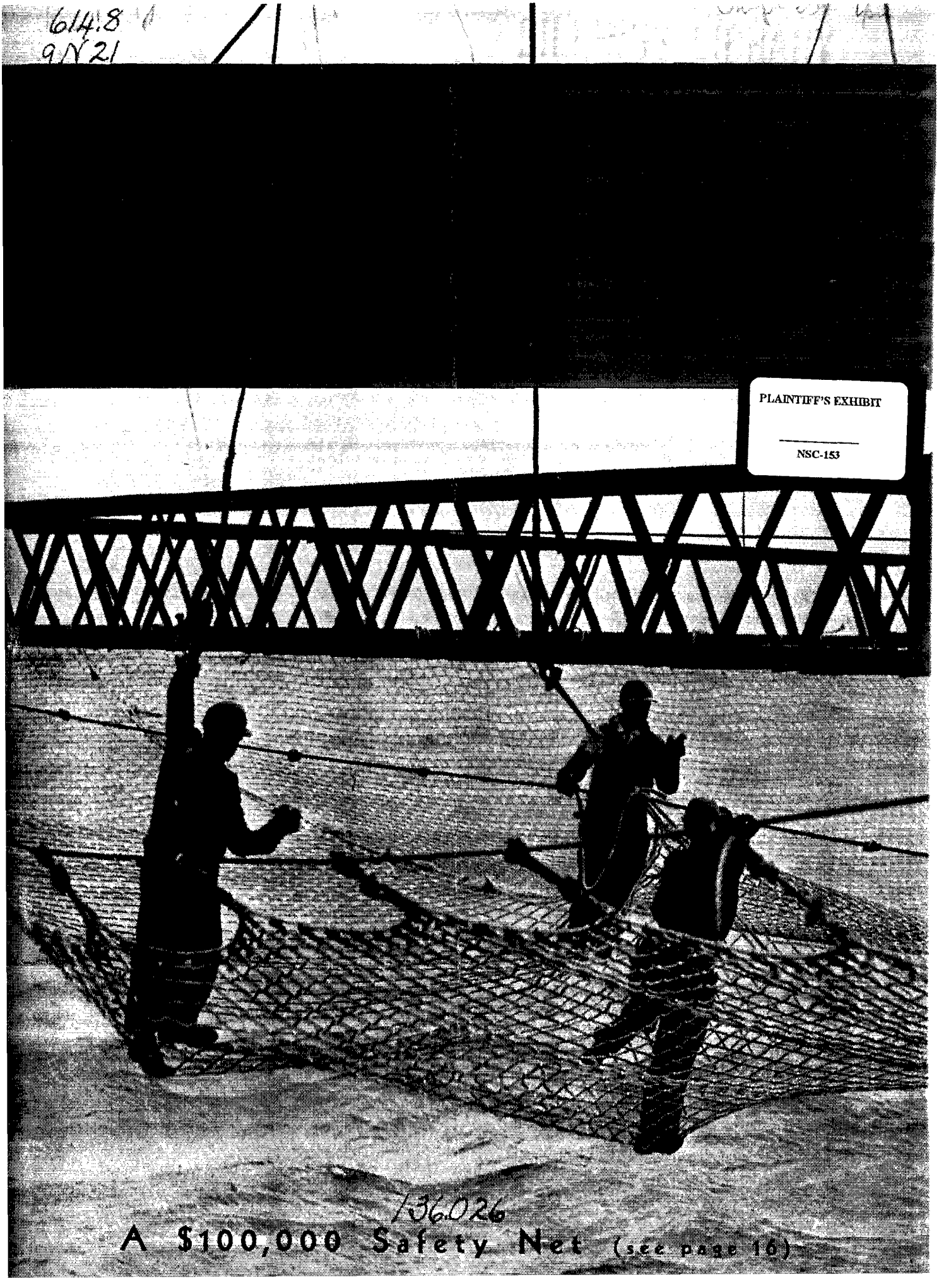
614.8
9N21

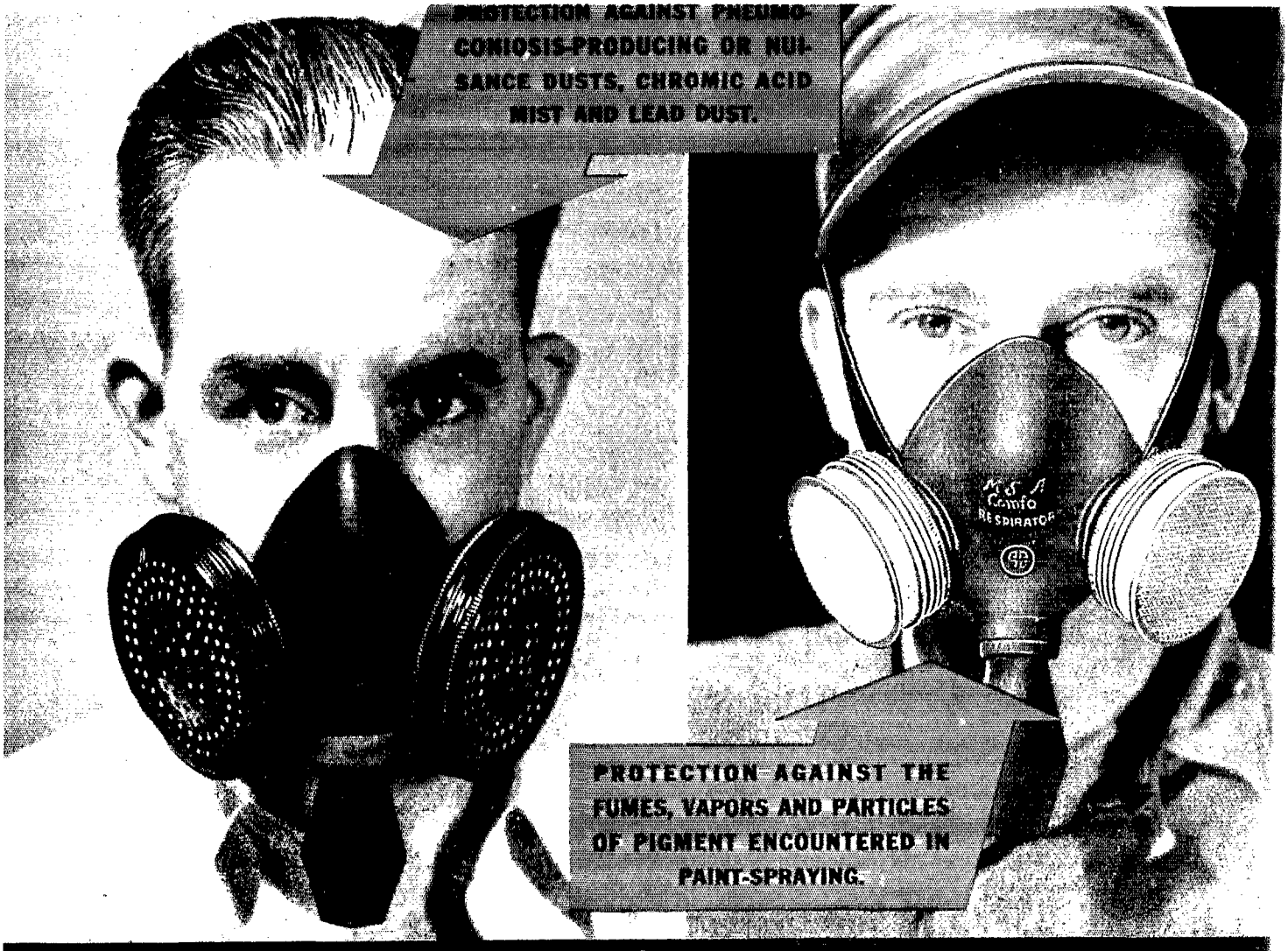


PLAINTIFF'S EXHIBIT

NSC-153

136.026

A $100,000 Safety Net (see page 16)



The M·S·A Comfo RESPIRATORS

REG. U.S. PAT. OFF. U.S. PAT. No. 2019928

ABATING THE DUST MENACE—The tremendous popularity of M.S.A. Comfo Dust Respirators continues! *Two types* now are available, *differing* only in the nature of the filtering medium: the Comfo Dust and Mist Respirator *(U. S. Bureau of Mines Approval No. 2101AC)* for protection against pneumoconiosis-producing or nuisance dusts and chromic acid mists; the Comfo Lead Dust Respirator *(U. S. Bureau of Mines Approval No. 2107)* for protection against mechanically-generated lead dust. Each combines unusual protective ability with extremely low breathing resistance, light-weight comfort and long filter life.

PROTECTION IN PAINT-SPRAYING—Now comes the new Comfo Paint Respirator, Twin-Cartridge type, with replaceable all-metal cartridges, factory loaded for uniformity. Breathing resistance is much less than that of a single-cartridge respirator; paint vapors and pigment particles are removed more thoroughly; maintenance is easier and simpler.

In addition to the types described above we have recently perfected our Air Stream Respirator, which provides both dust and fume protection wherever clean, compressed air is available.

We'll be glad to demonstrate any of these units for you. Just write us, stating the nature of the hazard.

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets, Pittsburgh, Pa.
District Representatives in Principal Cities.

M·S·A SAFETY EQUIPMENT

M.S.A. Products include Breathing Apparatus . . . Inhalators . . . Comfo Respirators . . . Masks of all types . . . Gas Indicators . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Clothing . . . First Aid Equipment . . . Submarine Escape Apparatus . . . *Descriptive Bulletins will be sent on request*

Silicosis!

—is YOUR plant safe?

This new Dust Counter makes possible the rapid evaluation of dust hazards. It is very helpful if not essential in:

- *Protecting your company against unjust claims.*
- *Making routine dust surveys.*
- *Locating dust-producing operations.*
- *Obtaining effective maintenance of dust control equipment.*



New Dust Counter offered Industry thru the Willson nationwide safety service organization.

Know Your Dust Hazards

Anybody can operate the new dust counter without technical supervision. In this one unit is everything needed to make complete dust counts with speed, convenience and facility; no additional equipment is needed. Light in weight and portable, it is readily used under all working conditions since there is no equipment to be set up where air sample is to be taken. For full details call in the Willson representative nearest you, or write to Willson Products, Inc., Reading, Pa.

Willson Authorized Distributors

ATLANTA, GA.—Fulton Supply Co.
BALTIMORE, MD.—Carey Mch. & Supply Co., 119 Lombard St.
BIRMINGHAM, ALA.—Modern Engineering Co., 709 S. 21st St.
BUFFALO, N. Y.—American Allsafe Co., 210 Franklin St.
CAMBRIDGE, MASS.—Cutter, Wood & Sanderson Co., 222-232 Third St., Kendall Square.
CHARLESTON, S. C.—Cameron & Barkley Co.
CHARLESTON, W. VA.—Safety First Supply Co., Bigley Ave.
CHATTANOOGA, TENN.—C. D. Genter Co., 2109 Broad St.
CHICAGO, ILL.—Protective Equipment, Inc., 634 Orleans St.
CINCINNATI, O.—The E. A. Kinsey Co., 331 Fourth St., West.
CLEVELAND, OHIO—The Safety Clothing Co., 3804 Payne Ave.
COLUMBUS, OHIO—The E. A. Kinsey Co., 243 N. High St.
DAYTON, OHIO—The E. A. Kinsey Co., 412 Refiners Oil Bldg.
DETROIT, MICH.—Willson Products, Inc., 3427 Harper Ave.
GRAND RAPIDS, MICH.—F. Raniville Co., 245 Pearl St., N.W.
GREENVILLE, S. C.—Carolina Supply Co.
HOUSTON, TEXAS—E. D. Bullard Co., 314 M. & M. Bldg.
INDIANAPOLIS, IND.—The E. A. Kinsey Co., 235 S. Meridian St.
JACKSON, MISS.—Modern Engineering Co., 734 Monument St.
JACKSONVILLE, FLA.—Cameron & Barkley Co.
KANSAS CITY, KAN.—L. R. Stone Supply Co., 405 N. 6th St.
LOS ANGELES, CALIF.—E. D. Bullard Co., 1229 So. Olive St.
LOUISVILLE, KY.—Neill-La Vielle Supply Co., Inc., 505 W. Main St.
MEMPHIS, TENN.—Modern Engineering Co., 358 Madison Ave.
MILWAUKEE, WIS.—Protective Equipment, Inc., 3155 S. 7th.
NEW YORK, N. Y.—W. S. Wilson Corp., 123 Varick St.
OMAHA, NEBR.—Interstate Machinery & Supply Co., 1006 Douglas St.
PHILADELPHIA, PA.—Industrial Products Co., 800 W. Somerset St.
PITTSBURGH, PA.—Safety First Supply Co., Brady Building.
PROVIDENCE, R. I.—James E. Tierney, 131 Washington St.
RICHMOND, VA.—Smith-Courtney Co., 7th, Porter and 8th Sts.
ST. LOUIS, MO.—Sligo Iron Store Co., 1301-1403 N. 6th St.
ST. PAUL, MINN.—Farwell, Ozmun, Kirk & Co., 3rd and Jackson Sts.
SALT LAKE CITY, UTAH—E. D. Bullard Co., 1620 Yalecrest Ave.
SAN FRANCISCO, CALIF.—E. D. Bullard Co., 275 Eighth St.
SCRANTON, PA.—L. B. Potter Co., 424 Sixth St.
SYRACUSE, N. Y.—Syracuse Supply Co.
TAMPA, FLA.—Cameron & Barkley Co.
TROY, N. Y.—The Troy Belting & Supply Co., 6 Grand St.

CANADA

MONTREAL, QUE.—Safety Supply Co., 1231 Catherine St., W.
TORONTO, ONT.—Safety Supply Co., Hermont Bldg.
VANCOUVER, B. C.—Safety Supply Co., 325 Howe St.

WILLSON PRODUCTS

The NATIONAL SAFETY NEWS is published monthly by the National Safety Council, 20 North Wacker Drive, Chicago, Ill. Yearly Subscription Price $4.00. Volume 34, Number 6. Entered as second class matter June 1, 1921, at the Postoffice at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at St. Joseph, Michigan.

Ford Motor Co. standardizes on 4-Way Floor Plate



Inland 4-Way Floor Plate installed in Ford Motor Company's River Rouge Plant

4-Way Safety

Extra Stiffness

4-Way Matching

4-Way Drainage

Ford Motor Company, which has done a great deal to promote Industrial Safety, has standardized on 4-Way Floor Plates. This decision came only after thorough testing of all types of flooring.

These super safe 4-Way Floor Plates are now used throughout the Ford Company where strong, slip-proof flooring is needed . . . and Ford is just as well known for economy as for interest in safe working conditions.

We believe it will pay you, from an economy as well as a safety standpoint, to specify Inland 4-Way Floor Plates.

A new clearly illustrated bulletin showing many applications, methods of installations, etc., including a Plate sample, will gladly be sent at your request.

Inland 4-Way is a tough, strong rolled steel Floor Plate.

The projections overlap uniformly, providing extra strength and stiffness—4-Ways.

Note how the projections center one another at right angles, providing equal traction—4-Ways.

4-Way is easily swept, and drains readily —4-Ways.

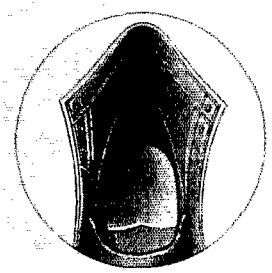
The uniform pattern permits laying end to end, or side to end, thus assuring a continuous pattern with negligible waste.

SHEETS • STRIP • TIN PLATE • BARS • PLATES • STRUCTURALS • PILING • BILLETS • RAILS • TRACK ACCESSORIES

INLAND STEEL CO.

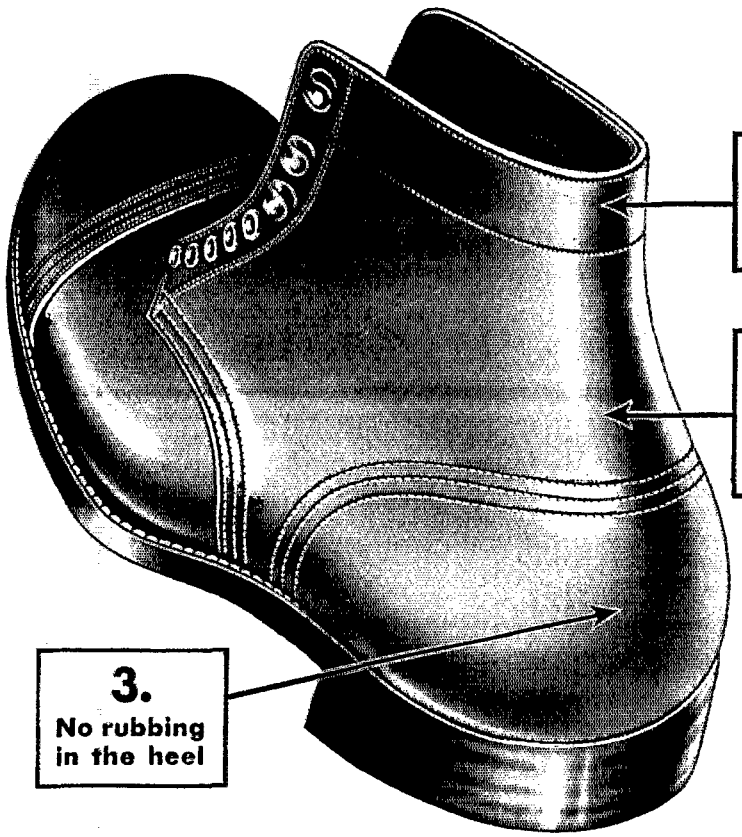
General Offices: 38 South Dearborn Street, Chicago, Illinois

THE Saf-eze . . .



