

NATIONAL SAFETY NEWS

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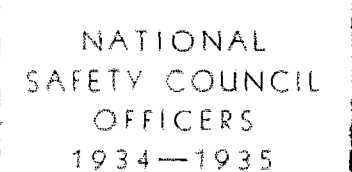
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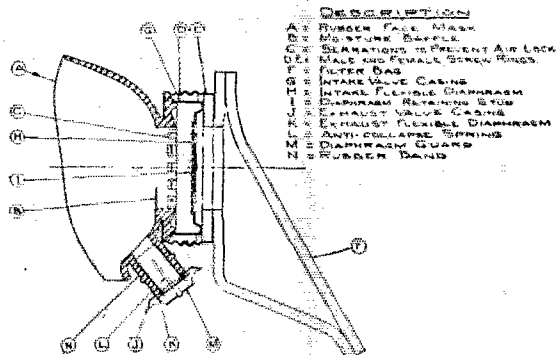
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Hes got a
date with
SAFETY
every day





**The New Bag Respirator No. 4
with Willson Long Life Bag Filter**



Please note above the method of obtaining airtight contact in the connection between the bag filter and the rubber face piece. The intake valve casing (G) is held in place by metal screw ring (E). Tightening the screw ring seats the intake valve casing firmly in the felt filter at the front and imbeds the back well into the rubber face mask. This design makes it impossible for even the finest dust to leak thru the clamping joint.

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No filter discs to replace in this new Willson Respirator

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Very light in weight the No. 4 Bag is extremely easy to wear because of its very large air filtering surface and the shape of the mask which is molded to fit the contours of the face. The shape of the filter bag and its off center joint to the face masks keeps the respirator out of the line of vision. It lies flat against the chest when the head is lowered and gives full vision underfoot.

No. 4 Bag Respirator is proving its ability on operations in high concentrations of silica, asbestos, lead and other poisonous dusts. It has, however, a broad use in many trades such as mining, foundries, quarries and potteries; brick, clay, glass products, paint; stone cutting, crushing, polishing and grinding; ceramic plants and dry mixing plants; also, workers mixing or applying silicate products such as frit, japan, lacquer, powdered glass, plaster, etc.

Any one of No. 4 Bags exclusive features warrants a trial. Send for one today to test such advantages as Willson Long Life Filter; locked air passage between filter and mask; bag with large filtering area entirely out of line of vision and low breathing resistance; low upkeep expense by eliminating constant filter replacement. It is shaped differently but the filter bag of this respirator is of a material similar to the Willson Bag Respirator No. 3, several thousand of which have been in use in many industries in the two years it has been available.

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DECEMBER, 1934

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National Safety News

Published monthly in the interest of accident
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VOL. XXX, No. 6



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Announcing a new Model

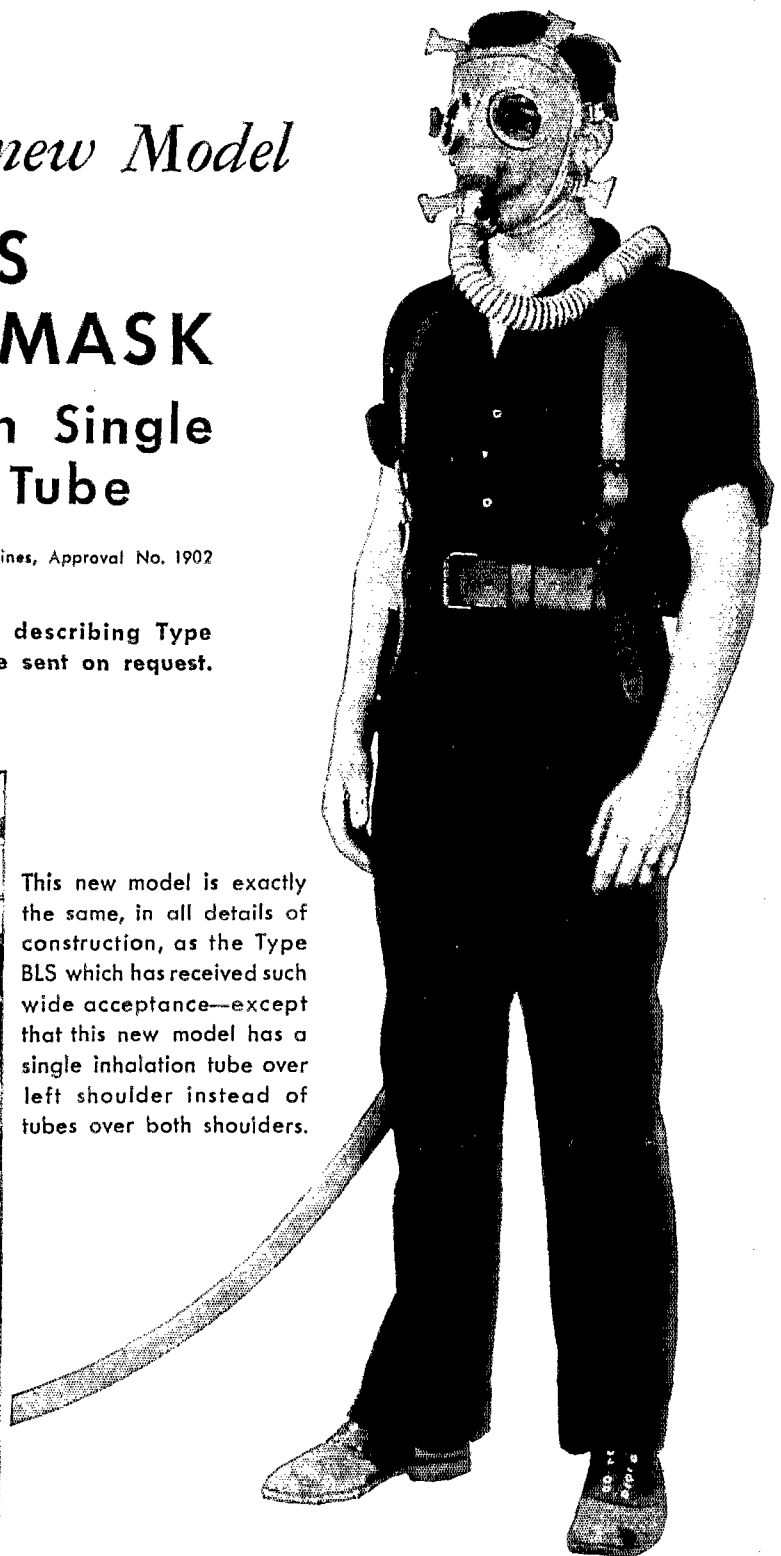
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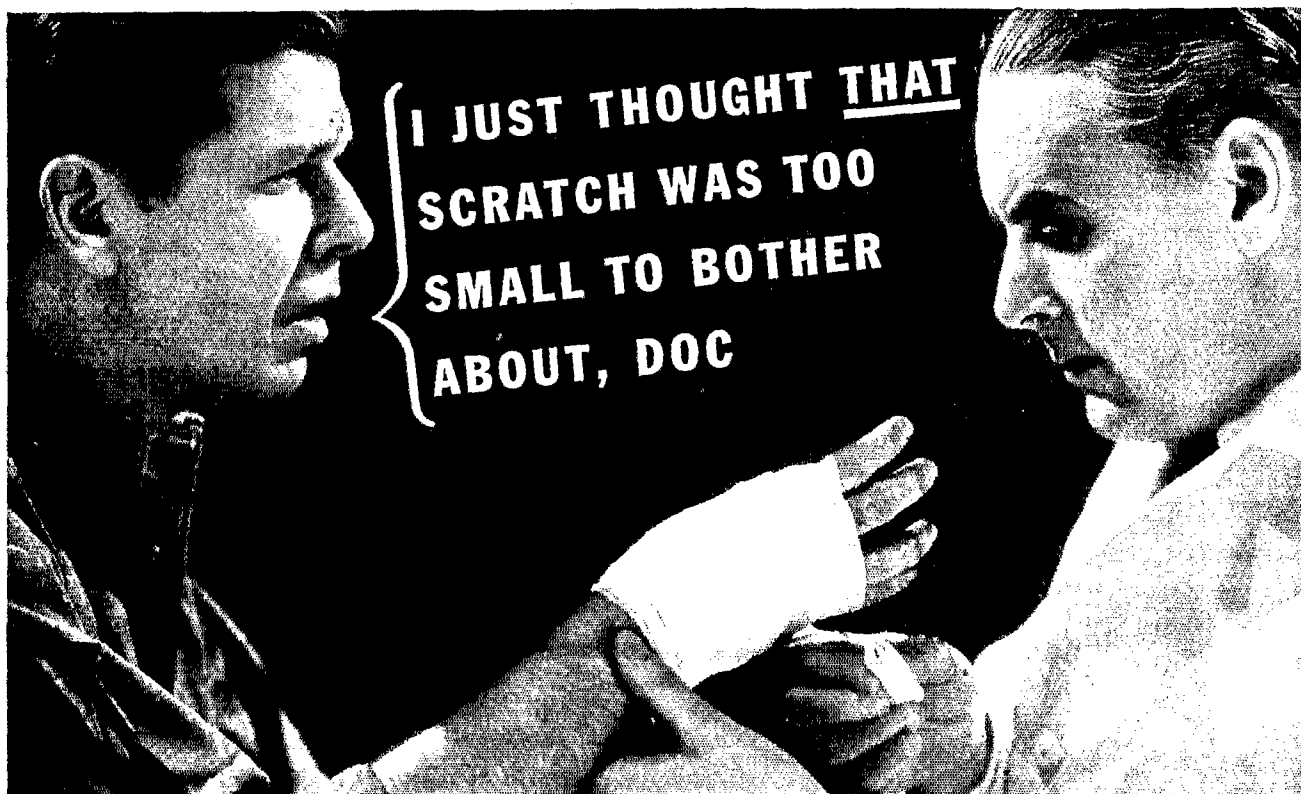
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LAI D OFF FOR 10 DAYS—

LAVA SOAP could have prevented it



How Lava helps prevent infections in those too-small-to-bother-about cuts

Ideally, of course, every skin abrasion—no matter how minor—should be taken to the Medical Department for attention. But you know how hard that rule is to enforce. A certain percentage of workers just won't take every minor nick and cut seriously. Usually dirt gets into them. Infection often follows.

Lava gets ALL the grime in a jiffy . . . The next best thing to 100% compliance with the rule is to make sure that workers' hands get *really* clean. And *Lava Soap* does just that. Regardless of the kind of dirt or grime that your workers get on their hands, Lava gets it off in less than a minute.

Here's how Lava works. First, its thick heavy lather takes the surface dirt. Then its pumice—so fine and powdery that it can-

not injure the skin—gets all the ground-in dirt. All the while glycerine and other soothing oils in Lava *protect* the skin, actually *help heal up* little nicks and scratches.

Lava is germicidal . . . And Lava kills germs. Tests show that as a preventive against many deadly bacteria, Lava is several times as effective as carbolic acid.

We believe that you will find—as many plants have—that your use of Lava Soap plant-wide will reduce your rate of hand infections. You'll find Lava economical, too—it lasts 3 times as long as ordinary soap. Works well in any water—hot or cold, hard or soft. It will pay you to investigate this easy method of reducing lost time from preventable infections.



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PROTECTS
THE SKIN**

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NATIONAL SAFETY NEWS

Published by National Safety Council, Inc.

DECEMBER, 1934

Vol. XXX, No. 6

We Need Christmas

THE world needed humanizing when Christ was born. Rome had established a world empire by military power and a hard-boiled, efficient organization. In a remote province of this empire was a theocracy ruled by a priestly class interested chiefly in preserving the empty forms of a religion whose spirit they had killed.

Christianity proved to be more than merely a new sect. It taught a new appreciation of human values and brought hope to those who were outside the established social order.

The world has had many great teachers who were of other creeds. From the standpoint of personal character, Epictetus will not suffer by comparison with Saint Augustine. The writings of Marcus Aurelius present a code of ethics and a concept of individual responsibility which are unsurpassed in any faith. The calm detachment of the Stoic philosophers may even seem refreshing in contrast with the dogmatic bitterness of theologians.

But philosophy is not for the masses. Few people are interested in the contemplation of virtue in the abstract. But they can understand the simplicity and directness which Jesus displayed in talking with his followers.

Stoicism taught a lofty ideal of duty but emotionally it was sterile. The Meditations of Marcus Aurelius are full of sublime thoughts but to most persons they seem dull and didactic. Where among the writings of the philosophers can we find anything to compare with the simple and appealing story of the Nativity as told by Luke? Mere philosophical speculation cannot warm the human heart.

Christianity did not overlook the material welfare of the individual. Much of the ministry of Jesus was devoted to the healing of minds and bodies. Whatever later theologians may have taught, the original spirit of Christianity implies that life is more than preparation for the hereafter.

The safety movement is a most practical phase of Christianity. We cannot imagine the conservation of the individual receiving much consideration under any system which fostered a passionless and fatalistic contemplation of the eternal truths. In spite of the shortcomings of its followers, Christianity is dynamic and essentially human. It presents a well balanced ideal of both material and spiritual development.

Some things should not be rationalized too completely, and Christmas is one of them. A certain amount of mystery is good for the soul. Christmas fills a real need in uncovering generous feelings which find too little chance for expression under the stresses of life.

Ten Million Safe Hours

ONLY a few years ago one million man-hours without a disabling injury was considered an utter impossibility. But that mark in safety progress was reached long ago and succeeding years have seen new records established.

Now the ten-million mark has been passed. On November 1 the Western Clock Company had operated 10,029,681

safe man-hours, and at the time of going to press no injury had been reported.

Behind this record are all the elements that are recognized as essential in an effective safety program. There has been inspiration from the front office, intelligent supervision, and whole hearted cooperation from the men and women on the job. The management has recognized its responsibility in providing a safe and orderly plant, the foremen have trained and watched over those under them, and the workers have responded to these influences. There has been little of the spectacular in the safety program. But there has been more than thirty years of painstaking and well directed effort which has gathered momentum with the years.

But in spite of the number of records that have been established recently, there is still recognition for the small plant that completes its first year without a disabling injury. The Honor Roll of the National Safety Council is open to any plant or department which exceeds the reasonable minimum of 400,000 man-hours or 200 working days without a lost-time case.

In This Issue

A DIVIDEND of 150 per cent? No, this is not quoted from a stock-selling circular of other days. It was the actual return which the California & Hawaiian Sugar Corp. received on its investment in safety. (Page 9).

The first step in preventing falls is the correction of physical hazards by the management. But after that has been taken care of, the individual has a certain responsibility. To find out what the Pullman workers thought about the prevention of falls, Harry Guilbert canvassed the system and received many interesting thoughts on the subject. (Page 10).

Prehistoric man depended on his own alertness for self preservation; his pampered descendants depend upon the police department and other safeguards established by organized society. So the safety director lies awake nights to think up new ways of keeping men interested in what should be one of their primary interests. (Page 13).

Woodland, Maine, has become known as "The Safety Town," because of the exceptional record of its only industry, The St. Croix Paper Company. This company has operated three years without a disabling injury and has won the grand trophy of *The Paper Industry* for two consecutive years. (Page 15).

Every analysis of serious injuries reveals many that could have been prevented by the wearing of protective clothing. Manufacturers provide equipment much better than that available a few years ago and they are still improving their products. (Page 17).

A motorist may be able to say, "It's a bra' bricht moonlicht nicht," but that won't satisfy the police. New scientific tests eliminate guesswork in determining a driver's absorption of alcohol. (Page 19).

Even the ancients had accidents with hand tools. Archaeologists have dug up chisels with mushroomed heads. (Page 21).

The Managing Director's Page

Safety's New Deal

ALMOST everything in America is now in the process of being remolded nearer to somebody's heart's desire. Many of these plans will eventually be realized but their optimistic sponsors will be disappointed at the slowness with which their hopes are fulfilled.

We in the Safety Movement have found out that public thought and action cannot be changed radically over night. It took centuries of infiltration of humane ideas before our barbarous penal codes were modified. Our progress in all the social sciences has been correspondingly slow. This is not surprising when we consider that right up to our own generation illiteracy has been widely prevalent. Unfortunately, we have many of the ethically illiterate in our social order, as well as those who have never grown up mentally and emotionally. These types complicate our problem of living together. They are not criminals nor mental defectives in the usual sense of the term but they are none the less a problem.

The world seems to be proceeding toward recovery by the trial and error method. Progress has been slow and disappointing. Many people become bitter and disillusioned when they find that glittering formulas and catch words cannot take the place of uninspiring drudgery.

And we may be sure that any effort to remold the world according to our heart's desire will run up against the inborn dislike of human beings at being remolded according to someone else's notions. Yes, we've been through these experiences in our efforts to induce people to correct totally unnecessary hazards and act with due consideration for themselves and their fellow humans.

INTERESTING ITEMS

The National Safety Council is making a study of state laws relating to hours of driving for commercial vehicle operators, and this is being supplemented by a field study by two members of the Headquarters staff. The findings of this study will be published as one of the Council's standard publications early in the new year.

. . .

Committees have recommended that a National Traffic Safety Contest again be organized among cities of the United States for 1935. The Third Annual Contest, which ends December 31, has proved once more the value of this contest.

. . .

Members of the Council at the Cleveland Congress unanimously passed a resolution calling upon President Roosevelt to hold a Governor's Conference at Washington on the national accident problem, with particular emphasis upon automobile accidents. Preliminary preparations for such a meeting are now under way.

. . .

The influence of the increasing use of alcohol on accidents is giving concern to many people. The Council has undertaken a national study of the effect of alcoholic indulgence on motor-vehicle driving. The publicity given to this particular phase of our accident problem will be augmented by a national program of publicity to be started during December.

The patient efforts of successive generations will probably be needed to attain the goal of universal safety but we have already seen what can be done with our limited resources. I am presenting here a blueprint of what I would like to see under a "new deal" for safety.

1. *Responsibility.* The manufacturer of every commodity has a distinct obligation to the public which purchases his products. Every device placed on the market, from washing machines to giant locomotives, should bear the seal of some disinterested agency, guaranteeing it against defects in design or workmanship which would result in injury to the user.

Many people, it is true, are influenced in their buying when a product bears the seal of acceptance of Underwriters Laboratories, Good Housekeeping Institute, or the American Medical Association. Unfortunately, few purchases are made with safety in mind and manufacturers feel there is no demand for this factor. That is a flimsy excuse. Advertising copywriters have made the public demand certain products for trivial and often imaginary merits. Safety has a stronger appeal than most of them realize. A few years ago, when the railroads introduced steel cars and advertised their safety, the public soon came to demand them.

2. *Education.* All formal education, from kindergarten to college, should train the individual to adapt himself to rapidly changing living conditions, especially those created by fast moving vehicles and machinery. We may deplore the emphasis placed upon speed but we cannot prevent its development. Present speeds will be multiplied in the years to come. The Safety Movement must recognize this inevitable fact and adapt itself to changing conditions.

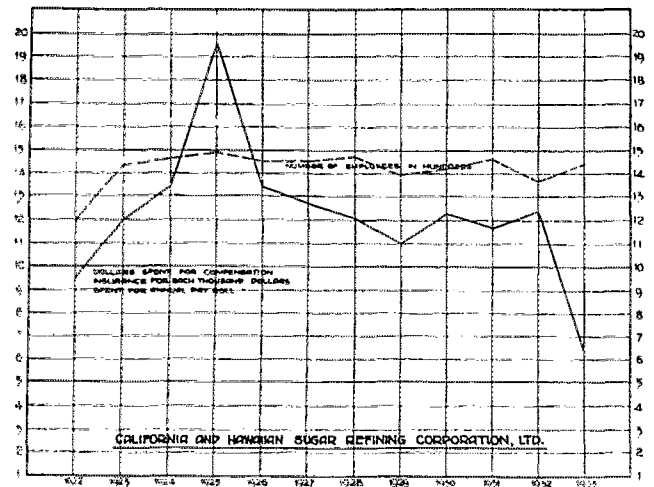
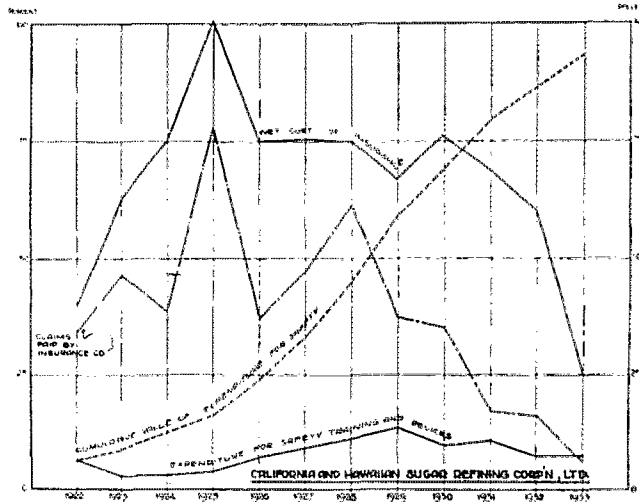
I believe that the operation of an automobile should be taught in every high school. The competent youths can be taught correctly before they are turned loose on the streets, and the hopeless drivers can be detected and labeled. Along with the mechanical side of motor-vehicle operation boys and girls should be taught their responsibilities in traffic.

3. *Recognition.* The employer who conducts his business with due regard for the health and safety of his employees is deserving of the highest honors the public can bestow. Perhaps the most practical form of recognition would be increased patronage. Many companies have found that successful safety work has been a powerful influence for good will in the factory community. In the future a product manufactured without accidents will have a powerful appeal to prospective customers throughout the country.

4. *Government's Part.* The protection of the public on the highways and in public places is recognized as an essential function of government. This involves the employment of engineering skill in overcoming physical hazards, the exercise of police powers where necessary, and education, supervision and control generally of those who use these public places.

M. J. Amoroso

Depression Dividends



By WILLARD SWAIN

The California and Hawaiian Sugar Refining Corp. found that dollars invested in safety brought a return of 150 per cent

THE Plant Engineer sat gloomily in his office after a conference in which the vital need for further drastic economy had been revealed. In came the Safety Engineer.

"Chief, that new installation works beautifully but we need some guards around the lower end of it to cover that exposed gearing and belting. It's dangerous the way it is."

"What will it cost?" demanded the plant engineer.

"About two hundred dollars."

"Too much! It will have to be done for a lot less or not at all. We've been sinking too much money for safety around here, from which we never get any returns. We've got to cut expenses."

"But Chief! You can't save money by exposing your operators to injury. If a man were to lose so much as a finger in that machine it would cost us five times as much as a complete set of guards."

"But the chances are none of the men will lose a finger!" thundered the Plant Engineer. "Don't bother me now! I've got enough to worry about without you coming around talking about men losing their fingers."

The Safety Engineer left the office restraining with difficulty his disgust. Such incidents were not unusual. The Safety Engineer had come to accept as a matter of course a policy of opposition to his plans.

Yet had the Safety Engineer been

alert to his opportunities he would have gone to the Office Manager and taken a look at the records. He'd have gone to the trouble to dig up statistics covering a period of years. From these he could have measured exactly the value of the money that had been spent for safety in the plant.

Such an investigation was recently made by the California and Hawaiian Sugar Refining Corporation. From figures thus revealed it is certain that the safety engineer of that company will have no such difficulties as those described in the hypothetical case above.

Industrial organizations accept as a matter of course an expenditure to protect their employees at work. Most of this money ordinarily is spent for accident insurance. A much smaller sum is usually spent for safety training and safety equipment.

Insurance costs money. So do safety training and safety equipment. Even though both may be of inestimable benefit they are both considered by accountants as items of expense. As items of expense their reduction is the aim of any alert management. But how go about it?

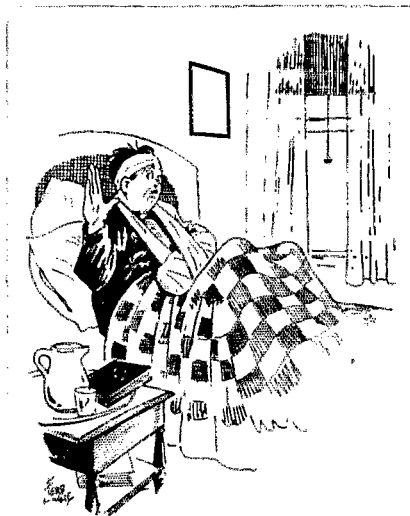
The California and Hawaiian Sugar Refining Corporation has been playing these two costs against each other and finding it highly profitable. During years in which profitable investments have been almost non-existent this sugar company within its own refinery has

found places where dollars could be spent that would yield not simply a conservative 4 per cent but instead have poured forth such glamorous figures as 150 per cent.

Initiative was the principal requirement to develop these sources of profit. Let us reduce this initiative to terms of dollars. In the six years ending 1933 the company spent for safety devices and training \$9,906.62 more than in the six years ending 1927. Officials of the Company got their heads together and went to the trouble to spend this additional sum in a careful way. What did the \$9,906.62 worth of initiative buy? In addition to preventing a large amount of lost working time it brought a reduction of \$24,928.24 in net cost of insurance for the six years ending 1933 as compared to the six years ending 1927. The dividends clear and above all expense were \$15,021.62.

The story behind this saving is worth the telling. About 1922 the company completed a program of modernization and enlargement of its plant at Crockett, California. When finished, the refinery was not only the largest of its kind in existence but it was the most complete and modern from a technical standpoint. Aside from the principal consideration which was to erect a highly efficient refinery, another important consideration was that there would be incorporated into the plant the safest

(Please turn to page 64)



"Have one first-class tumble and you'll never fall again," was one of the proposed remedies.

What does the worker really think about falls? According to this symposium, he actually does think. As might be expected, some of the ideas are practical, some are rather fantastic, but all of them are interesting.

EVERY human being has undoubtedly suffered a more or less severe fall at some time during his life. Therefore, it occurred to me that the personal experiences of the men and women in the Pullman organization would furnish some interesting sidelights on one of industry's most perplexing and costly accident problems.

To get the views of individual workers we bulletined every point in the country, offering cash rewards for the best letters on the subject. "What the worker can do to prevent falls." This was followed up with a letter to every Pullman employee, and this article is a summary of replies from superintendents, foremen, leaders, clerks, conductors, porters, shop men, male and female car cleaners, laundry workers, laborers, seamstresses and maids.

Some of the letters were written with the grammatical finesse and well-organized thought of college professors; others contained practical ideas expressed on paper with obvious difficulty. From this mass of correspondence we compiled a human document. The preponderance of evidence seems to indicate

How Can the Worker

By HARRY

Director of Safety,

that the majority of falls are due to errors of omission or commission, and that with reasonable diligence falls can be prevented. Our collaborators went a step further and prescribed the medicine. Again opinions differed, but the majority revealed a keen understanding of the problem.

The letters abound in human interest. To paraphrase a famous advertising slogan, if you want to find out about falls, "ask the man who has had one." One letter in particular impressed me. The writer said while crossing the tracks he jumped from the car steps, landing on a steam box which broke under the impact. All the bones in his left instep were broken. A rusty spike penetrated the other foot. This poor chap underwent 25 operations and visited the doctor 540 times. Both legs had to be amputated. Today he wears artificial legs just because, as he frankly says, "I didn't take the time to go around the right way."

In anticipating some unique replies, we were not disappointed. Some of the recommendations are rather humorous, but we appreciate them because they were offered in good faith.

One contributor states, "Talking while walking backwards is a common cause of falls." We cannot vouch for this because we have never tried the stunt. "Keep sober and you will never fall" was advised by another writer. His solution disagrees with the familiar proverb that "God takes care of fools and drunkards." Another author says, "Rubber-necking is extremely dangerous." We might add that any form of "necking" is somewhat hazardous. Another avers, "If we keep our eyes on the ground 30 feet ahead of us, we need have no fear of falling."

Corns, bunions, callouses and improperly trimmed toenails are all listed in a microscopic examination of our well-known "dogs." Broken arches, too, weak ankles, and that aggravating affliction called the "trick knee"—the bane of football players. Now, when folks take the trouble to mention such things,

one is led to believe that they have a better understanding of the subject than we realize.

One sincere gent insists that when we walk we do not pick up our feet high enough; we "shuffle along." Another fellow says, "we lift our feet too high, which causes stumbles and tumbles." Who is wrong? The high steppers or the shufflers? Take your choice.

"Go to bed before ten o'clock and you will not fall" counsels another, who adds that we should keep away from evil places.

Many communications reflect a deep spiritual sense, and I am not quoting them flippantly. "When the spirit is



Falls on icy steps and walkways can be prevented by the use of sand, cinders or salt.

infected with willful and malicious sin through such media as philandering, liquor, cigarettes, incorrect eating and sleeping, we do not think properly and therefore we fall down," writes another Pullman man. "Put your trust in God and He will take care of you," urges another, a dear lady whose method of preventing Pullman employees from falling is to pray for them.

Another chap would make falling unlawful. He recommends a stiff jail sentence for anyone who falls or is the

NATIONAL SAFETY NEWS

Prevent Falls?

GUILBERT

The Pullman Company

cause of others falling—rather tough on the “fall guy.”

One gentleman recommends daily practice in tip-toeing which, he states, will develop grace of movement. Those who follow his instructions will never fall from grace. I would be afraid to recommend this method to Pullman men because none of them have much regard for male adagio dancers.

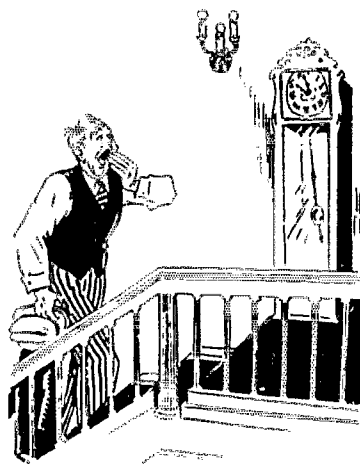
Another writes, “Thy feet hold the secrets of the sin of falling,” and lists the following Bible quotation which, while apropos, will never be endorsed by safety shoe manufacturers—“Thy toes shall be of iron and brass.” (Deuteronomy, 33:25).

A porter with leanings toward theology offers the following: “He will give his angels charge over thee and they will bear thee up lest thou dash thy foot against the stone.” This must refer to colored angels who, in the guise of porters, act as bodyguards to millions of Pullman patrons annually.

Another suggests that each one of us should have a first-class tumble and live to tell about it. “Do it just once,” he says, “and you will never fall again.”

We have listed one group of letters as the “banana peel series.” These com-

munications have to do with little things left on the floors—pencils, fountain pens, jackstraws, matches, nails, marbles, toys and a host of small objects that are often unnoticed. A case is cited wherein a good lady broke her ankle when she skidded on a small seedless grape. Unseen wet spots and grease are also included in this category. Johnny dropped a little castor oil when trying to swallow it too quickly. A few minutes later dad skids on the colorless fluid, falls and breaks his contract. The lesson



Be in bed before 10:00 o'clock and you won't fall.

of good housekeeping is everywhere apparent, also the extreme importance of watching out for little things.

Getting in and out of bed too quickly is listed by several as a cause of many falls. One serious gentleman asserts that, “Nothing much can be done about this falling business because folks are born that way, and if they haven't a sense of equilibrium when they arrive on this sphere, it is just too bad. They are simply out of balance.”

Astonishing as it may seem, the drab subject of this article inspired some with poetic muse and resulted in many outbursts in verse and song. Their efforts are pretty good considering the theme.



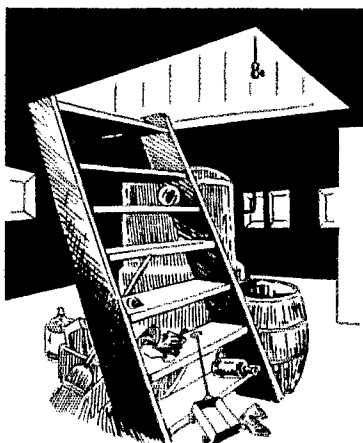
When one is loaded down with bundles pedestrianism becomes a hazardous procedure.

Another friend tells us that “While all the laws of the cosmic realm are intact and hermetically sealed against man's interference, he nevertheless manages to break them.” He insists that we “Listen to the hidden voice within” and summarizes with this interesting paragraph: “Let us through our sense of sight obey the injunction ‘Look’ thereby making our way safe. Then let us apply our emergency brake ‘Stop’ and our reward will be life, and upon the great musical keyboard, let us heed the vibration of the beautiful note ‘Listen’.” Please page the Kingfish.

Another recommends the reading of the Ten Commandments and the Sermon on the Mount as a remedy for falls which, in his judgment, “Are but the workings of the stern law of Divine Compensation. Past m'sdeeds must be accounted for,” he writes, and there was a nice little personal touch in his concluding sentence: “God bless you for your efforts, Mr. Guilbert. Perhaps some day you will turn your mind to spiritual thoughts.” Ouch!

