the preventing of commercial vehicle accidents. Now we do not buy safety with dollars, but rather we are coming to understand our contractual obligations as employers, which places upon us the responsibility of making careful operation an inherent part of our drivers' jobs on the basis of strict efficiency in consideration *for the original wage agreed upon.* It is proven that high accident frequency is found among those organizations which are generally inefficiently operated. (See "Safety and Production"—*Harpers*, 1928: although the conclusions of this report refer to industrial plants, the same facts hold for fleets of commercial vehicles.)

The modern fleet safety program must be backed by discipline. But this should not be arbitrary or "hard boiled"; it must be tempered by sympathy and an intelligent conception of all sides of the problems involved.

THE DEATH RACE IS ON!



Auto Fatalities Start Now for Highest Peak of the Year

DEATH rides at the wheel during August and September. During the next sixty days motor vehicle fatalities will reach the highest peak of the year. There will be a small decline in October and November and then up once more to the second high point by the end of December!

What can be done? Will **your** drivers be involved? You can meet this problem as hundreds of leading organizations are doing—not only in peak months but in ALL months. It will pay dividends, too—not only in human conservation but in cold hard cash, as shown in almost unbelievable reductions in insurance and repair costs:

1. Give each driver a copy of "The Safe DRIVER," acknowledged as the best little safety promoter in its particular field. Sixteen pages each month, jammed full of interesting, practical, helpful material—with fun and spice, punchy cartoons and illustrations for added measure.

2. Use the Dash Board Safety Slogans—Fifty-two thought-compelling messages. They are illustrated in colors and are furnished with metal holders. A weekly safety lesson that will not be forgotten!

. . . and this big double service at a ridiculously low cost. The sure and quick way to convince you that here, at last, is just what you have been looking for is to write today for samples and quantity prices.

NATIONAL SAFETY COUNCIL, INC.

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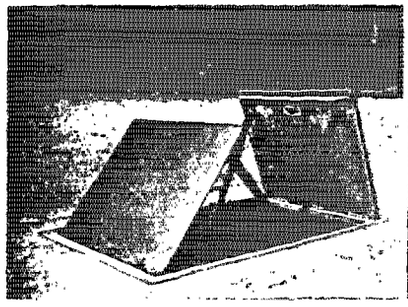
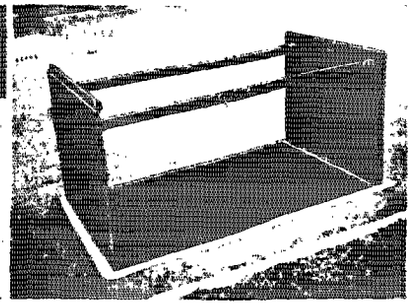
THE SAFETY EXCHANGE

"A ROUND TABLE IN PRINT"



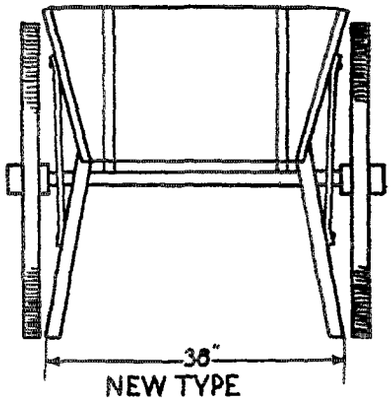


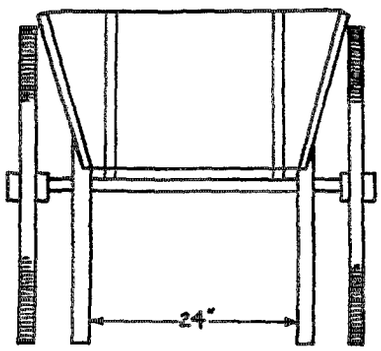
MANHOLE COVER HAS RAILING THAT FOLDS UP

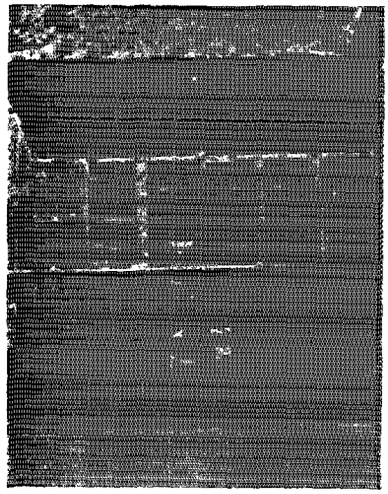
Here is an interesting type of manhole protection, as illustrated in the 1930 edition of the German publication issued by the Association of Founders and Rolling Mills. Note that while of stout and substantial construction, the railing is still arranged to operate automatically as the manhole is opened or closed. Thus the opening is protected on all four sides.

BETTER HAND BUGGIES CAN BE DESIGNED

One member of the Chemical Section of the Council, writing in the section *News-Letter*, says that they use a great many hand buggies (small carts) containing fertilizer, which are pulled by the men. A number of heel case injuries developed through the men striking their heels against the straight legs of the buggies. These injuries were aggravated by repeated knocks, became sore, and sometimes led to infection. To overcome the difficulty the legs on all the buggies were changed, as indicated in the accompanying drawings. The new straight legs were made to slant at an angle toward the wheels, instead of running straight down. The old type measured 24 inches between the legs at the bottom, while the new space is now 38 inches; and the old heel cases have disappeared.







SAFE STORAGE OF SMALL IRON AT THE QUARRY

This picture shows a carefully built storage rack for rod and strip iron at the plant of the Connecticut Quarries Company. The corner uprights are 6x6 inches in size, and heavy 2-inch rods run through the upright posts, extending from side to side, on which strip iron and small rods rest in compartments. A corrugated roof covers the rack. A platform at the front, half way up, affords convenient and safe footing in handling the stored materials.

NOVEL SAFETY CONTEST IDEA THAT HOLDS INTEREST

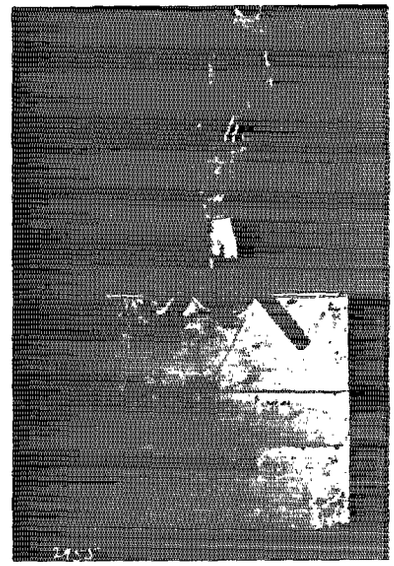
One department in the plant of the Hayes Body Corporation, Grand Rapids, Mich., was anxious to maintain its fine safety record of no accidents during 1932 as well as throughout 1931. A bulletin board was designed containing 170 little bags of beans, with the name of a worker and his badge number on each bag. Above was the legend, "Don't spill the beans." As yet, it hasn't been necessary to slit a hole in any bag, indicating that a certain individual was guilty of breaking the accident record. Two other items of interest are also displayed on the bulletin board—to the left, a pay check cut in two, and to the right an accumulation of bills—both of which usually accompany a lost-time accident.

★

The ideas presented here have proved helpful. If you have developed a useful device or method send in a description, with sketch, blueprint or photograph, if possible

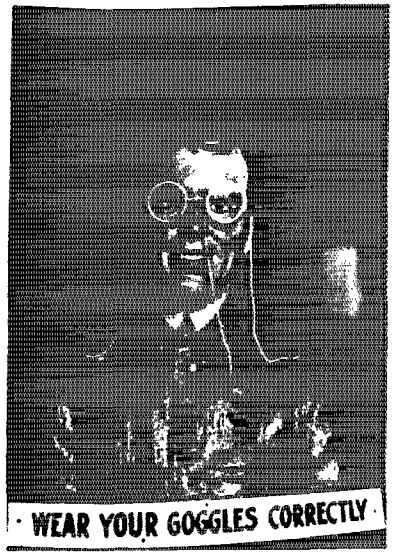
CASE FOR CARRYING SAWS OR CIRCULAR KNIVES

In the twine mill of the International Harvester Company it is necessary for the operator to carry circular knives through the plant which are used on twine machines. The difficulty was solved by devising this shallow box, open only at the top and supplied with two well-secured strap handles, which provided protection both for the operator and the employees among whom he had to make his way. The box can also be used for carrying circular saws or any large sharp round instrument.



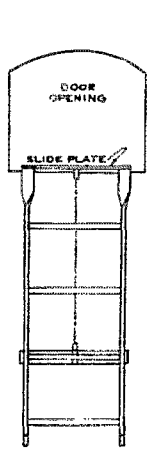
THIS WAX FIGURE DEMONSTRATES GOGGLE WEARING

Goggles are at times worn with considerable discomfort. There is, however, usually little need for this, as it is generally possible to adjust them so that they will fit properly. In fact, all goggles should be examined for comfortable fit when issued to the worker and adjustment made whenever necessary. The accompanying picture illustrates graphically how one member of the council has used a wax figure to demonstrate several important adjustments.

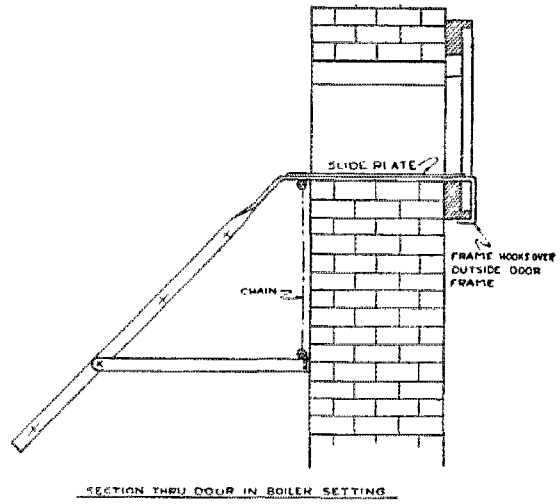


SAFETY LADDER FOR ACCESS TO BOILER FURNACE

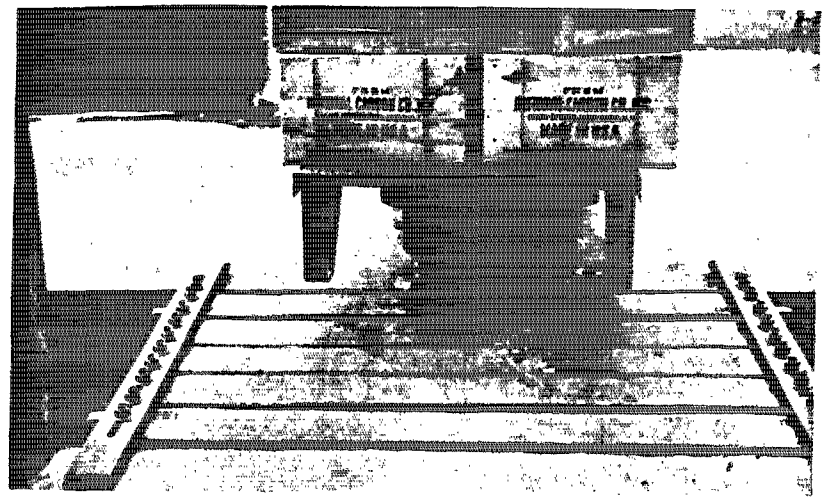
An improvement in the method of entering the furnaces of large boilers for repair work has been devised by W. E. Mallery, Saginaw River steam plant of the Consumers Power Company, Jackson, Michigan. This drawing, from the *Au Sable News*, shows a short iron ladder hung in the furnace door and let down inside, being braced against the front wall. It affords a firm footing and makes it no longer necessary for a man to drop into the clinker pit. The ladder also affords an easy way of exit. All this assists greatly in avoiding strains and sprains.

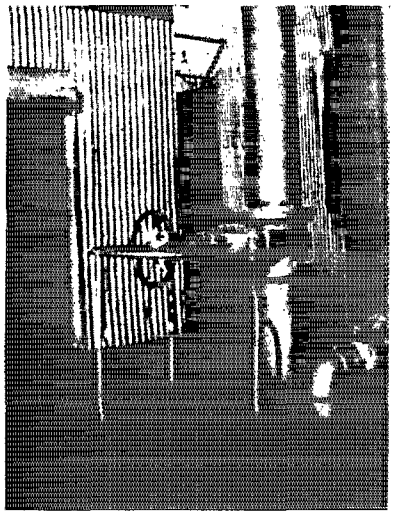


VIEW FROM INSIDE



SECTION THRU DOOR IN BOILER SETTING





GUARD FOR STEM OF A LARGE GATE VALVE

As the stem projecting from this large gate is in the plant of the Carter Oil Company, Tulsa, Okla., extended so far and was at about the height that would let it strike a man in the abdomen if he should bump into it, a stout railing was erected around the gate, as shown in the photograph.

HERE IS AN ADJUSTABLE BRIDGE FOR LOADING CARS

Here is a unique loading bridge which is adjustable to the extent of eight inches —sufficient for most situations. The bridge consists of five pieces of 6-inch 8.2 pound channel iron 68 inches long. These are filled with 1½ inch hemlock and hung under two pieces of 4-inch 7.25 pound channel iron 48 inches long. The ends of the 4-inch channel iron rest on the platform and the floor of the car which gives a working surface flush with both platform and floor. In order to allow for variations in distance between platform and floor, the 4-inch channel irons are slotted so that the bolts holding the two outer 6-inch channels on each side may be loosened and the position changed sufficiently to fill the space to be covered. The bolts holding the floor pieces of the bridge to the cross channel are ¾ inch by 5 inches long. The bridge in question cost $13, weighs about 325 pounds, and was devised by the Union Carbide Company, New York City.

PLATFORM AND RAILING OVER THE CLASSIFIER

In this picture showing a platform and railing over the classifier we see one more of the many ways in which the Homestake Mining Company, at Lead, S. D., provides for the safety of its employees. The platform gives access to the grease cups for filling and adjustment and provides a convenient cross-over which saves time.

THE BULLETIN BOARD

Conducted by STAN KERSHAW

A page devoted to the problems of the men who maintain the show windows of the safety movement

A Patriotic Duty

IF you ever have an opportunity to sit with a forest ranger atop the world in one of those little lookout houses, don't turn it down. It will give you a new viewpoint on one of the country's most serious problems—the prevention of forest fires.

From this sun tanned son of the soil you will most likely get a story about the carelessness of hunters, campers, and picnickers that will make you feel a flush of shame to think that the people who are responsible for the vast yearly toll of destruction and waste are, for the most part of your own race. Yet, it is safe to say that they do not do it intentionally. Perhaps it's carelessness or thoughtlessness or even just plain ignorance. Whatever it may be, it continues as a growing menace to the welfare of our nation and demands both individual and collective effort to put a stop to it.

Individually one can be careful about what he does when in the woods which is a great help, but the great problem is to get this same idea before the masses in such a way that they will realize its importance.

One way to make progress is to give wide publicity to the poster illustrated in miniature on this page. It is suitable for posting in schools, railroad stations, public and private camps, hotels, cross country buses, and other public places and it makes a fine mailing piece to enclose with general correspondence.

Not only should every one take an active interest individually, but the strength of all prominent citizens, industrial organizations and business establishments who have any direct connection with the problem should be thrown into the fight. This includes such industries and business establishments as the following: All wood-working and logging companies, paper and pulp mills, paper box board manufacturers, railroads, telephone and telegraph companies, electric power companies, naval stores companies, farm machinery manufacturers, construction companies doing work in wooded areas, sporting goods manufacturers and dealers, and a host of others.

2877 9x12 inches 1 unit

An extra supply of the poster has been printed in anticipation of a greater demand this year and it is recommended strongly that its use as a mailing piece be extended for the simple reason that so many persons are migrating by auto to the wooded areas that need to be protected against matches, camp fires, cigaret and cigar butts and other flame-producing objects.

Reaching Out with Posters

THE "saturation point" which is so often spoken of when the possible market for automobiles is discussed is a term that might well be used when talking about posters. The question is—is there a saturation point in the usefulness of a poster?

A poster is useful only in proportion to the number of people who actually absorb its message and react in a positive way.

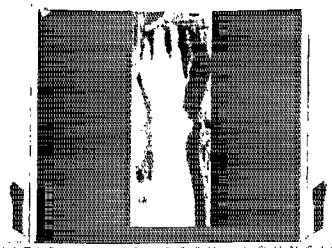
From a purely practical standpoint, the plant safety man has probably discovered the normal saturation point of a poster when he has displayed it in such ways that all of the company employees have had an opportunity to absorb the message. However, in order to get this result it has probably been necessary to post copies in several different places and to leave them posted long enough to give every employee an opportunity to see it. But is this all? Can it be used to further advantage?