Inside view of
Saf-eze One-Piece Quarter

Note the smooth glove-like inside fit of the one-piece seamless quarter. No ridge or seam to cause friction, blisters, or discomfort.



The Really Comfortable Heavy Duty Shoe

Saf-eze, Hy-Test's latest safety shoe development presents a new idea in a staple product that is proving itself an innovation in the safety shoe field.

Offering comfort hitherto unattained, plus a neat appearance, *Saf-eze* is constantly proving its worth to the industrial world. The new unique departure from ordinary shoe construction provides a *one-piece quarter,* a smooth, foot-conforming unit with no ridge or seam at the back to cause rubbing or irritation with its attendant blisters and discomfort.

And, of course, the other widely heralded Hy-Test Safety features are retained—the Isco steel *safety anchor flange,* which is doing a *real* job in preventing toe injuries in practically every important industry, besides providing complete toe freedom and comfort.

Our In-Stock department will gladly furnish detailed information concerning *Saf-eze,* or any of our numerous special industrial models. Write for a catalog.

ST. LOUIS

HY-TEST SAFETY SHOES

DESIGNED AND MANUFACTURED EXCLUSIVELY BY

INTERNATIONAL SHOE COMPANY, ST. LOUIS, MO.

THE WORLD'S LARGEST SHOE MANUFACTURER

Let's Use Our Heads To Save Our Feet

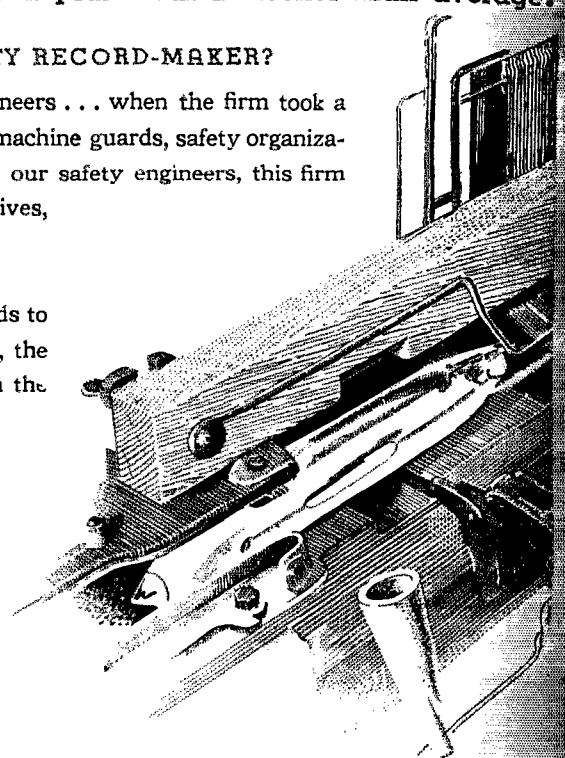
the Green thread

SAVED THIS GEORGIA COTTON MILL

This cotton mill paid only half the standard workmen's compensation rate for Georgia mills—35.2¢ per $100 payroll instead of 69¢. Yet a few years ago (in spite of large sums invested in mechanical safeguards, a safety organization, a dispensary and nurse) this plant was no better than average.

WHAT TURNED A "NORMAL" PLANT INTO A SAFETY RECORD-MAKER?

The change began after a conference with American Mutual safety engineers . . . when the firm took a new approach to the safety problem. All the safety tools were there — machine guards, safety organization, etc. — but they had to be used in a different way. Together with our safety engineers, this firm worked consistently on the safety program that has proved it saves lives, limbs and thousands of dollars for our policyholders.

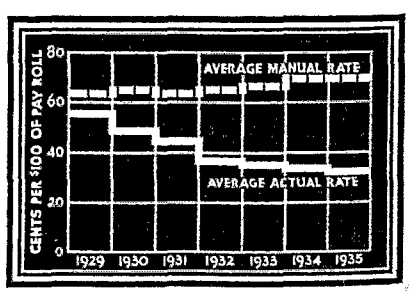


"PRODUCTION-SAFETY". Seeing danger not only as isolated hazards to be guarded, but also as a red thread running through men, machines, the building itself — our engineers worked to penetrate all production with the continuous green thread of safety.

FUTURE PROBABILITIES of accidents were accurately forecast on the basis of present conditions and hazards and past experience. Since the most likely accidents were known, they could be prevented in advance.

IN THE HANDS OF THE PERSONNEL from president to unskilled workers, rested the execution of this plan, the effectiveness of the machine guards, safety organization, etc. We helped to adapt the whole force to attitudes and methods of work which served to abolish danger.

A FLEXIBLE YARDSTICK, as always, gauged the amount of safety assistance we gave. No rigid schedule—the varying conditions and needs determined the number of our engineers' visits for safety cooperation.



"AMERICAN MUTUAL ENGINEERING SERVICE HELPED LOWER OUR RATES." says President of Georgia Mill. Graphed are the rising manual rates for Georgia cotton mills in the past seven years; and the falling rate of our policyholder — about half the manual rate, last year.

AMERICAN MUTUAL LIABILITY

BRANCHES IN 53 OF THE COUNTRY'S

Workmen's Compensation, Automobile, Fidelity Bonds, Elevator, Burglary, and other forms of casualty insurance are written by American Mutual; Fire Insurance by our associate, Allied American Mutual Fire Insurance Company

Safety

HALF ITS INSURANCE COST



$2636.40 YEARLY PROFIT FROM SAFETY WORK

Paying 35.2¢ instead of 69¢ per $100 payroll on their workmen's compensation insurance — a mill with 1300 employees (even allowing only an average $15 weekly wage, and only 40 weeks average work per year) *earned $2636.40 extra profit on insurance costs alone lowered through safety work with American Mutual.* Prevention of lost time, spoiled work, training new employees, etc., means many times greater savings. These would be likely to average, in such a mill, an additional $10,000 a year or even more.

TWO OTHER PROFITS FOR AMERICAN MUTUAL POLICYHOLDERS

With our specialized industrial medical service, even badly injured workers who might have been permanently disabled are often brought back to the productive work for which they were trained. Employers are thus saved the cost of training employees to replace them.

Third of the profits our policyholders have regularly earned, is a dividend of at least 20% of their premium, paid every year for nearly half a century . . . a total of $50,000,000. Why not let your firm, too, share in these profits?

WE WORK TO MAKE ALL WORK SAFE

INSURANCE COMPANY

PRINCIPAL CITIES

Admitted Assets: $23,809,545.32 Liabilities: $19,424,978.69
Surplus to policyholders: $4,384,566.63 As of December 31, 1935



AMERICAN MUTUAL
LIABILITY INSURANCE COMPANY
Boston, Mass.

Please send me the next four issues of the AMERICAN MUTUAL MAGAZINE — containing many valuable experiences in promoting safety.

Name_____

Title_____

Company_____

Street_____

City_____

State_____

NATIONAL SAFETY NEWS

Published monthly in the interest of accident prevention and industrial health

Volume 34, Number 6

Contents for DECEMBER, 1936

Safety Work Has Paid Handsomely—*E. G. Seubert* 11
Design for Living Safely—*Col. Willard T. Chevalier* 12
The North Wind Doth Blow—*C. F. Scheer* 14
A $100,000 Safety Net—*C. W. Geiger* 16
Will It Stop Quickly?—*C. W. Drake* 17
Through the Ice—Or Not?—*Fred C. Mills* 19
Let's Look at the Scaffolds—*Welton A. Snow* 21
A Safe Place to Work?—*Robert A. Shaw* 23
Know Your Hoisting Chains—*Walter J. Bloom* 25
They Turned Back Death 27
Air Contaminants That Affect Health—*H. B. Meller* 34
Wood Shapers—*Industrial Data Sheet D-W 3* 38
Heard at the Congress 48
They're Proud of Their Trophies 52

REGULAR DEPARTMENTS

Editorial 9
The Managing Director's Page ... 10
The Safety Exchange 28
Safety Instruction Cards 30
Industrial Health 34
The Bulletin Board 40
The Safety Library 56
Personals 66
The Honor Roll 73
Coming Events 73
With the Manufacturer 74
The Accident Barometer 80

CARMAN T. FISH, Editor
S. H. KERSHAW, Poster Editor
C. F. SCHEER, Associate Editor
C. H. MILLER, Advertising Manager

Copyright December, 1936 by National Safety Council, Inc. Printed in U. S. A. Entered as second-class matter June 1, 1921, at the Post Office at Chicago, Ill., under the act of March 3, 1879. Additional entry at St. Joseph, Mich.

The price to members for extra subscriptions to the NATIONAL SAFETY NEWS is $4.00 per year. Single copies, 40 cents. Reduced quantity prices for yearly subscriptions and single copies on request. Subscriptions are available only to members of the National Safety Council.

Member Audit Bureau of Circulation.

This magazine is indexed in the Industrial Arts Index.

Statements and opinions advanced in signed articles are individual expressions of their authors, not those of the National Safety Council.

13,750 copies of this issue were printed.

National Safety Council, Inc.

20 North Wacker Drive, Chicago, U. S. A.

Office of the Education Division, 1 Park Ave., New York City

National Safety Council Officers, 1936-37

CASSIUS H. WATSON, M. D. President
D. D. FENNEL, Vice-President for Public Relations
HART E. FISHER, M. D., Vice-President for Health
JOHN B. GIBSON, Vice-President for Safety Councils
HON. HAROLD G. HOFFMAN, Vice-President for Public Safety
ALBERT S. REGULA, Vice-President for Engineering
A. V. ROHWEDER, Vice-President for Industrial Safety
R. T. SOLENSTEN, Vice-President for Membership
ALBERT W. WHITNEY, Vice-President for Education
WILLIAM E. WORTH, Vice-President for Finance and Treasurer
W. H. CAMERON, Managing Director

Executive Committee
Members at Large

THE ABOVE OFFICERS AND:
HAROLD S. BUTTENHEIM, The American City
HARRY GUILBERT, The Pullman Co. and Surety Co.
HARRY GUILBERT, The Pullman Co.
WILLIAM C. KNOELK, Milwaukee Safety Commission
EDWARD J. MEHREN, Portland Cement Assn.
I. W. MILLARD, Industrial Gloves Corp.
HAROLD L. MINER, E. I. duPont de Nemours & Co.
GEORGE E. SANFORD, General Electric Co.
C. W. SMITH, Standard Oil Co. (Ind.)

Safety Council Representatives

ROBERT B. WALLACE, Worcester Safety Council
WALTER DENT SMITH, Delaware Safety Council
CARL L. SMITH, Cleveland Safety Council
E. J. O'BRIEN, JR., Louisville Safety Council
R. B. FORTUIN, Lehigh Valley Safety Council
W. J. MELVILLE, Chippewa County Safety Council

Sectional Representatives

GEORGE J. ADAMS, Paper and Pulp
C. M. ALLEN, Metals
C. W. DEMPSEY, Food
C. W. GIBBS, Mining
E. C. HOLDEN, JR., Marine
HARRY J. KELLEY, Wood Products
D. L. ROYER, ASSE-Engineering

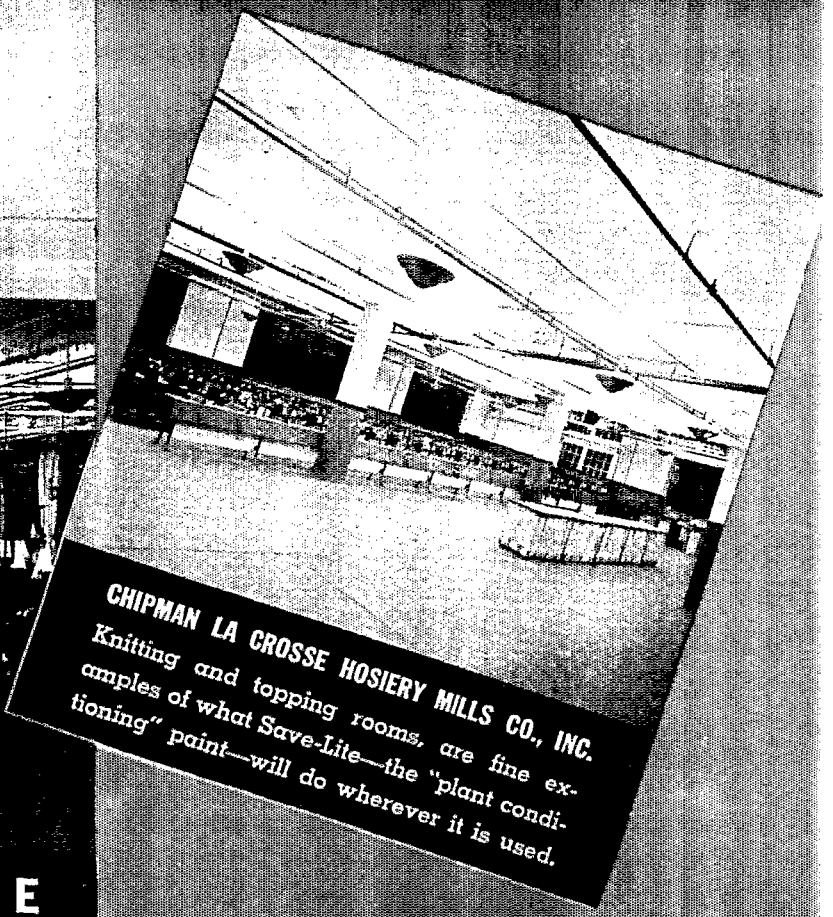
Past Presidents

ROBERT W. CAMPBELL
LEW R. PALMER
CHARLES P. TOLMAN
ARTHUR H. YOUNG
MARCUS A. DOW
LEWIS A. DEBLOIS
CARL B. AUEL
CHARLES B. SCOTT
WALTER G. KING
LT.-COL. HENRY A. RENINGER
C. EUGENE PETTIBONE
CARL W. BERGQUIST
JAMES I. BANASH
JOHN E. LONG

Honorary Members

ROBERT W. CAMPBELL LEW R. PALMER
ARTHUR WILLIAMS
ASSOCIATION OF IRON & STEEL ELECTRICAL ENGINEERS





CHIPMAN LA CROSSE HOSIERY MILLS CO., INC.
Knitting and topping rooms, are fine examples of what Save-Lite—the "plant conditioning" paint—will do wherever it is used.

LIGHTED WITH SAVE-LITE

The combination of indirect lighting and Save-Lited walls and ceilings is fast making many plants better lighted—many workmen better sighted. Sherwin-Williams Save-Lite diffuses artificial and natural light evenly, and to the greatest degree.