The replies as a whole reveal an intelligent grasp of the subject and a keen insight into human nature. For example: The underlying reason for falls while getting on and off trains. Most people place the blame on the trains, car steps or step boxes; but our porters in their answers point out the real cause—excitement. The thrill of meeting loved ones; the joy of watching for smiling faces when we should be watching

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If our basement stairs were as conspicuous as the front stairs they would never look like this.



When an electrical circuit is completed through a wet contact more than 12 volts is dangerous. The International Harvester Company has found 6 volts satisfactory for portable lights under such conditions

THERE is a general belief among electricians and those in allied trades that voltages of 110 to 220 are not particularly dangerous and can produce fatal shock only under "extraordinary" conditions. To the mechanic this usually means a "weak heart." A study of the annual reports of the department of gas and electricity of any city will show the fallacy of this belief.

In Chicago during 1933 there were four deaths officially reported from 220 volts or less. There were five in 1932, five in 1931 and three in 1930. We have no means of knowing the number of near fatalities that were not reported to the department.

At McCormick works during the past few years we have had several cases where men were tied up on 220 volts but were released from the circuit before resuscitation was necessary. There was also one case where artificial respiration was applied for an hour before the patient was in condition to be removed to the hospital. These cases were not in particularly hazardous locations. They occurred in shops, engine rooms, sub-stations, etc., and generally occurred

Miniature Voltages for Hazardous Locations

By JOHN M. STEWART

*Electrical and Power Plant Engineer, McCormick Works,
International Harvester Company, Chicago*

in changing a broken bulb in an extension cord. The only serious case occurred on 110 volts, the current passing through the man from his right ear to his left hand. His ear was in contact with the frame of the punch press against which rested a live conductor and his left hand was grasping an air pipe.

Every safety or electrical engineer has known similar cases, and there is scarcely a plant employing an electrical department wherein every day at least one member of the department does not get some part of his anatomy in a low voltage circuit.

About fifteen years ago in one of our plants, a repair man inspecting the interior of a boiler received a severe shock from the 220 volt extension he was using. As usual in this kind of work, the boiler was warm, the man scantily clothed, and wet with sweat. Probably a rather large area of his body was in contact with the boiler drum. With the lighting system in use he could not have had more than 110 volts to ground but it was enough to paralyze everything but his voice. He used this to such good effect that his helper outside the boiler saw his predicament and freed him by pulling the extension cord.

The chief steam engineer demanded rather bitterly that the electrical department do something about it. The electrical department foremen—old timers—told the chief that his gang "couldn't take it," or words to that effect in the slang of 1918-19. The argument continued until the electrical engineer in charge decided to run an actual test to see the voltage at which a man could make his muscles function if he were partly immersed in water. Rough test apparatus was set up, consisting of a variable transformer, galvanized bucket, and a hand electrode. One side of the transformer secondary was attached to the water pail and the other to the electrode.

The hard boiled electrical department were then invited to step up and try it.

The subject grasped the electrode with his left hand and endeavored to pick up a small object from the bottom of the bucket with his right hand. As I remember it, the test was tried on four men, and the conclusions were that a man could take only from 12 to 20 volts under these conditions and retain control of his muscles. We decided that six volts would be safe beyond question and adopted this as standard for such locations.

Recently we have held another series of tests, a little more elaborate than those just mentioned, and covering 18 men. These tests were conducted under the supervision of S. W. Johnson, M.D., whose opinion is as follows:

The obvious conclusion of this series of experiments to determine the voltage at which unsafe, uncontrolled muscular contraction takes place when an electrical circuit is completed through a wet contact is that, regardless of the general health of the man, anything over 12 volts is extremely dangerous. At that voltage, even those in the best physical condition complain of contractions in their hands, arms and shoulders which they could control only with real difficulty.

It must also be borne in mind that these tests were made with the patient expecting an electrical reaction. Certainly, where shock is unexpected, it is reasonable to assume that the muscular reactions would be greater and would include the normal defense reactions of pulling away from the source of the shock.

This substantiates earlier rough tests and confirms the practice we have followed during the past 15 years, that all repair men working inside boilers, man holes, catch basins, sewers, tanks or other locations where a large area of the body may be exposed to ground connections, must use six-volt extension lights.

The extension light equipment consists of a 50 or 75-watt 220 to 6 volt transformer. In boiler rooms these transformers are made a part of the lighting installation, and no other extension lights, except the six-volt, are allowed in the boiler rooms. There is some chance that these six-volt extensions might be

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Keep Them Interested

By C. B. BOULET

Insurance and Safety Department, Wisconsin Public Service Corp.

ANY discussion of ways of maintaining interest in safety is sure to be classed as "old stuff!" Certainly, it is an old problem, but there are, I believe, new solutions to this problem.

Before attempting to discuss the *how* of maintaining interest, let us try to analyze the *why*. Why is it necessary to maintain interest? Why need anyone urge men to be careful or keep them interested in being careful?

In the beginning safety was a purely selfish activity. The Paleolithic and Neolithic man knew for certain one thing; if he was to survive, he must keep safe from the dangers which surrounded him. Sharing the forests with wild animals, early man had time to think only of self preservation. There was no culture, no amusements, no thought of the future or of the past. Protection was the prime need, and to fulfill this need our ancestors fashioned crude weapons from stone. When these weapons seemed to be inadequate protection, early man did not hesitate to do the expedient thing to insure his safety. He took to the trees or sought refuge in dark caves. Self preservation—safety—in those days was the only activity of man.

Yes, the problem of safety is old, as old as the human race. The need to maintain safety interest is not so old. Why has there been a change? Why has the only interest of prehistoric man been relegated to a place in modern civilization where it is only too often ignored?

Man has always been inherently selfish. He is interested in those things which without question affect him. Early man could not afford to forget safety. His existence depended on his own carefulness. Today man is protected to a great extent by society. Police protect his property and his life. Laws give him certain rights and certain activities that he can pursue safely.

As a result, man no longer feels the need of spending all his time giving thought to his protection. He now pursues his occupation, drives his car, attends the movie, listens to the radio, plays golf, and otherwise lives without a thought of self preservation. These

many interests have so diverted his mind from the need of preventing accidents that it has become more and more necessary to so stimulate and so arouse him that he will not fall victim to an accident which the same complex society which has pampered him, creates.

Our problem today is to discover the best stimulants for our present pampered individual.

Who is the Key Man?

For just a moment I would like to refer back to the previous two talks. I want to say emphatically that responsibility for maintaining interest in safety lies with the supervisory force. Show me the superintendent and foreman who are sincerely interested in safety and I will show you a crew or a shop where the men are interested in safety and where the accident curve is below the normal.

First of all, then, in order to keep the man on the job interested, it is absolutely necessary to keep his immediate superior interested.

Some of the means of accomplishing this have already been discussed. I would like to mention one additional item that we have found useful and practical. Each month we send to every foreman and supervisor our Safety News-Letter. This news-letter contains such information as description of accidents, seasonal hazards, excerpts from minutes of safety meetings, timely suggestions, etc. The information is so designed as to give our supervisory people the proper background to direct valuable discussions in safety meetings.

Every safety effort, if successful, must ultimately affect the "man on the job."

Primitive man depended on his own alertness to stay alive. Modern man depends on the police and other defenses set up by society. Our problem today is to find stimulants for these pampered individuals.

It is the man on the job who makes or breaks the safety record. It is useless, therefore, to inaugurate or continue any effort that does not finally influence this key man in the safety program.

It is the failure to fully appreciate this fact that has caused accident prevention efforts oftentimes to fall short of their mark. Take the safety meeting for instance: Is your safety meeting a meeting of, by and for the man on the job, or is it rather an hour set aside for the superintendent or foreman to show his importance? Is it a time when the men discuss their problems, or is it merely an opportunity for a brilliant, or not so brilliant, oratorical demonstration by one of the supervisory force?

The safety meeting should afford an opportunity for men and supervisors to discuss and settle those problems, the solution of which is vital to accident prevention. If the conference method is the secret of supervisory training, it can also be made the answer to successful training of the man on the job. Make the safety meeting *his* meeting. Let him do the talking. Respect his opinions, and, where necessary, diplomatically direct them.

Will They Read Your Posters?

Is your bulletin board an integral part of your accident prevention program? Or, is it merely a display of numerous posters, letters, bulletins, orders, reports and miscellaneous material that no man will take the time to read?

Poster service should be given the attention it deserves by someone who is personally responsible for it. I feel that not more than one poster should be displayed at one time, but that that poster should be selected with the utmost care and to serve a definite purpose. Poster service should be closely coordinated with the balance of the safety program. It should carry messages that tie in with the men's own individual experiences.

Poster service should be alive, as should the entire safety program. Were you so unfortunate as to have an injury due to a fall? If so, naturally the matter of falls, and their causes, was

discussed in your next safety meeting. Did you also display simultaneously, posters relating to this subject? If you did not, you missed an opportunity to definitely create in the minds of your employees a safety consciousness that would go a long way to prevent similar accidents in the future.

In making use of the bulletin board, much can be accomplished with so-called homemade posters. The attractive display of a shattered goggle, a sketch or blue print showing conditions under which a recent accident occurred, photographs that personalize the safety suggestion, a letter signed by the president or general manager carrying a safety message or a newspaper item referring to a safety record or a recent accident all help to make the bulletin board a center of interest rather than merely a collector of dust, soot and cobwebs. Posters should of course be changed often, and the board should be conspicuously located and well lighted.

A tremendous amount of good can be accomplished through visual education by means of the bulletin board. or the accident prevention program can be labeled as out-of-date, time worn and musty by carelessness in this, the show window of the safety department.

Field Supervision

Accident prevention must be woven into the fiber of the modern industrial organization. It cannot be laid over regular operations like veneer, or spread like frosting on a cake. It must be serious, sincere and practical.

In order to keep safety a recognized part of every operation, careful supervision is necessary. It has been our experience that adequate safety supervision cannot be given to the foreman alone. In our organization plan, we supplement the foreman's efforts with the service of a safety engineer. It is his responsibility to attend safety meetings, be with the men on the job as frequently as possible, assist in the investigation of accidents, and in general act in an advisory capacity on all matters pertaining to safety. His visits to all departments, while periodical, are not on a regular set schedule. He can be expected at any time, at any place. He is a practical man who has had practical experience and can talk the language of the man on the job. His contacts are direct with both the foreman and the men. I believe this constant contact, with discussions of hazards and unsafe practices, does much to maintain a live interest in safety work. It helps



By W. W. WILLIAMS

"BILL, do you think our safety committee fully understands its job? That last report was devoted almost entirely to physical hazards.

"Sure, they're important but how about the unsafe practices? Why not give them some attention too? You know and I know that you can hardly walk through a plant this size without seeing some fellow inviting injury through unsafe methods of work. What are you fellows doing about that?

"Plant morale is the thing that will put your safety ideas across. You believe there is a real need for the committee, don't you? And it thrives when there is plenty of work to be done. Well, your big job is to maintain interest, and you'll have to do it without us killing somebody every week.

"A tough job? Sure it is, but it can be done. In these troublesome times, the committee is the best of all mediums for promoting a better relationship between the men and the management. It can render a real service to both of them and it would be a crime to fall down on the job.

"Bill, your big job is education and stimulation of interest."

develop that safety consciousness in each employee that makes him ask before starting any job, "Is it safe?" "How can it be made safe?"

It is imperative that no serious accident go without investigation that definitely locates the cause, the responsibility, and makes positive recommendations on ways to eliminate similar accidents in the future.

These investigations must be fair, but at the same time, must be thorough and uncompromising. They must develop definite conclusions and these conclusions must be made known.

To illustrate: I recall a certain company with a rather high frequency. Investigation of accidents on that particular property seems to have one objective—"blame no one." In cases of fatalities, full responsibility is usually placed on the deceased. In other serious accidents the cause is usually found to have been "unavoidable." Accidents

continue. Why? The reason is self evident. It is an unpleasant task to place even part of the responsibility for a man's death on some other members of the organization. It is much easier to blame the dead man who can "tell no tale," but this policy permits the cause of the accident to die in the files, to go without publicity, and, ultimately, there is another accident and someone else pays the price for lack of moral courage on the part of the investigators. Fair investigations are important if interest is to be maintained. You may be sure that the men on the job know who was responsible, and when that responsibility is not placed, the accident prevention program becomes a spineless jelly fish and loses prestige and confidence among the workers.

Inspections

Routine inspections of the plant and premises to bring to light unsafe conditions and practices should be assigned to the man on the job. Experience indicates that properly directed and supervised inspections do much to teach the fundamentals of accident prevention. It is of course essential that suggestions that are made be given careful consideration. In each case the matter of correcting the condition noted should be discussed with the inspector and the suggestion complied with, or reason for its rejection given. Inspectors should be changed monthly in order to give numerous men the training that seems so desirable. It is but natural that a man's interest in safety will increase with his knowledge of its technical aspects. He will not cease to be on the lookout for unsafe conditions, even after his term as inspector expires.

Don't Forget the Credit

Too often the credit for a good record is given to the safety department or the supervisory forces. While it is true that some of the credit is due these people it must not be forgotten that the man on the job is the key man so far as the ultimate record is concerned.

Failure to give him credit or recognition, both collectively and individually will dampen his future efforts to stop accidents. Credit can be given through the use of the bulletin boards, through personal letters from the management by means of a dinner, or the passing of cigars. His interest in a continued good record will be proportional to the joy of accomplishment he receives from past records. This joy can be found only through recognition.

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Our Town Is Known for Its Safe Mill

By F. L. IRVIN

Supervisor of Employment, St. Croix Paper Company.

THE success of the St. Croix Paper Company in its safety efforts has rightly won for the town of Woodland, Maine, the designation, "The Safety Town." This paper company is the only industry in Woodland and upon it the population of 1800 depends for its livelihood. Woodland is "Way Down East," situated on the St. Croix River in an isolated section of Northeastern Maine and adjacent to the Canadian Border. The mill site was chosen because of its almost unlimited supply of woodlands and an abundance of water power in the St. Croix River.

The construction of the St. Croix Paper Company's mill began in 1905, and in September 1906 produced its first news-print paper. Two years later, a third machine was installed to meet the increased demand. The daily capacity of the three machines totals 204 tons.

This company in the manufacture of its product performs every operation of the process from the felling of the trees to the finished roll of newsprint paper. For its own use, it manufactures daily 180 tons of ground wood pulp and 45 tons of sulphite pulp. Two of its paper machines run at an average of 800 feet per minute and the other 725 feet per minute. The main equipment of its pulp mills are 25 three-pocket mechanical grinders, two 15-ton digesters, and a battery of pulp screens. It has its own hydro-electric plant, located twelve miles up-river, which generates power not only for mill operation but for town lighting as well.

Because of its early construction, it cannot be said that the plant's physical condition is modern. Its buildings (90 percent steel, concrete and brick and 10 percent wooden) cover a greater area than a modern 200-ton newsprint mill. However, the management has kept pace with the march of progress and has installed up-to-date equipment throughout the entire plant so necessary for meeting the keen competition in the newsprint industry. It has been its

policy in all its improvements to "build-in" safety, no job being completed until its hazards, if any, are eliminated.

The working personnel of a newsprint mill has more hazardous jobs than are found in mills manufacturing other grades of paper. A variety of operations that call for heavy and dangerous work are necessary in the process of the physical change from the tree to a sheet of newsprint paper.

The workmen who handle the wood have a particularly hazardous job, especially during the winter season. During the winter, more than 10,000 cords are unloaded from freight cars, which are set on a high and long trestle. The wood

handlers walk up the narrow walkway of the trestle, covered often with snow and ice, move heavy iron chutes to and from the doors of the freight cars, and, further, have to be extremely cautious getting in and out of the cars. While unloading wood in proximity of the doorways, they use lifebelts. Other wood handlers pick two-foot blocks of wood from a frozen pile of 25,000 cords each year from November until May. They have to exercise extreme watchfulness on that job in order to be ever ready to move to safety from slides of the pile which occur quite frequently, especially in early spring. The handling of logs and four-foot wood from the river in the summer, sawing them into two-foot lengths, and conveying them through the mill are operations that are possible accident-makers.

The yard crew, which averages about 35 men, does a class of unskilled work that is heavy and monotonous and requires physical strength. This work consists of shoveling coal and sulphur, the handling and moving of materials such as heavy machinery, lumber, brick, cement, lime rock, etc.

The construction and maintenance crews perform hazardous work each day. For instance, there is the electrical department of 23 men which has duties involving the care of three generators of 4000 k.w. and three of 1200 k.w., 12 miles of 33,000 volt transmission line, 12 miles of electric distribution lines in town, and over 300 motors varying from 1/4 to 1800 h.p. This department's outstanding safety performance of not having a single lost-time accident since November 18, 1926, is deserving of mention.

In the steam generating plant, a crew of 20 men operate five coal-fired units for a total capacity of 6000 b.h.p. at pressures as high as 450 pounds and a temperature of 725 degrees F., one electric steam generator rated at 6000 k.w., 6600 volts and 18 turbines, sizes varying from 5 to 5000 h.p. In addition, it

ST. CROIX PAPER COMPANY
246 Washington Street
Boston, Massachusetts

July 11, 1934

Mr. L. J. Parant, Vice President
and General Manager
St. Croix Paper Company
Woodland, Maine
My dear Mr. Parant:

I want to take this occasion to congratulate you and, through you, the men who have worked with you and all the employees of the St. Croix Paper Company, upon the remarkable safety record you have achieved.

Out of the 82 mills, both in the United States and Canada, that entered the National Safety Council Contest, I understand that the St. Croix mill is the only one in Groups A, B and C that has a perfect record. This certainly shows a great effort on the part of everyone in the employ of the St. Croix mill. But perhaps more remarkable than that is the No-Accident performance, involving an average of 369 employees, which began on Sept. 22, 1931, and which, to date, is without a single disabling injury.

I am also glad to learn that the State of Maine has had a Safety Contest, which started on January 1, 1934 and ended June 30, 1934, and that you will probably be the winner of this, too.

In behalf of the officers and directors of the St. Croix Paper Company, I congratulate each and everyone of you.

Very truly yours,
Arthur L. Hobson, President.

does the ordinary maintenance work of retubing boilers, replacing Taylor stoker fronts, cleaning units, etc.

Carpenters, millwrights, pipers, machinists, blacksmiths, bricklayers, oilers, painters and concrete-workers engage in work that takes them in and about moving machinery and on high scaffolds. Much of their work is of a heavy nature.

Sixty men work on the three paper machines, which operate 24 hours of the day. The high speeds of the machines require the men to move quickly when there is a "break" in the paper. A misstep or mis-handling can cause a serious accident. For that reason it is essential that a paper maker on a newsprint paper machine be highly trained in safe practices.

The finished product is handled by a crew of 15 men, skilled in the handling of rolls of newsprint, the majority of which weigh 1200 pounds. The rolls are trucked with stevedore trucks from the finishing room and loaded into freight cars. It is a fast and heavy job and unless the truckmen are always vigilant in the handling of the rolls, serious mishaps are possible.

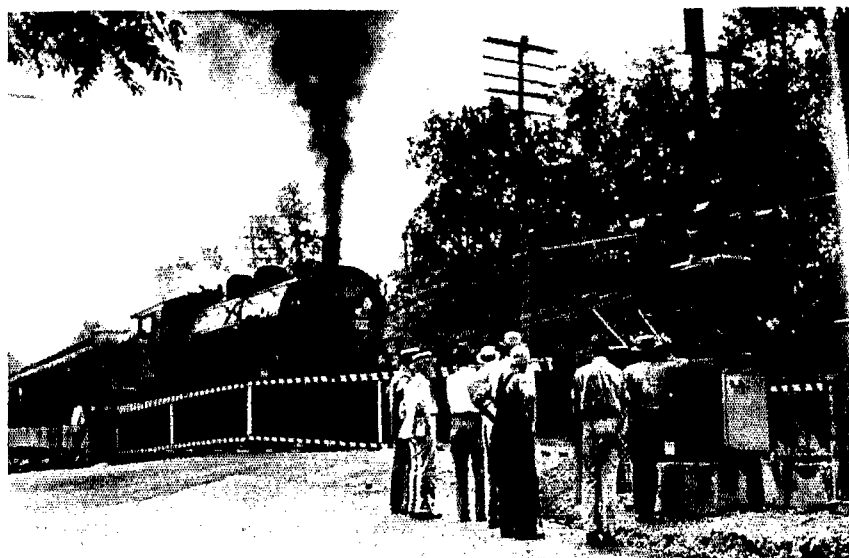
In general, practically every employee of the newsprint mill has to give real thought to his own safety and his fellow-workers as well because of the type of work in the process of manufacture, the maintenance of equipment and buildings, new construction, and the handling of materials and machinery.

Organized work in safety at the St. Croix Mill began in January, 1927, with the creation of a Safety Department. A few years previously, the company had joined the National Safety Council but not until 1927 had any real attempt been made to reduce accidents. The following record of lost-time accidents, showing also the number of employees, shows the results of that organized effort:

Year	Average No. Employees	No. Lost-Time Accidents
1926	503	85
1927	468	52
1928	431	8
1929	405	6
1930	448	4
1931	409	7
1932	364	None
1933	364	None
1934 (to date)	374	None

Especially during these past nine years has the St. Croix Paper Company realized its duty to provide safe working conditions for its employees. No expense is spared in removing "danger spots," many of which have been suggested by the employees through the medium of a safety suggestion system.

New Gates Protect Crossing



Shown in the above illustration is one of the five sets of automatic crossing gates installed at Anchorage, Ky., at crossings on the Louisville & Nashville Railroad. The gates were purchased by the town at a cost of approximately \$10,000. Thirty per cent of the funds were provided by the PWA. In the picture officials of the railroad the PWA, the town and the gate manufacturer are making a final inspection of the installation.

The gate differs from former similar models in that only one motor in a single standard at each crossing is necessary to operate from two to four gate arms. The 36-foot arms are operated by a piston

acting within a cylinder to which the fluid is transmitted from a hydraulic pump to a central master control unit. The gate arms automatically begin lowering about fifteen seconds before an oncoming train reaches the crossing, during which time an electric bell cautions the motorist.

Other features of the new gate are that a vehicle caught on the tracks when the gates are lowered can push the gate open for exit, but a vehicle cannot push the gate inward to get on the track. Motorists are not delayed at crossings while switch engines are working, as the gate raises automatically when the work engine is at a standstill.

Besides safeguarding the plant against mechanical hazards, a very important program of educational work, varied and comprehensive, is carried on to teach and train the employees in the safe methods of work. This includes in part:

1. The poster services of the National Safety Council and a commercial service. The pictures and bulletins from these two sources are placed on the bulletin boards in conspicuous places throughout the mill.

2. Distribution to every employee of a copy of *The Safe Worker*, a monthly publication of the National Safety Council; and at Christmas time, each employee is presented with a National Safety Council calendar.

3. General safety hints and personal messages are printed on small cards and placed in every pay envelope each week.

4. A monthly plant newspaper: Special space is devoted to articles pertaining to safety problems, the need of safety, general news of

safety accomplishments in different departments, etc.

5. The National Safety Council's course of safety instruction for school children is subscribed for each year by the company for use in the local public schools. This serves to recognize that the school children of today are the workers of tomorrow.

The safety program has been greatly influenced by the interest taken in it by the management of the company. As a matter of fact, the management insists that safety is a part of production and consequently, holds each foreman responsible for the safe working of his crew. With that mutual understanding, every foreman at the St. Croix Mill is a red-hot safety enthusiast. Each guides the working habits of his crew, wants safety and gets it by good foremanship methods. The foreman is the key man.

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NATIONAL SAFETY NEWS

From Head to Foot

By H. R. BIXLER

*Industrial Relations and Employment Department,
Union Carbide Company*

A NY analysis of industrial accidents is sure to reveal the importance of those injuries in which safety clothing would play a preventive part. It is desirable to study each job carefully before a definite selection of protective clothing is made so that the greatest degree of protection for the specific hazards of the job may be secured.

One of the major considerations in the design of protective clothing for special uses is the materials of which they are made. A specialist in this field has made the following comments:

"Primarily three types of materials are used in the manufacture of safety apparel. These are leather, asbestos, and fireproof duck. The word 'fireproof' is really a misnomer, since such duck should really be called flameproof. Flameproof duck will not ignite when exposed to flame, but a process of oxidation will eventually consume the cotton in the duck. Duck is the cheapest of the three substances and is suitable where impervious protection is not required.

"Many people think that asbestos is a heat insulator; actually it is a conductor. In this respect asbestos may be compared to any other mineral. It will not conduct heat as readily as metals but it will conduct some heat. Such equipment, therefore, should have some insulation, such as a cotton lining in an asbestos glove. Asbestos, of course, is absolutely fireproof. There is a small percentage of cotton used in the fabrication of asbestos which will oxidize, although without the danger of direct combustion.

Leather is Serviceable

"Leather, for most safety apparel, is either cowhide or horsehide. It can be either grain or split leather. Grain leather is comparable to the tough outer layer of skin, while split leather may be compared to the bottom layer. Grain leather has a shorter fiber, and is therefore softer and more flexible. Split leather will wear as well, if not longer than grain leather. In tanning leather it is necessary to use oil, but there

Protective equipment has been designed for every part of the human body and it is constantly being improved

should not be too much of it. Such leathers deteriorate rapidly when used for hot operations."

In the estimation of this specialist, leather is best and most durable article for general wear and hard usage. It is recommended for general purposes, except where its weight will tire the worker or make him uncomfortably hot while working.

Many specially designed types of protective clothing are made of rubber or a composition containing rubber. Such equipment is used in operations involving acids, fumes, work in wet areas, and handling liquids. Special rubber equipment has been designed for electrical hazards, and includes rubber gloves, boots, overshoes, sleeves, coats and hats, also line-covering material, such as blankets, line hose, insulator hoods and protectors.

Felt is used in some types of clothing for protection against heat, where duck, asbestos or leather is not desirable. One concern having electric furnace operations uses paper-mill pressed felt to make jackets and trousers for furnace operators because of its protective features, comfort, and relatively low cost. This material is pure wool felt and offers good protection against radiated heat on account of low thermal conductivity. It will burn, but very slowly and with no flame.

Reversing the title of this article and beginning with the lower extremities, we find the feet and legs of industrial workers protected by safety shoes, toe guards, spats, leggings, knee pads, thigh guards and aprons. Protection for the hands and arms ordinarily includes safety gloves, hand pads, mittens, finger cots, arm protectors, sleeves, jackets and the like. In addition, for complete body

protection are protective suits consisting of jacket and pants, or complete jumper suits. Ointments are also used for skin protection in operations involving acids, fumes and vapors.

Face and head protection is receiving increasing attention because of the hazards involving the eyes and respiratory organs. While eye protection has long been a part of industrial accident prevention work, the necessity for the use of goggles has not yet been fully recognized since we learn from the National Safety Council that there were 300,000 industrial eye injuries in the United States during 1933, each resulting in at least one day of disability. Of this number 70,000 were compensable, which means seven days or more of lost time. In 2,000 cases there was complete loss of vision in one eye, while 75 persons lost the sight of both eyes. The total loss of 3,600,000 days per year was attended with a total cost in time lost, compensation and medical bills of approximately \$50,000,000.

We are told that 70 per cent of all body movements are controlled largely by what we see, and that one-fourth of our basic body energy is consumed in this task. Everyone should understand the vital importance of good eyesight, the need for protecting it with the desirability of assisting poor vision with expertly fitted glasses, and the necessity for using the eyes at all times as a guide to our movements, so as to minimize the hazards of slipping, tripping, or striking against objects. Manufacturers of optical goods have studied conditions intensively during recent years, improving their products to the extent that many previously justifiable objections to goggles have been overcome.

He Valued His Spectacles

We all know, however, that many workmen do not realize the necessity of utilizing the means of eye protection provided by management. This is illustrated by a story appearing in a recent news-letter of the Construction Section of the National Safety Council. A machinist at an emery wheel, who was

wearing a pair of coverall safety goggles, was asked the reason. He replied that he had ruined a ten-dollar pair of spectacles before he started wearing the goggles. The hot sparks had pitted the lenses. When asked whether he had worn goggles before he had glasses he replied "no." Apparently he valued a ten-dollar pair of spectacles more than a pair of priceless eyes. It has long been a problem to enforce the use of goggles where only marginal protection is required.

Classifying the Hazards

Perhaps the most authoritative source of information on face and head protection is the Head and Eyes Safety Code, which is now being revised under the supervision of the American Standards Association. The title of the code is being changed to "American Standard Safety Code for Protection to Heads, Eyes and Respiratory Organs."

Processes in which protection for the head, eyes or respiratory organs are required are divided into 12 groups, as follows:

GROUP A. Processes where protection from relatively large flying objects is required. *Examples:* chipping, calking, some riveting operations, and sledging in quarries.

GROUP B. Processes requiring protection from dust and small flying objects. *Examples:* scaling and grinding of metals, stone dressing where quartz is not involved, and some wood-working operations.

GROUP C. Operations requiring protection from dust and wind. *Examples:* automobile driving, airplane piloting, and electric spot and butt welding where there is no exposure to radiant energy.

GROUP D. Processes requiring protection from splashing metal. *Examples:* babbitting, pouring lead joints for cast-iron pipes, casting hot metal, and dipping in hot metal baths.

GROUP E. Processes requiring protection from gases, fumes and liquids. *Examples:* handling acids and caustics, dipping in galvanizing tanks, and some japanning operations.

GROUP F. Processes requiring protection against dust and an excessive amount of dust and small flying particles. *Example:* sand-blasting.

GROUP G. Operations requiring protection from reflected light or glare. *Examples:* exposure to reflected light from snow covered ground, and from roofs and roads.

GROUP H. Processes requiring protection from injurious radiant energy with a moderate reduction of intensity of visible radiant energy. *Examples:* Oxy-acetylene and oxy-hydrogen welding and cutting, open hearth, Bessemer and crucible steel making, furnace work, electric resistance welding, brazing, and testing of lamps, tending electric arc furnaces.

GROUP I. Processes requiring protection from injurious radiant energy with a large reduction of visible radiant energy. *Example:* electric arc welding and cutting.

GROUP J. Processes where protection from dust, smoke, mists or fumes is necessary to prevent solid or liquid particles from entering the respiratory tract. *Examples:* lead storage battery manufacture, granite cutting, quartz grinding, sanding woodwork, spray coating (lead or siliceous materials), fire fighting.

GROUP K. Processes where it is necessary to prevent gases or vapors from entering the respiratory tract because of poisonous or chemical action involved. *Examples:* cleaning petroleum storage tanks, spray painting with poisonous volatile materials, exposure to carbon monoxide, or to ammonia or mercury vapor.

GROUP L. Operations where protection to the head from falling objects is required. *Examples:* Some conditions of building construction, mining, and shipbuilding.

Protection for the head should be provided in certain other kinds of work. Caps or nets covering the hair are recommended for operators in shops where there is moving machinery or power-transmission apparatus in which hair might become entangled.

Defining the Protectors

The following definitions, as given in the proposed revisions of this code, should be kept in mind when considering protective devices:

PROTECTOR. A device which is placed in front of the eyes, face, or head to afford protection from the hazards in industrial processes or from the natural elements.

GOGGLES. An optical device worn in front of the eyes, whose predominant function is the protection of the eyes only.

FACE MASK. A device worn before the eyes and a portion or all of the face, whose predominant function is protection to the eyes and face.

HELMET. A rigid device which shields the eyes, face, neck, and a portion or all of the other parts of the head, and is held in place by suitable means.

HOOD. A non-rigid device which completely covers the head, neck and portions of the shoulders so as to exclude dust and flying particles.

SHIELD. A device to be held in the hand, or supported without the aid of the operator, whose predominant function is protection to the eyes and face.

RESPIRATOR. A device comprising a mechanical filter for inhaled air, so arranged that when in position on the wearer's face, the inhaled air drawn from the surrounding air will be comparatively free from solid and liquid particles.

GAS MASK. A device to be worn on the face, and so arranged that the inhaled air is conveyed through a tube connected to a canister or a cartridge which mechanically and/or chemically cleans it. Goggles may also be included.

HOSE MASK. A device to be worn on the face and so arranged that the inhaled air is conveyed through a hose from a source of clean air instead of from the immediately surrounding atmosphere. It may also include goggles.

Our attention during the last few years has been drawn to the increasing concern for respiratory protection, relating especially to those diseases classified as silicosis, asbestosis, anthracosis and siderosis, signifying lung conditions produced by silica, asbestos, coal and iron particles respectively. Since silicosis is by far the most important of these diseases, the following information, published by the Industrial Health Section of the Metropolitan Life Insurance Company, will be of interest:

"Among the devices designed for the protection of the individual worker against dusts, by far the most important is the positive pressure respirator. In particularly dusty operations, such as sandblasting and metal grinding, where the particles may injure the face, the helmet type of respirator is preferred. Whatever type of air mask is worn, it is essential that the apparatus be provided with an adequate air supply drawn from a pure, dust-free source.