Take for example the case of the safety man who thought he saw an opportunity to reach some of the workers while off duty by persuading the grocer in the community near the plant to let him install a bulletin board in the store. Did the grocer object? Not a bit! He immediately saw the possibility of a closer tie-up with the business because of his nearness to the plant.

Did the safety man get results? You bet he did. Not only did he get the poster messages before the workers at odd times, but he also reached their families and soon had safety a topic of discussion at many a supper table and evening fireside.

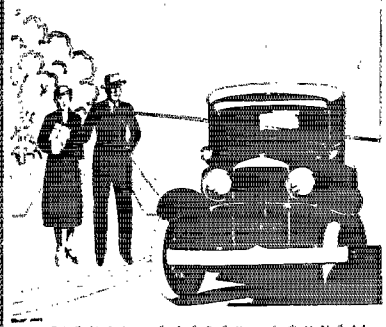
Consider the practical side of the small investment necessary to furnish the local drug store, pool parlor, hardware store, schools, clubs and perhaps some of the churches with bulletin boards and a weekly poster service. If safety work is three-quarters instruction or education, whichever you prefer to call it, how would it be possible to make a few dollars work any harder for the good of the cause?

SOME PEOPLE
KNOCK ON WOOD
OTHERS
PRACTICE SAFETY



NATIONAL SAFETY COUNCIL

TURN CORNERS CAREFULLY



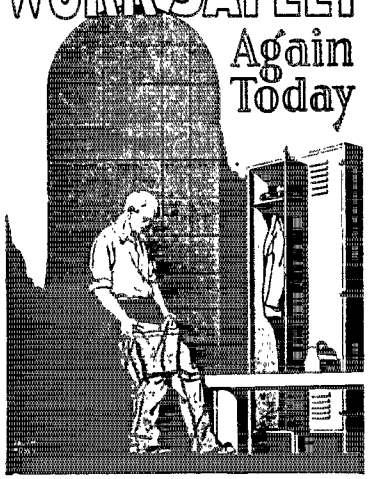
NATIONAL SAFETY COUNCIL

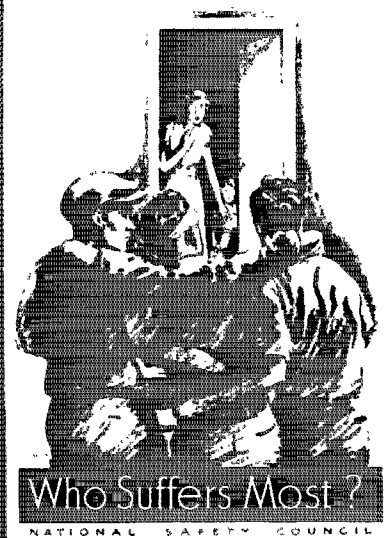
REMEMBER!

PREVENTION IS BETTER THAN CURE

NATIONAL SAFETY COUNCIL

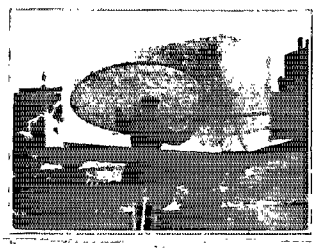
WORK SAFELY Again Today





Who Suffers Most ?

NATIONAL SAFETY COUNCIL

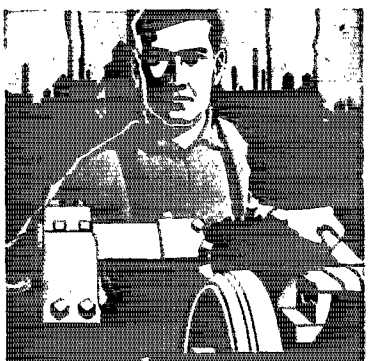


WHEN BACKING BE EXTRA CAREFUL

NATIONAL SAFETY COUNCIL

HAS *the* REAL MEANING *of* SAFETY REACHED YOU ?

NATIONAL SAFETY COUNCIL



I'M A SAFE WORKER ARE YOU!

CUTS AND SCRATCHES MAY TAKE YOUR LIFE IF NOT ATTENDED TO PROMPTLY AND PROPERLY

Large Size No. 1500

Good Enough

Good Enough

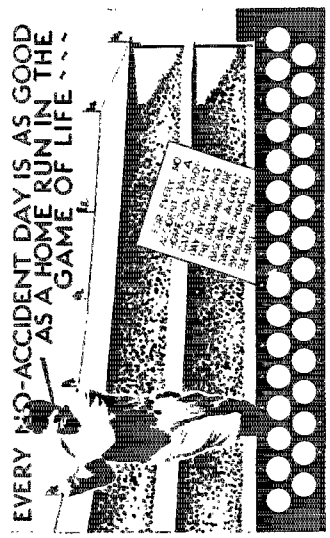
Make it Safe

TOO LATE TO READ AS YOU RUN

LEARN FIRST AID NOW

Large Size No. 1404

WORK SAFELY

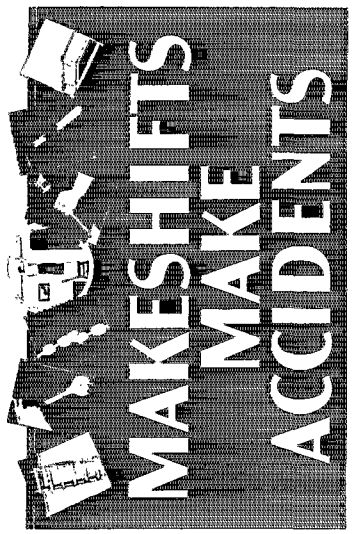


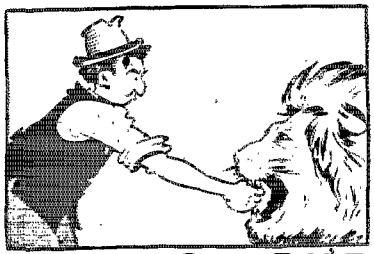
EVERY NO-ACCIDENT DAY IS AS GOOD AS A HOME RUN IN THE GAME OF LIFE

NATIONAL SAFETY COUNCIL

SUPPOSE THIS WERE YOUR CHILD!

DRIVE SAFELY

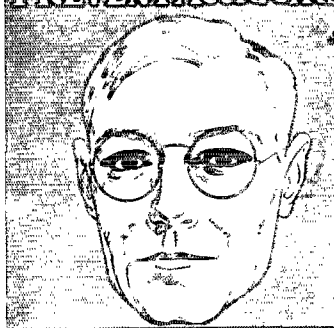




YOU WOULDNT DO THIS— BUT TO REACH INTO MOVING MACHINERY IS JUST AS DANGEROUS

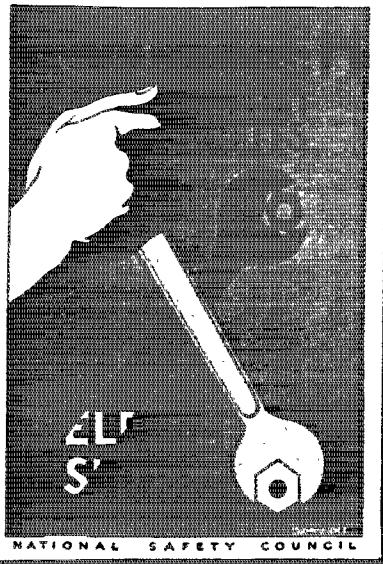
NATIONAL SAFETY COUNCIL

PREVENT Accidents

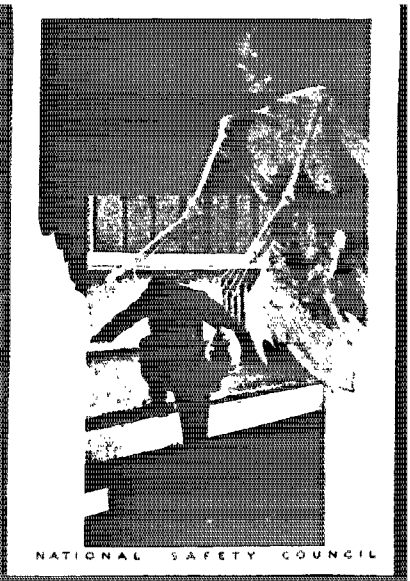


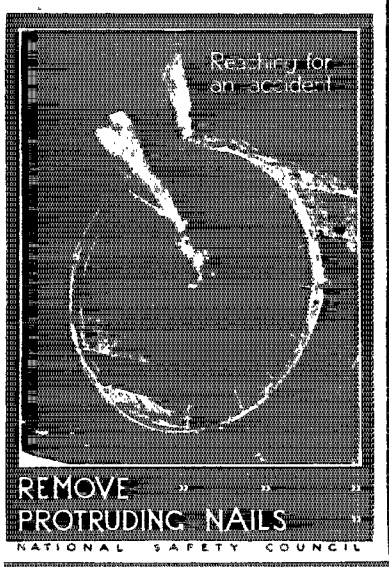
Glasses, when needed, *PREVENT* Eye-Strain and help you to work SAFELY

NATIONAL SAFETY COUNCIL


NATIONAL SAFETY COUNCIL

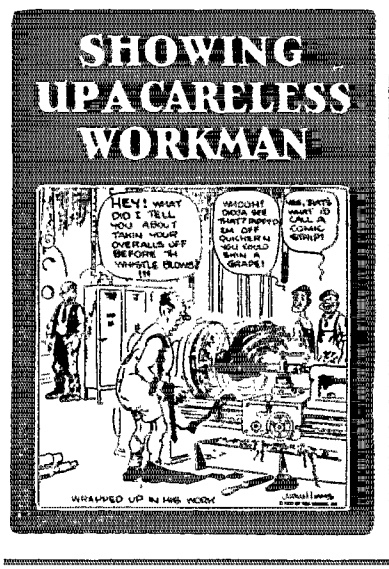

PAT, CAN YOU GIVE ME SIX REASONS FOR SAFETY?
SURE—
TH' FOUR LITTLE MURPHYS, ME WIFE, AN' MESELF!
NATIONAL SAFETY COUNCIL


NATIONAL SAFETY COUNCIL

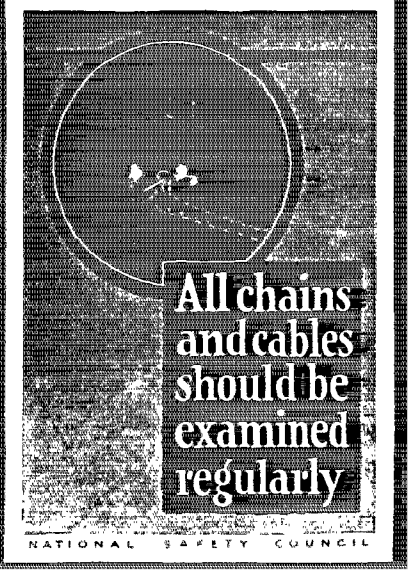

Reaching for an accident
REMOVE PROTRUDING NAILS
NATIONAL SAFETY COUNCIL

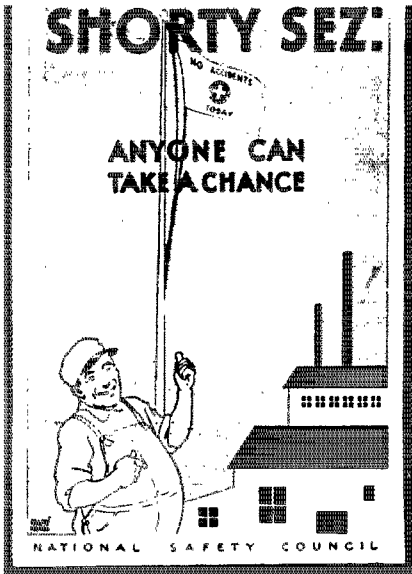

T Is Not Safe to Work Inside the Pin Wheel, Unless
YOU LOCK OR LATCH THE SHIFTER

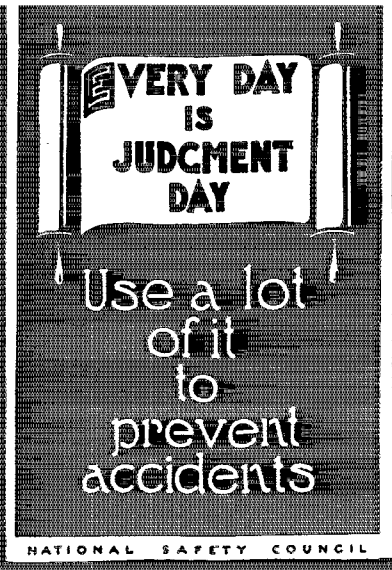

IF I'D ONLY WORN THOSE SAFETY SHOES-
A FOOT INJURY CAN COST YOU YOUR FULL PAY FOR WEEKS
NATIONAL SAFETY COUNCIL

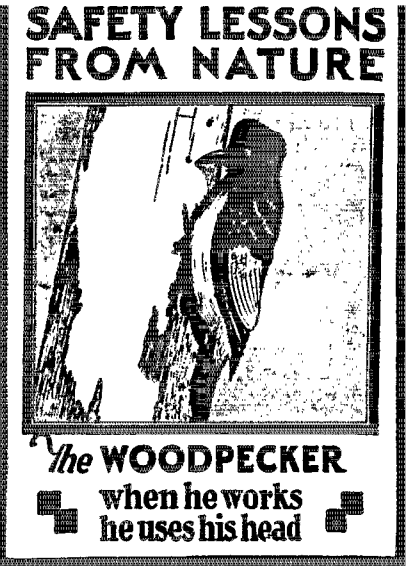

SHOWING UP A CARELESS WORKMAN
HEY! WHAT DID I TELL YOU ABOUT TAKIN' YOUR OVERALLS OFF BEFORE TH' WHISTLE BLOWS!!!
WHOOSH! DIDJA SEE THAT? PEPPO'S EA OFF QUICKER'N YOU COULD SWING AN GRAPE!
WRAPPED UP IN HIS WORK

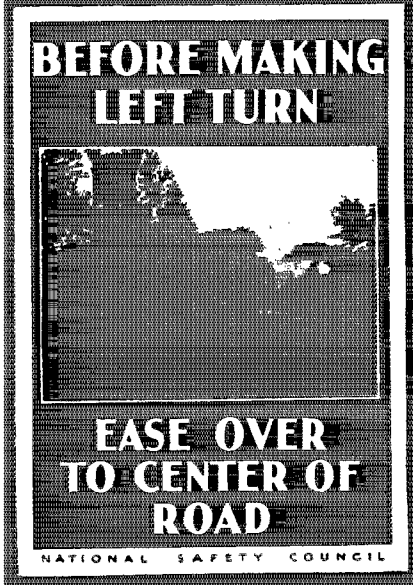

The Manhoist is not the place to carry Tools
NATIONAL SAFETY COUNCIL

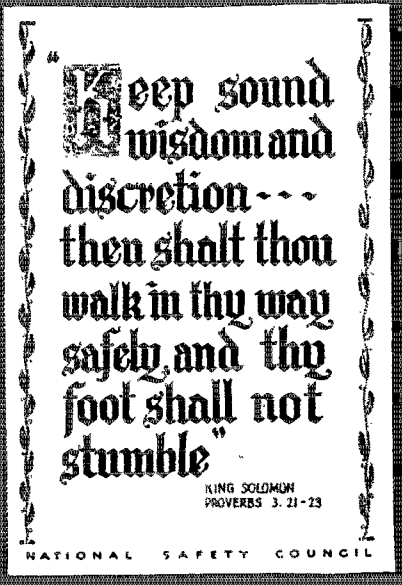

All chains and cables should be examined regularly
NATIONAL SAFETY COUNCIL

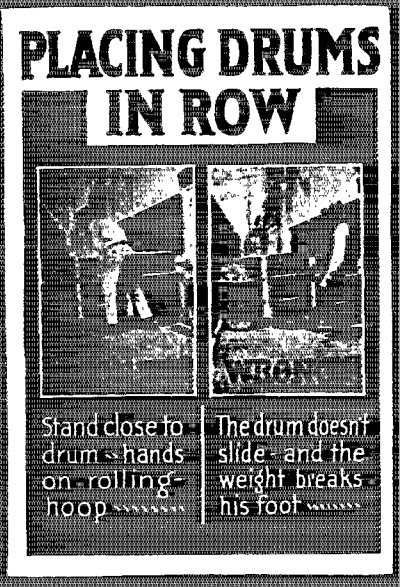

SHORTY SEZ:
NO ACCIDENTS TODAY
ANYONE CAN TAKE A CHANCE
NATIONAL SAFETY COUNCIL

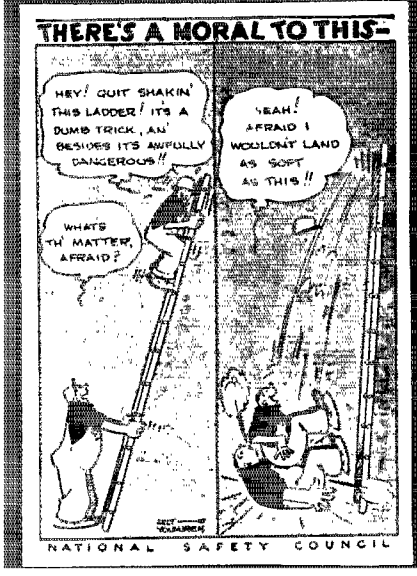

EVERY DAY IS JUDGMENT DAY
Use a lot of it to prevent accidents
NATIONAL SAFETY COUNCIL


