NATIONAL SAFETY NEWS

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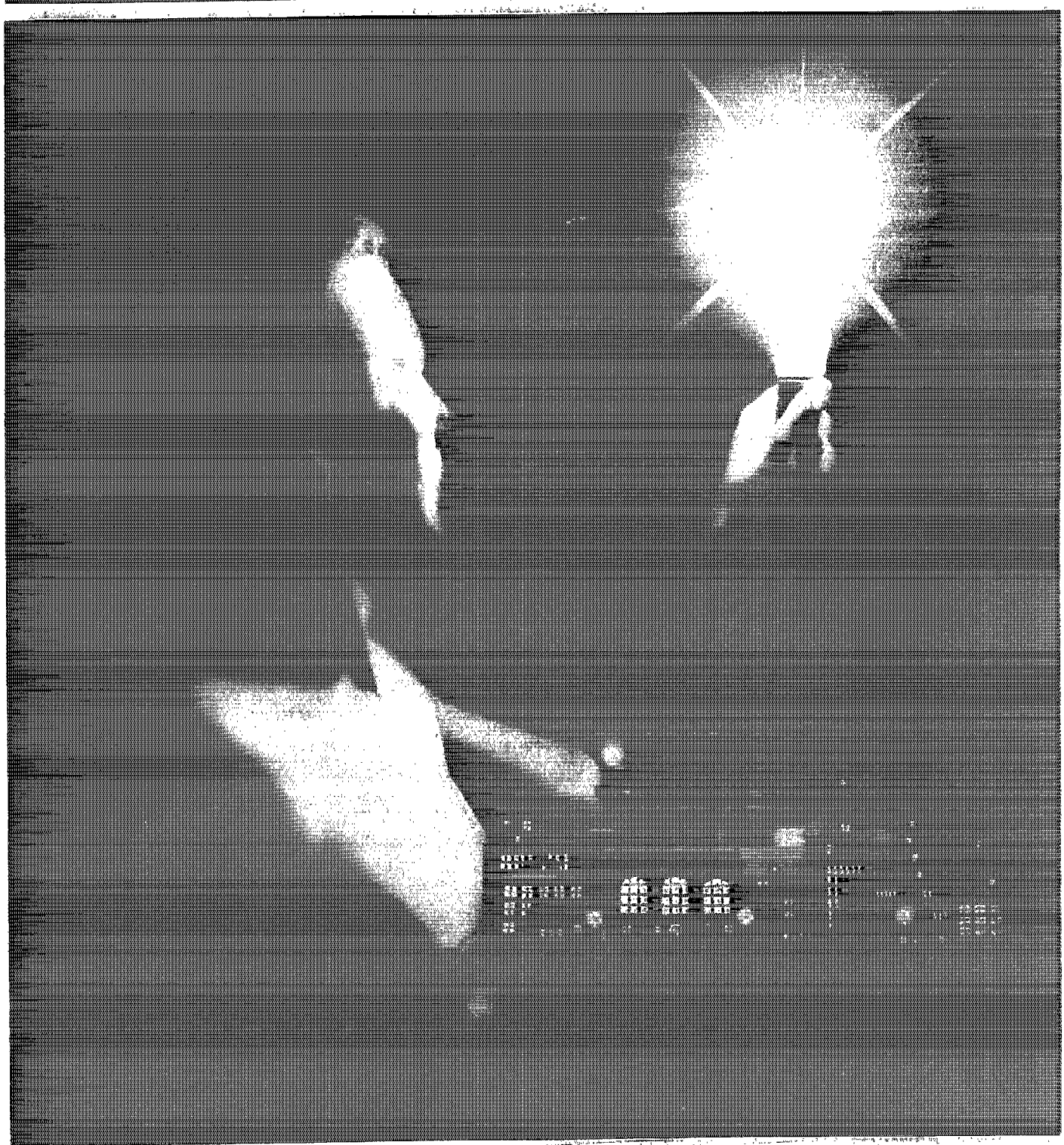
JANUARY 1933



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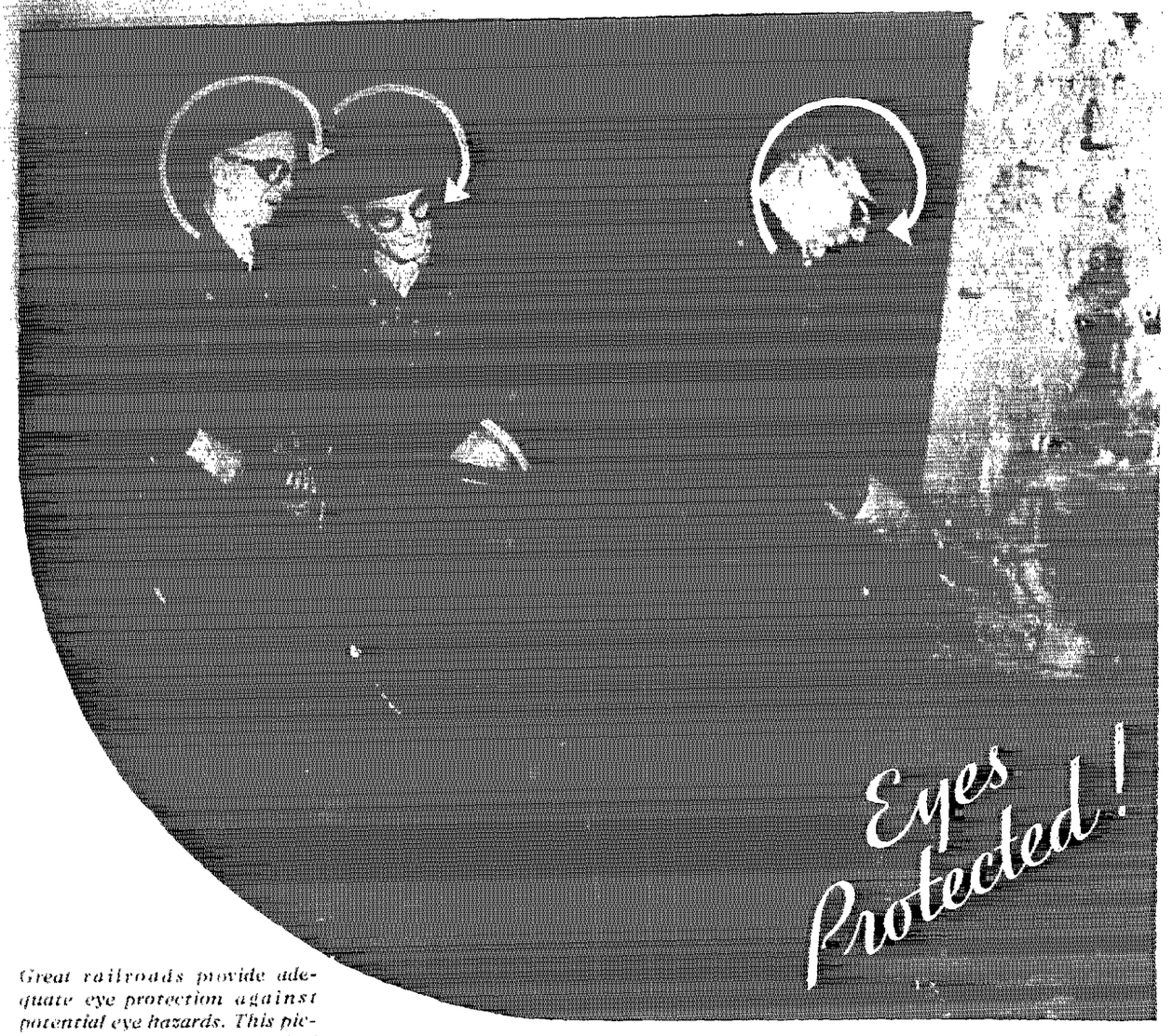
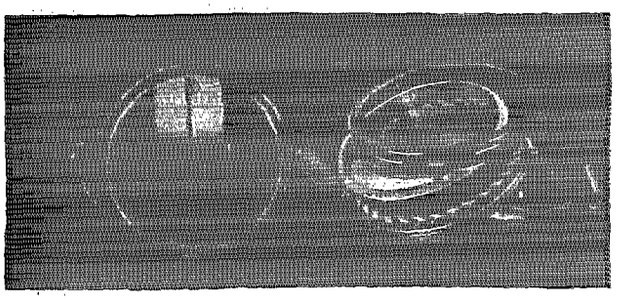
A SIGN of the times-



Great railroads provide adequate eye protection against potential eye hazards. This picture shows American Optical Company eye protection against the hazards of mudring rivers on fire box of locomotive boiler, in a railroad boiler shop.

American

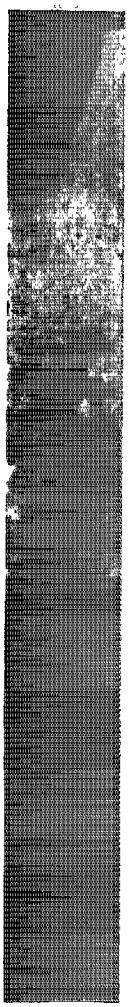
AOCO. DURALITE "50"



patented

J548

EYE *protection*



THE INCREASING USE of eye protection today is a sign that industrial management has found economy in high grade eye protection. A product of this increased demand is "bargain" goggles—prone to fail at crucial moments—costing far more than any saving on the purchase price.

For true economy consider AO Safety Goggles. Every lens is inspected for accuracy, tested for toughness. All parts are made of strong, light, well-machined materials. They're comfortable and safe. The kind of goggle you'd give the President of your Company to wear when he goes through the plant. And they are not expensive.

Our business is eye protection. It's our job to recognize eye hazards and protect against them. May we help you do this in your plant?

The* GOGGLES *in the picture are
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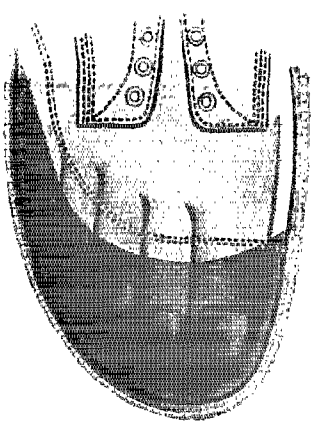

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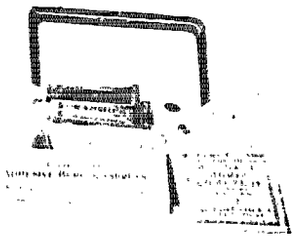

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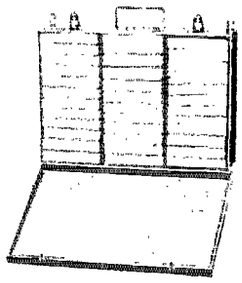

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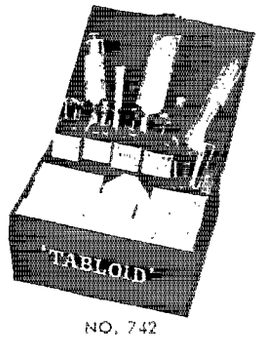

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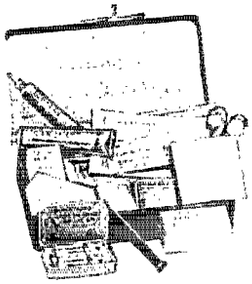

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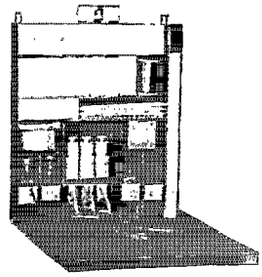

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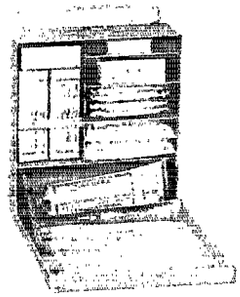

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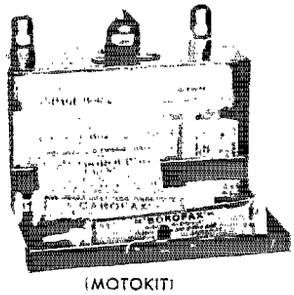

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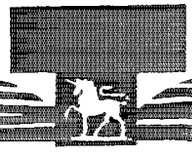

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National Safety News

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

VOL. XXVII, No. 1

CONTENTS for JANUARY, 1933

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CARMAN T. FISH, Editor
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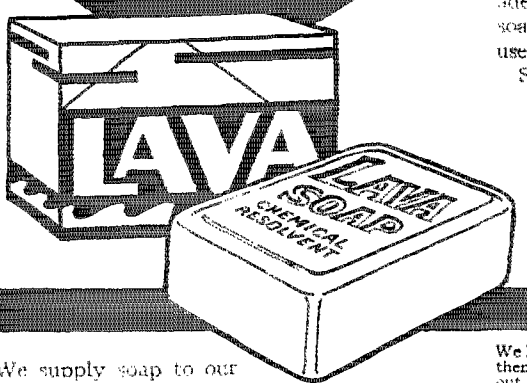

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It is much more efficient in killing germs than other toilet soaps. It is effective against bacilli diphtheria, meningococcus and many other deadly germs.

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Sometimes workers let their hands go dirty because they're too sore to stand hard scrubbing with ordinary soaps. You know the danger of infection when sore or scratched hands go dirty. *Lava is both soothing and efficient.*

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Companies now supplying employees with Lava find it saves money because it is made in large, firm cakes which last much longer than most soaps.

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We have prepared a special series of safety posters on the care and protection of hands. You may find them valuable for posting on your various plant bulletin boards. They are yours merely by filling out and mailing this coupon to Procter and Gamble, Dept. DNS-13, Cincinnati, Ohio.

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The Libbey·Owens·Ford Glass Company announces an important scientific achievement—a new super Safety Glass which is safer, clearer and more lasting.

This super Safety Glass is now used in the windshields of the cars listed below.* In some of these cars it is standard in all windows as well. In others, it is available at such a slight increase in the delivered price of the car that motorists can no longer afford to drive an automobile without *this vital protection in all windows.*

Highway and Safety Commissions have been highly instrumental in the educational work which preceded the provision of Safety Glass as standard equipment in practically all windshields. Their active interest is still essential, for windows, too, are liable to break. The present problem is to impress upon the public the necessity of *complete* Safety Glass protection. New low prices, made possible by the various motor car manufacturers, eliminate price resistance, and Safety Glass for all automobile windows is now easily within the reach of every new car buyer.

* PACKARD · GRAHAM · STUDEBAKER · FRANKLIN · REO · WILLYS
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In addition to the cars listed above L·O·F Safety Glass is also used in Dietrich and Le Baron Custom Bodies, Reo Speed Wagons, Twin Coaches, Brill Trolley Buses, Cincinnati Trackless Trolley Coaches, Bender Bus Bodies, Hackney and Springfield School and Passenger Bus Bodies, White School Buses, York-Hoover School Bus Bodies, Crown School and Motor Coach Bodies, Ford School Buses, Stinson and Stearman Aircraft, Gar Wood Boats, Matthews Cruisers and Chris-Craft Cruisers and Runabouts.

LIBBEY·OWENS·FORD SAFETY GLASS

NATIONAL SAFETY NEWS

Published by National Safety Council, Inc.

JANUARY, 1933 Vol. XXVII, No. 1

Chicago in 1933

THOSE WHO remember the successful Congresses of 1927, '29 and '31 will welcome the announcement that the Twenty-second National Safety Congress will be held in Chicago October 2 to 6. The Stevens Hotel will again be the Congress headquarters.

The committee which selected the Congress city deeply appreciates the hospitable invitations received from other cities but the preference of members was overwhelmingly for Chicago.

One of the attractions offered by Chicago this year will be the Century of Progress Exposition. Delegates who attend the Congress will find it possible to take in all the sights of the exposition without missing any of the sessions which are of particular importance to them.

Experiences Wanted

MUCH IS HEARD these days about accounting departments running short of red ink. So far, however, we have heard of no first-class business house discontinuing its bookkeeping because it isn't making money. Indeed many concerns have eased their difficulties by watching their financial statements more closely.

If this is true for general profit and loss calculations, it should be even more true for accident records. Safety is an economy, not an expense, and adequate records are essential in keeping that economy at a high point.

It is to be hoped, therefore, that Council members will be prompt in responding to the requests of their sectional officers for summaries of their 1932 industrial injury experience. A company should compare its own record with other records in the same line of business to measure the effectiveness of its safety program. And the national safety movement needs to ascertain by a careful summation of these individual reports the country-wide trends of industrial injury rates.

Waiting for the Sunrise

FOR THREE YEARS the world has been waiting for an economic sunrise. The hope that a New Year will bring better days persists in spite of past disappointments, and this steadfast hope helps to sustain men's courage.

The beginning of a new period of time encourages stock taking of both physical and spiritual things, and the incentive of a fresh start inspires better efforts. Prophets, prophecies and panaceas have failed, but the knowledge that the world has recovered from previous [illegible] seems to look confidently to the future.

[illegible] days ahead for the safety movement. [illegible] are not prepared for [illegible] industries [illegible] accompanied by increases [illegible] a general revival on a large scale would put [illegible] strain on industrial organizations, [illegible] there is not a man in industry who would not gladly shoulder the additional burdens. Idle machines sometimes create a mental hazard which offsets any advantages from more leisurely production. Being busy keeps the whole organization on its toes.

We can wish our readers nothing better for the New Year than more man-hours—and success in keeping them free from accident.

In This Issue

"NATURE in the raw is seldom mild," says the advertising for a well-known brand of cigarets. "You can't improve on nature," reports one of their contributors using a familiar but often disproved statement. When it comes to plant lighting, it is quite possible to improve on natural light which is often inadequate and unreliable. Page 11.

The medical department, with Dr. A. F. Lecklider as the spokesman, presents the case for safety. It is one of the most convincing presentations we have yet seen. Page 14.

In normal times the electric railways and buses transport fifteen billion passengers a year and the protection of persons and those who share the streets with the transit companies is a big responsibility. For that reason transit executives are among the strongest advocates of organized safety effort. Page 17.

Back injuries are a source of endless trouble from standpoint of both prevention and claims. Their diagnosis and cure are both difficult. Dr. Sumner M. Roberts presents some information that will be helpful in dealing with this problem. Page 20.

Safety codes are valuable tools for management, says Dr. P. G. Agnew. Industry can no more afford to neglect them than it can to ignore other developments which affect its processes. Page 23.

Is the public really interested in safety? G. D. Newton says not, and we admit with regret that he is right. However, he is convinced that the average person can be induced to take an interest in the problem if we use the right type of salesmanship more intensively. Page 27.

The Managing Director's Page

What Is the Next Step?

IN trying to solve the problem of properly financing nation-wide non-commercial safety activity there are a number of questions which seem pertinent.

Who should carry the financial burden of public safety activity in the community, the State and the Nation. If the general answer is that each community should carry its own burden, then we must ask ourselves what institutions within the community should assume this responsibility and why. If it were possible to answer this last question exactly would a continuous public safety program then be assured or would we still have to ask ourselves, "Who will undertake to interpret this acknowledged responsibility to the community institutions? How will the machinery of interpretation be financed and by whom?" We would follow this with the question, "Assuming that the responsibility was accepted locally but on an annual basis, how is the safety program to be guaranteed permanence so necessary to success?"

There is every reason to believe that there is increasing need for a strong, central agency like the National Safety Council, properly equipped to attack the public safety problem on a nation-wide scale. If the safety movement is to be made up of unrelated agencies working independently with no common meeting ground and no interchange of experience, it cannot make itself felt as a constructive social force, it cannot be the agency to coordinate research findings, to tabulate factual data, and to influence human behavior for safety.

The safety problem is a community problem after all and it is a community charge in the broad sense. It is a problem that requires social action against a social enemy just as is the problem of controlling other social enemies, for instance, communicable diseases. The problem of control of a communicable disease has many ramifications and if we analyze the agencies interested we will find that many of them are supported directly by their local communities but we will also find that the problem of control of a communicable disease goes far beyond the boundaries of a local community into distantly removed scientific laboratories often entirely supported by philanthropic money.

It seems to me that the same general appeal which brings financial support to other social agencies applies very well to appeals for financial support of the safety movement. Certainly it can be shown that accidents are just as great a challenge to our social welfare as any of the life-destroying diseases on which literally millions of dollars are spent for preventive work by philanthropic institutions and individuals who wish to make a contribution to this common good.

In a study of "American Foundations and their Fields" made by the Twentieth Century Fund, Inc., in 1930 we find that 71 American foundations made total grants of $52,476,137 for activity in the fields of general education, medicine and public health, esthetics, city planning and housing, child welfare and many other fields of interest, including monuments and memorials. It is disconcerting to find that while this philanthropic money reflected interest in almost every conceivable type of human problem, domestic and foreign, the field of accident prevention is conspicuous by its absence. Does this suggest an outlet to the institution or the individual seeking an opportunity to make a new and important contribution to human progress?

The National Safety Council has at the present moment a number of activities which need independent financing and which would make splendid and permanent memorials. Could there be a finer monument to the memory of an individual than a living, continuing work dedicated to humanity? In addition to present activities the Council has a number of projects crying to be done and necessary to an orderly and effective attack on public accident prevention problems but which must wait at the sacrifice of human life until funds are available to carry them out. Have the members of the National Safety Council thought of their individual opportunities to interpret the needs of the safety movement to friends who are seeking some worthy cause for their bequests or immediate contributions?

The National Safety Council will be glad to provide bequest forms and suggestions for memorials to persons drawing their wills and wishing to contribute to social welfare. Let me emphasize again that financial support of the safety movement can be translated immediately into direct, measurable life-saving results.

NATIONAL SAFETY NEWS

NEWS OF THE MONTH

PRELIMINARY work was started on a press campaign for Drivers' License Laws in states in which these laws will be considered this winter. The Council has supplied 13 mimeographed newspaper feature stories to key men in each of these states to help win public support. Council members should take an active leadership part in these license law campaigns. Write to headquarters for information.

Negotiations are now being carried on for Regional Safety Conferences in 22 localities. Another opportunity to lend your influence and support to a worth while activity.

Plans are now completed for the 1933 National Traffic Safety Contest and 3,000 announcement circulars already distributed. Indianapolis, Indiana, holds the honor of being the first city to enroll. About 25 per cent of the entries to date did not participate in the 1932 contest. Is your city participating?

Sometime ago the Council assembled more than 100 effective slogans and issued them on a printed sheet for use in the preparation of home made bulletins, filler material for plant magazines, for printing on pay envelopes and in other ways. There is a small supply of these sheets still available and members are welcome to a copy on request.

Forms are being distributed to a selected list of community agencies and clubs which will participate in a home safety survey during the month of February. Home accidents of all kinds will be reported and the data will be tabulated by the Council's Statistical Bureau.

The Light That Doesn't Fail

By P. R. HOLMES

MODERN artificial light is more dependable than daylight and it can also furnish the health-giving rays of real sunlight. More attention to lighting equipment in the plant will enable employees to perform their work with less strain and greater safety

CIVILIZATION brought mankind indoors. This change from an outdoor life to a predominately indoor one is perhaps the most outstanding change which has come to the human race. The human eye, which for ages developed for distant vision under the quantity, quality and distribution of natural daylight, has been called upon in a relatively few years to adapt itself to the enormously more severe demands of our present life.

Impairment of vision is sure to be brought about unless the fundamentals of good illumination are observed.

Recent years have shown considerable progress in the art of lighting. Notable improvements have been made in artificial illuminants and auxiliary equipment. General acceptance, however has been slow, particularly in the reflecting equipments, as evidenced by the fact that 75 per cent of industry today is challenged on the score of adequate and proper lighting. Of particular interest to safety men is a recent report from the Department of Labor which states that accidents in United States industries attributable to faulty lighting, cost the service of 125,000 workers valued at $150,000,000 annually.

Preventable Accident Causes

In attempting to analyze the causes for the majority of plant accidents resulting from faulty illumination, responsibility is generally placed on either inadequate or improper lighting. Inadequate light needs little explanation. While we are liable to find it in any part of the shop, the most common locations are in aisles, passageways and non-manufacturing areas. One seldom stumbles over objects that can be readily seen. Under good illumination, our eyes "see" and transmit the message to our minds so quickly that we avoid obstacles almost automatically. Under inferior lighting the difficulty of avoiding obstacles becomes great.

When considering faulty illumination it is a common habit to think only of the artificial lighting system. A recent survey conducted for one of our large companies indicated that in their case daytime conditions were far more troublesome than night. On account of the arrangement of work, many employees were forced to face windows through which considerable sky area was visible. The contrast [illegible] this might set up [illegible] and poor surroundings [illegible] not only to cause eye [illegible] noticeable to the eyes [illegible] would be certain to cause serious impairment of vision to the workers. This condition, under [illegible] reflection of glass, varnish [illegible] of paint, is not uncommon [illegible] working areas today.

Increasing Brightness

Credit for other grave conditions may be accounted for by the fact that when incandescent lamps were improved by replacing the carbon filament, there was an increase in the intensity and intrinsic brilliancy. With the introduction of the gas-filled lamp and other improvements, there have been further increases in the brightness of the light source. Reflecting equipment developments

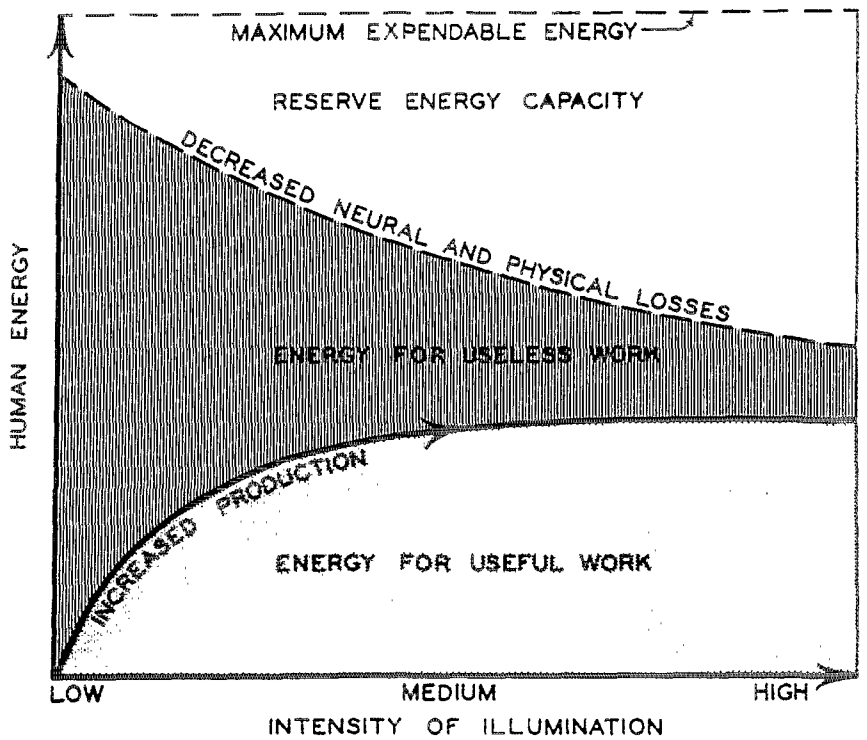


Figure 1. A diagramatic view of the expenditure of energy in a visual task. Any of a number of seeing factors could be placed on the horizontal scale. In the present primitive stage of lighting, intensity of illumination is generally the important factor.

*Illuminating Engineer, Incandescent Lamp Department of General Electric Company, Philadelphia, Pa. A paper presented before the Food Section, Twenty-first Annual Safety Congress.

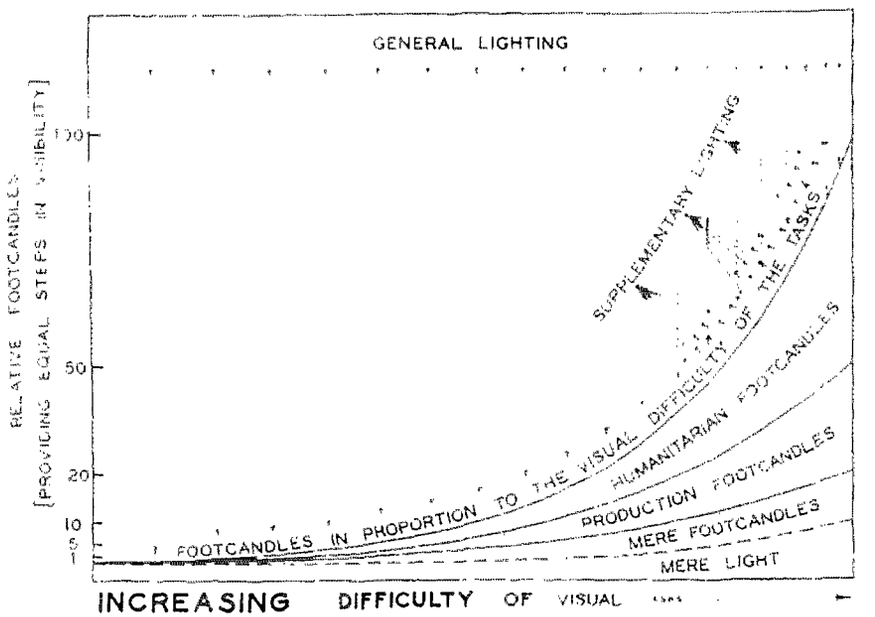


Figure 2. Foot-candle effectiveness is plotted on the vertical, approximately logarithmic scale. Recommended foot-candles are divided into four components which represent stages of lighting progress historically and scientifically.

rapidly followed the improvements in lamps, but the fact that changes in lamps were made without the corresponding equipment changes have, in many cases, brought about conditions less satisfactory than in the past.

Furthermore, the lighting units were in the past located promiscuously about the room without consideration for uniformity in the distribution of light. Whenever it was thought that more light was necessary, the electrician was called in. A drop cord was installed, from which a bare lamp was hung. If the light was too bright for the worker's eyes, he often made a makeshift shade protecting his own vision but leaving unshielded portions of the lamp to become a source of annoyance to neighboring workers.

The ill effects of glaring light sources are hardly less important than the glare from sources out of the direct range of vision which is reflected back from brightly polished surfaces of the work and surrounding objects.

Glare in any form results in eye strain, fatigue and hazardous shadows.

The New Science of Seeing

That seeing depends upon light as well as upon eyes is a statement that needs no proof. Yet it has not been generally realized how far indoor lighting is below the limit of daylight. As measured in footcandles, light regarded as adequate is only a minor fraction of outdoor light as found under the shade of a tree.

Excellent data are available pertaining to vision. Light has received wholly incommensurate attention. The objective, therefore, of the lighting industry should be to aid human beings to see more easily and clearly, to conserve their eyesight, to avoid defective vision, to increase their usefulness and efficiency and their pleasure in living.

In the corrective efforts being put forth, one must recognize we are not starting at the root of the trouble. A greater realization of proper lighting will, however, provide the urge to safeguard our children from the hazards that the vision of past and present generations has been subjected to.

In recent years those who have been following the science of seeing have become convinced that in applying the visual sense, the human machine expends energy other than that required in the process of seeing. An analogy might be made in the case of a pedestrian crossing a street, which may be likened to the actual effort required in seeing. There is an additional energy required in determining whether the crossing may be made in safety, which may be likened to unmeasurable amount of nervous energy expended in useless work and, in addition, nature has provided us with a reserve energy capacity to put forth [illegible] speed should a vehicle be approaching. This is not unlike the ability [illegible] equipments, [illegible] may [illegible] [illegible]

These [illegible] graphically shown by Figure 1. No numerical values are given because they are not known and because at the present time it is impossible to give definite relations between the upper and lower values.

In this test fourteen subjects—eight men and six women of normal or nearly normal vision—were employed. Three hundred and eight 30-minute tests on different days were conducted under illumination levels of 1, 10 and 100 footcandles.

Reading was taken as the visual task for this test. The subject was seated at a table containing an inclined rack for holding the book. He was instructed to read naturally and steadily. Hence the tests were conducted under normal, rather than forced conditions which greatly facilitates the interpretation of the results and enhances their value. The subject was further instructed to rest two or three fingers of the left hand upon a large dial knob of a concealed key and to press the key firmly as he read the last word on each page. This and various other expedients were employed to conceal from the subject the true purpose of the test.

Recommended Footcandles

The pressure exerted unconsciously on the key during the reading under the various illumination levels was automatically recorded at five-second intervals. The final results as indicated by the curve in Figure 1 are the average values obtained from the complete set of tests. Physically the pressures exerted were 63.2, 54.1 and 43.0 grams under the 1, 10 and 100-footcandle intensities respectively.

It is apparent that these differences in reactions resulting from reading under different illumination levels are of such definiteness and magnitude that they are capable of creating muscular strains on the hand which are measurable. Human energy expended in nervous muscular tension, in this case, is wasted since it accomplishes nothing useful. This waste of human energy due to inadequate levels of illumination apparently indicates nothing else than an effect of greater ease in a human seeing ma-

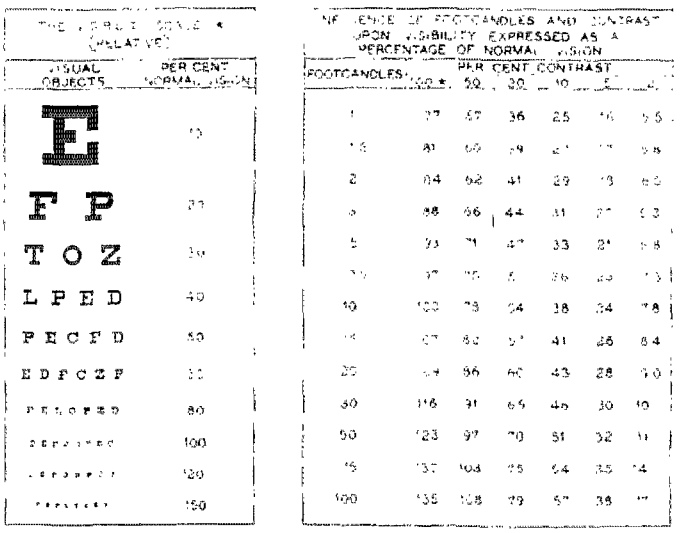


Figure 4. Vision is rated by eye specialists as a percentage of "normal" vision. The influence of foot-candles and contrast upon the visibility of objects is interpreted in a similar manner in the right hand portion of the table. The standard condition for comparison is as follows: vision is normal, or 100 per cent; the object is perfect black on perfect white, or 100 per cent contrast; the object and its background are illuminated to a level of 10 foot-candles.