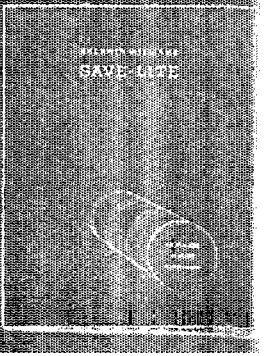
SHERWIN-WILLIAMS SAVE-LITE

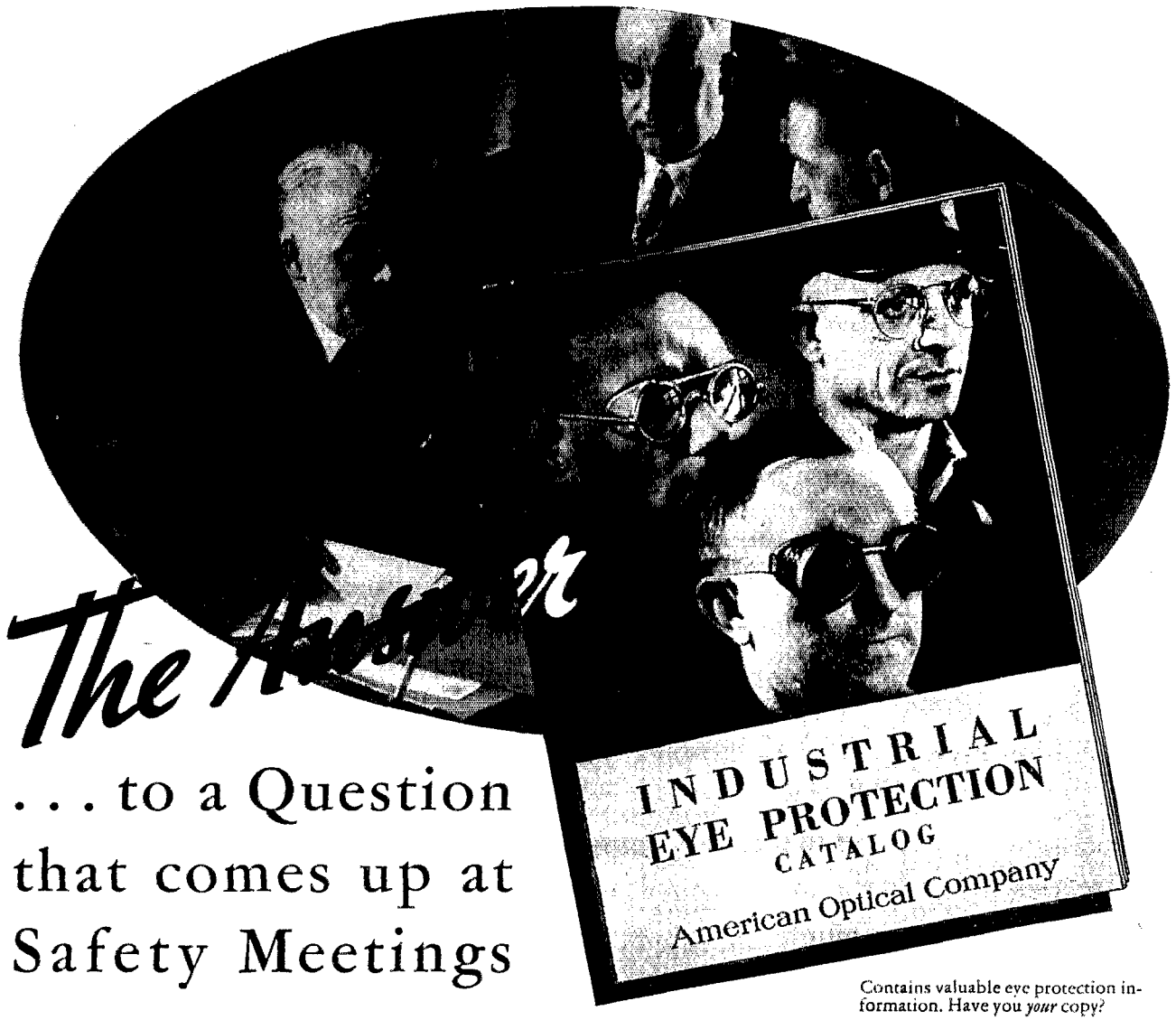
THE PLANT CONDITIONING PAINT

THE SHERWIN-WILLIAMS COMPANY, CLEVELAND, OHIO, AND ALL PRINCIPAL CITIES

SEE THE SHERWIN-WILLIAMS PAINTING ENGINEER

Write for the Sherwin-Williams Plant Conditioning report. Every plant operator should have it. It will be sent FREE on request.





Contains valuable eye protection information. Have you *your* copy?

The Answer . . . to a Question that comes up at Safety Meetings

"How can I get my men to KEEP their goggles on when they are working?"

One reason why some workers dislike wearing goggles is that they are not provided with the proper eye protection equipment for their work.

Recognizing the condition that no one type of goggles is suitable for all classes of work, American Optical Company has developed a complete line of eye protection equipment for every industrial eye hazard.

To help Safety Directors make their eye safety program effective and profitable, a new book has been prepared which describes and illustrates the many types of eye protection equipment made by American Optical Company. It tells of the services American Optical Company offers without charge or obligation. Have you *your* copies? Get in touch with the branch office near you or write us.

American Optical Company

Manufacturers, for more than 100 years, of products to aid and preserve vision. Factories at Southbridge, Mass. In Canada, Consolidated Optical Co., Ltd. Branch offices in all principal industrial centers

2547

NATIONAL SAFETY NEWS

Published by National Safety Council, Inc.

DECEMBER, 1936

The Humanizing Holiday

CHRISTMAS comes once more to restore our sense of proportion. We have become warped through differences of opinion on politics, creed and business; we are inclined to exaggerate the failings of our fellow men. We need the humanizing influence of this great holiday of the Christian year.

But Christmas is no time for the General Confession, for introspection. There is a time for solitary reflection and meditation but not at this season. It is a time for forgetfulness of self, for an outpouring of generous sentiment.

It is a holiday that must be shared. Wealth cannot purchase the joy that comes from the companionship of family and friends. Next to the man who has no Christmas dinner, the most forlorn individual is the one who must eat his alone —even in an exclusive restaurant.

The many acts of kindness and generosity remind us of the essential decency of people. Present day philanthropy, in contrast to much of that in the past, is inspired more by a desire to relieve distress on earth than to lay up treasure in heaven.

Christmas provides a way of expression for the inarticulate. Shyness, thoughtlessness, or just lack of words prevent outward demonstration of the love that people feel. Then comes Christmas to provide both a reminder and a way of expression.

Then there is the lesson of humility, of becoming as little children who sometimes find the truth more directly because their hearts and minds have not become clouded with sophistries. This brings to mind a verse whose authorship cannot be recalled at the moment:

A king may miss the guiding star.
A wise man's foot may stumble;
For Bethlehem is very far
To all except the humble.

There are some who bewail the brief duration of the Christmas spirit on earth. We wish it could remain, yet we can be thankful for this transient exultation of the human heart.

And there are some who begrudge others the gaiety of the season, seeing in it a pagan influence. But there was merrymaking at Cana.

A Welcome Development

WITH industry showing definite signs of recovery, industry is facing a shortage of skilled labor. This is a normal development rather than an alarming new problem, says John W. O'Leary, president of the Machinery Institute.

"After every depression we face this shortage of men with specialized skills," said Mr. O'Leary. As long as business is normal the need of finding suitable men to train for skilled jobs is constantly with us.

"These who deny that any shortage of skilled labor exhausts, and also those who complain that the shortage is impeding business operations fail to recognize the happy circumstance and the opportunities it brings for full employment. This is a normal and welcome development."

As evidence of this development, Mr. O'Leary pointed out that machinery manufacturers had taken on hundreds of apprentices during the past few months to train them for skilled jobs now available and for jobs which will become increasingly numerous as the demand for capital goods continues.

Mere jobs at subsistence wages do not constitute real recovery. The American worker wants work which will employ his ability and skill and pay a wage which will afford reasonable standards of comfort for his family. More employment opportunities in the higher brackets of skill are the surest way to the more abundant life.

With increasing employment come new opportunities and responsibilities for the safety man. The apprentices who are entering industry must be started on the right track but the older workers must not be overlooked. Workers are not listed among the company's assets at so much a head but they are one of industry's most valued possessions.

In This Issue

A REDUCTION of 48 per cent in accident costs has been one of the rewards of organized accident prevention work in the Standard Oil Company (Indiana). No less important has been its influence in bringing management and employees close together in mutual understanding and respect. (Page 11).

A large share of our modern hazards are bred by our environment. If the environment remains defective, we can hope for but limited improvement through regulation by statute or individual behavior, says Col. Willard T. Chevalier, who stresses the importance of the technician in designing a safer setting for the individual's daily life. (Page 12).

"The north wind doth blow"...but the safety engineer isn't worrying about the robin; it's the men in the shop. Cold weather calls for alertness in the individual, which is sometimes difficult when the senses are numbed by cold, and increased attention to correcting avoidable hazards. (Page 14).

The highway isn't the only place where quick stopping means safety. Improved electrical controls and dynamic braking have made hazardous machines much safer. (Page 17).

Breaking through the ice may end in tragedy or merely in discomfort, depending upon the precautions taken. Captain Fred Mills of the Boy Scouts, who is teaching thousands of boys how to enjoy water sports safely, gives some helpful advice on how to keep on the dry side of the ice. (Page 19).

The Managing Director's Page

What's Wrong With Our Safety Efforts?

WHAT'S wrong with our safety efforts? Many things. We have made progress, to be sure, but in many cases we are doing anything but a workmanlike job. We cannot hope to cure organized safety of all of its ailments, but we can suggest a few needed improvements.

First, there is inconsistency among us. Many persons are so busy taking about safety that they have little time left to do anything about it. I have in mind the chief executive of a large manufacturing concern who never misses an opportunity to address a group of listeners in any given city and extoll the virtues of safe practices. But his own plant has an accident record of which he should be ashamed.

Many times we have gone into the homes of professional safety engineers and found objects stored on stairs, flimsy ladders in use, and so on.

And have you ever been a passenger in automobiles driven by some of our "active" safety men? So have I. Of course, we must realize that unsafe driving never seems as dangerous to the driver as it does to his passengers, but sometimes it's hard to be tolerant. An unfortunate phase of our safety movement is that not all of us practice what we preach—which weakens the effect of our preaching. Safety, like charity, should begin at home.

Perhaps our most far reaching weakness is that of barking up the wrong tree. We find it difficult to get down to facts. Men who were pioneers in the safety movement spent most of their time in devising machine guards. Then someone startled us with the announcement that 85 per cent of industrial accidents were due to man-failure. The result was hundreds of employee mass-meetings where inspirational speakers came close to apoplexy trying to frighten men and women into avoiding accidents. It was found an audience would pay complacent attention. Then individuals either applied the safety lesson to someone else—or upon deciding to do something, found that the speaker had not told them how to meet a single one of the unsafe situations to which they were commonly exposed. He couldn't. He was probably speaking to 1000 persons representing 1000 different interests.

Much of the same misdirected effort is still with us. We are not analyzing accidents to detect specific unsafe practices and unsafe conditions so that the immediate hazard may be corrected at once. We are not viewing bad accident situations in the proper perspective that we may know why the same unsafe acts of workers and the same accidents are repeated time and again. There is insufficient scientific direction to our safety efforts. Meetings, speeches, posters, machine guards, all have their places in a well rounded safety program; but they aren't the whole answer to the problem. Usually they don't even constitute a good beginning, as many *good* safety engineers have come to realize.

There are too many other things wrong in the safety movement, even though they may not be as important as the misdirection of honest effort. There are supervisors who fail utterly in their safety responsibilities, who can't see the woods because of the trees. Their main interest is maximum production, which means keeping men and machines on the job. But they haven't time to make job analyses, keep accurate accident records and do the few simple things that would make it possible to reduce accidents and control the incidental delays accidents entail in a production schedule.

There is the mistake of believing that everyone knows how to avoid accidents and will exercise good judgment providing he is imbued with the proper safety spirit. Perhaps our greatest need today is for definite and clear-cut safety rules, applying to the anticipated experiences of each individual; presented and impressed on him in such a way that he will obey them to the letter and that his daily life will be guided by them. There are safety rules for every job and some supervisor should see that we know the rules and intend to follow them before we are entrusted with the job.

W. H. Cameron

INTERESTING ITEMS

A new series of "First Aid Reminders" has been released to members. This new series of seven leaflets was designed for seven weekly or monthly distributions. Each leaflet covers one (or two at the most) important subjects on first aid application and presented in such a clear understandable way that the information will *stick* until needed.

* * *

Three representatives of your staff met recently in Kansas City with the 1937 Congress Sponsoring Committee. Work has already been started on a nine-month intensive safety campaign within the several states immediately west of the Mississippi. This pre-Congress campaign is to be a fundamental and permanent safety job leading up to and including a great Congress in Kansas City early in October, 1937.

* * *

Nearly 200 leading executives of the Automobile Industry were guests of the Automobile Manufacturers Association at a luncheon in New York November 12 at which Paul Hoffman, Chairman of the Association's Safety Traffic Committee, reported on the progress to date in the safety campaign financed by the Industry. Representatives of the National Safety Council and other cooperating bodies told of their parts in the campaign.

* * *

The American Association of Motor Vehicle Administrators held its fourth and best annual meeting at Hot Springs, with 35 states officially represented. The subjects discussed included state organization for safety; adoption of drivers' license and other uniform traffic laws; driver testing; the regulation of house trailers for safety; and the problem of headlighting, complicated by increasing speeds of night driving. John Q. Rhodes, Jr., Motor Vehicle Commissioner of Virginia, was elected president to succeed L. E. Wallace of Iowa.

* * *

The demand for the Council's new pamphlet "Saving Lives Through a Drivers' License Law," mentioned on this page last month, has been so great as to require immediate reprinting.

Safety



WORK HAS PAID HANDSOMELY

By E. G. SEUBERT
President, Standard Oil Company (Indiana)

IF ALL the plaques, certificates and trophies which the Standard Oil Company has won for its achievements in the cause of safety were gathered in one place we would probably have to provide a special room to hold them. We are as proud of those evidences of success in preventing human suffering as we are of our long record of business success.

We have had organized accident prevention effort for nearly twenty years in our refineries and nearly ten years in our sales department. Staff men devote their entire time to study and teaching of the subject and committees of employees are actively preaching care and encouraging safety consciousness. In those years I think we can say that we have developed in our organization an attitude of mind that it is wrong and unsocial to fail to exercise maximum care against accidents.

In one year we received 1500 suggestions from employees. More than 90 per cent of these were found to be practical and were adopted. And one of the finest things is that employees are interested simply for the sake of the welfare of all. We offer no prizes, tokens, or awards to individuals. The awards we win in contests with other companies belong to the group, not to individuals.

Our safety work has paid handsomely. As compared with the situation before we began preventive work, accidents in the manufacturing department have decreased by 96 per cent. There was a decrease of 80 per cent in the first five years.

Costs of accidents have not decreased as much, because we have to maintain hospitals, medical and nursing staffs, and our prevention agencies whether we have many accidents or only a few. But the decrease, nevertheless is considerable —48 per cent.

In the Sales Department accidents have decreased 80 per cent, and the decrease in cost is 48 per cent. Whether the cost had decreased or not, the work would have been worth while for the saving of employees from injury or death. Many men are alive and sound today who would be dead or maimed if there had been no organized prevention work.

Employees appreciate that fact. I truly believe that our safety work is one of the main factors that has brought management and employees close together in our company in understanding and mutual respect.

We have found it most helpful to be able to exchange knowledge and experience with other groups through the facilities of the National Safety Council and to utilize the advisory and cooperative services the Council maintains.

It pays to pay for safety because safety pays.



Whiting Refinery, Standard Oil Company (Indiana)



design for LIVING Safely

COL. WILLARD T. CHEVALIER
Vice-president, McGraw-Hill Publishing Company

FROM the beginning, the major occupation of man has been to draft a design for living. At first it was a design merely for survival. Then he applied himself to living more conveniently. After a time, his increasing progress invited him to design for living comfortably. Each of these steps involved an increasing command over his environment, and increasing use of the powers that he could harness for his benefit.

But suddenly man became aware that in his zeal to conquer his world he had loosed a host of threatening forces. For the menace of his natural enemies, he had substituted that of his servant agencies.

Out of his very efforts to live more conveniently and comfortably, man must add to his specifications a new requirement: he must design for *living safely*.

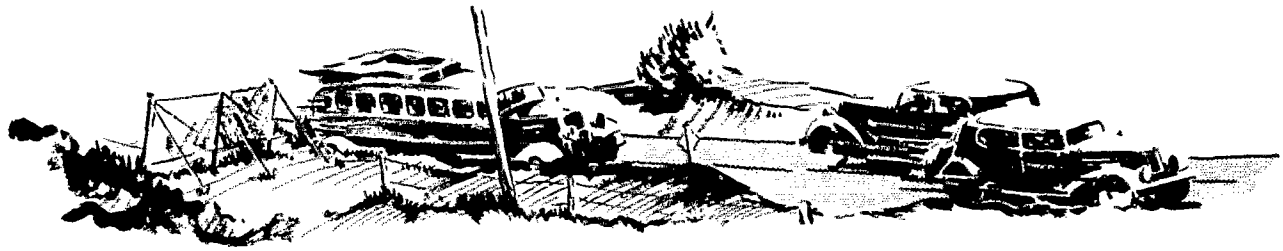
It has often been said that this is an engineer-made world. That is but partly true. The engineer may have made the environment in which we must live, but he did not make the people, nor the statutes the people have set up to govern their own behavior. We are told that the progress of technical science has outstripped that of economics, politics, and sociology, and that the forces it has generated are mastering man rather than serving him. By some it actually is proposed that we should curb our technical progress until we become smart enough to use new devices more effectively.