SAFETY LESSONS FROM NATURE
The WOODPECKER
when he works he uses his head


BEFORE MAKING LEFT TURN
EASE OVER TO CENTER OF ROAD
NATIONAL SAFETY COUNCIL

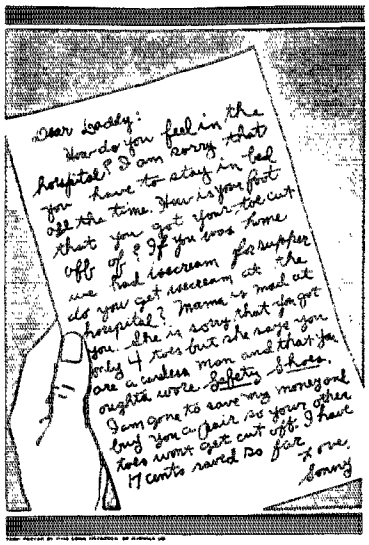

"Keep sound wisdom and discretion - - - then shalt thou walk in thy way safely, and thy foot shall not stumble"
KING SOLOMON
PROVERBS 3. 21-23
NATIONAL SAFETY COUNCIL


PLACING DRUMS IN ROW
WRONG
Stand close to drum - hands on rolling hoop
The drum doesn't slide - and the weight breaks his foot

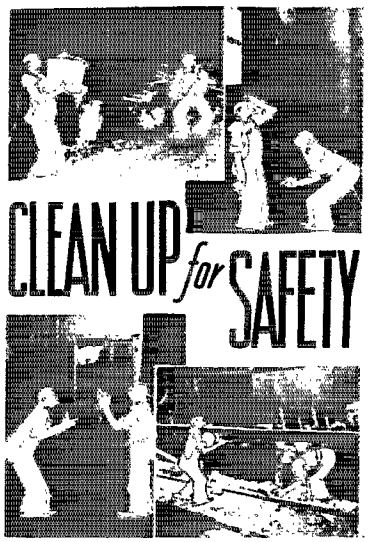

THERE'S A MORAL TO THIS-
HEY! QUIT SHAKIN' THIS LADDER! IT'S A DUMB TRICK, AN' BESIDES IT'S AWFULLY DANGEROUS!!
YEAH! AFRAID I WOULDN'T LAND AS SOFT AS THIS!!
WHAT'S TH' MATTER, AFRAID?
NATIONAL SAFETY COUNCIL


HANDLE WITH CARE
NATIONAL SAFETY COUNCIL

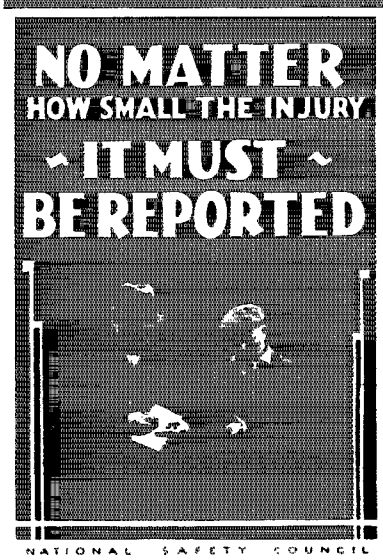

If men kept away from under loads, there would be fewer killed when something goes wrong
NATIONAL SAFETY COUNCIL



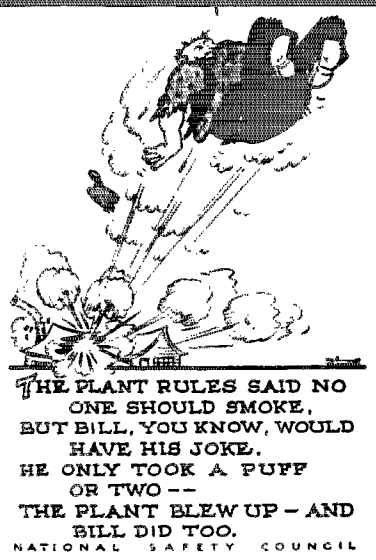
NATIONAL SAFETY COUNCIL



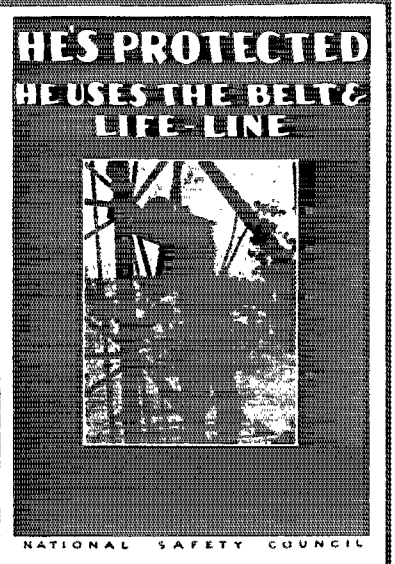
NATIONAL SAFETY COUNCIL



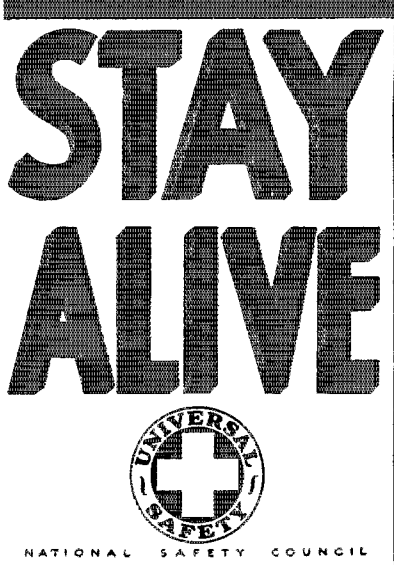
NATIONAL SAFETY COUNCIL



NATIONAL SAFETY COUNCIL

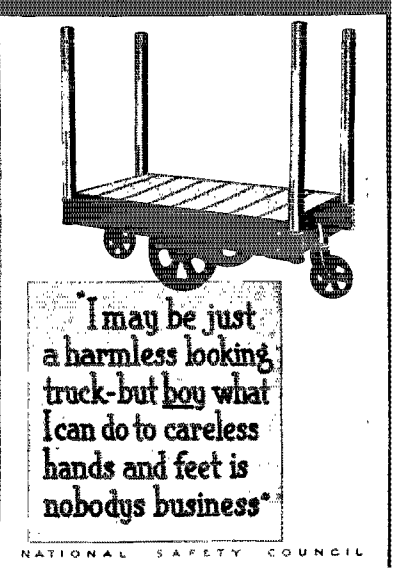


NATIONAL SAFETY COUNCIL



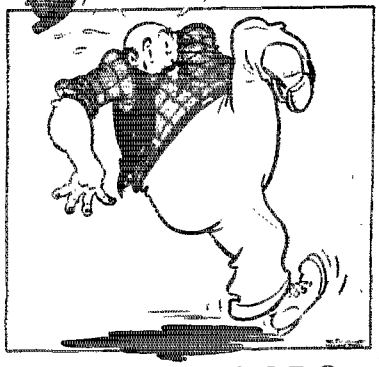
NATIONAL SAFETY COUNCIL

NATIONAL SAFETY COUNCIL



NATIONAL SAFETY COUNCIL

SLIPS DO COUNT.



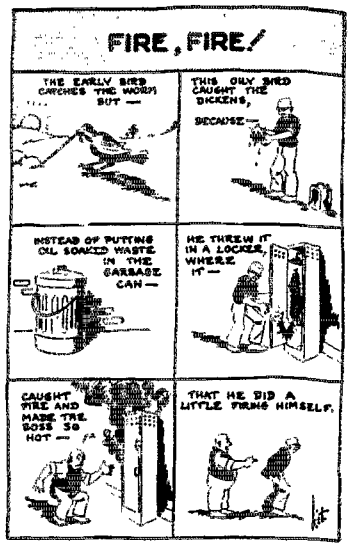
KEEP FLOORS CLEAN!!

NATIONAL SAFETY COUNCIL

YOU MAY HAVE OTHER THINGS TO DO BESIDES PREVENTING ACCIDENTS—

YOU WILL NOT BE ABLE TO UNLESS YOU PREVENT ACCIDENTS

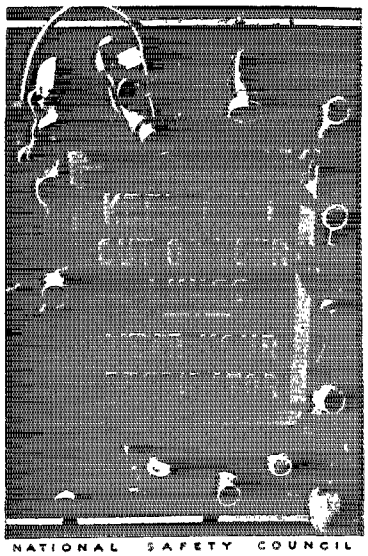
NATIONAL SAFETY COUNCIL



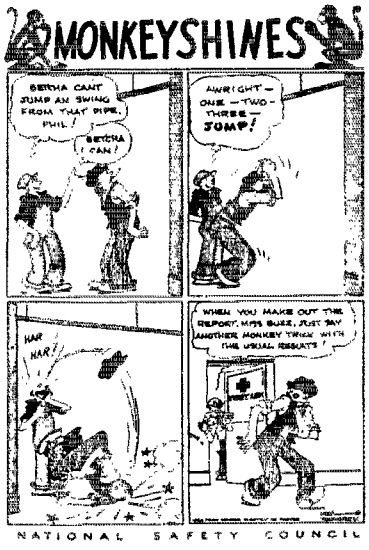
YOUR ARE WORTH MORE TO YOU THAN ALL THE $$$ IN THE PROTECT THEM BY WEARING YOUR

NATIONAL SAFETY COUNCIL

No man is safer than the most careless man in the mine



NATIONAL SAFETY COUNCIL



NATIONAL SAFETY COUNCIL

WHATEVER YOU DO BE CAREFUL

NATIONAL SAFETY COUNCIL

DON'T DREAM IT— PRACTICE IT

NATIONAL SAFETY COUNCIL

YOU CAN BE TOO THIN

YOU CAN BE TOO FAT

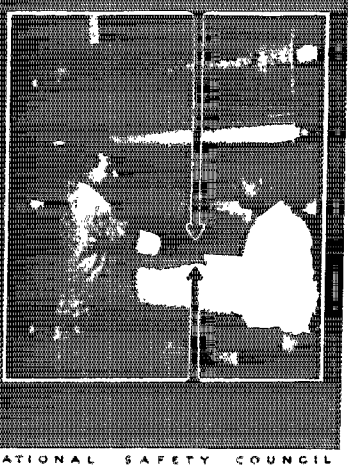
YOU CAN BE TOO RICH

YOU CAN BE TOO POOR

BUT—
YOU CAN'T BE TOO
CAREFUL

NATIONAL SAFETY COUNCIL

DANGER

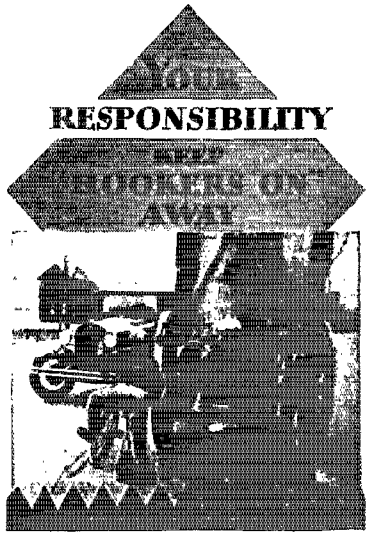


NATIONAL SAFETY COUNCIL

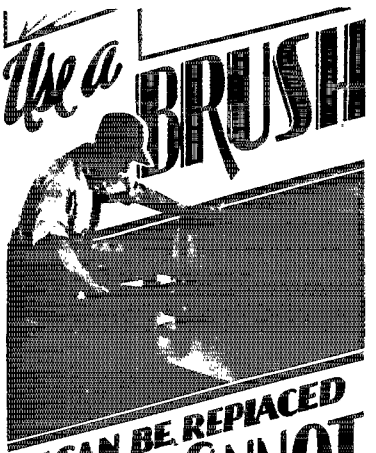
SAFETY SAVES LIFE

NATIONAL SAFETY COUNCIL

YOUR
RESPONSIBILITY

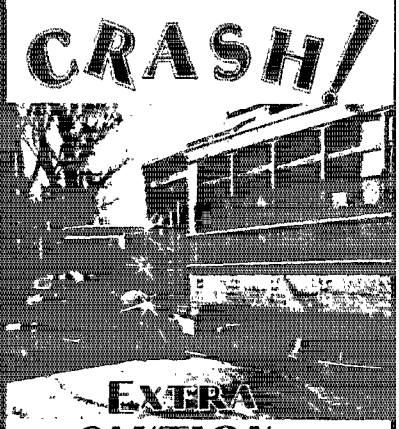


Use a BRUSH



IT CAN BE REPLACED
FINGERS CANNOT

CRASH!



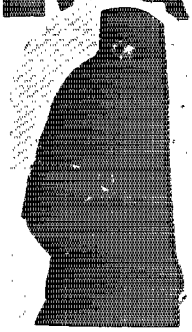
EXTRA
CAUTION
IS NEEDED AT
CURVES

MAKING FAST

A Slip and He Will be Thrown Hard

NO DANGER HERE
his feet are clear of lines!

ALWAYS

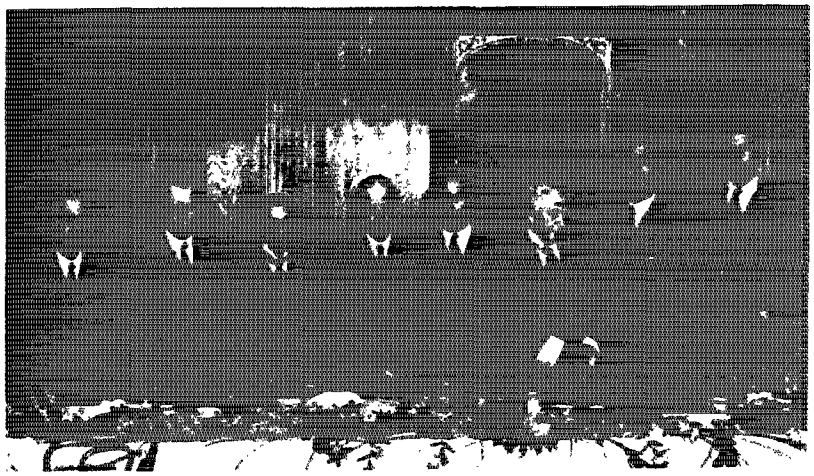


Look to see that the snap is properly fastened to the D-ring. Your life depends on it. Don't trust to hearing the keeper click.

LEARN

BY THE
EXPERIENCE
OF OTHERS

NATIONAL SAFETY COUNCIL



Presentation of the Harriman medals to railroads which have made outstanding records in accident prevention. Left to right: A. A. Hopkins, director, American Museum of Safety; P. E. Crowley, chairman of the board, New York Central Lines; James Speyer, treasurer, American Museum of Safety; R. H. Aishton, president, American Railway Association; G. H. Sido, general manager, Ann Arbor Railroad; Arthur Williams, president, American Museum of Safety; G. B. Vilas, general manager, Chicago & North Western Railway; Robert Winthrop, assistant secretary, Green Bay & Western Railroad.

Harriman Medals Awarded for Railroad Safety Records

THE Harriman Memorial Gold Medal, awarded in memory of the late E. H. Harriman annually to the railroad system having the best safety record, has been given to the Chicago & North Western Railway for its record during 1931. The presentation was made under auspices of the American Museum of Safety, donors of the medal, Arthur Williams, president of the museum and chairman of the Harriman Committee of Award, presiding.