PREVALENCE OF DEFECTIVE VISION

BY GROUPS:

	PERCENT DEFECTIVE	PERCENT CORRECTED	PERCENT UNCORRECTED
PUBLIC SCHOOLS	22	13	9
COLLEGES	40	18	22
INDUSTRIES	44	19	25

BY AGES

AGE	UNDER 20	30	40	50	60	OVER 60
PERCENT DEFECTIVE	23	39	48	71	82	95

Figure 3. Prevalence of defective vision by groups and by ages.

The Medical Department Presents

The Case for Safety

By A. F. LECKLIDER, M. D.

About T sixty years ago Koch, the great pioneer bacteriologist and discoverer of the T. B. germ, exclaimed according to De Kruif: "I hope I do not get any of that anthrax blood into this cut in my finger." Koch was introducing cultures of the deadly anthrax into mice through little incisions at the base of their tails, by means of small slivers. He knew that a small cut on his own finger, a slight slip of the knife, or a prick with that little sliver would mean death to him.

Can you think that there is a shop more dangerous, or a traffic filled street more potentially hazardous than this work of handling infinitely small germs, invisible to the unaided eye, without smell, without color, without sound, or without a single red flag of danger by which you might recognize them? And still, through the exercise of sufficient and meticulous care these dangers are avoided.

Others have done thousands upon thousands of blood examinations where the germs of syphilis and typhoid grew silently, without infecting themselves. Since it is a part of the practice of medicine to handle in pin-point amounts drugs and serums which kill in just a few times that amount, is it any wonder that safety and the factor of safety are two words ever in a doctor's mind? It is certain that medical men appreciate safety of an infinitely careful and unremitting type. We have no difficulty, therefore, in visualizing safety as an important function in industry and in life.

Money Well Spent

I am to endeavor to show our management and our directors where, in the eyes of their medical department, it is worth while for them to spend their money, their thought and energy in formulating and backing up a safety program. I am informed that certain previously prosperous years have become less prosperous ones. There is a tendency everywhere toward wholesale economies and the elimination of all activities classed as non-essential or non-productive.

I have noted many of the economy measures put into effect and have felt the pinch two times a month myself. Patients reporting to our plant hospitals talk of half-cent adjustments and tissue paper-thick shaving from costs. All these measures have seemed to be only partly successful in keeping the ship of industry on an even keel.

In the same hour when some one of these measures, productive of a few dollars and performed with back-breaking effort, goes into effect, two finger amputations and a fractured leg come into our hospital. Fortunately, so far as our medical organization goes and for the morale of the men, there is no excitement. We pride ourselves on handling everything with complete absence of confusion. However, by this event your half-cent decrease in quarter panel finishing is shot for four and a half days; your first-class band sawyer is transformed into a third-class trucker who becomes again, as the depression comes into full swing, a first-class client at the doors of your welfare department. No proper technique on the stumps of fingers will enable those stumps to completely surround the handle of a lever or a hammer.

I do not know of a single serious injury which has not resulted in a social problem case. All are potential social problems, many of them with aspects entirely outside the scope of compensation acts or industrial welfare departments. Only the community can attempt to deal with juvenile delinquency when it results from small income or from loss of discipline in a home headed by a cripple. An altered standard of living may be responsible for mental breaks and reduced ambitions. Twenty per cent of all temporary relief in one of our large cities is due to social causes as distinguished from unemployment causes. Without doubt most of these social causes have their roots in mental and physical disabilities.

Real Men

As members of the board of directors of a great company you may have little occasion to visit the actual scene of your operations. Many of you may not have looked upon a press or a lathe for many years. The subterranean recesses of your power houses where men repair huge machinery, down steep steel ladders, may be unknown to you. Personally, I enjoy nothing more than leaving the quiet surroundings of our white plant hospitals and walking through the pulsating lines of men who crowd the sides of that steel snake—the conveyor line; or better yet, I like to get the smell of clean sawdust in a mill.

I will confess that the shrill squeal of a rip saw is never music to my ears; I think too much of the possibilities. I like to visit the press rooms of a great plant and marvel at the human ingenuity which sets up these great presses two stories in the air and a story underneath. Coming back from that press room I have to remark to my nurses (who may be just swabbing a rather new stump from No. 17 press) on how impressed I am, by the skill and self-sufficiency of those fellows (a press operator does not stack up very high in industry who run those presses.

On the practical side we do something about that by taking our younger nurses through these mills

*Medical Director, Fisher Body Corporation, Detroit, Mich. (An address before the Automotive Section, Twenty-first Annual Safety Congress.)

the press shops and power houses when they first come from the clinics of their city hospitals, to those [illegible] nothing. We [illegible] that [illegible] get our point of view that these men are men, that the running of a [illegible] machine is a big job, that the man who does can it is entitled to great respect.

We in the medical end of industry realize very well the meaning of "compensation." We know that it does not represent damages, nor payment for suffering, depression of spirit, personal aggrie[illegible] or possible character changes. It means just what the word says, replacement of lost earning power. Dr. Kessler, of the New Jersey Rehabilitation Clinic says: "Workmen's compensation laws generally fall short in the benefits they assign to injured workmen, in that they fail to include what should be the true goal of such legislation, that is, the restoration of the injured worker to his former position. Monetary benefits are soon squandered and the patient is left without money and without the physical means, in many cases, to earn a living. He becomes a burden to the community or else turns to panhandling or other demoralizing activities."

Dr. Kessler's picture may be painted rather darkly, but certainly this statement is not without foundation. Some such cases have occurred in the experience of all of us. When this can be said in a country where compensation laws are almost universal and remuneration is liberal, it must be patent to all that any further considerable improvement in the direction of lightening the load of injury shall occur through prevention.

A Plant's Reputation

Were any of you gentlemen, by any chance, visiting your metal plant when Jake Shultz was caught between press No. 41 and a die suspended by a crane? If so, I hope you visited the scene of the accident and observed some of the terrific effects of such a tragedy upon the personnel of that department. The first cry of the man and the shouts of those about him, the sudden cutting off of power from one hundred ponderous machines, and the carrying out of one of their number on a stretcher has an effect upon the morale of an [illegible] to be appreciated.

This effect is far reaching. The [illegible] and the same [illegible] that such a thing should happen in a department under his supervision. He takes a moral responsibility for it and may endeavor to discharge this responsibility and ease his conscience by asserting repeatedly and with emotion that "this fellow did not do as he was told," "he did not use his tongs in operating that press." No one in the department ever forgets that fateful day and who can say how great the damage has been?

> **MEDICINE in industry, as in other fields, is trying to work itself out of a job. Prevention is its longest look ahead. Safety work in industry is analogous to the elimination of the mosquito in malaria and the rat in plague**

It would astonish the managers of some concerns if they were to hear certain remarks by their medical people, or if they could know the reputations of their concerns in the general hospitals of their city. No manager would care to know that his plant bore a reputation as a "butcher shop," or to find out that young medical people prize an appointment to his hospital staff on account of the volume of traumatic surgery encountered there. The medical departments themselves would be far happier in helping to prevent these things by such measures as physical examinations and close supervision.

Among people interested in accident prevention, compensation and medical work in industry, every plant in any given city is mentally catalogued for its standing as to safety. Unconsciously we catalogue everything else about the plant in accordance with its safety standing. I know of a concern whose continued bad accident record and enforced payment of accident penalties by the Compensation Board is a stock joke in its city; a rather weird joke.

A short time ago, the *Journal of the American Medical Association* in its editorial columns set forth the opinion of the medical profession [illegible]

[illegible]

Industrial medicine agrees that the careful employment of men after a painstaking physical and mental inspection, and placement based upon those two procedures is paramount in modern safety. Many safeguards are remarkable for their efficiency on certain operations, but the safety-conscious mind of an intelligent and physically well equipped employee is the only single safety device which operates from one way to another and from one job to another.

To the physical examination, made with safety in mind, there comes a limitation at which common sense dictates a halt; your applicant's vision is 20/20, rings small, no varicosities, no nervous system disease—yet your man, now an employee, gets injured. Years ago after the inspection and completion of a physical examination program, I remarked that physical examinations had done much. What remained was in the field of psychology, interview and education. There may be some who are still mechanical in their attack on the problem and who prefer to bolt a safeguard to the metal rather than to inject ideas into the cranial cortex. With these, I frankly take issue. To me the guard is a gesture, an evidence of good intentions but simply a minor part of the program which should have for its object safety consciousness in individuals known to be mentally qualified to harbor an idea.

What Can We Do?

Certainly, abstract thoughts alone do not get results, one must do something about these things. From the station you occupy in your medical department and the point of vantage you have, you survey the field for some knowledge of what the other fellow has done, and, getting an occasional paid ticket to the safety convention and to the meetings of other men who splint the fractures of industry, you figure out that most of these accidents are preventable. You start off by doing the least that

anyone entering the [illegible] which looks [illegible] furnished like one of his [illegible] who look [illegible]

Therefore, the [illegible] naturally [illegible] to come. They are sold on the idea that hospitals are always clean and white and that attendants wear white clothes and that cuspidors and dirt have no place there. They will give it just as much importance in their estimation as the occupancy does in its estimation. And so will an industrial commission, we have found that out.

Better Records, Less Argument

Also having noted that the press operator has lost a thumb, we arrive at the conclusion that some accurate description of how much of the thumb has been lost could be as little as could be done in the direction of thoroughness, in addition to good trimming and careful bandaging and good bandaging. We also note that the better our records the less argument there is about the claim and with the industrial commission.

And more important yet, we note that a description, just as careful, of the occasional bump or contusion or pain in the groin, saves us and the man trouble when, just under the time allowed by the statute of limitations, a claim for hernia appears. Certainly nothing could be more satisfactory to a claim or safety department than to find after a long interval of time, a carefully recorded story set down just as the man gave it that same hot afternoon when he first reported to the hospital, without recourse to relatives, friends or even lawyers.

We noted, too, that a certain number of our injured people came to their injuries because of physical defects. Not so many, but a certain definite few. We tried asking some of our hernia cases (the cost of a hernia case runs about $400) whether they did not think they were born with a hernia, or if they did not think they had it before they came to work for us, or if they did not think that the peculiar brownish discolorations of their groins were due to wearing a truss for a long time, and other questions, but uniformly it seems that all of the hernias which were uncovered in our plants came from the most unfortunate slips and falls while on duty.

[illegible] took care of forty of these, so we went ahead and did physical examinations, merely physical inspections, and rejected those birds to keep the next year. We did not keep those fellows out of the woods, we simply told them that they were broken and asked them to sign the record. The largest hernias bought themselves trusses. We have found out, however, that in different states, due to rulings of their local commissions, it is better to be rather careful in the hiring even of some of these known hernias.

We have found our physical examinations to pay and repay their cost. This is largely a safety procedure because what could be more closely allied with safety than preventing a man who sees only 120 degrees of the horizon where he should see 180 degrees, from plowing through a plant with five tons of castings loaded on a truck?

And aside from the safety program your insurance department has enjoyed a certain profit from this procedure also. We have noted that a few chest colds each year sometimes indicate a few T.B. bugs; also that persistent overweight and underweight have their own indications. A few words of warning to our fat man that he is in line for hypertension, diabetes or apoplexy helps him as well as the insurance rate. The same words to the thin individual may set him to eating breakfast, or to staying at home nights, or to careful observation of his chest by his physician with equally good results to the insurance department and himself.

Industry's Vaccination

Now these remarks sound as though their burden was to sell the medical department; however, we already have our medical department and it is the safety department which is demanding its place in the sun of this corporation. Medicine is doing exactly here as it is endeavoring to do in every other department of its existence, work itself out of a job. From the days of Koch, Pasteur and Walter Reed, prevention has been medicine's longest look ahead; in exactly the same way safety in industry is analogous to the elimination of the mosquito in malaria and the rat in plague.

It is, if you please, industrial surgery's vaccination against accident. We feel as proprietary an interest in it as does the management itself. We know that it pays. We have seen [illegible] casualty cases on our hospital [illegible] certain plants sink to five when every agency for safety was used and every effort bent toward a result.

Safety Trends

In recent years, we have noted with approval the trend of safety activity in your organization. There have been no effervescent campaigns. The inclusion of specifications for safeguards properly built into the machinery at the time of purchase is a fundamental improvement; surely every poison bottle in our hospitals has long had the nature of the antidote included on the label. We note also that the problem has been attacked at its base by the injection of safety into your educational program to the point where thirty-five out of forty of the sessions on departmental management in the foremanship training course give prominence to it.

The conception of safety as a problem of production rather than as the headache of one individual is spread evenly through the supervisory personnel as the general foremen and foremen in their conferences note the cost and charge per productive operation of their lapses from safe practice. Our medical people answer the roll calls of these conferences regularly and get and give a contact which is invaluable.

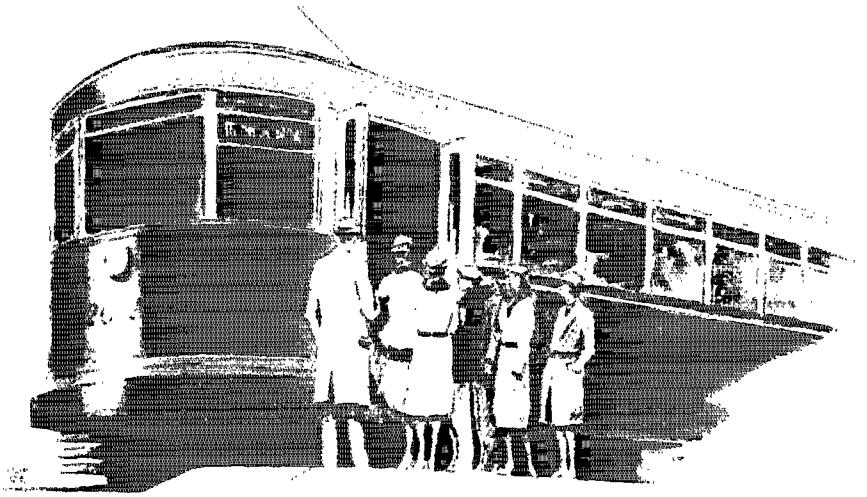
In another way available information has been made use of by the safety department. A board of review has been set up which has included your safety director, your employment manager, your welfare director, the head of the compensation department and myself. All except the most routine type of claims have been reviewed at the weekly meetings of this board. The facts pertinent to the injury are brought out for the critical review of this board which is in a position to present its own investigation made by safety and claim departments for comparison with the story told by the employee.

The facts pertaining to age, skill and length of service presented by the employment manager, plus the social history by the welfare department, constitute the background upon which the accident story is spread. The medical department

(*Please turn to page 60*)

Our Responsibility for

Fifteen Billion Riders



By F. G. BUFFE*

FOR THOSE in the transportation business accident prevention has always been a matter of primary concern. We are concerned not only for the safety of workers in the maintenance and construction departments but also for our greater responsibility for the multitudes we transported and for those who used the streets jointly with us. The automobile increased the hazards incident to our operation and the demand for faster transportation further complicated the situation.

We have also been the object of changing laws, and many of our former defenses have disappeared. We have for years been the prey of racketeers in the legal profession. We have had to combat not only just claims but also claims that were no more than legal hi-jacking.

We transport annually fifteen billion riders, or did before present conditions hit us, under the most difficult conditions of traffic, with hazards that have multiplied many times in the past ten years. We pay out annually as a charge to the injury and damage accounts almost $25,000,000. Safety is therefore very much in the mind of every one who has anything to do with mass transportation.

Safety in the mass transportation field may be divided into three natural divisions:

PLANT SAFETY, or measures for improving conditions and preventing accidents in the shops, yard tracks and line maintenance and construction work.

OPERATING SAFETY, or measures for training and supervising car and bus operators to reduce hazards to themselves and their passengers, to prevent accidents to pedestrians and those caused by the use of other vehicles on the streets.

PUBLIC SAFETY, or measures for educating the public in the safe use of the streets and of proper traffic control as a means to that end. Public safety includes safety work in the home and schools, and all methods of public education in accident prevention.

I am, in this discussion, ignoring the more inspiring humanitarian motive in which any normal person is naturally interested. From a net income standpoint we are vitally concerned with accident prevention. The injury and damage account can make the difference between success and failure in a transportation enterprise, especially in view of the narrow margin on which we operate.

I will ask you to take for granted that on our own property we have made a satisfactory reduction in accidents over a period of years. At the same time we have increased our over all speed and have been entirely one-man operated for five years. The same statement is true of practically every large property with which I am familiar. Progressive management has been at work accomplishing safety results along proven lines and adopting new methods as they are developed.

Plant safety, as I see it, depends correlatively upon the following:

1. Physical matters, such as guarded machinery, proper tools, elimination of tripping and shop hazards, proper lighting, approved equipment for handling material, and clothes and gloves.
2. Safe and efficient shop practices, such as use of guards, goggles and other protective devices, elimination of horseplay and practical job-analyses and standardized methods of work.
3. Organized safety work and education through some continuous method of follow-up. Shop safety committees engaged in promoting safety instruction and regulation.
4. An efficient first-aid organization for immediate treatment of minor injuries.
5. Physical examination of applicants for the force, medical supervision and sanitary inspection.
6. Management, inspiration and its support and control of accident-prevention work.

Operating Safety

Important as plant safety is, we have a much heavier responsibility, both from the standpoint of our balance sheet and to the public we transport. For want of a better term, I am calling it "operating safety." The electric railways and their bus affiliates carry in normal times fifteen billion passengers a year, and modern law makes them practically insurers of these passengers. Upon many thousands of car and bus operators rests the immediate responsibility for the safe movement of these people. Upon the mechanical features of our vehicles, upon their inspection and maintenance, upon the selection, training and supervision of our operators depends the safety of our patrons.

The continual job of the entire organization is to prevent those acci-

*Vice-president in charge of Operations, Kansas City Public Service Company. (Abstract of an address before the Electric Railway Section, Twenty-first Annual Safety Congress).

[illegible] ... promiscuous ... [illegible] ... crises.

Maintenance "Skinning"

Machine failure can be reduced by proper inspection and maintenance methods, the details of which are known to [illegible]. The danger in [illegible] comes from financial problems [illegible] to maintenance "skinning." Economy is vitally necessary but not to the extent of deferring maintenance to the danger point. Accidents that cost thousands often grow out of the apparent savings of hundreds. It is false and almost criminal economy.

Improvements and developments in car operating and passenger control devices have contributed to safety, and because of these one-man operation is becoming more and more general. Because of such devices and the placing of all responsibility on one individual accidents have actually decreased in most cases with one-man operation.

Assuming the correction of mechanical and maintenance faults, we come next to another class of causes which can largely be corrected by generally recognized and proven methods. These are the troubles growing out of physical conditions. Prevention in this class starts with the application of a prospective employee. Interview and preliminary investigation weed out the apparently unfit. A rigid physical examination establishes physical fitness for the job. Such an examination should include tests to establish muscular and nervous reaction, alertness and mental fitness for the work.

Training is next. It must be thorough and complete, and should cover sufficient time for teaching not only the essentials of the work but also good habits in performing it. The dangerous time in an operator's development is for the first few months after he is assigned. He becomes overconfident and relaxes some of his early vigilance. His work habits have not yet become automatic. He needs steadying, and a close follow-up in his training is needed to carry him over this period.

[illegible] ... permanent. [illegible] ... one-man operation [illegible] ... most complicated [illegible] employment department. The problem of every company is to give work to its present employees. [illegible] situation it is essential to follow up the physical condition of the operating force and not rely too much on its permanence and ability. Men get older and physical defects show up. Without checking bad habits are easily formed.

We now come to the cause of 80 percent of our operating accidents, the mental condition. Only a few years ago men were wont to regard the work of the industrial psychologist as "hooey." But they soon learned that there was more work for the psychologist than for the physician. In many ways a mental defect is more serious than a physical one. It is not easily discovered and comes to the surface at a most inopportune time.

We have all known accidents for which there was no apparent reason. Why should a street car operator in good physical condition, with 30 years' experience, on a line on which he had operated for years, go by a passing point past a red signal and into another car a few hundred yards beyond? Why do certain people seem to be "jonahs," continually hurting either themselves or others? These are questions that can be answered only by the psychiatrist.

Dangers from Distraction

A worried and distracted man is just as dangerous as a sick man, and he does not always give any outward sign of his condition. Perfect eyesight means little if the mind behind the eye is not seeing. No man who is worried and preoccupied is as safe as he would be otherwise. There is a direct connection between the sick baby and an accident. Accidents are made at the breakfast table, by home conditions, and by many other factors not connected with the job. I am convinced that the present economic disturbance is going to have an adverse effect upon accident prevention. Short-time employment, reduced wages, loss of homes and savings do not make for peace of mind and attention to job requirements.

One of the most common of acci- [illegible] ... day ... [illegible] ... the job. Either because of bad mental [illegible] or because of dis- [illegible] ... other [illegible] sometimes [illegible] things that they fail to see the danger ahead of them.

Providing Incentives

Some of the methods of counteracting these causes are group insurance, welfare plans, insurance for accident and health, pensions, building-and-loan and saving institutions, small company loans for emergencies, and medical attention for employees and their families, to some extent relieve worry and distress. Modern supervision presupposes close contacts between the employee and his immediate superior, whose advice and help in critical periods can often allay worry and fear.

Careful attention is paid to secure men with the right mental attitude and equipment. Many companies use scientific apparatus to measure mental reflexes, reaction time, muscle coordination, etc. Others, by carefully devised questionnaires and tests to determine personality, intelligence and vocational aptitude, endeavor to get behind the scenes to ascertain the individual's mental fitness for the job.

Incentive furnishes the mainspring to overcome indifference and arouse that keen interest necessary to success. It seems strange that any incentive other than self-interest should be needed to keep a man alert not to injure himself or others. Self-preservation is the first law of nature, but unfortunately civilization offers so many safeguards that this instinct has become dulled.

Different methods are used to furnish this incentive. Divisional and individual contests, company publications, posters and safety talks are some of them. Naturally enough, the financial incentive is the most compelling. Men desire to share in the rewards their efforts produce. If the financial purposes of a group and the institution can be made the same, cooperation can be secured more easily. Many companies provide this by bonuses or other rewards based on achievements.

In Kansas City we are enthusiastic [illegible] our [illegible] plan, which has been in effect since January, 1931. Under it our employees receive 25 per cent of the net income of the company after fixed charges are paid. In other words, they receive one-fourth of everything the stockholders earn, and they are preferred over the actual owners since they receive their 25 per cent whether dividends are declared or not. This money is invested in bonds of the company at the present low prices. They are receiving a high interest return, and any increase in the value will, of course, add to the value of their holdings. Up to August, 1932, the employees had received $118,[illegible] as their share of the net income. In that period there were purchased and distributed $282,400 par value first mortgage bonds of the company. During 1931 this distribution amounted to three cents on each man's hourly wage.

We have been surprised at the effective cooperation secured by this plan. We can say to the men, "For every dollar you can save by eliminating accidents, 25 cents is yours." And all over the property every man is urging his neighbor to greater effort.

Public Safety

Public safety includes safety work in its relation to the public in the streets, in the schools and in the homes. We are interested in the home and the school because education is the foundation of accident prevention and training in safe ways cannot begin too early.

We are more primarily interested in street and highway traffic safety, in traffic control, and all laws, ordinances and enforcement methods pertaining to vehicle movement. The problem has yearly become more and more complex with the growth of the automobile habit and the use of our streets by thousands of individual transportation units for which they were never designed originally. Coincident with this congestion has developed a demand for greater speed by our own cars and buses.

Higher schedule speed has been secured with no great increase in accident hazards. Progress has been made in car and equipment design to secure faster acceleration and deceleration. The skip stop has been found successful, especially in connection with arterial car-line streets, which require vehicles to stop before entering intersections. The public is beginning to realize that the street car operating on a fixed track with a large load of passengers should have precedence over the private automobile.

We are still suffering revenue losses because of the danger passengers incur in getting to and from car stops and the curb. This is being partially overcome by permanent raised safety zones.

ACCIDENTS that cost thousands often grow out of the apparent savings of hundreds. It is false and almost criminal economy

Much progress has been made in traffic control, but there is still room for improvement. Traffic lights and uniform traffic laws designed to regulate and control the use of the streets are universal. Many cities have called in experts to make scientific traffic surveys. In this connection I feel that the transportation industry owes a debt of gratitude to Dr. Miller McClintock, head of the Erskine Bureau of Traffic Research at Harvard University. Surveys under Dr. McClintock have been made in many cities and his work has done much to advance the science of traffic regulation and increase street safety.

It would be impossible to speak of public safety without a word for the local safety council. It offers a splendid field for public service to which outstanding citizens in many cities have given their energies. In Kansas City, by sixteen years of splendid service our council has become an authority on safety matters. It molds and leads public opinion, and in its field of effort has the support of the leading organizations of the city.

The Problem of Intoxication

As I see it, there is a tremendous task facing those interested in public safety, and one which will require the best efforts and the closest cooperation of safety bodies and enforcement agencies. I refer to the combination of gasoline and alcohol and the 25,000,000 motor vehicles operated by the American public. There will undoubtedly be some change in the [illegible] statutes [illegible] amendments. [illegible] necessary.

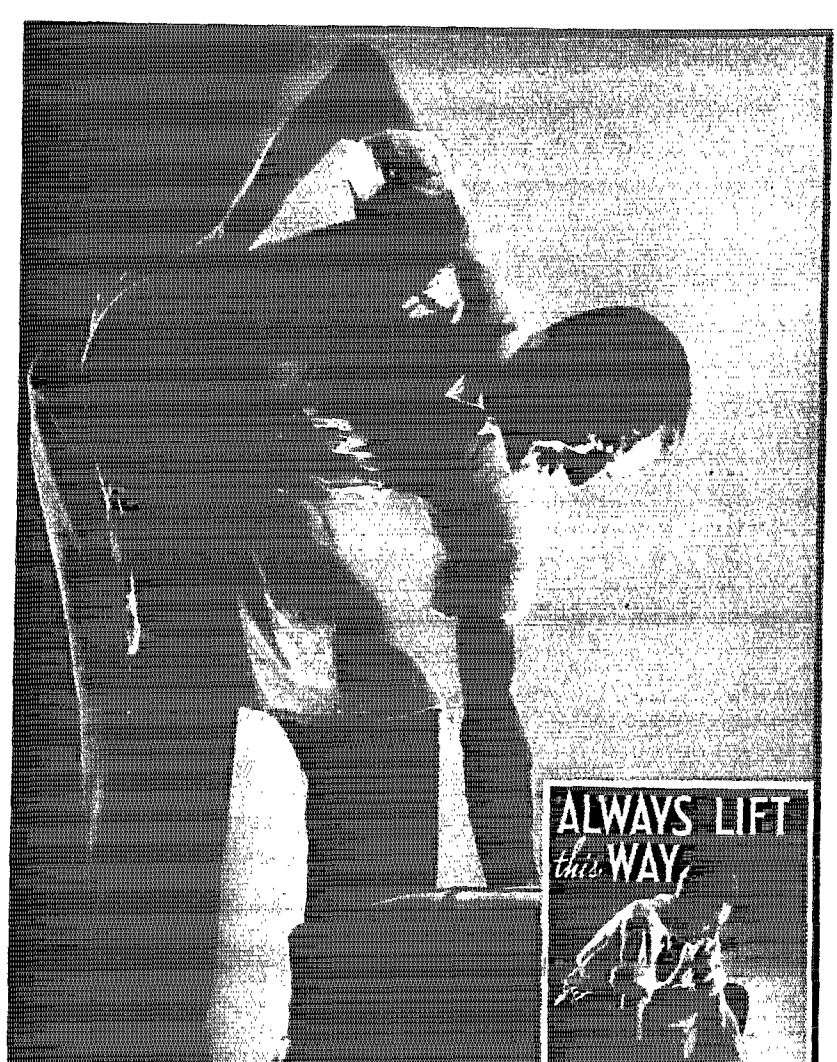
To my mind, it is not sufficient to say that we have the problem now and that a change in the law will not increase it. We do have it, and on our property there is never a 24-hour period in which we are not involved in an automobile accident with alcohol and gasoline as the chief ingredients. But I am convinced that our past and present experience will be no criterion to what is facing us, and the utmost of every agency concerned will be needed in the solution of the problem.

It is fairly easy to handle cases arising out of obvious intoxication. The dangerous cases are those caused by drivers who are apparently sober. Scientific tests show that very little alcohol is required to affect reaction and slow up that coordination between brain and muscles needed to drive an automobile. A study made in California, I believe, showed that much of the trouble was caused by one and two-drink drivers. There is always difficulty from the enforcement standpoint. It is extremely difficult to secure conviction in the courts, even in cases of obvious intoxication.

A Complicated Problem

An accident occurs at night. When the case comes up, the old question of the degree of intoxication arises; witnesses are missing or are uncertain, and the driver is acquitted. But in the case of the man with a few drinks the question becomes increasingly complicated. He is sober as far as appearances go, and, in fact, in everything but that split-second accuracy of mind and muscle he is sober. I am not suggesting a solution for this big problem but I wish to point out the increased responsibility that our public safety organizations will have to assume, and the vital need for support of these bodies by every good citizen.

We as operators of transportation enterprises owe a great debt to the national safety movement. It has not only inspired us to greater efforts, but it has done what we could scarcely have done unaided—the education of the public.



N.S.C. Poster No. 4351

BACK INJURIES are among the most common and perplexing cases in industry. Backs may ache because of organic disease, mechanical causes, or injury due to sudden violence or repeated strain

Why Backs Ache

By SUMNER M. ROBERTS, M. D.*

BACK INJURIES comprise a large percentage of all industrial accidents, and they result in prolonged incapacity for work. In New York state in 1930 back injuries were nearly 25 per cent of all lost-time cases. In that state 7,684 workers received compensation for injuries of this type. In the California oil fields 6,000 out of 80,000 cases were back injuries. It was estimated that the time lost from them totaled 800 working years and represented a wage loss of $1,854,000.

Why are these figures so large? The usual answer is because this type of injury is so difficult to treat. Such an answer is a mere evasion. If these cases are so prevalent, there must be a vast amount of experience and material to study. If medicine and industry fail to meet this challenge it is not because of lack of data, but because of inability to interpret and correlate the facts.

There are many and diverse causes of back pain. Elaborate classifications and minute subdivisions must be left to the physician. For practical purposes these injuries may be grouped under three headings:

1. Organic Causes
2. Mechanical Causes
3. Trauma

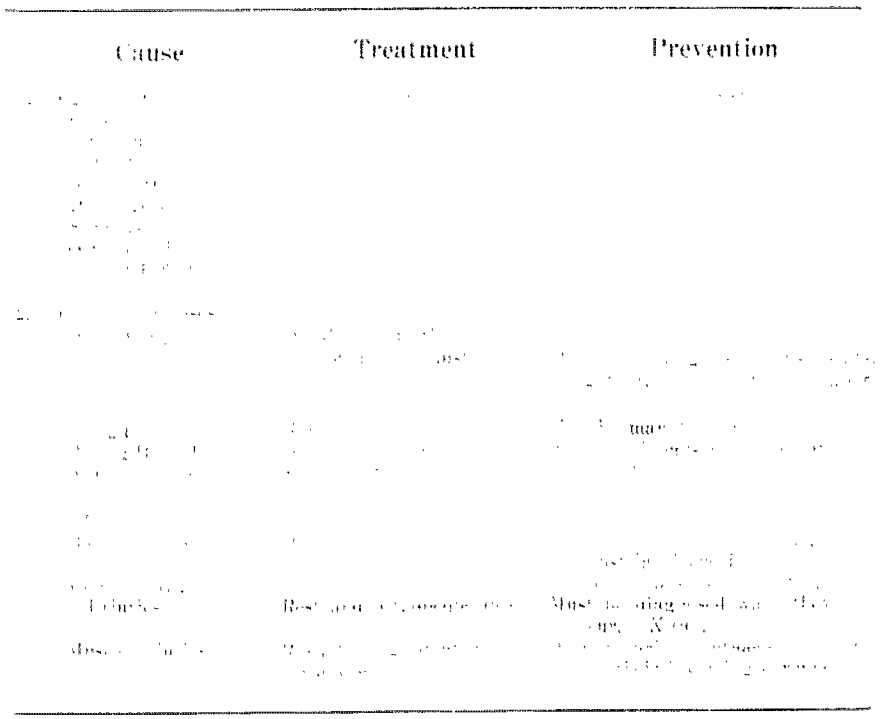
Under organic causes come specific diseases which may affect the spine or cause pain in the back. They are not true injuries but must be considered since they make the worker susceptible to comparatively minor stresses and strains.

There are certain diseases which directly attack the bones, joints and ligaments of the spine. The commonest of these is arthritis, or rheumatism. Whether this arthritis is due to some poison or infection present elsewhere in the body, or is due to bony over growth and proliferation from prolonged strain must be decided by the physician. Less common causes of back disability are tumors, tuberculosis, syphilis, and osteomyelitis, or bone abscess. Back pain may be due to disease elsewhere than in the spine.

True lumbago is a muscle disease, sometimes called myositis or fibrositis. It is the sort of thing that gives one a stiff neck if he sits too long in a draft. Other common sites of disease are the organs adjacent to the spine, such as the kidneys and the female organs of the pelvis. Foci of infection, such as abscessed teeth, diseased tonsils, infected sinuses, may flood the system with poisons. There is a growing belief, however, that these foci of infection are not as important as they were once thought to be.

It is the last two groups which are of particular interest to industry. Much can be done to prevent them, and, contrary to general opinion,

* Abstract of a paper presented before the Industrial Health Section, Twenty-first Annual Safety Congress.



occur. It has been found that the peak of their occurrence is between 11 and 12 a. m. and between 4 and 5 p. m.; in other words, when the worker is most fatigued. Correspondingly there is a sharp drop in accidents between 1 and 2 when the workers have had their noonday rest. One of the first places to show fatigue is the back, and it is there that a strain is most likely to occur.