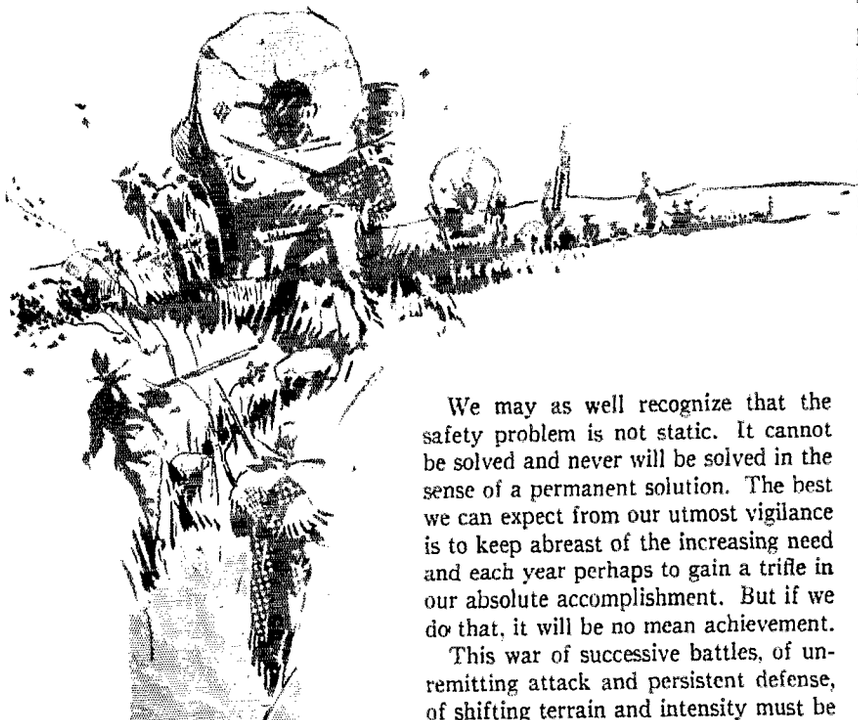
In such a doctrine I cannot concur. I have the utmost sympathy for those who through mental or physical deficiency cannot keep step with the modern pace, but I am mindful that the law of survival still operates, and must continue to operate if man is to be worthy of the world his genius creates. Let us safeguard to the maximum of our skill those who must lag behind, let us show scrupulous respect for their rights as members of the community, let us even show a reasonable measure of consideration and deference for their frailities; but let us not hold back, even in the slightest degree, the normal march of the majority to more productive and fuller standards of living.

If, then, we are going to achieve the most salutary balance between technical progress, statutory control and individual behavior, it becomes necessary for the engineer, the law-maker and the individual to counsel together so that each may know what the other can do and what is in turn expected of him. That, I take it, is a major function of the National Safety Council, and I congratulate you on the progress you have made during the two decades or more of your effort.

It is fair, I believe, to say that the standards of safety established by American industry and throughout American life generally, are incalculably higher today than they could have been without your work. But while we take satisfaction in this performance, it is up to us to face the fact that we are engaged not in a battle, but in a war. The forces with which we must reckon are many. The consistent increase in the scale of power use; the increasing speed and congestion of community life; the indifference of the individual to the rights and claims of others; the innate faith of each in his own immunity from accident; ignorance of what can be done and what has been done to realize greater safety—these are but a few of them.

An abstract of Col. Chevalier's address at the Banquet of the Twenty-fifth National Safety Congress.







Colonel Chevalier

We may as well recognize that the safety problem is not static. It cannot be solved and never will be solved in the sense of a permanent solution. The best we can expect from our utmost vigilance is to keep abreast of the increasing need and each year perhaps to gain a trifle in our absolute accomplishment. But if we do that, it will be no mean achievement.

This war of successive battles, of unremitting attack and persistent defense, of shifting terrain and intensity must be waged on three fronts. First comes the environment, the plan for living. Here is the domain of the technician, the architect, and the engineer. They, first of all, must provide structures and facilities that offer the maximum, reasonable safeguards for the average individual. Safer homes, safer streets, safer business and factory buildings, safer machinery, safer railroads, safer highways, a safer setting in every respect of the stage on which the individual must enact the role of his life.

I place this requirement first because so large a share of our modern hazards are bred by our environment. If that be defective, we can hope for but limited improvement through regulation by statute or individual conduct. Safety is measured by the product of behavior into environment. High standards of behavior multiplied by low standards of environment never can result in a high standard of safety *without intolerable loss in the efficiency of living and in the standard of human achievement.*

It is perfectly possible, of course, to realize a fair degree of safety in a defective environment by the exercise of individual and community caution; but such an achievement does not constitute a creditable acomplishment in behalf of safety. It means simply that we have slowed down the progress of the many, we have throttled the engine of human progress, we have sacrificed a gain in the general welfare in order to realize a higher coefficient of individual safety.

So I repeat that if we are to achieve the highest measure of safety without excessive sacrifice of other values, we must first of all design for safety in the structure or facility itself. That must be the foundation of all economical effort in behalf of safety.

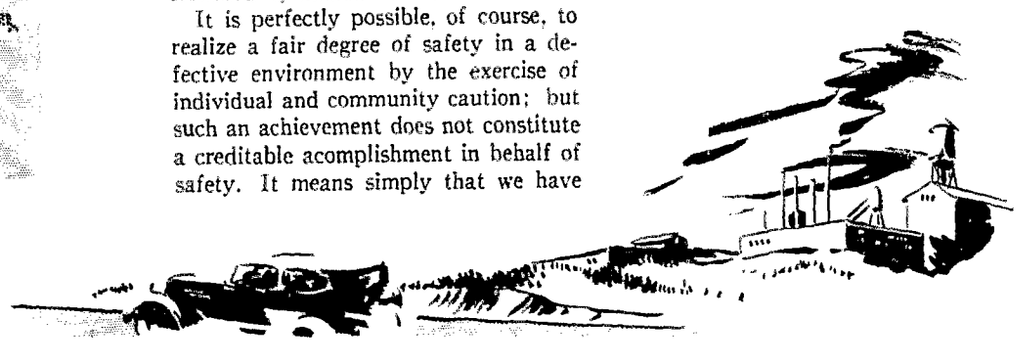
That is most clearly indicated perhaps in the safety efforts of industry, where the influence of economic competition makes it vitally necessary that safety be achieved without undue sacrifice of productive efficiency.

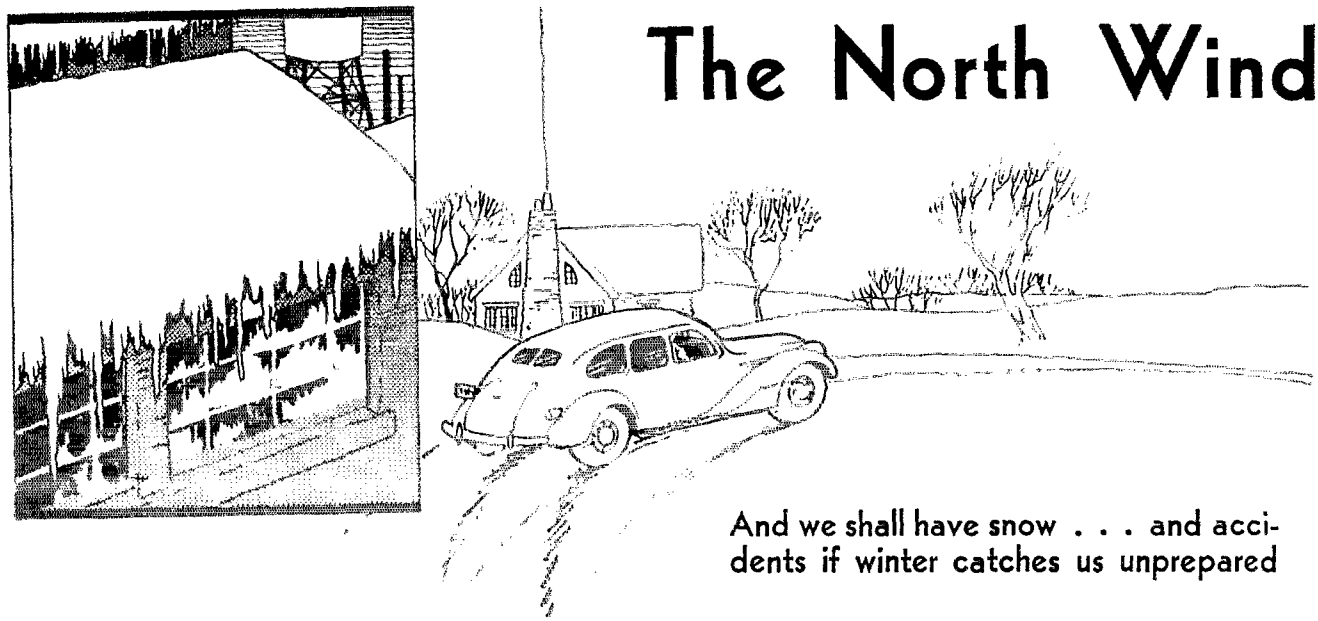
I would not appear to subordinate the vital necessity for constant improvement in the standards of human behavior. It is impossible to over-emphasize that necessity. Behavior falls into two classes which constitute the other two fronts on which the war for safety must be waged. The first is that type of behavior which the community can regulate by statute and enforcement; the other is that which the individual must control by personal precaution.

In both these phases of behavior a vast job cries out for the doing. Legislatures and public officials must be kept abreast of what has been learned concerning those areas in which they can act effectively; individuals, both children and adults, must be schooled incessantly in the behavior necessary to conserve their own safety and that of others.

But the very magnitude of this task insures that it will not be overlooked. Everyone can be made conscious in some degree of his personal relation to the safety problem. The effects of his own and his neighbors' acts are so evident and, in the individual case, effect follows so closely on the heels of cause that the average person, once reached, will react readily to safety appeals based on his behavior. To make everyone thus conscious, to inculcate habits of second-

(Please turn to page 54)





The North Wind

And we shall have snow . . . and accidents if winter catches us unprepared

WHEN swirling, drifting snow obliterates the landscape, and the cold north wind shrieks and howls, pummels the window panes, and snatches viciously at anyone who ventures out—then more than ever it is necessary to be alert to the danger of accidents.

True, winter offers much that is picturesque and appealing—the soft splendor of the clean, glistening, new fallen snow, and the exhilarating tingle that comes with exercise in the bracing air. Yet this season, bearing in its trail the Four Horsemen of ice, snow, cold and darkness, cunningly lays a string of traps for the unwary.

With ice to make the footing treacherous, with snow to muffle the sounds of danger and to conceal common hazards, with cold to numb the senses and warp machinery and equipment, and with early darkness to render vision more difficult, winter is well equipped to make life interesting for the safety man—or for any man.

One of industry's great common hazards—the slip, trip and fall type of accident—is accentuated by icy walks and stairs. The sight of a man flailing the air like a Dutch windmill, in an attempt to keep his balance, may be a side-splitting scene in the movies, but in industry it may be the forerunner of a lost-time accident—perhaps a compensation case. Falls on ice, of course, are as likely to occur in public places as in the plant grounds.

Fortunately, the remedy is simple—a sprinkling of sand, ashes, coarse salt, or calcium chloride. The householder can apply it just as easily on the walks and stairs about his home as the handy man can about the plant. If possible, it is wise to prevent ice from accumulating in the first place by draining pools of water during a thaw, by levelling off sunken places in the ground, or by repairing depressed or broken sections of sidewalk or driveway.

Contrary to the assumption of some persons, handrails on outdoor stairways are not a concession to the aged and the infirm. Anyone will find them useful in an emergency, and thus they should be examined and made rigid. If ladders must be used outdoors, where the ground may be frozen or slippery, they should have spiked feet.

Mats inside the door, where snow-covered shoes may be scraped, will keep slippery pools from forming within buildings.

A hazard more serious than is generally realized is that of falling icicles. The icy spears sometimes grow to prodigious proportions, and, broken off by their own weight, might inflict serious and even fatal injuries on passersby.

Generally these jagged crystal masses accumulate because self-cleaning eaves troughs have not yet been devised, or because no troughs have been provided on a building at all. Once the icicles have formed, however, it is advisable to remove them before they become an active menace. The most direct and practical method is to dislodge them with a long pole. Though the process is simple, the man selected for it obviously should not be the type who would saw off a limb on which he happened to be sitting.

Like many beautiful things, snow may be very treacherous. Because it may conceal patches of ice or obstructions on the ground, it should be removed in places where persons may walk or drive.

On Christmas cards a snow-covered roof looks picturesque, but actually roofs have buckled and collapsed under the heavy weight of snow. On large, flat roofs particularly, great quantities of snow should not be permitted to accumulate.

The first snowfall is a signal for better personal hygiene, for snow may mean wet feet, with a cold or pneumonia in the background.

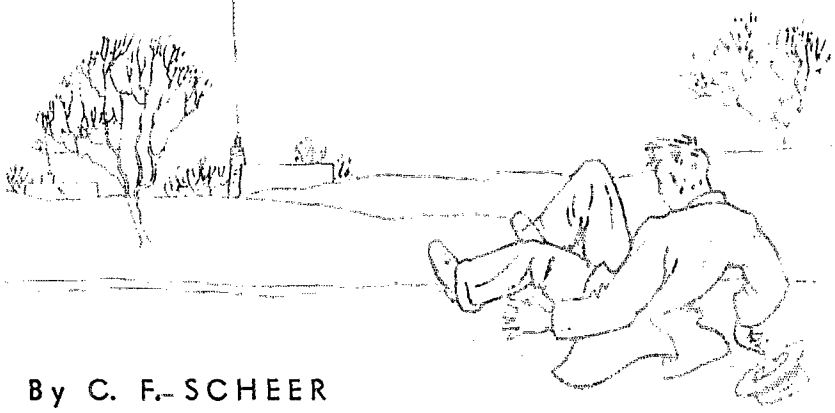
Shoveling snow is vigorous exercise, and those doing it should be careful to avoid strain. No one should attempt it if he has a weak heart or high blood-pressure.

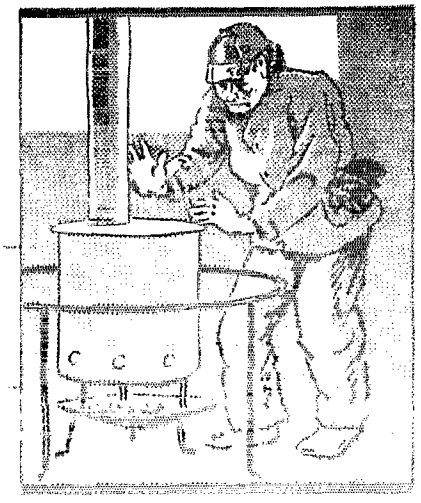
When the mercury shrivels up in the ball of the thermometer, and the north wind penetrates like a dagger, hazards multiply bewilderingly.

Perhaps the most common danger is fire. For centuries man has been building fires, yet he has not learned to do it safely. Some of the most obvious dang-



Doth Blow



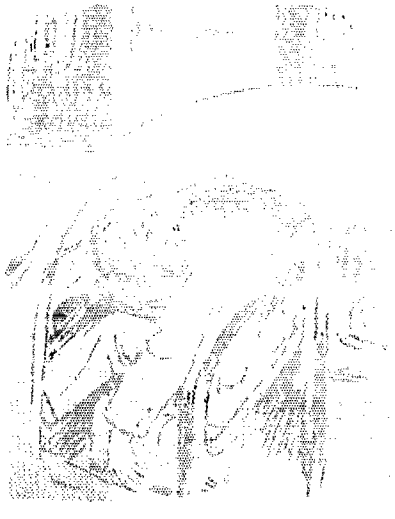


By C. F. SCHEER

ers, such as the suicidal practice of starting a fire with gasoline or kerosene, are still courted—but not often by the same person. Fires have also been started in homes and industrial and commercial buildings by forcing heating plants in excessively cold weather. An improperly insulated chimney or obstructions or accumulations of soot will likewise pave the way for an undesired fire.

Ventilation should always be assured, especially when an oil or kerosene stove or a salamander is burning in a room, for carbon monoxide, the product of incomplete combustion, quickly accumulates in lethal quantities.

The same gas is expelled from the exhaust pipe of an automobile—which makes it imperative that the doors of a garage be kept open when the car is being started and "warmed up." Carbon monoxide is so insidious that by the time its victim is aware of its influence, he is powerless to act. It is a good idea, when driving a car, to keep at least one window open, so that fresh air may displace any carbon monoxide that seeps in through the floor boards.



The story of the man who looked for the gas leak with a lighted candle is no more ludicrous than that of the man who burned the house down thawing out frozen water pipes with a blow torch. The practical way is to wrap the piping in rags and thaw it gradually with warm water. This will not only avoid the danger of fire, but will also guard against the bursting of the pipes by a too sudden change in temperature.

The effect of intense cold has been graphically demonstrated by dipping a length of pliable rubber hose in liquid air. When the frozen hose is dropped gently to the ground, it shatters into tiny fragments. Metal likewise becomes brittle with cold. Thus it is wise not to impose a load suddenly on chains, slings or rods—nor to load them too heavily.