Thirty-seven railroads, each operating more than ten million miles during 1931, competed for the medal. The winning railroad operated 690,292,000 passenger miles without a passenger fatality in train or train service accidents. Employee fatalities also were reduced from 14 in 1930 to six in 1931, a rate of 1.58 per million man-hours worked. This is the lowest level ever achieved among the railroads of Group A class.

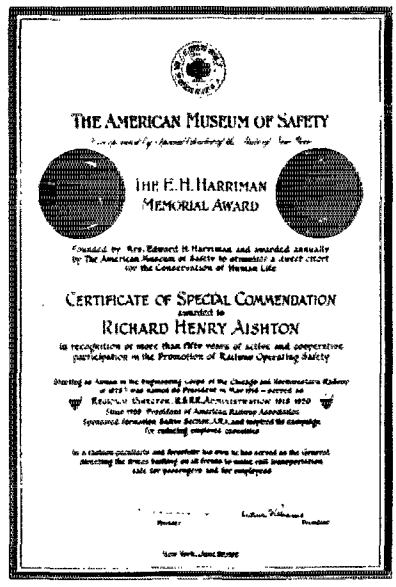
The silver medal award, presented under the same auspices at the same time, was won by the Ann Arbor Railroad, with a record of no fatalities either to passengers or employees and with only three employees injured in accidents during 1931. Sixty-seven railroads, each operating between one million and ten million locomotive-miles, competed for this medal.

The bronze medal, for railroads operating less than one million miles, was awarded to the Green Bay & Western Railroad, which has a clear record of no passengers and no employee fatalities in both 1930 and 1931, and with but one employee injured in 1931.

The year 1931 was the freest of both fatal and non-fatal railway accidents since the museum began to award the Harriman medals in 1923. There were 40 passenger fatalities in train and train service accidents in 1931 as compared with 50 in 1930 and 200 in 1922. Passenger injuries during 1931 numbered 2,102 compared with 2,665 in 1930 and 6,153 in 1922.

Fatalities and injuries to employees were also fewer in 1931 than in any preceding year. Fatal accidents numbered 644 in 1931 compared with 935 in 1930 and 1,657 in 1922. Employees injured during 1931 numbered 22,954 compared with 35,325 in 1930 and 117,197 in 1922.

In addition to the medals awarded the railroads, a certificate of special commendation was presented to R. H. Aishton, president of the American Railway Association, and chairman of the Executive Committee, Association of Railway Executives, for his efforts during more than 50 years in promoting railway operating safety.



THE AMERICAN MUSEUM OF SAFETY

THE E. H. HARRIMAN MEMORIAL AWARD

CERTIFICATE OF SPECIAL COMMENDATION

RICHARD HENRY AISHTON

Certificate awarded to R. H. Aishton, president of the American Railway Association, for his efforts on behalf of railroad safety.

What's the Next Move?

(*Continued from page 29*)

hesitate to put up posters, even if they don't apply to the work done in the departments where you post them. For instance, I often put up in our machine shop posters about electric railways, paper mills, cement plants, etc., and they create a lot of interest. Some fellows have come to us from other industries and they like to see pictures that make them think of "home." Then too, the general lessons can often be adapted in our own plant.

Say, Bill, have you thought about asking your boss to let you go to the Safety Congress in Washington the first week in October? You've never attended any of these big annual meetings, so you won't know what you're missing if you don't go. I haven't missed one for the past seventeen years and I'm not going to start passing them up now—even if I have to argue myself blue in the face.

It won't be long before the congress programs are out. Then I can make a schedule of the subjects I want to hear discussed. That's the thing I'll use in getting my chief to OK my trip. I'm sending you a copy of my last year's schedule so you can see what it looks like and so you can do the same this year, if you want to.

So long,

SHORTY.

Is Your Plant Fire-Safe?

By J. A. VOSS*

*** Fire Prevention is largely a process of checking up on housekeeping, organization, and extinguishing equipment**

FIRES can be prevented. But the fire waste problem can only be solved by each individual plant or industry making a study of what constitutes its fire hazards and removing these so far as possible from the premises.

Fire recognizes only a high standard of property maintenance. We all know that some properties maintain very high standards of upkeep, while others are slip-shod and indifferent in this respect. It is evident, then, that in any large organization someone must make it his business to set the necessary high standards and follow through to maintain them.

Fire prevention is very largely a process of checking up, and the man in charge of this work must recognize his responsibilities. To safeguard the plant there are three lines of fire defense:

1. Do not allow fires to start.
2. Minimize combustible material and construction, so that fires cannot spread.
3. Prepare to extinguish fires by proper organization and equipment.

It is dangerous to rely solely upon the third line of defense, but this is what most of us are doing. Fire cannot be driven back from our front line trenches, and be kept back, unless we strengthen and maintain all three lines.

No one cause leads to more fires than poor housekeeping. The accumulation of combustible refuse, such as rags, waste, excelsior and shavings, creates a very serious fire hazard. All such materials should be removed each day from the workroom and deposited in receptacles provided for that purpose. Self-closing metal containers or waste cans in which to place oil-soaked waste and rags should be placed at convenient points about the workroom, and at the end of each day the contents should be safely disposed of.

I consider a monthly systematic inspection for good housekeeping and a up thereafter one of the most important factors in the industrial fire prevention program.

The outstanding preventive measures in industry may be summarized as follows:

1. Waste and rags should be kept in gravity closing containers.
2. Roofs should be kept free from combustible material.
3. Packing material should be properly stored.
4. Rubbish burning should be done in suitable enclosures.
5. Lockers should be provided (metal preferred). Do not allow employees to put combustible material in lockers. Make periodical inspection of all lockers.
6. Switches, circuits, motors, generators, portable and pendant cords, temporary wiring, incandescent lamps, transformers, oil switches and lightning arresters should be installed in accordance with regulations of the National Board of Fire Underwriters.
7. Defective flues, exposed woodwork, smoke pipes, overheated stoves, forges, furnaces and torches must be properly protected.
8. Prohibit smoking where there is any danger of fire.

Matters of Importance

In addition, the construction of buildings, subdivision of fire areas within buildings, external exposures and their reduction, installation of electrical equipment, heating and power equipment, fire fighting equipment from extinguishers to sprinkler systems, and fire prevention education, are all matters of vital importance to the fire prevention man. Most of these are well covered in publications of the National Fire Protection Association of the National Board of Fire Underwriters.

All buildings should be supplied with ample fire fighting apparatus, consisting of sand pails, large and small hand extinguishers. A complete fire alarm system should also be installed. Volunteer fire fighting units should be organized at the larger and more important stations. The plan of organization should aim to stimulate the development of interest on the part of all employees by giving to each one an active part to perform in the fire drills. These drills should be held regularly.

The Plant Fire Brigade

Considerable thought should also be given to the probability of fires due to so-called static, dynamic currents and lightning. This should be considered as part of the building program. Grounding devices should be installed at all loading platforms and all service stations.

Another important factor in dealing with any fire is the plant fire brigade. No matter how small the plant or station, the men who may be called upon to fight fires should be trained in what to do in any emergency and how to do it. Where the plant is of sufficient size, a definite military organization should be formed, headed by a chief of strong personality, and a swift and clear thinker. His assistant and battalion chiefs should be of the same general caliber, fully able to assume charge if necessary.

The brigade should be organized, drilled and maintained with the basic idea that fires should be controlled as quickly after their start as possible. The man nearest the fire should give the alarm immediately and the local captain in the area should take instant charge. He should get the men busy on the fire with local emergency equipment, make sure the alarm has been turned in, and delegate men previously selected to begin salvage work.

Drills should be held once a month during normal work periods, their location being changed each time so that the men will become familiar with all parts and conditions of the plant. The handling of apparatus should be thorough and approximate

*Director of Safety, Republic Steel Corporation, Youngstown, Ohio. (Abstract of a paper read before the Eleventh Annual Midwest Safety Conference.)

actual fire conditions. As a rule, water should be turned on for all practice work, except in freezing weather. The drill should include the operation of portable apparatus, hose connections with hydrants, unreeling and stretching hose without kinks, coupling and uncoupling, carrying hose up ladders, over roofs and through buildings to reach out-of-the-way places, including basements.

Training in Resuscitation

Certain men should be assigned to the duty of shutting off fuel oil and gas mains in case of emergency. As many as possible should be instructed in the prone pressure method of resuscitation.

In our plant nothing is considered more serious than an interruption of work on account of fire. Our fire prevention work has therefore been extended continuously during the last five years. In our Massillon plant we have an auto call fire alarm system with alarm boxes placed in series in each division, so that the first number of the box gives a signal of the division or plant as well as the location of the fire. We also have volunteer fire brigades, with captains and lieutenants over each company at each division. The central fire station is in charge of a fire chief with three assistants.

Our equipment consists of a fire truck carrying 500 feet of hose, two chemical tanks with 200 feet of chemical hose and one foam generator. Standard fire hydrants are located in all divisions. Portable soda and acid chemical engines, hose coils, portable foamite engines, automatic foam engines and smaller extinguishers are placed about the plant wherever necessary. All this equipment is inspected regularly.

Automatic foam extinguishers have shown their value by quickly extinguishing fires in dip tanks and thus preventing their spread. Foam extinguishers are needed over tanks containing hazardous liquids thinned with naphtha and similar solvents. Automatic foamite sprinklers protect the building and prevent the spread of dip tank fires.

A general clean-up system was inaugurated in our plant a few years ago which has been followed up monthly, and this has been an important factor in reducing our fires and fire hazards.

The success of fire prevention measures is reflected directly in lower rates of insurance, which are not a matter of guess work, but are based upon the loss record over a period of time. As the efforts in fire prevention show favorable results in the reduction of losses, the insurance cost is decreased in proportion.

A few years ago our company organized a fire protection department to obtain an accurate understanding of the conditions existing in and about each plant property. An original survey was made of every building, tank, still, agitator, loading rack, etc. All the details of construction, occupancy, internal and external exposures, fire hazards and fire protection were considered. As a result of these surveys, detailed recommendations for the improvement of unsatisfactory conditions were made and submitted to the operating management, with a follow-through to a "yes or no" decision.

Since that time, re-inspections have been made of each structure covered in the original survey, at periods varying from three to twelve months, to detect new hazards and to check up on the old ones. This department has also collaborated with the engineering and purchasing departments in the development of proper designs and specifications for fire protection materials and installations.

Study Fire Reports

Reports of fires, no matter how small, occurring on our own properties are collected and analyzed. Information and any lessons obtained through a study of these reports which may be of value are distributed to those who may be interested. Educational work is carried on by means of bulletin boards, direct contact, and through the mails. Outside fires are investigated when they appear to have special interest, and the lessons learned are likewise applied under our own conditions.

It is too soon to forecast what will be the ultimate saving to our company through this work. It may be said, however, that with the removal of many fire causes, the improvement of structural fire-resistive conditions and fire-fighting facilities, and with the keen interest in fire prevention which has been aroused in our operating personnel, our chances of severe loss from fire have been considerably reduced and they should continue to grow less as the work advances.

Everyone interested in reducing fire losses should realize the continuous need of more education in fire prevention, and should impress upon every employee that fire destruction is the concern not alone of insurance companies, but equally of the industrial company, the plant management and every industrial worker.

Companies Awarded Holmes Honor Certificates

WITH impressive ceremonies the Dehue mine of the Youngstown Sheet & Tube Company, Dehue, West Virginia, was presented with the honor certificate of the Joseph A. Holmes Safety Association on May 24. The award was expressly made for operating one year without a lost-time accident, but 500 safe-working days had elapsed on the date of presentation, and the record is still continuing.

The presentation of the award for the Joseph A. Holmes Safety Association was made by George W. Groves, assistant supervising engineer of the U. S. Bureau of Mines, Pittsburgh, Pa. R. M. Lambie, Chief of the West Virginia Department of Mines, Charleston, W. Va., delivered the principal address. Others who took part in the program included C. McDonald England, of Logan, W. Va., chairman; Judge Naaman Jackson, of the Logan Circuit Court; E. B. Agee, superintendent of the Dehue mines; and N. R. Muir, in charge of the U. S. Bureau of Mines car stationed at Logan.

THE Hillsboro plant of the Eagle-Picher Lead Company, Hillsboro, Illinois, was presented with the Honor Certificate of the Joseph A. Holmes Safety Association on June 10. At 7 a. m. on the morning of the celebration this plant had completed a three-year period, or 1,098 days, without a lost-time accident, and the record was still unbroken at last report.

The specific record for which the certificate was awarded, however, was for operating "without a fatality or permanent total disability from 1925 through 1931, with 2,534,500 man-hours of work for its average of 124 employees." The presentation of the Honor Certificate was made by Alex. Miller, superintendent, U. S. Bureau of Mines.

CELEBRATING a period of safe operation through 14 months without a lost-time accident, the 140 employees of the Alloy, West Virginia, coal mine of the Electro Metallurgical Company, were also presented on June 12 with the Honor Certificate of the Joseph A. Holmes Safety Association and with a bronze plaque by F. P. Gormley, president of the company.

The record of no lost-time accidents was based on the first year of operations, from March 14, 1931, to March 13, 1932, but the actual record is still unbroken. In the period of 343,778 man-hours, 129,153 net tons of coal were loaded and 92,998 net tons of slate were disposed of.

Seventy-Three Life Savers Win President's Medal

DURING the first half of 1932 The President's Medal of the National Safety Council was awarded to 73 persons for successful application of the prone pressure method of resuscitation and two Bars also were awarded for second resuscitations by the same individual. Thus 75 lives were saved.

In addition, 43 persons were awarded Certificates for valuable assistance in some of the cases of resuscitation.

This brings the total number of medals awarded since establishment of The President's Medal in September, 1928, to 416, and of bars to 13, a grand total of 429 successful prone pressure resuscitation cases suitably recognized by the Council.

The President's Medal is bestowed by the National Safety Council for application of the Schafer method in cases of suspended respiration due to gas asphyxiation, electric shock, drowning, or any other accidental cause of prolonged suspension of natural breathing. Any person ten years of age or older is eligible for the medal, excepting those qualifying for the Insull, McCarter or other award for resuscitation.

All applications are most carefully reviewed by the Medal Administration Committee of the Council, and if approved the individual is presented not only with the handsome bronze medal but also with a certificate signed by the president of the National Safety Council, describing the accident and the service rendered. Additional certificates are awarded to those who, in the opinion of the committee, have rendered sufficient assistance in the resuscitation to merit recognition.

The awards from January 1 to June 30, in the order of their presentation, are as follows:

Laurence A. Hoffeditz, clerk, Rashid Bros., Victoria, Ill. Electric shock.

Hugo C. Albert, splicer's helper, United Electric Light & Power Co., New York City. Gas asphyxiation.

Charles Beauchamp, Jr., millwright apprentice, Western Electric Co., Kearny, N. J. Drowning.

George Bohler, splicer, United Electric Light & Power Co., New York City. Gas fumes from manhole.

Richard A. Brown, clerk, New York Edison Co., New York City. Illuminating gas.

John E. Cadigan, clerk, United Electric Light & Power Co., New York City. Illuminating gas.

Joseph A. Caggiano, splicer, United Electric Light & Power Co., New York City. Illuminating gas.

Henry George Caron, assistant substation operator, New York Edison Co., New York City. Illuminating gas.

Joseph P. Devlin, splicer, New York Edison Co., New York City. Illuminating gas.

Stanley Gregorovitch, meter tester, New York Edison Co., New York City. Illuminating gas.

George Gunther, collector, Brooklyn Union Gas Co., Brooklyn, N. Y. Smoke.

Leslie H. Head, timekeeper, United Electric Light & Power Co., New York City. Illuminating gas.

William Thomas Jacoutot, timekeeper, New York Edison Company, New York City. Illuminating gas.

William F. Jessup, splicer, United Electric Light & Power Co., New York City. Illuminating gas.

Thomas J. Kearns, truck chauffeur, New York Edison Company, New York City. Smoke and fumes.

D. Roy Keller, wire chief, New York Telephone Company, New York City. Drowning.

Joseph Kriz, draftsman, Western Electric Co., New York City. Illuminating gas.

William Law, boy scout, New Rochelle, N. Y. Carbon Monoxide.

Louis E. Luft, collector, United Electric Light & Power Co., New York City. Illuminating gas.

Patrick J. Mannion, ash handler foreman, United Electric Light & Power Co., New York City. Illuminating gas.

James F. Martin, splicer's helper, United Electric Light & Power Co., New York City. Fumes from manhole. (Medal and bar.)

Marvin E. Murrell, cable inspector, United Electric Light & Power Co., New York City. Illuminating gas.