There are many types of backs, just as there are many types of faces. There are two large groups of backs suited for quite different tasks. When the tall slender man is put to work lifting and carrying heavy loads his back may stand it at first, but sooner or later it will give under the load he was not fashioned to bear.

There is one more prevalent cause of back strain seldom suspected by either employer or laborer. There are all sorts of small peculiarities and differences of bony growth that make each spine distinctly individual. Many of these are of no importance, but sometimes one occurs which may weaken a back. Most of these abnormalities occur in the low back, either in the last vertebra of the lumbar spine or the first segment of the sacrum. A transverse process on one side may articulate with the pelvis and on the other side may not do so. This gives an unequal and assymetrical support for the back, and produces an instability which is likely to make the back give way under a strain which a normal spine could stand.

Again, certain portions of a vertebra may be absent from birth and may decrease the spinal ligaments of normal attachments, and make them bridge abnormal gaps. Without their customary secure anchorage these ligaments cannot stand as much strain as they normally should. Sometimes the normal bony and ligamentous support is so lacking that there may be an actual sliding of one vertebra on another.

Acute Injuries

Finally, there are the acute injuries which occur from time to time in industry. The back, roughly speaking, is composed of bones, joints, ligaments and muscles. Each of these tissues reacts differently to injury. The injury may be a direct violence such as a blow across the back or an indirect violence such as a man stumbling and falling to his knees while carrying a heavy weight on his shoulders. His back becomes acutely bowed, and a vertebra may be crushed between its neighbors at some distance from the point where the man's burden actually rests.

The bones comprising the spine and pelvis move on one another by means of joints. The football player gets "water on the knee." That is a joint injury. Similarly the small joints of the spine or the larger sacro-iliac joints may be injured. Closely associated with the joints are the ligaments. These are strong fibrous bands

The Problem of Fatigue

Hand in hand with the question of poor body mechanics goes the question of fatigue. It is natural for a man to be healthily tired at the end of the day. This tiredness disappears overnight, and in the morning he should be fresh and ready for work again. By fatigue I mean something which hangs over from day to day and gradually pulls a man down. Whether fatigue is brought on by poor posture, by outside worries or activities, or by work unsuited to the individual, the result is the same. The tired worker cannot meet the little extra stresses and strains that the normal man takes as a matter of course and accidents

of [illegible] which support the joints, prevent excess motion and impart stability, [illegible] tendons [illegible] strain. The ligaments of the back, while much stronger than those of the ankle, can also be torn and cause pain. Small hemorrhages may result from ruptured blood vessels or even an entire muscle attachment may be torn loose.

Methods of Treatment

Treatment of the first group of cases, those due to organic disease, is purely medical or surgical. Treatment of the second group is less important than their prevention. The importance of good posture and proper body mechanics is widely recognized. It has been well proved that persons who habitually stand and sit in poor positions can be taught to hold themselves correctly by exercises and occasionally light supports. This training, however, takes a long time, and the employer should not be responsible for it. The treatment of fatigue is rest and the regulation of home life as well as working hours. Activities outside of working hours, rather than the work itself, may be responsible for fatigue. Abnormalities of the spine must be treated individually, and the decision is up to the physician.

The acute injuries to joints and ligaments are unique problems and I want to discuss their treatment with the idea of preventing them from becoming chronic. Strains of the joints or ligaments, or both, of the low back are most troublesome, both to the injured and to those treating them. The case drifts along from one man to another, seldom receiving adequate treatment. The patient gets no better and is finally branded a malingerer.

When they reach the chronic stage it often seems as though they never will get well. But at one time they were acute injuries, and an acute injury of this sort, whether due to a single violence or to repeated small strains, will get well if properly treated.

In the beginning, proper treatment means rest. This does not mean that the laborer should be sent home to go to bed for a few days. This never works. The chances are that he will not stay in bed, or if he really does stay in bed he gets no rest there. I firmly believe that such a case should go at once to a hospital and stay there until all muscle spasm and acute pain have subsided. It may take several weeks but in the end it will be time well spent. Then send him home for the kind of rest he will get there. Other things must be done for him but these are up to the physician. And finally, the problem of his rehabilitation must be met.

The prevention of organic diseases which may cause or aggravate back pain falls only indirectly to industry. It is primarily a question of public health. Industry can and should help, however, by cooperation with public health officials and physicians, and by aiding in the campaign of educating the public in the prevention and recognition of disease. Mild general infections, such as infected tonsils and abscessed teeth, can be detected and eradicated before they have had time to aggravate a back.

Much can be done in the way of actual prevention of the mechanical types of back pains. A worker can be protected from unnecessary postural strain. It is often said, and truly, that it is harder to sit properly than to stand properly. Chairs and stools of the right type, proper lighting, accessibility of materials all help to protect the worker from excess strain. Care must be taken to see that the laborer is fitted for his work. The short, thick-set man must be given the heavy lifting and hauling jobs, and the light, tall man the structural type of work. Abnormalities of the spine cannot be prevented. They must be detected before it is too late, and for this x-rays are necessary.

General Safety Measures

Acute bone injuries of the back, fractures of the spine, can be prevented only so far as the general hazards of any industry may be lessened. General education, good lighting, even flooring, adequate space, etc., are all important. The important thing is to recognize bone injuries at once when they do occur. X-rays are essential. It is astonishing how many fractures of the spine are never recognized at the time.

It is the joint and ligamentous injuries that are so difficult to treat, and which so readily produce chronic disability. Much can be done to prevent their occurrence. Instruction in the proper method of lifting will not only make a man more efficient, but will also keep him from unnecessarily exposing himself to possible injury. If a man stoops over to lift an object, bending his knees only a little or not at all, [illegible] the weight of his burden is thrown on his back. The back [illegible] and works [illegible] great mechanical disadvantage. [illegible] gain, if he keeps his back straight and bends his knees, not only [illegible] of maximum mechanical efficiency but the muscles of the legs and thighs are brought into play. It is lesser loads improperly handled rather than great weights that cause the back strains.

Injuries from Slipping

Insecure footing is another important factor. A slippery floor or uneven surface, litter lying about and poor lighting can make a man slip, throw him off his balance, and strain his back. A common story is that two men were carrying an object when one of them slipped. Sometimes the man who slips receives the injury; sometimes it is his companion on whom the extra load is suddenly thrown. If two men can barely lift an object, a third man should assist them. This may seem a waste of man power but it is less wasteful than having a man on the disabled list.

If a man returns to heavy labor after a back injury the result will be the same as though he were a new man unaccustomed to the work. He would ache in every muscle. His muscles have become soft and he will be out of condition. But having once been injured he will not differentiate between the natural pains concomitant with his resuming work and the pains once experienced of injury. He will think his old injury has returned. The employer should be responsible for providing light work when the patient is ready to return. Then later when his muscles have somewhat resumed their normal power and he has gained confidence, he can be returned to his former job.

To sum up the various points that have been discussed, let us assume that a man has applied for a job, and that we are going to handle him in the ideal way. Some of the suggestions will perhaps be impracticable from the employer's point of view and others may be unfair to the worker. Only by outlining such a case, however, can we establish an ideal which may be modified as a basis for practical procedure.

First, the man is given a thorough physical examination by a competent physician. His posture is noted. He

(Please turn to page 26)

Safety Codes and Management

By P. G. AGNEW

EVERY [illegible] must [illegible] dustry. [illegible] pened, rather [illegible] role in the industrial life of his state.

I am sure that [illegible] administrator has often wished that his department could [illegible] with the more positive side. For example, industrial and economic planning is the keynote of the hour. Leaders in both small and large industries are giving increasing attention to planning within their companies, by industrial groups, and on a national scale.

The national safety code program and its [illegible] bodies has been discussed at many safety congresses. It is my purpose to deal here with one specialized phase of industrial planning in which I feel that vital progress is being made. [illegible] administrators can do much to foster the incorporation of safety work, including the voluntary use of safety codes by industry, into the very fabric of planning and control of operation. Hitherto, the whole safety problem has been treated largely as a separate undertaking, rather than making it an integral part of the whole problem of management.

Planning for Safety

Casualty hazards are simply one group of important problems, and as such, cannot be divorced from any program of industrial and economic planning either detailed or general. We are getting past the stage in which the plant is laid out, built, and operation started before safety is [illegible] considered [illegible] factors in planning the plant layout, in the design and selection of equipment, in the selection and training of personnel, as well as in operation.

[illegible]

> **VOLUNTARY adoption of codes by industry is even more important than legal adoption by states. Those companies to which industry looks as leaders are least affected by regulation. They lead rather than follow**

its primary function shall be to foster better planned and more economic operations on the part of the industries which it serves." In doing this, safety regulations become secondary to this larger objective but their effectiveness will be greatly increased. It is appreciated that this is a new conception of the functions of a labor administrator, but would not his task be far easier and his work on the regulatory side become thereby more effective through such a policy? Regulations will then cease to be just another contrivance that government has developed to harass plant managers, and to increase the cost of plant operation. They will be recognized by executives as tools, ready to hand, in which a vast range of industrial experience has been crystallized, which no plant can afford *to overlook if the plant is to be efficiently operated.*

Consider the problem which confronts the manager who finds it necessary for the first time to put into his plant a considerable installation of grinding wheels. If he is going to prevent unnecessary accidents, he must consider problems of personnel and problems of equipment, for if grinding wheels are improperly made [illegible]

[illegible] follows the first of [illegible] hazards [illegible] adopts the second [illegible] follow the experience [illegible] has been [illegible] in planning the installation and training his employees in its operation.

When [illegible] he does not [illegible] and build [illegible]. He [illegible] his particular [illegible] work.

Why [illegible] the same thing with a safety code pertaining to his business? It is not necessary [illegible] where the hazards [illegible]. He may take over as a part of his capital equipment, in the form of a safety code, the experience of a whole industry, not merely in discovering where the hazards lie, but also having the benefit of the solutions which have been reached as a result of many years of painstaking study and work.

Employee Training

What has just been said about the installation of machines is also true in the training of employees in the operation of machines. No finer illustration of what I have in mind can *be given than the experience of the* American Rolling Mill Company in its employee training program.

This company began its safety

[illegible] New York [illegible] the Governor [illegible] Annual Safety Congress.

work in an organized way in 1911. They went through the stages of guarding machinery, holding camp meetings and evangelistic campaigns and the installation of safety signs and slogans. Their statistics show that there was no progress and the appeals to prejudice worked with not lasting. During the same period a training program was instituted and the experience in training followed the experience in safety. There were lectures, hand readers on such topics as leadership, morale and psychology. Attendance was entirely voluntary and while many signed up at the beginning of the season, comparatively few were left at the end.

As a result of this experience with this type of safety and training program, the company became dissatisfied with results in the mill in which their major problem existed. They realized that such programs had a definite place in their organization, provided they could be utilized more effectively for the prevention of accidents, reduction of costs, and improvement of quality. They found that when good safety records were made, they were usually accompanied by good cost and production records.

Improving the Technique

Early in 1929, the safety and employee training programs were combined and the staff safety supervisor was given the responsibility for both activities, with the understanding that safety would be handled entirely as a matter of training. The program was designed to improve the technique of every man in the organization on his present job. The first responsibility went to the supervisory group as their jobs were found to be largely managerial. The program was designed to give every supervisor in the organization a proper and comprehensive view of his responsibilities. He was taught that he was actually in business for himself and was responsible for costs, quality, tons-per-hour and morale. Accidents and increased costs reduced the quality of his material, reduced the tons-per-hour and lowered the morale of the men of his department. Now, for six months out of each year, the foreman is required to attend the training classes and for the remaining six months he is given an opportunity to job-train his own men.

In the beginning, job-training was used as a "trouble shooter." When a department had an accident or spoiled too much or had any difficulty attributable to the organization the men in that department were immediately interviewed. Today job-training is on schedule, organized so that as changes in practice or equipment occur, the men will be given training in the new methods. Job-training now covers every typical job within the plant, including many minor operations. Practically every man in all the plants has been job-trained. There is an agreement with all of the groups that if any have a lost-time accident they will immediately again go into job-training. This is done on the theory that if a man has an accident he has not learned how to carry on his work properly.

> **NO PLANT can afford to overlook new developments in tools or equipment. Nor can it afford to ignore safety codes which are applicable to its work**

In order that the course shall not be a "hit-or-miss" affair but shall follow a definite schedule, the personnel staff prepares weekly outlines. In discussing individual machines, these outlines must give consideration to the points of hazard, the methods of guarding against accident at such points, the design of the guards, and the routine of the individual in order to avoid injury. Safety codes are of great assistance in the development of a course of instruction of this type.

The experience of this company illustrates very clearly the point that safety has become an implicit part of the larger subject of planned operations. In that sense, safety, important as it is, becomes a secondary, not a primary, feature in industry.

The key to the situation lies in the hands of the department head and the chief executive. Effective executive control is completely dependent upon systematized or standardized operation, that is, upon standard materials and processes. Without these, there can be no continuous, thorough-going control. From this point of view safety rules are as important as specifications for materials, if operations are to be subject to control.

This is an age of mass production, mass transportation, mass selling. Each and every one of these modern activities is dependent on a large measure of standardization of materials and processes. We have seen that one of the dominant features of the maturing safety movement is its integration into a general process of standardization, in which it becomes an important feature of mass production. Standardization is the habit-forming function of industry. safety can be woven into the fabric of industrial processes only if it is also in a large measure standardized, that is to say, if it is codified.

Thus again, we are forced to the conclusion that the coordination of safety with the other factors of production, having necessarily to be brought under executive control, must be standardized or codified.

No plant can afford to overlook new developments in tools or equipment relating to its business. In precisely the same way, it cannot afford to do otherwise than make use of the codes, state and national, which are applicable to its work, as those codes are developed.

Voluntary adoption of the codes by firms concerned is even more important than legal adoption by states. Those companies to which industry looks as leaders in economical and efficient operation, in personnel policies and in safety work, are the least affected by the regulation of state commissions. They lead rather than follow in the development of every safety code program.

A Newer Conception of Safety

It is my thought that this newer conception of safety work should be instituted by every industrial establishment. Voluntary use of codes should be the rule rather than the exception. If the labor administrator takes the lead in encouraging industry to make safety work an inherent part of programs of planned operations, rather than the separate function of a specialized group, he will be relieved of much of the distasteful side of his service-enforcement. What is far more important, he will be helping to eliminate one of the most destructive factors in our economic life—accidents.

How Feet Get Hurt

By W. H. TIPTON*

THIS SURVEY of foot injuries in a steel mill over a period of 19 months showed where the accidents were occurring and demonstrated the value of foot protection

THOSE of us who are engaged in accident prevention work have been struggling with the problem of foot injuries. These injuries are entirely too frequent, they involve long periods of lost time, and sometimes even result in permanent disability.

Safety shoes have reached a high stage of development and practically

*Special Engineer, Safety Work, [illegible] Steel Company, Mingo Junction, Ohio.

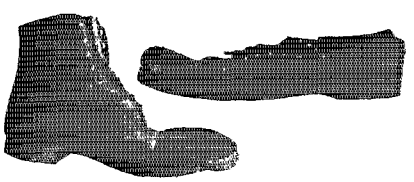
all industrial plants have taken steps to provide foot protection for their employees. At Mingo Works of the Carnegie Steel Company we have had [illegible] for several years. To ascertain just what had been accomplished in preventing foot injuries we undertook an analysis of these cases over a period of nineteen months, from March 1, 1930, to September 30, 1931. These cases were analyzed, first, from a plant-unit standpoint, and then by departments. Approximately ten per cent of all foot injuries were lost-time cases. Foot injuries constituted 6.7 per cent of the total cases and 28.7 per cent of the lost-time cases.

The value of safety shoes in protecting feet has been included in this analysis. As these shoes are designed primarily to protect the toes their real value is shown by a study of those injuries which involve the toes. The following facts are significant:

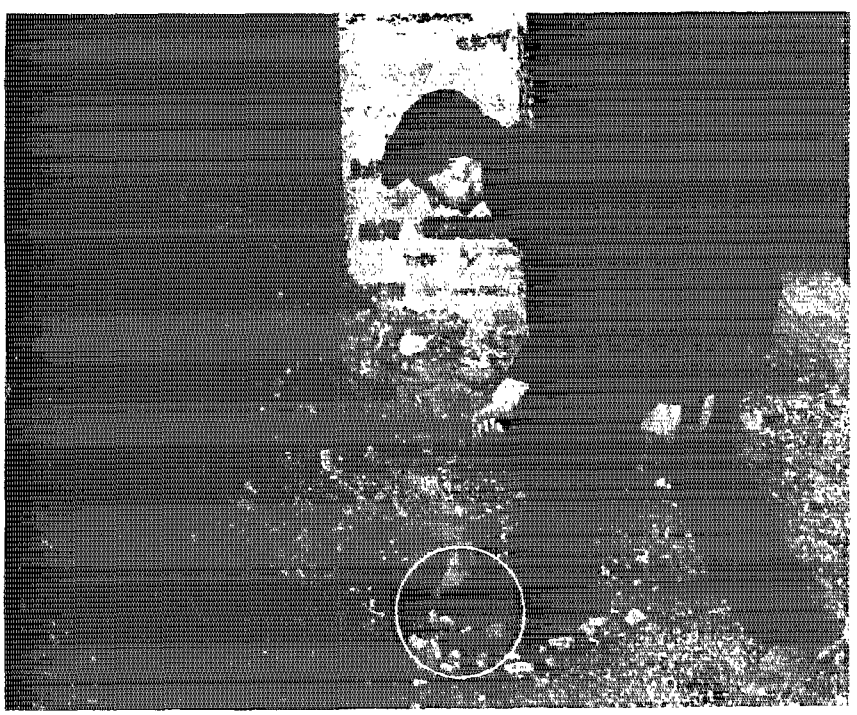
Dept.	Per Cent Foot Injuries Involving Toes	Per Cent Cases Safety Shoes Not Worn
[illegible]	44.1	87.4
[illegible]	34.1	92.5
[illegible]	28.1	66.6
[illegible]	66.6	100.0
[illegible]	42.6	91.6
[illegible]	45.7	91.6
[illegible]		
[illegible]	45.8	84.8
[illegible]	66.6	100.0

It is also worth noting that in the shipping-inspection department, where the foot-injury hazard is always serious, safety shoes and foot guards have afforded such protection that during this 19-month period only one foot injury was reported. This was a minor injury to a toe. In this particular case the victim was wearing ordinary shoes. Approximately 90 per cent of the men in this department wear safety shoes.

During this 19-month period the average force for the entire plant was 1,277. They bought 1,029 pairs of safety shoes, an average of 54 pairs a month. Assuming the average life of a shoe to be about six months, this is an average of 324 men wearing safety shoes at any given time, or slightly more than 25 per cent of the force.



Left: a shoe worn by a hooker when a narrow gage buggy ran over his toes. Only slight injury was suffered. Right: a type of footwear too often found in industrial plants. It affords little or no protection to the foot.



Courtesy Youngstown Sheet & Tube Co.

While this worker was barring slag at the open hearth pit, a piece of slag broke off and fell on his feet. Again safety shoes prevented injury.

This car reparman had the "dropsy" while handling a journal bearing, but a safety shoe saved his toes.

Foot injuries during this period totaled 197. Of the men suffering these injuries, 159, or 80.8 per cent, were wearing ordinary shoes.

Following is an analysis of these accidents by causes:

Causes	Safety Shoes	Ordinary Shoes
Metal burns	10	25
Hot sand in Shoe	1	
Tripping, slipping or falling	5	7
Foot caught between material		4
Wheelbarrow accidents		3
Falling material	15	66
Struck foot against object	1	4
Hand tool	4	13
Slivers, sharp edges, etc.		4
Machinery accidents	1	2
Stepped on nail	1	
Total	38	159
Daylight injuries	28	105
Injuries after dark	10	54
Right foot	18	93
Left foot	19	66

Nineteen of these injuries were lost-time cases, comprising about 9.6 per cent of the total foot injuries. In two of these cases, the injuries being caused by falling objects, the men were wearing safety shoes. The average number of days lost per case was 44. Of the seventeen cases in which ordinary shoes were worn, nine were caused by falling objects, three by slipping or tripping, two by machinery, one by a hand tool, one by a wheelbarrow, and one by striking against an object.

In [illegible] cases [illegible] per case averaged 21.8. Three others were "future" cases involving no [illegible] partial disability with indefinite temporary disability.

The following table shows the parts of the foot affected by the accidents.

	Safety Shoes	Ordinary Shoes
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

From the above it becomes quite apparent that safety shoes provide real protection for the toes. If employees were 100 per cent protected by shoes of this type we might reasonably anticipate the prevention of approximately 40 per cent of such injuries, and perhaps make an even greater reduction in the severity of the injuries.

Five Hundred Entries in Safety Slogan Contest

FIVE HUNDRED slogans were submitted in a contest held recently by the Murray Corporation of America, Detroit. Approximately 10 per cent of the employees participated. Executives as well as men in the shop sent in their contributions, the identity of the author being kept from the judges. The slogan which won the $10 prize was: "Follow Safety Rules and Safety Will Follow You."

Eight others received honorable mention and were rewarded with a credit of $1.50 each at the company stores:

"Safety Properly Understood Provides a Better Livelihood."

"Why Not Make Safety Your Hobby."

"Safe in Thought, Safe in Deed, Employees' Gain, Murray Creed."

"Let's Make Safety Our Goal, Place Murray on the Honor Roll."

"Life Insurance Pays Funeral Expenses but Safety First Pays Living Expenses."

"Seconds for Safety Often Saves Months for Repairs."

"Use Your Pliers, Use Your Hooks, Then You'll Never Spoil Your Looks."

[illegible] entries [illegible] contest [illegible] but the labor appeared to be the main [illegible] R. V. Stark of the Safety and Welfare Department. "About 10 per cent of the employees can be expected to take part in such an activity and we feel that the results [illegible]."

Why Backs Ache

Continued from page 20

[illegible] not be required to [illegible] 100 per cent, but if his posture is such as to materially weaken his bodily efficiency he will be considered unfit for heavy labor. Cognizance will be taken of his general body type and he will not be assigned to tasks for which he is not fitted. Furthermore, an x-ray will be taken of his back to rule out any hidden defects.

When he reports for work he will find stools and benches of the proper height to work at. Lighting will be good. The floors will be cleaned and dry and free from debris. If he is required to do heavy lifting, he will be shown how best to apply his body to the task. If he has to carry heavy objects, he will have adequate assistance. At times he may be asked to work extra hours or exert extra effort, but this will not be prolonged to the point of serious fatigue.

If, in spite of these precautions the worker is injured, he will report at once to a physician who will carefully examine and x-ray him and prescribe treatment. When the acute symptoms are over and he is on his feet again, he will be given light work at first, and not returned to heavy labor until he is physically and mentally ready for it.

BIBLIOGRAPHY

Kilnes, E. S. Low Back Pain. Bull. Assn. Md. Phy. & S. Oct., 1929.

Kunstad, M. Medicolegal Aspects of Low Back Injuries. New Jersey Med. Soc. Jour. 1930.

New York State Dept. Labor, Bulletins No. 164 and 170.

Kober & Hazhurst: Industrial Health. (P. Blakeston & Son).

International Association of Industrial Accident Boards and Commissions. Published as bulletins of U. S. Bureau of Labor Statistics. Bulletins No. 218, 281, 304, 333, 385.

Osgood, R. B. and Morrison, L. R. Problem of the Industrial Lame Back. Boston Med. & Surg. Jour. Vol. 191; No. 9, Aug. 28, 1924.

Simmons, E. B. & Clark, W. L. A study of Back Strains. Jour. Ind. Hygiene. Vol. VII. No. 2, Sept., 1925.

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Is the Public Interested?

By C. D. NEWTON*

I HAVE COME to the conclusion that the public—that mass of 120,000,000 men, women and children—doesn't want to know anything about automobile accidents. But before you have a chance to misunderstand me, let me hasten to add that there are thousands of prominent persons, members of clubs, national groups, business and other organizations, and many others belonging to no particular group, who are deeply interested in this problem. But they cannot be classed as comprising the American public.

What would happen if any of us were to go out on the streets and ask passers-by: "What do you want to know about automobile accidents?" If we persisted, I imagine that within a short time we would be seized and held for observation.

The American public as a group doesn't care to know anything about automobile accidents, although there is much that it ought to know and must know if our streets and highways are not to continue as trenches of warfare.

Sobering Influences

For one, I am inclined to hope, just as many of you do, that automobile accident prevention work is in part responsible for the reduction in deaths for the current year. Yet it must be remembered that an accessory before the fact has been this period of business and social readjustment, which most certainly has had a sobering effect upon many persons who had lost sight of their personal responsibilities for their own safe conduct through life.

If conditions business-wise have sobered the public generally and have caused many to revise their thinking processes, it seems to me that we have witnessed a very able demonstration of the influence of mind over matter. And this demonstration can direct our

THE PUBLIC doesn't want to know anything about automobile accidents, says Mr. Newton, and most of us will admit regretfully that he is right. Thousands of thoughtful people are interested, but they are not the "public." Our real problem is to reach the millions, not the thousands

activities, if not in a new direction, then at least upon a wider front.

Suppose that we consider this problem of automobile accident prevention in a business-like way. What do we have?

First, we have ample stock on hand. Secondly, we have the product of safety. Thirdly, we have a market. And the weakest link in this setup involves the problem of distribution.

Let us take a look at this product. Intangible? Yes. In that respect unlike most products, yet not unlike some, such as insurance for example. Since this product of ours, safety, which we desire to sell—and I use that word advisedly—to the public is so unlike most things which the public is asked to buy, a problem of large proportions is put upon salesmanship. That problem has been faced in the insurance business, to which I am referring only because I know slightly more than nothing about it. Not so many years ago life insurance was solely death insurance. Of course no one cared to carry any sizeable amount of life insurance, because the policyholder couldn't see where he himself had anything to gain from the transaction. Insurance was to provide a decent burial and perhaps a small nest-egg for the family until the period of condolences was over.

But the time came when life insurance began to do things for the living, such as the acquisition of peace of mind, retirement, pleasure combined with comfort in later years, for the person who paid the premiums. Notwithstanding the admitted attractiveness of such a product as life insurance, business is not influenced with ease, although the public is in the habit of buying automobiles, radios, refrigerators, furniture and any one of a thousand other products. The distinction when I discuss it is clear cut. Where there is a tangible product, something that has neither shape, size nor weight the need for a high type of intelligent salesmanship becomes apparent, and in such cases the product, whether it be insurance, safety, or any other similar thing, has to be sold. That is a problem which faces those of us engaged in the business of automobile accident prevention. Only when we become efficient salesmen will the public show any inclination to want to know anything about automobile accidents.

It is said: "If a man write a book, preach a better sermon, or make a better mouse trap than his neighbor, though he build his house in the woods, the world will make a beaten path to his door."

The Motto Doesn't Apply

This in general is only true in part, and it is only true in part as it relates to street and highway safety. For we have a valuable product, one that literally means life and well-being to many persons now possessed of all their faculties, but the world is certainly not making a beaten path to the door of any one who is promoting the conservation of life and limb. Since self-preservation is the first law of humanity, we should ask ourselves why the public is not beating a path to our door to obtain the product that we have to offer.

If this is a true statement of the public's general attitude, I am not sure that we can place the blame upon the public. The product that we have to offer has not been made attractive enough to win some of the public's attention, and in this respect, we are in the "hearse days" of insurance. Our selling program must be changed as well as greatly expanded if we are to obtain more of the market.

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*Supervising News Bureau, The Travelers Insurance Company, Hartford, Conn. (Abstract of a paper delivered before the Street and Highway Traffic Section, Twenty-first Annual Safety Congress).

To illustrate my thoughts, let me call your attention to a fact so often mentioned when it is to the effect that courtesy on the part of drivers and pedestrians in their use of the streets and highways would bring about a great improvement in the traffic accident situation. But the word courtesy doesn't mean anything particularly to a great many individuals as they drive about in automobiles. Therefore, the idea must be presented in a newer and a better way.

Laws of Physics

Then we have as another illustration of what I am trying to express the fact that too much speed for time and place tends to produce accidents that are more serious. But speed doesn't mean particularly anything to individuals as they drive cars, unless it is to go faster.

Speed, in a way, is one of those intangibles I mentioned before. The public demand for speed, about which we have frequently heard, was probably latent, rather than active, until it was stirred into activity by salesmanship—by spoken and printed words, by pictures that suggested it. And just as the desire for speed has been stimulated by intelligent use of words and illustrations so must the hazards of speed be presented in a newer and better way than we have usually employed. We can rave about speed loudly and long, but not get far. There is a better, more effective technique.

There are many other factors in connection with our product that need to be given new life—some of them pertain to the fundamental laws of physics governing bodies in motion; some of them pertain to regulations; some to enforcement, some to differences in human abilities to operate a car in a sane manner. Our product has inherent values, but it has not been selling. And since it has not been selling, it is high time the reason is discovered. Most certainly the public is not falling over itself clamoring for knowledge of our product—safety on the streets and highways.

Joseph Conrad, quoted by Glenn Frank in *Thunder and Dawn*, a most thought-producing book, said: "He who wants to persuade should put his trust not in the right argument, but in the right word. Give me the right word and the right accent and I will move the world." In another part of his book Glenn Frank says: "Knowledge is communication as well as understanding, and a thing is fully known only when it is analyzed, shared, socially accessible; a fact of community life which is not spread abroad so as to be a common possession is a contradiction in terms." And speaking of the need to spread knowledge, he adds in substance that an evangelism of science is needed and that the function of interpretation must be recognized as not being inferior to the function of investigation. "Research," he says, "may unearth all of the necessary raw materials . . . but these raw materials . . . will be about as significant as so much sawdust if they are allowed to lie unused in our laboratories or remain buried in technical brochures that none save the initiated can decode; and they will not be used . . . unless the man in the street is given at least a bowing acquaintance."

Admitting, as I do, that Mr. Frank in his volume was not speaking of the traffic problem, I do assert, nevertheless, that some of his passages, as mentioned, have a direct application to our problem. The public could be made to want to know all that there is to know about avoiding death and injury on the streets and highways, but we cannot expect the public to give evidence of such interest until it is given "at least a bowing acquaintance with the facts."

Understanding the Laws

Perhaps there are other problems beside street and highway safety that have been disguised, rather than interpreted, by language; but very likely none exceeds it in this respect. Let us take the matter of laws regulating the movement of vehicles. Who can say that any statute upon the subject has any semblance of clarity of thought or expression? Who can attempt to read and understand the laws without getting a headache? Is it so surprising then that not a man in a million knows even the slightest thing about the regulations designed for his protection? Our regulations, it seems to me, are in the same category as developments of research in the field of science that lie buried in technical brochures.

The same thing can be said with entire justice about many other announcements on the traffic problem. We have reams of figures, charts, and illustrations that even cause untold mental anguish to those that give them more. Is it surprising, [illegible] any meaning [illegible] of the figures and [illegible] Does the average pedestrian or driver [illegible] anything about the destructive [illegible] abilities of cars in motion and [illegible] destructive capabilities increase either as the weight increases, or as the speed increases, or as the result of both? Does the public understand much of anything about the facts as to why a car cannot be stopped as quickly when the road surface is covered with ice as when dry? Does the public regard in any personal way the mass of figures on the number of people killed and injured when the figures remain nothing but masses of numbers? Does the public understand much of anything about the distance traveled per second by a car at 40 miles per hour, or how rapidly distance is annihilated by cars approaching each other at such a speed?

Pictures vs. Words

The facts on all these questions are available and some have appeared in print. But Conrad said: "Give me the right word and the right accent and I will move the world." The accent may be by way of emphasis or by way of illustration and a good illustration is worth a thousand words.

We have a good product. But at present it lacks sufficient appeal. If it had appeal, the reduction in the loss of life would not be dependent upon a depression. And if any are doubtful of the possibility of changing human nature in the use of the streets and highways, I, for one, want to say the attempt has not been made to any considerable extent. We have seen the public virtually come out doors to sleep. We have seen the public take to a more frequent bath, like fish to water. We have seen the coming of bobbed hair, knee skirts, long skirts, Princess Eugenie hats, and the acceptance of most any mode which is "the thing." It can become "the thing" to use the streets and highways with care.

By none of these remarks do I wish anyone to infer that I do not believe there is further room for engineering improvement; because I do. Cars can be made safer. So can roads. But I am more interested in making people safer for themselves. And what's

(*Please turn to page 68*)

The Costs of Medical Care

By C.-E. A. WINSLOW

ON May 17, 1927, there was organized a nation-wide Committee on the Costs of Medical Care under the chairmanship of Dr. Ray Lyman Wilbur, who later became Secretary of the Interior, and with the writer as vice-chairman and chairman of the Executive Committee. The Committee was composed of representatives of the medical, dental and nursing professions, of public health workers, of social scientists and representatives of the public, the field of industrial hygiene being represented by the writer and by Dr. W. Irving Clark of the Norton Company. This committee has carried on a long and extensive series of investigations and has published some twenty-five reports of its studies, and on October 31, 1932, adopted its final report and recommendations.

The studies of the Committee show that the total cost of all forms of medical care, including hospitalization, physicians' services, dentists' services, nursing services, drugs and medicines, private health services and all other incidental factors is approximately $3,650,000,000, or about $30 per capita per year. This total includes certain items that could be reduced to advantage, particularly the 700 million dollars now spent for drugs and medicines, three-fourths of which is almost certainly unnecessary, and a considerable proportion positively harmful. On the whole, however, the expenditure of 4 per cent of the total national money income for health protection and the care of illness does not seem in any sense excessive.

Uneven Distribution

The real difficulty, however, as our studies show, is that average figures give very little idea of the actual problem that is involved. While the average money income of the country in 1928 was approximately $750 per capita, 50 per cent of the population even in that prosperous year had an income of less than $500 per capita. Family incomes are very unevenly distributed, and the costs of medical care even more variable in their incidence. Perhaps the most striking single fact brought out by our studies is the fact that in the group of families with a family income under $1,200 per annum, 1 per cent of the families spent in a given year $500 or more for medical care. Results are not very different in the higher income groups. All along the line, one family in a hundred in each year must spend from a quarter to a half its annual income as the result of the emergency of sickness and it is this hundredth family which creates the serious problem of the costs of medical care.