Also it is prudent to ease an automobile or truck gently over extremely rough pavement and to avoid sudden or abrupt starts or stops.

Because of the added danger brought on by cold weather, fire-fighting equipment should be checked with particular care to make sure it will be in usable condition in an emergency. Soda acid fire extinguishers, because they contain water, will be useless if exposed to freezing temperatures. Extinguishers of this type should be kept in warm places. If they must be kept outside, they should be housed in insulated containers (see page 28). However, it is sometimes practical to replace them with extinguishers of a non-freezing type.

Early darkness is the fourth hazardous element trailing in the wake of winter, causing accidents not only on the streets but also in and about the industrial plant.

To make the best use of as much natural daylight as is available, the industrial plant should see that its windows are kept clean during the winter months. In addition, electric lamps and reflectors should be cleaned for maximum efficiency.

The deficiency of daylight imposes the need for alertness, particularly on drivers of automobiles and trucks. These should remember that pedestrians, their senses numbed by the cold, might hasten into an intersection without looking carefully for traffic. Also, dark clothing is worn in winter, and this further decreases visibility.

Regarding the care of the automobile itself, many items call for special attention in winter. Some type of antifreeze solution should be used in the radiator, and it should be checked frequently to maintain it at the proper strength or level. Failure to perform this simple but necessary duty may transform the front end of the car into an unruly geyser, throwing steam and spray against the windshield at some critical moment when clear vision is needed. When the radiator is being checked—if it contains some flammable solution such as alcohol—the examination should not be conducted by the light of a match, nor with cigarettes nor cigars in the immediate vicinity.

Windshield wipers should be inspected. Likewise, it should be ascertained that lights are operating efficiently.

(Please turn to page 68)

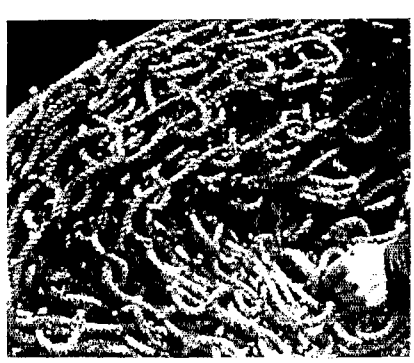


Reaching outward from each side of the Golden Gate, this huge safety net is being placed under the entire length of the Golden Gate Bridge to protect workers on the unfinished structure. This view was taken from the San Francisco side looking toward the Marin side.

THE use of a safety net is not new. But its application on the enormous scale seen at the Golden Gate Bridge across San Francisco Bay is unusual.

This colossal span stretches for nearly a mile and a quarter—6,400 feet to be exact—rising 250 feet above the surface of the Bay. Its width is 90 feet. This may give some idea of the work involved in running out a safety net to protect every angle of the operations. The net must not only be as long as the span, but it must also be wider, projecting on either side to afford a margin of protection to the steel workers, painters and pavers who move about on the unfinished structure.

To provide a projection of 15 feet beyond either edge of the bridge deck the net has been made 120 feet 6 inches wide. It is constructed of ⅜ inch Manila rope fashioned to form a six by six inch mesh. Thus it is light enough to permit its use over such a wide expanse, strong enough to catch and hold any falling worker, and porous enough to permit white hot rivets to pass harmlessly through and into the water below. It is flame-proof and water-proof and is designed so that repairs can be made readily. The mesh is held firmly in place by a specially designed and patented L and S clamp of galvanized iron.



Iron clamps hold the net firmly together providing a 6 by 6 inch mesh.

There will be a net under the bridge from the time the construction of the deck begins until the span is completed. "Traveling nets" 121 feet wide and 126 feet long, one starting from each land end, protect the workers while the permanent net is being erected. Each traveling section, built on a metal frame, is attached by cables to wheels which ride on the upper member of the deck truss. Thus the nets will be moved along as the deck truss is constructed out from land. The outer edge of the traveling net will always project 12 feet ahead of the deck truss, thus protecting deck workers as well as those erecting the permanent net.

A box attached to the rear end of each traveling net contains sections of the permanent net, which are paid out and fastened in place as the traveling net moves along. Thus a continuous section of safety net will move from each land end toward the middle of the span.

The permanent net, which will cost $100,000 when completed, is built in sections 52 feet long. The borders of each section are provided with lash lines, so that units may easily be combined or fastened to convenient points on the cable.

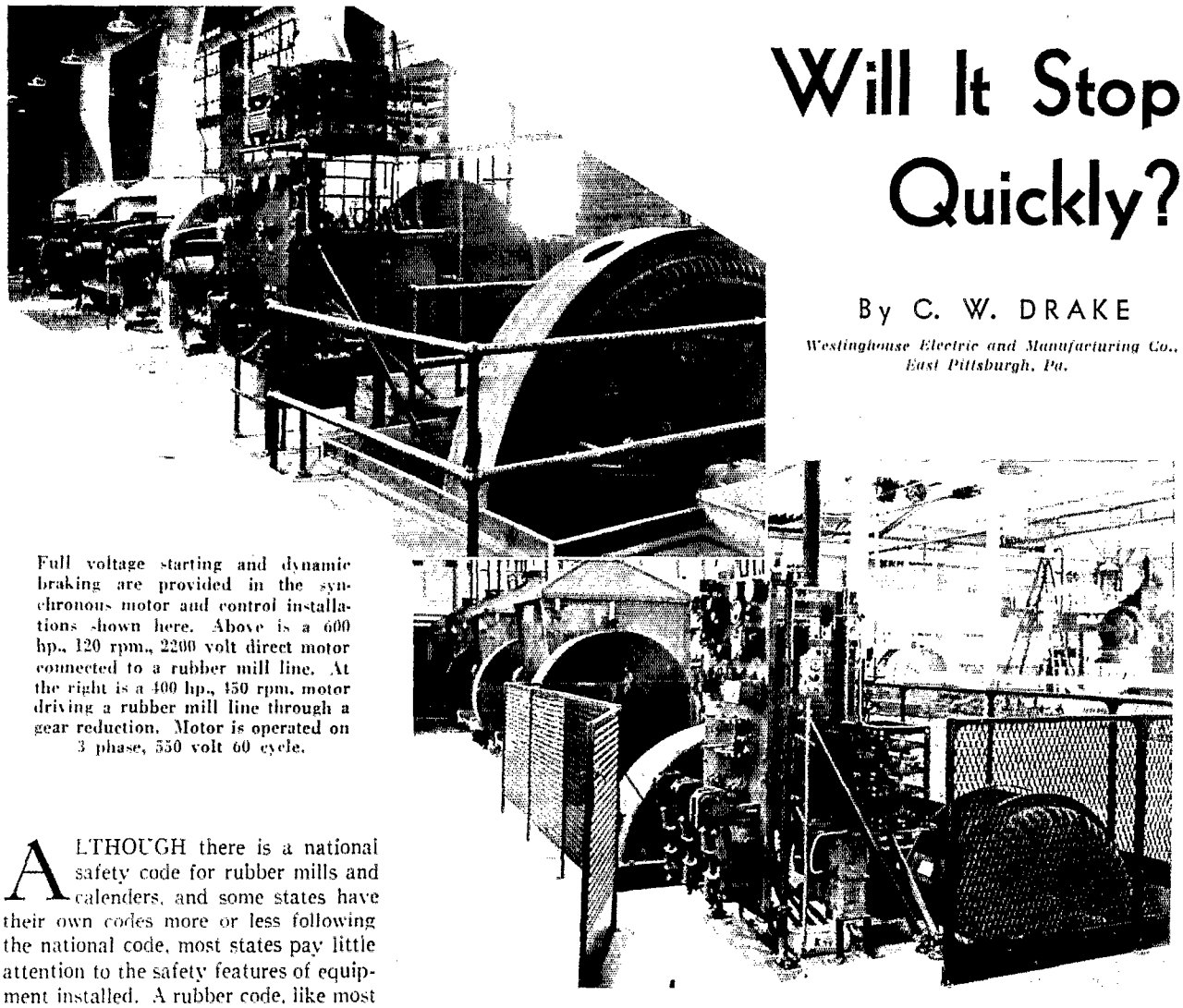
Will the net sustain the weight of a falling man? Tests were made to determine this before the net was ordered. A 400-pound load, consisting of four 100-pound bags of sand tied together, was dropped 53 feet onto a 20 by 30 foot section of the net. The stout bags of sand burst with the dead weight of their contents, but there was no appreciable effect on the net.

The use of the net was brought about through the cooperation of T. A. Reardon and F. C. McDonald, of the California Industrial Accident Commission, and Hugo Newhouse, chairman of the Bridge Safety Committee.

Will It Stop Quickly?

By C. W. DRAKE

Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.



Full voltage starting and dynamic braking are provided in the synchronous motor and control installations shown here. Above is a 600 hp., 120 rpm., 2200 volt direct motor connected to a rubber mill line. At the right is a 400 hp., 150 rpm. motor driving a rubber mill line through a gear reduction. Motor is operated on 3 phase, 550 volt 60 cycle.

ALTHOUGH there is a national safety code for rubber mills and calenders, and some states have their own codes more or less following the national code, most states pay little attention to the safety features of equipment installed. A rubber code, like most laws, is unnecessary for the company or the individual who appreciates the operating conditions and has the proper regard for the other fellow.

From inquiries and orders received by our company for motors and control equipment the attitude of many companies toward safety stopping is evident. Numerous inquiries regarding induction motors and synchronous motors for mill line drives specify standard control equipment with no provision for safety stopping. A few inquiries have also been received for induction motors to drive calenders where constant speed or small speed variation was satisfactory but with no provision for braking.

In all such cases we explain to the purchaser that the equipment specified includes no safety features, and even if his state does not insist on them, we strongly recommend compliance with safety code provisions. From the humanitarian standpoint alone such action is justifiable, and it is poor economy to install equipment which will not meet code requirements. To change it over later may cost many times as much as it would when initially installed.

Along opposite lines we find that regardless of where it is installed, the leading rubber companies specify that all equipment meet code requirements or better. During the last few years we have noticed considerable activity toward modernization of old drives to improve stopping conditions, and in some cases the travel on calenders has been reduced as much as 50 per cent at a very moderate expense. Much of this work has been done in states having little or no code enforcement.

Safety stopping may be obtained by either mechanical or electrical braking but the electrical method has proved cheaper in first cost and is more uniform and reliable in operation, especially in the larger capacities. The absence of any mechanical friction or wear in the electrical system gives more uniform results with a minimum of attention and maintenance.

Any braking system should be so designed and constructed that as far as possible it meets the following requirements:

1. Stop the machine as quickly as possible without undue shock or stress on any part of the equipment.
2. Withstand without injury to either the machine or braking equipment as frequent operation as may be desired.
3. Not depend on closing of electrical circuits, operation of magnets, etc.
4. Design should be such that the breaking of any wire or circuit essential to safety stopping should immediately stop the equipment upon occurrence of such failure.

Dynamic braking meets the above requirements very satisfactorily. Most of the stored energy of the system is in the rotor of the motor, and with the braking action developed on the rotor through the air gap the system is brought to a

quick and smooth stop with no greater and often less stress on the mill gears than when starting. In view of the above conditions safety stopping may be applied as frequently as desired without fear of injury to the motor, gears or driven machines.

A general law of safety is that the failure of any protective device should become immediately evident. This is a feature rather difficult to obtain with some mechanical equipment such as fire hose, pumps, and similar equipment, and regular tests of such items are most essential. With dynamic braking, however, it is comparatively simple to design the circuits so that the breaking of a wire, the opening of a contact, or other failure immediately opens the control circuit and stops the motor.

On synchronous motor controllers up to 550 volts contactors having an upper and lower contact offer a very satisfactory solution of the dynamic braking problem. With the opening of the control circuit to the upper magnet the contact spring pressure aided by gravity gives a quick closing of the lower contacts, although a lower magnet coil is also provided largely to prevent bouncing and to maintain a better contact. Oil immersed contactors of similar design are also extensively used for 2,200 volt motors, but oil circuit breakers are required in certain cases either for higher voltage or higher interrupting capacity.

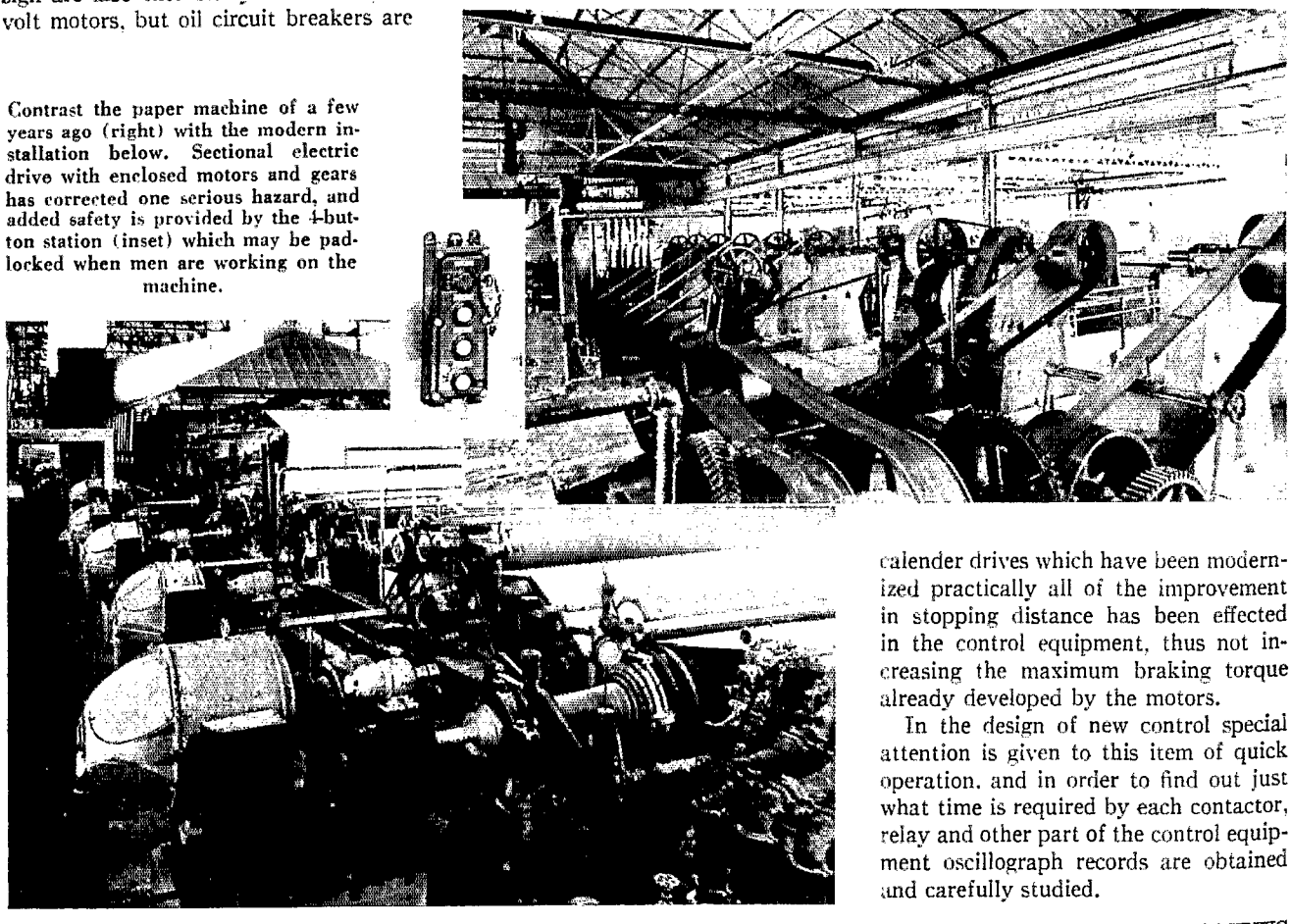
The circuit breaker arrangement consists of two 600 ampere 7,500 volt breakers and is a new development in dynamic braking of synchronous motors. The two breakers are mechanically connected to operate from one solenoid mechanism as a three-pole double-throw breaker. A heavy coil spring normally holds the dynamic breaker closed. The energizing of the operating solenoid closes the running breaker, at the same time opening the dynamic braking contacts against the pull of the spring.

The safety switches operate in the no-voltage circuit of the breaker so that failure of the control power for any reason immediately stops the motor. Since circuit breakers are ordinarily provided with a shunt strip mechanism energized from the direct current circuit, this device is also used in addition to the low voltage trip, thus making in effect a dual safety protection. Tests show that the total time from the opening of the safety switch contacts to the closing of the dynamic breaker is 0.12 seconds, which is much faster than the usual breaker operation. Such control characteristics in suitably designed synchronous motors provide a maximum of safety and reliability.