John J. McHugh, change of consumer man, United Electric Light & Power Co., New York City. Illuminating gas.

Arthur B. Nicholson, splicer's helper, United Electric Light & Power Co., New York City. Illuminating gas.

Frank J. Ryan, clerk, New York Edison Company, New York City. Naphtha fumes.

Joseph N. Nilsen, splicer's helper, New York Telephone Co., New York City. Fumes from manhole.

Cornelius F. Savage, chief switchman, New York Telephone Co., New York City. Drowning.

William Schaefer, splicer's helper, New York Edison Company, New York City. Illuminating gas.

Guy Ashmun Sherman, auto mechanic, New York Edison Company, New York City. Drowning.

Gregory L. Speck, clerk, New York & Queens Electric Light & Power Co., New York City. Carbon monoxide.

Harry Weinstein, patrolman, Police Department, Brooklyn, N. Y. Illuminating gas.

Thomas C. Wisker (bar), assistant collector, New York Edison Company, New York City. Illuminating gas.

Robert Douglas, golf caddy, Springfield, Mass. Drowning.

Edward McGroarty, lineman, Duquesne Light Co., Pittsburgh, Pa. Smoke.

Frank T. Powell, lineman, Duquesne Light Co., Pittsburgh, Pa. Smoke.

John C. Schofield, street lamp cleaner, Duquesne Light Co., Pittsburgh, Pa. Drowning.

Richard Riegel, boy scout, Washington Water Power Co., Spokane, Wash. Electric shock.

Walter F. Hague, cable tester, Bell Telephone Co. of Pa., Philadelphia, Pa. Electric shock.

C. G. McClure, foreman, Illinois Northern Utilities Co., Dixon, Ill. Illuminating gas.

John Zavalydriga, foreman, Equitable Gas Co., Pittsburgh, Pa. Drowning.

Leo Lucci, student, Lehigh Portland Cement Co., Allentown, Pa. Drowning.

V. C. Grant, line patrolman, Northern B. C. Power Co., Ltd., Prince Rupert, B. C. Drowning.

Jack Chance, line foreman, Kansas Power Co., Salina, Kansas. Auto wreck.

Melvin E. Mitchell, janitor, Bell Telephone Co. of Pa., Altoona, Pa. Whooping cough.

Harry A. Reese, turbine oiler, Ohio Edison Co., Toronto, Ohio. Drowning.

J. S. Findley, personnel manager, John Morrell & Co., Sioux Falls, S. D. Electric shock.

John V. Denny, detective, Police Dept., Plainfield, N. J. Illuminating gas.

John M. Evans, lineman, Bell Telephone Co. of Pa., Williamsport, Pa. Drowning.

John Malone, police officer, Police Dept., Elizabeth, N. J. Illuminating gas.

Frank Schmidt, police officer, Police Dept., Roselle Park, N. J. Illuminating gas.

Edward Kelly, operator, Continental Oil Co., Baltimore, Maryland. Gasoline fumes.

Glen D. Barrett, gas shop foreman, Peoples Power Co., Moline, Ill. Carbon monoxide.

Ernest H. Martin, line walker, Empire Companies, Bartlesville, Okla. Electric shock.

Glee Chamness, coke yard foreman, Shell Petroleum Corp., Wood River, Ill. Drowning.

Lee McIlwaine, laborer, Gulf Refining Co., Kittanning, Pa. Drowning.

Leslie L. Mannering, boy scout, Donna, Texas. Electric shock.

Alton G. Witten, route foreman ice dept., Central Power & Light Co., Corpus Christi, Texas. Drowning.

Aaron B. Davidson, asst. mine foreman, DeBardeleben Coal Co., Birmingham, Ala. Electric shock.

Murray L. Fitzsimmons, line foreman, Northern Indiana Power Co., Kokomo, Ind. Illuminating gas.

R. J. Conrad, line foreman, Ohio Elec-

tric Power Co., Sidney, Ohio. Carbon monoxide.

L. A. Meyer, meterman, Ohio Electric Power Co., Sidney, Ohio. Carbon monoxide.

Roy Wieal, service man, Ohio Electric Power Co., Sidney, Ohio. Carbon monoxide.

Peter Perelli, water gas operator, Western United Gas & Electric Co., Aurora, Ill. Carbon monoxide.

Paul S. Bennett, manufacturing dept., Western Electric Co., Baltimore, Md. Carbon monoxide.

W. Vernon Huston, meterman, Kansas Electric Power Co., Lawrence, Kansas. Carbon monoxide.

Alexander McAllister, shot firer, Central Coal & Coke Co., Pittsburgh, Kansas. Electric shock.

Dr. Murray Maxwell, dentist, Roslyn, L. I., N. Y. Drowning.

James J. Geagan, conduit worker, New England Telephone & Telegraph Co., Boston, Mass. Drowning.

William A. Miller, foreman, New England Telephone & Telegraph Co., Boston, Mass. Drowning.

Francis Regan, cable splicer's helper, New England Telephone & Telegraph Co., Boston, Mass. Drowning.

William V. Brumfield, truck driver, Public Service Co. of Ind., Indianapolis, Ind. Black damp in mine shaft.

Robert F. Hunt, Jr., student, Burr & Burton Seminary, Manchester, Vt. Drowning.

Urho Hokkanen, chute-trammer, Oliver Iron Mining Co., Duluth, Minn. Electric shock.

Ralph J. Brett, lineman, Electric Light & Power Co., North Abington, Mass. Smoke.

COMING EVENTS

Associations featuring safety in their programs are invited to send dates of meetings

Sept. 26-30, Swampscott, Mass.
Illuminating Engineering Society. Annual Convention. E. H. Hobbie, general secretary, 29 West 39th Street, New York City.

Oct. 3-7, Washington, D. C.
NATIONAL SAFETY COUNCIL, Twenty-first Annual Safety Congress. W. H. Cameron, managing director, National Safety Council, 20 North Wacker Drive, Chicago.

Oct. 10-14, Atlantic City, N. J.
American Gas Association, Annual Convention. Alexander Forward, managing director, 420 Lexington Ave., New York City.

Oct. 24-27, Washington, D. C.
American Public Health Association, 61st Annual Meetings. Dr. Kendall Emerson, American Public Health Association, 450 Seventh Ave., New York City.

Nov. 3-4, Winston-Salem, N. C.
Third Annual State-wide Industrial Safety Conference. E. G. Padgett, director of safety, North Carolina Industrial Commission, Raleigh, N. C.

Announce Winners in National Safety Competition

THE winners in the National Safety Competition for 1931 among mines and quarries have been announced by the U. S. Bureau of Mines. The contest is the largest ever held, 350 mines and quarries being entered from 34 states, and the wide success of many units in accident prevention is notable. Following are the leaders in their respective mine groups:

Anthracite coal mine group: Highland No. 2 mine, Jeddo-Highland Company, Jeddo, Penn. Record is 299,560 man-hours with 15 accidents.

Bituminous coal mine group: Dawson No. 1 mine, Stag Canon Branch, Phelps-Dodge Corporation, Dawson, New Mexico. Record is 117,661 man-hours and no accidents.

Non-metallic mine group: Retsof Mining Company, Retsof, New York. Record of 554,172 man-hours and no accidents.

Metal mine group: Harold Iron Ore Mine, Hanna Ore Mining Company, Carson Lake, Minnesota. Record is 196,315 man-hours and no accidents.

Quarry and open-pit mine group: Mahoning Open Cut Iron Mine, Mahoning Ore & Steel Company, Hibbing, Minnesota. Record is 339,722 man-hours and no accidents.

To each of these winning mines will be presented with suitable ceremonies the bronze trophy known as the "Sentinels of Safety," which is awarded annually by *The Explosives Engineer* magazine. In addition to the five principal awards, honorable mention was given to 79 other mines and quarries whose records in accident prevention are commendable.

Undoubtedly the outstanding feature of the National Safety Competition of 1931 was the success of the Phelps-Dodge Corporation, Stag Canon Branch, in operating its bituminous coal mine at Dawson, New Mexico, without a lost-time accident throughout the year. It is the first time since the contest was originated seven years ago that a bituminous coal mine has operated without a lost-time accident during the 12-month contest period. Many mines have almost achieved this goal, falling short of a perfect score by only one or two or three accidents, perhaps, but none has ever been entirely successful until now.

It is peculiarly fitting that the trophy for the bituminous coal mines should have been won by a mine whose record was free of lost-time accidents. The year 1931 was a distinctive year in the coal-mining industry in the United States. The industry made an all-time record by mining coal with a smaller loss of life per million tons than ever before; and as far as can be judged from employment records that are not yet complete, it also established one of the most favorable fatality rates per thousand employees that has been recorded during the past quarter of a century.

In addition to the four winning companies whose records for the contest year were free of lost-time accidents, 64 other plants out of the total enrollment of 350 were operated without an accident that caused loss of time to an employee. Most of these no-accident plants were quarries, but among the number were nine open-cut iron ore mines, one under-ground salt mine, an underground gypsum mine, an underground iron-ore mine, and an underground bituminous coal mine.

The National Safety Competition is an annual event conducted by the Bureau of Mines. Enrollment covers mines that employ 50 men underground, and quarries and open-cut mines that employ not less than 25 men in the pit. Companies become ineligible if the number of employees falls below the minimum stated, or if the period of operation is less than 150 days.

While the contest rules are specific as to method of grading the contestants, they also provide that the records shall be submitted to a committee of award for examination and review. The seven committee members are as follows: Dr. Thomas T. Read, professor of mining engineering, Columbia University, New York City; William Green, president, American Federation of Labor, Washington; W. H. Cameron, managing director, National Safety Council, Inc., Chicago; James F. Callbreath, secretary, American Mining Congress, Washington; C. B. Huntress, executive secretary, National Coal Association, Washington; A. T. Goldbeck, director of bureau of engineering, National Crushed Stone Association, Washington; A. J. R. Curtis, assistant to the general manager, Portland Cement Association, Chicago.

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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

Experiences in Industrial Hygiene*

IT HAS been well said that the human unit is procured according to specifications and that in return for his work he receives a wage. Furthermore, the human unit should be selected as to the type of work he is to do, whether it be manual labor, supervision, or mental work. The work of selection is the duty of the industrial physician.

After the acceptance of the human unit, it is usually conceded that he must be kept in a productive and efficient condition, and this is also the work of the physician. Similarly, should anything happen to the human unit during his working period, it is necessary that he be treated and brought back to normal with a minimum of time lost; the work of the industrial physician also embraces this principle.

The various factors which affect the human unit in industry may be controlled by the medical department of any given industry in a way similar to that in which the mechanical factors are controlled in reference to machines, by the engineering department.

Selection

It is recognized that the physical examination is a useful instrument in selecting and placing employees. In using the physical examination, it should be emphasized that it is virtually an evaluation of any given person in terms of his physical defects, and his ability and capacity to do certain types of work.

Although certain physical defects may exist, these may not necessarily be a basis for rejection, since experience has definitely shown that with certain types of defects, there is no hindrance to certain kinds of work.

The Conference Board of Physicians in Industry has outlined the following causes for rejection:

1. When the applicant possesses certain characteristics which constitute a menace to his own safety.
2. When he would be a menace to the safety of his fellow employees or others.
3. When the individual is a menace to property or material.

Dr. Paul A. Davis has added a fourth cause which he believes is important, in the light of his own experience: when the applicant possesses characteristics which may lead to liabilities under the compensation law or involve legal difficulties.

Rejections, however, in industrial experience fall very largely into a low percentage class, varying ordinarily between 2 and 4 per cent. For instance, in a large industry in which 33,790 men have been examined for employment during the past four years, 796 were rejected, amounting to 2.3 per cent.

Not only are physical defects of importance in making a selection of industrial employees, but it is important to know that certain types of individuals, although in normal physical condition, can do certain types of work better than others. Dr. Davis makes the following suggestions:

1. A tall individual with a disproportion of distance between shoulders and pelvis, and pelvis and feet, should not be put on a job where he has to do lifting from the level of his feet.
2. Light-weight individuals should not be placed on jobs involving heavy lifting, especially where the weight to be lifted is 75 per cent or more of the body weight. In lifting, muscles of the body function most efficiently if their factors are calculated in terms of fulcrums and levers; if these factors are disproportionate, strains may result.
3. Light-complexioned and fair individuals should not be exposed to irritating substances, which may involve the production of a dermatitis. Such individuals are more susceptible than the brunette or dark types.
4. Persons with chronic bronchitis should not be exposed to volatile substances of an irritating nature, or dusts.
5. Female workers should be kept away from lead, benzol, arsenic, aniline, and various other poisonous exposures, for they frequently develop abnormal menstrual disturbances.
6. Persons with nose and throat infection should not be placed in dusty surroundings nor those which contain irritating vapors.
7. Individuals possessing flat feet should be placed in occupations where they do not have to stand or walk during most of the day.
8. Applicants possessing focal infection in teeth, tonsils, or other portions of the body should not be placed on work where there is an opportunity for the development of muscle strains, or joint disabilities, for frequently such infection has prolonged disability, increasing absenteeism, compensation, and the cost of medical care.
9. Individuals with defective vision should not be placed on inspection jobs or work involving acute vision.
10. Applicants having history of any lung or kidney condition, although apparently it is not active at the time of examination, should, nevertheless, be placed carefully where there is the least possibility of causing a recurrence.
11. Epilepties constitute a definite liability.
12. Individuals with dilated inguinal rings should be considered as having potential hernias and should not be placed on heavy lifting jobs.
13. Asthmatics or other persons who have hypersensitive reactions should not be placed in a dusty environment.

It is not claimed that this list is exhaustive, but these are some of the important problems which confront the industrial physician when selecting and placing employees.

Reexaminations at periodic intervals are a very important part of the program of industrial hygiene. Although some organizations make arrangements for the reexamination of all employees, when this is not practical, executives, foremen, supervisors and keymen should be given a thorough reexamination once a year. It is also recognized that it is important to examine all employees who are ex-

*Abstracted from a paper on "Industrial Medicine as a Specialty," read by Dr. Paul A. Davis, at the All-Ohio Safety Congress, 1932.

posed to known occupational disease hazards; the examination procedures vary, of course, with the individual and the type of exposure. It is customary to examine food-handlers and restaurant employees every three months and to have a blood test made once a year or more often if it seems advisable.

Industrial Diseases

An efficient industrial physician should know enough chemistry and have enough experience to tell in a general way that certain chemical groups have toxic properties; in this way, the physician will be able to tell the production manager something about the possible effects of certain compounds which are to be used in manufacturing processes, upon employees exposed to them. If the substance is new, the first step is to find out the chemical structure of it; search the literature for reference to its toxicity; and finally, to conduct animal experimentation to ascertain the toxic properties of the compound. Another important point is to discover what changes the compound undergoes during manufacturing processes and also to understand what changes are undergone when the substance enters the human body.

Because industrial dermatitis and dermatoses exist in great frequency, it is important that the industrial physician be familiar with the use of manufacturing materials which may cause irritation of the skin and also be cognizant of the presence of hypersensitive individuals among the plant personnel. So-called "patch" tests may be made, thus affording some definite information. Dr. Davis points out the following important points relative to the appearance or manifestation of skin irritation:

1. Absence of any visible reaction, but the presence of itching and burning.
2. Redness with burning and itching.
3. Blister formation with oozing.
4. Pimples either with or without pus.
5. Roughened skin with evidence of plugging of glands.
6. Dry, scaly, or eczematous skin.
7. Discoloration, through exposure to dyes or other substances.

Some of the causes of these evidences of skin irritation are as follows:

1. Excess heat or cold.
2. Dusts.
3. Chemical compounds.
4. Friction and mechanical irritation.
5. Hypersusceptibility to various nontoxic substances.
6. Inhalation of various chemicals.
7. Exposure of skin to certain light rays.
8. Absorption of certain chemical compounds through the alimentary system.

These are some of the important problems of industrial hygiene, demanding the serious consideration of the industrial physician, and they constitute functions which are of great value in the conservation of health of industrial employees.

THE QUESTION BOX

Each month Dr. Sappington will answer certain questions relative to industrial health and first aid. Because of limited space, it is sometimes necessary to abbreviate the question or use only a portion of it, while the rest may be answered more fully by correspondence

EYE EXAMINATIONS

Q.—How frequently should we have eye examinations for (a) machinists; (b) truck drivers; and (c) stationary engineers?—R. L. T.

A.—The usual period of re-examination of eyes for all persons no matter what occupation, is three years. There are some instances where it is necessary to check up at more frequent intervals of time, particularly where fine work is done or where the illumination is not properly regulated and may cause difficulty. Machinists might well come under this class of exceptions.