The evils which result from such uneven distribution are many and diverse. On the one hand the persons and agencies furnishing care find their financial status insecure and unsatisfactory. The average income of physicians in 1929 was $5,300. One-third of the practicing physicians of the country, however, had an income of less than $2,500. Our hospitals are struggling under burdens which at the present moment in many communities seem almost insurmountable. The patient on the other hand has often the choice between incurring expenses which will cripple his budget for a decade, resorting to the charity of public agencies or relying upon physicians, or going without the medical care he needs. Too often the last alternative is selected. It is a common catch-word that only the very rich and the very poor have good medical care, but half of this catch-word is untrue. We find that in the group of families with an income of $10,000 and over the actual care received is indeed reasonably adequate. Compared with what we believe to be sound and reasonable standards such families receive 84 per cent of the physicians' calls which they need in home, office or clinic and 87 per cent of the hospitalization they require, but even in this group only 62 per cent of the dental care desirable.

FOUR PER CENT of our national income is spent for health protection and the care of illness. Evenly distributed, this would not be an excessive amount, but the cost of sickness falls with crushing weight on an unfortunate few. Many others are unable to pay for medical treatment that is urgently needed. This is the situation which led to the survey described by Dr. Winslow.

Organized Medical Care

As we pass down the scale of incomes, we find medical services progressively less, except that for hospitalization the poor are somewhat better off than those just above them in the economic scale. The group of families with incomes under $1,200 receive only 34 per cent of the physicians' calls they need, only 67 per cent of the days of hospital care and only 12 per cent of the necessary dental attention. All along the line the lack of use of preventive procedures is appalling. "Preventive medicine" is still a pious aspiration and not a realized fact.

In addition to its examination of the operation of the ordinary conventional system of medical practice, the committee has made special surveys of the number of experiments in the provision of medical care in a more organized fashion. Members of the Council will be particularly interested in number 5, "Medical Care for 15,000 Workers and Their Families," a survey of the Endicott Johnson medical service, and number 18, "The Medical Service of the Homestake Mining Company," and in number 20, "A Community Medical Service Organized Under Industrial Auspices in Roanoke Rapids, North Carolina."*

*Professor of Public Health, Yale School of Medicine, New Haven, Conn.

*All the reports of the Committee may be obtained from the University of Chicago Press.

The Committee finds many interesting [illegible] furnishing complete medical care to their employees at costs ranging from $10-$20 per capita, [illegible] of [illegible] the same [illegible] under the traditional plan of individualistic practice. In one of these [illegible] services we estimate that medical care which actually cost $71,000 would have cost over $175,000 at [illegible] local rates. We have found groups of university students in our larger universities receiving under an organized program perhaps the most complete form of medical care, preventive and curative, enjoyed by any considerable group of persons anywhere in the world. We have found an army post at Fort Benning, Georgia, spending $40 per capita for a service which in most respects seems ideal in quality.

Group Payment Basis

The deliberations of the Committee led it to two major fundamental conclusions, as follows:

1. The Committee recommends that medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organized, preferably around a hospital, for rendering complete home, office, and hospital care. The form of organization should encourage the maintenance of high standards and the development or preservation of a personal relation between patient and physician.

2. The Committee recommends that the costs of medical care be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods. This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits, i.e., compensation for wage-loss due to illness, if and when provided, should be separate and distinct from medical services.

The organization which the Committee ultimately visualizes as the ideal for an urban community is a medical center organized somewhat under the plan of our present voluntary hospitals. It should have a board of trustees, as these hospitals do, representing the wide public interests involved for the general administration of the funds which the community must provide. All technical problems, however, should be decided, as they are in the present voluntary hospitals by the professional staff. The family physician should be the central figure in the plan and the family under the care of the medical center would be directly in charge of the general practitioner of its choice belonging to its staff. Complete hospital, clinic and home care, including preventive health examinations, immunizations and the like should be provided for a fixed annual per capita payment.

HEROES OF PEACE

Not in charging fights and desperate marches only is heroism to be looked for, but on every bridge and building that is going up today, on freight trains, on vessels, and lumber rafts, in mines, among firemen and policemen, the demand for courage is incessant and the supply never fails. These are our soldiers, our sustainers, the very parents of our life.

— William James.

The Final Goal

This final goal of a coordinated community medical service can be gradually and progressively approached by the expansion and development of many of the existing experiments now under way. Hospitals, group clinics, industrial medical services, university medical services, may expand their scope and approach more and more closely to the ultimate ideal.

In regard to industrial medical service, the committee says, "Complete medical service paid for jointly by employees and employers embodies a desirable form of organization for medical care if it is developed so that the participating professional men have control over the professional aspects of the service and opportunity and stimulus to maintain high standards. Free choice of practitioners should be allowed insofar as practicable.

The Committee suggests that care may often be extended to dependents and that the aim in each case should be to consider the entire family as the unit for which medical [illegible] Suitable means should be found to assure [illegible] some independence of business [illegible] As a rule the [illegible] general medical service [illegible] families should be limited to those instances where one or more industries are the dominant factor of the community life. In other communities, general medical care should be provided to workers and their families by community medical centers founded on a hospital rather than on an industry. Ideally, [illegible] industrial medical services should expand into community medical centers, under public and professional control. In such cases the type of medical service now maintained in most industrial plants, i.e., preventive and sanitary service, should be continued by the factories."

Adequate Facilities

The committee feels sure that the United States has today very nearly the number of doctors, nurses and hospital beds which would be necessary for completely adequate care. It is spending today nearly enough, if the expenditure were properly distributed and the service properly organized, to provide such adequate care. We estimate that $36 a year instead of $30 as an average figure, would provide really complete preventive service and curative care for all the people of this country. The two essentials for realizing this end are organization for the rendering of group service, and the distribution of the cost of sickness through some program of collective reserves. Sickness is an emergency, and we know quite well in other fields how to provide for emergencies by insurance.

The majority of the committee does not believe that such insurance should at present be based on state compulsion. We should like to see a period of experimentation under voluntary group purchase going hand in hand with the development of group practice, and in such a program of experimentation lies the only possible escape from such systems of state control as have come into force in almost all of the countries of Europe. We urge progressive leaders in medicine, in industry, and in civic affairs to study the report and to attempt to work out in their local communities sound methods of applying its basic principles.

Protecting the Plant by Remote Control

By RAYMOND K. HYDE

CENTRAL station supervision of plant protection is a constant check against failure of men and mechanical devices

AUTOMATIC sprinkler systems, compulsory in many instances, have done much to reduce fire hazards. Insurance companies often allow substantial reductions where they are installed. But records prove that there are literally thousands of cases every year where, for one reason or another, sprinkler systems become totally or temporarily useless through no inherent fault of their own. Gate valves are closed—for repairs or by accident—and are not opened again. Exposed water tanks freeze, air escapes from pressure tanks, water runs low in gravity tanks, steam for water pumps drops down to an inadequate supply. There are a score of situations that can prevent the proper operation of the best sprinkler system ever specified.

Many executives realize these dangers but few fully appreciate that there are efficient safeguards against them. Every system of protection, upon which lives and property depend, should wherever possible be supervised by an independent and impartial organization which specializes in such work. A simple illustration of the value of outside central station supervision of sprinkler systems is the small blaze that, in itself, does little damage because a sprinkler head opens up and quickly puts it out. Every one has gone home . . . the sprinkler head is still open, pouring thirty gallons of water a minute into the building. An electrically supervised system, however, would flash a signal to the central station of the protection company and immediate steps would be taken to shut off the water.

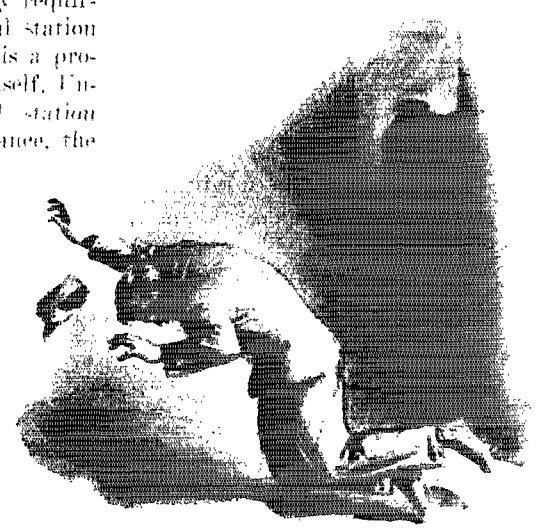
In the case of exposed water tanks, gate valves, pressure tanks, steam supply, air supply, etc., electrical devices installed on these vital parts of the sprinkler system flash warning signals that demand immediate steps be taken to correct any abnormal condition. Subscribers for such systems have a direct private wire connection to the nearest central station of the protection company. The radius of operation depends upon local conditions, but there are many cases where a central station is protecting property fifty miles away.

There are many central station electrical protection services that executives may make use of to safeguard their buildings. In addition to the supervision of automatic sprinklers and their water supply, there is night watchman supervisory service. This system not only keeps the watchman alert throughout the night by requiring him to signal the central station at periodic intervals, but it is a protection to the watchman himself. Unless he signals the central station within a definite time allowance, the protection company dispatches a guard to investigate his delinquency.

There are thousands of cases every month where watchmen, for one reason or another, have been unable to perform their duties. The reasons run all the way from accident, death, holdup and drunkenness to peaceful slumber. When a watchman is supervised by a central station system, his activities are under observation constantly. Should he be held up by burglars and forced to make his usual rounds at the point of a gun, he can signal for help without endangering his life. If the usual signals fail to register at the central station, an immediate investigation is made. Local police assist when necessary.

There are also hosts of industrial applications for central station supervisory services—for instance, the supervision of industrial and residential oil burners. Stack temperatures are checked by simple electrical devices. A certain drop in temperature sends notice that the burner has failed to function. An overflow of oil is just as promptly registered in the central station. Such signals are treated in a predetermined manner and such action taken as the case warrants. In most cases, a watchman or

Accidental injury or sudden illness may leave the plant unprotected if the responsibility is placed on one man.



*Engineer, American District Telegraph Company.

engineer has [illegible] sent to the premises.

An [illegible] temperatures [illegible] constant [illegible]

A watchman bound by burglars will be unable to perform his duties for several hours, and much can happen in the meantime.

certain dangerous temperature is reached, a local alarm is sounded as well as the usual central station alarm. Vat temperatures in many factories are being checked continuously by central stations, probably miles away. New applications are being made of this service almost daily.

A central station protective system which can be adapted to almost any kind of building, old or new, is an automatic fire alarm that actually feels fire and flashes an alarm to the central station and the nearest fire department without a moment's loss of time.

When a small fire started in Fraunces' Tavern in New York, that famous old heirloom of the eighteenth century was thrown into a turmoil. The door that once knew the hand of George Washington was ruthlessly thrown open and the quaint atmosphere was rudely shattered by uninvited firemen. The invasion was protested, but the firemen, unheeding, [illegible] between [illegible] oak [illegible] of sentiment that architecture and [illegible]

The [illegible] fire alarm recently [illegible] fire and [illegible] than a [illegible]. A feature of [illegible] is that it [illegible] most [illegible] system. A small [illegible] tubing, about one-twentieth inch in diameter, is fastened to rafters or ceiling. Nothing interferes with the decorative scheme. More important, this system of fire detection keeps constant watch. It protects every part of the building at the same time. A fire is detected immediately and the alarm flashed to a central station and the fire department without waste of time, without excitement or indecision.

Fire takes an appalling yearly toll of American resources—equal to twice the cost of the Panama Canal. The installation of automatic sprinklers properly supervised, automatic fire detection systems, and the insistence that watchmen be both capable and constantly supervised by an impartial central station system, will not only lessen the fire hazard, but will lessen the responsibility of executives when fire does strike.

The central station idea is growing rapidly. It is being used to prevent loss of life and destruction of property by fire, accidents, theft, man failure, material failure, and the class of happenings known as "acts of God." If the safeguarding of premises is of sufficient importance to warrant the installation of expensive protective apparatus and the services of watchmen, the proportionately small extra cost for outside maintenance and supervision is a logical consideration. A staff mechanic may think that he is maintaining the automatic sprinkler system or the fire-alarm system in good order, but, like all mechanical and electrical devices, they must be supervised constantly to insure dependability. When electrical devices connect the fire or more vital functional parts of a sprinkler system to a central station, nothing can happen without immediate steps being taken to correct the faulty conditions.

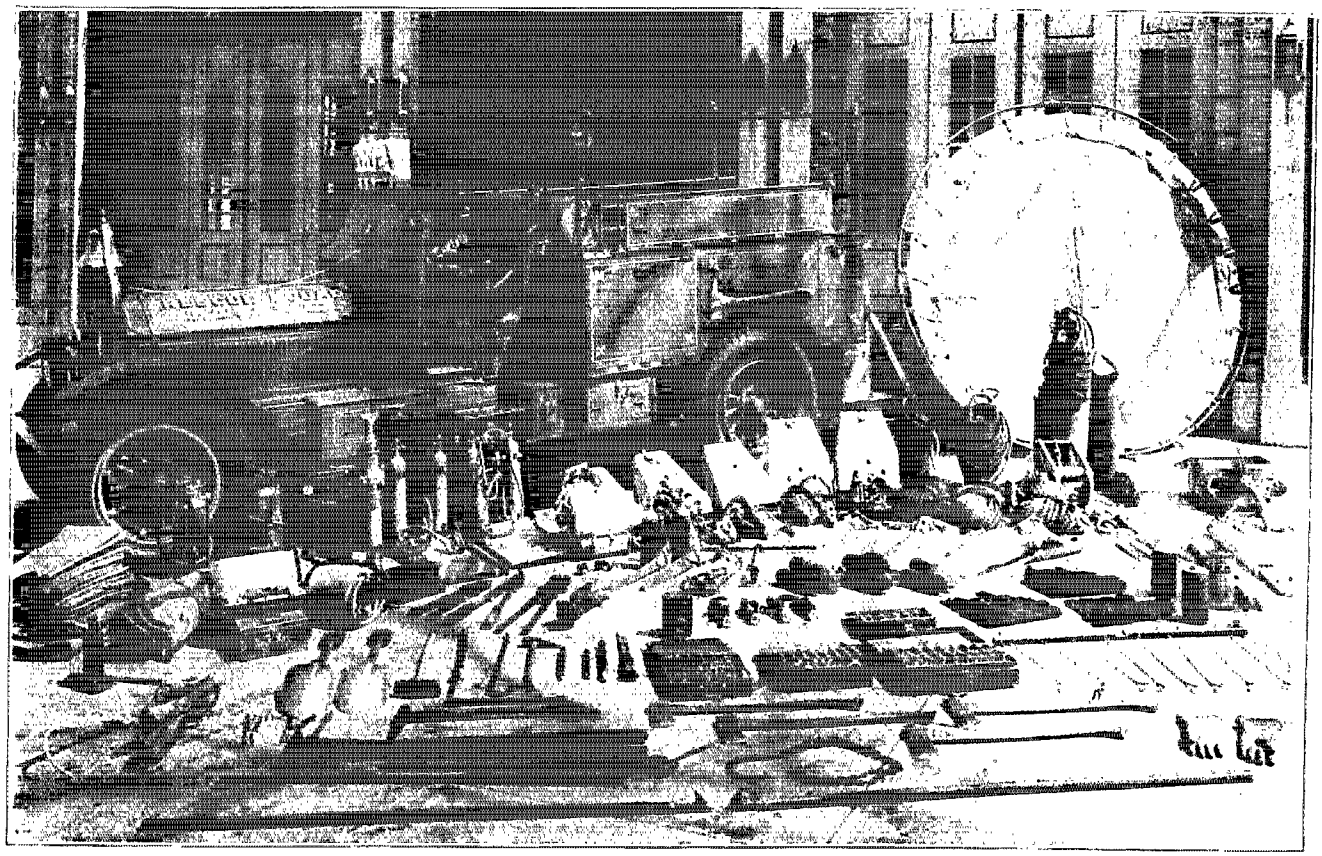
In the case of watchmen, there is always the incentive for mutual accommodation and collusion. There is a constant—and innocent—contact among members of the [illegible] organization. These relations of intimacy lead to [illegible] and shifting of duties. In case of [illegible] watchmen and others protect each other against the [illegible] their occasional delinquencies and failures. Central station supervision of protective apparatus and watchmen provides an unrelenting check on the whole protective scheme.

The Snow Shovel as an Emblem of Civic Pride

You know how to judge whether your neighbor is proud of his town? Watch how quickly he gets out after a snow storm and clears his sidewalk. Watch, in slippery weather, to see if he scatters a little sand or cinders on the ice. You'll be surprised to find how true it is that the snow shovel is an emblem of civic pride.

But there's something even more important than civic pride to be considered. The Chicago Safety Council has brought out some timely statistics to show that icy walks have sent many a person to the hospital. You'll never forgive yourself if, through your negligence to scatter a few ashes, somebody suffers a severe accident on your walk this winter. Why not set your neighbor a good example and keep your walk free of

snow and safe under foot. The exercise you'll get will do you almost as much good as the feeling of pride you'll experience from having participated in a good community move.—*Safety Committee, La Grange (Ill.) Civic Club.*



Minneapolis Fire Department Rescue and Life Saving Equipment

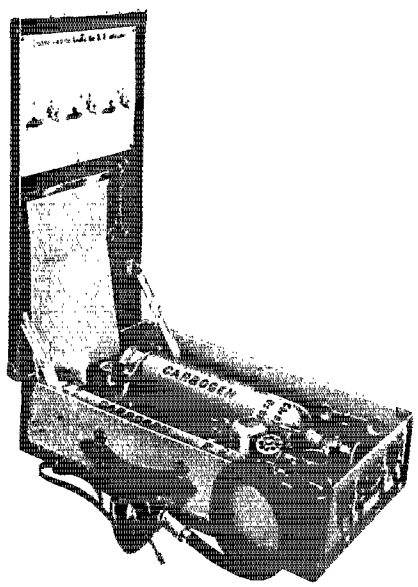
FIRE DEPARTMENT RESCUE SQUADS and OTHER AGENCIES

Are Accomplishing Wonderful Life-Saving Results, Especially in Cases of Resuscitation

The following statistics, taken from the 1931 Annual Report of the Minneapolis Fire Department covering Activities of the Rescue Squad in First Aid and Resuscitation Work, are indicative of the life-saving Accomplishments of this department as well as the Accomplishments of hundreds of other agencies such as Police and Public Utility Emergency Crews, Life Guard Services, etc.:

TYPE OF CASES	Number of Calls	Number of Patients	Number Revived
Illuminating Gas	140	150	97
Carbon Monoxide Gas	14	18	12
Coal Gas	9	14	14
Drowning	15	15	3
Electric Shock	2	4	2
Burns	8	8	6
Miscellaneous	43	47	28
	231	256	162

The H-H INHALATOR was used successfully in many of these cases. This is the season of the year when gas poisoning cases are most numerous.



Portable H-H INHALATOR

A widely and successfully used Resuscitation Device employed in conjunction with the Prone Pressure Method of Artificial Respiration.

BE PREPARED WHEN RESUSCITATION CALLS ARISE!

Put H-H Inhalators on Your Safety Program
May We Send You Complete Information?

Mine Safety Appliances Co.

Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

"EVERYTHING for MINE and INDUSTRIAL SAFETY"

The Effects of

Inhaled Mineral Dusts

By LEROY U. GARDNER, M. D.

As long as men have worked in stone it has been appreciated that an unusually large proportion of them suffer from disease of the lungs. It was natural to assume that such disease would be caused by the dust generated, and this belief was strengthened by the discovery of black, grey or red pigments in the lungs, sometimes accompanied by the formation of scar tissue.

The term pneumonokoniosis was introduced to describe the lung pigmented in this manner. With further observation pathologists attempted to classify various forms of pneumonokoniosis on a basis of the type of dust inhaled and such names as anthracosis, siderosis, chalicosis and even byssinosis and tobaccosis made their appearance. It was recognized that some forms of the disease were attended by severe symptoms and resulted in death but there was no correlation between the clinical and pathological pictures and the causative dust. Finally statistical study demonstrated that of all kinds of industrial dusts silica generally produced a definite type of disease with a characteristic pathological lesion and complex of symptoms.

Today the clinical entity known as silicosis is one form of pneumonokoniosis which is quite clearly defined. Moreover, within the last three or four years asbestos dust has also been shown to produce another specific type of reaction attended by symptoms differing in some respects from those of silicosis.

The other forms of pneumonokoniosis still lack complete definition. The widespread use of radiography has brought together a mass of descriptive data from individuals exposed to many kinds of occupational dusts but these findings have not yet been correlated with pathological anatomy, chemical studies of the tissues and detailed analyses of industrial atmospheres. There is a tendency to assume that many of these pulmonary changes are due to the action of silica perhaps modified by the chemical components of the dust. We shall only be in a position to speak with assurance about them when the pure types of dust and their various combinations have been studied in human beings or in experimental animals.

For the sake of clarity no mention has been made of the infections which so frequently complicate some forms of pneumonokoniosis. In the prebacteriological era of medicine the use of such terms as "grinders' consumption" and "miners' phthisis" reflects the popular association of pneumonokoniosis with tuberculosis. The names were justified both by clinical and pathological observation for it has been subsequently shown that, in silicosis at least, a super-imposed tuberculosis may cause death in perhaps 75 per cent of the cases. Some observers even go so far as to state that silicosis itself does not develop unless the lungs are previously damaged by a latent tuberculous infection. This is probably an exaggeration, for typical silicosis can be produced in the experimental animal by the inhalation of silica without infection.

Asbestos Dust

The role of asbestos dust as an excitant of tuberculous infection is not as clear cut as that of pure silica. While there are numerous reports of death in asbestosis due to a terminal tuberculosis, nevertheless surveys of living workers have failed to demonstrate any excess of such infection. Simple anthracosis is said to prevent the progression of tuberculous infection. Statistics from coal mining districts do show a tuberculosis rate much lower than that "normal" for the age group. As yet corroborated experimental proof of protective action of coal against tuberculous infection is lacking.

Silica and Tuberculosis

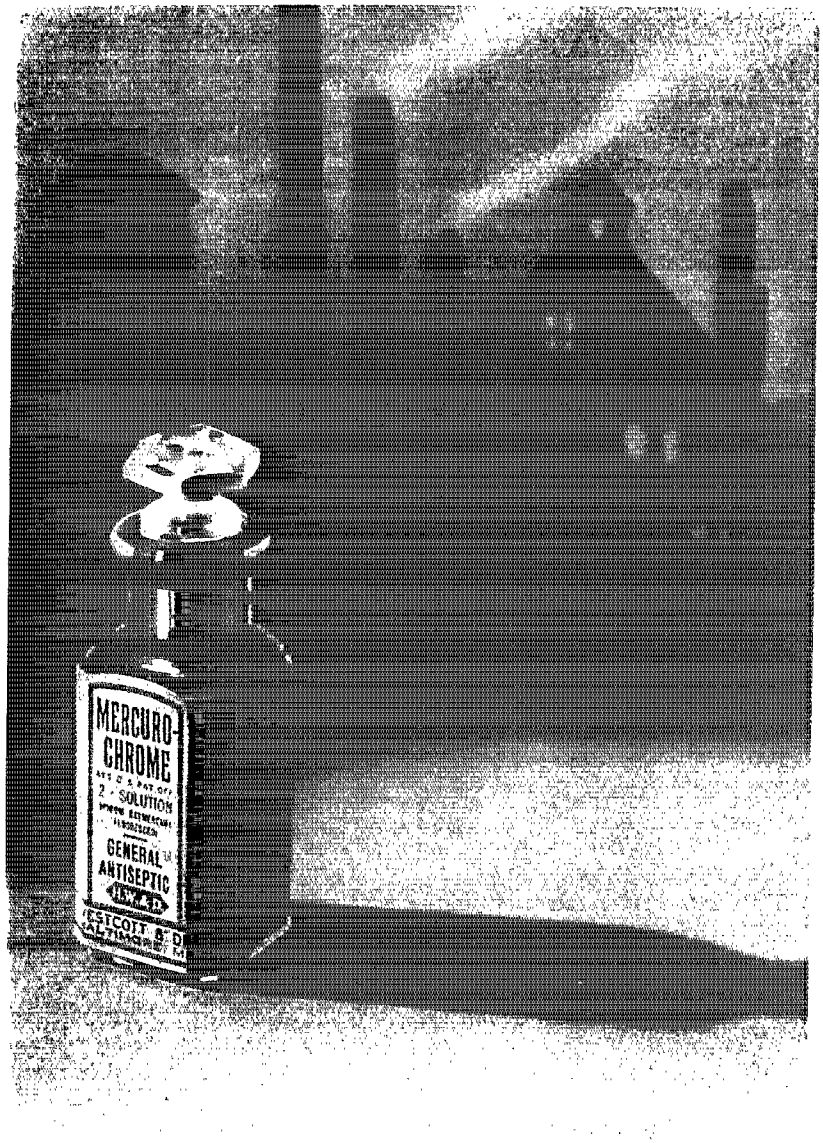
Not only the tubercle bacillus but other bacteria seem to develop with special facility in the tissues previously damaged by silica. For example the pneumonia rate among silicotic native laborers of south Africa is many times that in non-silicotic natives living under similar conditions. In coal miners, likewise, pneumonia is a common and often fatal complication. Case reports of fatal pneumonia in asbestosis are frequent but morbidity statistics from large groups of asbestos workers are lacking. For most other dusts the data are even more fragmentary.

What has been said of the effects of inhaled inorganic dusts would indicate that the reaction of the tissues is not merely a response to mechanical irritation by particulate matter. Today it is generally accepted that the injury is chemical in nature and that only certain of the common types of industrial dusts possess properties capable of exciting reaction. In the cases of silica and the silicate of magnesium or asbestos the slightly alkaline body fluids probably effect a slow solution of the dust particles liberating silica in colloidal form. This substance irritates the connective tissue cells which respond by multiplying. The result is an overgrowth of the supporting framework elements at the expense of the more delicate cells specialized for specific functions.

For these two types of dust the character and form of the pathological changes has been carefully worked out. In *silicosis* the essential tissue change consists of nodules of connective tissue which develop

*Director, Saranac Laboratory for the Study of Tuberculosis, Saranac Lake, N. Y. (A paper presented before the Industrial Health Section, Twenty-first Annual Safety Congress).

FIRST AID IN INDUSTRY



IN industry, as in every day life, little things count. A little scratch if ignored today may become a serious infection tomorrow.

MERCUROCHROME has proved to be a valuable antiseptic—it is recognized throughout industry.

USE MERCUROCHROME in all injuries, however small, but remember that for more serious injuries even the most competent layman should not assume the responsibilities of the physician.

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Gentlemen: Please send me free Mercurochrome Applicator Bottle for personal use.

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.....

[illegible] the drainage apparatus of the lungs. These nodules interfere with the physiological removal of foreign bodies and subsequently inhaled particles accumulate in the framework of the lung itself. Such reaction gradually decreases the normal elasticity of the organ and encroaches upon its functional elements. As a result the cardinal symptom of the disease, dyspnoea or shortness of breath develops. Because of the excessive amounts of scar tissue formed in the lungs the right side of the heart encounters increasing difficulty in forcing blood into the organs. In an attempt to compensate the overworked heart muscle becomes thicker and heavier and unless infection intervenes the time eventually arrives when the heart fails and death occurs from this cause.

Obscure Causes

The reasons for the prevalence of infection in the silicotic lung are not altogether clear. It is obvious that when the drainage system is so obstructed by nodules of scar tissue that more dust particles can only be removed with difficulty, the same must be true of bacteria which may be inhaled. As a consequence they remain in the lung and set up progressive infections. But this is not the whole story. The silicotic tissue apparently offers a peculiarly favorable soil for the continued multiplication of tubercle bacilli and perhaps other bacteria. Experiment has shown that even attenuated organisms of this type will produce rapidly fatal tuberculosis in a silicotic guinea pig. Furthermore, inhaled silica dust will cause a preexisting latent tuberculous focus, harboring a few attenuated bacilli, to become progressive and spread.

The cause of this effect upon tuberculous infection has not yet been ascertained but the writer believes that it is in some way associated with the death of tissue caused by the toxic silica. Associated with this factor is an increased activity of the phagocytes which are stimulated by the irritating silica so that these cells tend to migrate rapidly and carry tubercle bacilli into previously uninvolved portions of the lung.

Asbestos dust, perhaps because of its fibrous structure, is not transported very far within the lung. It tends to lodge along the walls of the finer tubes and little of it is removed by the lymphatic drainage system. Tissue reaction probably initiated by the solution of the dust occurs in their immediate vicinity. As in the case of silica this reaction consists in an overgrowth of the connective tissues which, is later transformed into leather-like scars. The arrangement of the scar tissue in asbestosis is quite different from the nodular collections in silicosis because of the difference in localization of the foreign particles. In asbestosis the deposition along the walls of fine tubes radiating from larger bronchi in all planes throughout the lung gives rise to a fine linear fibrosis with little or no nodule formation.

Aluminum oxide will serve admirably as an example of a non-siliceous dust whose particles are as hard and sharp as those of crystalline silica. When a measured quantity of such particles, 1 to 3 microns in diameter, are injected into the ear vein of a rabbit the majority of them come to rest in its liver and spleen. There they remain, apparently harmless, collected in large phagocytic cells and producing no reaction of the connective tissues for at least two years. Injection of the same quantity of the same sized quartz particles excites the formation of so much scar tissue that the functional elements are almost completely destroyed.

Carborundum, the carbide of silicon, when inhaled by guinea pigs for periods as long as four years, likewise fails to excite significant overgrowth of the connective tissues. It produces only a low grade inflammatory change with no nodules.

Instances such as those cited constitute the basis for believing that the cellular response to dust particles is not due to their hardness and sharpness but to chemical substances liberated by the action of the tissues upon them. The case for solubility has not been proven directly, for the detection of soluble silica in the tissues offers technical difficulties which today are unsurmountable. Nevertheless this substance is known to be a cell poison and in weak concentrations it will provoke an overgrowth of the connective tissues.

Coal Dust

Mention should be made of the effect of inhaled coal dust. Most city dwellers breathe in sufficient quantities of this material during an average [illegible] to pigment considerable areas of their lungs. Deposits of grey or black dust will be found along the walls of the minutest drainage system [illegible] concentration is associated with [illegible] to new growth of connective tissue. The coal miner's [illegible] are rather unusual but in most instances it also develops no deforming scars. When such reaction does occur analysis usually reveals appreciable amounts of silica in the lungs. The presence of excessive quantities of carbon dust apparently influences the localization of moderate amounts of silica so that the latter is not deposited in nodules as in pure silicosis but in streaks along lymph vessels as pure [illegible] are localized.

Coal miners' fibrosis, due to relatively small amounts of silica, is therefore different from that of the pure quartz miner. When the amount of inhaled silica is excessive, the effect of the coal is negligible and the reaction approximates that in pure silicosis. There is said to be more reaction to hard coal than to the bituminous variety but there is evidence to suggest that this is due to the greater amount of siliceous rock which must be worked in mining anthracite coal.

Finally, consider the silicosis of granite cutters. This develops somewhat more slowly than that of the pure quartz miner and it has been maintained that this is due to the relatively small amount of uncombined silica in granite (25 to 40 per cent). But it is the writer's belief that other components of the glomerate granite may neutralize or at least inhibit the effects of the silica so that only after prolonged exposures to high concentrations does significant reaction occur. While typical silicotic nodules develop in guinea pigs inhaling pure quartz for a year, not even the earliest suggestion of nodules has appeared in the lungs of animals inhaling comparable concentrations of granite (40 per cent silica) for four years.

This very brief discussion of some of the problems involved in pneumonokoniosis draws attention to the limitations of our present knowledge. It indicates that the reaction to an inhaled dust is determined by the chemical and probably physical composition of that dust. It emphasized the need to further study of different types of dust both in the pure state and in measured combinations.

Make Safety Education Easy!

Almost every problem of safety is handled in the following publications. You will need these to help reduce accidents in 1933. Their use will make your plant safer, promote better workmanship and increase personnel efficiency. In fact, they will make your safety program easier!

1. **The Healthy Worker.** 48 pages full of health hints for the worker. Will help reduce costly short-time absenteeism.

2. **First Aid Reminders.** A 32-page booklet full of first aid hints for the average person who may be called upon to help an injured person before medical aid can be secured.

3. **Pay Envelope Enclosures.** Five series of "safety reminders" available. A sure way of getting safety messages across to workers!

4. **The Safe Driver.** A monthly 16-page illustrated safety booklet for motor vehicle drivers. Interesting, instructive and humorous.

5. **Safety Slogans.** A 32-page collection of snappy slogans, aphorisms, jingles, etc., helpful in making pay roll enclosures, home made safety posters for bulletin board display, etc.

6. **Safety Poems.** A 40-page booklet containing a collection of choice extracts from the writings of various authors.

7. **You and Your Car.** A series of six 4-page leaflets—every vehicle operator should read this set.

8. **Fire Prevention School.** Six 4-page outlines comprising a course of safety instruction in industrial fire prevention.

9. **The Safe Worker.** A 16-page illustrated monthly safety booklet for workers, teaching accident hazards and common sense safe practices in an interesting way.

10. **Safety Pays.** A brief, safety rule book. Every rule illustrated in a catchy manner.

11. **Shop Safety.** A 12-page hand book of safety containing facts about accident prevention on the job while in the plant.

12. **Vehicle Dash Cards.** 52 punchy colored, safety lessons. For posting on the dash board every week during the year. Keeps the driver alert to the hazards of driving.

13. **Artificial Respiration, Prone Pressure Method.** Leaflet size suitable for pay envelope enclosure—explains in detail with illustrations so that every worker will know how to apply in case of emergency.

14. **National Safety News.** The official monthly safety publication of the Council. It provides industrial executives and safety directors with the latest accident prevention news.

15. **Safeguarding Women in Industry.** Produced entirely and specifically for women workers. Its 24 pages discusses feminine problems such as high heels, long hair, clothing, etc.

16. **Safety Calendar.** A 365-day safety reminder. Is a forceful and constructive part of any safety program.