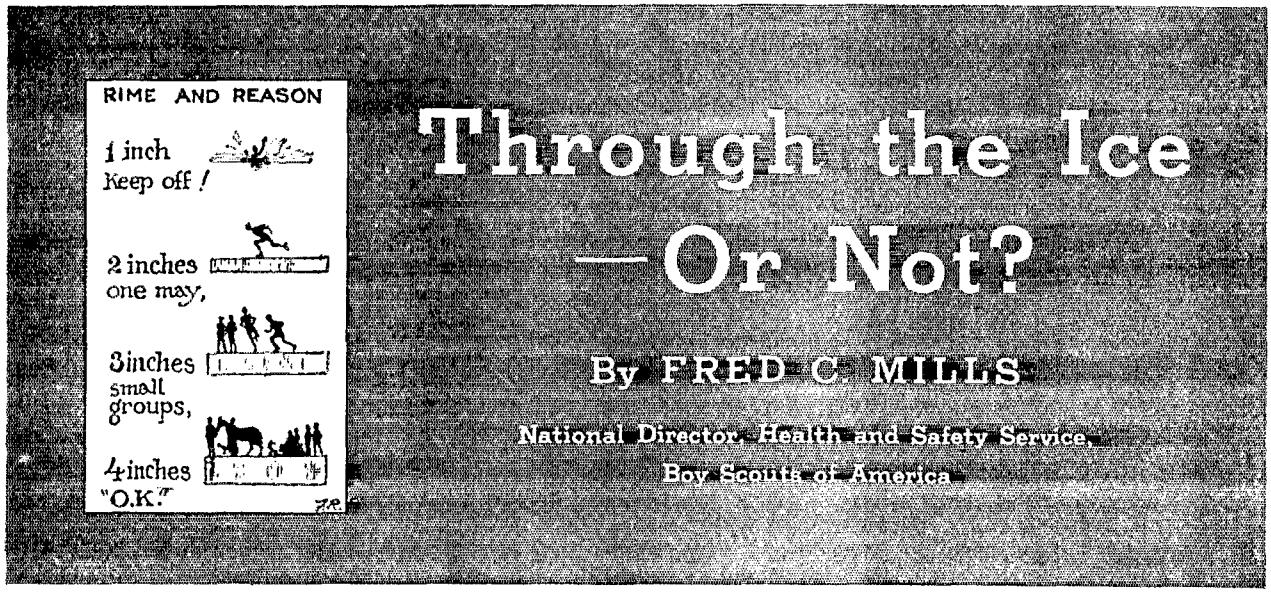
The stopping distance or travel of any motor-driven machine is made up of two portions; first, the travel obtained from the opening of the safety switch to the interruption of the motor circuit, and secondly, the travel obtained while the motor is decelerating. Until the motor circuit is interrupted the motor is operating at normal speed, and the travel during a given time is approximately twice as great as that obtained during the same time when the motor is slowing down. Consequently any saving in time that may be effected in connection with the control equipment is twice as effective as similar reduction in the time of the motor braking.

Consider for instance a 22 inch diameter mill roll so geared that with a 600 r.p.m. motor a roll travel of 15 inches corresponds to 7.5 revolutions of the motor. With the motor operating at full speed, that is, 10 revolutions per second, if the time from the opening of the safety switch to the opening of the motor current is .2 seconds the motor will have made two revolutions or nearly 27 per cent of the allowable travel before it even starts to slow down. In existing calender drives which have been modernized practically all of the improvement in stopping distance has been effected in the control equipment, thus not increasing the maximum braking torque already developed by the motors.

In the design of new control special attention is given to this item of quick operation, and in order to find out just what time is required by each contactor, relay and other part of the control equipment oscillograph records are obtained and carefully studied.

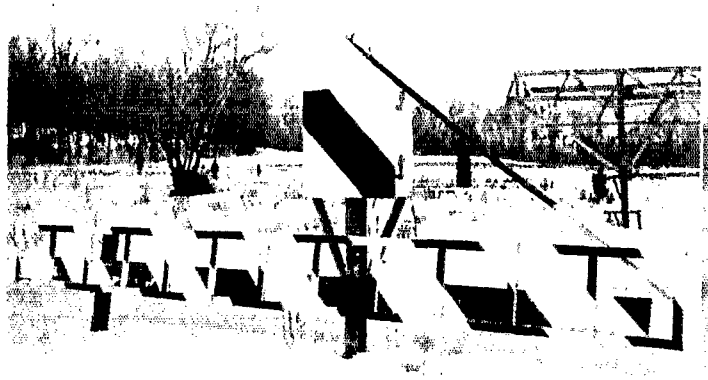


Contrast the paper machine of a few years ago (right) with the modern installation below. Sectional electric drive with enclosed motors and gears has corrected one serious hazard, and added safety is provided by the 4-button station (inset) which may be padlocked when men are working on the machine.



Through the Ice —Or Not?

By FRED C. MILLS
National Director, Health and Safety Service
Boy Scouts of America





Where there are many skaters and regular supervision, rescue equipment shown in the illustration at the left is desirable. A pole, ladder and lifebuoy are provided. The broad bands of red and white are conspicuous against either bare earth or snow. Where such apparatus is not available it is desirable to keep a plank, pole or rope in an accessible place.

ABOUT nine o'clock one frigid February morning in 1932 two women and four men skated out over the icy surface of Pine Pond, at the Gypsy Trail Club, Carmel, New York. Two hundred yards off shore a hole eight feet square was cut through the lake's frozen surface. One at a time two of the men, with ropes secured to their bodies, skated over the jagged edge and disappeared below the water's steaming surface, presently to reappear and pull themselves out on the solid ice shelf.

This was the beginning of a series of experiments made by representatives of the Girl Scouts, Inc., the Boy Scouts of America, the American Red Cross and the Skate Sailing Association of America for the purpose of securing first hand information on ice accident prevention and rescue, which might help to dispel the musty mist of paralyzing fear which had resulted from lack of accurate information. The participants in the experiments had been given thorough physical examinations several days before the work started and were checked upon carefully on the previous day and again each morning before the beginning of the experiments. Immediately after each man had completed his work and left the water, his pulse count, blood pressure and temperature were all carefully recorded by the doctor who was in constant attendance.

The names of those who made these experiments are almost forgotten, but the history of this type of accident indicates that their efforts have been worth while, and that the information given out has been used with success many times since in making ice rescues.

Where adequate precautions are taken, it is possible practically to eliminate submersion accidents. The thickness of ice necessary to support groups of people for sports is well established. Three inches is considered as a minimum for even small groups, but four inches of clear ice is quite satisfactory.

Thin spots can almost invariably be found on any large ice surface. They are caused by the slow freezing of the water at the farthest point from shore; agitation of the surface due to bubbles rising from springs on the bottom; moving currents of water, particularly where the inlet enters a lake, or in the case of rivers, at the place where the current runs with considerable speed.

Ice thickness can be measured by cutting a hole through its surface and using a piece of wire with the end bent at right angles, or a stick with a peg placed at right angles at one end.

It is suggested that warning signs or bushes be placed in holes found in the ice to attract attention to the danger. At night red lanterns may be placed on

the ice near the hole. If possible, the dangerous point should be fenced off.

The following effective equipment for rescue work is recommended: a ladder 12 feet long, a plank of the same length, a long pole with a hook on one end and a loop in the other, and a 15-inch cork-filled life ring with 75 feet of quarter-inch manila rope. All of this equipment should be painted with alternate red and white stripes to enable it to be seen either against a white background of snow or a brown background of dead foliage. The ring buoy should be placed with rope coiled in a box just large enough to hold it with a hook or hasp fastener. This box should be painted white with wide red stripes running diagonally across the door. The equipment can be mounted on trees or on posts set in the ground.

In brief paragraphs there follow some of the notes and suggestions which resulted from the careful consideration of the experiments by those who worked in or observed them:

Notes on Experiments

The shock of submersion in the ice water was not as great as had been expected, due probably to the fact that the experimenters were well clothed in wool under and outer garments and had exercised for some minutes before submersion.

The picture on looking up from under water through snow ice was white and cloudy: on looking through hole in ice on dark day, yellow-green; when two feet back from hole, under ice, could not tell where hole was located.

No difficulty was experienced in climbing out on strong ice that was somewhat melted and offered a rough surface, when feet were kicked up and down to keep them afloat and to aid in propelling body over the ice edge. Glassy, hard ice offers no gripping surface; awls, spikes or knife point are important to dig in with.

After breaking through one-inch ice, it was found possible to support the body by placing one hand on unbroken ice, although it was not sufficiently strong to carry the weight of the body, indicating that relatively thin unbroken ice will support a person if he does not attempt to climb out.

After breaking through thin ice found it was necessary to break back a considerable distance from point of entry before ice was strong enough to support weight of body, to pull out.

In all group rescues, it is necessary that participants have something on their feet to keep them from from slipping, such as skates or "ice creepers," or that they brace themselves against some object imbedded in the ice. Persons who can get no foothold are practically unable to pull a person out of the water.

If a person breaking through ice is caught in ice formed over running water and carried underneath, he has little chance, unless fortunate enough to find a hole.

There is no sound basis for the belief that ice forming on a body of water that maintains a constant level has an air space underneath. Seven-eighths of floating ice is always under water. A cubic foot of ice weighs 56 pounds; a cubic foot of water 62.35 pounds.

Houdini is reported to have claimed that while under the ice he remained alive by keeping his head in the air space. Belief that there is such a space evidently resulted from the fact that ice forming over streams at high water, (which afterward recedes) is left, forming a bridge above the water's surface. The same thing may happen in tidewater. A thaw, however, soon melts the ice at its edges and permits it to settle.

Suggestions

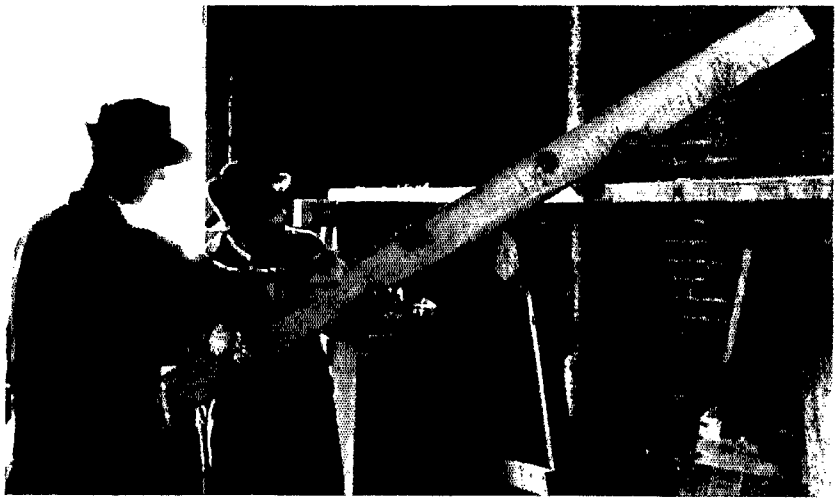
If you break through the ice, grasp the edge and count ten while you survey the situation. Then proceed with calm precision. Too violent action may hinder the rescue.

If the ice proves too thin to climb out on, the man in the water should attempt to support his body as much as possible with one hand placed lightly on the ice and break his way forward with the other hand toward shore. Recently two boys and a man saved themselves when

(Please turn to page 76)



Three methods of getting a person out of the water with the minimum of risk to the rescuer. Top: Using a ladder. Middle: Using a pole with a loop of rope on the end. Bottom: Using a cork-filled lifebuoy.



A knotty plank will make an unsafe scaffold.

Let's Look at the Scaffolds

By WELTON A. SNOW
Safety Director, Associated General Contractors of America, Inc.

Careful inspection of the scaffold, its materials and construction will avoid many a later regret

WEBSTER says that a scaffold is "an elevated platform for supporting workmen and materials in building." He also gives another definition, "a stage or platform usually elevated for the execution of a criminal." Substitute "workmen" for "criminal" and see what we have. Isn't that an appropriate definition in far too many cases?

Let's "look at the record," meager as it is. It is difficult to obtain complete and detailed statistics but I have some that will be of interest. For example, in the state of New York over a period of three months this year, the construction industry was charged with 72 deaths. Falls from ladders or scaffolds accounted for 14, or about 20 per cent. Falls from "other elevations," omitting ladders and scaffolds caused 26 deaths, or about 36 per cent. In manufacturing plants falls from ladders and scaffolds accounted for only one death and other falls for only four deaths.

In the State of Pennsylvania during July 1936, out of a total of 989 accidents charged to construction and contracting, 203 were due to falls of persons, or close to 20 per cent. How many were due to scaffolds we do not know.

It would appear then that scaffolds and ladders are contributing in an appreciable proportion to the needless and seemingly endless string of fatalities and disabling injuries occurring in the construction industry.

Let us consider a few common types of scaffolds.

Pole Scaffolds

This pole scaffold is the most common type. It is used generally up to a five-story height. Its weight is supported by two rows of poles or uprights, or only partially so supported when "putlogs" are used in connection with brick work. The working platform is moved upward as the structure increases in height. This is done by simply extending pole heights and the scaffold structure, shifting the platform planks to the new level of work.

Important points in the design, construction and use of this type of built-up scaffold are:

1. The uprights or poles should rest on solid foundations so that there is no danger of settling.

2. Uprights should be plumb and fixed at the bottom so that they cannot shift.

3. Uprights for scaffolds not exceeding 50 feet in height should be 4 x 4 with squared ends and with members resting directly on each other. Cleats not less than four feet long should be well nailed on two adjacent sides of uprights at the joints. Joints should be staggered every other upright. In cases where the scaffold is to be used by painters and no appreciable dead load is imposed, uprights may be 3 x 4, but it is recommended that 2 x 4 single should not be used as it is too light a construction.

4. Ledgers not less than 2 x 6 should be well nailed to the uprights, preferably on the inside. It is recommended that 5 ten penny cut nails be used at each nailing point. Some authorities suggest a 1 x 6 ledger as a minimum, but we prefer the factor of safety afforded by the 2 x 6.

5. Crossbars or bearers to carry the platform should not be less than 2 x 8 or 4 x 4 and five cut nails should be used at nailing points. These members should rest on top of the ledgers.

In the case of a single-pole brick mason's scaffold, where putlogs are used, extreme care should be taken to place putlogs properly. They should not be nailed to posts or ledgers but should rest on the ledger next to the pole except, of course, the one that should always be used in mid-span. Putlogs oblong in section should always bear on the wider face, otherwise they might tilt and cause a severe shaking of platform planks.

6. Longitudinal bracing as recommended in "standard construction methods" for general use provides a brace of 1 x 6 at 45° from every other post in one direction and at in between posts a similar brace extending in the opposite direction. Braces should run from post to post with no splices between and should be nailed to each post with at least 4 ten penny cut nails, being placed on the outer face of uprights. Longitudinal bracing on inside poles may be eliminated at work levels if necessary, but should be installed below the work level as scaffold height is increased.

7. Transverse bracing should be used between each set of poles, installed in one direc-

Abstract of a paper read at the Ninth Annual Maine Safety Conference.

tion so as not to interfere any more than is necessary with passage of workmen. 1 x 6 boards should be used with 4 or 5 ten penny cut nails. Where only one set of poles is used as in the case of a mason's scaffold where putlogs and spring-stay braces are installed, no transverse bracing is needed.

If window braces are used, be sure that window frame is securely anchored in place. It is better to let the brace pass through the window opening and be secured to the floor. Secure the scaffold structure to the building at every opportunity, fastening such braces to the ledgers close to the poles or to the poles themselves.

8. Platform should be at least 4 feet wide between uprights. Not less than 2 x 10 planks should be used and laid tightly together, but a space of from 4 to 8 inches should be left between the wall and the inside plank. Planks should be sound and free from all large or loose knots and placed so that overlapping occurs at points of support, that is at the crossbars, bearers, or putlogs. The overlap should be at least 12 inches.

9. Guard rails should be erected on outer edge of scaffolds at the work level of 2 x 4 material, 42 inches in height about the platform, and well nailed to the uprights. Heavy wire netting of not over 2 inch mesh should be installed between the guard rail and the scaffold platform, or one inch boards not over two inches apart may be used, well secured by 2 x 4 posts. Toe-boards at least 10 inches high should fit closely to the outer edge of the platform.

Dimensions

So far we have covered the major features of this very common type scaffold, except as to certain dimensions and materials. We have already stated that the platform should be at least four feet wide, which dimension establishes the transverse distance between posts or uprights. With respect to the longitudinal distance between sets of posts, this is controlled by the length of the platform planks and the loading to be imposed on the structure.

Let us take an example:

We wish to build a two-pole scaffold for general work by painters and carpenters with no appreciable loading by materials. We have 2x12 spruce planking for scaffold planks. Let's figure that the maximum load at mid-span on any one plank will be 200 pounds. Referring to a table of safe center load for scaffold plank compiled by the National Safety Council, we find the allowable span for 220 pounds to be six feet, and for 156 pounds 8 feet. We should use a 7-foot span and our poles will be set 7 feet on centers. The minimum size planking to cover the bays will be 2x12's 16 feet long.