You may be familiar with the drivers' license laws in various states requiring eye examinations before a license is issued, which of course would apply to truck drivers. Fourteen states have this regulation at the present time, and the names of these can be secured upon request. It is an interesting point that these licenses for driving are renewed in periods varying from one to three years, questions being asked at time of renewal about any changes which may have taken place in visual efficiency.

Stationary engineers might well come under the regulations applied to the general population, having a re-examination of the eyes once every three years.

Briefly, the frequency of eye examinations depends upon the age (being more necessary after 40), on the character of the work, the kind of illumination supplied, and individual differences which are only observable through eye examinations.

SNAKE BITE

Q.—Can you give me information about adequate first aid treatment for snake bite?—H.P.M.

A.—According to the experience of Drs. Scott, Jackson, and Crimmins, who have had extensive experience in the first aid and medical treatment of snake bite, the most important procedures consist in the application of a ligature or tourniquet a few inches above the snake bite (to delay the absorption of the poison into the general circulation) and the injection of anti-venomous serum. After the use of the serum, the tourniquet should be released.

If anti-venomous serum is not available, a cross-cut incision is made at each fang-mark (the incision being about ¼ inch deep and ½ inch long), allowing the poisonous fluids to escape. The removal of toxic fluids may be hastened by the application of strong suction over the incisions; this may be accomplished mechanically by an apparatus such as a breastpump, or a large hypodermic syringe especially adapted to this procedure, and used for a period of twenty minutes out of each hour for a total of fifteen hours.

In every case, it is important to obtain the best medical attention as soon as possible.

FERROSILICON DUST

Q.—What is the possible health hazard when employees are exposed to ferrosilicon dust?—J.R.B.

A.—Ferrosilicon is an alloy of iron and silicon, the latter being present in proportions of 15 to 95 per cent, and containing arsenic and phosphorus as impurities. In the presence of moisture, ferrosilicon which contains more than 30 per cent or less than 70 per cent of silicon, decomposes, giving off arseniuretted and phosphuretted hydrogen, which are poisonous.

Several instances have been reported in the literature, where fatalities have occurred by exposure to ferrosilicon dust and fumes, on ships in which steerage passengers were housed in ill-ventilated cabins near the hold.

Apparently no fatal cases have ever been reported in American literature, as occurring in industry, although cases of poisoning in which effects were attributed to ferrosilicon are on record. There should be no difficulty if good ventilation is provided, which will remove dust and fumes at their source.

MINERS' KNEE

Q.—Can you give me information regarding the affliction known as "miners' knee?"—E.W.

A.—This disability is also known as "beat knee," bursitis, or subcutaneous cellulitis. There are other similar conditions known as "beat hand," and "beat elbow."

These disabilities are all caused by the friction of tools or the contact of parts of the human body with hard ground, rocks, or other hard materials. Prevention may be accomplished by providing knee pads or elbow pads, such as are used by basketball or football players. Treatment should be in the hands of a competent physician and surgeon.

PERSONALS

R. C. SALISBURY, for the past year and a half director of personnel for the Hardware Mutual Casualty Company, Stevens Point, Wis., has been placed in charge of the company's engineering department. Before becoming associated with the Hardware Mutual Casualty Company Mr. Salisbury was safety director for the Fisk Rubber Company at Cudahy, Wis. He has also served as general chairman of the Rubber Section, National Safety Council.

At the last meeting of the Executive Committee of the National Safety Council, I was authorized to enter into an arrangement with any safety engineer at present unemployed to sell memberships for the council on a liberal commission basis. This arrangement will help build our membership and assist these engineers during the present trying times.

Any reader who knows a safety engineer who is interested in helping himself and the safety movement, is invited to communicate with me or ask him to write me.

W. H. CAMERON,
Managing Director.

Manitoba Holds Second Safety Week

THE second annual Accident Prevention Week in Province of Manitoba, Canada, was held May 29 to June 4, sponsored by the Winnipeg Board of Trade and the Manitoba Associated Boards, the Department of the Provincial Bureau of Labor, and the Manitoba Motor League. The support of every public spirited citizen and of every local organization was secured in cooperation with an official committee headed by S. A. Wood as chairman.

The campaign was officially opened by a radio talk over CKY by the Hon. John Bracken who announced that the Lieutenant Governor, Hon. James D. McGregor, had issued a proclamation designating "Accident Prevention Week." Each day of the week was devoted to some particular phase of safety effort.

Many cooperating agencies assisted in the success of the Accident Prevention Week, including the National Safety Council, Royal Canadian Mounted Police, Winnipeg Public School Board, Winnipeg Service Clubs, Boy Scouts and Girl Scouts, Manitoba Bus and Truck Association, Silvertown Safety League, the Department of Public Works and the Bureau of Labor of the Province.

THE ACCIDENT BAROMETER

A Monthly Review of Significant Changes in the Accident Situation

Prepared by the

STATISTICAL BUREAU, NATIONAL SAFETY COUNCIL

Employee fatalities in 12 reporting states decreased from 535 in May to 478 in June—a drop of 11 per cent. The average monthly total in these states from February to May was 526, so that the June total is also a decline of 9 per cent from this average. Five of the 12 states declined from May to June, in 4 states the two months were the same, and in 3 states there were increases. Records for the five months are:

	Feb.	Mar.	Apr.	May	June
California	63	66	59	52	59
Illinois	50	49	46	85	35
Indiana	7	11	12	12	4
Maryland	8	13	13	8	8
Massachusetts	29	32	29	33	32
Michigan	15	11	13	15	15
Minnesota	17	17	13	10	...
Missouri	6	13	6	9	9
New Jersey	23	33	19	22	17
New York	108	97	142	136	136
Ohio	79	83	87	82	72
Pennsylvania	96	100	122	75	84
Wisconsin	10	12	8	6	7

Note: This table shows when deaths were reported to Industrial Commissions, not when accidents occurred. State totals are not directly comparable, due to differences in laws.

Industrial accidents in Austria during 1930 numbered 42,725, as against 48,186 in 1929, according to a recent report in the Industrial Safety Survey. It is further stated that "the decrease was apparently due in a large measure to a slackening of work in the undertakings." In the Netherlands, accidents dropped from 151,865 in 1929 to 137,034 in 1930. It is also reported, on the other hand, that "accident frequency has steadily increased in Sweden in the last few years"; and that the number of industrial accidents in South Africa showed an increase during 1930.

Industrial injuries (fatal and nonfatal) reported to the Ohio Industrial Commission numbered 10,173 for May. This was an 8 per cent decline from April and a 28 per cent drop from May, 1931. The industrial commission also reports 641,562 days lost from May accidents, a decline of 10 per cent from April, and 19 per cent from May, 1931.

The Industrial Accident Commission of California reports 230,515 casualties to workers during 1931. Of these 477 were fatal, a decrease of 160 deaths from 1930. Permanent disabilities numbered 748, a reduction of 106 from 1930. Temporary injuries numbered 68,851, 11,684 fewer than in 1930. "Medical only" cases numbered 160,439. The 1931 industrial accident record is the lowest in the history of the state. The total of 477 deaths may be compared with 748 in 1926. The permanent disabilities of 748 may be contrasted with 2,100 in 1918, and an average since 1914 of approximately 1,500.

The injury frequency rate during May among employees in the industrial establishments of 18 community safety council cities was 11.15, compared with 11.00 in April, and 11.06 during the first 5 months of the year. The March and April rates were below that of May; January and February rates were higher. The severity rate during May, however, was only 0.31, compared with 0.84 in April and an average of 0.83 for the first 5 months. In this reporting group, in other words, injuries are increasing slightly but severity is going down.

Motor vehicle fatalities in 115 cities showed a drop of 12 per cent from May to June, thus continuing the decreases exhibited in earlier months. This decrease is all the more unusual, considering that there is ordinarily a sizeable increase between these two months. A somewhat smaller group of cities shows a 22 per cent decline from June, 1931 to June, 1932.

Automobile fatalities in 10 large cities sending monthly reports of such accidents to the National Safety Council are as follows:

	Jan.-June 1932	Jan.-June 1931	Per Cent Change
Baltimore	76	84	— 9.5
Boston	40	54	—25.7
Buffalo	43	48	—10.4
Chicago	447	451	— 0.9
Cleveland	90	104	—13.5
Detroit	151	160	— 5.6
New York	502	528	— 4.9
Philadelphia	162	165	— 1.8
Pittsburgh	67	90	—25.6
St. Louis	75	88	—14.8

Commercial vehicle accidents in 19 community safety council cities numbered 17.90 per 100,000 vehicle hours operated during May, compared with 15.39 during April, and 20.12 for the first five months of the year. In 8 cities where mileage is also reported, there were 4.05 accidents per 100,000 vehicle miles, compared with 4.10 during April, and 4.08 in the first five months of the year.

Accidental deaths of all types in 22 reporting cities decreased from 258 in May to 236 in June. The greatest percentage decline was in the industrial classification, where there was a drop from 25 to 16. Home fatalities decreased from 92 to 89. Motor vehicle deaths dropped from 96 to 72. The only increase occurred in the classification of public (not motor vehicle) accidents. Here drowning was the important item, increasing from 21 deaths in May to 28 in June.

Looking ahead . . . Automobile fatalities usually increase in August, but the downward trend exhibited in earlier months makes such an increase doubtful this year. Drowning deaths, which are usually second in importance in July will fall back to third place in August, although their number will still remain high. Falls will probably resume second place.

He Won't Wear Safety Shoes

(*Continued from page* 18)

eventually develop into the second class—broken or fallen arches.

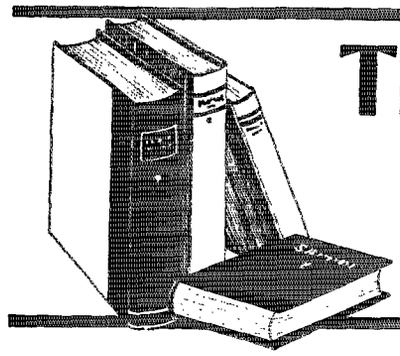
Such feet have at one time been normal and owe their present condition to improperly fitted shoes. In this type of foot the muscles holding the arch in position have been weakened and stretched until the natural elasticity has disappeared and the foot has sagged into a swollen and congested mass. This condition is accompanied by severe pain. We can readily see the hazard in such cases, leading to fatigue and accidents. In addition to the sagging and breakdown of the inner and outer longitudinal arches, the metatarsal arches will also be found flat.

The third class may be designated as a natural flat foot and must not be confused with abnormal flat feet caused by fallen arches. In normal flat feet the natural arch elevations are negligible. Were it not necessary to wear shoes, and stand and walk on hard surfaces, this class, together with the first class, would experience no discomfort. Indeed, most foot troubles can be traced to ill fitting shoes and hard walking surfaces.

Mr. Anderson is convinced that the shoeist of the future must cooperate in a greater degree with the medical profession than has been true in the past. By such cooperation he has arrived at a unique and successful procedure in difficult cases, and he has developed a skill which discovers symptoms which no shoeist should attempt to remedy before consulting with a doctor.

The simple method developed by this man is to provide artificial compensation for the deficiency of the shoe. The method of compensation for natural flat feet is to provide some slight spring or elasticity for the foot. For feet with high arch elevations the difference is made up between the shoe and the foot. In the case of fallen arches a gradual increase in thickness is made in the support under the arch until the foot is restored to its original and natural arch elevation.

Mr. Anderson has labored to find a material for his arch compensation that would accommodate the action of the foot muscles. He believes that metal arch supports are apt to cause atrophy of the foot muscles and defeat their purpose.



The Safety Library

by

MARY M. WELLS
Librarian N.S.C.

Further information regarding publications listed here can be obtained from the National Safety Council Library

SAFETY FOR THE HOUSEHOLD

"SAFETY FOR THE HOUSEHOLD" is the title of Circular No. 397 of the United States Bureau of Standards published in May of this year and just released. It is the most complete discussion of this problem available and supersedes Circular No. 75 which has not been in print for several years.

The pamphlet consists of more than a hundred pages and contains a number of full-page plates illustrating the common and hazardous practices.

The pamphlet is divided into nine chapters, the first of which is an introduction in which the whole problem of home accident prevention is discussed. Other chapter titles are Mechanical Hazards, Fire Hazards, Gas Hazards, Electrical Hazards, Lightning, Miscellaneous Hazards, What Can Be Done About It?, and Suggestions for Building a Home.

ACCIDENTS, NEUROSES AND COMPENSATION

"Accidents, Neuroses and Compensation," by Dr. James H. Huddleson; 256 pages, with a foreword by Dr. J. Ramsay Hunt. Cloth, price $4.00. Published 1932 by The Williams & Wilkins Company, Baltimore, Md.

BECAUSE of Workmen's Compensation Laws and the World War, traumatic neuroses have assumed increasing importance, especially as related to industrial accident work.

This excellent scientific treatise includes a consideration of historical points; etiology; classification and symptomology; structural pathology; post-traumatic psychoses, psychopathies, and malingering; specificity between situation and syndrome; evolution, duration, and prognosis; differential diagnosis; treatment; compensation; and prophylaxis.

There is an excellent bibliography of approximately 500 international references. A useful feature of the book is a summary at the end of each chapter. Case histories are widely used to illustrate various principles.

The author has some very definite ideas concerning compensation: "In brief, if the awarding of money for traumatic neuroses cannot be legally and finally abolished, then it should be given in a single sum at the earliest possible moment, in an amount ranging from $50 to $500. Actual verdicts in personal injury suits are too tardy in time and too liberal in amount. The postponement of a final cash award destroys its curative properties. Continuous payments possess questionable socio-economic merit and generally less than no therapeutic value."

Regarding prophylaxis, Dr. Huddleson states: "If, as Wechsler says, 'a neurosis is the penalty one may pay for growing up,' then traumatic neuroses are among the penalties incurred by society through hyperindustrialization and depersonalization. Without being obliged to alter main trends, civilization is bound to apply correctives. * * * * * * * * Quick resumption of occupation is strongly prophylactic in the face of sudden fright and little injury. Patients with cerebral injuries must be kept in bed long enough to preclude posteoncussion neuroses."

This technical and highly specialized work deserves a place in the library of the industrial physician, where it will eventually prove its usefulness as an important reference volume.—*C. O. Sappington, M.D., Dr. P.H.*

BOOKS AND PAMPHLETS

Auto Accidents:

Report by the Committee to Study Compensation for Automobile Accidents to the Columbia University Council for Research in the Social Sciences. Published by the Committee, Commercial Trust Bldg., Philadelphia, Pa., 1932. Price $1.00. (Pamphlet.)

Blueprints:

Fortman, R. H. and McKinney, J., Blueprint reading. For the machine trades. A practical handbook on reading working drawings, assembly drawings, scale drawings, manufacturing drawings, tool drawings, installation drawings. Published by the American Technical Society, Drexel Avenue and 58th Street, Chicago, Ill., 1932. Price $2.00. (Book.)

Bonus Systems:

Harrington, D., Bonuses to encourage safe work and for work safely done. Published by the U. S. Bureau of Mines, Washington, D. C., 1932. Free. (I.C. 6625.) (Pamphlet.)

Borax:

Borax mining and purification. Published by the Retail Credit Company, Atlanta, Ga., 1932. (Pamphlet.) (Industry Report.)

Gases:

Jones, G. W., and Kennedy, R. E., Inflammability of mixed gases: mixtures of methane, ethane, hydrogen and nitrogen. Published by the U. S. Bureau of Mines, Washington, D. C., 1932. Free. (Pamphlet.)

Insurance:

Cohen, P., The British system of social insurance. History and description. Published by Columbia University Press, 2960 Broadway, New York City, 1932. Price $3.50. (Book.)

Trucks:

Trucks and wheelbarrows. Published by the National Safety Council, Inc., 20 North Wacker Drive, Chicago, Ill., 1932. Price 25c. (Pamphlet.) (Safe Practices No. 30.)

PERIODICALS

Elevators:

Elevator inspections. In *Travelers Standard*, July, 1932, p. 137-140.

Occupational Diseases:

Stratton, R. C., The engineering control of occupational diseases by plant equipment and operation. In *Travelers Standard*, July, 1932, p. 129-137.

Traffic:

Community value of street lighting as an accident preventive. In *Travelers Standard*, July, 1932, p. 121-129.

Mickle, D. G., Safety islands—their design and use. In *Civil Engineering*, July, 1932, p. 435-439.

Traffic accidents increase with diminished lighting, decrease with better lighting. In *American City*, July, 1932, p. 96.

Woodworking Industry:

Carter, A. B., Safety rules for cabinet shops. In *California Safety News*, June, 1932, p. 4.