17. **Safe Practices Pamphlet Sets.** For persons in charge of safety work. Over 100 pamphlets bound in one loose-leaf binder and completely indexed. The "Kent" of the safety engineering profession.

18. **Health Practices Pamphlet Sets.** Helpful to industrial health physicians and safety supervisors because of the importance of the relationship existing between health and safety.

19. **Safety In Foremanship.** A series of seven safety textbooks which give foremen a broader knowledge of accident prevention and inspire them to make safety a more important part of their job.

20. **The Safety Speaker.** An 80-page booklet full of valuable hints, suggestions, and up-to-date data for speakers on accident prevention.

NATIONAL SAFETY COUNCIL
20 North Wacker Drive
Chicago, Ill.

Please send to me detailed information of following numbers:

Name .....

Title .....

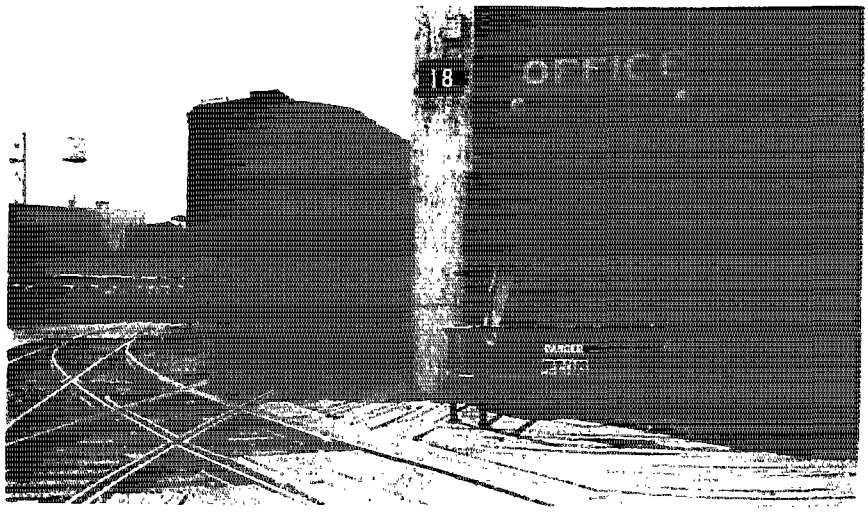
Company .....

Address .....

THE SAFETY EXCHANGE

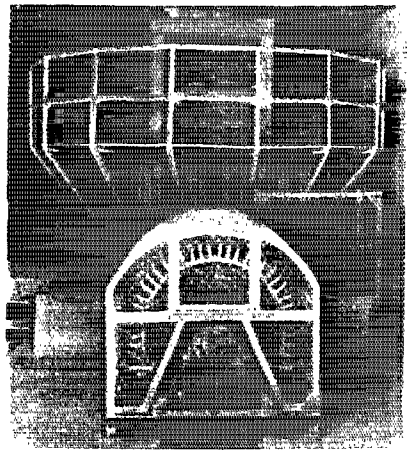
"A ROUND TABLE IN PRINT"

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



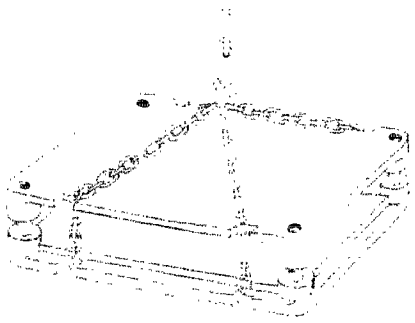
PROTECTIVE RAILING GUARDS THIS DOORWAY

Wherever railway tracks of any kind run close to an exit either to plant or office, thoughtless employees continually run the risk of being struck by the cars if they emerge in a hurry, as so often happens. The accompanying picture was taken in the plant of the Container Corporation at Chicago. The protective railing [illegible] attention to a real need.



PRESS DIES EASILY HANDLED WITH HOIST AND CRANE

One of the hazards in handling power press dies is the danger of a die slipping out of sling chains when raised and transported. The Murray Corporation of America



has found a practical way of overcoming this difficulty. Small dies under 18 inches in diameter are handled in a basket provided with a drop side, and in the case of large dies chain slots are provided. The drop side of the basket makes it easy to slide the die out onto the press table, and the old hazard of trying to carry them with chains, cables or ropes is removed. Each section of all dies larger than 18 inches is provided with chain slots, which make handling easy and safe.

UNUSUAL JOB OF PLATFORM AND GUARD CONSTRUCTION

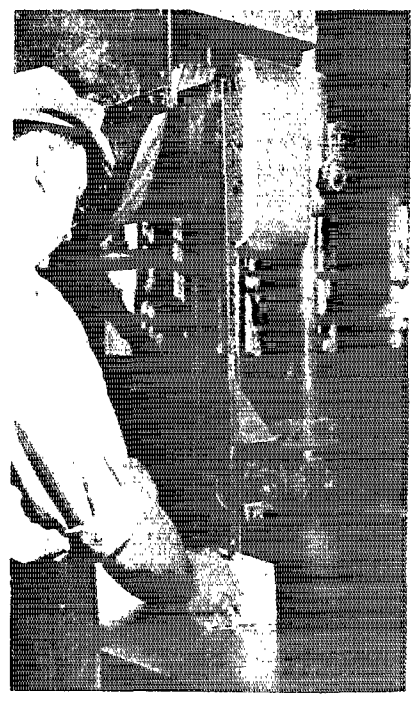
The stone crusher has been equipped with steel platforms of neat and substantial construction to reduce the hazards incident to the work of making repairs and adjustments. The motor which drives the crusher is enclosed with a guard of unusually good design. Other railings and guards are likewise in evidence. Guards that are well designed give the impression that the company means business in its safety work and they command respect.

STAMP THE SAFETY MESSAGE ON THE PAY CHECK

Giving the employee a safety message with his pay check is not a new stunt, by any means. Sometimes it is an enclosure, and often it has been printed on the check. But E. N. Goldstine, of Barrett & Hilp, San Francisco, suggests that another striking way to use the safety message is to rubber-stamp it prominently on the check face. His company uses bold lettering, occupying a space three inches wide, and a variety of colored inks bring the message out prominently. Some of these messages are: "If you think SAFETY doesn't pay, ask someone who has had an accident." "An accident is the natural result of something wrong. LET'S DO THINGS RIGHT." "Don't let an accident separate you from the payroll. BE CAREFUL." "Our aim—MADE EVERY DAY A NO-ACCIDENT DAY."

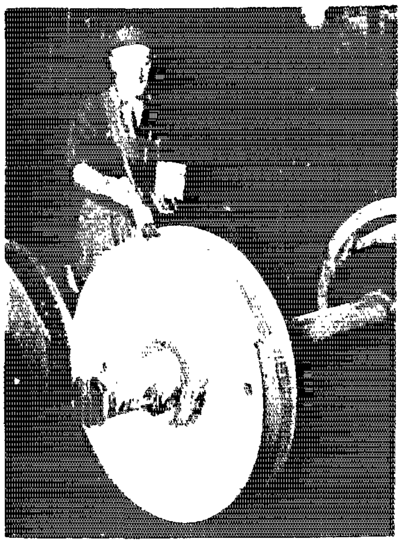
THIS BAND SAW GUARD IS MADE OF GLASS

Here is an interesting picture of a band saw in the shops of the Chicago and Northwestern Railway which is guarded by a sheet of glass. The guard is sometimes of wire-reinforced glass of course, and the lower section is counterbalanced, so it is easily raised or lowered to suit the work and the job is at all times safe.



METHOD OF DETECTING FLAWS IN CAR WHEELS

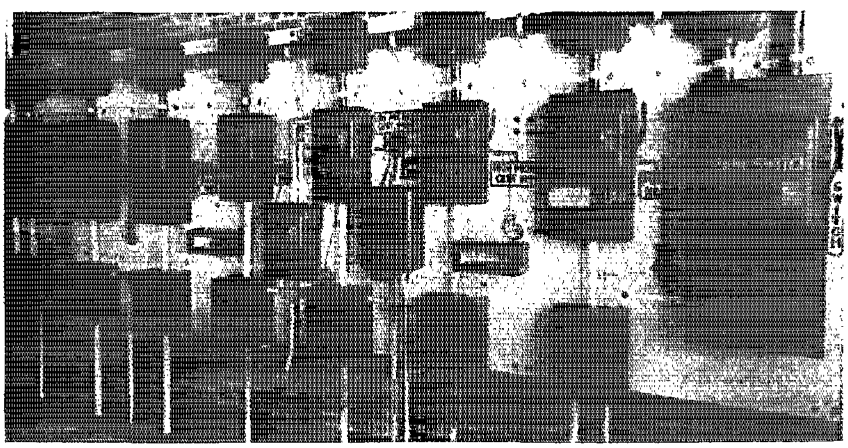
[illegible]

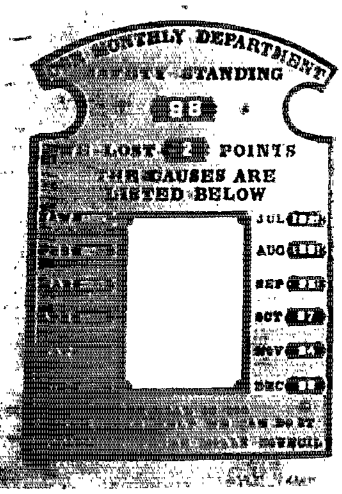


then struck a sharp blow with a sledge hammer. If there are any cracks in either wheel or axle, the whiting will be thrown out by the vibration and thus expose the flaws. The picture is from the shops of the Chicago North Shore & Milwaukee Railroad.

CONVENIENT SNAP DEVICE FOR THE SWITCH PANEL

Here is an interesting picture of a switch panel in the plant of the Hercules Powder Company, at Parlin, N. J. The particular safety feature may be noted as a small circular tag saying "DANGER Do Not REMOVE" which is attached by a snap to the switch lever in a number of the locations. This convenient snap enables the tag to be quickly attached, and its presence effectually warns anyone from removing the tag and closing the switch until all work in progress is completed. The tag will be removed only by the original worker who placed it on the switch. The clear marking of the switch, as will be noted, is an additional safety feature of great importance.



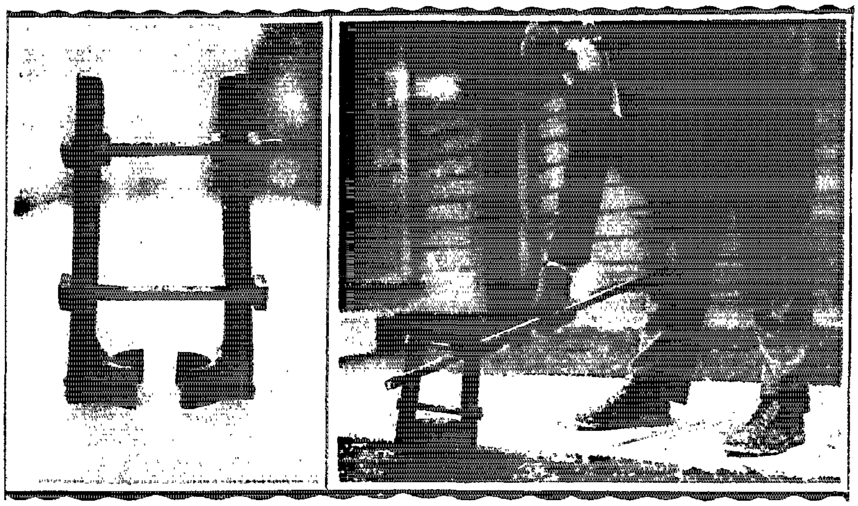


ANOTHER INTERESTING DEPARTMENT SAFETY STANDING BOARD

Here is a means of grading different departments on their safety standing, as employed by the International Harvester Company in its McCormick [illegible] works. The board is made of cast iron and has a number of spaces for inserting numbers after each month, and a space in the center to give a report of the cause for losing a certain number of points during the month, also the person's name who was responsible. This method of grading has stimulated competition and a good deal of departmental pride.

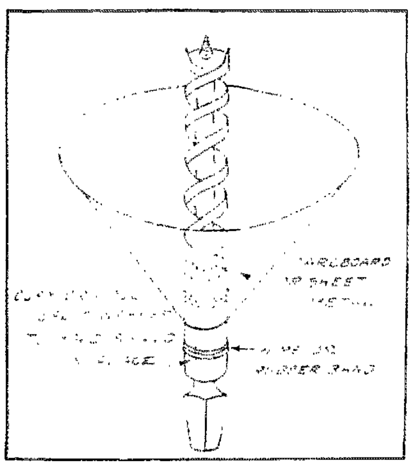
THIS CLAMP AIDS IN HANDLING CURB BOXES

These pictures show a clamp for raising or lowering curb boxes, suggested by an employee of the Equitable Gas Company, and described in *Public Service*, the employees' [illegible] of The Philadelphia Company, Pittsburgh, Pa. The two uprights [illegible] are made from a steel bar, [illegible] 14 inches long, and a piece of steel [illegible] inches, with a radius of [illegible] inches, [illegible] to fit the curb box and welded to the ends of the uprights. Two [illegible] inch bolts, with square nuts to fit a dresser type ratchet wrench, are used for pulling the clamp snug around the neck of the curb box. The second picture shows the device with clamp tightened about the [illegible] box just under the lid, [illegible] necessary [illegible] employ a [illegible] lower the box to the desired [illegible].



CHIP SHIELD PROTECTS EYES OF THE OPERATOR

A simple guard for the bit when boring holes above the head is suggested by the accompanying diagram. The guard is in the shape of a funnel which fits down snugly over the bit shank, thus catching chips or shavings and preventing them from falling into the worker's eyes. The funnel guard may be made either of cardboard or sheet metal.



THE BULLETIN BOARD

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

Conducted by STAN KERSHAW

Must This Horror Continue?

THE INSTITUTE of Mutual Casualty Companies reports that for a five year period ending in March 1931, the most nearly complete record available, a total of 800 children injured by playing with blasting caps was 800. Many of these children were crippled for life. Some died from their injuries.

There is encouragement in a further report from the Institute that during the first six months of 1932 there was a decrease of 73% per cent as compared with the number of injuries reported for the same period of 1931. But why should there be any. Who leaves the caps lying around. Can it be that many of the people who use them do not appreciate the danger. Can it be that quarries, mines, and construction companies do not have rigid requirements governing the caps, or are they lax in enforcing them. Are there but few people outside of those who use them who really know what blasting caps are and what they can do.

Everyone in charge of men or who has anything to do with the education of children or who has any occasion to use blasting caps should be interested in the contents of poster No. 4625 appearing in this issue. It shows what a blasting cap looks like it tells what it contains and it includes timely warnings to workers who may use them and to children who may get hold of them.

Unfortunately, the hazard is not confined to one community or to a small number of communities. Tragedy often occurs in the least expected places and it requires nation-wide effort to put a stop to it.

If you are an employer an educator or an influential member of a civic organization you can contribute to a worthy cause by obtaining copies of the poster and making them available for posting on plant bulletin boards and in schools.

Whatever you do, don't get the impression that your community is completely immune to the danger.

Politics

WHEN Poster No. 4584-D was issued for school use it aroused unexpected reactions in some sections of the country.

"Big and tough, yet he takes no chances," was the caption which accompanied a picture of an immense elephant. The poster was one of a series of safety lessons from nature.

Apparently the very sight of an elephant aroused suspicion in some quarters during the heat of an election. It was rejected by one school in New York because of the political associations of the elephant.

The Education Division of the National Safety Council naturally regarded this objection as rather far-fetched but was surprised a few days later to receive a request from a Republican Club in Ohio to make use of the poster during the campaign. Both reactions were equally embarrassing to a non-partisan organization.

Now that the heat of the campaign is over it is to be hoped that the elephant can be used to teach a lesson of strength guided by discretion.

Color Contrast

THE PREPARATION of suitable backgrounds for poster displays is more important than one would ordinarily suspect. All you have to do to prove this is to prepare two displays and stand them side by side for comparison. For one, select a poster that has a lot of bright orange in it and mount it on a deep, rich, purple background. For the other, select a poster in which green predominates and place it against a background of approximately the same shade of green. Now walk several paces away and observe the result.

Authorities tell us that black on yellow can be read at the greatest distance, with green on white, red on white, blue on white, white on blue and yellow on black, following in the order named. These facts may serve to suggest some good color contrasts for the bulletin board. There are other good combinations of colors and while great contrast will capture attention about as effectively as anything short of motion, there may be plenty of times when, for variety, it pays to sacrifice for more subdued colors to bring about a pleasing harmony for close observation.

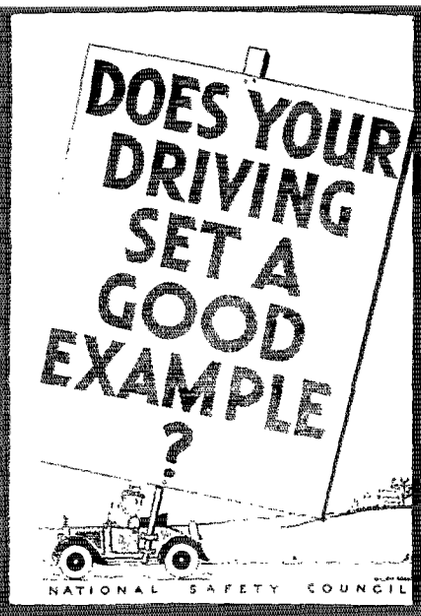
Changing the displays every few days and varying the combinations of colors will do much to hold the interest of your people.

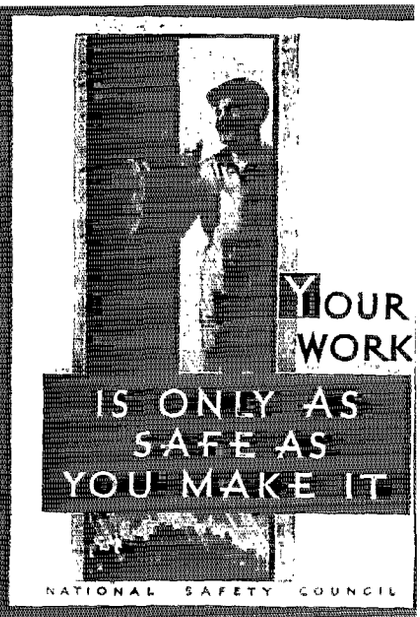
A New Use for Calendars

ONE MEMBER has written that he uses two copies of the annual safety calendar on each bulletin board. One copy is placed so that the current month shows and the other is turned around so that the reverse side of the page of the same month is displayed. This gives everyone an opportunity to read the information on the reverse side without having to turn the page.

Where the bulletin boards are large enough to allow space for the calendar display for a month at a time with plenty of room left over for other material, this is one good way to make sure that everyone reads the valuable information on the reverse side. However, there is no really good substitute for the plan of giving a calendar to each employee so he may take it home where the entire family may benefit from it.

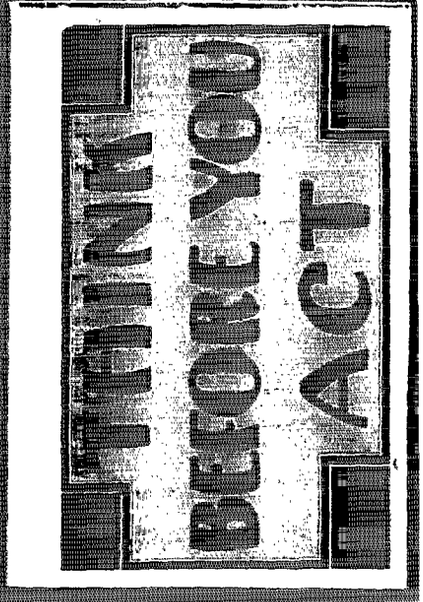

DANGER
ISN'T ALWAYS
AHEAD
KEEP THAT MIRROR
ADJUSTED
NATIONAL SAFETY COUNCIL


DOES YOUR
DRIVING
SET A
GOOD
EXAMPLE
?
NATIONAL SAFETY COUNCIL

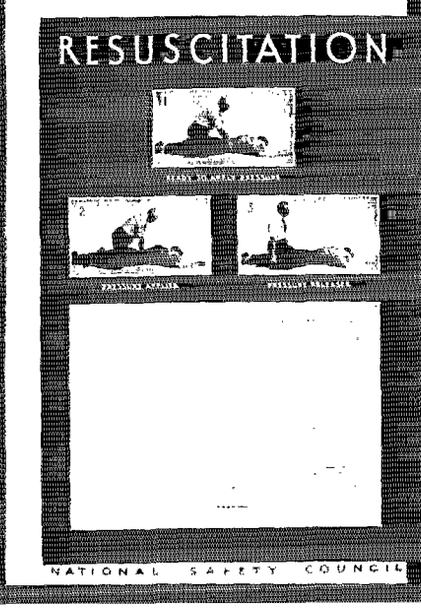

YOUR
WORK
IS ONLY AS
SAFE AS
YOU MAKE IT
NATIONAL SAFETY COUNCIL

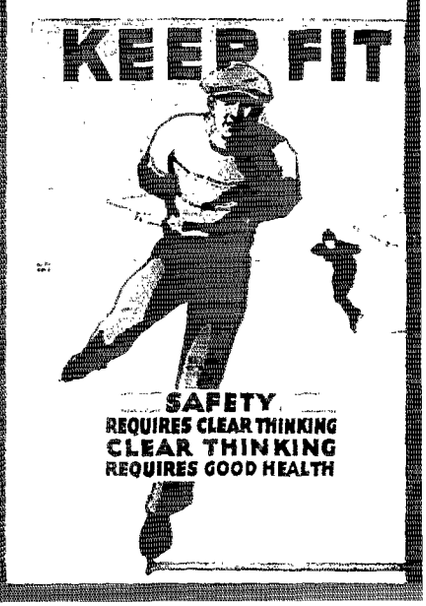

WHY LET
AN
ACCIDENT
HOLD YOU
UP?


"Where's my daddy"?
NATIONAL SAFETY COUNCIL

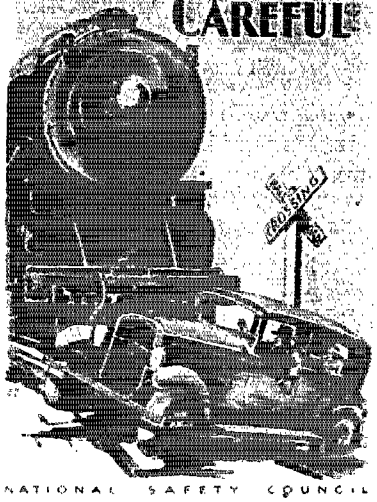

THINK
BEFORE YOU
ACT


The Eyes Have It!
Goggles
Keep 'em
That Way

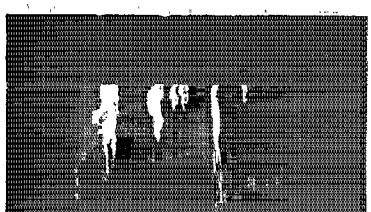

RESUSCITATION
NATIONAL SAFETY COUNCIL


KEEP FIT
SAFETY
REQUIRES CLEAR THINKING
CLEAR THINKING
REQUIRES GOOD HEALTH

TOO LATE to be CAREFUL



NATIONAL SAFETY COUNCIL



UNSAFE WORKERS ARE NOT WELCOME HERE

NATIONAL SAFETY COUNCIL

THOUGHT FOR TODAY

No one cheers when you come home hurt

"GOOSEY"

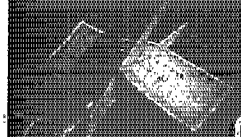
A "goosey" man is one who is nervous. When you touch him he jumps. There is nothing funny about it. One "goosey" man jumped off a scaffold and broke both legs when a fellow worker touched him. Another almost jumped into a pot of molten slag.

To intentionally startle a nervous person while at work is more than a mean trick—

IT IS CRIMINAL

NATIONAL SAFETY COUNCIL

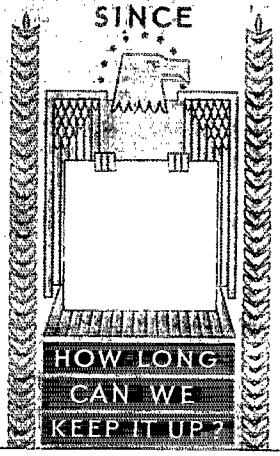
AN ACCIDENT



CAN CUT YOUR PAY in HALF

NATIONAL SAFETY COUNCIL

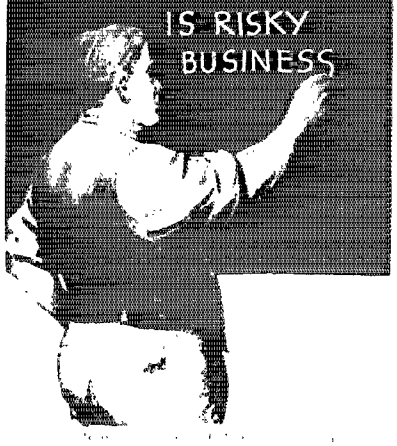
NOT A LOST TIME ACCIDENT IN THIS DEPARTMENT SINCE



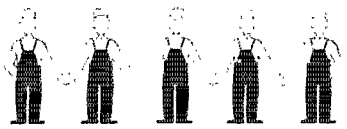
HOW LONG CAN WE KEEP IT UP?

SHORTY SEZ:

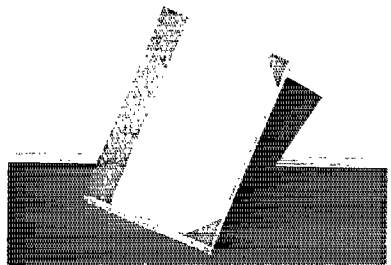
TAKING CHANCES IS RISKY BUSINESS



One man can't do it



but ALL OF US working together can STOP ACCIDENTS



IT ISN'T HOW OFTEN YOU READ THEM— IT'S HOW WELL YOU KNOW AND APPLY THEM

NATIONAL SAFETY COUNCIL

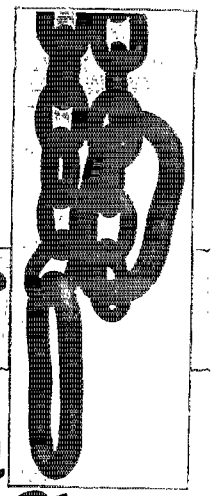
Think how much suffering First Aid prevents!

NATIONAL SAFETY COUNCIL

LET'S HAVE A MONTH WITHOUT ACCIDENTS STARTING NOW

NATIONAL SAFETY COUNCIL

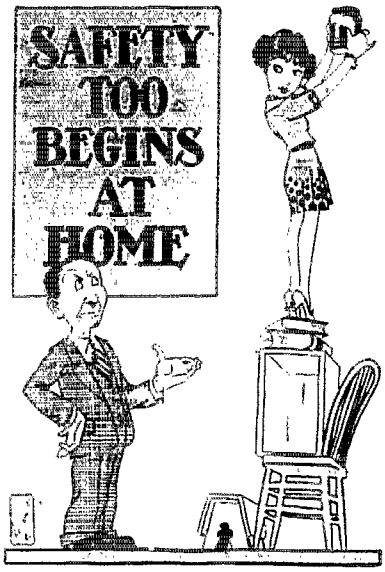
Find the weak links before they cause accidents.



Watch Your Chains

NATIONAL SAFETY COUNCIL

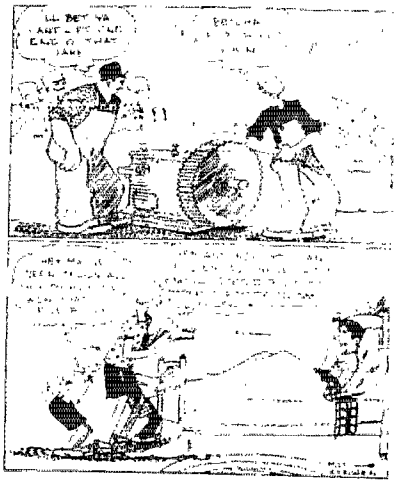
SAFETY TOO BEGINS AT HOME



STOP ACCIDENTS before they STOP YOU

NATIONAL SAFETY COUNCIL

THERE'S A MORAL TO THIS

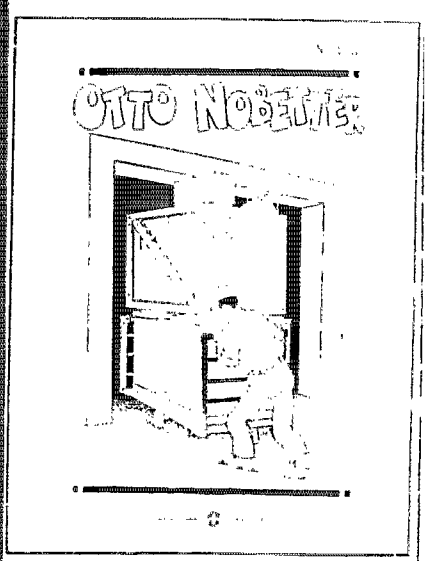


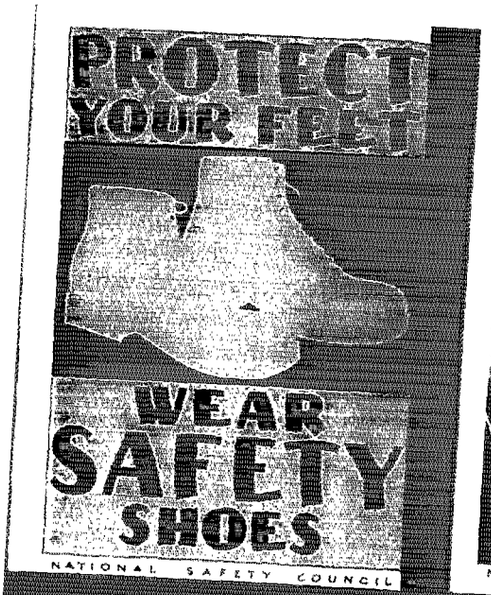
A SUGGESTED REMEDY FOR THOSE AFFLICTED WITH "DROPSY"

NATIONAL SAFETY COUNCIL

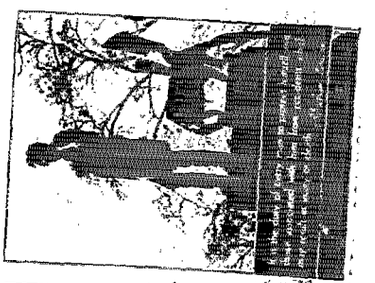
THIS BUSY GUY THAT YOU SEE HERE IS "BLIND TO SAFETY" NOW IF HE KEEPS HIS GOGGLES ON HIS CAP HE'LL SOON BE BLIND—AND HOW!

NATIONAL SAFETY COUNCIL




PROTECT YOUR FEET
WEAR SAFETY SHOES
NATIONAL SAFETY COUNCIL

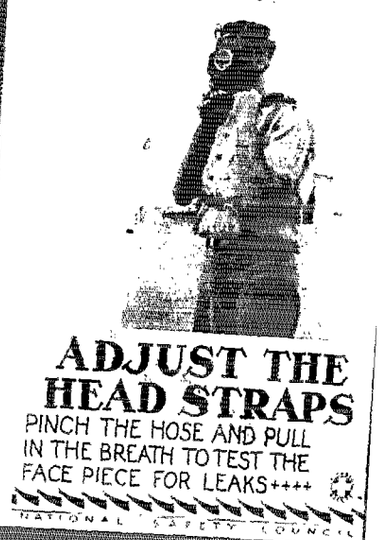

ONE of the THINGS A GOOD MECHANIC DOES NOT DO
NATIONAL SAFETY COUNCIL



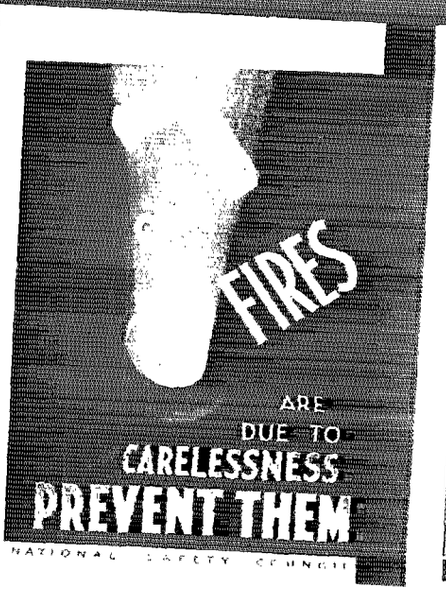

BE SAFE
TAKE CARE

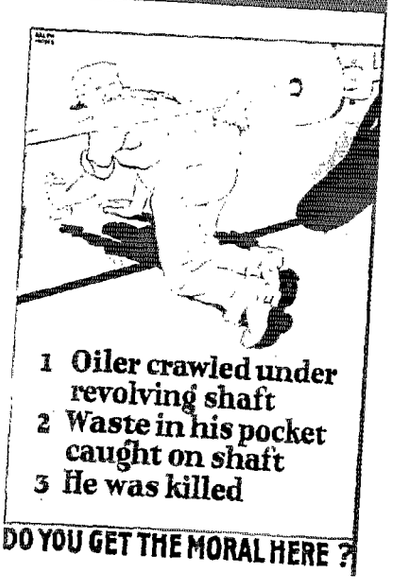

I'LL JUST TAKE THAT
MY NAME IS ACCIDENT
NATIONAL SAFETY COUNCIL


CLEANING UP
is part of the JOB
NATIONAL SAFETY COUNCIL

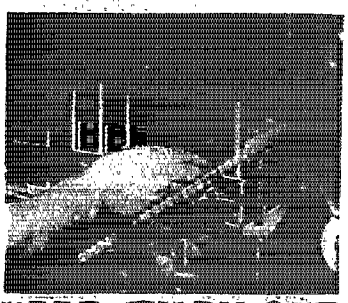

ADJUST THE HEAD STRAPS
PINCH THE HOSE AND PULL IN THE BREATH TO TEST THE FACE PIECE FOR LEAKS++++
NATIONAL SAFETY COUNCIL


YES!
I TOOK A CHANCE AND WISH I HADN'T


FIRES
ARE DUE TO CARELESSNESS
PREVENT THEM
NATIONAL SAFETY COUNCIL


1 Oiler crawled under revolving shaft
2 Waste in his pocket caught on shaft
3 He was killed
DO YOU GET THE MORAL HERE ?

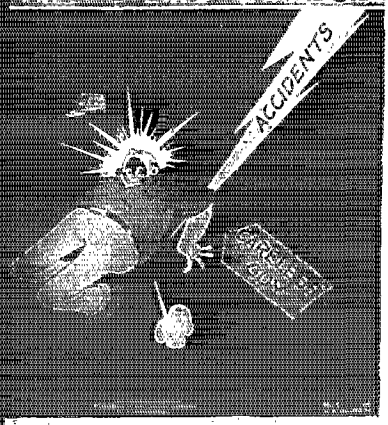
HANDS
ARE MORE VALUABLE THAN THE FINEST PRODUCTS OF INDUSTRY!