"Some authorities recommend as much as six cubic feet per minute, while others are of the opinion that respirators constructed on modern principles are efficient when used with but one or two cubic feet per minute. The source of air supply is equally important. The mistake is frequently made of taking the air directly from a compressed air line without providing the air intake to compressors with a filter capable of removing the fine dust particles. Sometimes the air of the compressed air line is wet and oily, and there may be a possibility of carbon monoxide poisoning due to oil being partially burned in a reciprocating piston-type compressor. The air, under these conditions, is unsuited for breathing, and it becomes necessary to install a small rotary compressor blower.

Comfort and Efficiency

"Respirators should be selected for comfort to the wearer and for their protective efficiency. The manufacture should be required to submit a laboratory report of the efficiency of his device for the purpose selected. Although respirators should never be regarded as substitutes for local exhaust ventilation, they provide a practicable means of protection in dusty operations carried on only occasionally or for short periods of time.

"The positive air pressure type of respirator, unfortunately, cannot be worn by workers engaged in operation requiring freedom to move about un-

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Has He Been Drinking?

By H. A. HEISE, M.D.

Columbia Hospital, Milwaukee, Wis.

PRESENT day statistics on the relationship of alcohol to automobile accidents are practically worthless. Even though a person may be obviously drunk, arresting officers may hesitate to prefer charges of intoxication because they know that they cannot prove their assertions in court; since every symptom of drunkenness may be simulated by some pathological condition. Or a person may be obviously drunk at the time of the accident, but may suddenly sober up to such an extent that he can satisfactorily pass a test for sobriety.

Also, it is obvious that persons severely injured or killed cannot be examined by the usual methods. Furthermore, it would be necessary to know the normal behavior of every individual before one could definitely ascribe his peculiarities to alcohol. Finally, the psychological inferiority produced by small amounts of alcohol can be measured only by complicated tests.

Experiments performed on volunteers indicate a measurable loss of efficiency when as little as one ounce of whisky is consumed. This was shown in type-writing experiments, the alcohol increasing speed at the expense of accuracy. Some experiments were performed under actual driving conditions and the subjects were given from five to eight ounces of whisky. It was found that they could perform the routine acts of driving fairly well, but were measurably slow or erratic in applying the brakes, showed poor judgment in avoiding obstacles in the road, were particularly clumsy in backing the car; and most of them were blissfully unconscious that they were driving dangerously.

All of these tests were correlated with an estimation of the amount of alcohol in the blood or urine at frequent intervals; and it was found that all persons were psychologically inferior when the alcohol in the blood or urine reached 0.02 per cent, that they were visibly changed from the normal at 0.10 per cent and obviously intoxicated at 0.20 per cent. An interesting finding is that a person accustomed to alcohol must usually drink larger quantities than the

When scientific methods replace personal judgment in sobriety tests, our statistics on alcohol and accidents will be much more reliable

novice to arrive at the same percentage of alcohol in the blood; but then they are about equally affected.

After examining about 200 persons charged with drunken driving, using both the routine physical examination and the chemical test, the correlation was found to be so obvious that my colleague, Dr. Halporn, attempted to predict the amount of alcohol to be found in the urine from the physical examination alone. The agreement was found to be remarkably accurate, except in one case in which he estimated 0.30 per cent when the actual amount was only 0.18 per cent. This disagreement was later explained in favor of the laboratory, when a brain injury was found.

The alcohol in body fluids is the most constant finding in all cases of alcoholic intoxication, and thus furnishes scientific confirmation that alcohol may have been responsible for the symptoms. On the other hand, the absence of alcohol, or an amount out of proportion to the physical findings may prevent a serious injustice.

The Test in Action

In Fayette County, Pennsylvania, in 1924, before the chemical test was used, 34 persons accused of drunken driving were found not guilty and 21 found guilty or pleaded guilty. In 100 recent consecutive cases in which the alcohol in the urine exceeded 0.19 per cent by weight, 87 were found guilty or admitted guilt, 6 were pronounced not guilty but directed to pay the costs (meaning, "You are not guilty, but don't do it again"), and 7 were acquitted.

Butler County, Pennsylvania, was unable to get one conviction in 1930, but a later communication from E. H.

Negley, district attorney, states, "The chemical test for alcohol was used in 20 of the 36 cases. During the past 6 months it is used in every case unless the defendant at once pleads guilty. We have not lost a case in which it is used, and it seems to me impossible to lose a case in which it is used."

The method used to test the amount of alcohol in blood or urine is a modification of the one used by Nicloux and depends on the fact that alcohol reduces an acid solution of potassium dichromate, changing the color from orange to blue. Results are obtained which are correct to within 0.01 per cent with the ordinary test, and when traces of alcohol are examined the accuracy is even greater. A series of experiments performed to determine the specificity of the test proved conclusively that none of the substances which have been mentioned as interfering with the test need be considered as changing results in any way.

Survey of Accidents

In order to determine the relationship of alcohol to automobile accidents, an analysis was made of 119 automobile accidents involving injury or death to 216 persons. All but two were treated in the Uniontown Hospital. As Uniontown is a city of 20,000 inhabitants, situated on the National Highway in southwestern Pennsylvania, this two year survey comprises a fair distribution of urban, rural, and tourist traffic accidents. It should be borne in mind that the "alcohol accidents" are those in which a responsible individual had more than 0.02 per cent alcohol in body fluids, an amount which has been shown to cause psychological inferiority, and not necessarily obvious drunkenness. The survey, therefore, deals with the "drinking driver"; and not primarily with the obvious "drunk."

The survey revealed that about 60 per cent of the accidents and 75 per cent of the people injured or killed were in the "alcohol accidents." It was found that while the "non-alcohol accidents" involved slightly more than one person

per accident, the "alcohol accidents" were responsible for injury or death to about two people per accident. Further evidence that the seriousness of the accident is generally proportional to the amount of alcohol in the blood or urine, is shown by the fact that the average percentage of alcohol in the drivers who ran off the road or upset was 0.15 in the non fatal accidents and 0.24 in the fatal cases. In collisions the alcohol per cent of the drinking driver in the non fatal cases averaged 0.21.

From a study of the ages of pedestrians killed or injured, it is found that drivers striking children and old people are usually sober; when a driver strikes a person between the ages of 16 and 60 the pedestrian is most commonly to be found in the alcohol group; but if the pedestrian is sober then the driver is usually found to be "under the influence." In some cases both driver and pedestrian are found to be in the alcohol groups.

An interesting finding is that a sober driver usually has sober passengers in his car, and the non drinking men are rarely found to be passengers when the host is intoxicated.

Women drivers are known to be involved in fewer accidents than would be expected from the known ratio of the number of women drivers to men drivers. This survey offers the explanation that the reason for this finding may lie in the low incidence of drinking women drivers, rather than to superior handling of cars by women.

The unmistakable role of alcohol is shown by comparing the daily incidence of accidents in which non-drinking and drinking drivers are involved. The week end peak is found to be "alcoholic," and not necessarily due to increased traffic. If traffic alone had been responsible, then the non-alcohol accidents would have shown a similar week end rise, but such is not the case.

That darkness is associated with a definite driving hazard is shown by the increase of "non-alcoholic" accidents during the early evening hours. An additional factor may be fatigue, the effects of which are very similar to alcoholic intoxication. The imbiber, however, reaches a much higher peak between 6 and 7 p. m. which is probably the result of the "cocktail hour," and another peak at midnight. In the daylight morning hours almost all accidents are of the non-alcoholic type.

The most despised type of driver is of the "hit and run" variety. In this survey six were apprehended and were

examined. All were found to harbor an unusual amount of alcohol, the average being 0.30 per cent. It is possible that alcoholic intoxication adds an additional factor of fear of apprehension, or the alcohol may make capture easier, as in one case in which zigzag tracks in the snow led from the scene of the accident to the spot where the car was found.

Conclusions

1. Education of the public regarding the role of alcohol in automobile accidents may decrease the number of accidents.
2. The chemical test for alcohol in body fluids has been proved to be practical in confirming alcoholic intoxication; and also may prove that certain symptoms are not due to alcohol. Conviction of drunken drivers is practically assured, and persons who are not intoxicated are protected by the chemical test.
3. A survey of 119 consecutive accidents demanding hospital treatment for the injured or resulting in death indicates strongly that present statistics regarding the role of alcohol in automobile accidents are greatly in need of revision.

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Switch Lessens Danger of Fire in Crashes

FIRES resulting from an airplane crash or an automobile accident may now be prevented by an automatic safety switch, invented by Captain H. M. Salmond, of the Royal Air Force of the British Army, according to *The Week's Science*. Usually such fires are caused by failure to turn off the ignition switch when a crash is imminent, or perhaps by a flash from charged wires when they are suddenly broken even though the ignition switch has been turned off.

To avoid such chances, Captain Salmond's invention leads all electric circuits through a special switch, all wires becoming dead as soon as the switch is opened. The switch is connected to a heavy pendulum which opens the switch automatically. Ordinary jars or sudden turns of plane or automobile do not affect the pendulum, since it is held fast by a link of wire or other thin material which will withstand such stress, but under the greater force of an actual crash or collision the pendulum is released and swings. This instantly breaks all electric connections, so that no spark can occur.

Of course, fires may still be caused in airplane or automobile if some one is smoking, or because matches are set off by friction; but this safety switch seems an effective preventive of most fires.

NATIONAL SAFETY NEWS



—Cleveland Plain Dealer.

"Just a little tipsy"—and then!



Simple But Hazardous

By W. T. GRONER

Superintendent, Southwestern Portland Cement Company, Osborn, Ohio

HAND TOOLS are so common and simple that very little thought is given them, and the average person rarely considers them as hazardous. We all have considerable respect for dynamite, pulverized coal and buzz saws, and, probably as a result of extra precautions, we have had fewer accidents with them than with the less spectacular hand tools.

Primitive man created the first hand tool. It was a cobble stone used for a hammer. A stone was selected that would fit well into the hand; pits or shallow depressions for the fingers were worked into the stone, thereby making the grip easier. With these, our remote ancestors worked out their livelihood and protection.

The discovery of ancient hand tools has done much to enrich our knowledge in the progress of civilization. Archaeologists have discovered crude knives without handles made of obsidian rock. Axes of hematite were blocks of mineral crudely shaped to the semblance of a cutting edge and grooved so that the handles could be tied on with thongs. Axes with bronze blades and wood handles were in use approximately four thousand years ago.

Ancient hammers and chisels of iron show the same mushroomed condition on the percussion ends as is so commonly found in the poorly maintained tools of today. This mushroomed condition is a serious hazard to the eyes and all exposed parts of the body, and it proves how slow we are to correct a hazard.

Hand tools have contributed much to human progress but their abuse and misuse are conspicuous accident causes

Shortly after the beginning of the Christian Era, about 50 A.D., Italy produced the wood plane and draw knife very similar to the tools used at the present time.

Hand tools are accredited with having forwarded the progress and civilization of mankind more than any other agency of life. They are used in every trade and activity, as well as in the home. The hammer is undoubtedly the one most used.

Each era of progress brings forth new kinds of tools. The automotive industry in its demand for higher class tools generally is probably the greatest force today for the creation of better made and therefore safer hand tools.

Occasional investigation and recommendation concerning the cause of hand tool accidents have been made, yet the subject has not received the attention given other causes of accidents.

The July Bulletin of the Industrial Commission of Ohio showed hand tools among the three chief causes of injury with a record of 1,817 injuries including one fatality. Handling objects, first place with 3,328, including two fatali-

ties; and machinery second with 3,073 including one fatality. Adding the injuries from hand tools and handling objects makes a total of 5,145 compared to only 3,073 from machinery. These figures are all the more appalling when it is realized by far the greater amount of work is done by machinery.

A large number of avoidable accidents results from the improper use and care of hand tools. The Bureau of Statistics of the New York State Department of Labor shows that 7,389 persons received compensation in one year for injuries from hand tools. The total amount paid those injured for their loss of time from work was \$1,574,455. Hammers caused most — nearly one-third of all permanent injuries, and over 1,000 temporary ones. Knives caused the next largest number of injuries, and the lowest on the list of 28 hand tools causing injuries is the can opener.

There were 15 deaths distributed as follows: from hammers 3; knives 3; axes 1; wrenches 4; crowbars 1; jacks 2; and tongs 1. In ten of these cases the original injury was a cut which became infected and caused the worker's death.

The foregoing figures cover only those injuries which caused more than one week's loss of time. Slight accidents where less time was lost were not recorded, although they were much more numerous.

The Bureau also made an analysis of 100 investigated lost-time accidents from hand tools. Out of 28 activities the

machine shop led with 18, automobile repairs second with eight, and electrical contracting, public utilities and wood-working tied for third place with six each.

The 100 accidents caused 5,124 days of lost time. Tools having highest frequency of accidents were wrenches 17, hammers 14, knives 10, screwdrivers 7, and sledge hammers 5.

Primary causes of the 100 accidents were:

Slipping tools	32
Insecurely or loosely held work which caused tools to slip or glance	11
Chips flaking from tools	10
Glancing tools	9
Excessive pressure on tools causing them to break or slip	8
Body and limbs in line with the travel of such tools as the axe or sledge	7
Piping used for added leverage on wrenches	7
Wrongly held tools	5
Striking hardened steel with hardened steel	5
Handles coming off machinist files	2
Handles breaking off machinist files	1
Badly balanced tools	2
Infected blisters created by tool handles	1

These accidents were studied to determine the responsibility. It was found that employers were responsible for 46 cases, workers for 34, and in 20 cases the responsibility was shared by the injured employee, the employer or fellow workers. In practically every case, the possibility of injury would have been greatly lessened had those concerned shown any forethought.

Each year I have read with much interest the reports of the Portland Cement Association giving the names of cement companies that finished the year without a lost-time accident, and I try to visualize the joy and satisfaction that comes to the members of the organization in receiving their trophy. Then I read with equal interest, but with an entirely different feeling, the list of those companies who lost the year's record by having only one lost-time accident.

And while I always expected that some January first I would experience the joy of realizing that our own organization had completed a full year without a lost-time accident, I never even dreamed that we would lose a year's record by only one accident. However, we were to experience both the bitter and the sweet.

We were still pointing proudly to our fine trophy won by completing the year 1931 without an accident when, after having completed 10 months and 11 days of 1932, a hand tool accident spoiled our record. Not only for that year, but as we have had a clear record

since, it was the only blot for a period of 3 years and 9 months.

On October 11, 1932, one of our most careful workers evidently had an off moment mentally for while closing a hopper bottom car door with a wrench that was believed to be safe, the handle that had been purposely bent to enable the operator to obtain a better leverage, turned about a quarter turn, catching the operator's little finger on his right hand between the handle and the smooth side of the hopper, breaking the bone between the second and third joint. The skin was not cut or broken or even discolored. The fact that the finger had been broken in the same place several years before when the victim had been thrown off of a horse did not alter the case. The bone had been broken and so had our record. Down went our safety flag and with it the high spirits of our organization.

While it is comparatively easy to equip machines effectively with safeguards, so far no technique has been worked out for the control of accidents from hand tools that is at all comparable with the technique for the control of machine hazards. Thus it is imperative that we increase our efforts to control the human element through training.

In the case of the broken finger from the car closing bar, we promptly and definitely eliminated that hazard by welding a clamping device to one end of the bar so it cannot turn or slip; however, since the new device is so heavy, we are concerned that an operator might break a foot by dropping it.

Tools That Stand Punishment

Much has been written about the hazards of using hand chisels, punches, etc., that have become mushroomed, and many suggestions have been made for reconditioning these tools. Our method is to make tools that will withstand severe use and even misuse without mushrooming.

While working in a shipyard of The American Shipbuilding Company many years ago, it was estimated that the men using hand chisels spent about one-half of their time going back and forth between the boats and the tool dressing shops, and having injuries from flying pieces treated. The most aggravating thing was to get a chisel that would dub over on the cutting end and mushroom on the shock end; then break off anywhere from three-eighths to an inch and one-half from cutting end. The cause was believed to be bad quality steel, unskilled tool dressers, or both.

I was so curious to find the cause that I got chummy with a so-called tool expert in another shop and inveigled him into teaching me how to dress tools. During all the years since, I have continued under the illusion that I could dress tools until one day about three years ago a man with a "brain truster" appearance came into the office and asked for five minutes' time to explain his method of dressing tools, etc. His story was so good that I arranged for him to make demonstrations in our shop and teach our mechanics.

I had some samples* made to show the uses and abuses that tools made from ordinary low priced tool steel can be subjected to without breaking or mushrooming when properly forged and heat treated.

Sample No. 1 is a cold chisel made from Bethlehem No. 71 alloy tool steel. It costs retail about 22 cents per pound, contains .65 carbon, .60 manganese, and .20 chromium. Immediately after this chisel was heat treated, it was driven through a block of iron cold. The block is one inch thick and it took 53 full blows from a 12 pound sledge to drive it through. The chisel has not since been reground or dressed in any way and it did not mushroom, buckle, or break. The cutting edge is still sharp and in good condition for general work.

One of the things that impressed us most with this type of tool dressing was that tools could be forged very much thinner than with the normal method of dressing, which of course requires a much lighter blow to accomplish a given amount of work and is much more desirable and effective to use than the old blunt type chisel that it was believed necessary to forge thicker and grind more blunt in order to hold up.

Sample No. 2 is a hand punch made from the same grade of steel as No. 1. I had sample No. 3 made to show what can be done with a much cheaper grade of steel when properly forged and heat treated. This hand chisel was forged from an old worn-out apron conveyor link and driven through a piece of cold steel one inch thick, the same as samples No. 1 and No. 2.

We buy the steel in flat bars $\frac{3}{8}$ x $3\frac{1}{4}$ inches. Analysis: Carbon .42-.52; Manganese .85-1.00; Chromium 1.05-1.20, and Vanadium 1.5-2.0. It costs .082 cents per pound. We make practically all of our hand tools from worn-out conveyor links.

*The samples referred to in this article were exhibited by the author before the Cement Section at the Twenty-third Annual Safety Congress.

Lighting the Motorist's Way

By PAUL H. GOODELL

Street Lighting Engineer, General Illumination Engineering Company, Cincinnati, Ohio.

Improved standards of street lighting and motor-vehicle headlighting will help to check the growing hazards of highway travel at night

TO PROVIDE safety and convenience on our public thoroughfares at night through adequate visibility has been the primary purpose of street and highway illumination. Visibility involves not only illumination but human seeing machines as well. Quick, efficient seeing or poor seeing with its strain of undue fatigue may differentiate between life and death on the highway. Because civilization has imposed such critical conditions surrounding visual tasks, visibility must be based upon seeing under actual driving conditions.

An analysis of seeing on streets and highways reveals an almost infinite number of factors associated with present modes of travel which may affect the motorist's ability to see. Of these, the most important are the visual capacity of the individual, nature and degree of illumination, type and condition of road surface, speed, and character of objects which the motorist must distinguish.

*Abstract of a paper read at the Twenty-eighth Annual Convention, Illuminating Engineering Society.

The records of the U. S. Bureau of Public Roads indicate that some 24,000,000 motor vehicles were operated over 153,000 miles of city streets and 110,000 miles of major highways during 1933. From gasoline consumption records and motor-vehicle registrations, the volume of traffic represented was somewhat below that for the years 1929-30-31 but slightly greater than for that of 1932. In accord with the usual experience, however, 31,000 people were killed and over one million non-fatally injured.

Alarming as the general trend may seem, the night accident experience is even worse. Annual reports of the National Safety Council, covering both rural and urban experience, indicate that the ratio of night fatalities to total fatalities is increasing. The pertinent question is "how have changing conditions affected the hazard, and is visibility involved?"

Motor-vehicle hazards based on gasoline consumption and vehicle registrations show a constant increasing trend, although the public expenditure for improving the convenience and safety of public thoroughfares has reached annual sums exceeding two and one-half billion dollars. From the increasing trend of night accidents and from traffic studies which reveal that the hazard per car is four times as great by night as by day, it seems likely that the improved condition of roads has encouraged speeds in excess of visibility conditions.

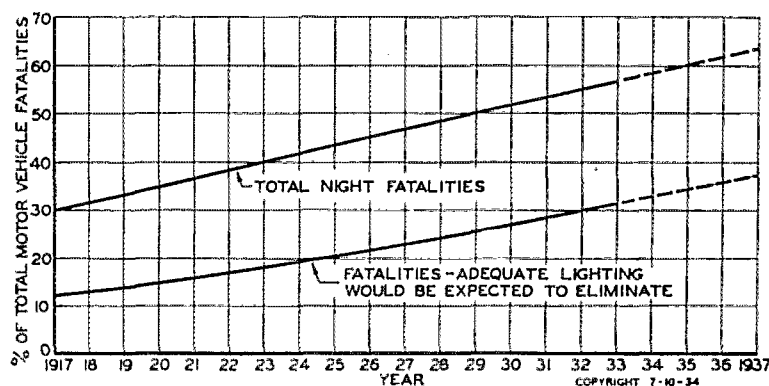
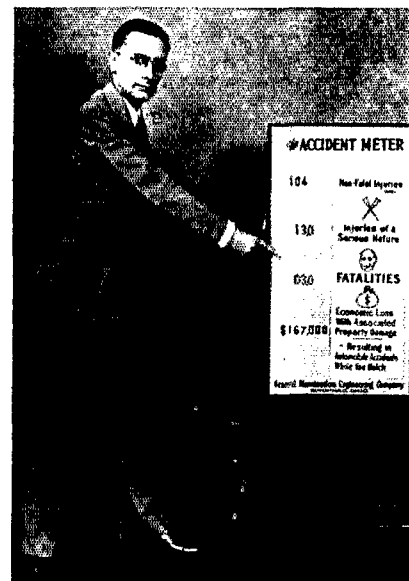


Fig. 1. Driving hazards are four times as great by night as by day but adequate illumination would reduce them to approximately the daytime level.



The author and the "Accident Meter," an ingenious device for visualizing the rate at which accidents are occurring. The meter can be set at any speed and at any ratio for the different classifications of accidents shown.

During the past year studies of motor vehicle speeds have been made by the engineering department of the University of Maryland and the Department of Public Safety of the State of Michigan. These studies indicate that the average speed of travel on improved highways is 43.3 miles per hour during daylight hours and 41.5 miles per hour at night. The Michigan studies further show that 10 per cent of the traffic was traveling at speeds greater than 60 miles per hour, and since the general trend has been constantly increasing, it is quite likely that future considerations for safety will have to take even greater speeds into account. If visibility is to be adequate for such speeds, it is imperative that the motorist be able to distinguish objects on the road at a distance greater than that required to stop his car.

To determine the distance required to stop a motor vehicle at various speeds of travel introduces such variable conditions as type of road surface, condition (wet, icy or muddy), grade (up or down), condition of brakes and tires. There are few cases when one or more of these conditions do not increase stopping distances. Tests to determine the minimum stopping distance which would be required on dry, level, paved roads

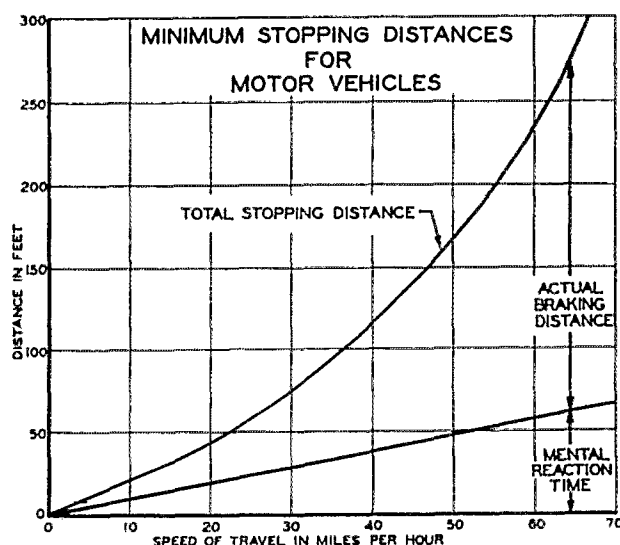


Fig. 2. Do motorists driving at night see in time to stop? These minimum distances required for stopping are invariably exceeded on the highways.

120 per cent by Snellen chart; (3) Speed of test car, varying from stationary position to 60 miles an hour at 10 mile intervals; (4) Type of road surface, varying from new concrete with a light reflection of 25 per cent to bituminous macadam and sheet asphalt with a reflection factor of 4 per cent; (5) Reflection factor of test object, corresponding to pedestrians dressed in dark, medium or light clothing. Test objects were so located that the background was provided by the road surface, not the foliage at the side of the road.

Test Results and Conclusions

Visibility distances increased very rapidly with increases in light intensity up to 6,000 beam candlepower. With improved reflection factor of the test object, visibility distance increases rapidly, particularly for the lower reflection factors. Although the light intensities were measured and held constant for the speed at which observations were to be made, there was a decided decrease in visibility distance with increased speeds of travel. This undoubtedly was due to the greater distance covered during the process of seeing at the higher speeds, and to the increased expenditure of nervous muscular energy required to operate the car. The consequent reduction in energy available for the seeing function as well as the time required for seeing were undoubtedly responsible for the decrease in visibility distance, which at 60 miles per hour was only half of the visibility distance obtained for stationary tests conducted under equivalent conditions.

From the evident importance of beam candlepower, particularly below 6,000, it is desirable that we should know something of the intensities which are in general use on motor vehicles. These intensities are obviously dependent upon the design characteristics of the headlight lens and reflector, the proper adjustment and condition in which the headlights are maintained, type and condition of the lamp employed, and energy supplied to the lamp. In making a survey of several comparatively new cars, it was found that six months' ordinary use, which included cleaning of only the outer lens surface, had resulted in a depreciation of the headlight beam by as much as 60 per cent or more.

The relation of automobile headlighting to visibility is probably most seriously affected by the general condition under which the headlights are operated. That is, the apparent lack of adequate maintenance, lack of proper adjustment and

and with brakes in proper adjustment were recently conducted by the Eastern Conference of Motor Vehicle Commissioners. The results of these tests in conjunction with information recently determined at Massachusetts Institute of Technology regarding time lag required to coordinate mind and muscle in the stopping of an automobile are shown in Fig. 2.

From the minimum conditions indicated, it will be observed that visibility must permit the quick discernment of objects at from 300 to 500 feet for existing speeds of travel. To produce visibility at such distances there are two methods of artificial illumination—portable automobile headlighting and stationary street lighting.

Motor-Vehicle Headlighting

Studies of visibility conditions with various types of artificial illumination have been made with models and by experiment under actual conditions. Each method has its advantages. The use of models is considerably more flexible, although for street illumination the actual conditions are somewhat more dependable.

In studying visibility conditions for automobile headlighting, actual road conditions are to be preferred, because observers, conscious of the test objects, would distinguish them long before individuals who were not aware of the tests. In some cases test objects have been damaged by the latter group when observers making the tests would report that the objects could be seen for a hundred feet or more. To overcome this condition and obtain data which might be considered as representative of normal

driving conditions, the author, with the cooperation of The Corcoran-Brown Lamp Company, employed the following test procedure.

A section of straight level highway was selected and marked with danger signs to warn traffic that caution should be exercised in traveling over the test course. Test objects were then placed on the road and observations made of the distances at which drivers, not aware of the tests, were able to distinguish the objects and change their course of travel to avoid hitting them. The size and light reflection factor of the test objects were so adjusted that they could not be distinguished until the driver was sufficiently close to necessitate changing his course of travel immediately upon distinguishing them. By then allowing a sufficient distance to compensate for mental reaction time, the distinguishing point for a large number of cases was determined and established as the proper distance at which test observers should report the presence of the test object.

As might be expected, our observers under corresponding conditions would distinguish the presence of the test objects at considerably greater distances than the other motorists. To compensate for this condition, test objects of various geometric patterns were constructed of such a size that the average distinguishing distance for the particular pattern by the observers, corresponded to the distinguishing distance established for the motorists not aware of the tests.

Although some of the tests were still in progress at the time this article went to press, the variables considered were (1) Intensity provided by the headlights—beam candlepower, 2,500 to 50,000; (2) Visual rating of observers—70 to

in many cases the deficiency of energy supplied to the lamps, particularly at the higher speeds of travel, are directly responsible for vital losses in visibility distance. The relatively small increase in visibility distances which are obtained with increasing beam intensities of the higher order, obviously place serious limitations upon this method for providing sufficient illumination, particularly for the higher speeds of travel.

With such intensities, glare, which is already responsible for a portion of the motor vehicle accidents, might become a serious factor, if for example lamps were not so installed that they could not easily get out of adjustment. Higher intensities should certainly be encouraged but with them should be introduced uniform regulations for the proper use of equipments which will provide a maximum of visibility and at the same time avoid objectionable glare.

Street Lighting

Fixed types of lighting installations have been employed on public thoroughfares in this country since 1774 with the demands for seeing ability, which they might provide, being constantly increased. The rapid increase in motor-vehicle traffic, as well as night activities in general, have, during the past fifteen years, increased the seeing demand placed on public lighting to such an extent that we are now confronted with the question, "Does the supply meet the demand and what would be the economic result of improved street illumination?"

Detailed studies of this have been reported in the *Illuminating Engineering Society Transactions* of October, 1931;

December, 1932; and September, 1933. The evidence presented in these reports as obtained from principal cities in the United States is certainly conclusive that street lighting bears an important economic relation to both motor-vehicle accidents and crime.

A current example of the economic benefit from street lighting will show the following results. During 1933, automobile accidents in the United States which might have been prevented with adequate illumination were responsible for 9,900 fatalities and approximately 346,000 non-fatal injuries. With the associated property damage the economic loss from these accidents would amount to approximately \$550,000,000, enough to have paid all the street lighting bills in the United States for the past seven years.

As compared with automobile head-

lighting, fixed types of street and highway lighting offer many advantages. The light sources, for example, may be so located with respect to the normal line of vision that large quantities of light may be provided with a minimum of glare. One of the fundamental objects in seeing is the contrast between the object to be distinguished and its background. On the highway in particular, where objects must be distinguished at greater distances due to the higher speed of travel, fixed types of lighting may be employed to improve the contrast by providing a luminous background on which the object may be silhouetted. This method of distinguishing objects, due to the absence of illumination, may be accomplished with a minimum of lighting and is probably the only reliable way by which dark objects may be distinguished on dark road surfaces, at visibility distances safe for existing speeds of travel.

Many city streets are well illuminated with ample quantities of light providing good visibility. Other streets may have proportional amounts of light poorly distributed or providing destructive glare which diminishes the ability to see. Still other streets may not have sufficient illumination, or as is the case with nearly all highways, there may be no permanent illumination provided at all. Surveys recently completed by the author and covering principal cities having an aggregate population exceeding 75 per cent of the total urban population of the United States, show that the average spacing of existing street lighting units is approximately 327 feet and the average light output provided by each unit is only 2300 lumens.

At prevailing utilizations of light, the average illumination may be liberally

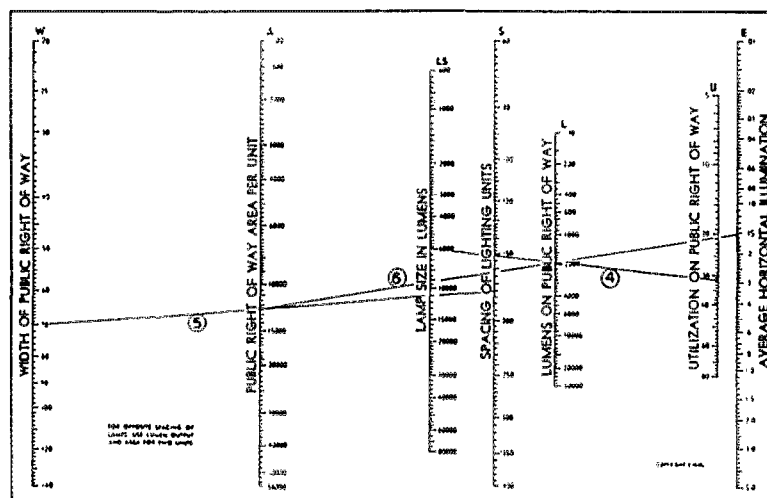


Fig. 4. Litegraph for determining average horizontal illumination.