100% First-Aid Training Helps Safety Record

ACCORDING to statistics compiled by the American Petroleum Institute, the Oil Production Division of the Empire Companies had the lowest accident frequency rate of any producing company operated 2,500,000 hours or more annually. Company figures show a reduction in lost-time from 45 per million man-hours two and one-half years ago to 9.8 for the first six months of 1932.

Another achievement of this group and one of the reasons for the low frequency rate is the fact that every employee has been trained in first aid and holds a certificate from the U. S. Bureau of Mines.

The interest of the employees in accident prevention was recently evidenced when 17 teams from the Kansas Division met in their annual first-aid contest held at Oil Hill. Prizes for the 1932 meet were a plaque donated by M. R. Shaffer, general superintendent, and first aid kits and driving goggles donated by safety supply houses. More than 1,000 employees and visitors attended the meet, which was one of the largest held in the Mid-Continent area. A. V. Miller, U. S. Bureau of Mines, Vincennes, Ind., E. F. Coulter, Hartford Accident and Indemnity Company, Kansas City, and C. S. Warren, superintendent of the Kansas Division, spoke at the meet. C. E. Beecher, production engineer, Bartlesville, Okla., presented the prizes.

"Super-VISION" Brought Safety

(*Continued from page* 15)

ciated the interest shown and cooperated in correcting conditions. A leaflet calling attention to the need for caution in school bus operation and a suggested code of rules was published and given wide distribution.

The Coast Line performed a real service to the city of Rocky Mount, North Carolina, in promoting a community safety organization. The city authorities sent a questionnaire to all city employees asking their pledge to assist in safety work. Then a department of Public and Personal Safety was organized under the chairmanship of A. S. Lyon, superintendent of public works.

Seventeen safety committeemen were appointed, representing the various city departments and each enlisted the active support of the men working in his department. Superintendent Lyon reports that more than one hundred hazardous conditions on both public and private property have been corrected. Hearty cooperation in the work has been received from citizens in removing these hazards when they were reported.

One thought had been on my mind for many years. What do employees really think about safety work, contests, trophies and the like? Do they affect a synthetic enthusiasm in the presence of supervisors and safety men? I remembered a conductor on a branch line freight whose "safety first" preaching aroused considerable derision among the train crew. Once I had attended a safety rally where the employees were waiting as patiently as they could for the end of the speech making and the start of the entertainment. I expressed this feeling to Mr. Scott.

"Why don't you go out and find out first hand," he replied, pointing through the window toward the round house and shop. "They don't know you and you could probably get their frank opinion."

A negro worker stopped to look at one of the bulletin boards in the shop.

"They feed you a lot of this safety first stuff," I remarked. "Don't you ever get tired of it?"

"No, sah, boss, ah reckon we needs it," he replied with an ivory grin. "Ah been workin' on dis railroad fo' ten years and nobody gets hurt here no moah." And he pointed to the sign indicating 908 days without a reportable injury.

Perhaps the more sophisticated workers would be less enthusiastic. The next person I tried was apparently a foreman. A question about some detail of one of the locomotives, a Pacific 4-6-2 which stood panting on a siding, served to open the conversation. Eventually the talk turned, quite casually, to accidents.

"I thought manicuring these iron horses was a dangerous job," I remarked, pointing to the sign proclaiming 908 safe days.

"It used to be," he replied. "Maybe it still is on some railroads. But we've got a real safety organization here. Last year we won a big bronze trophy for having the lowest accident rate of any railroad in the country. And I hear we'd have won it again only the same road can't win it two years in a row."

The shops, it seemed, were strong for safety. How about the train crews?

As the train moved northward from Wilmington, I got into conversation with the flagman in the rear vestibule. Soon the Pullman conductor joined us and I began to realize the continent-wide scope of the Pullman safety organization. Also, I concluded that there was nothing superficial about the railroad man's interest in safety.

The aim of the Atlantic Coast Line has been to develop safety consciousness among its personnel to the point where it will be adopted as a creed by those who operate the trains and maintain the equipment and right of way. And when safety becomes a creed its influence is not confined to the job. The "super-VISION" exerted at work is carried into the daily lives of employees and their neighbors. Thus the Atlantic Coast Line has become a powerful force for safety in the six states it serves.

Campaign for Employers

(*Continued from page* 11)

toughest ones to convert, but we finally brought them around and today they are the most enthusiastic supporters of our safety program.

"Each month a safety meeting is held at our plant. Superintendents who formerly attended them as a

matter of duty now attend because they are intensely interested in accident prevention. Furthermore, they are now active participants in those meetings, offering constructive suggestions looking toward total elimination of accidents.

"I am firmly convinced that at least 90 per cent of the industrial accidents are preventable, providing ordinary care is taken. Now we are thinking in terms of safety not only in the manufacture of fuses and lamps, but in the designing of tools. Many accidents could be prevented if more care were exercised when the tool is designed and made.

"Furthermore, I have not found one job where the speed of the operation had to be cut down. In fact, in a great number of instances a simple redesign of feeding mechanism resulted in a material increase in output per hour with complete safety. I know this is contrary to popular belief in many quarters, but it has been proved conclusively in our plants. It was not necessary to make any drastic changes in equipment or in the layout of our plants, or to incur any heavy expense to effect this standard of safety. Carefulness and tidiness are about the most important considerations in executing a safety program in an industrial plant.

"The man who thoughtlessly shouts, 'Dumb operator!' when an unnecessary accident occurs is sorely in error. He should shout, 'Dumb management!' The management of a plant, not its employees, is responsible for accidents. In order to cooperate to the fullest extent we have placed safety signs throughout our plants, but those signs are valueless unless they are hung constantly in the minds of the employer.

"Simply because a man hires people to work for him, he has no license to injure them. But unless he preaches, practices and insists upon safety in all operations, he is not doing all in his power to prevent accidents in his plant.

"If the management, superintendents and foreman practice safety, the employees will follow their lead."

Such a simple, inexpensive matter as changing the viewpoint in a factory appears, on the surface, too easy to be really effective as an accident prevention measure. But the fact that the Bussmann Manufacturing Company has not had a lost-time accident for more than a year is ample evidence of its effectiveness.

What Types of Persons Have Accidents?

(Continued from page 17)

more ambitious circles. They try to do as well as the more brilliant but fail in the attempt.

The average person has less trouble, perhaps, because he realizes his weaknesses and drives accordingly.

Recklessness

When an accident-prone driver cannot be classified in any other way he is said to be reckless. The road-hog, the drunk, the speed demon, the paranoic, the man with defective vision, the "ne'er do well," the nervous person, the unintelligent, and all the other cases that are not definitely analyzable go into this group. The term should not be used and the reason for the "recklessness" should be studied.

In this short paper an attempt has been made to point out some of the common types of individuals that have been found to have accidents more frequently than expected by operation of chance factors. The criterion has been actual driving performance. On the devices used for measuring, which were discussed in a former issue of this journal, most of the defects were easily detected.

A good medical examination together with a careful mental examination by a trained psychologist using apparatus for measuring accident susceptibility would easily reduce the number of accidents 60-80 per cent, if backed by suitable administrative machinery. Diagnostic studies of one large utilities company reduced accidents 50 per cent for the year following the study, and the trend is downward after two years.

For those who would care to read further on any of the topics discussed, the following books are recommended. Titles starred are theoretical in nature. The others are more or less practical.

1. *Bridges, J. W. Outline of Abnormal Psychology. R. G. Adams Company, Columbus, Ohio. 1925.
2. Martin, R. E. Are you not to drive your car? Popular Science Monthly, No. 4, 116, 55-56. 1930.
3. *Munsterberg. Psychology and Industrial Efficiency. Houghton-Mifflin Company, 63-82. 1913.
4. *Pintner, R. Measurement of Intelligence
5. Viteles, M. S. Tests for chauffeurs. Industrial Psychology, No. 1, 2, 30-45. 1926.
6. *Viteles, M. S. Psychology in industry. Psychology Bulletin, No. 6, 25, 309. 1927.
7. Wechsler, D. Tests for taxicab drivers. Personnel Journal, 5, 21-30. 1926
8. Weiss, A. P.
Bauer, A. R. et al. Psychological Principles of Automobile Driving. The Ohio State University Press, Columbus, Ohio. 1931

Safety's Third Fundamental

(*Continued from page 27*)

can be prevented by the education of the employee.

The error is not in the fact, but in the danger that it will be assumed that safety efforts may be concentrated on education to the neglect of safeguarding and engineering revision. I believe that this neglect is even true already in some plants which (to speak mildly) have become over-enthusiastic about training the employee in his so-called responsibility.

Those pioneers, as I have pointed out, had sound reasons for the order in which they placed the safety fundamentals. How is it possible to gain the complete confidence and cooperation of employees if management does not demonstrate, by effort and by money spent in safeguarding the plant hazards, its own sincerity in the accident prevention program? Do not forget that accidents suffered *on high speed machinery* usually involve severe injuries.

Here are some compensation figures taken from Bulletin No. 164 of the Division of Statistics, New York State Department of Labor.

Compensation was paid for 11,755 accidents due to machinery for the year ending June 30, 1929. The largest group of accidents due to any one cause was that of handling objects. There were 28,724 cases in this group, the compensation amounting to $5,259,858, or an average of $183 per case. But in the group due to machinery, the compensation amounted to $4,747,677, or an average of $380 per case.

It is unreasonable, of course, to expect that industrial management, even in the best of times, should scrap serviceable machinery because it is dangerous, or perhaps even impossible to safeguard. Considerations of economy must often be paramount. But the machine that cannot be fairly well safeguarded is the exception, and the homemade guards, supplemented with a wise and thorough employee training in safe practices, should serve to keep injuries at a minimum.

The day comes, soon or late, however, when new machinery must be purchased. Management then will do well to canvass the machine field alertly, for manufacturers have shown themselves ready to develop safe machines when evidence is seen that the purchaser has a real desire for them. *Already there are many plants*, especially among the membership of the National Safety Council, but also independent of this association, which are thoroughly safety minded and demand the adequately safeguarded machine. The question of price is still too often a determining factor; but this counts most with the plant less experienced in safety work. The prevention of accidents by means of safeguarding and by the selection of thoroughly safe machines is fundamentally an economy measure, well established in plants that have long records of safety accomplishment.

THE HONOR ROLL

Details of no-accident records in excess of 400,000 man-hours, or 200 working days, are invited for this department

Burroughs Wellcome & Co.

May 20 saw the completion of one year without a lost-time accident by the employees of the Tuckahoe, New York, works of Burroughs Wellcome & Co. (U. S. A.) Inc. The period covered a total of 427,770 man-hours. Management attributes this success to an effective safety committee, the proper spotting of numerous bulletin boards, changed weekly, education of the employees through NATIONAL SAFETY NEWS, The Safe Worker and The Safe Driver, and a campaign of safety messages and slogans stamped on time cards and made conspicuous throughout the plant.

General Petroleum Corporation

The northern division of the pipe line department of the General Petroleum Corporation, with headquarters at Taft, Calif., completed on June 9 four years without an accident involving loss of time. Over 530,000 man-hours were accumulated, and the record is still unbroken. This division operates 161 miles of main lines and 90 miles of gathering lines; also five pumping stations.

Niagara Alkali Co.

The plant of the Niagara Alkali Company, Niagara Falls, N. Y., completed, on July 1, one year without a lost-time accident. The exposure was 460,000 man-hours. The safe record was accomplished without organizing any special competition among the plant departments, or other incentive.

The Delaware and Hudson Railroad

The Oneonta car shops of The Delaware and Hudson Railroad Corp. had their last three-day reportable injury November 14, 1930, and have now completed 19 months of safe operation, or 1,725,000 man-hours. Approximately 500 men are employed in these shops, and they are engaged in rebuilding and repairing both railroad freight and passenger cars.

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

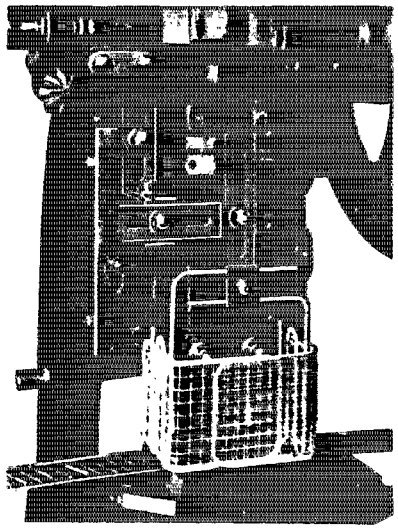
PYROIL LUBRICATING PROCESS

A new lubricating process which is said to control friction and overheating, affording increased operating efficiency, safety and protection to machinery has been placed on the market by the Pyroil Company, LaCrosse, Wisconsin.

The name of this product is Pyroil, an oil product embodying a heat-proof, graphite element. This product is added in small quantity to regular lubricants. It then deposits its heat-proof element on all bearings and frictional surfaces, creating a slippery, glossy surface which it is said is capable of self-lubrication in the emergency of loss or deterioration of the regular lubricant. Once created and sustained, this surface, it is said, is impervious to excessive temperatures of heat, to wear or to dilution. The surface perpetually renews itself yet never becomes thicker than a mere film and cannot interfere with clearances in any way.

JOHNSON BASKET GUARD

E. P. Johnson Rule Mfg. Company, 565 West Washington St., Chicago, announce the new Johnson Basket Guard, especially adaptable for protection of operator when feeding strip stock through a punch press. It also may be used where it is necessary to hold parts in position in the press when forming or blanking.



The basket guard can be used with practically any die, the manufacturer claims, as it is adjustable to any position as well as to any size from 6 to 12 inches in width.

THOMPSON IMPROVES LAMP HANGER

The Thompson Electric Company, 1438 West 9th Street, Cleveland, has developed new demountable lower contact members for the Thompson Lamp Lowering Hanger.

Each contact member has but one porcelain block instead of two. The lower contact elements are wired to the reflector or lamp fixture instead of to the bottom member of the hanger, enabling one reflector to be substituted for another without rewiring.

By means of the Thompson I-Beam Clamp, these hangers may be attached to the underside of an I-Beam without drilling and tapping.

The hanger may be placed anywhere under the I-Beam with the chain extending either along the bottom of the beam or at any angle to it, directly from the lamp to any column, corner or wall, to bring it down to the floor; chain may be in conduit if desired.

A new bulletin on these improvements will be sent upon request.

NEW MAXIM EXHAUST WASHING SILENCER

By combining a water scrubber and a Maxim Silencer in one, corrosion-proof unit, the Maxim Silencer Company, Hartford, Conn., has produced a compact Silencer that, not only makes the exhaust of a Diesel engine quiet, but also makes it sparkless and clean.

On gasoline and gas engines, it will eliminate the possibility of exhaust line explosion, the manufacturer writes. It is expected that it will be ideal for installation on the exhausts of Diesel engines used in tankers, where sparks must be eliminated.

This new Silencer is called the Model EW. It is built of cast iron throughout, making it corrosion-proof. Only a moderate amount of water is required, the cooling circulation being sufficient. It is smaller and lighter, size for size, than the standard dry type Maxim Silencer.

A bulletin describing this latest addition to the Maxim Silencer line will be sent to those interested, upon request.

SINGLELIFT TRUCK

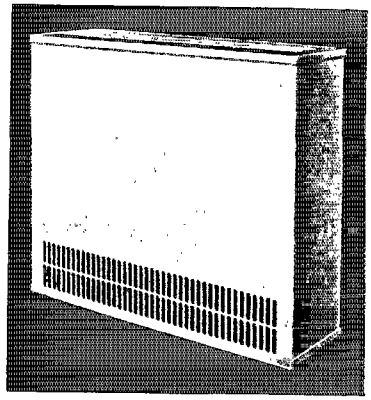
The Lewis-Shepard Company, 125 Walnut Street, Watertown Station, Boston, Mass., has announced an entirely new Singlelift Truck—the Gold Flash.

This new Singlelift Truck has a number of unusual features. It lowers the load forward and downward at the same time. The descending load cannot grind down along the next load behind. Just a slight backward roll of the truck as the load descends prevents loss of any floor space. The handle when in load-raising position is always connected to the load. To release the load from its elevated position, the operator has only to press lightly on the release pedal. The lock rolls out of engagement.

The head-room has been reduced to a minimum, and a newly designed high capacity release check is used to govern the load in lowering. A circular, No. 104, is available describing this truck.

UNIT COOLER

Comfort cooling for summer months is becoming as much a requisite in many types of factories as winter heating.