The vertical spacing of ledgers and bearers will be determined. of course, by the respective working levels of the men on the scaffold. Having determined these general dimensions, we can then proceed to construct our scaffold.

Materials

Now let us consider the materials to be used. Needless to say, all material should be of good quality. By this I mean free from large knots, shakes, splits, decay, pitch pockets, etc. Used material is permissible if carefully inspected for defects and all unsound pieces discarded.

UPRIGHTS. Spruce is commonly used. Hemlock should be avoided on account of brittleness. Under a heavy load it is liable to break suddenly without warning.

LEDGERS. Spruce should be used.

PUTLOGS AND BEARERS. Chestnut is best for putlogs but spruce is acceptable. Spruce is generally used for bearers in this country.

PLATFORMS. Selected spruce planks, straight grained and free from imperfections.

BRACING. Material should be of first-class quality. Braces are subject to compression as well as tension. They insure the stability and rigidity of the structure.

NAILING. Cut nails should always be used in preference to wire nails. Their holding power is much greater.

For example, in white pine a ten penny cut nail driven perpendicular to the grain affords a holding power of 181 pounds per inch of penetration, whereas a ten penny wire nail affords only 70 pounds. If wire nails were used there would be grave danger of the nails working loose under the working stresses of the scaffold.

It is well to test a sample from the keg by driving it half way into a block of wood, then with a claw hammer working the nail back and forth three times through a full right angle in each direction. If the sample shows no evidence of distress, the nails may be considered satisfactory.

Always drive the nails home. Leaving the heads protruding will weaken the structure.

PAINTING. Painting of scaffolding should be avoided. It will cover up many defects in material.

You will note that spruce is recommended for the important members of the scaffold. If it is not readily available, long leaf yellow pine is a good safe substitute.

Other Types of Scaffolds

So far we have concentrated on the pole type of scaffold. There are several other types of which the following are most common:

1. Suspended scaffold.

2. Needle beam scaffold suspended by ropes or chains used mostly by structural iron workers.

3. Cantilever or outrigger scaffold used in building work where horizontal timbers are projected outward through the window openings and secured to the floor beams at one end so as to support the working platform outside the building.

4. Horse scaffold, which is an arrangement of wooden horses and platform planks.

5. Ladder scaffolds, where ladders are used as uprights or posts.

Space will not permit a discussion of these five types but we can consider the six cardinal principles of scaffolding presented by Mr. F. A. Davidson, of the Patent Scaffolding Company, in the National Safety News for May, 1934.

But first let me emphasize these two thoughts. A scaffold, though temporary in use and existence, is just as important with respect to good design and safe construction as is the structure which it serves. The provisions of building codes applying to scaffolds should be followed and enforced just as carefully as those pertaining to permanent structures.

Select the Right Type

Mr. Davidson's first principle is *the selection of the proper type and design for the work in hand.*

For example, a scaffold extending 40 or 50 feet in the air should not be the horse type scaffold. This selection should be made by an experienced man, preferably a construction engineer, chief mechanic or construction superintendent.

The second point is *the selection of the proper materials to be used in the scaffold.*

We must abolish absolutely the idea that any sort of material lying around the job is good enough for temporary staging. And how many of you have visited a contractor's "yard" and observed his scaffold lumber piled out in the open, exposed to the elements? Scaffold lumber should be kept under cover while in storage.

Third. *The selection of the right type of men to erect the scaffold.*

Too often this important item is overlooked. Many excellent and willing workmen when working at elevations and under rather unstable conditions are a hazard to themselves and to others. Never send a man aloft if he shows signs of nervousness or fear of altitude.

Fourth. *The establishment of an adequate foundation or starting place.*

This would seem to be self-evident but too often an insecure foundation has caused the collapse of a scaffold. On heavy or high structures the weight of the scaffold material itself is considerable. Every precaution must be taken to see that the posts, uprights or horse legs rest on a firm secure footing.

(Please turn to page 62)

What Makes a Plant
A Safe Place to Work?



By ROBERT A. SHAW
Safety Engineer, The Murray Corporation of America, Detroit, Michigan

"IS YOUR plant a safe place to work?"

I am afraid most of us would have to qualify our answers to this question, but a little self searching would do us good. Our own record is commendable, but accidents still occur. The problem will always be before us.

Safety is like a wheelbarrow. It has two handles and stands still until pushed. Who should push it—the employees or the corporation? We proclaim a policy that one handle must be pushed by the employees and the other by the corporation, working together for a common beneficial cause.

Men, follow a leader, and each workman, foreman, superintendent and manager is following or trying to imitate someone. When a good example is provided, the line of organization is controlled and safety is a natural sequence.

To develop a creditable safety experience in any plant, large or small, some important points must be incorporated in the program. These are discussed briefly in the following paragraphs.

INSPECTION OF EQUIPMENT. Among the important items are cranes, elevators, exhaust systems, electric hoists, "jenny" electric trucks, and chains.

When trouble develops with these devices, a serious accident may be expected. Operators must be selected with care and trained thoroughly. We issue permits to men who are qualified, the permit usually being included in a small book of safety rules.

Exhaust systems must be maintained by qualified men because failure means a hazard to health.

PROGRESS BRINGS NEW HAZARDS. Electric welding has made rapid progress during the past five years. It is now indispensable to industry but its development has created new hazards.

The selection and maintenance of welding equipment is a real problem. Operators should receive careful physical examination, with particular emphasis on the heart examination and eye test. Helmets, gloves and goggles are needed, also aprons suitable for handling oily parts. Booths must be provided where other workers must be protected from flashes, and good ventilation is needed wherever welding is carried on.

No employee is allowed to operate welding equipment without a permit.

MECHANICAL GUARDS. Perhaps you think that accidents from unguarded machines are a thing of the past. Consult your compensation records before making any statement and check all general machinery for unguarded gears, sprockets, pulleys, etc.

Have you ever experienced a change-over in a body plant or an automobile plant with equipment loose and ready to be rearranged, creating new hazards?

EXPLOSION HAZARDS. Gas ovens require explosion vents and automatic lighters.

Acetylene and oxygen equipment have special operating rules. The design of the truck is important; it should have a wrench attached and a place to hang the point.

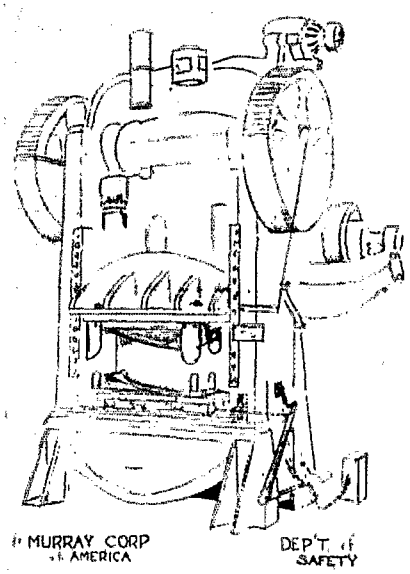
A welder in a Detroit plant, working without a hook on which to hang the nozzle, put it into a barrel bung hole. Apparently the connection leaked acetylene and the barrel was filled with gas. After lunch the operator took the burner, lit the point and swung it over the bung hole. The gas ignited and a fatality resulted. Such details as a wrench, toolbox and holder are necessary items of welding equipment.

All gas and oxygen piping must be of the standard color.

DIE DESIGN. Inspection of new equipment, plant layouts and new methods of manufacturing are import-



A bulletin board 12 x 16 feet displays a "Jumbo" poster at each entrance to the Murray plant. One girl in a Detroit school who had been winning prizes regularly for safety slogans finally explained to her teacher that she had remembered the slogans displayed at the entrance to this plant.



No operator is allowed to put his hand under the die. When adjustments must be made, the wooden block (chained to the press) is put in place. Open spaces in the press require a low bridge of leather and in some cases a lifting arm on the die.

ant duties of the safety engineer. Too few organizations take the time to recheck.

Our die designer moves a pencil one way, and our dies are made with chain slots. The clearances are allowed because he is safety-minded; he has listened to safety requirements. One more mark of the designer's pencil and the corners are rounded for safety.

PRESS TRIPPING. Now let us take a trip through the press room where steel body tops are passing through the large forming and trim dies. Note the air tripping devices and the presses stopping in any position, also the latest safety features in design and brake combination. Nevertheless, hazards persist. Note the open spaces that require a low bridge made of leather and in some cases a lifting arm on the die. (See illustration).

In front of each operator is a small yellow sign in a frame—"Keep Hands Out."

Certain jobs require pliers because *nobody* is allowed to put hands between dies. Operators, superintendents and die men, when making adjustments, must first put in place the 6 x 6 inch hard wood block that is attached to each press.

The "electric eye" may be used on a very few jobs.

CONVEYORS. The conveyor, known as the crawling platform, has revolutionized the method of assembling motors, automobiles and movement of stock. It is sometimes called the minute delivery system. It is also a systematic way of promoting equality in performing work, as each member of the organization performs an equal amount of work.

Hazards naturally present themselves. Foot injuries are watched for, and head and eye injuries on overhead conveyors. Crossover bridges are necessary. Emergency stop buttons are required, especially on slat conveyors with chain stops across the end.

A cable along the conveyor is standard practice in some plants. Specially designed hooks of special material and proper cotter keys are standard, also the overhead chain type kick backs are used in case of breakage, and a guard under the parts that cross the aisles, etc.

GRINDERS. The grinder is standard equipment in all plants. We require glass fronts on all small tool grinders, which have an average speed of one mile a minute. The tapping of all grinding wheels in the tool crib may prevent a cracked wheel from being placed in service. Large wheels must be balanced. Electric shut-offs are recommended in case a short occurs. The motor stops instead of speeding up and exploding the wheel.

In storage all wheels should stand on end to prevent warping.

Disc grinding operations require the use of hardened lenses one-eighth inch thick in a cup shaped goggle. On some jobs respirators are used in addition to an exhaust system.

HOUSEKEEPING. Clear and well-defined aisles are necessary in a safe and efficient plant. To maintain this, *special instructions backed up by discipline* are necessary.

In a dirty plant a contest will eventually impress upon the whole personnel that the management wants better housekeeping. When planning departments, sufficient space for stock and for aisles must be provided. A report of violations is very effective and a rating system for the housekeeping contest is necessary.

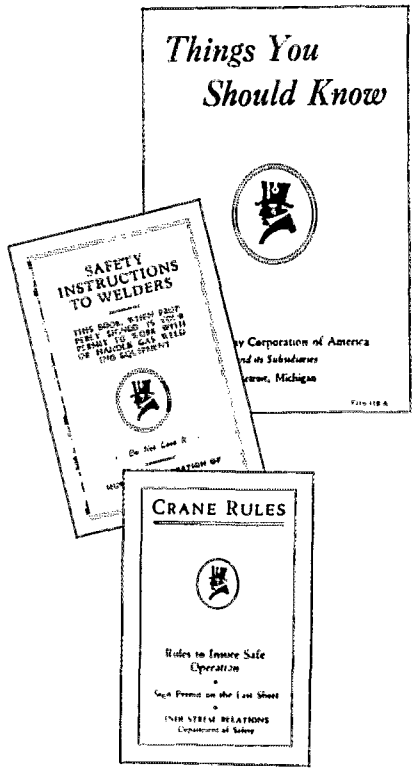
HYGIENE. If provision is not made for the immediate treatment of minor injuries, considerable time is likely to be lost through infections. Sufficient washrooms maintained according to high standards of cleanliness are characteristic of the up-to-date plant.

SAFETY CONTESTS. All divisions are rated in the six-month safety contest and have a budget according to hours and payroll. This is low and does not allow for a major accident. Every two weeks a sheet is issued and each division can ascertain its position and the medical costs. If a department exceeds its budget, it is shown in red.

The winners—the superintendents, foremen and assistan foremen and the first three of the twenty divisions—are given a banquet. They are entertained at some prominent sport event, a hockey game being favored in the winter and a baseball game in the summer. This reward has proved more satisfying than any other type of reward.

SAFETY COMMITTEES. Our committees meet monthly. All reports are made in a book with an individual's name opposite each item. This shows who is responsible for the correction of the hazard, unsafe practice, improper method or mechanical defect.

The committees meet on the corporation's time. The cover of each book contains a message in cartoon form. Where the manager of a division acts as chairman of the committee, and good housekeeping prevails, we have found



A booklet of general safety instructions is supplemented by smaller rule books for certain occupations.

(Please turn to page 61)



Know Your Hoisting Chains

By WALTER J. BLOOM
Metallurgist, Otis Steel Company, Cleveland, Ohio

Failure is usually the result of lack of knowledge or disregard of the strength of hoisting equipment

CHAIN failures are not always due to defective material; in many instances we have found that they are the result of lack of knowledge or disregard of the strength of the equipment. We may state frankly that carelessness in the application of the chain to the load is one of the factors that gives us the greatest concern.

Until recently there has been little change in the materials and methods of manufacture of chains. Users had the choice of either wrought iron or mild steel, both materials being cut to lengths of the required diameter stock and scarfed at either end. The lengths were then placed in a blacksmith's furnace and heated. When hot enough to form, the sections were taken from the furnace, formed roughly on the end of an anvil until the scarfs almost met, then the open ends were slipped through a previously formed link and closed and welded by hammering the scarfed ends together.

It is easy to understand that there might be considerable variation in chains made in this manner and it is a fine tribute to the skill of chain makers that their product has maintained a degree of uniformity. The selection of a chain of suitable quality of the best materials and workmanship is of utmost importance. Material which is ductile and sufficiently elastic to recover from the strains produced by shocks should always be used. Though a high tensile strength may be obtained with hard material of low ductility, such material has been found unsuitable; it is liable to fracture when subjected to sudden loads.

The links of a chain should be as small as is practical. The greater the number of links in a given length the more flexible is the chain, and the smaller the transverse dimension of the links, the less bending action at the ends.

The recommended safe loads for short link wrought iron chains compiled by the Chain Institute and the National Safety Council are well known. In applying them to specific uses, it should be remembered that the safe working load for a long link chain should not exceed two-thirds of that for a short link chain of the same diameter.

Among chain attachments, rings come to mind first, due to the fact that we have had considerable trouble with them. A ring should be made of material as good or better than the material of which the chain is made. A ring must be sufficiently strong to carry a load equal to the sum of the safe loads of all the attached chains. Moreover, it must be capable of standing the total proof loads of these chains without deformation.

Hooks. There is little variation in the general outline of ordinary hooks. Both the inside curved surface and the outside curved surface are usually circular in shape, though not necessarily concentric. The opening or gap of the hook must be wide enough to admit the largest ring that has to be placed on it.

When a hook is loaded, the material in the shank is subjected to a direct tensile stress. This should not exceed three tons per square inch. The material in those sections not in direct line of application of the load is subjected to stresses caused by bending action in addition to the direct tensile stress caused by the load.

These bending stresses increase with the distance of the section from the line of loading, and are tensile at the inside and compressive at the outside of the hook. The stress at the inside is the greater, and a hook, therefore, should be designed so that the maximum stress produced by the working load does not exceed the working stress usually allowed for the material of the hook. As hooks are subjected to varying loads and shocks, this working stress should be based on an ample margin of safety. We have established the practice of purchasing slings made up completely by the manufacturer. In this way we are assured of attachments that are correct in material and design.

Slinging. Definite rules for methods of slinging cannot be given as the method varies according to circumstances. However, certain general rules and precautions are followed to insure safe working.

The kind of sling depends largely on the nature and shape of the articles to be lifted. The size of the chain is determined by the weight of the article,

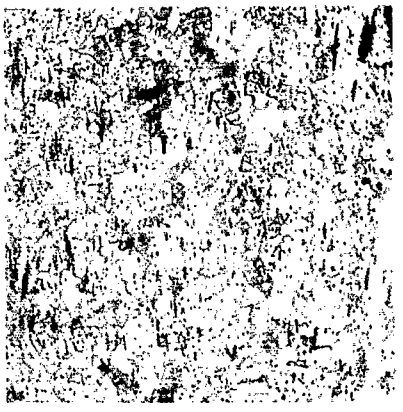


Photo-micrograph showing characteristic wrought iron chain structure. Magnification, 100 diameters.



Photomicrograph showing wrought iron chain at the weld. Magnification 100 diameters. (Otis Steel Co. Photos)

also by the angle between the legs of the sling or the position in which it must be used.

In our steel foundries where large castings are raised from molds, it often happens that all of the sand is not removed from the sides of the casting and the actual load upon the lifting gear is augmented by the pressure, or the "suction" of the sand, as it is termed by molders. Lifting gear of ample dimensions is always used.

Again, in the case of steel works, the removal of "skulls" (slag containing metal) from furnaces or casting pits entails unknown loads on the crane and slingchains, and special precautions are taken.