KEEP THEM OUT OF DANGER

NATIONAL SAFETY COUNCIL

LIGHTNING DOES STRIKE TWICE IN THE SAME PLACE

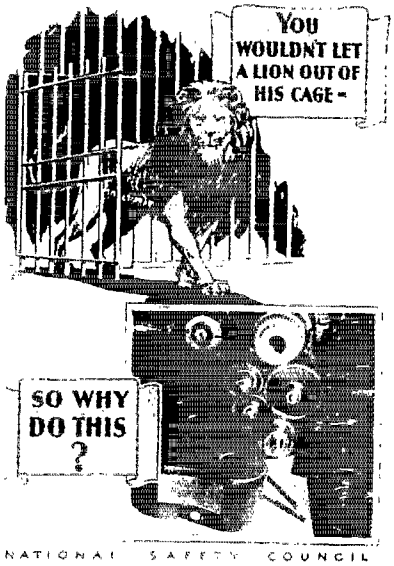


NATIONAL SAFETY COUNCIL

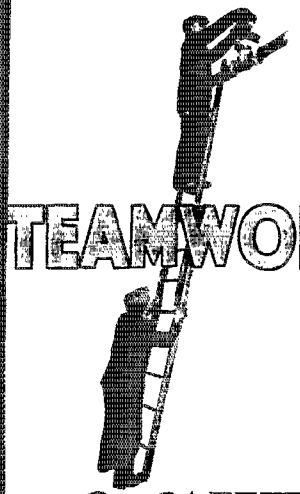
MARKS *the* SPOT

CLEAN IT UP

NATIONAL SAFETY COUNCIL



NATIONAL SAFETY COUNCIL

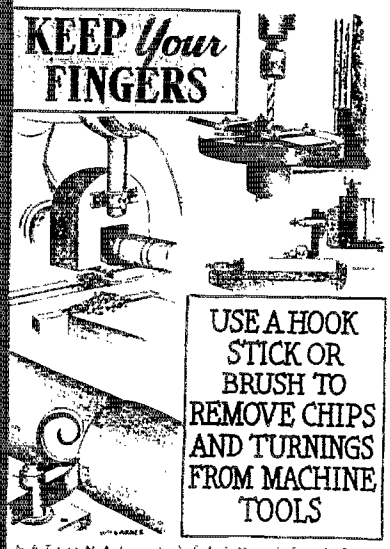


TEAMWORK

for SAFETY

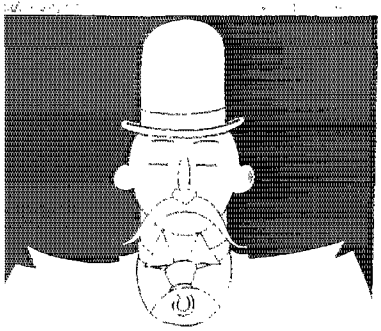
NATIONAL SAFETY COUNCIL

KEEP *Your* FINGERS



USE A HOOK STICK OR BRUSH TO REMOVE CHIPS AND TURNINGS FROM MACHINE TOOLS

NATIONAL SAFETY COUNCIL



STYLES MAY CHANGE BUT SAFETY NEVER

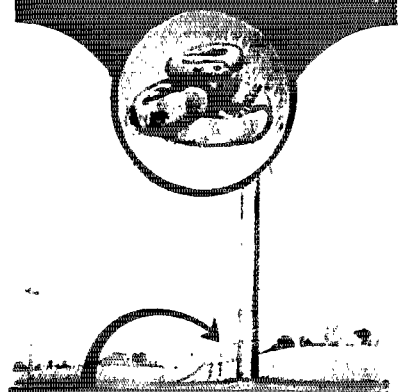
TWO OF A KIND

NATIONAL SAFETY COUNCIL

SAFE DRIVING *DEPENDS ON THE* MAN *at the* WHEEL

NATIONAL SAFETY COUNCIL

YOU WOULDN'T PICK UP A RATTLESNAKE/



THIS IS TWICE AS DANGEROUS

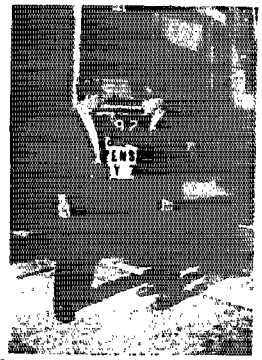
NATIONAL SAFETY COUNCIL

WHY ARE THERE TWENTY-FIVE MANUFACTURERS OF CRUTCHES IN THE US?

NATIONAL SAFETY COUNCIL

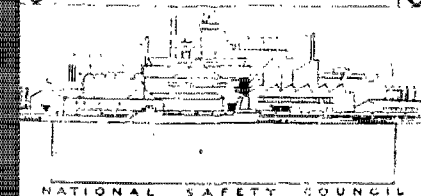
It takes at least two men to DO IT SAFELY

EXPERIENCE SAYS SAFETY IS WORTH A LOT NEVER FORGET IT



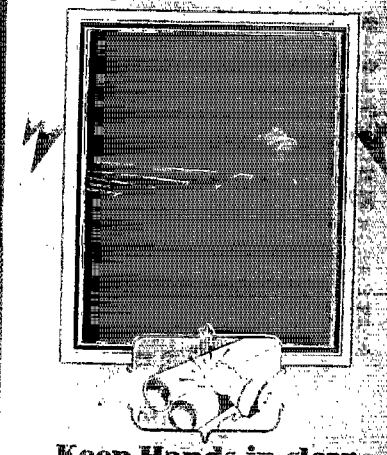
NATIONAL SAFETY COUNCIL

WHY SHORTEN LIFE? IT'S TOO SHORT NOW



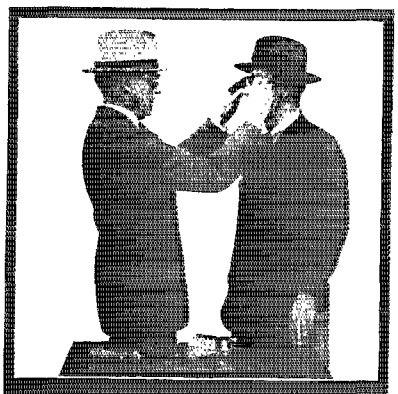
NATIONAL SAFETY COUNCIL

WHEN ROLLING STOCK



Keep Hands in clear

NATIONAL SAFETY COUNCIL



HAVE A FIT!

When you get a pair of goggles, see that they fit your face. Then they can be worn with comfort—and full protection to the eyes.

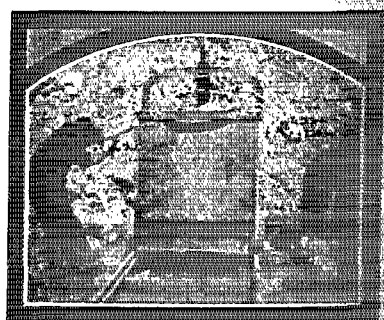
NATIONAL SAFETY COUNCIL

No 1311

CRANE SIGNALS

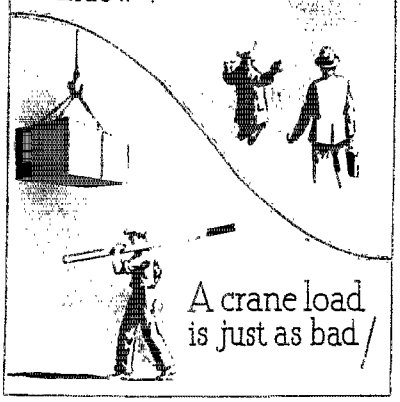
For One Hand

Operator should refuse to start crane until the proper signal is given. No verbal or other signals contrary to these shown above should be heeded by crane operators for moving loads.



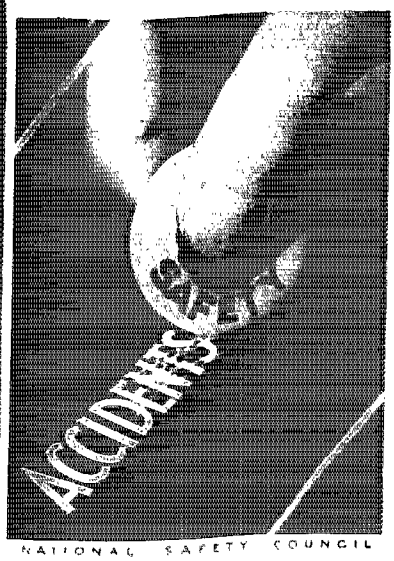
a rock inside is worth many outside and it injures no one

You wouldn't walk under a safe being lowered from a window

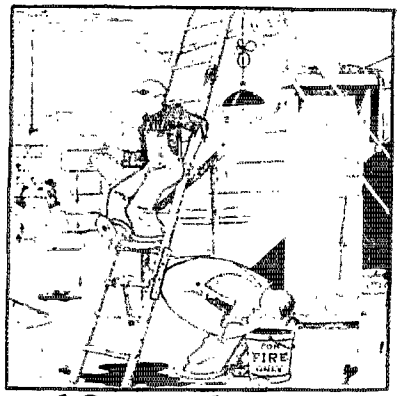


A crane load is just as bad

NATIONAL SAFETY COUNCIL



NATIONAL SAFETY COUNCIL



HOW MANY UNSAFE PRACTICES IN THIS PICTURE ?

NATIONAL SAFETY COUNCIL

Someone left file on pipe — It fell hitting man's hat

PICK UP TOOLS & PUT THEM AWAY~

THIS BIRD CAUGHT ITS WINGS IN COCKLE BURRS AND WAS FOUND DEAD

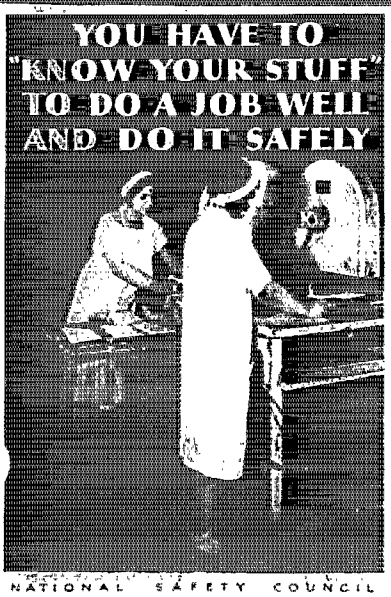
WEARING LOOSE CLOTHING AROUND MACHINERY MAY GET YOU INTO THE SAME KIND OF TROUBLE

NATIONAL SAFETY COUNCIL

Ankle Sprained

This block was not picked up

YOU HAVE TO "KNOW YOUR STUFF" TO DO A JOB WELL AND DO IT SAFELY



NATIONAL SAFETY COUNCIL

BLASTING CAPS

These are blasting caps. They are made of copper and filled with a powerful explosive. These two are the fuse type.

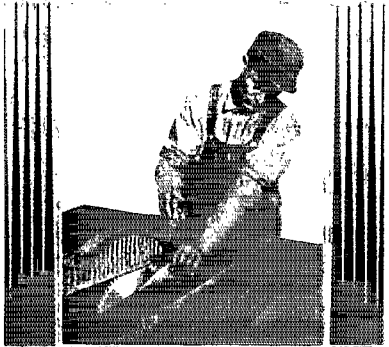
Below is the electric type with wires attached

WARNING TO CHILDREN

WARNING TO WORKMEN

NATIONAL SAFETY COUNCIL

Stop the Saw



It's the safe way to remove sliver

NATIONAL SAFETY COUNCIL

Safety Instruction Cards

The National Safety Council is submitting this month a new experimental service called "Safety Instruction Cards." Its continuation depends upon the reception received. These cards—3x5 inches in size—are for distribution to operating executives, foreman and workmen

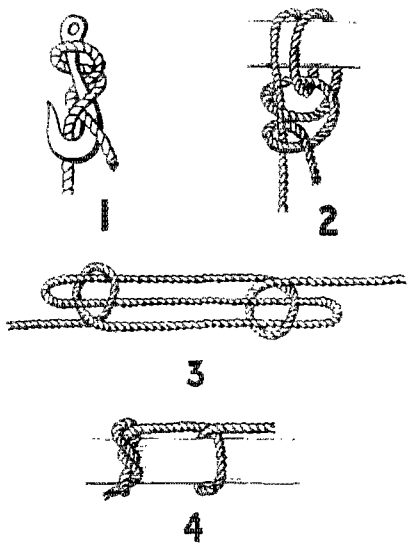
BELOW and on the following three pages will be found 14 full-size reproductions of "Safety Instruction Cards." Each card carries a technical or semi-technical treatment of a specific accident hazard or a brief suggestion on the safe way of performing some particular job. There will also be a card or two giving factual tables on subjects relating to the engineering application of certain occupations.

There is a wealth of practical safety information available, particularly applicable to certain occupations, that should be passed on to operating executives, foremen, and particularly the workers on these jobs. This is not material for safety posters because displaying a poster so specific that it applies to only a few workmen in the plant is not using bulletin board space to the best advantage.

These 14 cards are offered as an experiment. If they are ordered in sufficient quantities to cover the cost, an equal number of cards on other subjects will be offered in each subsequent issue of the NATIONAL SAFETY NEWS. The greatest possible number of industries and occupations has been covered with these card. Members are invited to submit suggestions for other cards.

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

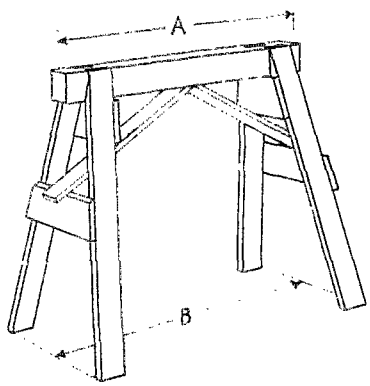
The order should specify "Safety Instruction Cards," and give the numbers of the cards selected.



Some Rope Hitches and Slings That can be Depended Upon

1. Double Blackwall Hitch—for hitching rope to a hook for hoisting.
2. Fisherman's Bend—for fastening a rope to a ring or anchor.
3. Sheepshank—for shortening a rope or to pass by a weak spot.
4. Timber Hitch and Half Hitch—for lifting spars. Can be easily loosened when strain is taken off, but will not slip under a pull.

SAFETY INSTRUCTION CARD No. 1

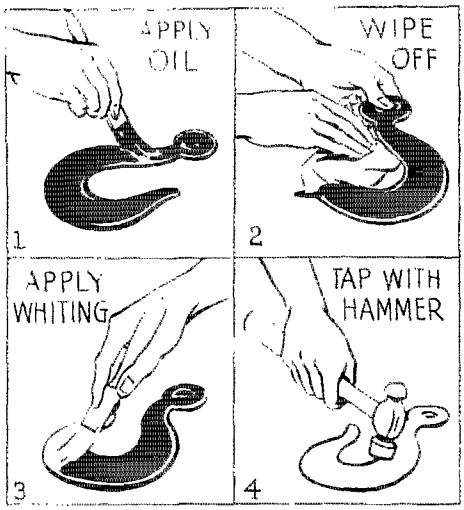


A—Several inches less than B.

A Well Designed Horse

EVERY horse regardless of what it is to be used for should be constructed so that the legs spread in all directions. The top should be shorter than the base so that it cannot tip over. Good bracing is important. The illustration shows one good type of construction.

SAFETY INSTRUCTION CARD No. 2



To Detect Flaws in Chain Links, Hooks, Castings, Etc.

SATURATE them thoroughly with some light oil long enough to permit the oil to soak into any cracks or pinholes, then wipe off all traces of the oil on the surface. After this has been done, coat the entire surface with whiting. After the whiting has dried the oil will begin to appear thru it wherever there are deep-seated flaws having surface openings. A blow with a hammer will help bring the oil to the surface.

SAFETY INSTRUCTION CARD No. 3

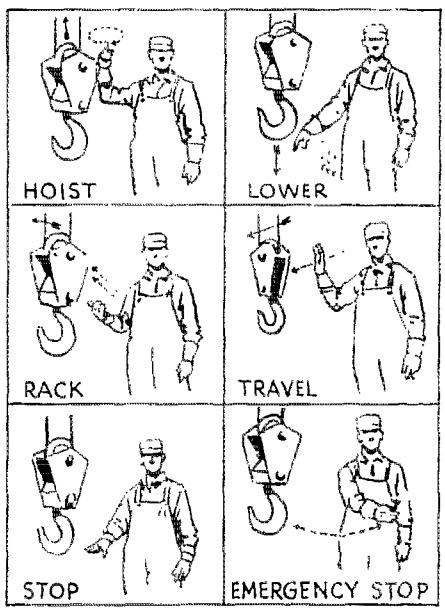
To Test a Rubber Glove for Leaks

ROLL cuff tightly. This will compress enough air in the glove to determine whether it leaks.

This is only a rough test for gloves used when working on energized electrical equipment. A high voltage test under proper supervision is the only way to make sure gloves will give adequate protection for this kind of work.

Workers other than electrical workers find it helps to detect leaks if the gloves are immersed in water while the air is compressed in them. Any escaping air will form bubbles.

SAFETY INSTRUCTION CARD No. 4



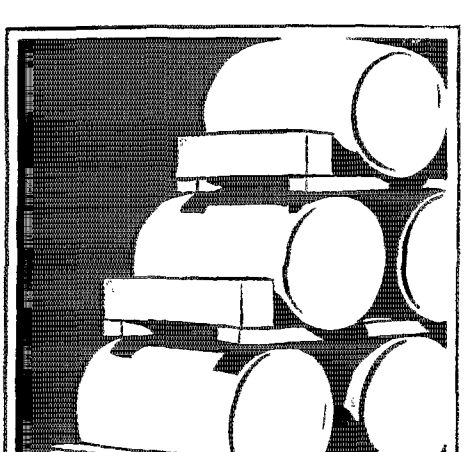
SAFETY requires that standard crane signals be used at all times. Otherwise, misunderstandings and accidents are almost sure to occur. This card illustrates the proper signals.

SAFETY INSTRUCTION CARD No. 5

To Fit Hammer Heads to Handles for Safety

HAMMER handles should be of the best straight grained hickory, ash, or maple and free from slivers. Never depend on nails for wedges. If a wedge is used apply glue before you drive it. Make sure the handle fits well in the head. One way to make sure a head will not fly off is to make two long wedges as shown in the illustration. Fit one on each side of the handle and drill a small hole thru the wedges and handle to receive a rivet.

SAFETY INSTRUCTION CARD No. 6

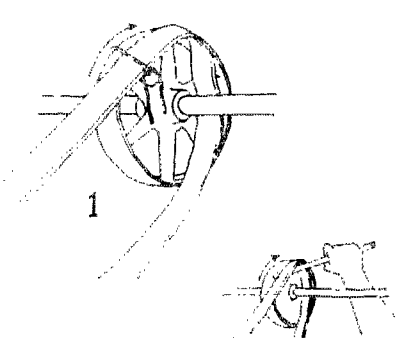


To Stack Cylindrical Objects

ONE safe and efficient way to stack kegs, barrels, rolls, round shafting, etc., is to use the kind of skids illustrated. Wooden ones are easily made and have the advantage of being light. Metal ones are often more substantial but should be light enough for safety in handling.

This method of stacking not only helps to prevent accidents but also conserves space.

SAFETY INSTRUCTION CARD No. 7



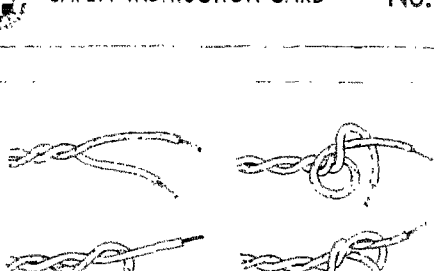
To Put a Belt on a Pulley

1 STOP THE MACHINERY.

2 If the belt is large, force it onto the pulley as far as possible by hand then tie it is as shown in fig. 1 using string, cord or rope light enough to break if the pulley swings around too far. Turn the pulley over by hand if possible, if not, make sure everyone is clear, then apply the power

3 If the belt is small, use a smooth stick or hammer handle to force it into place. Whatever you use, be sure it is not thick enough to strain the belt unduly.

SAFETY INSTRUCTION CARD No. 8



Underwriter's Knot

WHENEVER flexible cords are connected to electrical appliances such as light sockets or attachment plugs, an Underwriter's knot should be tied in the cord after it has been run through the hole in the shell. The knot will then take the strain if the cord is pulled—thus preventing broken connections and short circuits.

Notice how the forming of this knot brings the wire ends into the same relative positions in which they were before the knot was tied.

SAFETY INSTRUCTION CARD No. 9

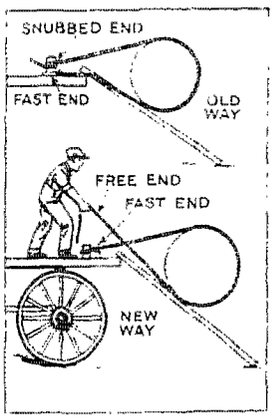
To Check Peripheral Speeds of Grinding Wheels

A SIMPLE way to determine whether or not a wheel is operating at a speed greater than, say, 5,500 feet per minute is to multiply the diameter of the wheel in inches by the speed in revolutions per minute and if the result is higher than 21,000 the speed is excessive. Factors for other peripheral speeds are as follows:

Peripheral Speed	Factor
2500 feet per minute	9,550
3000 feet per minute	11,460
3500 feet per minute	13,370
4000 feet per minute	15,280
4500 feet per minute	17,190
5500 feet per minute	21,000
6000 feet per minute	22,920
6500 feet per minute	24,825
7000 feet per minute	26,740
8000 feet per minute	30,560
9000 feet per minute	34,380
10,000 feet per minute	38,200

Never exceed the maximum safe speed recommended by the manufacturer.

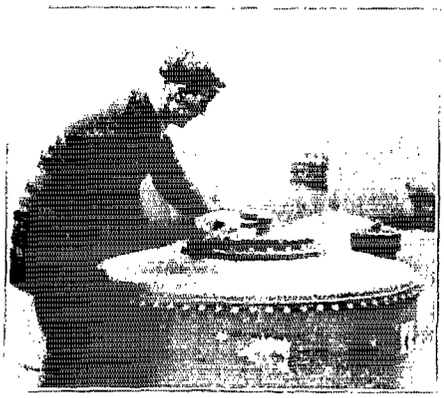
SAFETY INSTRUCTION CARD No. 10



To Skid a Cylindrical Object Safely

FASTEN one end of rope as shown, then pass it over and under the barrel, tank, roll or whatever it may be and keep a tension on the free end. This method requires little strength because the cylindrical object slides down the skid, furnishing its own friction.

SAFETY INSTRUCTION CARD No. 11



Opening Tank Car Dome Covers

THE danger of slipping and falling may be lessened by exerting short vigorous pushes against the bar or wrench instead of pulling it. Try it and you will be convinced that it is the safer way to do it.

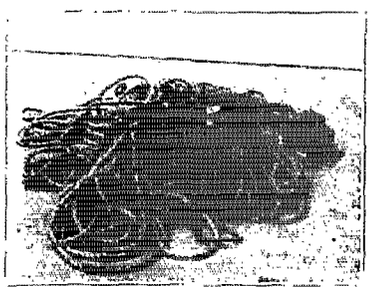
SAFETY INSTRUCTION CARD No. 12

Safe Carrying Capacities for Electric Wires

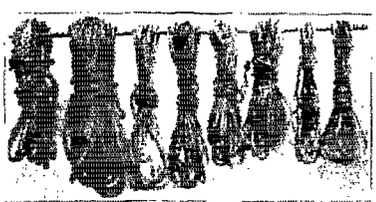
Gage No.	Diameter of Solid Wires in Mils	Area in Circular Mils	Rubber insulation capacity in Amperes	Varnished Cambric insulation capacity in Amperes	Other insulation capacity in Amperes
18	40.3	1,624	3		6
16	50.8	2,583	6		10
14	64.1	4,107	15	18	20
12	80.8	6,530	20	25	30
10	101.9	10,380	25	30	35
8	128.5	16,510	35	40	50
6	162.0	26,250	50	60	70
5	181.9	33,100	55	65	80
4	204.3	41,740	70	85	90
3	229.4	52,630	80	95	100
2	257.6	66,370	90	110	125
1	289.3	83,690	100	120	150
0	325.0	105,500	125	150	200
00	364.8	133,100	150	180	225
000	409.6	167,800	175	210	275
		200,000	200	240	300
0000	460.0	211,600	225	270	325

ALL wiring should be done in accordance with the National Electrical (Fire) Code and the National Electrical Safety Code. Do not depend entirely upon the insulation on the wires.

SAFETY INSTRUCTION CARD No. 13



ROPE thrown on the floor may rot quickly. It also wastes valuable material and may endanger the lives of those who may have occasion to use it. It also makes a tripping hazard.



WHEN thru with it, tie it in a loose coil and hang it up.

SAFETY INSTRUCTION CARD No. 14

The Light That Doesn't Fail

Continued from page 13

pressed as a percentage of normal vision. Contrast is defined as the ratio of brightness of the background. A perfectly black object on a perfectly white background has a contrast of 100 per cent because the object brightness equals zero.

By analyzing the individual work-Illumination required for various types of visual work may often be estimated. In some cases it is admitted that the complexities are such as to preclude analytical treatment, but there are many cases in which the mutual disagreement among values in the present lighting code may be readily proved. For example, if 15 footcandles is considered good practice in the office of a garment factory, should the level for hand sewing be only 10 to 20 footcandles? In the office most of the visual tasks involve nearly black details on nearly white backgrounds. In hand sewing on dark goods the brightness-level due to 150 footcandles may be no more than that on the visual task in the office, but the contrast is very much less. A conservative recommendation for the workers sewing on dark goods with dark thread is ten times more footcandles than in the office.

As previously stated, present-day practices in lighting have in many instances shown very commendable improvements in recent years. Well designed installations ranging from 25 to 100 footcandles general illumination have been found economically sound. It will undoubtedly prove timely to review for just a moment one of the most unusual installations in recent years, since it may indicate a trend in building construction and plant illumination for the future.

Much interest was created when the Simonds Saw & Steel Company announced their plans to erect a windowless factory. This $1,500,000 structure located in Fitchburg, Mass., with floor space of 360 feet by 540 feet, may well be termed the first all controlled conditions plant.

Some of the factors which undoubtedly entered into the decision of the owners to plan a building of this character may be summarized. The length of the working day is decreasing and the present over-supply of workers may mean continued shortening of hours. On the other hand, why should not the factory buildings and machines work two, three or even four shifts? Overhead costs may be reduced in direct proportion to the number of shifts. The cost of manufacturing machinery is generally a fairly high percentage of the building cost, but the depreciation and amortization of machinery may run much higher than for buildings. Insurance covers risks for 24 hours a day as well as for a 6 or 8-hour shift. So why not have the plant buildings and tools work overtime? By actual tests in their own plants, the owners found that the improvements in lighting practice had made this possible with a resultant saving of a very considerable amount of manufacturing area and equipment costs.

The lighting equipment to be used consists of a 50-inch mercury vapor tube in the shape of a U with four 75-watt Mazda lamps in a row down the center. The combination takes a total load of approximately 650 watts. These units are spaced according to truss construction on 14x20 feet centers and mounted 16½ feet above the floor. An average illumination level in service of the order of 20 to 25 footcandles is anticipated. Unfortunately business conditions during the past year have prevented an actual check.

The combination unit provides a quality of light closely approximating daylight since the excess red and yellow obtained from the incandescent lamps combine with the excess blue-green characteristics of the mercury vapor tube to produce a very pleasing mixture.

Ultra-Violet Radiation

One-half of the mercury vapor tubes are made of ultraviolet transmitting glass which makes this installation unusual in that in providing adequate light for seeing, advantage has also been taken of the possibilities to furnish the worker with some of that portion of the invisible spectrum needed in the maintenance of health.

In discussing this new phase of artificial lighting with the extended purpose of health maintenance, as well as for seeing, curative values may be eliminated. Illness and disease should be exclusively the field of the medical profession. In this new lighting development particular care has been taken by the manufacturers to provide equipments that simulate sunlight, thereby giving adequate and proper light for seeing and in addition supplying health benefits to those who work and play indoors.

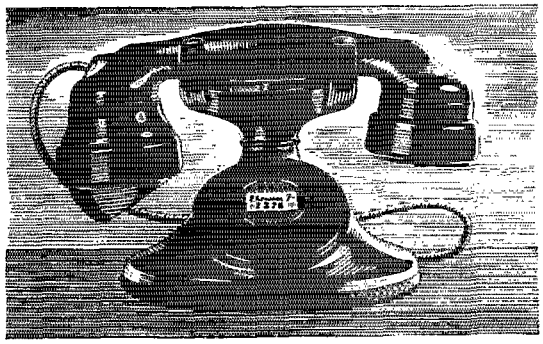
Particularly in congested cities, valuable ground and floor areas are being wasted to admit inadequate and uncertain daylight indoors. Wall space is being consumed by windows. Architecture is being handicapped by the window and skylight habit. These losses, combined with heat losses, investment and maintenance charges, are quite evidences that the development of artificial light and lighting has overtaken and passed most persons because of retarding habits acquired before the age of modern controllable and relatively inexpensive artificial light. Daylight equipment to let light in and to let vision out should be installed where it can be useful at reasonable cost. But artificial light is always necessary as insurance against failure of daylight.

Safety Hats Save Heads

THE value of protective headgear for underground workers has been demonstrated by the experience of many mining companies. In 1928 the Susquehanna Collieries Company had one head injury for every 55,130 tons of coal mined. In October, 1929, the company began the gradual adoption of head protection and the number of tons mined per head injury has reached 182,723 for the first eight months of 1932. The underground employees at three collieries are now entirely equipped and more than 3,000 hats are in use.

Since 1929 Maderia, Hill & Company have saved approximately $7,500 in the cost of head injuries. In that year 240 employees wore protecting hats and the compensation and medical costs due to head injuries totaled $7,964.70. As the number of hats increased the costs decreased and in the first six months of 1932 with 1,713 hats in use the cost of head injuries was only $68.68.

According to statistics reported to the Pennsylvania Bureau of Workmen's Compensation, head and face injuries were responsible for 38.5 per cent of all fatal accidents in Pennsylvania coal mines in 1931.



Making the telephone MORE VALUABLE to more people

The constant purpose of the Bell System is to make the telephone worth more and more to all who use it. To that end eight helpful ways to increase the usefulness of the telephone in your home or office are listed below. . . . Some of these you may know. Others may come as a welcome surprise—as something you often have wished for without knowing it is so readily available.

Extension Telephones. A great convenience in bedroom, kitchen and living-room. Make stair climbing unnecessary. Improve business efficiency in the office. Save many steps every day.

Hand Telephones. Modern. Distinctive in appearance. An attractive addition to any room. Leave one hand free to take notes while telephoning.

Portable Telephones. Plug in the wall like a lamp. May be moved from one room to another as needed.

Individual Lines. Cost little more than party line service. Assure additional privacy. Your line is "busy" only when you use it.

Intercommunicating Facilities. Provide for making calls from one part of the home or office to another or transferring of incoming calls without the aid of the central office operator. Save time and steps and lead to a quiet, smooth-running establishment.

Additional Bell Signals. For use in noisy locations or where it is necessary to summon people from a distance to answer the telephone.

Additional Directory Listings. Enable friends to locate you even though the telephone is in the name of husband, brother or sister, or another relative. In addition to the firm's name, your own can be shown. Direct business to you. The cost is small.

Telephone Planning. The telephone company in your city will gladly assist you in planning the most convenient telephone facilities for your home or office. The services of telephone experts are at your disposal.

Call the Business Office of your Bell Telephone Company for full information about any of the services listed above

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AMERICAN TELEPHONE AND TELEGRAPH COMPANY

INDUSTRIAL HEALTH

A Non-Technical Symposium for Physicians and Laymen

Public Health Nursing in Industry

[illegible] Dorothy B. Deming, R. N., Editor *Public Health Nursing*, and Secretary Nursing Section Twenty-first Annual Safety Congress.

FIFTY years from now a title like this will not be necessary, for all nursing everywhere will be public health nursing, and nursing in industry will mean public health nursing. In the present training program of the leading schools the nurse is taught to see her patient as a part of his family, of his community, state and nation. From what home conditions has the patient come, to what conditions will he return, how much does he know about keeping himself and his family well, under what conditions is he working, what undesirable habits are keeping him from the best and most efficient use of his energies, what community resources are available to him for cure, correction or prevention of handicaps—what local, state and federal rulings safeguard his health?

The major function of the public health nurse is that of teacher, and she counts herself a failure if by her third or fourth visit to a home the family or neighbor is not sharing actively and intelligently in the care of the patient, if by the end of her service, she has not taught at least one member of the family something of the rules of health and the prevention of disease.

Most industrial nurses learn the functions of public health nursing "on the job," others never learn them, and they wonder why their good, sincere, technical nursing work is not recognized and why it makes less headway than the work of the nurses in the public health field. A public health nurse works under certain advantages—she is given expert nursing supervision in her job. Only a few industrial nurses on large staffs have the privilege of supervision. The public health nurse has also the stimulus and companionship of the staff and workers or a group of community workers—something the nurse working alone in industry misses sadly. The industrial nurse must travel under her own momentum.