The Trane Company, LaCrosse, Wisconsin, has adapted its extended surface heat transfer unit, now used in the heating and ventilating fields, to the cooling field. Here is pictured one of the cabinet units for combination winter heating and summer cooling, with water, brine or direct expansion refrigerant. Other models made by this company include suspended and concealed types for various installations.

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.

NEWS ITEMS

Safety First Shoe Company, Framingham, Mass., has appointed Williams and Company, Inc., with offices and warehouses at Pittsburgh, Cleveland and Cincinnati as representatives in Ohio, Pennsylvania, west of Harrisburg, parts of West Virginia, and Kentucky. They will maintain stocks of Safety First Shoes at each of their three warehouses.

* * *

Divine Brothers Company, manufacturers of flexible grinding, polishing and buffing machinery, Utica, N. Y., recently added Robert Klaas to their Machinery Division Staff.

Mr. Klaas has been connected in various capacities with the polishing industry all his life. He comes to Divine Brothers Company from the Hammond Machinery Builders of Kalamazoo, Michigan. Because of his long experience in the field of polishing and buffing machinery,

Mr. Klaas believes the new connection will evolve some new developments that will prove of interest to the entire industry.

* * *

The Surty Mfg. Co., Inc., 4139 W. Kinzie Street, Chicago, announce they have worked out the problem of an individual exhaust for grinding, buffing and polishing wheels which can be installed and operated at a very low cost.

Good Records Win Prizes for U. S. Rubber Plants

SAFETY experience of the United States Rubber Company was improved during 1931 by 27¾ per cent over the previous year. There were 222 fewer lost-time accidents during the year, and no fatalities were suffered. This is the first year on record without a fatality.

The company's interest in accident prevention is shown by the fact that the executive committee voted to increase the amounts of the cash prizes awarded for safety accomplishment. These prizes for safety achievement during 1931 were awarded as follows:

Large Plant President's prize, $500. To the Lycoming Rubber Company, Williamsport, Pa., for showing an improvement of 64.11 per cent. This plant operated throughout the entire year without a lost-time accident.

General Manager's prize, $250. To the Winnsboro Mills, Winnsboro, South Carolina. This plant showed an improvement of 55.77 per cent.

Small Plant President's prize, $250. To the Shoe Hardware Company, Waterbury, Conn., for an improvement of 86 per cent. This plant also operated throughout the entire year without a lost-time accident.

General Manager's prize, $125. To the Fibre Products Division, including the Cleveland and Rock City Falls factories. The improvement shown was 81.22 per cent.

The Cost of "Spare Parts"

ONE of the items of accident excuse which receives little attention is the cost of spare parts for disabled human beings. According to the United States Bureau of the Census, in 1929 the Nation spent $2,435,527 for artificial limbs and $17,257,092 for braces, trusses, knee caps, anklets, arch supports, ear drums, crutches, splints, etc.

Nominate N. S. C. Directors for 1932-35

AS PROVIDED by the by-laws of the National Safety Council, I transmit to you herewith the report of the Nominating Committee, composed of Messrs. George G. Traver, Chairman; Dr. B. L. Corbett, E. K. Eastham, Robert F. Hand and Hoyt L. Fracher.

This committee has unanimously nominated the following directors of the National Safety Council, whose terms of office expire October 3, 1932, for re-election at the annual meeting in Washington, D. C., October 3, 1932:

J. I. Banash, consulting engineer, Chicago.

J. E. Culliney, manager of safety, Bethlehem Steel Corp., Bethlehem, Pa.

Edward Dana, general manager, Boston Elevated Railway, Boston, Mass.

F. A. Davidson, president, General Scaffolding Engineers, Inc., New York City.

Lewis A. DeBois, New York City.

D. T. Harrington, chief engineer, Safety Division, U. S. Bureau of Mines, Washington, D. C.

G. T. Hellmuth, claims attorney, Chicago North Shore and Milwaukee Railroad Company, Chicago.

Frank J. Lanaham, president, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.

J. E. Long, superintendent of safety, The Delaware & Hudson Railroad Corp., Albany, N. Y.

Paxton Mendelssohn, Detroit, Mich.

Miller McClintock, Director, Erskine Bureau, Harvard University, Cambridge, Mass.

John A. Oartell, chief of safety bureau, Carnegie Steel Company, Pittsburgh, Pa.

C. E. Pettibone, vice-president and manager engineering Department, American Mutual Liability Insurance Company, Boston, Mass.

Lieut. Colonel Henry A. Reninger, special representative, Lehigh Portland Cement Company, Allentown, Pa.

Dr. A. D. Risteen, director of technical research, The Travelers Insurance Company, Hartford, Conn.

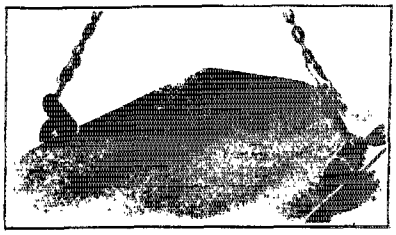
Charles B. Scott, president, Bureau of Safety, Inc., Chicago.

Dr. Cassius H. Watson, medical director, American Telephone and Telegraph Company, New York City.

Albert W. Whitney, associate general manager, National Bureau of Casualty and Surety Underwriters, New York City.

W. H. Winans, manager, Industrial Relations Department, Union Carbide and Carbon Corp., New York City.

A one way street is a street on which the motorist can be bumped from the rear only.



Safety Costs Less

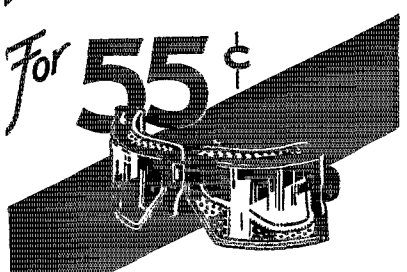
IT'S expensive to handle boiler plate with old-fashioned chains or hooks, which have a tendency to slip, causing accidents.

The use of Never Slip Safety Clamps will reduce these expenses, because these clamps do not slip. Two clamps and chains will do the work of four bent hooks and chains, and do it without harming the plate. Even at an angle Never Slip Clamps will hold work without slipping. Made in two styles for lifting plates horizontally and vertically.

Write for details

Never Slip Safety Clamp Co.
51 East 42nd St. New York City

EYE INSURANCE



A real wide-vision, general utility goggle with large curved lenses, non-corroding metal frame, ventilated and rubber-edged eye cups, adjustable bridge, and elastic band. Lenses replaceable.

NEW ERA GOGGLES
Reduce the Cost of Safety

THIS TYPICAL value is offered by way of proving that you can save money by dealing with New Era—whether you buy goggles of our special design or the standard styles for which we are distributors. A Copy of our new Industrial Catalog—it's free for the asking—will show you the economy of purchasing from a house whose 20-year reputation is based on selling quality optical goods at lower prices.

NEW ERA OPTICAL CO.
Industrial Division
17 North Wabash Chicago

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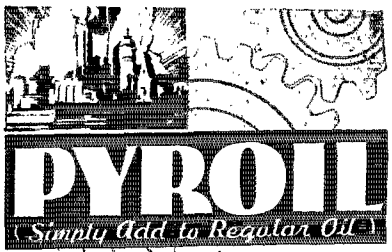

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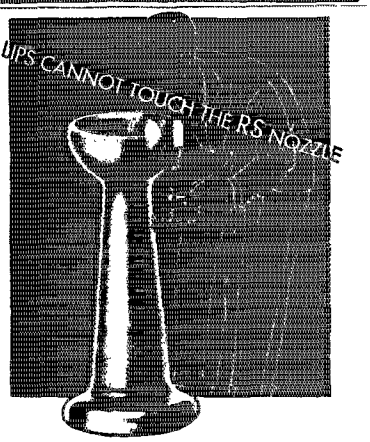

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That is the decision of every institution installing Rundle-Spence drinking fountains . . . and they arrive at their decision rightfully. First, because the sanitary features of an R-S fountain place it in a class by itself; and secondly, because without exception the R-S fountain prevents all users from touching their lips to the jet or nozzle.

Before you decide on the type of drinking fountain to install, write for the R-S catalog. Colors are available for any color scheme.

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441 N. Fourth St. Milwaukee, Wisconsin

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Besides record, fur and storage vaults, LUX units are designed for all kinds of flammable liquid and electrical hazards. Built-in systems protect the larger hazards in a confined space—or those requiring a "local application", as dip tanks and spray booths. The LUX portable is for emergency use in spots not covered by a built-in system. Free booklet, "LUX Makes the Difference" gives full details.

Walter Kidde & Company, Inc.
140 Cedar Street
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LUX Fire Protection

FOR ALL KINDS OF FLAMMABLE LIQUID AND ELECTRICAL FIRE HAZARDS

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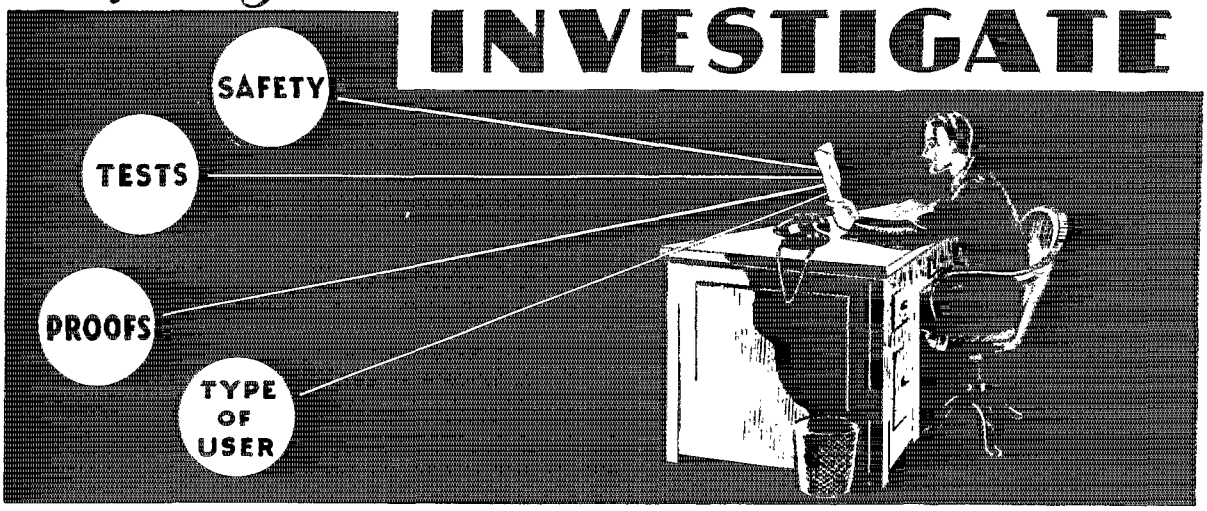
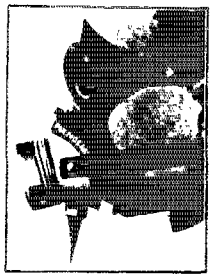
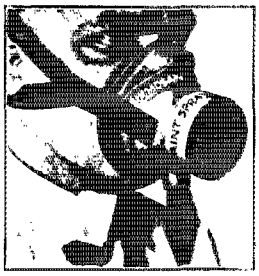


PULMOSAN RESPIRATORS

GR-230 Goggle Respirator

Provides protection of eyes, nose, throat and lungs, against dust, paint spray, fumes, smoke. One piece.



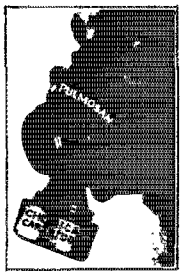


R-110 Dustpruf Respirator

Most popular for protection against fine dust and paint spray mist. Weight, 2½ oz. Comfortable, adjustable, easy breathing.

R-160 Chemical Cartridge Respirator

New Pulmosan development. For paint spray, organic fumes, sulphur dioxide and smoke. Chemical cartridge purifies air. Light weight.



Respirators are bought for only one purpose—to protect the workers' nose, throat and lungs against the dangers of dusts, fumes, smoke, mists, etc.

Since that is true, you can't afford to risk "half-way" measures! Protection must be adequate—economical—serviceable... all essentials which you get in PULMOSAN RESPIRATORS. Consider this evidence:

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- The majority of the largest corporations in the country, after careful tests, have standardized on PULMOSAN RESPIRATORS.
- PULMOSAN RESPIRATORS are the product of safety engineers who have devoted twenty-two years of constant advancement in the manufacture of respirators.

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New Low Prices

Money wisely spent on goggles, protective clothing, respirators and other necessary safety devices is economy. Don't risk the liability of high compensation costs by "shaving" your safety budget too closely. And above all things don't, in the name of economy, resort to the use of substitutes of uncertain protective qualities. At the new, low prices prevailing on "Safety Service" Protective Equipment, you can buy with confidence that your dollars are securing 100% value in protective qualities and solid worth.
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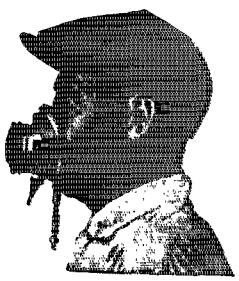
The Dr. Wood Respirator

For protection against dust hazards. Extremely comfortable on the face. Filter cloths renewable. Each..... $1.35



The Kleenair Respirator

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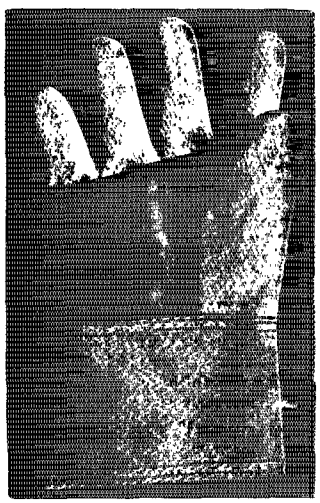

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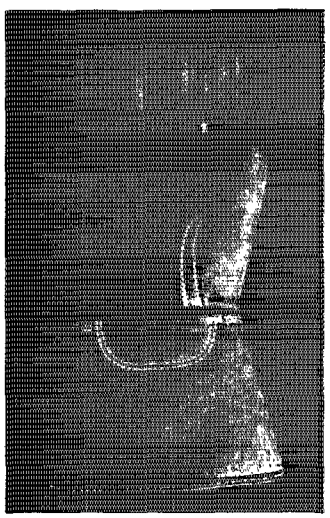
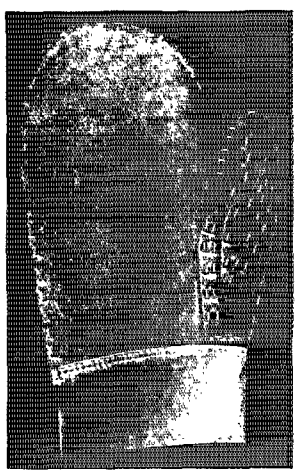
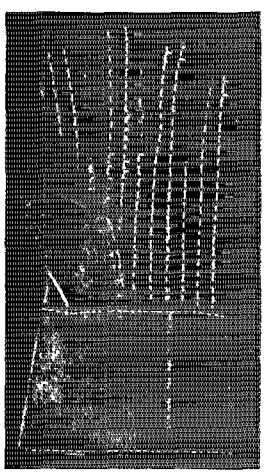
"STURDY-WEAVE" ASBESTOS GLOVE
Reinforced with chrome leather patch. Dozen Pair..... $15.00



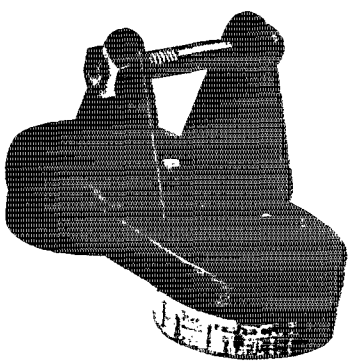
No. 3008
CHROME LEATHER GLOVE
Made of high grade stock. All seams double stitched. Dozen Pair..... $10.50



No. 1680
STEEL STAPLED MITTEN
A strong, serviceable leather mitten with steel stapled thumb. Can be worn on either hand. Dozen Pair..... $13.05



No. 1644
STEEL STAPLED GLOVE
For protecting hands in handling rough materials such as pig iron, brick, scrap, bars, etc. Dozen Pair..... $15.75



"ADJUSTO"
Cork Grip Ladder Shoe

Designed to prevent the ladders from slipping on metal, concrete, marble, slate and similar surfaces.

The cork soles of these ladder feet grip the floor with bull dog-like tenacity. Soles are renewable and may be replaced easily when worn out. Ladder feet are adjustable to fit any size ladder. Dozen Pair..... $16.50

THE SAFETY EQUIPMENT SERVICE COMPANY
1228 ST. CLAIR AVENUE Buell, W. Nutt, *Pres.* CLEVELAND, OHIO