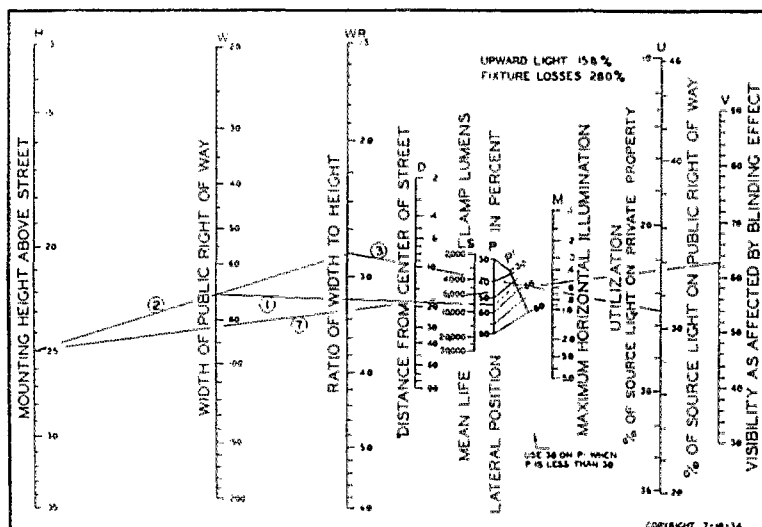


Fig. 3. The utilization of light, maximum illumination, and effect of blinding upon visibility are determined with the "Analysis Litegraph."

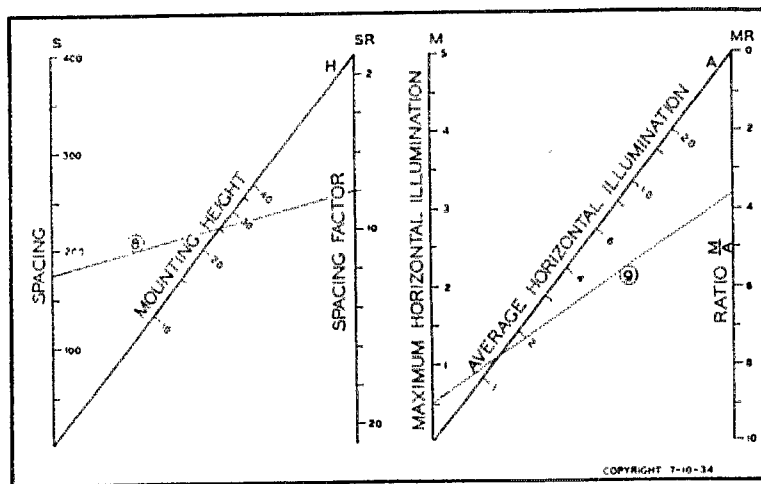


Fig. 5. Lamp spacing and light distribution factors are essential to the determination of illumination effectiveness.

estimated to be only four hundredths of one foot-candle—very little more than full moonlight. Compare this with the intensity of 10,000 foot-candles on a summer day and one reason for the toll of night accidents will be obvious.

According to the authoritative recommendations of the Illuminating Engineering Society Code of Street Lighting, these prevailing conditions are far short of adequacy for existing traffic conditions. A large number of major highways on the British Isles and in Europe are illuminated. However, there are but 400 miles of highways now illuminated in the United States of a total system embracing some 110,000 miles of major improved highways. Would it not be desirable to consider the use of gasoline taxes or other public funds for this important adjunct to safety?

The past treatment of lighting and particularly street lighting, has primarily been concerned with quantitative measures. Lighting is more than foot-candles and lumens, however, as was indicated in the brief discussion of silhouette effect where seeing was actually accomplished due to the absence of illumination. "Quality of lighting" is the new element which we must then introduce along with the usual elements of quantity and spectral character of the light provided. The importance of quality in street lighting is evidenced by its depreciating effect upon quantity if, for example, the blinding effect of glare is not minimized. The matter of light distribution as affected by lamp spacing, mounting height and the control of light flux, are important with respect to silhouette effect and the physiological factors involved in seeing. Greater quantities of illumination improve visual acuity, speed and ease of seeing, but

these factors are influenced in a logarithmic relation rather than being directly proportional.

To introduce the science of seeing in street lighting, it is the author's proposal that the various elements which influence seeing be evaluated in a manner which will facilitate their interpretation into the physical factors which may be controlled in the street lighting installation. To accomplish the results desired, the author would propose an engineering index of the seeing value provided by any installation. This suggestion is offered as an indication of what might be accomplished, not necessarily as a final solution.

To reduce the necessary analysis to a basis sufficiently simple and accurate for general use, the author has employed nomographs which with a simple procedure of drawing straight lines may in effect, be made to perform complex engineering procedures. To determine the quantity of useful illumination provided by a given street lighting installation, a chart representative of the character-

istics of the equipment is first employed to determine the utilization factor for the installation. Such a chart is shown in Fig. 3, with the utilization for a given problem being determined by drawing lines in the numerical sequence indicated. The utilization factor determined with the completion of line three is then transferred to the corresponding scale on Fig. 4. By completing the three operations shown on this chart, the average horizontal illumination for the installation is obtained and may be transferred to its proper scale on Figs. 5 and 6.

The blinding effect of glare, which is principally influenced by mounting height of the light source and maximum candlepower directed along the axis of the street, but corrected for level of illumination on Fig. 6, is computed by drawing line 7 on Fig. 3. This result may also be transferred to its correct scale on Fig. 6. The effect of light distribution and silhouette upon ease of seeing is coordinated in Fig. 6 but computed from the ratios determined in Fig. 5. The maximum horizontal illumination for line 9 is transferred from the intersection of line 7 with its scale in Fig. 3. When these ratios are transferred to Fig. 6 the final index for the installation is obtained by drawing lines 10, 11 and 12. The result thus obtained by the simple procedure of drawing twelve lines represents the composite analysis by which ease of seeing may be compared for various installations.

All comparisons of seeing ability should be made for the same combination of extraneous factors, that is, the results are not an actual measure of the ability to see but merely a basis of making comparisons for a given set of conditions. This procedure reduces to a constant the many extraneous variables which would otherwise have to be taken into account including differences in the visual capacity of individuals.

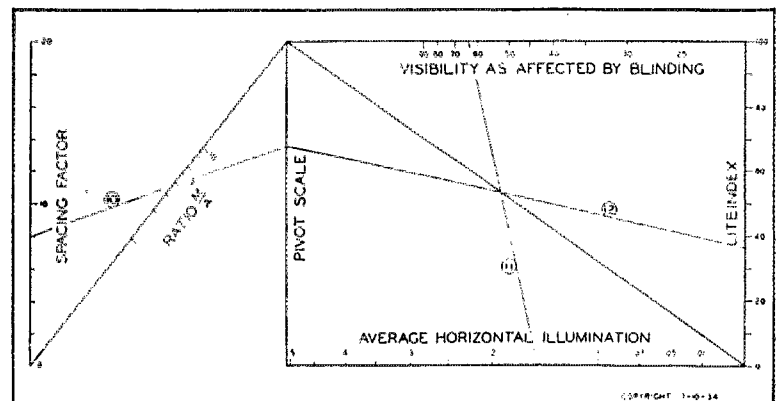


Fig. 6. The comparative merits of street illumination systems are determined by their Liteindex values.

An Aid to Management —and Safety

By R. D. PACKARD

Manager, Department of Industrial Relations,
The Standard Oil Company (Ohio)

● As a builder of mutual understanding and a promoter of safety, the Standard Oil Company (Ohio) has found its employee magazine invaluable

SOME six years ago *The Sohioan*, the employee magazine of The Standard Oil Company (Ohio) was initiated. It was believed at that time by the management that a company magazine would answer certain needs. This was a period of radical adjustments in our organization.

The Sohioan has had an uninterrupted existence since that time. The fact that it has been continued is an indication that our management has felt that it filled important needs and that it has continued to meet changing requirements.

Some months ago I made an informal survey to determine the popularity of *The Sohioan*. The rank and file were almost unanimous in their opinion that the magazine was an active force for good in the organization. Among the supervisory forces opinion was divided.

The Sohioan consists of 32 pages divided into two main sections. The first half or feature section is given over largely to the following: The President's Page; statements of important company policies; inspirational articles, written by both employees and outsiders; health articles, by our company physician; Employees & Mutual Benefit Association news; monthly reports of disabling injuries; sales engineering developments; stories about hobbies of employees; and announcements regarding new products or sales campaigns.

The second half of *The Sohioan* consists of local and personal news contributed by the correspondents in the sales divisions, accounting department, home office and manufacturing units. Each unit has its own space, the size of which depends upon the amount of material furnished the editor. This section is devoted to such matters as the mention of new employees; stories about the transfer or promotion of employees; births - deaths - weddings; vacation stories; sports news and local Sohio social affairs, such as picnics, dances and parties.

This section contains numerous photographs of employees and of their wives and children, as well as cartoons illustrating humorous things which have happened to employees.

The second section corresponds somewhat to the average small-town weekly newspaper. The special doings of Mr. and Mrs. Sohioan and the Sohio youngsters have, we believe, a definite and vital place in a company magazine.

The appeal of this section is the appeal of the personal. It is based upon the simple fact that most folks like to see their names or pictures in print. It enhances an employee's feeling of importance in the organization and the feeling that he really belongs to it. One of the highly prized features of *The Sohioan* is the monthly Sohio Honor Roll which lists the service pins awarded during the preceding month. Our company now awards service pins after five years of service and every five years thereafter, resulting in a rather large list of names being shown each month.

Reaching Scattered Workers

The Standard Oil Company (Ohio) is a state-wide organization. While our company certainly cannot be considered a large one, compared with many corporations, nevertheless, our management could never come to know personally the 5,000 employees scattered over 41,000 square miles in Ohio. It is obvious that unless the management avails itself of some means of unification and coordination, it would be practically impossible for hundreds of isolated employees to have the conviction, which we believe our employees have, that they belong to a unified, family-type organization.

The first section of the magazine, as outlined above, might be said to carry an informative, contacting function. Of this desirable function, the "President's

Page," is a case in point. The first installment of this feature was written by our president, Mr. W. T. Holliday, at the request of the manager of industrial relations as an introduction or sponsorship of the magazine. The reaction from all departments, however, induced Mr. Holliday to continue his page. His subject matter has been wide and varied, and the pressure of other business has seldom interfered with his monthly contribution.

The page has become an institution and it has helped tremendously to develop employee morale. Mr. Holliday's mail reflects the wide appreciation of his page. Employees and their wives, relatives, and friends all write to express their appreciation.

The ordinary informative function, however valuable and necessary, is not in itself a sufficient basis for a successful company magazine. This purpose could be answered by bulletins. Such bulletins might easily take care of the tangible need for a vehicle of communication but could hardly be designated as a house organ.

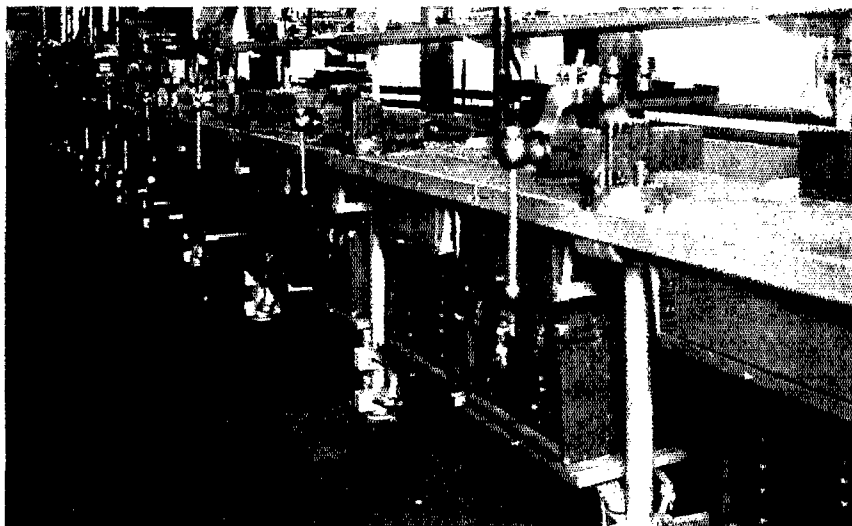
On the other hand, the intangible values associated with the numerous personal items in the unit news are indispensable to the magazine and weigh heavily in computing the total benefit.

A good employee magazine will help reduce accidents. I understand that in some publications an entire page or even a section of the magazine is devoted to accident prevention propaganda, accident news, etc. The proportion of such space to the rest of the magazine will naturally be determined by the specific problems of the company which publishes it; the more hazardous the industry, the more accident prevention will need to be stressed.

In the case of *The Sohioan*, its editors have tended to avoid sermonizing on safety; they believe that preachy editor-
(Please turn to page 55)

THE SAFETY EXCHANGE

—“A ROUND TABLE IN PRINT”—



Swing Shelves Adapted for Tool Boxes

One excellent way of solving the problem of work bench congestion is shown in the accompanying picture. The usual place for the individual machinist's tool box is on the bench and frequently it occupies valuable space. In the photograph a swing shelf has been arranged below the work bench which keeps the tool chest out of the way. It also helps get the men out of the habit of storing miscellaneous parts under the work bench. General Electric Company follows this plan in its Pittsfield, Mass., plant.

Guard Railing Now Holds Door Panels in Place

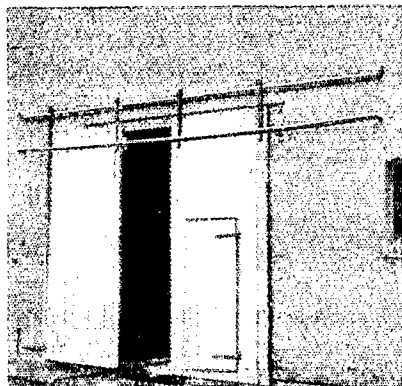
It is common in many plants to see heavy sliding doors that hang from a narrow track above the door opening. In one case a truck passing through the

opening struck one of these doors, knocking it from the track, and a man was killed when the door fell on him. As a result of the accident, a stout guard railing was fastened securely to the wall and running across the door opening, as shown in the accompanying picture. This holds the door panels in place.



Safe Type of Gate at the Mine Shaft

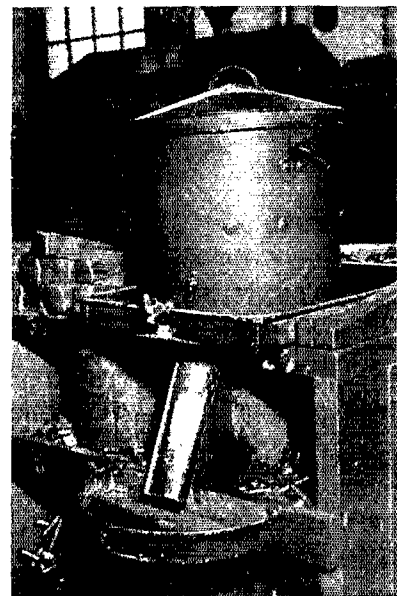
This quite unusual type of gate at the mine shaft serves a double purpose. First, it is a safe gate; second, it serves as a bulletin board upon which safety messages may be posted. In the present instance, the sign merely says, "No Smoking." The picture is sent in from the U. S. Bureau of Mines.



THE IDEAS presented here have proved helpful. If you have developed a useful device or method send in a description, illustrated with a sketch, blue-print or photograph, if possible

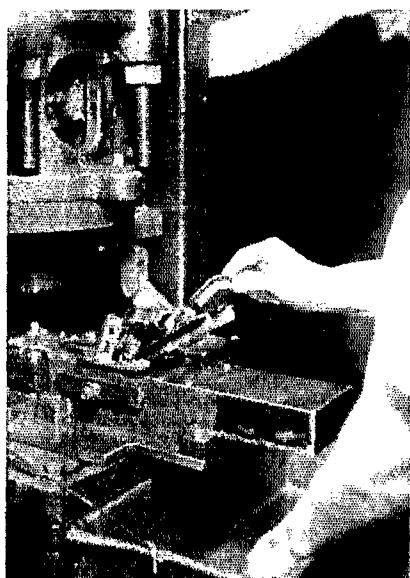
Oil Storage Can Very Well Designed

This oil storage can is fitted with screen filter about its midsection, and is placed in a leak-proof pan, with faucet just above the bottom extending beyond the pan. The can is filled with car oil used for the priming of journals and journal brass in the truck shop of the Chicago & Northwestern Railway car department in Chicago. Note that a strip of sheet metal is fastened securely to the under side of the bench on which the can rests, to catch any dripping from the faucet, and this leads to a drip pan hooked into the bench which may be removed for cleaning. Thus all danger of waste oil on the floor and of slipping accidents caused by it, is removed.



Press Feed Increases Safety and Efficiency

This photograph, showing a feeding device on a Bliss press, is from the plant of the Simmons Company, of Kenosha, Wis. A drawing job is in process for the bottom mount of a bed. The material placed in the chute is automatically pushed into the die, and comes through at the bottom. A ram en-



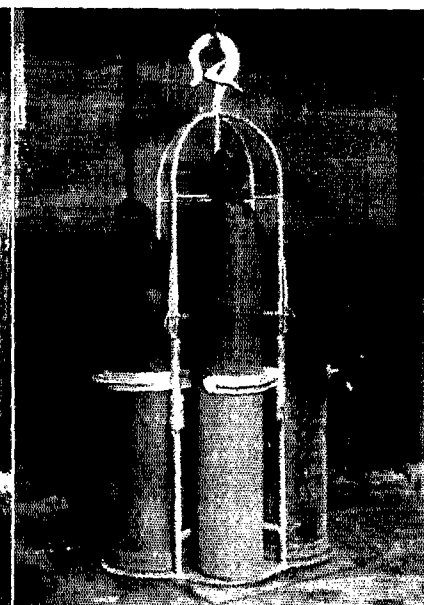
closure would afford additional protection. Operations were increased by the use of this feeding device from 1,300 to 2,000 per hour.

This Improved Gangway Stops Accidents

The General Petroleum Corporation of California sent in these improved gangway photographs. The short gangway, eight to ten feet long, used principally on board ship, has been improved by the use of adjustable stanchions which provide a higher rail at the most dangerous points. The accompanying photographs also show canvas rigging between each man-rope and supporting pieces of gangway which prevent persons from falling from the gangway underneath the man ropes. These short gangways with movable stanchions are



especially suited to boats whose water line varies considerably with the load.



Compressed Gas Cylinder Hoisting Device

The accompanying pictures show a device for hoisting oxygen and acetylene cylinders aboard government destroyers under construction, as developed by the Bath Iron Works Corp., Bath, Maine. The base is a $\frac{3}{8}$ inch steel plate in a four-leaf-clover pattern. The center rod is of 1 inch round steel and terminates in a forged steel hook. Four supplementary braces bend inward to join the center rod. Cross braces form compartments for the cylinders and prevent their slipping. All frame members are arc welded and a safety pawl is attached to the steel hook. The cylinders are held in place by an interlocking device, the pressure of a spring being applied against each cylinder.



Guard for the Circular Saw in Packing Plant

The circular saw in the accompanying picture is used in cutting pigs' feet. The guard is hinged and automatically lifts and descends as the meat is pushed under the guard and into the saw. This particular guard has been in use during the past eight years in the plant of the Oscar Mayer Company, Madison, Wis., and no accidents have occurred on this saw.



Safety Stop is Placed on Hydraulic Valve

In operating the hydraulic press, it is quite possible to open the hydraulic valve so far that the valve stem is backed entirely out of the threaded portion, instead of coming to a stop when wide open, as with an ordinary valve or faucet. To overcome this hazard, the General Electric Company has designed a safeguard which consists of a U-strap into which the entire valve is bolted. The top ends of the strap are formed inward and at right angles to the vertical portion. The edge of the "lip" engages a steel washer, which has previously been fitted to the squared shank of the valve stem, when the valve has been opened to what is considered the maximum safe limit. (Providence, Rhode Island, Safety Council News Letter.)

SAFETY INSTRUCTION CARDS

Practical Safety Information for the Man on the Job

THESE cards are intended for individual distribution. They may be carried in the pocket conveniently; they will slide into most pay envelopes easily. If tacked on the wall over a work bench or machine they will not tear off when a little wind strikes them; several of them can be displayed in a small space and they will fit in a standard card file.

The same information is not put on posters, as many members have suggested, because in a vast majority of instances workers do not have the time to study it when presented in this way.

Where data appearing on the cards is needed for permanent posting and the cards do not seem to be quite large enough for the purpose, or it is desirable to include it with operating instructions issued on standard letter size paper, the cards may be photographed or planographed.

The following alphabetical index of Safety Instruction Cards issued to date has been prepared to aid members in ordering cards which apply to their own particular operations.

Subject	No.
Acid and caustic pipe lines, opening	
hanged joints	117
Acid, sulphuric—handling	242
Acid tanks, repairing	124
Air hoist operation	142
Aprons, protective	223
Artificial respiration	165
Auto tires, inflation	208
Axe, how to handle	191
Babbitt, pouring	139
Belt, to put on a pulley	8
Removing from pulley	193
Bicycles	241
Boiler gage glasses, replacing	103
Boxes and crates, shipping	206
Bricks, how to pile	242
Broken glass, how to dispose of	244
Cable clamps	36
Carboys, safe handling	195, 224
Carpenters	127
Carrying long materials on shoulders	39
Case hardening with cyanide	133
Chain links, hooks, castings—detecting flaws in	2
Chains, safe loads for	63
Determining need for annealing or normalizing	267
Safe use of	151
Chemical laboratory practices	207
Chemicals, protection against	42
Cleaning machine parts	137
Clothing for machinists	230
For men	83
For women	84
Cold chisel, cutter or punch head, proper shape for	28
Couplings, link and pin	46
Crane and hoist operators, advice to	58
Crane signals	5
Crushed hands, avoiding	53
Dog bites, to avoid	175
Drill press operators	87

These "Safety Instruction Cards" are printed on white card stock, 3 by 5 inches, slightly heavier than government postcards. In any quantity the price is one cent per card (all of one kind or selection) with a minimum order of 25 cents. This minimum charge is necessary to cover the cost of handling, mailing, etc. Stamps or cash may be sent with order, or an invoice will be rendered.

The order should specify "Safety Instruction Cards," and give the numbers of the cards selected.

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Lifting Capacity of Tackle

Wooden Shell Blocks with Manila Rope

Maximum Safe Load in Pounds	RIGGING	Maximum Safe Load in Pounds	RIGGING
6,100	2 Parts	20,900	6 Parts
8,325	3 Parts	22,200	7 Parts
10,100	4 Parts	23,100	8 Parts
11,450	5 Parts	23,700	9 Parts
12,500	6 Parts		
13,250	7 Parts		
13,800	8 Parts		

14" minimum blocks for 1 1/2" rope and 20" minimum blocks for 2" rope.
These tables are for new high grade A or B steel wire rope made to Federal Specifications for Manila Rope (No. 1-8-40) and are based on a factor of safety of 5. Where the service subject the rope to conditions and accelerate rope deterioration or if the rope has been in service a month or longer, use factor of safety of 10 and decrease loads accordingly. These maximum loads are only for tackle at work. If lead line is snatched or passes over additional sheaves, decrease maximum loads accordingly.

SAFETY INSTRUCTION CARD No. 69
Revised Oct. 1934

Lifting Capacity of Tackle

Steel Shell Blocks with Wire Rope

Maximum Safe Load in Pounds	RIGGING	Maximum Safe Load in Pounds	RIGGING
18,650	2 Parts	20,600	2 Parts
25,850	3 Parts	31,700	3 Parts
31,950	4 Parts	41,000	4 Parts
42,500	5 Parts	48,800	5 Parts
		60,200	6 Parts

12" minimum sheave blocks for 1 1/2" wire rope and 20" minimum sheave blocks for 2" wire rope.

These tables are for new high grade A or B steel wire rope, uncoated with fiber core, made to Federal Specifications for wire rope (No. 88-5-31) and are based on a factor of safety of 5. Where failure of the rope in service would endanger life or property, use much higher factor of safety, and decrease loads accordingly. These maximum loads are only for tackle at work. If lead line is snatched or passes over additional sheaves, decrease maximum loads accordingly.

SAFETY INSTRUCTION CARD No. 66
Revised Oct. 1934

Lifting Capacity of Tackle

Steel Shell Blocks with Wire Rope

Maximum Safe Load in Pounds	RIGGING
27,600	3 Parts
35,300	4 Parts
49,000	6 Parts
60,500	8 Parts
73,900	10 Parts

24" minimum sheave blocks for 2" rope.
These tables are for new high grade A or B steel wire rope, uncoated with fiber core, made to Federal Specifications for wire rope (No. 88-5-31) and are based on a factor of safety of 5. Where failure of the rope in service would endanger life or property, use much higher factor of safety, and decrease loads accordingly. These maximum loads are only for tackle at work. If lead line is snatched or passes over additional sheaves, decrease maximum loads accordingly.

SAFETY INSTRUCTION CARD No. 95
Revised Oct. 1934

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Miniature Voltages for Hazardous Locations

(Continued from page 12)

carried to some other location and plugged into 110 or 220 volt receptacles, creating a serious hazard. That we have had no trouble in this respect has probably been due to close supervision. If something more than supervision seems necessary to prevent this, a different type of plug and receptacle might be provided for this equipment.

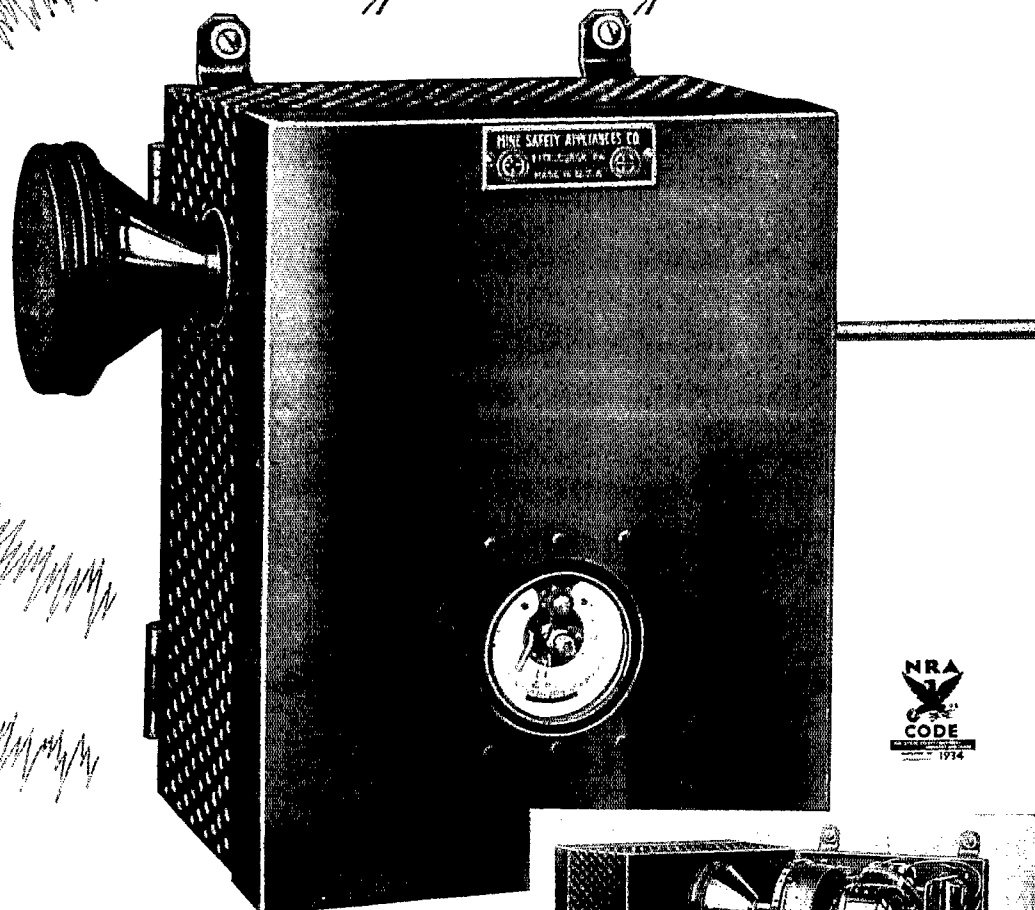
To the repair men whose work takes them into such locations as man holes, catch basins, sewers, tanks, etc., we issue equipment consisting of the same 75-watt 220-volt to 6-volt transformer. The extension is permanently connected to the six-volt side with a standard re-

ceptacle cap on the 220-volt lead. This cap is connected to the transformer by not more than two feet of tirex or other heavy duty cord. This makes it impossible for the transformer itself to be carried into the man hole or catch basin, and it may be plugged into any 220-volt outlet without danger. Close supervision is again relied upon to see that only these extensions are used in such locations. The transformers are made by a reliable manufacturer and subjected to a shop test of 1,000 volts between the primary and secondary coils. It may be possible to obtain portable electrical tools which operate on voltages low enough to be safe in such locations, but I do not know of them. Our practice is to use air-driven tools in such locations whenever possible. If electrical tools must be used, we see that the tool and cord are in good condition, the frame properly grounded, the circuit properly fused, and that a reliable, alert man is stationed outside ready to cut off the current should trouble occur.

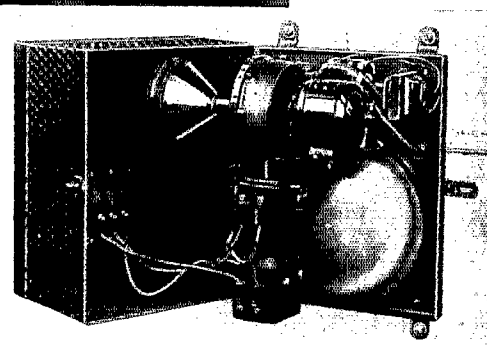
It is my belief that this test which was made to determine a safe working voltage for hazardous locations has done more to enlighten maintenance men on the hazards of the lower voltages than any amount of talking could have done. These tests have caused much discussion at safety meetings and apparently the lesson has struck home.

In 15 years of operation with low voltage equipment, we have not had an accident, and we are convinced that this equipment is the best safeguard in such locations.

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INDUSTRIAL HEALTH

A Non-Technical Symposium for Physicians and Laymen

Medical Supervision of Workers Exposed to Dust

By W. J. McCONNELL, M.D.

Assistant Medical Director, Metropolitan Life Insurance Company

THE HAZARD resulting from certain dusty processes in industry has been given undue publicity within recent years, and the conflicting testimony of those who specialize in the litigation field has led many industrialists to consider claims of alleged disease resulting from dust exposure as a form of racket. Although many of these claims are vague and appear to be based upon a desire to get something for nothing, health impairment often follows prolonged exposure to certain dusts.

The harmfulness of dusts varies widely with the physical and chemical natures of each substance. Certain dusts are soluble or slightly soluble in the body fluids and their harmful effects are proportional to the toxicity of the compounds formed. Lead, mercury and arsenic are examples of poisonous dusts. Other dusts exert their harmful effects locally on the skin and mucous membranes and through irritation to the respiratory passages. Chronic acid and alkalis are examples. Attention has been called recently to the probably harmful effect of dusts from radio-active ores. A fourth group of dusts which are insoluble or very difficultly soluble in the body fluids may initiate harmful pathological lung conditions. These may be subdivided into non-fibrosis and fibrosis producing dusts. (By fibrosis is merely meant the replacement of the normal elastic lung tissue by an unyielding scar tissue.)

The organic dusts, mainly the vegetable fibers, such as cotton, jute, hemp, etc., are non-fibrosis producing dusts. The fibrosis producing dusts are limited, so far as we have evidence, to a few of the inorganic mineral dusts, such as free silica, crystalline silicon, quartz, and certain combined silicates. Of the fibro-

s's producing dusts, those having a high percentage of free silica are the most important because exposure over a period of years distinctly predisposes the individual to tuberculosis.

It is seldom, however, that any one of these groups of dusts occurs singly in industry. Usually we are confronted with a variety of dusts in varying combinations, and until research investigation determines the effects of mixed dusts in measured combinations, it is difficult, if not impossible, to evaluate their degrees of harmfulness.

Diagnosing a Disease

The diagnosis of a disease induced by exposure to dust is entirely a medical problem, and is based upon a correlation of the patient's occupation, his symptoms, and physical examination. Laboratory and X-ray examinations must be included when indicated. The elimination or control of a dust hazard requires the assistance of the engineer, the chemist, and specialists in other sciences whose training enables them to contribute additional information. It is essential to determine the source of the harmful dust, its concentration within the breathing zone of workers, its chemical composition, and in most instances, the particle size measurements of the dust. With this information and a knowledge of the length of exposure, taking into consideration individual susceptibility and other physical defects of certain individuals, the extent of the dust hazard can be fairly well estimated.

Dust determinations indicate the locations where preventive measures must be applied. The effective method of prevention depends upon the circumstances giving rise to the hazard and may

include the segregation of the dust-producing operations, the hooding or enclosing of the operations with the application of adequate exhaust ventilation, increased general ventilation, the use of protective clothing and respirators, good housekeeping, and, most important of all perhaps, the consistent maintenance of all equipment for dust control.