Miss Deming points out what she considers are the public health nursing functions of the graduate nurse in industry. They fall under four headings:

1. The nurse as a [illegible]
2. The nurse as executive,
3. The nurse as social worker,
4. The nurse as teacher.

The first two named functions need little explanation. The nurse as a social worker simply means that the industrial nurse recognizes a social problem when she sees it and knows *where to turn for advice and help*. In most communities there are established agencies ready to help and to relieve the nurse of the investigation necessary to a sound plan of assistance; or the plant itself, recognizing that a social problem may be as serious as illness in its effect on the worker, administers a personnel department to which such cases may be referred. Examples of social problems presented by employees are: Inability to meet rent, housing problems, debts, desertion, marital difficulties, delinquency among children, dependent relatives, drunkenness, problem of the unmarried mother, etc.

The last and greatest opportunity of the industrial nurse is her function of teacher. How pointless to put iodine on the scratched finger of a worker only to send him back to his job to stand next to a man who has a sore throat, is running a temperature and is coughing and sneezing. Obviously, it would be equally worth while to teach employees to report at once at the beginning of a cold. Take an even more common situation. A worker frequently reports a headache. Aspirin is given according to the standing order of the plant physician and the worker sent back to his machine with no questions asked as to possible cause of the headache, no instructions given to avoid future headaches, and the worker, a few weeks later, has a serious accident due to defective eyesight. How much good was the aspirin—and how much good is the industrial nurse? She may be a good executive and a good technician but she has fallen down on her most important capacity, that of teacher.

Industry has an interest in community life and cannot be considered isolated or unaffected by what happens to its workers during half of their time. Frequently, it is the industrial nurse who first hears from the worker coming to her office of a home condition which calls for health service. Or, the worker himself may send word that he has influenza—what arrangements can be made for his care, what warnings are to be given to his fellow workers to report at the first sign of a cold or feeling chilly? What teaching can the industrial nurse offer to groups or singly if an epidemic of colds breaks out, or boils, or a run of infection from slight cuts?

Surely these are *health teaching* opportunities of which to take advantage.

Summary

The industrial nurse who is thinking of her job as a public health opportunity attempts to cover the following points:

1. She knows community resources for health and tries to work as a cog in the wheels of these community agencies, not as an independent piece of machinery hedged in by factory walls.

2. She attempts to give to each individual simple, practical and applicable advice in maintaining health and building resistance to disease. She "follows-through" on the doctor's orders.

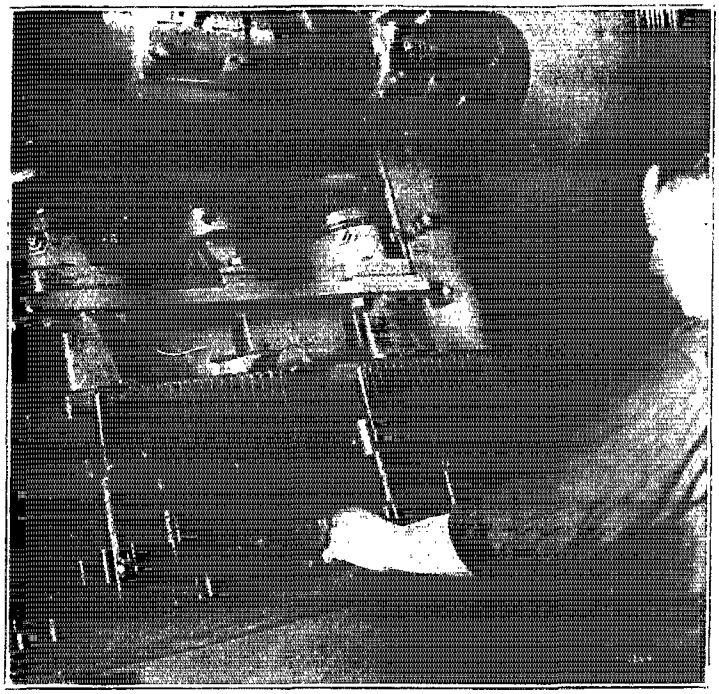
3. She takes advantage of every chance for group education through posters, pamphlets, talks, campaigns or classes.

4. She keeps accurate records, on which to base an estimate of her success or failure in getting defects corrected and health habits adopted.

5. She keeps up to date in her professional field by reading her professional magazines, attending local, state and national meetings.

6. She teaches, by example, the value of good health and mental poise by keeping her own body and mind in the "pink" of condition."

PUNCH PRESS OPERATORS NEED THIS GUARD



It permits the operator to hand feed the strip metal between the two operating dies.

The guard is made of sheet steel with smoothly punched oblong holes, the size and arrangement of which permit excellent vision of the dies and work.

The use of this guard has increased factory production and reduced accidents.

We furnish the sheets—your handy man can form them and attach to the machine.

The Harrington & King Perforating Co.

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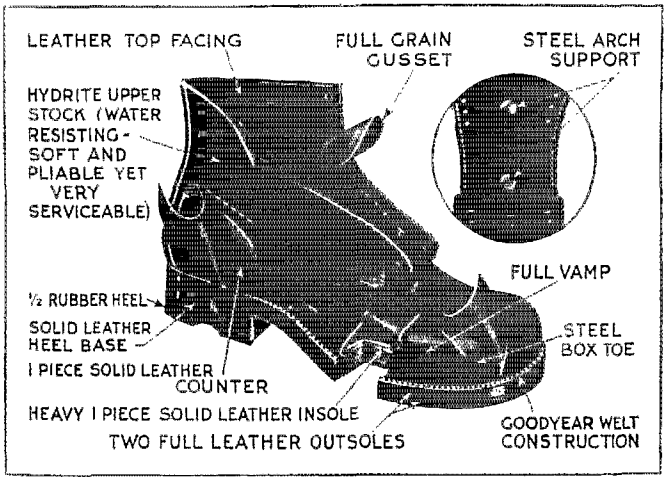
Large Terminal Company says: **"90% of our foot injuries could have been avoided with HY-TEST Safety Shoes"**



NO. H-702—General Utility Steel Toe Safety Shoe. Other models for every safety need.

"The growing demand among our employees for the Hy-Test Safety Shoe has shown their keen appreciation of its protective qualities in our business of handling heavy freight . . . numerous foot injuries have already been prevented during our three months experience with the Hy-Test Safety Shoe . . . 90 percent of our compensable foot injuries in the past two years could have been avoided with your Safety Shoe."

(The original of this letter is in our files. Names are withheld for obvious reasons.)

—●—

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Designed and Manufactured Exclusively by

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International Shoe Company, Dept. HT-2, St. Louis, Mo.

We are interested in knowing more about your HY-TEST Safety Shoes without obligation on our part.

Safety Director's Name . . . . . .

Purchasing Agent's Name . . . . . .

Firm Name . . . . . .

Address . . . . . .

THE ACCIDENT BAROMETER

A Monthly Review of Significant Trends in the Accident Situation
Prepared by the Statistical Bureau, National Safety Council

Industrial fatalities in November were only slightly below the same month last year, according to the records of Industrial Commissions in thirteen states. This is not true of each state separately, however, for while Indiana, Missouri, New York and Texas had increases, California, Illinois, New Jersey, and Pennsylvania recorded very substantial decreases. In the [illegible] states for which eleven months' data are available, this year's record to the end of November is 20 per cent below last year's.

	[illegible]	[illegible]	Per Month [illegible]	[illegible]	[illegible]
California	[illegible]	[illegible]	[illegible]		[illegible]
Illinois	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Indiana	[illegible]	[illegible]	[illegible]		
Maryland	[illegible]		[illegible]		
Massachusetts		[illegible]	[illegible]		[illegible]
Michigan	[illegible]	[illegible]	[illegible]		[illegible]
Minnesota		[illegible]	[illegible]	[illegible]	[illegible]
Missouri	[illegible]	[illegible]	[illegible]		[illegible]
New Jersey	[illegible]	[illegible]	[illegible]		[illegible]
New York	[illegible]	[illegible]	[illegible]	[illegible]	
Ohio	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Pennsylvania	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Texas	[illegible]	[illegible]	[illegible]		
Wisconsin	[illegible]		[illegible]	[illegible]	

NOTE: [illegible]

Steam railroad accidents decreased substantially in August, bringing the eight months total for persons killed down to 3,100, or 8.5 per cent below the same months last year. The total for injuries is 19,307, down 21.6 per cent from last year's comparable total. The only increases recorded were for trespassers and trainmen. Highway grade crossing fatalities are off 21.6 per cent—an excellent record, considering the great improvement made in previous years. Employee accident rates per million man-hours show a slight increase in fatalities and an equivalent decrease in injuries.

Vermont compensation payments in the two years from July 1, 1930 to June 30, 1932, amounted to $364,627, compared with $652,292 in the preceding two years—a 44 per cent decrease. Medical aid decreased 52 per cent from $377,865 to $179,930. During the same years fatalities dropped from 82 to 27 and non-fatal injuries from 25,893 to 14,951.

Industrial injuries in 1,197 plants entered in the Inter-Plant Contests of 17 community safety councils dropped from 11.84 per million hours worked in September to 10.87 in October, an 8 per cent reduction. On the other hand, the resulting time lost increased from 0.41 days per 1,000 hours worked in September to 0.92 in October. This makes the October frequency a little lower than the average for the first ten months of the year (11.27), and the October severity a little higher than the average (0.80). In October 1931 the rates for a similar group of plants were: frequency, 11.74; severity, 0.91.

Motor vehicle deaths in October were slightly more numerous than in September, thus following the usual seasonal trend. However, there were about 500 deaths less than in October 1931. The total for all months from January to October is now estimated as 23,500, or nearly 14 per cent below the 1931 ten-months total of 27,200. In November the decrease from last year's record seems to be even larger, judging by the following data for 10 large cities and 2 states:

	Nov. 1932	Nov. 1931	First 11 Months 1932	First 11 Months 1931	Per Cent Change
Baltimore, Md.	12	22	127	163	22.1
Cincinnati, Ohio	7	12	84	101	-16.8
Cleveland, Ohio	23	25	[illegible]	208	-[illegible]
Detroit, Mich.	[illegible]	36	250	289	-13.5
Minneapolis, Minn.	7	8	61	76	-19.8
Newark, N. J.	10	10	77	83	-7.2
New Orleans, La.	4	8	55	[illegible]	-35.3
New York, N. Y.	92	99	923	1013	-8.9
Philadelphia, Pa.	28	21	272	[illegible]	-5.6
Seattle, Wash.	3	6	[illegible]	[illegible]	-25.6
Delaware	7	7	53	74	-28.3
Massachusetts	101	82	655	721	-8.7
Total	[illegible]	286	2921	3159	-10.7

Commercial vehicle fleets entered in the National Fleet Safety Contest averaged 2.89 accidents per 100,000 vehicle-miles in October, compared with rates of 2.45 in September, 2.48 in August, and 2.73 in July. There is a wide variation in the accident experience of fleets doing different types of work, as shown by the following tabulation of October rates, and the average rates for the four months of the contest:

	[illegible]	[illegible]
Miscellaneous Manufacturing Plants	[illegible]	[illegible]
Inter-City Bus Operations	[illegible]	[illegible]
Petroleum	[illegible]	[illegible]
Public [illegible]	[illegible]	[illegible]
Laundries, Bakeries, Restaurants	[illegible]	[illegible]
Transfer and Storage	[illegible]	[illegible]
Miscellaneous Heavy Trucking	2.97	[illegible]
Coal and Ice	1.26	3.57
Miscellaneous Light Delivery	[illegible]	[illegible]
City Bus Operation	[illegible]	[illegible]

Student accidents were more numerous in October than in September, and the rate per 100,000 student-days rose from 10.3 to 12.1. This increase is largely seasonal in nature, and results chiefly from football games. In the October total of 1,145 accidents there are 76 so classified. Absence from school due to October accidents averaged 2.9 days per accident. Five students were killed, 4 in motor vehicle accidents.

Accidental deaths of all types, in the ten cities listed below, numbered 158 in November, a reduction of 23 per cent from the record of the same month last year. The eleven months total is 1,735, or 14 per cent below last year. Motor vehicle deaths still head the list, but home deaths constitute one-third of the total, and in three cities they are more numerous than motor vehicle fatalities.

	Total	Occupational	Home	Motor Vehicle	Other Public
Baltimore, Md.	34	2	11	2	6
Boston, Mass.	41	3	11	22	5
Buffalo, N. Y.	22	0	5	12	[illegible]
Dallas, Tex.	17	1	8	5	3
Dayton, Ohio	5	0	0	5	0
Des Moines, Iowa	8	1	5	2	0
Newark, N. J.	16	0	1	13	2
Providence, R. I.	7	0	2	4	1
Rochester, N. Y.	7	0	1	5	1
Syracuse, N. Y.	1	1	[illegible]	[illegible]	0
	158	8	51	76	23

Looking ahead. . . . A substantial reduction in the number of accidental deaths usually starts in January and continues on into March. There will be a drop of 500 to 1,000 in automobile deaths, the amount depending in large measure on weather conditions affecting traffic. Deaths from falls will be as numerous as in December, while those resulting from burns or asphyxiation may even increase slightly.

PERSONALS

The Northern New Jersey Chapter of the American Society of Safety Engineers Engineering Section, National Safety Council, reelected the following officers for 1933: Chairman, Edward L. Root, Celluloid Corp.; vice-chairman, A. R. Lawrence, Compensation Rating and Inspection Bureau; secretary, H. E. Wright, Westinghouse Lamp Company; treasurer, Fred M. Rossland, Newark Safety Council; members of Executive Committee, John Roach, deputy commissioner of labor, New Jersey; E. Conte, Mallinckrodt Chemical Works, and F. J. Walsh (ex-officio), Hudson County Safety Council. C. L. Searle, Western Electric Company, and Homer Steiner, Public Service Electric & Gas Company, were elected new members of the Executive Committee.

The following committee chairmen were appointed: Membership, H. F. Gilbert, American Cyanamid Company; Program, H. B. Mohring, Public Service Electric & Gas Company; Publicity, T. F. Smith, Compensation Rating and Inspection Bureau; Research, E. Conte, Mallinckrodt Chemical Works; Finance, R. W. Black, Standard Oil Company.

Harry Reid, vice-president of the Chicago Eye Shield Company, died December 5, 1932. He was 38 years old. Surviving are his widow and two sons.

Mr. Reid entered active safety work with the Pullman Company in 1923 after several years of shop safety committee experience. In 1928 he went with the American Optical Company, later becoming associated with the Safety Equipment Service Company. For two years prior to his death he had been with the Chicago Eye Shield Company.

Burton W. Marsh has resigned as traffic engineer for the city of Philadelphia to become manager of the newly created department of traffic and safety of the American Automobile Association. He will act primarily as consultant for the Association in all national safety and traffic conferences. His services will also be available to cities lacking funds to employ technical traffic consultants. Before coming to Philadelphia in April, 1930, Mr. Marsh was traffic engineer at Pittsburgh for five years.

Safety Director or Production Assistant?

By WILLIAM C. JAMES

If the safety movement generally should adopt the title for its leaders which is recommended by Mr. Frank Morris in the September issue of the NATIONAL SAFETY NEWS, the movement would soon lose its force. It no doubt is true that the accident prevention work in any factory does, in the long run, improve production, just as it reduces overhead expense. It may be true that in some factories this is the only reason for the maintenance of a safety organization, but surely considerations of policy or logic will easily persuade the majority of factories to retain their safety director.

The key word of the safety movement, as Mr. Morris hints in his article, has always been "welfare." All safety propaganda has been and must be directed at the worker, for he is, as Mr. Morris says, "responsible for 80 per cent of the injuries which occur." Safety engineers and safety directors have always endeavored to secure the cooperation of the employee, to get him to understand that not only his employer but also he himself benefits from the safety policies of the plant. Therefore it is his duty—to the plant? No! to himself and to his family—to work safely.

This policy has secured good results; and it is logical that it should. Every human likes to know that he, as an individual, is being given sincere consideration. He likes to feel that the people for whom he works are interested in him, and he welcomes any step which gives evidence of this interest. When the safety director (and this very title seems to say to the worker "we are interested in your safety") suggests to the employee that a certain job be done a certain way, because it will save him from an accident, in nine cases out of ten he will cooperate gladly. The "we are interested in you" attitude does more than any amount of discipline to secure safety.

Suppose on the other hand that the safety director is dispensed with, and an assistant to the production manager is assigned the job of preventing accidents. What happens? The worker, who is responsible for most of the accidents, immediately loses the feeling that his welfare is of paramount interest to his employees. He learns that the company is, in fact, not interested in him at all, but is actually attempting to dictate and regulate his every move so that it will not have to lose money because the production at his machine was stopped when he had an accident.

Obviously, when the "assistant to the production manager"—and no title is better calculated to arouse the immediate antagonism of the worker—comes to him and says, "Look here, John, I want you to wear your goggles on that job; we'll lose a lot of money if your eye gets knocked out and you have to stop turning out work," John will think—though he may not dare to say—"Go to hell. I don't care how much you lose." As soon as this production man turns away, off come the goggles. John has not realized that he himself will be the chief sufferer if he loses an eye.

It does not require much thought to see which is the best title for the safety man, when the workers' psychology is considered. No manufacturer, when given the choice between a group of employees safe in the knowledge that their company is interested in them, and a dissatisfied, antagonistic group which feels that the company is interested only in itself—its employees do not count, would hesitate to choose the former.

The "bucket of blood and bag of bones" is crude propaganda, of course, and is rapidly falling into disfavor, but the "safety director" with his "employee welfare" motif must remain on an equal plane of authority with the production manager, even to the extent of stopping production on an unsafe job if necessary. His subordination to the production manager would be a serious, if not a fatal blow to industrial safety.

CORRESPONDENCE

COMMON SENSE METHODS

Bloomfield, N. J. [illegible] of commending [illegible] December, 1932, NATIONAL SAFETY NEWS.

Mr. Gardiner in his article "Common Sense Accident Prevention," flings the [illegible] more effectively than any writer I have read for a long time. His [illegible] on commencing on the [illegible] is a [illegible] in relation to modern accident prevention methods. He has written to the Operating Executive a study of the article.

Fairness [illegible] importance of the points stressed in Mr. Gardiner's article has been [illegible] unfavorable comment on safety in the past.

H. E. WRIGHT

Safety Engineer, Westinghouse Lamp Co.

Goodyear Lowers Accident Rates

AN AVERAGE reduction of 63 per cent in accidents in the seven subsidiary Goodyear Tire & Rubber Company Factories for the first ten months of 1932 as against the similar period for 1931 is announced by the safety division of the company. During October, 1932, the seven Goodyear factories located at Bowmanville and New Toronto, Canada; Gadsden, Ala.; Los Angeles, Calif.; Wolverhampton, England; Sydney, Australia, and Buenos Aires, Argentina, hung up a new record of no lost-time accidents. The Akron factories had out 17 accidents during the month. A 20 per cent reduction of accidents was effected in 1931 over 1930 at the Akron plants.

Each factory is laid out in divisions, each of which has a safety committee of foremen. This committee carries on educational work with individual workmen, and twice a month there is an interchange of foremen for a rigid inspection, the results of which are returned as written suggestions to the safety division.

In its efforts to promote safety interest, Goodyear has established as an annual award the William Stevens plaque given the division in the Akron factories showing the lowest frequency of accidents. Likewise there is an interplant plaque, known as the Slusser award, which is competed for among all of the plants on a similar basis. The company's seven cotton mills are also in safety competition for a cotton mill banner.

Three Goodyear men have been active for a number of years in the work of the Rubber Section of the National Safety Council, including M. H. Kilgore, who has been chairman of the engineering committee, B. F. Cierpicide, chairman of the slides and safety kinks committee, and J. T. Kidney, a member of the section's executive committee.

It is an interesting commentary on the safety program that at the Goodyear-Zeppelin airship dock where the U. S. S. Akron was built and the U. S. S. Macon is being constructed for the navy, there have been no major accidents.

The Case For Safety

Continued from page 59

with its physical examination and accident record completes the picture, so that the safety department with its knowledge of the hazards of the job is in a position to deduce the actual cause. A claim is occasionally found to have no proper foundation in fact, but with the information available, and with the opportunity of a personal hearing, a solution satisfactory to the employee can usually be worked out. The group knowledge brought to bear is likely to produce a cure for further accidents of this nature.

Occupational Disease

The medical department of the corporation has been able to practice some of the tenets of modern safety as regards occupational disease. As you know, some of your plants are located in states having occupational disease acts. We have not differentiated in practice between states with or without occupational disease laws. Our contacts with these plants have been entirely along the lines of suggesting proper hygiene and the dissemination of knowledge of methods and of ingredients. We have no correspondence whatever on treatment. We have not been interested in the effect of poisons any more than the safety department might be interested in a discussion of a three finger as against a four finger amputation. The thing to be discussed is cause and not effect.

We have passed available information concerned with health along to your member plants, managers and medical departments alike. We have found that the necessary information is always available and that very rarely do trade secrets stand in the way of their being given to us. No manufacturer in our experience has failed to appreciate the fact that intelligent protection of employees handling his product is his own best protection. In most cases our requests for simple information bring a representative with complete instructions and facts.

Occupational disease is preventable. The first and frequently the most logical move is an attempt at elimination or substitution of the toxic agent. Witness toluol for benzol and zinc for lead. Elimination may apply as well to a process; turpentine has disappeared from auto painting. A change in methods such as the substitution of mechanical sanding for hand sanding has eliminated the familiar oil dermatitis. The substitution of wet sanding for dry sanding has freed a whole industry from the perils of lead poisoning.

The second method, failing elimination or substitution, is the inspection and ordering of working conditions. No factory is ever so well ordered that your occupational disease hazard cannot be lessened by frequent and searching inspections. This inspection extends to the operations, to the safeguards and draft systems already installed, and to the men themselves. For many years we have watched the effective use of respirators and have checked the results by physical examinations. In many states these examinations are compulsory at monthly intervals, and many of our records extend back ten years, one examination per month. These have been performed in the face of negative findings, time after time, but we have considered and found these negative reports to be of as much value to us as those showing the existence of poisoning.

Cannot the foregoing be an exposition of the importance which the medical department attaches to safety? There is nothing suggested here on the prevention of injury by poisoning which does not apply to the prevention of injury by trauma.

Spirit

I am firmly sold on the idea that the spirit is everything; I believe that spirit in industry is simply another way of spelling ambition and perseverance. It is a state of intelligent enthusiasm which is long lasting and which enters into the texture of all proper organizations. Without it an organization is simply an aggregation. Every military commander realizes the necessity for spirit, or you may call it morale as the Army people do.

Now, granting that spirit is a necessary requisite to success, your corporation endeavors through the means at its command to make it a part of the organization. Possibly

the hours, the employee publication, the high pay rate, the good feeding system, the savings plan, the group insurance plan or your summer camp may be the means.

In my humble estimation however, any one or all of these cannot so influence your employees as the knowledge that they are working in a safe industry, without hazard to life or limb or to the economic security of their families. Nor can spirit be inspired by a man without it. I think your safety engineer is imbued with this thing. Given the opportunity to speak with some authority, to talk to men in the aggregate as well as individually, to get off his hands the detail of small mechanical contrivances, he should certainly be able to put into your organization something which will be vital to it, and which may be the means of turning your red figures back to black ones.

COMING EVENTS

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

Jan. 16-20, Detroit, Mich.
American Road Builders' Association Annual Convention and Road Show; Highway and Building Congress, Charles M. Upham, engineer-director, American Road Builders Association, National Press Building, Washington, D. C.

Jan. 23-27, New York City.
American Institute of Electrical Engineers, Annual Winter Convention. Assistant National Secretary, H. H. Henline, 33 West 39th Street, New York City.

Jan. 23-25, Cincinnati, Ohio.
American Society of Heating and Ventilating Engineers, Annual Meeting. Secretary, A. V. Hutchinson, 51 Madison Ave., New York City.

Jan. 23-27, Lafayette, Ind.
Purdue Road School, Prof. Ben H. Petty, Engineering Extension Department, Purdue University, Lafayette, Ind.

June 26-30, Chicago.
American Society for Testing Materials, Annual Meeting. Secretary-Treasurer, C. L. Warwick, 1315 Spruce Street, Philadelphia, Pa.

Oct. 2-6, Chicago.
National Safety Council, Twenty-second Annual Safety Congress, Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago.

Oct. 8-12, Indianapolis, Ind.
American Public Health Association, Sixty-second Annual Meeting. Acting Executive Secretary, Dr. Kendall Emerson, 450 Seventh Ave., New York City.

Unusual Accidents

W[illegible] engine [illegible] operating [illegible] used [illegible] releasing pressure [illegible] cleaning [illegible] the palm of [illegible] pressure [illegible] pounds [illegible] was forced [illegible] a painful injury resulted. A section of the palm had to be cut out to remove [illegible] and [illegible] latest report indicated [illegible] bility of amputating [illegible] fingers.

W[illegible] in Lynn, Mass., dozed [illegible] the wheel of his car, several unexpected events occurred with startling suddenness, according to a United Press despatch. The automobile hit a hydrant, releasing a torrent of water. It felled a pole carrying high tension wires. A drawbridge operated by the wires was temporarily crippled. Street lights in the manufacturing district were extinguished. And finally the wires set fire to the automobile. The driver was treated for burns and then taken to court where he was fined [illegible] for reckless driving.

* * *

Both the hunters and the hunted were killed in an automobile accident near Altoona, Pa. An automobile carrying three hunters collided with a buck which dashed from the brush into its path. The car swerved and struck a tree killing [illegible] occupants as well as the buck.

* * *

A cylinder head of a locomotive blew out as the train was approaching a station and pieces of the head flew through the bay window of the station, killing the agent, who was seated at the telegraph table. [illegible] days later the same cylinder head on the same engine again blew out and killed a track laborer who was standing beside the track.

* * *

A machinist was going to a scrap pile behind the roundhouse, walking on a well beaten cinder path when the cinders gave way and he fell into a narrow opening up to his neck. He was rescued in less than two minutes but died within a few minutes from burns. The cinders had been burning for years with no indication except the usual steam which nobody regarded as a sign of danger, but a crust remained which gave way when the man stepped on it.

* * *

A crane was being used to raise a steel pole close to a transmission wire carrying 66,000 volts. As the pole neared the upright position, current jumped two feet from the transmission line to the pole shocking three workers. The pole then came in contact with the wires, killing one man.

* * *

A fireman placed a bottle of coffee on a boiler head to keep it warm. As he reached for the bottle, it exploded and his eye was severely injured by flying glass.

THE HONOR ROLL

Details of no-accident records in excess of 100,000 man-hours, or 200 working days, are invited for this department.

Eastman Kodak Co.

Two departments of the Camera Works of the Eastman Kodak Company at Rochester, N. Y., have established commendable records of days without accidents. The Punch Press Department, with 34 employees had, on November 12, operated since September 1, 1930, without a lost-time accident. During this period the employees worked 148,157 man-hours. The Welding Department has had no lost-time accident since October 6, 1928. On November 12, the 28 employees had worked 1,990 days, with a total exposure of 225,076 man-hours.

National Electric Products Corp.

On September 1, 1932, the Ambridge Plant of the National Electric Products Corp. was awarded a certificate by the Liberty Mutual Insurance Company for operating six months without a lost-time accident. The exposure was approximately 783,000 man-hours. The operations in the plant include power press work and rubber relining. High voltages are used.

St. Croix Paper Co.

The St. Croix Paper Company at Woodland, Maine, has completed its seventh month without a lost-time accident, with more than 900,000 safe man-hours accumulated in its seven-day-a-week mill. The record-breaking run began September 27, 1931.

Spaulding Fibre Co.

When the plant of the Spaulding Fibre Company at North Rochester, N. H., completed three months without a lost-time accident, ice cream was served to all members of the working force. When the six-month accident-free month passed, the management entertained the employees at a picnic. They are looking forward to a reception at the city opera house when they make it a whole year. These expressions of the management's appreciation of a good safety record has helped to make the employees safety minded, says Harold A. Stillings, secretary of the company's safety organization. At the time of reporting, the department had worked 244 days with an exposure of approximately 250,000 man-hours.

Twin State Gas & Electric Co.

An unusual record for safe public utility operation has been established by The Twin State Gas & Electric Company and associated companies operating in Vermont, New Hampshire, Maine and New York. With an average force of 600 employees, the companies have operated since September 16, 1931, without a lost-time accident. On November 30, 1932, the exposure totaled 2,062,617 man-hours.

Westvaco Chlorine Products, Inc.

Seven units of Westvaco Chlorine Products, Inc., at South Charleston, W. Va.,

[illegible] 200 [illegible] hour [illegible]. Following [illegible]

	Days	Man-hours
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	142	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Office [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

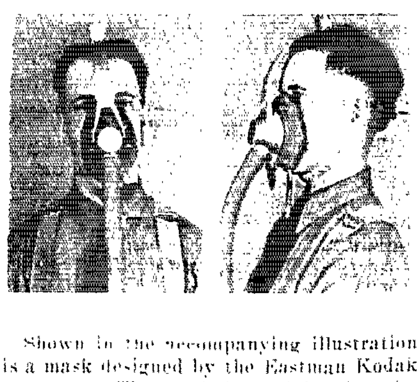
First-Aid Course Held for California Industries

MORE THAN 200 men and women representing 40 industrial concerns [illegible] San Francisco Bay district completed the third annual Bullard first-aid training course and [illegible] awarded certificates [illegible] November [illegible]. This course, given under the sponsorship of the California State Society and the California Industrial Commission, is an annual event offered by E. D. Bullard Company. The course was held in the company's auditorium in San Francisco. It consisted of five lectures and demonstrations given by R. S. Burke, an accredited instructor from both the U. S. Bureau of Mines and the American Red Cross.

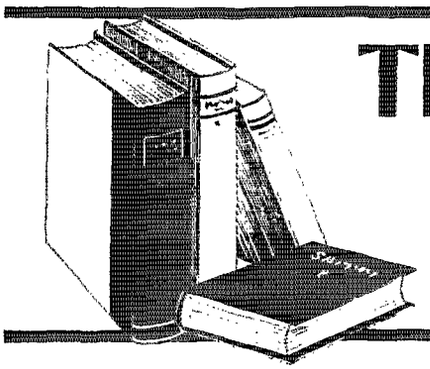
In connection with the training course, discussions of the safety problems of industry were presented by Simon Ash, district engineer of the Bureau of Mines, and A. C. Anderson, president of the California Society and safety engineer for the Shell Oil Company. The women's first-aid team of the Department of Public Relations of the [illegible] California gave a demonstration of first-aid work.

During the past [illegible] years E. D. Bullard Company has instructed more than 700 workmen and plant supervisors in first aid. In addition to this instruction given by the San Francisco office, training has been given in other districts by branch managers.

Improvements Make Mask More Convenient



Shown in the accompanying illustration is a mask designed by the Eastman Kodak Company. The mask is held in place by a spring and two rubber cups which are adjustable. It is for use on jobs where a fresh air mask must be used for three or four minutes and then removed. This type of spring makes the mask comfortable to wear and avoids the necessity of adjusting straps which must be pulled down over the head and ears.



The Safety Library

by

MARY M. WELLS

Librarian N.S.C.

UNEMPLOYMENT

Gilbreth, Frank B. The elimination of unnecessary fatigue. Published by Princeton University Press, Princeton, N. J. 1932. Price $2.00. Book.

HOW the unemployed can help get work, in a simple orderly fashion, is outlined in this significant book. An appendix presents a proposal whereby large numbers of unemployed can immediately be put to work through the profitable activity of existing large merchandising units.

MOTION AND TIME STUDY

Mogensen, A. H., Common Sense Applied to Motion and Time Studies. Published by McGraw Hill Book Company, Inc., 370 W. 42nd Street, New York City, 1932. 228 p. illus. Price $3.50.

"THERE is no waste in the world that equals that from needless, ill-directed and ineffective motions, and the resulting unnecessary fatigue," said Frank Gilbreth.

The elimination of this waste is the real purpose of motion and time study. It aims to increase production and lower costs, of course, but not by the unsound process of speeding up the worker.

The author, who is assistant editor of *Factory and Industrial Management*, has incorporated in the book several articles which have appeared in that magazine. These, however, merely present certain phases of the subject while the broader *interpretation of it has been handled quite* skilfully by the author. Mr. Mogensen has a thorough appreciation of the importance of accident prevention in industry and at the Twentieth Annual Safety Congress he spoke on "The Relation of Motion Study to Accident Prevention." His paper was reprinted in the NATIONAL SAFETY NEWS of January, 1932.

Several chapters in this book are of general interest, regardless of the reader's practical interest in the application of motion and time study. The opening chapter defines this valuable aid to industry, with comments on some of industry's problems. The second chapter, "The Value of an Open Mind," will appeal to all who have ever tried to get a new idea accepted.

The author stresses the very real association between safety and productive efficiency, and points out that reducing the number of operations reduces exposure to injury and lessens the operator's fatigue. Even more important is the application of motion study to safety education. Generalities about safety, he points out, are of limited appeal, but when safety instruction is tied up with the right way of doing the job, both supervisors and workers become interested. The final chapter deals with the taking and using of motion pictures in job studies.

An index would increase the usefulness of this excellent volume as a reference book. C. C. Fish.

PLANNING THE CAPITAL

Planning and Building the City of Washington. Edited for the Washington Society of Engineers by Frederick Haynes Newell. Published by Ransdell, Inc., 730 Rhode Island Avenue, Washington, D. C., 1932. 532 p. cloth, illus., index. Price $7.00.

A GRAPHIC story of the unusual development and growth of the national capital is presented in this book which *should be interesting to the tourist and* casual reader as well as to the architect and engineer. Chapters have been contributed by prominent architectural and engineering experts and the book is profusely illustrated with photographs and *diagrams.*

OTHER BOOKS AND PAMPHLETS

Furniture:

The metal furniture industry. Published by the Retail Credit Co., Atlanta, Ga., December, 1932. Pamphlet. Industry Report.

Soda Industry:

Soda and its compounds. Published by the Retail Credit Co., Atlanta, Ga., November, 1932. Pamphlet. Industry Report.

Workmen's Compensation:

Jones, F. R., Ominous abuses threatening the insurability of workmen's compensation. Published by the Association of Casualty and Surety Executives. One Park Avenue, New York City, 1932. Free. Pamphlet.