The effectiveness of dust control measures in preventing diseases can be determined only by physical examination of the workers so exposed under competent medical supervision. The benefits which accrue to the employer and employee alike, as a result of the physical examination of all applicants for employment, as well as periodic examinations of those already engaged would indicate very careful consideration by industry of a program for control of sickness. Such a procedure protects the employer from engaging an applicant already physically or mentally impaired who later may claim disability for a condition either not associated with employment or contracted during a previous employment. The applicant's physical and mental condition is established and by keeping records of his subsequent illnesses and accidents, the question of responsibility for injuries and sicknesses incurred during employment need never arise.

The applicant is protected from engaging in work for which he is physically ill adapted. For example, an applicant with an arrested tuberculosis who seeks work in certain dusty occupations if allowed to engage in such work might readily convert an inactive tuberculosis into an active one. The same applicant if assigned to a position that involved no such exposure, might be expected to continue for years as a useful and productive workman.

Many of the younger individuals who seek employment have never before received a thorough physical examination and consequently are unaware of the defects from which they suffer. As a result of physical examinations, many defects are located which may be cor-



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rected before they have caused irreparable damage. Furthermore, incipient tuberculosis, unsuspected diseases of the heart, kidneys, and a host of other diseases of similar nature are discovered and the applicant referred for proper medical treatment which otherwise might have been postponed until too late.

Of even more importance than the initial physical examination of applicants is the periodic examination and care of old employees. Such a procedure serves to check the efficiency of preventive measures designed to prevent occupational diseases. It offers the most effective way of controlling the health of large groups of workers by discovering early not only occupational diseases, but many other conditions that go undiscovered until the worker is acutely ill or becomes disabled. If the various contagious conditions go unrecognized, others become infected.

The information obtained from physical examinations affords the medical supervisor the opportunity to make certain that employees are engaged in suitable work, to correct the effects of undue exposure to harmful environmental conditions, and generally to lessen all occupational hazards. As a public health measure, it is impossible to over-estimate the value of such periodic examinations in establishing among employees interest in sickness prevention.

For a long time the importance of accident prevention has been well recognized by industry. The very earliest attempts at industrial medicine consisted largely in the prevention and treatment of accidents occurring in the course of employment. By systematic work along educational lines and establishment of safety departments supervised by trained personnel the occurrence of serious injuries has been enormously reduced. The problem that confronts all industries today is how to bring about a like reduction in so-called occupational diseases.

Since actions for damages on account of diseases due to alleged negligence of the employer are being brought with increasing frequency in the civil courts, many bills have been introduced in state legislatures for the purpose of bringing certain occupational diseases under the compensation acts. At the present time considerable discussion as to the advisability of including the most important of the lung diseases caused by dusts, namely silicosis, under the compensation law is heard. Despite the fact that silicosis is purely an occupational disease, none of the state workmen's compensation laws in the United States specify silicosis as a compensable occupational

disease, with the exception of Kentucky which passed an amendment, effective June 14, 1934, permitting employers in certain industries subject to the silica dust hazard to voluntarily place them-



selves under the workmen's compensation act with respect to silicosis.

Of the eleven states and three territories in which occupational disease is compensable, five have schedules of diseases which shall be covered and none of these lists silicosis, so that it is definitely not compensable in Illinois, Minnesota, New Jersey, New York, and Ohio. In six states and two territories and in the District of Columbia, there is more or less general coverage for occupational diseases, and silicosis may be held compensable under the laws of California, Connecticut, District of Columbia, Kentucky, Massachusetts, by mutual consent of employer and employees in Missouri, and in North Dakota and Wisconsin.

The governors of a few states have appointed commissions to study the methods for bringing diseases caused by certain dusts under the compensation act and for promoting preventive measures. Valuable reports have been issued by such commissions in Pennsylvania and Massachusetts, while New Jersey, Illinois and Wisconsin have studied the situation intensively.

The Massachusetts and Wisconsin commissions recommended regulations for preventive measures, since the disease is already a compensable one in the states. The Massachusetts commission's recommendations included

compulsory physical examinations on entrance to certain specified hazardous employments and periodic examinations throughout exposure, neither of which was carried through. The Industrial Commission of Wisconsin has developed and put into effect a code which attempts to define a harmful concentration of various injurious dusts and establishes a "safe limit" below which the atmosphere of workrooms must be maintained. The Pennsylvania Commission recommended a scheduled list of diseases and special provisions for the compensation of disabled workers with strong emphasis on a medical board of control such as exists in the British Empire.

These references serve to indicate the trend of present-day thought with respect to control and diagnostic measures. Control measures cover a wide scope of conditions to be standardized, which, besides physical examinations, include methods of determining the extent of hazards; equipment designed to protect the workers; and the elimination or control of contributing factors. These problems can be solved only by the combined experience of trained men in the various sciences. The diagnosis of the diseases resulting from exposure to industrial hazards and the extent of disability incurred obviously should be entrusted to medical men specially qualified for this work with facilities for adequate radiological examinations. Disputed cases should be referred to a board capable of coordinating the medical, radiological, and pathological examinations as well as the results of scientific investigations.

The set up of a proper program for medical control of workers exposed to dust depends upon the number of employees involved and individual plant conditions. A series of articles under the title of "The Medical Department Manual" by Dr. Hart E. Fisher, published in recent numbers of *Industrial Medicine*, gives a very comprehensive account of the organization, operation, and routines of a medical department.

Any number of instances of adequate medical supervision of workers might be listed, differing in certain respects, but all retaining the essential features of control measures. Briefly, these include:

1. Establishment of a medical department with adequate facilities and qualified medical personnel. A process analysis of all operations in the plant should be made and the medical supervisor should list all possible health hazards and familiarize himself with their physiological effects. If necessary, he should conduct research studies to determine the harm-

(Please turn to page 63)



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Safe Handling of Chlorates and Perchlorates

Industrial Data Sheet D-Chem. 8

A. Problem

1. What are the hazards in the handling and storage of chlorates and perchlorates and what protective measures should be taken against these hazards?

B. Hazards

2. Chlorates and perchlorates are hazardous because of the quantity of oxygen they liberate when heated. They also form explosive mixtures with sugar, charcoal, shellac, sulphur, starch, sawdust, sweepings, dust or other organic materials, and also with sulphuric acid, potassium cyanide, phosphorus or antimony sulphide. They may be detonated and exploded by percussion or friction. Perchlorates when contaminated with oil or grease, will detonate on shock.

3. Another danger is that when working with chlorates and perchlorates the clothing may become impregnated and then burst into flames easily because of friction or nearby heat.

C. Discussion

Containers

4. All chlorates and perchlorates must be transported in containers which conform to the requirements of the Interstate Commerce Commission (See Note X).

5. Chlorates and perchlorates are usually stored in wood boxes, kegs and small barrels, lined with heavy brown manila paper, or placed in close woven burlaps or cheese-cloth sacks and packed in one of the above containers. This is to prevent the crystals from falling through the cracks frequently found in wooden containers.

6. Repairs to damaged containers should not be made in storage buildings. All discarded wooden containers should be destroyed by burning and should not be used as containers for other articles. If destroyed by burning, they preferably should not be broken up but should

be placed whole upon the fire. However, if they are first broken to pieces, this should be done out of doors.

Storage

7. Whenever it becomes necessary to store large quantities of chlorates and perchlorates great care should be exercised in the selection of a proper type and location of building.

8. The building should be cool, dust-free and of fire-resistant construction and should be located in a field where there is no possibility of fire communicating with other buildings. Buildings used for storage of these materials should be clearly marked in a conspicuous place with the name of contents and with precautions for handling. These materials should never be stored in a building with other chemicals.

9. Chlorates and perchlorates should be stored in a similar manner and with as much care as high explosives.

10. Containers should never be allowed to become wet due to a leaky roof while in storage or from exposure to weather. All chlorates are soluble in water. The water solution impregnates the wood of the container. After the water is evaporated, fine crystals of the chlorates will be found on the sides and bottom of the container. This makes the container dangerous to handle because of the possibility of starting a fire from friction created by scraping the container along the floor. Numerous fires have occurred in this manner.

Handling

11. Chlorates and perchlorates should be transported from storage to the point of consumption in the smallest quantities

that are practicable. They should be handled in buckets with glazed surfaces and tight covers somewhat similar to some types of milk pails, so as to prevent spillage.

12. The contents of damaged boxes and barrels should be immediately transferred to good containers so that contents will not spill over the floor while transferring the materials from one point to another. Instances are known of where workers stepping on spills of chlorates and perchlorates have been seriously burned because the friction between their shoes, the materials and the floor has started fires.

13. Workers who handle chlorates and perchlorates should be provided with and required to wear special protective clothing. This special clothing as well as the containers used for handling the materials should be kept in the storage building when not in use. Under no conditions should they be allowed to remain in other buildings.

14. Men handling chlorates and perchlorates should be thoroughly instructed as to the nature of the material and the danger of rough handling.

15. Frequent accidents occur in laboratories and semi-work plants where chlorates and perchlorates are used in making starting mixtures for different types of ammunition. In making mixtures spatulas of non-ferrous or non-sparking materials should be used, and where experimental batches are made this work should always take place behind a screen of steel plate or reinforced glass. With steel plate screens it is necessary to use mirrors.

Note X—Complete information on the design and construction of containers for shipping and transporting chlorates and perchlorates will be found in Bureau of Explosives Pamphlet No. 9, "Interstate Commerce Commission Regulations for the Transport by Rail Explosives and Other Dangerous Articles Freight, Express and Baggage Services."

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THE BULLETIN BOARD

A page for those who maintain the Show Windows of Safety

Conducted by STAN KERSHAW

Winter Hazards

NOW IS the time to make a drive on winter hazards. If you have not planned a special poster campaign on this subject, why not do so at once?

Here are some posters particularly suited for the purpose:

No. 4913-B, 17 x 23 inches, 4 units—A sprinkling of sand or ashes may save a person from serious injury.

No. 4013, 9 x 12 inches, 1 unit—The footing may be bad but a little care will prevent a slip.

No. 4622, 9 x 12 inches, 1 unit—It's better to report icicles than accidents. Don't wait for someone else to do it.

No. 5008, 9 x 12 inches, 1 unit—If you must sneeze, sneeze in your handkerchief; it's yours. Don't sneeze in the air; it's everybody's.

No. 4300, 9 x 12 inches, 1 unit—Colds can be prevented. Avoid overeating, loss of sleep, constipation.

No. 4968-B, 17 x 23 inches, 4 units—Winter driving demands your best judgment. Ice, snow, rain, mud, soft shoulders—any of these may get you into serious trouble. Drive cautiously, stay safe!

A Long Range Bulletin Board

HOW ONE plant got 100 per cent reader interest in its bulletin boards has been described by Walter J. Brennan, safety engineer for the Department of Labor and Industry, State of Maine. It can't miss, he insists.

In the plant where it was tried, there was a long sweep of yard visible from a part of the plant where the employees congregated every noon. At the far end of this stretch he placed a weather proof bulletin board on which he mounted some safety posters. At the point where the men gathered he erected a substantial pedestal on which he clamped a telescope aimed at the board.

The expected took place. Everyone wanted to look through the telescope.

This is an excellent example of how a little originality will create interest in the posters.

Supplement Posters with Accident Stories

MUCH additional strength can be given to almost any good poster by surrounding it with typed stories of

accidents and near accidents that are directly or fairly closely related to the subject of the poster.

These stories need not all relate to accidents within the company, although it is so much the better if they do. Newspaper clippings of stories describing local accidents, particularly if persons known to the employees are involved, will arouse much interest.

The condition of a bulletin board reflects the sincerity of purpose of the entire program of safety work. How can we expect a worker to have any respect for safety if our safety advertising looks like a last year's bird's nest?

Don't forget that there are 756 different kinds of safety posters from which to make your selections. Besides the 63 in this issue there are 693 in the other eleven most recent issues of the NATIONAL SAFETY NEWS to choose from.

A well organized safety bulletin board program permits no let up in the daily or weekly changes of displays.

Subject	1934 Issues of National Safety News in Which Posters Are Illustrated					
	July	August	September	October	November	December
Cleaning, Oiling, Adjusting and Feeding Machinery		4432		5231, 4862		
Clothing	4091, 4752	4792			4222, 4895	4109, 4497
Explosions, Electricity, Heat, Etc.	4097, 4756	5210, 5214			5303	
Eye and Face Protection	5197, 5203	2634-B, 4550	5256-B, 4822, 4697	2492, 2336	4903, 4152, 4850	4243
Falling Objects	5202	2668	4440	4854	2069	
Falls of Workers	5207, 4429, 5206	2730, 4602, 4804, 4441	5241, 4014, 4830, 4825	5284, 5282, 4855, 3098, 4205, 4871, 5286, 5287	4905, 5317, 5305	5328, 5330, 5329, 4936
Fire Prevention	4679, 4756	4809	3010-B, 5262-D, 2305, 5244	5283, 5288, 2786, 2390	3016	2640-B
First Aid		5220, 4802		4341-B	4168-B	5265-D, 4512, 4065-B, 4684
Guards	5189, 5200	4437	4834, 5239		4901, 5304	5335
Hand Tools	4054, 4753, 4061, 5203	4442, 2588	5240	2492, 4571	5304, 5314, 5306	5331, 2788
Handling Objects	4416, 4755, 4417, 5205		4846, Com-30, 2765	4483, 4854		
Harmful Substances	4752	4796		4095		
Health	5204, 4752, 4764, 4749	4795, 4810, 4802	4175, 5251, 2248, 5237, 3013	2638	5311, 4698, 2969	4161, 4109
Hoisting and Conveying	5192					4811
Horseplay and Distracted Attention	5203	4759, 5221	5252, 2525		5312, 5321, 3040	5338, 2998, 4455, 4529
Housekeeping	4775, 4420	4800	5249	5287, 5212, 5297	4206, 4856	5323
Infections	3051-B, 4765-B		4456, 2096	4389, 4452		
Machinery—General			2525	5258	4906	2004, 3005
Safety Shoes	5219	4461	4352	5292		
Stepping on or Striking Against Objects (including nails)		5254	4456, 4613, 5236	4069, 5276		4134, 4525



SAFETY is your greatest responsibility while driving . . . Know the rules of the road and local regulations. The ancient rule still stands "Ignorance of the law excuses no man"

NATIONAL SAFETY COUNCIL

DO YOUR SLOWING DOWN
ahead of intersection
NOT IN IT - PICK UP SPEED
WHILE PASSING THROUGH



YOU'LL MAKE
BETTER TIME
with **SAFETY**

NATIONAL SAFETY COUNCIL

ANOTHER YEAR GONE

ARE YOU PROUD OF YOUR SAFETY RECORD ?

NATIONAL SAFETY COUNCIL

Does your **DRIVING** **SET** **PASSENGERS** **ON EDGE**



NATIONAL SAFETY COUNCIL

It isn't too late yet



NATIONAL SAFETY COUNCIL

HAPPY NEW YEAR..

May you enjoy a full measure of health and happiness during 1935.



May your continued interest in Safety reap rich reward to your family, your fellow workers and yourself through the prevention of needless accidents.

NATIONAL SAFETY COUNCIL



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



Who Suffers Most ?

NATIONAL SAFETY COUNCIL

WE'RE IN THE **NATIONAL SAFETY COUNCIL** **SAFETY CONTEST** ENDING JUNE 30TH

We're competing with others in the same business all over the country and a good record will give us a national reputation for safety.

LET'S HAVE
NO ACCIDENTS

NATIONAL SAFETY COUNCIL

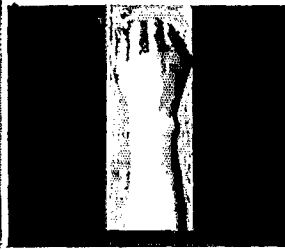
"HE WAS PLAYING on the RAILROAD TRACKS"



NATIONAL SAFETY COUNCIL

5131-B 17x23 inches 4 units

SOME PEOPLE
KNOCK ON WOOD
OTHERS
PRACTICE SAFETY.



NATIONAL SAFETY COUNCIL

4103-B 17x23 inches 4 units



WHEN
BACKING
BE EXTRA
CAREFUL

NATIONAL SAFETY COUNCIL

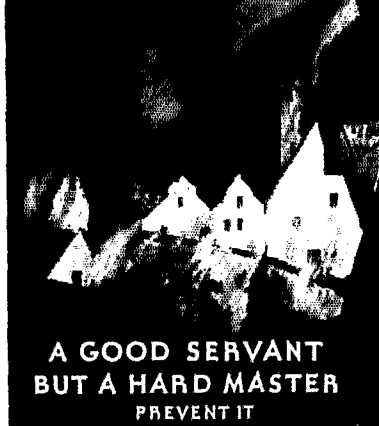
4931-B 17x23 inches 4 units

NO MAN
*is greater
than his deeds.*
*More generous
than his gifts.*
OR SAFER
THAN
HIS ACTIONS

NATIONAL SAFETY COUNCIL

4944-B 17x23 inches 4 units

FIRE



A GOOD SERVANT
BUT A HARD MASTER
PREVENT IT

2640-B 17x23 inches 4 units

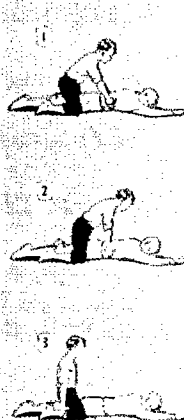
"GOOD ENOUGH"
IS NOT
GOOD ENOUGH

MAKE
IT
SAFE!

NATIONAL SAFETY COUNCIL

4943-B 17x23 inches 4 units

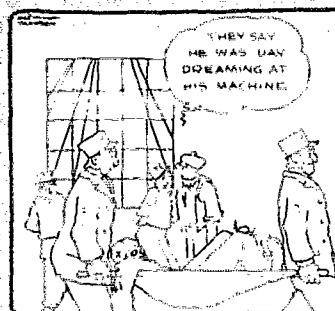
ARTIFICIAL RESPIRATION "REMINERS"



1. Tilt the head back.
2. Pinch the nose.
3. Breathe into the mouth.
4. ...
5. ...
6. ...
7. ...
8. ...
9. ...
10. ...

NATIONAL SAFETY COUNCIL

5265-D 12x18 inches 2 units

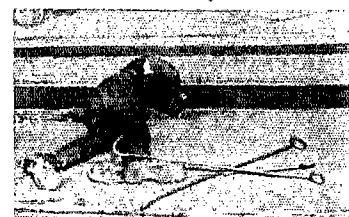


DON'T FORGET
THAT—DAY DREAMS
CAN BECOME
NIGHTMARES!

NATIONAL SAFETY COUNCIL

5338 9x12 inches 1 unit

Keep tools where
they belong



NATIONAL SAFETY COUNCIL

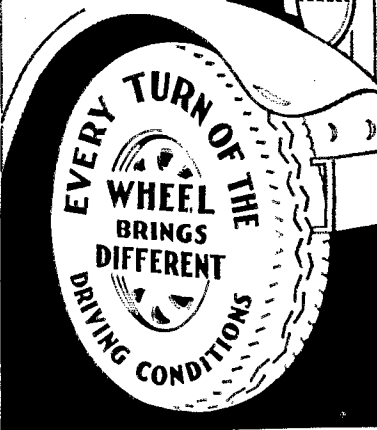
5328 9x12 inches 1 unit

**NO MATTER
HOW SMALL THE INJURY
~ IT MUST ~
BE REPORTED**



NATIONAL SAFETY COUNCIL

BE CAREFUL
EVERY INSTANT YOUR
VEHICLE IS IN MOTION



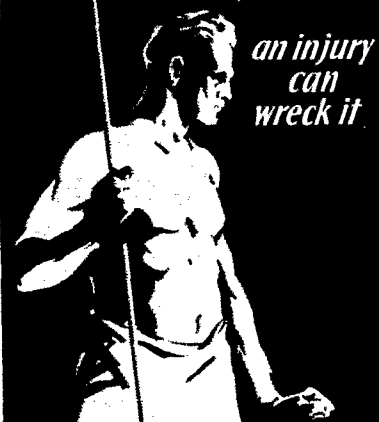
NATIONAL SAFETY COUNCIL

**HE'S PROTECTED
HE USES THE BELT &
LIFE-LINE**



NATIONAL SAFETY COUNCIL

*The HUMAN BODY is more
wonderful than any machine.*



NATIONAL SAFETY COUNCIL

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

**WHATEVER
YOU DO**

**BE
CAREFUL**

NATIONAL SAFETY COUNCIL

**SAVE
A MINUTE
AND LOSE
YOUR LIFE**

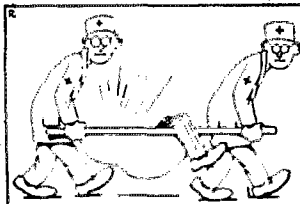
or

**LOSE
A MINUTE
AND SAVE
YOUR LIFE**

WHICH

NATIONAL SAFETY COUNCIL

**The man who
rushes in
headlong—**



**usually comes
out
feet—first!**

**YOU
MAY HAVE
OTHER THINGS
TO DO BESIDES
PREVENTING
ACCIDENTS—**

**YOU
WILL NOT
BE ABLE TO
UNLESS YOU
PREVENT
ACCIDENTS**

NATIONAL SAFETY COUNCIL



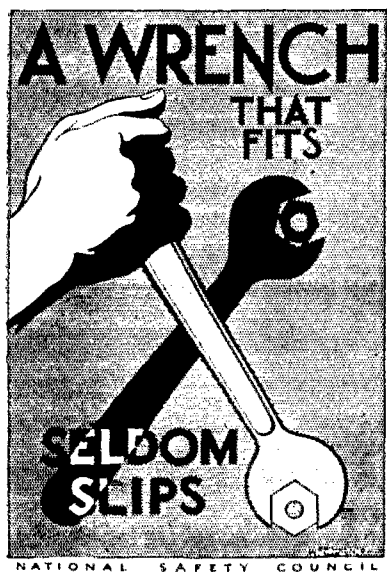
5336 9x12 inches 1 unit



4497 9x12 inches 1 unit



4443 9x12 inches 1 unit



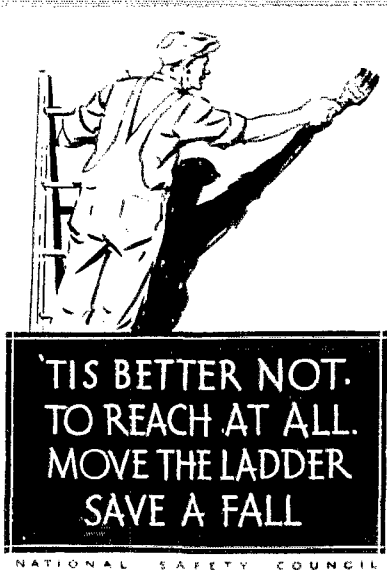
2788 9x12 inches 1 unit



4525 9x12 inches 1 unit



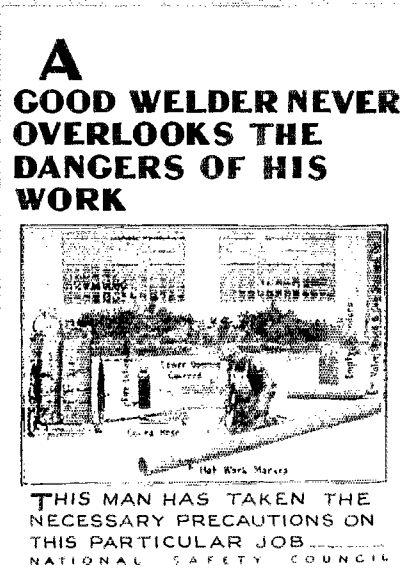
4526 9x12 inches 1 unit



5329 9x12 inches 1 unit



5334 9x12 inches 1 unit



4758 9x12 inches 1 unit

ACCORDING TO
PREVIOUS EXPERIENCE

20,000
PERSONS

WILL BE
KILLED
THIS YEAR BY FALLING

**WILL YOU
BE ONE
OF THEM?**

NATIONAL SAFETY COUNCIL

STAND TO ONE SIDE
WHEN USING
CIRCULAR SAW



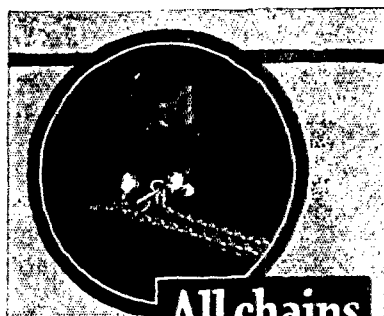
*THIS SPRUCE SLIVER 9 FEET LONG
AND 1 INCH SQUARE WAS DRIVEN
THRU THE MAN'S THIGH AND 6
INCHES OF FLESH HAD TO BE
GUT TO REMOVE THE STICK.
WHAT IF IT HAD PIERCED HIS
ABDOMEN?*

NATIONAL SAFETY COUNCIL

WONDER WHAT A MACHINE
GUARD *Would Say?*



NATIONAL SAFETY COUNCIL



**All chains
and cables
should be
examined
regularly**

NATIONAL SAFETY COUNCIL

**WEAR
SHOES**



**THAT FIT
YOUR FEET**

NATIONAL SAFETY COUNCIL

WHY IS IT-



**THAT ONLY
JACKASSES
TRY HORSE-PLAY
?**

NATIONAL SAFETY COUNCIL

GAS MASKS



**ARE
LIFE SAVERS**

*Failure to wear one
when necessary is
nothing short of
suicide*

NATIONAL SAFETY COUNCIL

**WATCH FOR
THIS FELLOW**



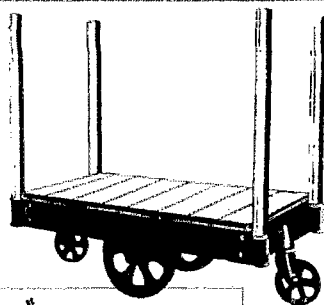
**he's an
accident
maker!**

NATIONAL SAFETY COUNCIL

**YOUR
ARE WORTH MORE
TO YOU THAN ALL
THE IN
THE PROTECT
THEM BY WEAR-
ING YOUR**



NATIONAL SAFETY COUNCIL



"I may be just a harmless looking truck-but boy what I can do to careless hands and feet is nobodys business"

NATIONAL SAFETY COUNCIL

4519 9x12 inches 1 unit

**THIS
OPENING
MAY
CAUSE
A
FATAL
ACCIDENT**



**COVER HATCHES
PROPERLY**

NATIONAL SAFETY COUNCIL

5330 9x12 inches 1 unit

**HAND HOOKS
ARE SAFE
IF YOU**



Keep handles tight
Keep points sharp
Keep free from
rust and if you
aim straight...

NATIONAL SAFETY COUNCIL

5331 9x12 inches 1 unit

LEARN



**BY THE
EXPERIENCE
OF OTHERS**

NATIONAL SAFETY COUNCIL

2562 9x12 inches 1 unit

**AVOID INFLUENZA
GRIPPE AND COLDS**

BY OBSERVING THE FOLLOWING PRECAUTIONS

1. Avoid temperatures of over 75 degrees in your working and dressing rooms (prolonged non-ventilating processes permit). See that the humidity is between 40 and 60.
2. Avoid over-eating. Include plenty of milk, orange juice, leafy vegetables, eggs and salads in your diet throughout the winter.
3. See that you get the proper amount of rest and sleep every day.
4. Avoid persons who cough and sneeze at you.
5. See that both hands and forearms are washed well each day.
6. Drink at least six glasses of water daily besides what fluids you use at your meals.
7. Accustom your skin to changes of temperature by dressing according to the weather and by taking cold shower baths every morning if you can arrange it.
8. If possible, arrange to get artificial sunlight through ultraviolet ray exposure, during the winter.
9. If you find your throat sore or your nose running, take a teaspoonful of baking soda in a glass of water three times a day, and add more milk and oranges to your diet.
10. Wash your hands with soap and hot water before each meal and keep the fingers away from the mouth and nose.

**IF YOU DEVELOP A FEVER
GO TO BED AND CALL YOUR DOCTOR**

A SERIOUS ILLNESS MAY THUS BE PREVENTED

Influenza Can Be Controlled by the Above Measures

NATIONAL SAFETY COUNCIL

4161 9x12 inches 1 unit

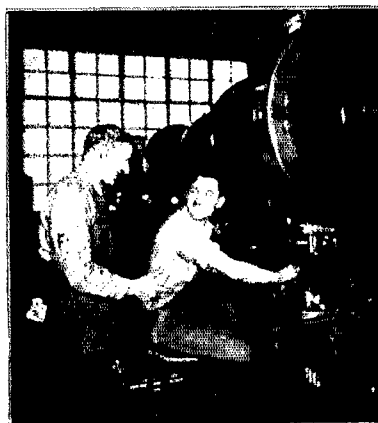
**WISH I'D PAID
MORE ATTENTION
TO THESE**



**Breaking Rules
May Cause
Broken Bones**

NATIONAL SAFETY COUNCIL

5320 9x12 inches 1 unit



**THIS IS NO
PLACE TO SWAP
STORIES**

NATIONAL SAFETY COUNCIL

2998 9x12 inches 1 unit

A Scratch?

**Nothing to worry about
IF YOU APPLY FIRST AID**



4654 9x12 inches 1 unit



NATIONAL SAFETY COUNCIL

4134 9x12 inches 1 unit

Electrotypes may be purchased from the National Safety Council for \$2 each

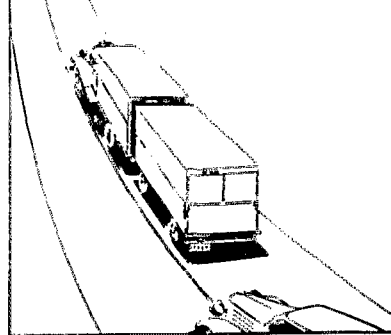
NATIONAL SAFETY NEWS

Dear Sir
 you have no right to
 take a chance
 the other fellow
 may have to take
 the consequences



NATIONAL SAFETY COUNCIL

REMEMBER
 IT TAKES MORE
 TIME TO PASS
 AROUND A TRUCK
 WITH TRAILER



NATIONAL SAFETY COUNCIL

Keep sound
 wisdom and
 discretion...
 then shalt thou
 walk in thy way
 safely and thy
 foot shall not
 stumble

Proverbs 10:9

NATIONAL SAFETY COUNCIL

IN THE GLOAMING OF LIFE
 Safe and
 Happy

Like a song or a poem is a life of
 work which ends happily in
 contented retirement. Most men
 live for rest when their work is
 done and age creeps on.
 They have earned it.
 But millions of men not work-
 ing will lose their chance for a
 happy old age because of tragic
 ACCIDENTS. These men will
 fall they will be burned, they will
 die in the work age of anxious
 days they will down they will be
 crushed they will be killed or
 disabled crippled by an manner
 of mishaps which might easily be
 prevented.
 Don't let an accident cheat you
 of a happy old age. LIVE to en-
 joy it.



NATIONAL SAFETY COUNCIL

**STAY
 ALIVE**



NATIONAL SAFETY COUNCIL

**THOUGHT FOR
 TODAY**



No one
 cheers when you
 come home
 hurt

CURIOSITY



COST A FINGER
 NATIONAL SAFETY COUNCIL

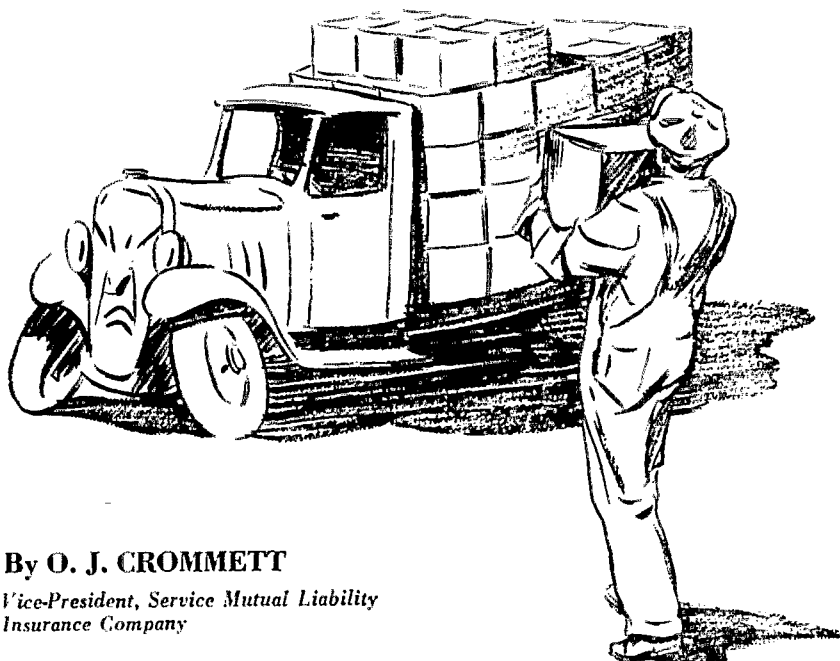


**DON'T
 DREAM IT—
 PRACTICE IT**
 NATIONAL SAFETY COUNCIL

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

Are Overloaded Trucks Hazardous?



By O. J. CROMMETT

Vice-President, Service Mutual Liability Insurance Company

OUR records do not show that the overloading of trucks is a direct cause of accidents. Some drivers, however, say there is an accident factor in overloading, and the accident comes when the authorities catch them at it. The minute the driver gets under way with an appreciable overload, he feels the added burden in the way the truck handles, especially in the way the brakes take hold. He knows he is taking chances with the law, with his life, and with the lives of others; he is on his guard, drives with extraordinary caution, and no accident happens.

Now overloading once in a while is a most natural sin. The court records and the Department suspensions show that even the best of us overload and get caught now and then. A truck load of commodities, such as wool, coke, or lumber, may start out with a legal limit load, and a pouring rain storm or driving snow will increase that load ten to fifteen per cent. Under these conditions, we have a no-pay overload as the result of an "Act of God"; yet it is an overload in the eyes of the law.

Another serious problem is the clean-up load which for-hire truckmen get up against frequently. Here is a fellow

hauling canned goods, eight tons to a load, from Newburyport to Lynn over a most dangerous, hilly, and fast moving traffic route. He drives within the law until the last load, when he finds a two-ton overload will clean up the job and save an extra trip. He takes the chance and gets away with it but he violates the law and imperils not only his own life but that of others, and he casts a reflection on his employer's integrity.

The customer who hires a truck by the hour or on the mileage basis naturally wants as large a load carried as possible. The driver should stop the loading when it reaches the legal limit, explain to the customer and refer him, if necessary, to the office of the operator if he persists in overloading. This is the job of the fleet manager and not of the driver.

The general motoring public, too, is watching the trucking industry with a critical eye. It has contributed heavily towards the cost of building state highways throughout the country. So have the truckmen. Naturally, both are proud of these highways they have helped pay for and feel a real personal ownership in them. Rightly or wrongly, the motoring public blames the big, heavy, overloaded trucks for the holes and deep ruts we find now and then, especially in the

spring. That is a natural inference, but it is bad for the trucking industry. The truck with its high, lopsided load, appearing to the layman as an overload and just about ready to topple over, gives another jolt to the public mind against the operator. The overloaded truck, large or small, lumbering along to make the crown of the hill, gets on the nerves of the long line of traffic behind it.

Then there is the truck with the flapping canvas covering flying in the wind, the truck with the overhanging load, the truck that "rolls the hills," the truck that plays the road hog,—all these create a bitter feeling against truckmen as a class. This sentiment hurts a who'e lot and reacts against us when defending claims before juries. Every company operating delivery vehicles pays for it in higher liability insurance rates. As much as any other one thing, a drive to correct this sentiment will be well worth while to us all.

Just a word now about the fellow who registers, say, a one and one-half ton truck with an excess load of 1000 pounds to save a few dollars in his registration fee, then goes ahead and puts three tons on it. He is not only overloading according to the law, but under the code he is—shall we call him a chiseler?

When all is said and done, overloading in the past few years has been due largely to the fact that the fleet operator could not get an adequate rate to pay him to make the trip without overloading. That overload was his profit! When the code gets under full swing, and the scale of fair prices established, the principal cause for overloading will be done away with.

Duquesne Light Co. Wins Third Safety Trophy

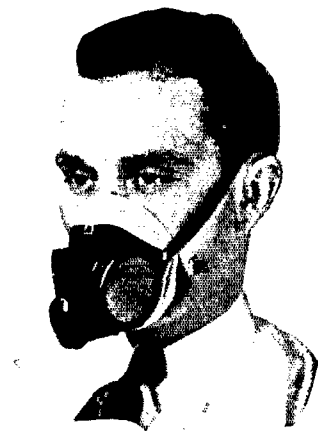
FOR the third time, the Duquesne Light Company of Pittsburgh, has been awarded the trophy of the Pennsylvania Electric Association for the best record in accident prevention among power companies in the state employing more than 500 workers.

The contest began July 1, 1933, and ended June 30, 1934. Eight companies competed with the Duquesne Light Company, which had a total of 21 accidents for the contest period, making a frequency rate of 3.75 accidents per million hours worked.

The Duquesne Light Company had a frequency rate 22 per cent lower than the average rate of the group. Honors were won by this company in 1931 and 1932. In 1933 first place went to the Philadelphia Electric Company.

NATIONAL SAFETY NEWS

*Abstract of a paper presented at the First New England Safety Conference.



BULB VALVE TYPE No. 4

Has a clear entrance filter aperture of 7½ sq. in. and uses felt filter pads.

Extra Pads, ½ in. thick, 1c each
Extra Pads, ¾ in. thick, 4c each

Price \$18.00 Dozen

Sample postpaid, \$1.50

DUPOR

Reg. U. S. Pat. Off.

The ORIGINAL REVOLUTIONARY Double Filter Chamber RESPIRATOR

Basic and Detail Patents Allowed

The slower speed of the air through the felt filter pads, causes more dust and spray to be caught.

First users of DUPOR are continually ordering more.

Thousands in Use.

Used in smoke, paint spray, light fumes, vapors and all kinds of dust.

Manufactured only by



BULB VALVE TYPE No. 6

Has a check valve in each filter chamber, and enlarged adjustable filter chambers of screw cap type and the very large filter aperture of 11½ sq. in.

Extra Pads, ½ in. thick, 3c each
Extra Pads, ¾ in. thick, 6c each

This type fills the most exacting requirements for a Respirator of its kind.

Price \$30.00 Dozen

Sample postpaid \$2.50

H. S. COVER

CHIPPEWA-A

SOUTH BEND, INDIANA

U. S. A.

Announcing

A NEW SAFETY SHOE



618—Black Elk Scout Pattern Oak Sole. Rubber Heel Goodyear Welt.
5 to 12 EE

619—As above except Chrome Sole and Heel.

Entirely new pattern with Improved Steel Box Toe. Roomy. Comfortable Last

IN STOCK



615—Black Elk Scout Pattern Grid Rubber Sole and Heel. Clinch Nail Fastening.
5 to 12 EE

Lehigh Safety Shoe Co., Inc.

31-33 South Seventh Street

Allentown, Penna.

DECEMBER, 1934

Contest Solves Problems of Reorganization



Left: J. G. Jenkins, superintendent, Georgetown Division, Capital Transit Company, winner of the safety-courtesy contest, July-September, 1934. Right: George Emmart, foreman of the Northeastern Division car house, winner of the reliability contest for the same period.

LOCAL mass transportation systems are continually striving to find an attractive as well as equitable method of dealing with Safety. One of the most recent plans evolved is that of the Capital Transit Company at Washington.

About a year ago this company was formed as a merger of the Washington Railway and Electric Company and the Capital Traction Company and now provides the mass transportation for Washington in its entirety, including the majority of the bus service.

This consolidation of a large group of employees formerly in two different organizations together with the addition of new employees, created a safety problem which was quite unusual. After careful study it was decided to promote contests in the three important branches of the service—operating, mechanical and maintenance.

In the Operating Department the contest period covers three months and the results of the contest are based on the improvement shown by each division of the Department as compared with the division's record in the previous six months. This provides that the contests in each of the divisions of the Operating Department require them to

face the same weather conditions and the same traffic conditions and the same general circumstances as each of the other divisions in the department. In addition to safety, courtesy is included as a feature of the contest and the charges against the divisions are made on the following basis:

1. All accidents involving cars and buses which may be the basis for claims.
2. Complaints of discourtesy which warrant disciplinary measures.
3. Preventable accidents charged a second time if it is reasonable to expect the employee could have prevented them.
4. Unreported accidents, each of which is given a penalty equal to two accidents.

The score is ascertained by adding the charges against the division and dividing the total by the number of miles operated. The winner is the division which makes the best improvement in the three months as compared with the previous six months.

The competition for maintenance crews is based on the record of the crew which makes the greatest improvement in breakdowns of equipment for the three months as compared with the previous six months. The inclusion of maintenance crews in the contest encourages greater cooperation between

the operators and the maintenance crews.

All mechanical, track and roadway crews are included in a third contest the purpose of which is to reduce employee accidents and the responsibility of the foreman is emphasized in this contest. It is worked out on the three months basis as compared with the previous six months record as is done in the other two contests.

The results at Washington to date indicate that this method of conducting safety contests is working out successfully and may serve as an illustration to other properties faced with safety problems either of a general character or with special features such as Washington had to face as a result of reorganization.

A.G.C. Urges Increased Safety Efforts

RECOGNIZING the seriousness of accident losses in the Construction industry, the Governing Board and Advisory Board of the Associated General Contractors of America passed the following resolution at the regular Fall Board Meeting, held at Chicago, October 22-23:

WHEREAS, current statistics show that the accident experience for the Construction Industry is worse than that reported for twenty seven other major industries; and

WHEREAS, under the present conditions of unemployment many men inexperienced in the hazards of construction are being given relief employment; and

WHEREAS, the Federal Government in its many divisions, bureaus, and departments, and also in its Code promulgation activities, has particularly stressed and advocated accident prevention measures, thus giving Federal recognition to importance and value of accident prevention work: now therefore

BE IT RESOLVED, that we, the Governing Board and Advisory Board of the Associated General Contractors of America, in regular session assembled do sincerely appeal to every member of the A.G.C. and the Construction Industry at large to energetically and wholeheartedly devote the necessary time, effort and study in this matter of eliminating construction hazards from within our industry; and

BE IT FURTHER RESOLVED, that we urge upon every member of the A.G.C. his participating in the Annual Safety Contests conducted by the A.G.C. to the end that interest in accident prevention work will be aroused and maintained, as well as providing, through the contest reports, valuable statistics on construction accidents.

One of the prime requisites for taking a motor vehicle operator's license examination is that the car is in good running condition and meets inspection requirements at the time.—*The Car*.

Win Trophies for Long Safety Records

TWO Buffalo firms have been awarded trophies for unusual excellence in accident prevention by Associated Industries of New York State, Inc. These firms, the Buffalo Shops of The Pullman Company and M. Wile & Co., Inc., were the last survivors of a field of 24 firms who were started on the Second No-Accident Endurance Contest



Maxwell S. Wheeler (left), president of Associated Industries, presenting trophies to Ben Hirsh (center), president of M. Wile & Co., and W. J. Keville (right), manager of the Buffalo shops of the Pullman Company.

of Associated Industries in the fall of 1931. Firms were eliminated as they experienced their first accident. The Pullman Company ran 32 months before being eliminated but in that time had operated a total of 4,217,310 man-hours without an accident. This was the highest man-hour exposure reported during the contest. The plant of M. Wile & Co., Inc., the final survivor, operated for 35 months, nearly three years, before an accident called a halt to their record. Their final score was 3,653,642.00 man-hours.

The management and employees of the Wile organization were, therefore, awarded a trophy for having operated the longest period of time without accident and those of the Pullman Company a trophy for having amassed the greatest number of man-hours without accident.

"Did you have a good trip?"

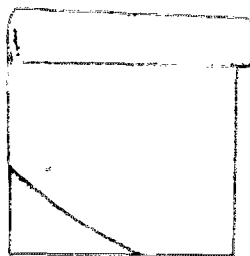
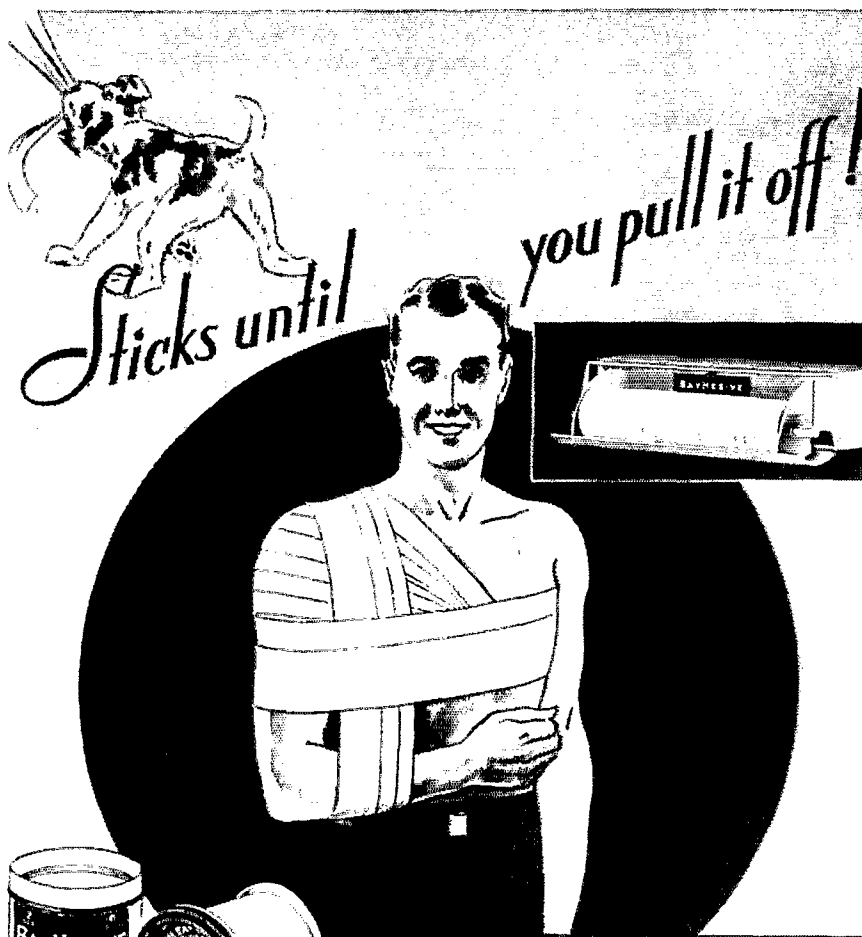
"Fine. My wife did all the driving."

"How lovely! So you were able to enjoy the scenery?"

"Yes, all I had to do was to hold the steering wheel."—*Cappers Weekly*.

DECEMBER, 1934

SURGICAL **BAY'S** DRESSINGS



The coupon will bring you a sample.

THE BAY COMPANY,
Bridgeport, Conn. NSN 12
Gentlemen: Please send me a free sample of BAYHESIVE.
Company _____
Person requesting _____
Address _____

BAYHESIVE, the improved zinc oxide adhesive plaster, attains maximum tenacity at body temperature.

It is obtainable in the following forms:

On the new BAY reel container in the following sizes: from 1/2 inch wide by 2 1/2 yards long to 3 inches wide by 10 yards long. Supplied in white or flesh color.

Surgeon's Rolls—12 inches wide by 5 yards long, crinoline faced. Also supplied 7 inches wide by 1 yard long. White or flesh color.

For use in the new BAY wall rack which accommodates 12 inch by 10 yard rolls uncut or in assorted widths.

THE BAY COMPANY
BRIDGEPORT, CONNECTICUT
PARKE, DAVIS & CO.

How Can the Worker Prevent Falls?

(Continued from page 11)

our step. Mother returning from her vacation sees dad on the platform and she cannot wait to find out if he left the dirty dishes in the sink, or if he put the cat out every night as per schedule. Lovelorn Willie gets a glimpse of his sweetie who looks prettier than ever and for a moment he forgets about commonplace things such as steps and step boxes and the need for descending carefully. Now, there is a proper time and place for looking into the eyes of the sweetest girl that ever lived, but it is not from the vestibule of a train. One should heed the sign which appears on the steps of every Pullman car—"Watch Your Step."

Porters plead a strong case against the danger of high-heeled shoes, and here is something else of interest: Many communications point out the common practice indulged in by some passengers of carrying too many personal parcels, such as brief cases, typewriters, hat boxes, fur coats, and other objects which the porters are only too willing to carry. Ladies appear to be the greatest offenders: not in order to avoid a tip, as one porter points out, but rather the fear of trusting anyone else with their personal property.

Don't get the idea that any of our people are trying to dodge responsibility. Careless habits and poor housekeeping come in for some very strong criticism; also failure to inspect thoroughly and at regular intervals. Safety men are, and should be, fully aware of the importance of these matters, but sometimes we are not so sure that our workers fully appreciate them. However, after reading their letters, I am convinced that they fully understand the necessity of good housekeeping and inspection; also that they are wide-awake to the dangers of thoughtlessness, wool-gathering and day dreaming which cause many accidents aside from falls.

One of the encouraging results of the questionnaire is reflected in the application of safety principles to the home, which indicates that our men are not hanging up their sense of caution along with their overalls. Many of the replies reveal a full appreciation of home hazards and prove conclusively that the writers have given thoughtful consideration to this important phase of accident prevention.

Old stuff, you say, yet to me it is in-

spiring to learn that the seed of our educational efforts has borne fruit in the home as well as in the shops, yards, offices, laundries, etc. Scores of hazards were dragged out of their lurking places from every room in the house, the yard and the garage. One indignant gent who had just skidded on a piece of soap immediately sent in his complaint, writing the letter with one hand while caressing the afflicted portion of his anatomy with the other.

A Comedy of Errors

Another gentleman relates a comedy of bathroom errors. "I just concluded my bath," he relates, "and was standing up in the tub when my foot slipped. My head struck the side of the bathing receptacle, causing it to tilt, and one of the legs dropped off. I fell and struck my head on the bottom of the bath-tub. This was only the beginning of a series of mishaps. The tub turned on its side, the water pipe burst and a stream of the blawsted liquid gushed ceilingward. The cut-off was located under the sink in the kitchen. I toddled downstairs in my birthday suit, and in my haste, stumbled, bruising certain portions of my anatomy. Finally I reached the cut-off and in my excitement pulled it too forcibly and the connection broke. I recalled there was another one under the house, so draping a table-cloth around my loins, and gliding like a nymph, I descended into the dark and dusty depths where I barked my shins on my offspring's kiddy-kar. At last I succeeded in turning off the water. Results: Painful bruise on my cranium—I might have fractured it; miscellaneous contusions; exposing myself to pneumonia; considerable flood damage, followed by a plumber's bill, all of which could have been avoided by the use of a rubber mat at the bottom of the receptacle used for my ablutions."

One of our colored ambassadors edited a splendid treatise on the subject of safety which indicates that he has given the matter serious study and consideration, and furthermore that he is well versed in the fundamentals of accident prevention. The concluding paragraph commences with the Greek word for safety, "which," he says, "may be Greek to many; in fact, it is; but translated into English means safety which is 'Greek' to many people in any language."

Another chap wrote describing a contest sponsored by the Delaware Safety Council from which it appears that the majority of home accidents occur on Saturday afternoon to male members of the household, and that most of the injuries are caused by falls in the kitchen. This indicates that the lady of the house leaves some work for the bread-winner to perform on his day off and in his haste to complete it—wishing to attend the ball game—he fails to apply safe practices as he does in the shop. "Such accidents," he concludes, "could have been prevented by the use of a little more time and care."

Incidentally, the "hurry-up" theme is predominant in a great many letters. In the opinion of one author, we move too quickly; we do not think fast enough. In other words, while the tempo of our work and play has been speeded up to conform to the demands of the modern age, we still think along Victorian lines.

Some writers go into considerable detail in explaining why we have so many falls on stairways. They point out the danger of poor railings or no railings at all, obstacles on steps, defective steps, etc. Some correspondents remind us that basement stairs are often too steep and have dangerous turns. They point out the risk of poor lighting and emphasize the hazard of junk piled on the steps.

One letter called attention to the fact that front stairways are usually kept neat but those leading to attics and basements are often neglected. If it were not for the element of pride, the front stairs would be just as untidy and dangerous as the others. The neighbors seldom see the basement stairways.

An amateur athlete informs us that acrobats are taught how to fall. When they find themselves descending they relax, while ordinary mortals become tense.

Our contest was an experiment which opens up a fertile field for future efforts. Regardless of results, we do know that the subject of conversation among thousands of Pullman men—and railroad men, too—was falls, and the effort involved was more than justified. My solution of the problem is more intensive supervision.

For instance, snow and ice on steps, platforms, walkways, etc., are a prolific source of falls. Certainly, they are entirely unnecessary. They could be prevented by the use of salt, cinders or sand. But too many employers consider only the expense.

I am thinking of one case where we paid \$3,000 to a maid who slipped on an icy platform in a railroad yard.

NATIONAL SAFETY NEWS

PERSONALS



T. H. Garrow

The following officers have been elected by the Safety Section, Association of American Railroads—Steam Railroad Section, National Safety Council, for the year 1934-35:

Chairman—Thomas H. Garrow, superintendent of safety, Pennsylvania Railroad, Philadelphia.

First Vice-chairman—Willis H. Failing, claims attorney, Reading Company—Central Railroad of New Jersey, Philadelphia.

Second Vice-chairman—C. F. Larson, superintendent of safety, Missouri Pacific Lines, St. Louis.

Secretary—J. C. Caviston, 30 Vesey Street, New York City.

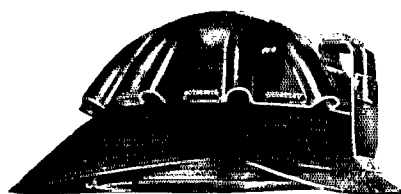
HON. HAROLD G. HOFFMAN, Commissioner of Motor Vehicles for New Jersey, and Chairman of the Street and Highway Traffic Section of the National Safety Council, was elected governor of the state on November 6. Governor Hoffman has been Commissioner of Motor Vehicles since April 1, 1930, and had previously served as mayor, state legislator and congressman. He has been in eight political campaigns and has not yet been defeated. His election on the Republican ticket in a Democratic year is evidence of his personal popularity throughout New Jersey.

As commissioner of motor vehicles, he made the New Jersey Department one of the leaders in the promotion of

POSITION WANTED

Accidents can be prevented by an aggressive plan of action. For sixteen years I have formulated and directed the personnel and safety policies of major industrial plants of from 1 to 10,000 employees. Of established reputation, I am seeking an opportunity which is seeking the man qualified to develop it. Immediately available at a reasonable salary. BOX 293 NATIONAL SAFETY NEWS.

DECEMBER, 1934



COOL HATS

Two New Products:

Left—Sou'wester type COOL HAT with soft collapsible leather brim—it can't easily be knocked off.

Below—COOL HAT with hard brim for neck and shoulder protection.



Comfortable Companions to the Celebrated COOL CAP Are Now Available with Soft and Hard Brims!

COOL HATS combine all the proved advantages of COOL CAPS—including the comfortable, flexible ventilated forehead band—plus wide brims to shed water and solid particles from the neck The coal mining industry has adopted the COOL CAP with open arms because of the unusual comfort and head protection it provides—there is no tightness or irritation to the forehead—just SOLID COMFORT throughout the entire shift COOL HATS are finding favor in wet coal and metal mines, quarries and construction projects where wide brims offer especial head protection advantages.

COMPLETE INFORMATION ON REQUEST

Do You Have A Copy Of Our No. 34 Catalog?

PORTABLE LAMP & EQUIPMENT CO.

MANUFACTURERS AND DISTRIBUTORS OF SAFETY EQUIPMENT

405 Penn Avenue, Pittsburgh, Pa.

—COOL CAPS and HATS ARE ALSO DISTRIBUTED BY—

G. A. LUCKENBACH URQUHART SERVICE THE MINER RUBBER CO., LTD.
1634 Jefferson Avenue, 2133 Blake Street, Grandby, Quebec,
Scranton, Pa. Denver, Colo. Canada



No More Accidents in This Shop!

—or in any other where WIESMAN SAFETY PRESS GUARDS are installed on the power presses. The operating principle ABSOLUTELY PROTECTS THE OPERATOR without interfering with his natural working movements.

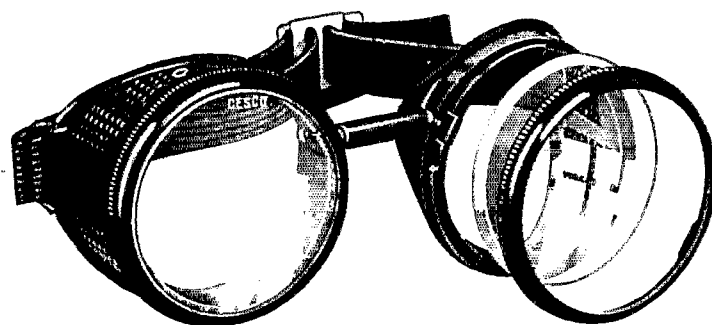
Simple, easy to attach, for all types of presses. Made for right or left hand stroke. Details?

Wiesman Mfg. Co.

31 South St. Clair St.
DAYTON, OHIO, U.S.A.

The Cesco Line moves forward

... again establishes new standards of
quality, performance, efficiency and safety



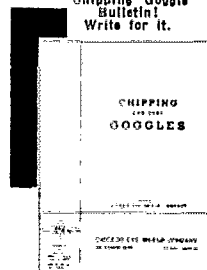
The new Cesco No. 535 Chipper's Goggle shown here is but one example of the outstanding quality, performance, efficiency and safety to be found in Cesco's complete line of industrial eye, head and lung safety equipment. Cesco No. 535 Chipper's Goggle introduces new and exclusive features in goggle design—features that make it a better goggle for chipping, cutting and all impact hazard work.

DEVELOPMENTS: Shallow eye cups (see illustration)—50 m.m. lenses set close to eyes, increasing effective visual range, CIRCULATION OF AIR ACROSS UNDER SURFACES OF LENSES—make the No. 535 cooler and more comfortable. The moulded eye cups are balanced. Weight: less than 2½ ounces complete.

*It will pay you to give this new goggle
a trial.*

CHICAGO EYE SHIELD CO.
2323 Warren Blvd., Chicago

Chipping Goggle
Bulletin!
Write for it.



Close Hopper-Bottom
Car Doors with

EASE and SAFETY

Prevent smashed fingers, strained backs, ruptures and other serious injuries, by using the Prescott Safety Tool—Saves time—Is inexpensive.

Write for prices and details

The Trumbull Mfg. Co.
Warren, Ohio

highway safety. At the Twenty-third Annual Safety Congress in Cleveland, he was re-elected general chairman of the Street and Highway Traffic Section. Since election, Governor Hoffman has expressed his continued interest in the work of the National Safety Council and his intention to devote as much time as possible to the work of the section.

Commenting on Governor Hoffman's election, the *Eastern Underwriter* says:

"The election of Harold G. Hoffman as Governor of New Jersey will give particular satisfaction to automobile and fire insurance men because of the fine administration of Mr. Hoffman in his position of State Commissioner of Motor Vehicles. He has been one of the nation's outstanding motor vehicle commissioners, has cooperated with insurance companies from the start and in a most intelligent manner."

The Hoberg Paper and Fibre Company, Green Bay, Wisconsin, is organizing a department of industrial relations under the direction of H. D. Banta, general chairman of the Paper and Pulp Section of the National Safety Council. Among the functions of this department will be safety, sanitation, housekeeping, first aid, other employee relations and general welfare.

LEWIS W. MCINTYRE, formerly traffic engineer for the City of Pittsburgh, has opened an office as consulting engineer at 6630 Woodwell Street, Pittsburgh. Mr. McIntyre is president of the Institute of Traffic Engineers, and vice-chairman of the Street and Highway Traffic Section of the National Safety Council.

W. E. MEGRAW, of the H. H. Robertson Company, Pittsburgh, and member of the Executive Committee of the Metals Section, National Safety Council, died early in November. Mr. Megraw had been active in the work of the Metals Section for several years, having been chairman of the Membership, Publicity and Program Committees. He was also a member of the Window Cleaning Code Committee.

MRS. MARY L. MALCOM, wife of Robert Malcom, president of the Chicago Eye Shield Company, died in Chicago September 15. For many years Mrs. Malcom had devoted a large part of her time to philanthropic activities and had done considerable work for the blind. She was treasurer of The Friends of American Writers.

NATIONAL SAFETY NEWS

An Aid to Management

(Continued from page 27)

ials will not only be disregarded but may cause the reader to lose interest in the magazine generally. However, *The Sohioan*, this side of sermonizing, never misses a chance to further the cause of safety. For instance, the back cover of the August, 1934 issue was used for an announcement of the splendid "Old Observer" series of broadcasts, sponsored by the National Safety Council; and the September, 1934, issue contained a copy of the speech which our Mr. Herbert recently gave in Cleveland as part of one of these broadcasts.

On the whole, the editor believes he can more effectively reduce accidents by the device of printing, under the simple caption, "Disabling Injuries for September" (or whatever the month happens to be), the names of those who suffered disabling injuries, the causes of those injuries, and the number of days lost: publicizing in each instance the employee's division or refinery.

A typical item will read: "Columbus Division—Dave Jones, truck driver, received cut on eye while removing lug bolts from wheel. Lost eight days." Or: "Akron Division—Bill Smith, service station salesman, was struck by an auto which rolled off the lift, causing wounds on leg and bruise on knee. Lost twelve days." Employees are chagrined to have their names listed and are therefore especially anxious to avoid the specific types of carelessness which cause most of the disabling injuries, and there is a lively inter-divisional competition to keep the list of names down to a minimum. Naturally, division managers and refinery superintendents share this ambition. Therefore, it's a pretty safe bet that if a division has four disabling injuries listed during a month, while other divisions have none, the manager of that division will regard those four names as evidencing carelessness in his territory. He will soon find some means of re-emphasizing to his personnel the importance of preventing these accidents.

Thus *The Sohioan* by limiting itself to brief accounts of the accident facts, causes its readers to preach their own safety sermons and to make their own safety resolutions. Our safety engineer, Mr. J. H. Herbert, believes that accidents actually have been reduced more by *Sohioan* publicity than through any other effort.

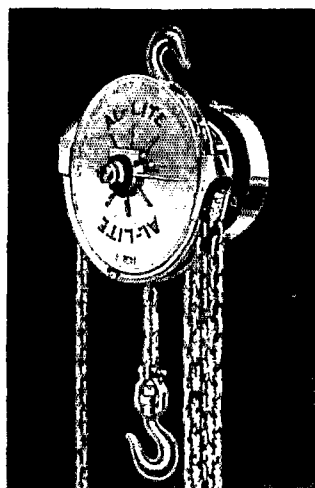
We would not suggest using the publication for special sales promotional

DECEMBER, 1934

HOISTS GO MODERN



In Lightness, Speed, Efficiency



1/3 LIGHTER

AL-LITE Safety HOIST

(of Alcoa Aluminum Alloy)

AL-LITE leads the way in today's swing to lighter, quicker, more logical hoists! It's the world's first and foremost MODERN Safety Hoist, built of certified Alcoa Aluminum Alloy and made safe through a patented overload Governor that automatically indicates overload in excess of 50%.

Its simple, compact design and strong aluminum construction make it 1/3 lighter and a real one-man hoist. Yet, in spite of lightness, AL-LITE is outstandingly strong, with a 5 to 1 safety factor.

Get "streamlined action" into your hoisting operation with an AL-LITE—the only hoist that is completely modern in design and efficiency. Ask your distributor, or write Chisholm-Moore Hoist Corp., Tonawanda, N. Y. Division Columbus-McKinnon Chain Corporation.

CHISHOLM-MOORE
CHAIN HOISTS TROLLEYS  ELECTRIC HOISTS CRANES

AL-LITE



COLD WEATHER SHOES

The best judges of REECE WOODEN SOLE SHOES are the men who have worn them for years.

Ask these men and they will tell you, "they are real cold weather protectors—keep feet warm and dry—avoiding colds, flu and rheumatism." Also that the Reece Wooden Sole is, "EASY AS AN OLD ROCKER."

Write for Complete Catalog No. 1.

Reece Wooden Sole Shoe Co., Inc.
Columbus, Nebraska

501—Waterproof
503—Full Felt Lining
505—Safety "Strong Toe"

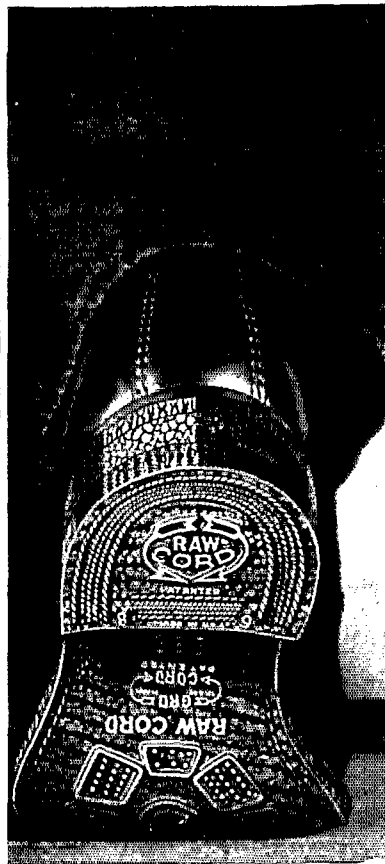
HERE'S SAFE FOOTING ON ANY FLOORING

ALWAYS—wherever he steps in your plant—the workman who wears *Gro-Cord Raw Cord Soles and Heels* is protected from costly slipping accidents. On slippery boards... on wet flooring... on stairways... on ladders... on elevators, *Gro-Cord Raw Cords* provide a non-slip walking surface.