PERIODICALS

Automobile Driving:

Baker, J. S. What driver's license laws do for safety. In *Southern City*, December, 1932, p. 24-26, 30.

Rear-end collisions. In *Traveler's Standard*, December, 1932, p. 230-237.

Lighting:

Pedestrians suffer from inadequate street lighting. In *American City*, December, 1932, p. 102.

Petroleum Industry:

Biddison, P. M. The hazards in natural gas pipe line work. In *Pipe Line News*, December, 1932, p. 13-15.

Steel Industry:

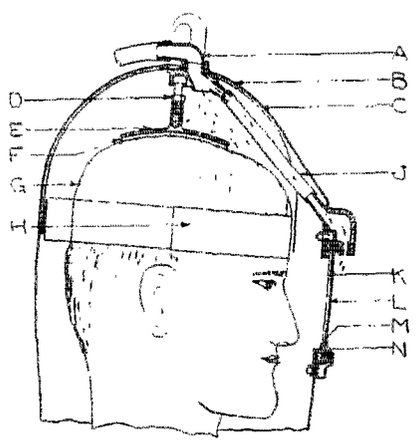
Brundage, Dean K. and Bloomfield, J. J. The pneumonia problem in the steel industry. In *Journal of Industrial Hygiene*, December, 1932, p. 345-363.

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

PURAIR HELMET

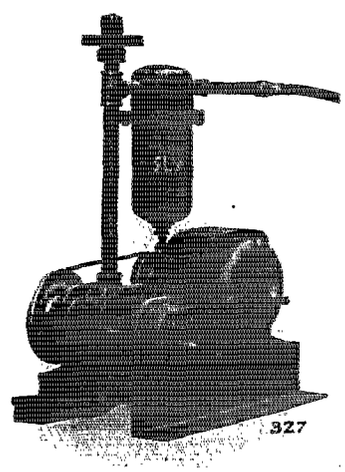
The Sly PURAIR Helmet is a new development brought out by the W. W. Sly Manufacturing Company for protection of workers from the effects of dust, fumes, gases and vapors. It is roomy and [illegible]



Cut 328
Sectional View of Sly PURAIR Helmet

The air entering through inlet nipple A is distributed over rubber head B and aluminum dome C by a deflector E. This deflector also acts as a headrest and has a sponge rubber cushion F. The deflector is adjustable in weight by means of adjusting nut D. Skull cap G is furnished. Adjustable headband H furnishes additional support for greatest possible comfort. Part of the air leads through tube J to the front of the vision opening, keeping glass K and screen L clean. Glass and screen hold firmly against sponge rubber gasket M by lock bar N making a dust-tight seal. Glass and screen are easily removed by pulling out the lock bar.

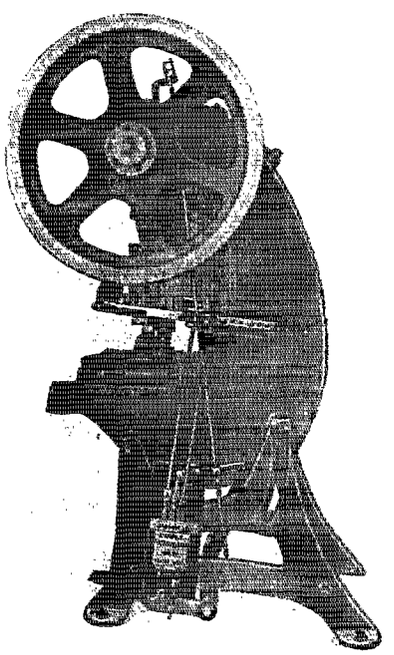
A PURAIR Power Unit has also been designed by this company to furnish clean, dry and filtered air to the helmet. The air should preferably be taken from outside of the building. It first passes through an intake filter, then through the blower, then through another filter and pressure equalizer. The blower unit itself consists of a base, motor, a V-belt drive, and a positive pressure blower of the impeller type, all assembled into a [illegible] unit.



SAFETY GUARD

Wuest Brothers, 10th and Hill Streets, Louisville, Ky., are now marketing the Junkin Triple Interlock Safety Guard, perfected by J. C. Junkin.

This device is designed to prevent accidents to the operators of punch presses, shears or any machine that is pedal operated, and can be attached, the manufacturer states, to any machine that requires a guard to prevent operators from getting their hands near the danger point.



When the pedal is pressed by the foot, the guard, which is light and cushioned so that it will not injure the operator's hand, *is automatically unlocked and falls by* gravity. If the operator has his hand in the way, preventing the guard from coming all the way down, the pedal will lock and the press will not be tripped. The press cannot be put in motion until the guard is entirely down. Only when the guard is entirely down will the pedal be unlocked, allowing the press to be tripped.

With this device the operation of the guard is fast ahead of the ram and the guard must be all the way down before the ram starts down and the guard starts up. The motion is slow at first as the ram comes down and the guard is up as the ram passes the bottom center. Thus the guard is always out of the way of the operator and does not interfere with placing the work in the dies.

PLASTIC FUT-SURE

General Abrasive Company, Niagara Falls, New York, has developed a new floor surfacing product known as "Plastic Fut-Sure". It is a combination of aluminous abrasive grains and a specially prepared binder. The abrasive is tough and durable and is securely held in the bond, wearing down slowly and evenly. Manufacturer claims it retains its slip-proof characteristics through long service.

Plastic Fut-Sure can be used any place where a long-lasting, slip-proof surface is needed. On stair treads, floors, entrances and about machinery. It is particularly effective for making over worn surfaces and can be applied to any type of flooring.

TAILGATE ELEVATOR

Silent Hoist Winch & Crane Company, 762 Henry Street, Brooklyn, N. Y., has placed on the market a built-in platform lift for motor trucks for loading and stacking.

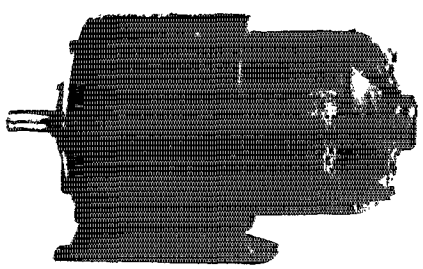
This Silent Hoist Tailgate Elevator functions by power and the mechanical arrangement is similar to the conventional elevator. A specially designed hoist is located underneath the truck body and is operated through a power take-off from the truck engine. A removable, single lever control located at the rear of the truck permits the truck driver to hoist, lower or hold in position the floating tailgate, and there is an automatic upper limit switch to prevent overtravel. When not in use the operator removes the control handle and places it in a convenient tool box.

The Tailgate can be lowered to curb level and raised to truck floor level or to a higher level for double tiering. When not in use the tailgate can be closed similar to the conventional tailgate or can be left open for additional payload space.

The obvious advantage, the manufacturer claims, in addition to expediting loading and unloading of motor trucks, is the safety element. A machine or heavy, bulky material can be raised to truck floor with ease.

MOTORIZED SPEED REDUCERS

Motorized Speed Reducers, capable of adapting nearly any type of motor, are announced on the market by [illegible] Co., Milwaukee. The motor and speed reducer are combined into a single compact self-contained unit which makes an easily mounted, slow speed drive for many types of industrial machinery. Ratings available are ¾ to 75 H.P. with output speeds 4 to 100 R.P.M.



Efficiencies as high as 97% or more are made possible, the manufacturer writes, by simple design which reduces to a minimum the number of rotating and wearing parts. High-grade precision gears and pinions with high-grade oversized ball bearings throughout insure accuracy, quiet operation, and long life.

Built in styles accommodating nearly any type of motor, these units can be furnished with motor characteristics and style of mounting best suited to each application. The integral style shown in the attached photo, in which the endbell is used and the motor close-coupled to gear casing, is most common where an [illegible] motor or enclosed non-ventilating motor is employed. The flexible style, in which the entire motor without any change is mounted on the gear casing, is furnished where conditions require an explosion-proof, encased fan-cooled, splash-proof, or other protected type of motor. Either style can be furnished to provide normal starting torque, high starting torque, high slip, adjustable speed, multi-speed, or other desirable characteristics that can be built into separate motors.

PROTECTS WORKERS' HANDS

A new product, known as Pro-Tek, is now being marketed by The DeVilbiss Company, Toledo, Ohio. Pro-Tek is a white cream which, when rubbed into the skin before working, forms a protective film, soluble only in water and through which sticky substances and soiling materials cannot penetrate, the manufacturer claims.

When Pro-Tek is used, lacquer, paint, grease, metallic dusts and similar materials can be quickly removed by washing the skin under running water. Manufacturer states that even battery acid, gasoline and naphtha are unable to reach the skin through Pro-Tek. It is, therefore, helpful in preventing oil dermatitis and other industrial skin diseases.

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.

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. **Trench Guards.** Folder illustrating new type metal trench guards for marking excavation work, either in industry or on streets and highways. The Cleveland Trencher Company.

2. **Accident Prevention Equipment.** Catalog illustrating and explaining the use and need of protective equipment of all kinds. The Safety Equipment Service Co.

3. **F. W. D. Six Wheeler.** Fleet owners and truck operators will be interested in the safety, range of operation and economy features of four wheel drive trucks given in this catalog. The Four Wheel Drive Auto Company.

4. **Pickering Governers.** Illustrated catalog on governors for steam engines. Automatic safety stop for stopping engine in case governor belt breaks or runs off the pulley is featured in this publication. Illustration of various types of steam engine governors with dimension tables and prices are shown. The Pickering Governor Co.

5. **Saf-T-Top Applicator Bottles.** A booklet on the safe bottle of iodine, merurochrome, ferric chloride and isopropyl alcohol. The top feeds like a fountain pen. Robert A. Bernhard.

6. **Metro-Matic Lubrication.** Folder describing new Alemite Metro-Matic Lubricating System for machinery. A multiple pipe line system that forces lubricant into all bearings while machinery is running. Alemite Corporation.

7. **Safety Treads.** Booklet describing various types of safety treads for stairways, walkways and platforms in factories and public buildings. American Mason Safety Tread Company.

8. **Kushion-Aire Shoes.** Folder gives brief description of safety shoes, incorporating cushion inner soles, for all classes of industrial work. Chippewa Shoe Manufacturing Co.

9. **Mine and Industrial Safety.** Well illustrated general catalog on all types of safety and personal protection equipment, also first aid material used in all fields of industry. Mine Safety Appliances Company.

10. **A New Tool for Industry.** Booklet illustrating many uses of the Spencer Central Cleaning System for the factory, power plant, to remove rust, clean boiler flues, and remove excess material during process of manufacture. The Spencer Turbine Company.

11. **Electrician's and Linemen's Tool Guide.** A pocket tool guide containing specifications and information on tools for telephone, telegraph, railway and power construction work. Mathias Klein & Sons.

12. **Finnell Facts.** Presentation listing various types of industrial electrical floor scrubbers, waxers, and polishers for all types of flooring. Finnell System, Inc.

January, 1933.

NATIONAL SAFETY NEWS
20 N. Wacker Drive
Chicago, Ill.

Please have sent to me the following publications, numbers

Name . . .

Title . . .

Company . . .

Address . . .

Is the Public Interested?

Continued from page 28

more, I doubt if it can be done by means of a few laws, by the police or by more rigid enforcement, although such means and agencies can help. The only way to make people safer for themselves is to sell them on safety.

I venture to say there are not more than a mere handful of people, relatively speaking, who are spending all their working hours attempting to sell street and highway safety. The commissioners of motor vehicles and their assistants should not be expected to accomplish such a task without aid, for how can they alone market a commodity, if safety can be called that when the customers number 120,000,000 people? Hence, there must be some part-time salesmen whose aid must be used as best it can. And let me add, in this connection, that the headaches in making use of part-time advocates of our product are bound to exist for a while. It will take time to acquaint this new sales force with their commodity. But there is not a traffic expert, not a law enforcement officer, not a commissioner of motor vehicles who will not say that today he knows more about his job and how to do it than he did last year, or five years ago. The difficulties that will be encountered in recruiting a large sales force, so that safety may be properly presented everywhere in our nation, will work themselves out, just as they always do as experience and knowledge accumulate.

Everyone is well acquainted with the part which salesmanship played in the world war. When it started the generals were supremely confident of being able to win the war by their own unaided efforts. Practically every one now knows how the generals had to resort to support at home in order to obtain shells, guns, supplies of all kinds, and men. At first there was no place in the scheme of things military for the Lord Northcliffes and George Creels, but as the war continued to last and last it became apparent that expert propaganda also was an element of arms if nations were to be aroused. We are engaged in a great war today—a war on a hundred thousand mile front. No one man, no small group of men, can win this war unaided. We need volunteers. We should welcome their assistance even though at times we do not approve 100 per cent of their method of procedure.

Salesmanship during the war induced men to leave the relative safety of their homes for the dangers of the battle front. It induced men and women at home to buy government securities to the amount of billions. It induced people to save on essentials that were more urgently required by the soldiers and sailors. It induced business men to forget their animosities. It instilled in nations the will to do or die. Salesmanship in the world war was in many respects high pressure; hence it was without a basis in truth in many instances. But this—a battle to save lives on our streets and highways—does not need to twist the truth; the plain truth is awful enough and startling enough. The plain truth if humanized will compel men's minds to control their actions—and if there are any who refuse to do this—a militant public will know how to get rid of them as a menace.

Today we have more and better ways of spreading truth and ideas than the world has ever before possessed; but all of these are of no avail if we forget the injunction given by a great leader 1900 years ago: "Go ye therefore, and teach all nations . . . teaching them to observe all things whatsoever I have commanded you."

That is the type of salesmanship we are in need of in this problem. Teach all people to observe the things commanded of us. Let us make safety in the use of streets and highways "the light of the world, as a city that is set on a hill cannot be hid." Likewise, to paraphrase, let me hope that it shall not be said of any of us engaged in this undertaking, that we were so busy mending our nets that we fished not.

Among the strange claims on record in the files of a prominent accident insurance company are those of a garage man who was kicked by a horse and a blacksmith who broke his arm cranking an automobile.

INDEX TO ADVERTISERS

Around shop machinery is not the only location where loose clothing is a hazard. An automobile driver lifted the hood to inspect the oil gage. His necktie was caught in the fan belt and he was strangled to death.

THE BUYERS' SERVICE

Those listed below are advertisers in this issue—See "Advertisers' Index" Page 69

A

Accident Prevention Service
National Safety Council

Anemometers
Mine Safety Appliances Co.

Aprons
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Co.
Safety Equipment Service Co.
[illegible]

Arm Protectors
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

B

Badges and Buttons
Mine Safety Appliances Co.

Belts—Linemen's
Klein, Mathias & Sons
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Belts—Safety
Mathias Klein & Sons
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

Belts—Tree Trimmer's
Mine Safety Appliances Co.

Belts—Window Cleaners'
Mine Safety Appliances Co.

Blackboards

Blankets—Fireproof
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

Blowers—Portable Electric

Blow Torches
Mathias Klein & Sons

Brakes, Vehicle, Power

Buckets, Hoisting

ulletin Boards
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

C

Car Blockers
Safety Equipment Service Co.

Car Blockers—Mine
Mine Safety Appliances Co.

Car Movers
Safety Equipment Service Co.

Car Step Treads—Safety

Carboy Inclinators
Safety Equipment Service Co.

Carbon Monoxide Detectors, Indicators and Recorders
Mine Safety Appliances Co.

Chain—Factory

Chairs—Safety Boatswain
Mine Safety Appliances Co.

Chip and Spark Guards
Chicago Eye Shield Co.
Safety Equipment Service Co.

Clamps and Sockets
Never Slip Safety Clamp Co.

Cleaning Compounds

Cleaning Systems
[illegible]

Clothing for Industrial Workers—See Aprons, Caps, Gloves, Hand Leathers, Leggings, Overalls, Shoes.

Clothing, Weatherproof
Mine Safety Appliances Co.
Safety Equipment Service Co.

Cuspidors—Sanitary Paper
Burnitol Mfg. Co.

D

Disinfectants and Deodorants

Drinking Fountains

E

Elevator Safety Devices

Emblems
Mine Safety Appliances Co.

Eye Shades—Non-Breakable
Chicago Eye Shield Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.

Expanded Metal
Erdle Perforating Co.
Harrington & King Perforating Co.

Explosive Containers
Justrite Mfg. Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.

F

Films or Slides For Rent and Sale
National Safety Council

Finger Protectors
Chicago Eye Shield Co.
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.
[illegible]

Fire Alarms
Mine Safety Appliances Co.

Fire Detectors

Fire Extinguishers
Walter Kidde & Co., Inc.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Fireproofed Clothing
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.
[illegible]

First Aid Equipment
The Bay Co.
Burroughs - Wellcome & Co. (U. S. A.), Inc.
Hynson Westcott & Dunning
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

First Aid to Illness
Burroughs - Wellcome & Co. (U. S. A.), Inc.

Floor Machines

Flags—Danger
Safety Equipment Service Co.

Flammable Vapor Indicators
Mine Safety Appliances Co.

Flooring Materials—Safety

Flywheel Guards
Erdle Perforating Co.
Harrington & King Perforating Co.

Foot Guards
Ellwood Safety Appliances Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.

Footwear—Rubber
Mine Safety Appliances Co.

Fuse Pullers
Mine Safety Appliances Co.
Safety Equipment Service Co.

G

Gas Detectors
Mine Safety Appliances Co.

Germicides

Germicide—Cutting Oil

Glass, Non-Shatterable
Chicago Eye Shield Co.
[illegible]
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

Gloves and Mittens
Chicago Eye Shield Co.
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

Goggles
American Optical Co.
Chicago Eye Shield Co.
Mine Safety Appliances Co.
New Era Optical Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
Willson Products, Inc.

Gongs, Sirens, Horns and other signaling devices
Mine Safety Appliances Co.

Guards—Safety
Erdle Perforating Co.
Harrington & King Perforating Co.
Safety Equipment Service Co.

H

Hand Cream
Mine Safety Appliances Co.

Hand Leathers
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

Hats—Safety
Mine Safety Appliances Co.

Helmets
American Optical Co.
Chicago Eye Shield Co.
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

Hooks, Linemen's Belt
Mine Safety Appliances Co.
Safety Equipment Service Co.

Hooks—Safety Hoisting
Never Slip Safety Clamp Co.

Hospital Equipment
Burroughs - Wellcome & Co. (U. S. A.), Inc.
Mine Safety Appliances Co.
Safety Equipment Service Co.

I

Inhalators
Mine Safety Appliances Co.

Insurance

J

Jointer Guards
Safety Equipment Service Co.

L

Ladders—Safety
Mine Safety Appliances Co.

Ladder Shoes
Johnson Ladder Shoe Co.
Mine Safety Appliances Co.
Safety Equipment Service Co.

Lamp Hangers

Lamp Locks
Mine Safety Appliances Co.
Safety Equipment Service Co.

Lamps—Safety
Mine Safety Appliances Co.

Lanterns—Electric
Mine Safety Appliances Co.

Leggings
Holcomb Safety Garment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
[illegible]

Lighting—Industrial
National Carbide Sales Co.

Linemen's Protectors
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

Linemen's Tool Bags
Safety Equipment Service Co.

Lockers and Hangers for Clothing

Lubrication
Pyrofi Co

Lubrication Systems

M

Masks
Chicago Eye Shield Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co

Masks—Navy Type
Mine Safety Appliances Co.

Mats—Standing, Safety

O

Oil Cans
Mine Safety Appliances Co.
Safety Equipment Service Co

Oxygen Breathing Apparatus
Mine Safety Appliances Co.

P

Pads—Knee
Mine Safety Appliances Co.
Safety Equipment Service Co.

Paint Remover

Pneumonia Tents
Mine Safety Appliances Co.

Power Press Guards
Chicago Eye Shield Co.
Davis Emergency Equipment Inc.
Taylor-Shantz Co.

Prize Awards
Mine Safety Appliances Co.

Pyrotannic Detector
Mine Safety Appliances Co.

R

Rail Clamps

Respirators
American Optical Co
Chicago Eye Shield Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.
Willson Products, Inc.

Resuscitation Equipment
Mine Safety Appliances Co.

Rock Dusters
Mine Safety Appliances Co.

Rope—Wire

S

Saw, Safety
Mine Safety Appliances Co

Saw Guards
Safety Equipment Service Co

Scaffolding

Scrubbing Machines—Electric

Shaper Guards

Shoe Heel—Non-Slip

Shoe Soles—Non-Slip
Lima Cord Sole & Heel Co.

Shoes—Factory and Foundry
Childs & Co., H.
Chippewa Shoe Mfg. Co
Mine Safety Appliances Co
Reece Wooden Sole Shoe Co
Safety Equipment Service Co.
Schiff Leon & Co.

Signs
Mine Safety Appliances Co.
Safety Equipment Service Co.
Stonehouse Signs, Inc.

Sirens and Signals

Slides—Lantern—Also see Films or Slides

Slings—Safety Wire Rope

Soap

Sterilizing Equipment

Surgical Dressings
Mine Safety Appliances Co.
Burroughs - Wellcome & Co. (U. S. A.), Inc.

Switchboard Mats and Flooring

T

Tools—Linemen's
Klein, Mathias & Sons

Tools—Non-Sparking
Pulmosan Safety Equipment Corp.

Towel Cabinets—Paper

Traffic Markers
Safety Equipment Service Co

Treads—Safety

Tree Trimming

Trestles—Safety Extension

V

Vending Machines

W

Washroom Equipment—Industrial

Washers—Safety

Waste Cans
Justrite Mfg. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co.

Water Coolers

Welding Equipment

Wet Finishing Processes, Laundry & Textile

Window Cleaner

Wrenches—Hopper Car
Safety Equipment Service Co
Tremdale Mfg. Co.

INDUSTRIAL SAFETY MARKET

AS a service to our readers, we endeavor to maintain a complete list of the source of supply of all types of safety and allied equipment.

If you do not find what you want in the advertising pages, send in the coupon below, and we will have forwarded to you without charge, or obligation, detailed information and catalogs on material to meet your requirements.

National Safety News,
20 N. Wacker Drive, Chicago

Please have forwarded to me from various manufacturers, without charge, prices, catalogs, etc., on the following material:
Specifications: (Be specific as to size, capacity, quantity, etc., when prices are wanted.)

.....

.....

.....

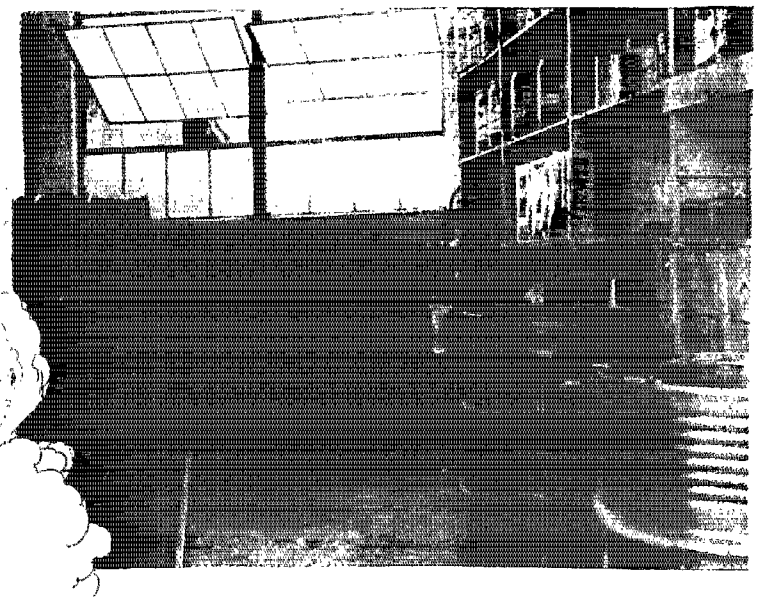
Company .....

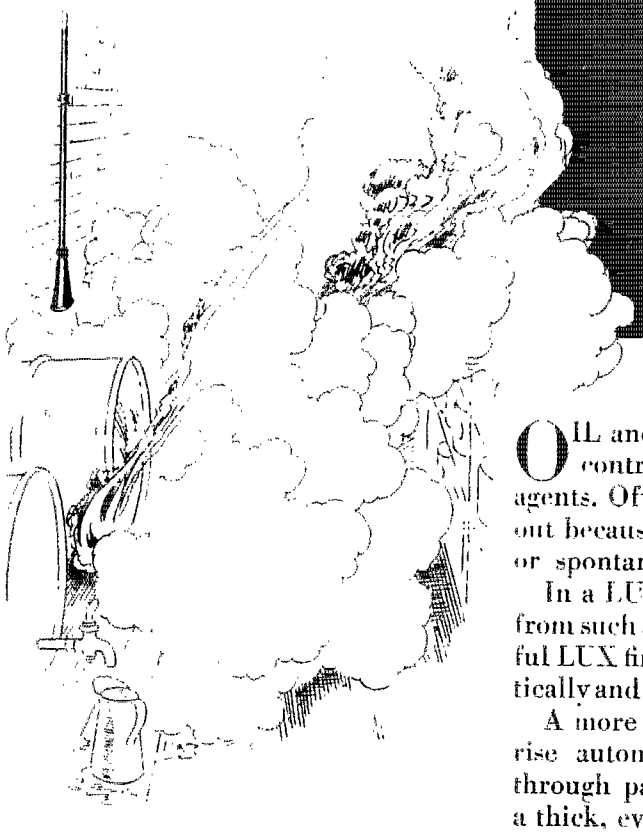
Address .....

Your Name .....

Do Storage Rooms Menace Your Plant?

A typical paint storage hazard—LUX protected





OIL and paint storage rooms are difficult fire hazards to control—almost impossible for ordinary extinguishing agents. Often closed up for hours at a time, fire may break out because of a short circuit, a carelessly dropped cigarette, or spontaneous combustion from oil or paint soaked rags.

In a LUX protected storage room there is nothing to fear from such a hazard. In the dead of night, the silent, ever watchful LUX fireman will extinguish any blaze—quickly, automatically and without damaging the contents of the storage room.

A more than normal increase in the rate of temperature rise automatically discharges LUX gas (carbon dioxide) through patented Shielded Nozzles which spread the gas in a thick, even blanket. Fire is instantly killed at every level in the room—in running liquid on the floor or a blaze near the ceiling. The oxygen in the room is displaced by the LUX gas so that no fire can live for more than a few seconds. LUX gas is dry and clean—there is no water or chemical damage.

LUX is gaining wider acceptance daily among all industrials who have any kind of flammable liquid or electrical fire hazard. Systems can be designed to protect small hazards in a building or an entire hazardous room.

Let a LUX representative make a Fire Hazard Survey of your plant. It costs you nothing and he may find some dangerous fire hazards which you did not know existed.

Walter Kidde & Company, Inc.
140 Cedar Street
New York

LUX Fire Protection

Portable CO_2 Extinguishers and Permanently Piped CO_2 Systems

RESOLVED for 1933

"... To Reduce Accidents in our Plant"

HOW TO START:

Check back into your 1932 accident figures. Find out just what operations . . . or what causes . . . produced *profit-eating* accidents in your plant.

With that as a starting point, you can make—*and carry out*—a determined resolution for 1933, to plug these leaks and to prevent recurrences.

A FEW SUGGESTIONS

Have you employees working . . . unprotected . . . under dust or fume conditions? This is an insidious danger that does not show immediate effects . . . but it is among the leading industrial hazards. *The remedy . . .* PULMOSAN *RESPIRATORS*

Are any men exposed to flying chips or splash conditions that endanger their eyes? *The remedy . . .* PULMOSAN *SAFETY GOGGLES.*

How about the handling and carrying of heavy—rough—or hot objects? The remedies may be found in the full line of PULMOSAN Safety Gloves, Aprons, Suits, Leggings, etc., to protect any part of the body.

OTHER SAFETY AIDS:

Emergency Equipment	Safety Ladders
First Aid Kits	Ladders Shoes (non-slip)
Helmets and Hoods	Safety Tools (non-sparking)
Fire Extinguishers	

Etc., etc.

"If it's for Safety—WE HAVE IT!"

Send coupon below for complete file of Pulmosan Safety Equipment. It will suggest many accident preventives for the New Year.

PULMOSAN SAFETY EQUIPMENT CORP.

176 Johnson St., Brooklyn, N. Y.
Michigan Distr. THE BOYER-CAMPBELL CO.
Detroit

WE WISH ALL OUR FRIENDS A SAFE and PROSPEROUS NEW YEAR

Pulmosan Safety Equipment Corp.
Bill & Fred Wahlert

Pulmosan Safety Equipment Corp. N.S.N.1
176 Johnson St., Brooklyn, N. Y.
Gentlemen:
Send us a complete file of Pulmosan Safety Equipment, without obligation.
Firm Name .....
Address .....
City ..... State.....
Individual .....

What does it profit a man to save a few pennies and sacrifice workmen's eyes

An Observation

—by Buell W. Nutt, President

The Safety Equipment Service Company

ON the rear cover of the November 1926 issue of the National Safety News appeared an advertisement the caption of which we are reproducing above. It was an announcement of the original Drednaut Goggle—the first molded goggle to be offered for sale—a goggle which was destined to revolutionize goggle manufacture—a harbinger of a new day in goggle construction. In much less than the six years since this advertisement appeared molded goggles have taken the place of metal goggles and the latter are fast disappearing from the market.

This advertisement might well be reproduced as a whole because while it was written regarding the original Drednaut Goggle, the spirit of it just as aptly fits the Improved "Drednaut 50" Goggle. If you keep a file of National Safety News you will be interested in reading it. Let me quote:

"Safety is a Spirit

You can not conceive a goggle as a piece of mere merchandise—a product consisting of two lenses, a headband and two cups fashioned to cover the eyes. A GOGGLE IS SAFETY ITSELF. And you can not buy safety on a competitive basis on the open market. Viewing it from the humanitarian aspect, the price of safety is full, complete and positive protection for your workmen's eyes. Considered as a practical benefit, the price of safety buys the goodwill and respect of your workmen; effective safety buys the full-time effort of skilled workmen; it buys relief from the burden of costly workmen's insurance."

Of course, the Improved "Drednaut 50" Goggle embodies improvements not incorporated in the original "Drednaut 45"—improvements that again make this goggle outstanding as we think you will agree when you have actually seen one of them, tried them on and tested them by any method you may select.

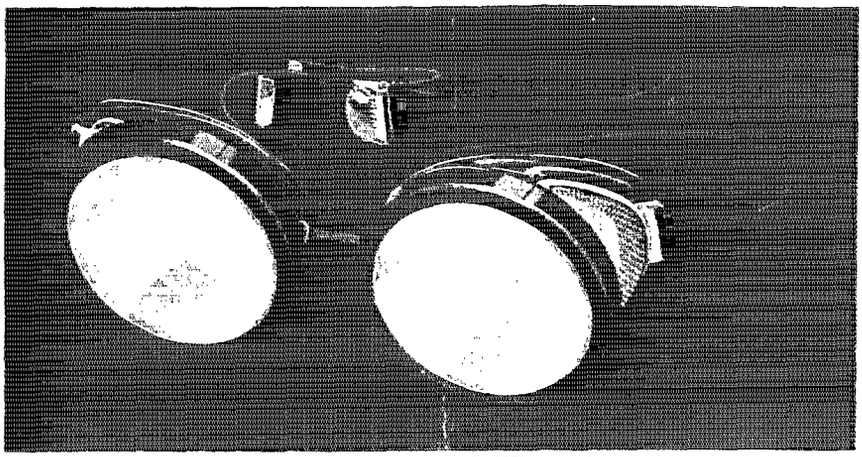
Not only have the frames of the Improved "Drednaut 50" Goggle been improved but new Drednaut lenses made by an improved process are, in our judgment, superior in quality and strength to any other lenses on the market.

You can determine for yourself just how good the Improved "Drednaut 50" is by sending for a sample pair. Just fill in and mail the handy coupon at the bottom of this page.

How Long Have Your Drednauts Been In Use?

For about four years we have been stamping the month and year of manufacture of all Drednaut Goggles on the cups. Near the chain nose-piece on these dated goggles will be found two numbers—the first indicating the month and the other the year. For example, a goggle bearing the numbers 9—1 was made in September 1931. Thus, you can tell just how long a Drednaught has been in use. If no numbers appear on the frame it was made prior to 1929. Lots of Drednaut Goggles are still in use after five years service and still going strong.

I'd like to hear from some of you fellows who have Drednauts you have used continuously for five years. Drop me a line.



Regular Model of the Improved "Dreadnaut 50" Goggle

No One Profits When Saving Is Gained at Another's Expense

So much has been said of late on the subjects of spending and saving that it would almost seem that nothing more remained to be expressed. The virtues of both have been propounded and expounded and you are left to take your choice. The prudent man will not accept the extreme of either but will realize that sometimes saving may lead to spending while on the other hand spending will many times promote saving.

Accident Prevention Work can only result in a favorable saving in fewer accidents, less suffering and less loss of money when it is vigorously and wholeheartedly carried on. To try to "save" by unreasonably cutting down personnel, eliminating activities or using inadequate safety equipment or probably none at all, will in most cases result in defeating its object and in the end this kind of "saving" will most likely result in spending and the "spending" will invariably be more than the "saving."

Spending to promote safety is spending to save and *the saving is always greater than the spending* whether it be in money or in effort. This will be verified by any one who has been active in the work. To give anything short of the best efforts to prevent accidents in order to "save" will profit no one—least of all an employer.

Got to thinking about this the other day when I was in a plant which in the past has done some mighty good accident prevention work. Noticed quite a number of the men wearing goggles which were, to say the least, obsolete. There were many styles and makes some of which had passed out of the picture several years ago. On inquiry I found orders had been issued to round up all the old goggles—have 'em repaired and reissued. Some of them were capable of giving adequate protection but some should have been consigned to the scrap heap because while they were in good repair they provided something less than complete protection. No saving there.

BUELL W. NUTT, President
The Safety Equipment Service Company,
1228 St. Clair Avenue Cleveland, Ohio

COUPON

The Safety Equipment Service Company
1228 St. Clair Avenue
Cleveland, Ohio.

I want to examine a pair of your Improved "Drednaut 50" Goggles. Send me a sample pair—no charge.

Name..... Address.....

Company..... City..... State.....