Upright cords, embedded in live rubber maintain a friction surface between sole and flooring. Wear keeps cord ends constantly bare and sole non-slip to the last day of wear.

Workmen like to wear *Gro-Cords* because of their great flexibility, comfort and long wearing qualities. Easily attached to any shoe or any manufacturer can supply them on new footwear. A complete line of safety rubber footwear, *Gro-Cord* equipped, is also available.

Write for catalog—test *Gro-Cords* on your *own* shoes.



GRO-CORDS are widely used in Dairies, Iron and Steel Foundries, Railroad Shops, Auto Factories, Gas and Electric Plants, Ice and Fuel Stations, Stone Quarries, Mines, General Warehouses.



The Lima Cord Sole & Heel Co., Dept. 12F, Lima, O.

Fully Protected by Patents—Any Infringements Will Be Prosecuted

GRO-CORD

NON-SLIP SOLES AND HEELS



(Patent Nos. 1,292,936 and 1,946,331)

Look for the DIAMOND

DIAMOND Disc Respirators are universally popular because they are handy, efficient, and comfortable. Men will wear them because of these features. A large filtering area is provided in the Diamond Disc pocket arrangement where sponge is inserted for filtration purposes. Valve action produced by pressure at exhalation makes respiration easy. Leading industrial plants use the Diamond Disc.

Manufactured by

The Hygeia Respirator Co.
129 E. 85th St. New York City
Northwestern Representative
THE SANDERSON SAFETY SUPPLY CO.
71 Columbia St. Seattle, Wash.

purposes. The less said about sales the better. The magazine should not be loaded up with short-sighted pro-management propaganda. An employee magazine should be what its name implies, a periodical for employees, and as far as possible, by employees.

Above all, do not expect the house organ to carry the labor relations load. If the industrial relations program is limited it may be wise to expend energies in another direction first. The best magazine will not relieve management of its obligations to provide a planned program of employee protection against the major risks of life. A magazine, even a good one, is not a substitute for collective bargaining.

Practically everything that can be said concerning the value of employee magazines to management would be an elaboration of or a natural inference from the coordinating, morale-building value. This value seems to me to be greatest when the magazine is presented sincerely by the management and least when issued from ulterior motives. That value must come indirectly and is represented by intangibles which, under favorable conditions, rapidly translate themselves into tangibles.

The following seven points summarize the main advantages which I believe have accrued to our organization as the result of six years of *The Sokioan*:

1. A means of bringing about mutual understanding between management and men as it offers a medium of appeal to employees through three main interests—their jobs, their homes, their hobbies.
2. A medium of communication between management and men, enabling management to define clearly company policies and principles. In these trying times, the accurate and complete knowledge and understanding of company policies and problems on the part of the employees will contribute greatly to maintaining a rational attitude.
3. A means of educating employees to be organization conscious; educating each worker to understand his fundamental relation to his fellow worker, the unit in which he works and the company as a whole.
4. A means of fostering pride of workmanship, pride of teamwork, pride of company.
5. A means of educating employees by disseminating information about the business of the company, of the industry and the company's place in the industry, encouraging sound thinking on industrial and economical subjects.
6. A means of bringing the ramifications of the industrial relations program to the attention of the employees.
7. A means of securing increased attention and interest in accident prevention and health conservation and increased participation in social and athletic activities as a further medium for promoting a better understanding, cooperation and good will among employees.

NATIONAL SAFETY NEWS

The late Mr. E. K. Hall, formerly in charge of personnel work for the Bell System, expressed himself as follows regarding the employee publications of the Bell System:

The highest function of management is to maintain morale, to develop maximum team play, first picking and training the team and then eliminating every discoverable element working against cooperation or smooth-running.

All these matters, tying in with that intangible something called morale, have little chance of success without the aid of the company magazines.

In my estimation we have received dollars for nickels upon our investment in company magazines.

Our Sohioan represents a cost of about 20 cents per copy, which amount is high because only 6,000 are printed. I believe it would be difficult indeed to match the potential good to our organization by any like expenditure. In my opinion, our management has received liberal dividends from the company magazine investment.

Our Town is Known for Its Safe Mill

(Continued from page 16)

Those who share in the duties of the safety department are: F. L. Irvin, supervisor of employment and editor of the plant publication; Clifford G. Chase, assistant master mechanic; Dr. J. W. Crane, part-time plant physician; Miss Ella Arseneau, R.N., full-time nurse, and two part-time assistants in first aid department.

The safety slogan, "All for Safety—Safety for All," is well exemplified by the employees of the St. Croix Paper Company. Every man from top to bottom has given his whole-hearted cooperation, full interest and live enthusiasm to the program of the safety department. This splendid support has resulted in several noteworthy safety performances, two of which are as follows: (1) 188 consecutive no-accident days in 1928, involving 584,887 safe man-hours. (2) Present holder of Paper & Pulp Industry safe man-hour record with more than two and one-quarter million safe man-hours. This safety achievement began on September 22, 1931 and to date remains unbroken.

The past few years, they say, have brought about a "bloodless revolution," but a lot of people seem to have lost their heads in it.—The Houghton Line.

DECEMBER, 1934

SAFETY GUARD ECONOMY

THE Harrington and King system of guard building eliminates many of the difficulties of safety guarding machines and belts and permits making, in your own shop, the finest of guards at minimum expense.

We can supply all the material in excellent form for easy assembling.

Perforated Angles and Bands for Frames.

Gussets to Make Rigid Corners.

Floor Posts and Sockets for Detachable Guards.

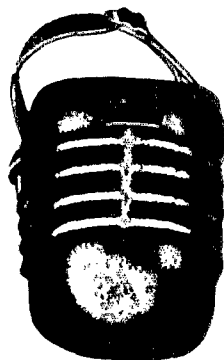
Perforated Sheets for Covering Fabric.



The Harrington & King Perforating Co.

114 Liberty St.
NEW YORK, N. Y.

5645 Fillmore St.
CHICAGO, ILL.



SANKEY FOOT GUARDS

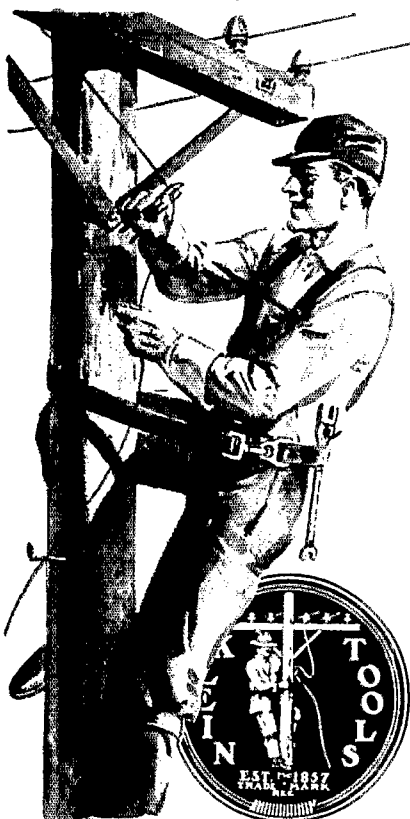
Sankey Foot Guards are made of 16-gauge steel, or Rigidium, an aluminum alloy. Being light in weight they are comfortable to wear and permit free and easy movement of the feet. Although light, they are constructed for strength and will withstand an impact of 300 foot pounds.

Designed so that the floor or ground takes the force of the impact in case of falling objects.

Write for your sample today.

ELLWOOD SAFETY APPLIANCE COMPANY
ELLWOOD CITY, PENNSYLVANIA

KLEINS



for SAFETY

A TOUGH JOB, a dangerous job, — made easier — safer — by Kleins. Public utility companies everywhere have standardized on Klein equipment for linemen. Linemen themselves know the importance of Klein equipment on the job that calls for skill, courage, and caution. Klein equipment has represented the maximum in quality and safety — "since 1857."

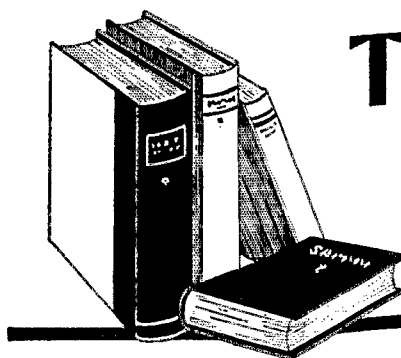
A national campaign featuring safety for linemen is being conducted by Mathias Klein & Sons to assist in selling the idea of safety to linemen.

Distributed through jobbers

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

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

Mathias KLEIN & Sons
 Established 1857 Chicago, Ill. USA
 3200 BELMONT AVE., CHICAGO



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

URGES REVISION OF FIRE INSURANCE CLASSIFICATIONS

Stone, Harold A., *Fire Insurance Classification of Cities and Fire losses*. No. 43 of the Public Administration Service Series. 7 tables, 3 charts, 28 pages, paper bound. Price 50c. Published by Public Administration Service, 850 E. 58th Street, Chicago.

The need for an improved measuring schedule for fire protection is urged by Mr. Stone in this pamphlet. His study includes 43 cities with populations over 50,000 and concludes that there is an almost complete lack of coordination between the cities' actual fire losses and their insurance ratings according to the National Fire Underwriters' classification of fire defenses and physical conditions.

Mr. Stone challenges the methods of spreading insurance losses based on the present grading system which rates a city a total of 5000 points on these nine factors: water supply, fire department, fire alarm, police, building laws, hazards, structural conditions, climatic conditions and divergence between the first two factors. No consideration, Mr. Stone states, is given to whether the department functions efficiently and uses its fire defenses to advantage. The fire prevention bureau, an activity that has grown up since the schedule was devised, is not considered.

The author recommends four additional factors in grading systems: (1) Ability to use fire defenses; (2) Fire prevention; (3) Moral hazard; (4) Maintenance of an adequate record of fire losses.

BOOKS AND PAMPHLETS

Labor Laws and Legislation:

U. S. Bureau of Labor Statistics: Discussions of labor laws and their administration at the 1933 Convention of Governmental Officials in Industry in the U. S. and Canada. Washington Government Printing Office, 1934. Price 15c. (Pamphlet)

Occupational Diseases:

Occupational disease compensation. A report. Published by the Pennsylvania Commission on Compensation for Occupational Disease, Harrisburg, Pa., 1933. Free. (Pamphlet)

School Shops:

A school shop safety program. Shop safety rules for teachers and students. Published by the State Board of Control for Vocational Education, Lansing, Mich., 1934. (Free) (Pamphlet) (Bulletin No. 228)

Textile Industry:

The silk industry. Published by the Retail Credit Co., Atlanta, Ga., 1934. (Pamphlet) (Industry Report)

PERIODICAL ARTICLES

Dusts:

Church, L., Easy to get rid of dust. Pt. 2. In *Factory Management and Maintenance*, November, 1934, p. 512-513.

Price, D. J. and others: Lessons from some recent dust explosions. In *National Fire Protection Association, Quarterly*, October, 1934, p. 153-188.

Fatigue:

Manzer, C. W.: Fatigue. How does it affect the quantity and the quality of muscular work. In *The Personnel Journal*, October, 1934, p. 140-143.

Home Safety:

Drugs, medicines and other compounds in the home. In *Travelers Standard*, November, 1934, p. 217-220.

Petroleum Industry:

Jewett, R. A., Health hazards in the oil industry. In *American Journal of Public Health*, November, 1934, p. 1123-1128.

COMING EVENTS

Of Interest to Safety Men

December 6-7, Washington, D. C.

Highway Research Board, Fourteenth Annual Meeting. Roy W. Crum, director, 2101 Constitution Ave., Washington, D. C.

Jan. 16-18, New York City

American Society of Civil Engineers, Annual Meeting. Secretary, George T. Seabury, 33 W. 39th Street, New York City.

Jan. 22-25, Washington, D. C.

American Road Builders' Association, Convention and Exhibit. Engineer-Director, Charles M. Upham, 958 National Press Bldg., Washington, D. C.

Mar. 5-7, New York City

Sixth Annual Greater New York Safety Conference. Julien H. Harvey, National Safety Council, 9 E. 41st Street, New York City.

NATIONAL SAFETY NEWS

Keep Them Interested

(Continued from page 14)

I have not mentioned a number of other items that can be used to create and maintain interest in safety in the man on the job, but have confined my remarks to those things which I deem most essential. To these might be added the safety contest between plants or departments, with its friendly competition. First aid teams are important in many plants in the effort to sustain interest. The use of films, film strips and slides has considerable value, and this possibility should not be neglected.

A careful analysis of various human interests reveals that man is interested in those things which vitally affect his mode of life—his pleasures, his pocket-book, or his convenience. Safety will interest any individual to whom it can be proven that it is to his benefit to work and live safely. Perhaps a quotation, which may be familiar to some of you, states the case more clearly than I can. "I am not much of a mathematician," said Carelessness, "but I can add to your troubles. I can subtract from your earnings. I can multiply your aches and pains. I can divide your attention. I can take interest from your work and discount your chances of safety."

Maybe that's a good statement with which to start your efforts to create an interest in the man on the job in safety. And perhaps that is also a good statement with which to close these remarks.

A Tough Job

OPERATING officials and safety men in the Western World really do not know what trouble is. The superintendent on the Chinese Eastern Railway would seem to be in a position to understand that word. One division head reported that between June 17 and August 6 the following events occurred: Twelve train wrecks, 43 bandit raids, 2 murders, 24 railway employees wounded, 14 robberies, 28 cases of damage to road bed and rolling stock, two fires, and 9 cases of sabotage to telegraph and telephone lines.

A recent Associated Press dispatch concerns the driving skill of Mustapha Agha, a taxi driver in Istanbul who has piloted his cab through the narrow streets of the city without an accident for a quarter of a century. The city authorities recognized this accomplishment in a practical way by presenting him with a medal and a check.

DECEMBER, 1934



Safety
Officials:
Write for
FREE
Sample.



SAF-T-OP

"The High-Speed"
Antiseptic Applicator

Speed is an essential part of good antiseptic technique. The sooner antiseptic is applied to wounds after injury, the less chance there is for infection.

Saf-T-Tops offer a most convenient method of quick disinfection for employees before going to the first-aid station. They can be carried in the pocket, tool-kit or hand bag ready for instant use. The patented applicator tip feeds like a fountain pen, applying solution exactly where needed.

Your Choice of 5 Solutions

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Mfg. Chemist

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THE OVERHEAD DUST IS THE REAL MENACE

- Dust that shakes loose from overhead piping, beams, ledges and walls—the fine powdery dust that constantly filters down and pollutes the plant atmosphere—that's where the REAL danger lies.

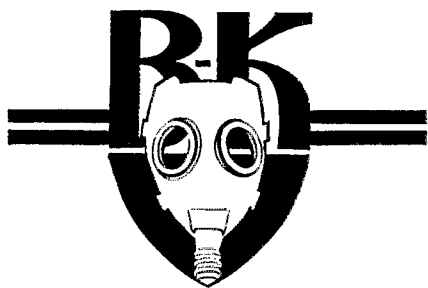


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Quickly, Safely, Economically

Most overhead dust was first on the floor. Pick it up from the floor, regularly and at low cost, with a Hoffman Vacuum Cleaning System—and use the same equipment for an occasional rapid, economical overhead cleaning. We build all types—portables, and stationary units engineered to meet your dust problems.

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And a Safe New Year!*

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Manufacturers
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Industries Receive Trophies at Maine Safety Conference

THE Governor Louis J. Brann Trophy, awarded by the Governor of Maine to the plant within the state for the greatest accomplishments in accident prevention, was presented to the Bath Iron Works Corporation at the Seventh Annual Maine Safety Conference held at Augusta, November 1.

This company manufactures all types of steel vessels and its hazards are more severe than the average. In 1930 the corporation employed 1,150 men and suffered 960 injuries, of which 256 caused loss of time. Starting in September, 1933, with a crew ranging from 400 to 700 men, the company operated ten months without a disabling injury.

The "U. S. Dewey," one of the latest type of fighting craft, was built and launched without a permanently disabling injury, and with the last ten months of construction entirely free from lost-time cases. The ship was welded, the first to be so built in Maine, and practically all surfaces below the water line were heavily galvanized. Early in the construction, the problem of metal fume fever appeared but was overcome. Previous to the launching of the destroyer "Dewey," this crew built the ocean-going tug "Turomaco Girls" without a disabling injury.

In addition to the Governor Louis J. Brann Trophy, trophies were awarded

to eight companies winning first place in their respective groups in Maine's First Industrial Safety Contest, January 1 to June 30, 1934. The winners, all of which had perfect records, were as follows:

Cotton Group—Lisbon Spinning Company, Lisbon. 125,356 man-hours.

Paper Group—Rogers Fibre Company, Bar Mills. 95,197 man-hours.

Special Paper Group—St. Croix Paper Company. 382,638 man-hours.

Public Utilities—Bangor Hydro-Electric Company, Railway Division. 127,779 man-hours.

Shoe Manufacturing Group—Adult-Williamson Shoe Company, Auburn. 356,271 man-hours.

Woolen Group—American Woolen Company, Pittsfield. 155,032 man-hours.

Woodworking Group—E. I. duPont de Nemours & Company, Portland. 113,327 man-hours.

Miscellaneous Group—Nissen Baking Company, Portland. 170,399 man-hours.

Walter J. Brennan, safety engineer for the State Department of Labor and Industry, also pointed out that 55 per cent of the trophies awarded to members of the Paper and Pulp Section of the National Safety Council in the 1934 contest were won by Maine plants, in-



PLANNING THE YEAR'S WORK

John E. Long, president of the National Safety Council, and W. H. Cameron, managing director, in conference at Council headquarters.

cluding the grand trophy presented by The Paper Industry which was won by the St. Croix Paper Company.

Attendance at this year's conference was double that of last year and the capacity of the State House was taxed. A resolution was passed commending Governor Brann for his interest and participation in accident prevention work and a steering committee was created to work with the coming legislature for increasing the safety activities of the Department of Labor and Industry.

Planes Not Likely to Be Struck by Lightning

AIRPLANES in thunderstorms are in little danger of being struck by lightning unless radio antennae or other wires are trailing from the machine, according to *The Week's Science*, quoting the conclusions of Dr. G. C. Simpson, weather expert, in a pamphlet issued by the British Air Ministry.

A number of mysterious crashes have been blamed on lightning striking the craft while it was invisible inside a cloud or under other circumstances when no report of eye witnesses could be obtained. No such instance has been proved with certainty. Dr. Simpson believes such events to be extremely rare, if they occur at all.

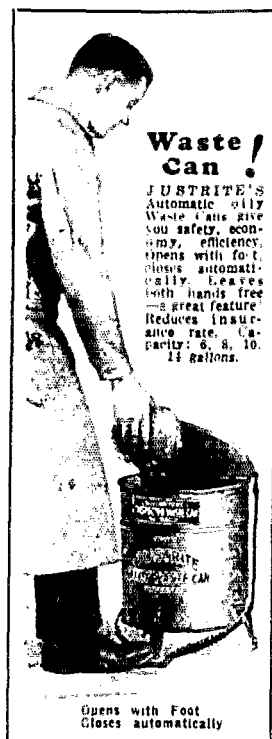
To cause a flash of lightning there must be a great difference of electric voltage at the two points between which the flash will travel. Such voltage differences in clouds require distances much greater than the size of any aircraft. Lightning may flash to a cloud from the ground or from another cloud but an airplane actually in the cloud at one end of the flash would be unlikely to be damaged.

One desirable precaution is that the entire airplane be one electric unit, either by complete metal construction or by connecting separated metal parts by conducting wires. The danger of trailing antennae is because differences in electric voltage may exist between the airplane in a cloud and the distant end of the antennae. Pilots are advised to reel in antennae whenever much radio static indicates nearby lightning.

Advocates of education as a cure-all overlook the fact that most men aren't making use of the education they've got already.—The Houghton Line.

DECEMBER, 1934

PRESENTING New Justrite Safety Cans!

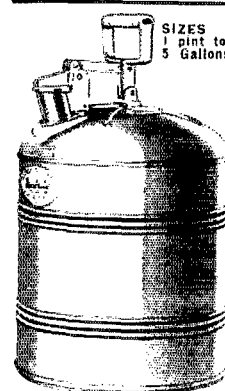
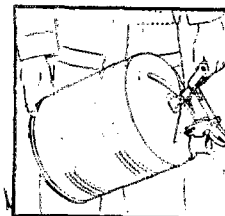


JUSTRITE presents a New Improvement in the 2, 3 and 5 gallon Safety Cans. The carrying handle has been redesigned. This permits "Easier Carrying" and "More Accurate Pouring." Large Spout—easily filled direct from filling station hose—no funnels required.

See how easy it pours—the most efficient can for the workman. Automatic spring controlled spout cap. Natural Hand Grip—opens in one operation—closes automatically. A safe container for carrying explosive and volatile liquids—no leakage or evaporation. Labeled by the Underwriters' Laboratories, Inc., and Approved by the Associated Factories Mutual Fire Insurance Companies.

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POSITIVE QUICK ACTION

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Improved Possons Safety Device for Punch Presses

FEATURING

1. Device equipped with a "Pullout Multiplier" removes the hands of the operator 5 1/2 inches on the first 1/2 inch of ram stroke.
2. Adjustable ram-connection—device operated from below any possible breaking point.
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OUR ENGINEERS ARE QUALIFIED TO ADVISE REGARDING YOUR PUNCH PRESS SAFETY PROBLEMS
Devices furnished on approval.



IT'S MORE THAN A GUARD
MORE THAN 3300 IN USE

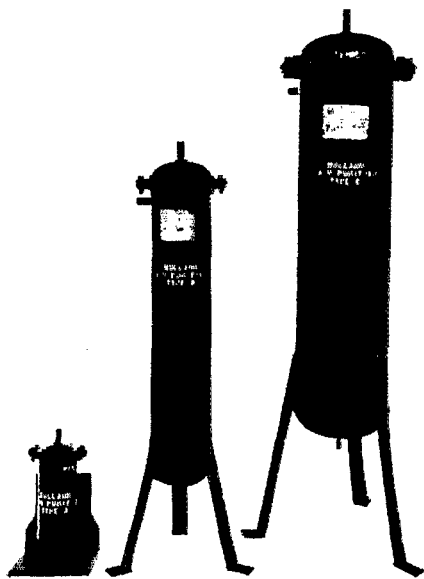
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SILICOSIS

Authorities recognize the harmful effects of certain breathed dusts, prominent among which is silica.

The practical solution is the Bullard Compressed Air Purifier when used in conjunction with a hose mask.

This purifier thoroughly removes dust, fumes, oil and water from compressed air. It is completely trouble-proof, requiring no attention other than occasional replacement of filters. The purifier may be placed in the compressed air line without mechanical difficulty.

Any Bullard office or distributor will gladly send our bulletin describing the Bullard Compressed Air Purifier.

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Bullard products are distributed by
Safety First Supply Company, Brady Bldg.,
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C. H. Dockson Co., 2885 East Grand Blvd., Detroit

Safety Service Company, 108 No. Quincy St., Green Bay, Wis.

Direct Sales Company, 108 President Road, Braintree, Mass.

C. D. Genter Co., Chattanooga Bank Bldg., Chattanooga, Tenn.

J. A. Hunt Co., 2036 Sansome St., Pennsylvania, Pa.

From Head to Foot

(Continued from page 18)

hampered by air hose. The only available protection under these conditions is a respirator with a filtering medium of fiber or tissue. Only those types which have been demonstrated to possess the necessary filtering medium to give sufficient protection against fine dusts should be selected."

From the foregoing general information it would seem that the major developments in industrial protective clothing relate to the protection of the respiratory organs. These developments have, no doubt, been given unusual impetus in recent years by occupational disease claims, especially concerning silicosis. New types of protective equipment against dust in industry are being developed, along with better procedures for the observation of such work and the enforced use of protective equipment.

In addition to new types of clothing and equipment, management and workers are cooperating with the manufacturers of safety equipment in developing the use of new materials and improved design. These include new composition materials for protective headgear and other devices to protect various parts of the body; air insulated protective suits for jobs involving extreme heat; air fountain respirators for dusty work where only marginal protection is necessary; increased use of special chrome-tanned leather for resistance to heat; development of special metal alloys for the mechanical parts of protective equipment, and improved design in eye protective devices.

From our contact with industrial concerns as well as the manufacturers of safety clothing and equipment, it would seem that there are no needs for protective clothing which are not being taken care of, to some degree at least. The development of safety clothing to its present degree of refinement has been possible because of cooperation by all persons concerned.

The safety engineer can keep informed of developments in his field by referring to the available publications on accident prevention work. On this point a consultant in protective devices recently said to us, "Unfortunately, it seems to me that industry has not taken advantage of these excellent publications. This point has been brought home very forcibly during some of the recent silicosis suits where employers have been caught at a decided disadvantage

when the plaintiff was able to prove, by referring to government publications dated twenty years back, wherein certain manufacturing operations were described as hazardous and means of combating these hazards suggested. We personally know that in most instances manufacturers were not aware of the existence of these publications."

Reference might be made here to the availability of practical information from such sources as U. S. Department of Labor, U. S. Public Health Service, U. S. Bureau of Mines, National Safety Council, state departments of labor, American Standards Association, insurance companies, and consulting organizations. The advancement of public and private means for the collection and dissemination of such information is, undoubtedly one of the trends of present day accident prevention work.

Trophies Awarded to Seventeen Ships

SAFETY trophies have been awarded to 17 ships operated by Lykes Bros.—Ripley Steamship Company for having completed the allotted number of



voyages during 1933 without a disabling injury to any member of the crew.

The body of the flag, shown in the accompanying illustration, is green with a six-inch white border and the miniature white house flag with a blue diamond and white letter "L" is shown in the body of the flag at the left side.

When flown at the mast head the combination of colors makes the pennant most attractive, and the men of these vessels feel considerable pride in displaying this trophy in American and foreign ports.

Industrial Health

(Continued from page 36)

ful effects of new substances introduced into plant processes. In cooperation with other departments he should investigate the extent of the hazards and devise measures of control.

2. Routine examination of applicants. Procedure should include a detailed history of the applicant's previous illnesses and accidents classified under (a) diseases of childhood, (b) general infectious diseases, (c) respiratory diseases, (d) venereal diseases, (e) accidents and resulting physical defects. A detailed history of previous occupations is very important. Merely stating the type of industry has slight value. The exact duties performed in each occupation and the probable length of exposure to hazardous substances should be noted.

If the applicant has been or will be exposed to dusts which induce lung diseases, an X-ray picture of the chest is important. This part of the examination may be referred to an expert roentgenologist as its value depends upon the type of pictures taken and the experience of the reader who interprets them. The examining physician also may need additional information obtained by laboratory analysis of blood, sputum and urine.

3. Rating and placement of applicants. In cooperation with the personnel department the applicant should be rated and placed, not only on training and past experience but also on physical and mental ability. The record of his examination should be the confidential property of the medical department.

4. Periodical physical examinations. The frequency of periodical physical examinations must depend upon individual circumstances as determined by the supervising physician. Where examinations are made for the first time, employees should be given ample explanation of their benefits and assurance that their jobs are secure.

5. Provision for the disabled. Employees who develop disabilities during employment should be reassigned to occupations which will not aggravate the disability, or they should be provided for in other ways.

Many concrete examples might be cited of results obtained through dust control measures and competent supervision of workers. One which strikingly illustrates the value of such measures is the experience of the South African gold mines. During the years 1918-20 the production rate for silicosis for those who had 10 years underground service amounted to about 10 per cent. The highest rate for those having 16 years service amounted to 14.5 per cent. During the years 1920-23 the production rate for those who had 10 years of service dropped to 5 per cent and during the year 1931-32 the rate dropped to a fraction over 1 per cent. The highest rate during the 1920-23 period amounted to a little over 7 per cent with 16 years' service and in the period 1931-32 the highest rate was about $4\frac{1}{2}$ per cent after 18 years of service. This experience can be duplicated wherever preventive measures are effectively applied.

DECEMBER, 1934

A Dressy SAFETOE in Great Demand



Carried in stock in sizes D 5 to 12. Price \$3.50

We carry a complete line of Safetoe shoes in stock to meet practically every requirement. Write for special illustrated Safety Shoe catalog.

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Manufacturers of every kind and type of shoe worn in America, including the famous Buster Brown shoes for boys and girls, and Brownbilt Tread Straight shoes for men and women.

Stock No. H 112-2 "Blue Ribbon" Men's Black Elk Safetoe Blucher is a very popular safety shoe — because of its style lines and generally dressy appearance, and because it comes in D width to give more comfortable fit to narrower feet. Has sturdy, heavy, single oak sole, Steel Box toe and wear-proof lining. Welt construction.



STRENGTH and SAFETY without bulky weight

Examine the jaws on this new lighter, thinner, stronger Crestoloy Wrench—lean and sinewy; trimmed for quick, effortless action.

Crestoloy Wrenches are nearly one-third thinner than the conventional adjustable wrench yet actually more than

twice as strong. They are SAFE because they will not spring, break or slip.

Available in 4 to 15-inch sizes at prices little higher than for ordinary wrenches. Ask your Supply House or write for Crestoloy catalog of safe, fully-guaranteed tools.

CRESCENT TOOL COMPANY

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CRESTOLOY STEEL WRENCH

DESIGNED, MADE AND GUARANTEED BY THE ORIGINATORS OF THE CRESCENT WRENCH



Depression Dividends

(Continued from page 9)

possible working conditions. When the plant was completed it might have been reasonably assumed that inasmuch as here was a factory that was as near to perfect in regard to safety conditions as it was possible to design that henceforward little money need be spent for safety devices and training.

But it didn't work out that way. The graphic charts that accompany this

article show how the theory, if ever it was advanced, failed to prove itself true, and also show what was done to overcome the rising curve of insurance costs.

In 1923 less money was spent for safety than in 1922. In 1923 the cost of insurance went up. In 1924 the direct safety expenditure was slightly increased. Still the cost of insurance soared because more accidents were taking place in the refinery. In 1925 the safety expenditure was increased but only slightly. That year the accident record

and insurance costs mounted higher than ever.

This was becoming a serious problem. Something had to be done. So with commendable forthrightness the safety expenditure for 1926 was made double that of the previous year. And it brought home the bacon. The number of accidents and the cost of insurance tumbled. It became clear that here was a way to reduce accidents and the cost of insurance. Since that time generous appropriations for direct safety have been made.

In 1929, the year in which the most money was spent for safety, the curve of insurance cost was started definitely downward and it has been coming down ever since. This is made all the more remarkable because during the past three years an extensive program of reconstruction has been carried on within the central refinery building during regular plant operations. In spite of the hazards connected with installing a completely new foundation and reinforcing the entire framework of the building with concrete and steel while the plant was operating the accident record was lowered each passing year.

Insurance costs for this company have not fallen because of decreases in number of employees or total payroll as is indicated by the second chart, which also shows the value of safety expenditures in pulling down the cost of accident insurance per total payroll.

On the first chart is a dotted curve marked "cumulative value of expenditures for safety." It represents the rising value from year to year of the money spent for safety training and equipment. It makes clearer the reason a comparatively small rise in the expenditure for direct safety can cause a drop in insurance costs worth many times the amount spent for safety.

Dollars spent for insurance buy invaluable protection. No business can afford to operate without it. But dollars spent for safety training and devices buy indispensable prevention. And it is these prevention dollars which will in the normal course of events yield the biggest dividends because they are not in reality written off the books at the year's end. Money spent for safety devices will work for you as many years as these devices remain in your business. Money spent for safety training will work for you as long as the employees receiving that training remain in your employ. Money spent for accident prevention is about as permanent an investment as this shifting world affords.

NATIONAL SAFETY NEWS

FOR SAFETY . . .



IPCO INSULATED TOOL BAG Style L

. . . for hoisting tools, insulators and supplies. 12" dia. by 15" deep. Manufactured of heavy weight hard woven canvas, special flexible waterproof leather bottom. Non-metallic ring at top to hold mouth of bag open at all times. Rope loop for hanging over pin. All loop holes leather reinforced inside and outside.

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NEED

Try out a few and convince yourself of the better results obtainable through the use of this bag.

INDUSTRIAL PRODUCTS COMPANY

Accident Prevention Equipment.

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PREVENT SLIPPING ACCIDENTS

on Stairs and Other Walkways

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American Abrasive Metals Company Treads Are Fireproof
For New and Worn Steps

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A Million Hours Was Their Goal

EMployees of Sinclair Prairie Oil Company in the Shidler-Burbank district resolved to work a million hours without a disabling injury. That was back in 1929 at a regular monthly safety meeting. Their ambition was realized in October, 1934, and a celebration was staged commemorating their accomplishment.

On Monday, October 22, 120 employees who had worked in the Shidler district during the past five years were officially and publicly honored by officials of Sinclair Prairie Oil Company. A special program was started at 5:00 p.m. in the Shidler High School auditorium attended by 1500 to 1800 men and women. A large certificate was presented the safety chapter and individual certificates for all employees were given to the men who had worked at Shidler during establishment of this record. After the program the large crowd adjourned to the barbecue ground.

During the period of time in which this record was being established, 15 wells were drilled to an average depth of 3000 feet and 27 wells were plugged. There were 2,803 strings of rods pulled and run, totaling a string 3,185.2 miles in length. Also 496 miles of tubing were pulled and run in 437 strings and 1,776,346 barrels of oil were produced. In the gasoline plant there had been over 28,000,000 gallons of gasoline manufactured. All this work has been done under the supervision of L. M. Kelsey, gasoline plant superintendent, and J. W. Stoker, production superintendent and they are in a large measure responsible for the safety record.



The Shidler safety chapter of Sinclair Prairie Oil Company employees was the first company chapter organized. Beginning in 1925 as a company unit, it has grown to serve the community. It now has its own orchestra and its monthly programs attract the families of employees and many outsiders. The community safety work of this chapter is strongly supported by the public schools and the civic organizations of Shidler. Since the Safety chapter now holds a high industrial record for safety, the civic clubs are joining it to establish a high record for home and public safety for the town of Shidler.

The Shidler safety chapter is one of forty Sinclair Prairie Oil Company safety chapters. These units serve communities over the Mid-Continent, Rocky Mountain and Gulf Coast areas. All the chapters meet once a month and their meeting programs of safety are controlled by the safety department at Tulsa. H. W. Boggess, superintendent of safety for the company has organized all the chapters and due to his program of safety education, all the chapters are trying for the mark reached by the Shidler chapter in industrial and public safety.

The editor of the Shidler newspaper, in writing of the local celebration, said: "In the parlance of the oil man, the meeting and barbecue was the greatest gusher ever brought in for the Osage country."

Dry Ice Causes Accident in Home

A HOUSEWIFE, wishing to preserve a brick of ice cream, put a piece of "dry ice" in the tin foil wrapper along with the ice cream and then placed the package in a mason jar, screwing the cap on lightly.

After a short time the jar exploded, blowing a piece of glass into the eye of a young boy who stood nearby looking with longing gaze at the ice cream. The sight of one eye was destroyed and some damage done to the room by the explosion which was caused by the rapid building up of pressure inside the jar by reason of the generation of gas.

Dry ice should never be placed in a tightly closed vessel of any kind, warns the *Michigan Mutual Shop Man*. The gas should be given a chance to escape.

The man who works single handedly adds; he who works through an organization multiplies.—B. C. Forbes.

GAMBLE HERE



—but Not with your Plant and Profits

THERE is more than a few dollars at stake when you take chances with inadequate fire extinguishers. You may lose orders, customers and profits which not even insurance can bring back.

For alcohol, lacquer, gasoline and oil hazards, LUX extinguishers will give you protection, more complete than you can get with any other type. LUX extinguishers put out flammable liquid fires burning in a tank or on a surface as effectively as foam or carbon tetrachloride units. LUX also snuffs out fires involving flammable liquids flowing through the air from leaking pipes or overflowing tanks against which foam and carbon tetrachloride extinguishers fail.

LUX smothers fire with an inert gas instead of a liquid. It is instantaneous and three dimensional in its extinguishing effect. It leaves no mess to clean up and does no damage to anything in the fire area.

Investigate LUX for your flammable liquid hazards and play safe! Write to Walter Kidde & Company, Inc., 71 West Street, Bloomfield, New Jersey.

2 Reasons Why LUX Gives Better Fire Protection



A faster rate of discharge gives the new Super-LUX extinguisher longer range, greater penetrating power and greater fire extinguishing wallop.

The new oval shaped LUX discharge horn gives a better distribution of snow and a wider blanket of smothering gas.



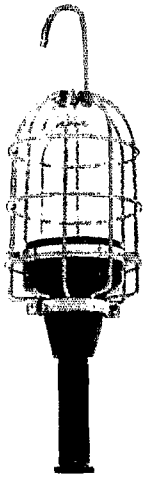
For All Electrical and Flammable Liquid Fires

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

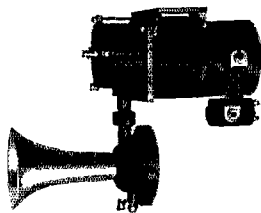
VAPOR PROOF PORTABLE LAMP

A new vapor-proof portable lamp designed and constructed to offer protection against such hazards as moisture, gases, acid fumes and dust has recently been announced by Industrial Products Company, 800 W. Somerset Street, Philadelphia, Pa. It will take a 100 watt bulb and is of heavy-duty construction throughout with threads in the rubber safety handle and glass globe accurately made. The manufacturers further state the weatherproof socket—with cord grip clamp, takes all strain off the terminals. Cadmium plated guard over the globe, electrically welded at joints, which clamps to the handle. Guard can also be furnished with a rubber insulation that helps to absorb shocks from accidental dropping. Tests show a di-electric strength of over 4000 volts.



NEW FEDERAL ELECTRIC-AIR HORN

This unit was developed to meet the requirements for a penetrating and powerful signal without the necessity of steam or compressed air piping. It utilizes as the sound producing member the same type of vibrating-diaphragm compressed air horn employed in large fire alarm horns. The horn member is directly attached to a special type of compressor



that furnishes air as required by the horn and which is driven by a fast, highly accelerated, heavy duty type motor. It is equipped with relay for connecting into fire alarm, paging and other signaling systems. Code signals may be sent on it on a timing of one to two seconds per impulse. It can be furnished for 12, 24, or 32 volt storage battery operation and for 110 and 220 volt AC or DC supply. Manufactured by the Federal Electric Company, 8700 South State Street, Chicago.

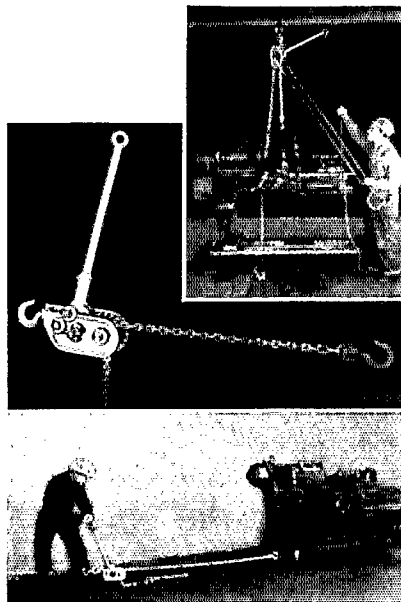
STONEHARD RESURFACER

Concrete, wood, brick, asphalt or composition floors that have become rutted,

rough or broken may be repaired or completely resurfaced and made ready for truck traffic in 36 hours by means of this new material. The manufacturers claim it provides a tough, resilient surface which is waterproof, dustless and non-skid. It can be applied with an ordinary trowel. They further state extensive preparation is unnecessary and that any handy man can make permanent repairs to all types of floors and platforms. The makers are Stonhard Company, 401 North Broad Street, Philadelphia, Pa.

COMBINED PULLING JACK AND CHAIN HOIST

To fill the need for a pulling jack that could also be used for overhead vertical lifting, the Anchor Puller-hoist has been recently developed by the Edelblute Manufacturing Company, 343 Jackson Street, Reynoldsville, Pa. It is a lever-operated



mechanism, using simple principles of leverage, working on a ratchet-toothed chain sprocket wheel, and a load chain with a swivel hook. It is automatic reversing, and the load can be pulled or lowered a notch at a time, by merely turning the reverse latch to its proper position. Hoisting speed is 2 to 4 feet per minute, according to the load. At present, it is made in one size only for a rated capacity of 1½ tons. The hoist weighs only 20 pounds and the 15 foot chain 16 pounds. It has been designed to be handled and operated by one man.

TATTELITES "THEY TELL THE TALE"

This is the name of a new line of safety neon potential fuses and testers recently placed on the market by the Littelfus Laboratories, 1772 Wilson Avenue, Chicago. They are designed to protect against and discharge dangerous excessive voltages. The principle and function is the



same as in lightning arresters, only on a smaller scale. The manufacturers state they are made to discharge potential ratings of 100, 250, 500, 1000, and 2000 volts; are glass enclosed, filled with rarefied neon gas and glow brightly when operated.

The purpose of this line is to either indicate or discharge to ground dangerous potentials before they become high enough to cause a spark or produce a body shock. Such potentials often gather on machinery, metal tanks, bins, etc., due to running belts, rubbing parts, dust, and induction from nearby transmission lines. Another use for Tattelites is in testing for live wires, since they glow when brought near a live line, and, by the intensity, indicate the approximate voltage.

NEW 3-TON ELEVATING TRUCK

The Baker Industrial Truck Division of the Baker-Rauland Company, 2168 W. Twenty-fifth Street, Cleveland, Ohio, has just brought out a new two-wheel drive, four-wheel steer, 3-ton elevating truck which incorporates several new features of design. The manufacturers state the greatest change from previous models is the "streamlined" enclosure for the battery box and controls which improves the appearance and increases the safety for the operator since there are no protruding units or parts against which he may be thrown.

Other new features include an electrically welded frame of high carbon steel, alloy steel trailing axle of great strength, larger travel brake than on previous models, roller bearings at top and bottom of steering mast and needle bearings in many of the steering rod connections for increased ease of steering, somewhat higher travel speeds, and a sponge rubber pad on the operator's platform which de-

creases fatigue under long hours of continuous operation.

The power axle and the lift unit are the same units which have been used on Baker trucks for several years. The former helical springs have been replaced by resilient rubber piles having the same shock-absorbing ability without the possibility of breakage. Driving wheels turn on drop forged knuckles and are mounted on deep-grooved, ball bearings. Driving tires are of the solid, pressed-on type and are 20 x 5 inches in size. Trailing wheels also turn on drop forged knuckles and are each mounted on two adjustable tapered roller bearings, tire size is 10 x 6 inches.

Standard platforms are furnished in lengths from 55 to 84 inches and can be furnished as special equipment in any length desired. Standard platform height is 11 inches giving ample clearance under the standard 12 inch skid and the lift is 53 1/2 inches. Standard platform width is 20 1/2 inches. When the standard truck with the 55-inch platform is carrying a skid 60 inches long by 36 inches wide, a right angle turn can be negotiated in 98 inch intersecting aisles.

News Items

NEW WELDING EXHIBIT FOR MUSEUM OF SCIENCE AND INDUSTRY

Announcement is made by O. T. Dreusser, director of the Museum of Science and Industry in Chicago, that complete equipment, including material handling hoist for a permanent exhibit of industrial welding has been presented to the institution by the Harnischfeger Corporation of Milwaukee. The exhibit itself is an ingenious one, for with the demonstrations carried on behind a special colored glass, visitors are able to see at close range the technique employed in various types of welding without blinding glare.

The Museum of Science and Industry in Chicago is the only institution of its kind in the United States with a permanent arc welding demonstration.

The Ilg Electric Ventilating Company of Chicago announce the opening of a new sales office at 122 Jay Street, Schenectady, N. Y., under the direction of R. B. Cooper

[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.]

Campaign Teaches Safe Use of Electricity

AN educational campaign for the safe use of electricity in the home has been launched by the International Association of Electrical Inspectors, 85 John Street, New York City. The Association is endeavoring in this campaign to promote the use of approved cord bearing the Underwriters Laboratories' label and to teach the public the safe use of flexible cords. A booklet entitled, "Safeguarding Electric Service in the Home," a large poster illustrating correct and incorrect ways of using appliances, and a home electrical inspection report form are being distributed.

DECEMBER, 1934

Trade Publications

for your

SAFETY EQUIPMENT LIBRARY

Safety Information on File

A reference file of trade publications on safety equipment should be a part of every plant's ammunition for the battle of controlling accidents. A wealth of valuable data and information is yours at no charge and with no obligations. Every executive should avail himself of these publications—much help in the every day problems of efficiency, safety and profitable operation are found in them. Mail the coupon today!

- 1. C-H Helmet and Suit.** This circular illustrates and describes a helmet and suit designed to solve the dust and fume protection problem. Full length suits and waist length jackets available. Cunningham-Hall Aircraft Corporation.
- 2. Industrial Uniforms and Aprons.** A complete line of uniforms and aprons especially designed for industrial use for both men and women. Designed to permit freedom of motion and are washable to help control spread of disease. Keystone Coat and Apron Manufacturing Company.
- 3. Safety First Shoes.** This folder shows a line of all leather safety shoes designed to insure protected feet for every worker. Fitted with improved safety steel toe. Safety First Shoe Company.
- 4. Heat Acceleration.** This 20-page catalog deals with heat acceleration, what it is, and how it differs from heat anticipation. The value of heat control in industry. Minneapolis-Honeywell Regulator Company.
- 5. Martindale Maintenance Equipment.** Catalog No. 18. A very complete catalog containing a multitude of electrical and maintenance equipment including a number of safety products. The Martindale Electric Company.
- 6. Sly Dust Filter, Type EC.** Bulletin No. S-76. This 12-page bulletin gives the construction features of this dust filter designed for a number of industrial operations. The W. W. Sly Manufacturing Company.
- 7. Insulation Testing Equipment.** Bulletin 934. Deals with dielectric strength test sets, insulation resistance meter, constant temperature cabinet, humidity control apparatus and dielectric constant and power factor equipment. Sound Engineering Corporation.
- 8. Goggles for Miscellaneous Industrial Operations.** An interesting 4-page folder illustrating and describing a number of goggles designed to meet specific requirements. Willson Products, Inc.
- 9. Mercurochrome in First Aid.** An interesting little 16-page booklet dealing with infection, microbes, first aid for dirty wounds and how and when to use mercurochrome. Hynson, Westcott and Dunning, Inc.
- 10. The Air You Breathe.** This condensed pocket-size 32-page catalog completely illustrates and describes a line of ventilating, heating, cooling and air conditioning equipment. Ilg Electric Ventilating Company.
- 11. B-K Refilling Equipment.** Bulletin No. 103. Describes portable pumps for charging oxygen breathing apparatus, inhalators and medicinal cylinders with oxygen and other gases at high pressure. Bishinger-Koehler Manufacturing Company, Inc.
- 12. Wilbur Fire Extinguisher.** Folder describes pump operated type of fire extinguishers designed to prevent liquid leaking or evaporating and will not gum up or corrode. Wil-X-MFG Corporation.

NATIONAL SAFETY NEWS

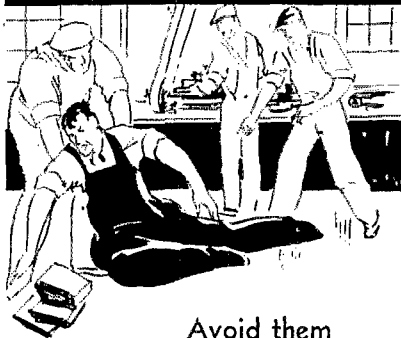
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December, 1934

SLIPPERY FLOORS UPSET PRODUCTION



Avoid them with PLASTIC FUT-SURE

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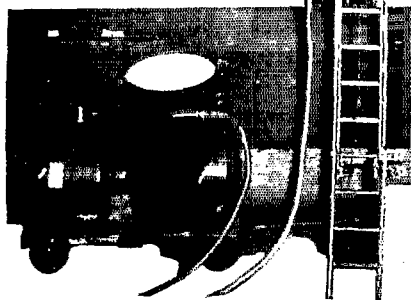
FOR SAFER WALKING SURFACES

Dust Control begins overhead

It's of little use to try to reduce the dust count if the jar of cranes, tralls and machinery is continually bringing more dust down from pipes, trusses and ceilings.

THE SPENCER PORTABLE VACUUM CLEANER

enables one man to remove the overhead dust hazard. All dirt and dust goes direct to an enclosed separator. This portable is easily moved, and cleans all kinds of surfaces. Has been used in industry for many years. Bulletin on request.



SPENCER
PORTABLE VACUUM CLEANING

SPENCER TURBINE CO., Hartford, Conn.

583

Street Lighting Uses New Mercury Vapor Lamps

THE first street lighting installation in America incorporating high-intensity mercury vapor lights has been made in front of the new post office at Lynn, Mass., where eight of the units have been put in service by the Lynn Gas & Electric Company.

The units externally do not differ from the usual ornamental street lighting globes. Within, however, are contained two lighting units—one of the new mercury vapor lamps and one of the usual incandescent lamps. The combination of the two types of light emitted by these radically different units, blended within the ornamental fixture, gives a white light suitable for heavy traffic thoroughfares and business sections of cities.

The mercury lamp, used by itself, is an efficient producer of bright, slightly bluish green, white light. Its quality is much closer to white than that produced by the low-pressure type of mercury lamp with which the public has been familiar, the light from which is much more bluish. Addition of the incandescent lamp within the fixture contributes a certain amount of yellowish and reddish light, improving the color rendition and more closely approximating daylight.

The mercury vapor lamp is rated at 400 watts, and produces 14,000 lumens, or units of light; the incandescent lamp is rated at 200 watts, and produces approximately 3400 lumens. The combination gives 29 lumens per watt, about half again as much light as would be obtained from incandescent lamps alone.

The high intensity mercury vapor lamp is a glass tube approximately a foot long and two inches in diameter and having a large, or mogul, screw base. It is mounted base down within the lighting fixture. Within the outer bulb is another sealed bulb, approximately seven inches long and 1 3/4 inches in diameter, within which the arc takes place. During operation the mercury vapor it contains is at approximately atmospheric pressure; between the two bulbs of heat resisting glass the gas is at reduced pressure. Above this mercury lamp is mounted the incandescent lamp and its reflector, base upward.

The incandescent lamp within the luminaire serves several purposes. Not only does it correct the color value so that more natural effects are obtained, but it supplies heat for starting the mercury lamp in cold weather. It also safeguards the location from outages which

would result if mercury units alone were used; it is an inherent property of the mercury lamp that, energy having been cut off or a decided voltage drop encountered, it has a tendency not to restart until it has cooled.

The high intensity mercury vapor lamp incorporates the latest developments of the illuminating laboratories of the General Electric and General Electric Vapor Lamp companies. Just as it differs greatly from the low intensity mercury vapor lamp which has been in use for years in industrial lighting, so does it differ from the sodium vapor light, introduced by the General Electric Company a year ago for rural and state highway illumination. Although of even higher efficiency, the sodium lamp has a characteristic orange-yellow glow and is mono-chromatic in nature, which makes it inapplicable to uses where color is a factor. The mercury vapor luminaire introduced at Lynn retains a high efficiency characteristic and affords a comparatively white light in which other colors of the spectrum are included. It is far smaller than the sodium-vapor lighting unit.

GRATING



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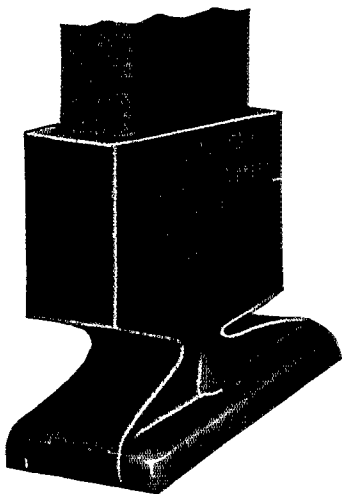
2030 Farmers Bank Bldg.
Pittsburgh, Pa.

BLAW-KNOX

NATIONAL SAFETY NEWS

KEEP OUT OF THE WHEEL CHAIR

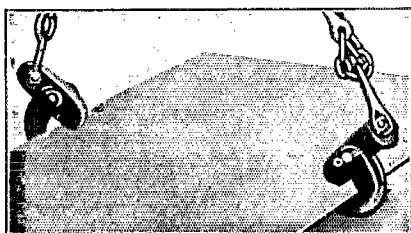
By Using
JOHNSON LADDER SHOES
Try a set today!



Shoes for straight ladders
per pair\$1.65

Shoes for step ladders
set of four\$6.00

Johnson Ladder Shoe Co.
Eau Claire, Wisconsin



Save Time and Money In Handling Boiler Plate

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

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Grand Central Annex, New York City

DECEMBER, 1934

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We do not want a thing because we have found reasons for it; we find reasons for it because we want it; we even elaborate philosophies and theologies to cloak our desires . . . No one ever convinced anybody by logic, and even logicians use logic only as a source of income . . . To convince a man you must appeal to his self interest, his desires, his will. Observe how long we remember our victories, and how soon we forget our defeats.—Will Durant in "The Story of Philosophy."



Frank

Knee Leggings
Hip Leggings
Spats

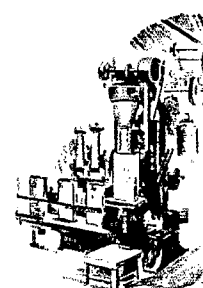
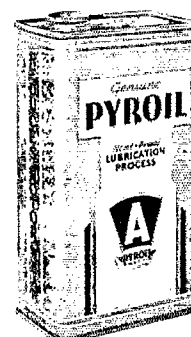
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Lubrication

Pyroll Co.

Lubrication Systems**M****Masks**

American Optical Co.
E. D. Bullard Company
Bishinger-Koehler Mfg. Co.,
Inc.
Chicago Eye Shield Co.
Davis Emergency Equipment
Co., Inc.
Industrial Products Company
Mine Safety Appliances Co.
Pulmosan Safety Equipment
Corp.
The Safety Clothing Co.
Safety Equipment Service Co.
Willson Products, Inc.

Masks—Navy Type

Bishinger-Koehler Mfg. Co.,
Inc.
E. D. Bullard Company
Industrial Products Company
Mine Safety Appliances Co.
Willson Products, Inc.

Mats—Standing, Safety

Davis Emergency Equipment
Co., Inc.
Industrial Products Company

O**Oil Cans**

E. D. Bullard Company
Industrial Products Company
Mine Safety Appliances Co.
Safety Equipment Service Co.

Oxygen Breathing

Apparatus
Bishinger-Koehler Mfg. Co.,
Inc.
Davis Emergency Equipment
Co., Inc.
Mine Safety Appliances Co.

P**Packs—Mittens'**

Portable Lamp & Equipment
Co.

Pads—Knee

E. D. Bullard Company
Industrial Products Company
Mine Safety Appliances Co.
Portable Lamp & Equipment
Co.
Safety Equipment Service Co.

Paint Remover

Perforated Metal
Harrington & King Perforating
Co.
Industrial Products Company

Pneumonia Tents

Bishinger-Koehler Mfg. Co.,
Inc.
Mine Safety Appliances Co.

Poster Service

Power Press Guards
Chicago Eye Shield Co.
Industrial Products Company
Positive Safety Mfg. Co.
Wiesman Mfg. Co.

Prize Awards

Mine Safety Appliances Co.

Pyrotannic Detector

Mine Safety Appliances Co.

Pumps—Oxygen

Bishinger-Koehler Mfg. Co.,
Inc.
Mine Safety Appliances Co.

R**Rail Clamps**

Industrial Products Company

Respirators

American Optical Co.
Bishinger-Koehler Mfg. Co.,
Inc.
E. D. Bullard Company

Chicago Eye Shield Co.

H. S. Cover
Davis Emergency Equipment
Co., Inc.
Hygeia Respirator Co.
Industrial Products Company
Mine Safety Appliances Co.
Portable Lamp & Equipment
Co.
Pulmosan Safety Equipment
Corp.
The Safety Clothing Co.
Safety Equipment Service Co.
Willson Products, Inc.

Resuscitation

Equipment
Bishinger-Koehler Mfg. Co.,
Inc.
E. D. Bullard Company
Davis Emergency Equipment
Co., Inc.
Mine Safety Appliances Co.

Rock Dusters

Mine Safety Appliances Co.
Portable Lamp & Equipment
Co.

Rope—Wire**S****Saw—Safety**

Mine Safety Appliances Co.

Saw Guards

E. D. Bullard Company
Industrial Products Company
Safety Equipment Service Co.

Scaffolding

Scrubbing Machines—
Electric

Shaper Guards

Industrial Products Company

Shoe Soles—Non-Slip

Lama Cord Sole & Heel Co.

Shoes—Factory and

Foundry
Brown Shoe Co.
E. D. Bullard Company
Industrial Products Company
Lehigh Safety Shoe Co.
Mine Safety Appliances Co.
Portable Lamp & Equipment
Co.
Safety Equipment Service Co.

Shoes—Wooden Sole

Industrial Products Company
Reese Wooden Sole Shoe Co.
The Safety Clothing Co.

Signs

Industrial Products Company
Mine Safety Appliances Co.
Portable Lamp & Equipment
Co.
The Safety Clothing Co.
Safety Equipment Service Co.

Sirens and Signals

E. D. Bullard Company
Industrial Products Company

Slides—Lanterns—Also

see Films or Slides

Slings—Safety Wire

Rope

Soap

The Procter & Gamble Co.

Sterilizing Equipment

Straps—Safety
E. D. Bullard Company
Davis Emergency Equipment
Co., Inc.
Industrial Products Company
Matthias Klein & Sons
Portable Lamp & Equipment
Co.

Surgical Dressings

The Bay Co.
E. D. Bullard Company
Davis Emergency Equipment
Co., Inc.
Industrial Products Company
Mine Safety Appliances Co.

T**Tools—Linemen's**

E. D. Bullard Company
Davis Emergency Equipment
Co., Inc.
Industrial Products Company
Matthias Klein & Sons

Tools—Non-sparking

E. D. Bullard Company
Davis Emergency Equipment
Co., Inc.
Pulmosan Safety Equipment
Corp.

Towel Cabinets—Paper

Traffic Markers
Safety Equipment Service Co.

Treads—Safety

American Abrasive Metal Co.
Blaw-Knox Co.
Industrial Products Company

Treadle Guards

Trestles—Safety
Extension
Industrial Products Company

Trophies**V****Vacuum Cleaners**

Speiser Turbine Co.
U. S. Hoffman Machinery Corp.

Valves—Oxygen

Bishinger-Koehler Mfg. Co.,
Inc.
Mine Safety Appliances Co.

Vending Machines

Sanitary

Ventilating Equipment

Blaw-Knox Co.

W**Washroom Equipment—**

Industrial

Washers—Safety, for

Grinding Wheels
Industrial Products Company

Waste Cans

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Davis Emergency Equipment
Co., Inc.
Justite Mfg. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment
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Safety Equipment Service Co.

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THE ACCIDENT BAROMETER

Prepared by the Statistical Bureau, National Safety Council

ACCIDENTAL DEATHS OF ALL TYPES totalled 8,170 in September, or about 10 per cent more than occurred in the same month last year. This brings the nine months' total up to 73,800, exceeding 1933 by 8,000 and 1932 by 7,000. However, the September estimate is about 500 below that for August, and 3,500 under July. The decrease comes in occupational, home, and public (not motor vehicle) accidents. Motor vehicle deaths continue the steady increase that commenced last February. Despite the slightly more favorable trend in August, the 1934 all-accident total will be about 100,000 deaths unless there is some major improvement during the last three months of the year.

OCCUPATIONAL ACCIDENTS resulted in approximately 1,200 deaths in September, a welcome reduction from 1,400 in August. Furthermore, this decrease appears to have taken place without a corresponding drop in exposure to accidents. The nine months' total is 11,700, which compares favorably with the 1933 figure for the same period of 10,800. Such a small increase is encouraging in the face of the high frequency of motor vehicle and home deaths. Other details of the September accident experience are: Companies participating in the inter-plant contests of community safety councils had 9.91 accidents per million man-hours, resulting in 0.78 days lost time per thousand man-hours. The frequency rate represents a satisfactory reduction from 13.56 for September, 1933, but the severity rate advanced from 0.65 in that month. Plants in three sectional contests conducted by the National Safety Council reported an average frequency rate for September of 7.66 which is 30 per cent under the September 1933 rate. Indications are for an increase in October fatal accidents, according to reports from Industrial Commissions in 18 states.

STEAM RAILROAD ACCIDENTS showed a less favorable trend in July than in some of the earlier months this year. Deaths numbered 526 compared with 504 for July 1933, and non-fatal injuries totalled 2,566 or nearly 5 per cent above last year. During the first seven months of 1934 there were 2,760 deaths recorded, or 4 per cent more than

All Accidental Deaths January-September

1934	73,800
1933	65,490
1932	66,348

(National Safety Council Estimates)

in the same months of 1933. Injuries advanced 11 per cent to 16,385. Two-thirds of the increase in deaths and about one-third of the advance in injuries were due to highway grade crossing accidents. Most of the remainder came from employee accidents. However, employee accident rates based on exposure show little change.

AIRPLANE ACCIDENTS in miscellaneous (non-scheduled) flying operations during the first half of 1934 caused 160 deaths, 61 severe injuries, and 132 minor injuries. There were 793 other persons involved in the accidents who escaped uninjured. The total plane-miles flown was 36,780,157, which makes the death rate 4.4 per million plane-miles. For the same months of last year the rate was 3.9, or 11 per cent under the present rate.

MOTOR VEHICLE DEATHS jumped from 3,020 in August to 3,470 in September, an estimated advance of 15 per cent. The increase over the same month of 1933 is fully as great. Thus the improvement in this year's record that occurred in August did not last long enough to do much good. The nine months' cumulated total stands at 24,680, an excess over the same period last year of 3,600 deaths. It surpasses the 1931 total for the same months by 500, and thus definitely sets a new all-time high. The annual total of 35,000 previously predicted on this page seems assured, and the question now is whether the forecast should be increased by 500.

COMMERCIAL VEHICLE ACCIDENTS occurred with a frequency of 1.90 per 100,000 vehicle miles during September, according to National Fleet Safety Contest reports received from 503 fleets operating more than 46,000,000 vehicle miles in that month. The record is

about 7 per cent higher than that for August, but is slightly under the rate for July. However, the situation appears to be better than in the same month last year, when a similar group of fleets averaged 2.16 accidents per 100,000 vehicle miles.

PUBLIC (NOT MOTOR VEHICLE) deaths continued to decline during September, the month's total reaching only 1,450, compared with 1,680 in August. This is primarily due to a reduction in the number of drownings. Public deaths occurring in the first nine months of the year are now estimated at 14,500, or only 5 per cent more than last year's similar total of 13,800. Last month, due to a printer's error, the eight months' estimate appeared as 21,700; this should have been 12,700.

HOME ACCIDENTAL DEATHS took another drop in September, numbering only 2,300, against 2,800 in August and 3,800 in July. The September figure, however, is still about 17 per cent above September 1933. Moreover, the nine months' total, which is now estimated as 24,900, exceeds the comparable 1933 total by more than the excessive heat deaths that occurred this summer. In all respects the year's experience thus far is decidedly unfavorable.

DECEMBER EXPECTATIONS . . . There will probably be about as many motor vehicle deaths in December as in November—which means that there may be about as many as there were in either June or July. The total amount of traffic will be considerably less than in those months, but with darkness coming earlier and the danger of skidding increased there will be little improvement in accidents. Deaths from burns may reach the year's high in December, and will probably number nearly 1,000. Asphyxiation will result in about 300 fatalities.

These items summarize briefly the monthly reports collected by the National Safety Council to show current accident trends. Certain of these reports are analyzed more fully in other monthly publications of the Council, devoted to industrial, traffic, commercial vehicle, home, and school safety. In addition to these monthly data on trends, the Council's annual statistical report "Accident Facts," contains very detailed information on the types and circumstances of all accidents.

NATIONAL SAFETY NEWS

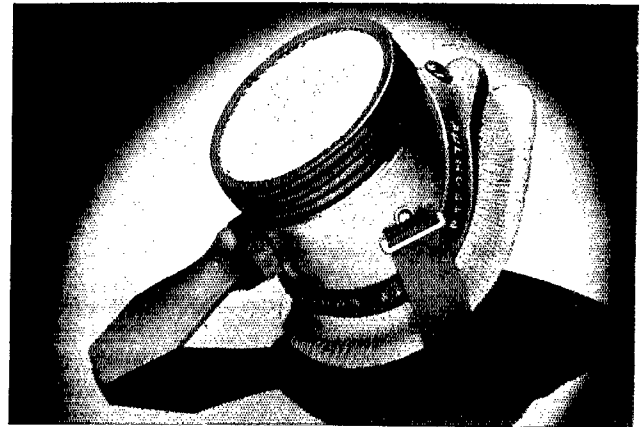
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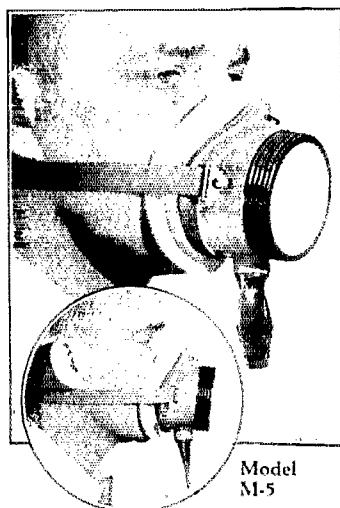
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