The important connection between the actual tension in the leg of a sling and its angle of inclination should never be overlooked. It is often assumed, sometimes with disastrous results, that a multiple-legged sling will lift a load equal to the safe load of one leg multiplied by the number of legs. Actually this is true only when all the legs are in a vertical position.

Effect of Temperature

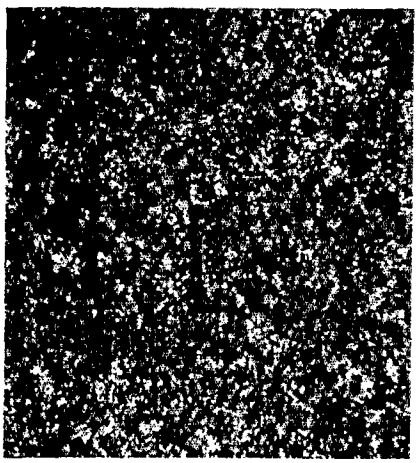
Chains and other lifting gear are often exposed to abnormal temperatures in foundries and steel works. Those used in the open are subject to variations of atmospheric temperature, including frost. At ordinary temperatures the strength of iron and steel is not seriously impaired, but above 600° F. strength diminishes rapidly with increase of temperature. With the exception of lifting appliances attached to ladles for molten metal, few, if any, are exposed to temperatures beyond this limit.

Among chain users the consensus is that chains exposed to frost become brittle and are liable to fracture without warning. Recent research supports this view and shows that, although good quality chain iron does not develop brittleness in the absence of notches at low temperatures, there is grave danger of brittle failure in chains containing defective welds or links which have become notched or damaged in service, even at ordinary frost temperatures.

It is, therefore, necessary to avoid exposure of chains and other lifting gear to extremes of temperature. These tend to aggravate the effects of slight cracks, flaws, bad welds, and similar defects.

Annealing

Although annealing or normalizing chains and other appliances will cure the skin hardness which arises in service,



Photomicrograph showing alloy steel chain at the weld. Magnification 100 diameters. Steel used in this chain is S. A. E. Specification 4615.

neither of these heat treatments will prevent the subsequent development of this hardness when the chain is put into service again. Periodic annealing is therefore necessary.

The period allowed between annealings will depend on the nature and amount of use of the appliance. We believe it is the practice of most large users of chains to specify definite periods for annealing different classes of chains.

As a matter of safety, all wrought iron and mild steel chains in ordinary use should be annealed at least once every twelve months. When subject to frequent or severe use, or when employed in carrying molten metal, these chains should be annealed at least once every six months. Chains subjected to especially severe use, as on cranes or grabs used to unload coal, ore, scrap, etc., should be annealed every three months.

One important advantage of periodic annealing is the opportunity offered for careful examination of the chain. With all grease and dirt removed by firing the metal is exposed for inspection. Though minute cracks are often difficult to detect, a fire test facilitates their discovery and it is applied in case of doubt.

Permissible Wear

Before our present definite plan of control was inaugurated at the Otis Steel Company, the wear of chains was often allowed to reach serious proportions. Sometimes chains were found in use with links socketed to half their normal diameter. Under our present plan, where chains are subject to continuous wear, the examiner must eventually decide when the wear is sufficient to render the chain unsafe for its normal working load.

If a chain containing worn links becomes distorted, as it generally does, the chain is removed from service and the worn links replaced. In some cases, a chain or appliance must not be used for its maximum safe working load if the wear on any part exceeds 10 per cent. In other cases wear is limited to a reduction in diameter of the iron of 1/32 inch for chains up to one inch, and 1/16 inch for chains over one inch. In all cases the general condition of the chain is also taken into account.

The wear of a chain is often local and its life may be extended by changing ends, thus subjecting different links to wear. It is now the practice at the Otis Steel Company to identify every chain in use in the various departments. New chains are marked by the manufacturer but chains which have been in use for some time have an identifying letter for the department and a number for the chain stamped on a metal marker which is bolted to the end links. We have developed a system of records which ties in with chain identifications. These records, which are maintained by the chain inspector, contain such information as:

1. Brief description with important dimensions.
2. Purpose for which used.
3. Reference number on maker's test certificate.
4. Maximum permissible working load.
5. Date issued for use.
6. Dates of annealing, examination, repairs.
7. Nature and extent of repairs.

Filing cards afford convenient records where large numbers of lifting appliances are used. A record of each chain, hook, shackle or sling with its appliances is entered on a separate card, and the cards filed according to departments. Different periods for annealing may be indicated by cards of different colors.

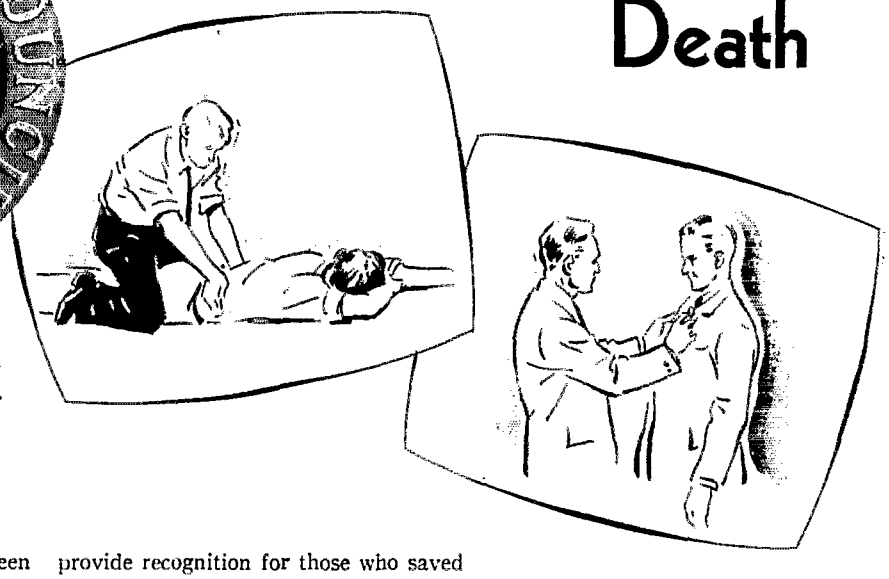
Inspectors are authorized to decide when a chain shall be removed from service for repairs, treatment or replacement. All materials thus removed are referred to the Metallurgical Department which then assumes all responsibility for reconditioning or replacing chains and returning them to the department storeroom. On a specified day each week, a meeting of the department safety committee is held at which the inspector and a representative of the Metallurgical Department are present. At these meetings the inspector's reports are presented and the use of chain equipment discussed.

At the outset of the chain program at the Otis Steel Company we were primarily concerned with the instruction of

(Please turn to page 68)

They Turned Back Death





More than 800 persons have won the President's Medal for saving life through the prone pressure method

FOR CENTURIES men have been experimenting with methods of reviving those who were apparently dead. Many of the methods of restoring respiration have been crude, unscientific, and even barbarous. Some of them actually worked, however, when conditions were favorable and the patient was not too far gone.

In 1903 Sir Edward Schafer, a prominent British physician, introduced what is known as the prone pressure method. Although new techniques have been announced from time to time, none has yet equalled Schafer's method in simplicity and effectiveness. It is used throughout the civilized world and it is being taught to thousands by the American Red Cross, public utility companies, police and fire departments, the Boy Scouts and other agencies organized for the promotion of first aid and life saving. There are now thousands of persons of both sexes and all ages who are qualified to save life by artificial respiration.

Medals in recognition of successful resuscitation have been awarded for many years by the Edison Electric Institute and its predecessor, the National Electric Light Association, and by the American Gas Association. These awards, however, were confined to the industries represented in the trade groups. There were hundreds of other persons who had saved lives by the prone pressure method of resuscitation but were not eligible for any award.

To stimulate further interest in the Schafer method of resuscitation, and to provide recognition for those who saved life by its application but who were not eligible for other awards, "The President's Medal" was inaugurated by the National Safety Council in September, 1928. Since that date, 805 medals have been given out by the Council, and 25 persons have received bars for a second resuscitation.

The file of applications for the President's Medal at National Safety Council headquarters provides eloquent testimony to the value of the prone pressure method in a wide variety of emergencies. Electric shock, drowning, asphyxiation by gas were the most frequent causes of suspended breathing. Carbon monoxide from automobile exhausts or from defective heating appliances figured prominently in the cases which occurred during winter months. In one case, resuscitation succeeded on a baby which had strangled from convulsions.

The ages of those resuscitated range from infancy to old age, and there is almost as great a variation in the ages of the life-savers. The minimum age for eligibility is 10 years, and several of the young heroes were under fifteen. One of the recent awards was to a fourteen year old girl who had resuscitated a three-year old child who had fallen into a pool.

Occasionally an application for the President's Medal can not be approved because the first aider used some mechanical device or some method of resuscitation other than the prone pressure method. While some of these methods are not without merit, the Council feels that the greatest good can be accomplished by standardizing on the Schafer method and encouraging such training to the fullest extent.

The use of a mechanical device is not encouraged because it would be available only in a small proportion of emergency cases, and life might be lost while awaiting its arrival. Moreover, some of the devices used in the past are potentially dangerous. This does not refer to the inhalator by which oxygen mixed with a small portion of carbon dioxide is applied to the victim, in conjunction with the prone pressure method. In the hands of the first aid squads of public utility companies, police and fire departments, and other agencies, this device has proved an invaluable aid to life saving.

One case which unfortunately was ineligible for The President's Medal was that of an unemployed bricklayer in Texas who resuscitated a six year old girl who was apparently drowned. In restoring her, he used the Silvester method, which he had learned many years before in the German army.

The Council wishes to see every successful case of resuscitation recognized and welcomes applications for The President's Medal. It should first be ascertained that the lifesaver is not eligible for any other award and that the Schafer method was used. The application must be made within one year after the date the resuscitation was performed.

The Safety Exchange

A Round Table in Print

Chock Promotes Safety in Handling Dump Cars

Chocks to prevent a car from traveling have often been inserted between a wheel and the rail by hand. This practice resulted in many crushed fingers.

A recent development is a wooden block to which a metal handle is bolted.



The handle is fastened to the block at an angle of about 30 degrees and then is bent away from the side of the chock at a 30 degree angle. By enabling workmen to insert the block without stepping or placing any part of the body in the path of the car the device insures safety.

Container Protects Fire Extinguisher

This container protects fire extinguishers from freezing, and keeps the equipment available for instant use. It was thoroughly tested during the winter of 1935-1936 when the temperature reached 12 degrees below zero. The extinguishers were checked every few days and were not frozen when discharged.

The container details follow: A 50-gallon oil drum with the head removed is buried 30 inches in the ground. A small cylindrical container nine inches in diameter and 32 inches long, made from galvanized iron roofing, is held in shape by rivets. About four inches of dry sawdust is put in the bottom of the drum, then a piece of old belting on the sawdust, and the galvanized container centered on it. Dry sawdust is packed around the container to approximately 18 inches from the top. The extinguisher to be protected is placed in the container and a common 14-quart galvanized pail (a water bucket in case of fire) is inverted over it, to serve as a cover.

The lid of the drum is one-inch lumber and tar paper. The top wooden lid is 27 inches in diameter, tar paper 25 inches in diameter is placed on the lid, and a second wood lid 22-3/4 inches in diameter is centered on top. The tar paper is placed between the two wooden lids and the lids securely nailed together. Any common handle can be used.

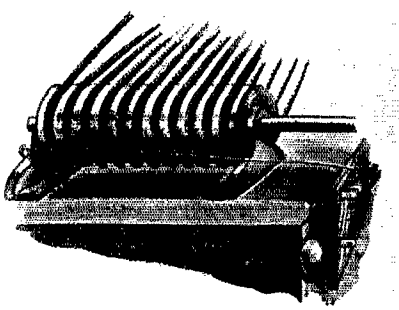
As most of this container can be made from scrap, the entire cost is low. Blue prints can be obtained by writing National Safety Council Bureau of Information.

This idea was developed by J. W. Young, Farm boss, Empire Oil and Refining Co., Lamont, Kansas.



Electric Signal on Rope Drive

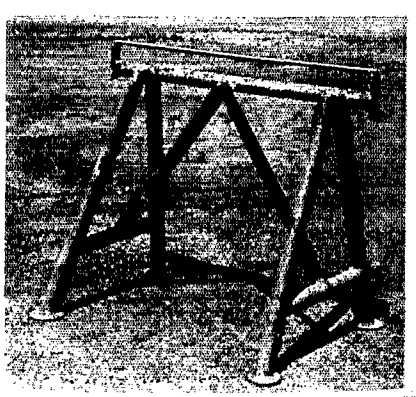
Across the end of a rope drive, a wire is attached to a signal bell. When



ropes begin to fray, the ends strike against this wire and cause the bell to ring. This warning prevents injury to persons near the front of the drive, and enables operators to know when the ropes are fraying. This device is used by the Hammermill Paper Company, Erie, Pa.

An Improved Iron Horse

This welded tubular steel iron horse is a great improvement over those of



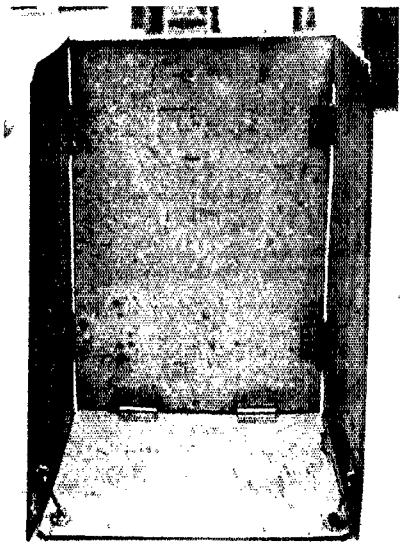
ordinary design. The bar, welded to the pipe upright, prevents planking (placed under the bar) from moving, should a workman step on or near the end of the planking used. A further improvement would be to spread the legs so the top will not overhang the base. This device was submitted by the Standard Oil Company of Indiana.

The ideas presented in the SAFETY EXCHANGE have proved helpful. If you have developed some useful device or method, send in a description, with illustration, if possible. These devices are home-made and are not available commercially

Screen for Street Use Protects Passersby

To protect passersby and other workmen, this simple, rugged screen was designed by the Atlantic City Electric Company. One feature of the guard is the bottom attached to the sides so that it is practically impossible for apparatus to be overturned or blown over.

The bottom of the screen is made of No. 12 gage galvanized iron 16x16



inches. The sides and back are two pieces of No. 18 gage galvanized iron 16x24 inches. All edges are wire rolled. The hinges are 2 inch reversible galvanized iron, and the hatch hooks and eyes No. 130 brass.

The cost of these guards, which were manufactured by a local tinsmith, was $3.85.

Maintaining Interest In Safe Driving

To help maintain drivers' interest in safety, W. F. Burk, of the Canton Repository, divided the drivers of the fleet into two equal groups and appointed one driver from each group captain. At a set date the drivers of each team started checking drivers of the other for unsafe driving practices. Any violations of traffic rules were reported to the captain of their own team, who in turn notified the captain of the other team. He got in touch with the driver who was said to have committed the violation, and a defense was prepared.

Each prosecuted its charges at the regular drivers' meetings. Prosecuting and defense attorneys were appointed by the captains to argue the matter before three judges. The judges consisted of the traffic manager, an insurance representative and the superintendent of garages. Demerits commensurate with the offense were charged against the team which had been unsuccessful in defending itself. At the end of six months these were totaled, the losing team standing treat at a dinner.

Guard for Horizontal Milling Machine

A step forward in safety for operators of horizontal milling machines is shown in the guard developed by R. E. Frederick, International Business Machines Corp., Endicott, N. Y. This device offers good protection, regardless of the size or contour of the job. It can be set up quickly for any type of job, including end milling.

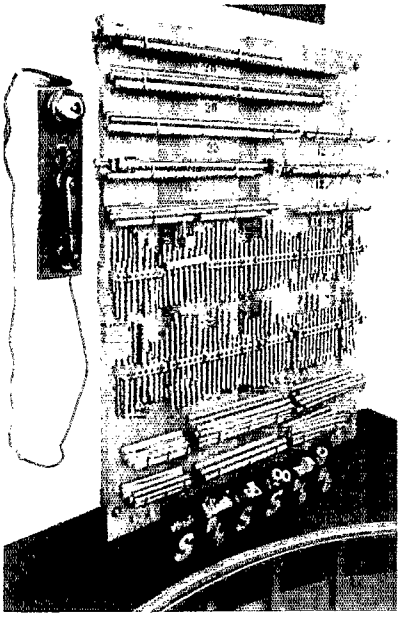
The guard consists of one-quarter inch case hardened pins of varying lengths held by screws in a T-slot plate which is fastened on the column between the arbor support arm and the spindle. The pins are held rigidly in place by Allen head screws and can be raised or lowered individually by a set screw wrench to conform with the contour of the work.

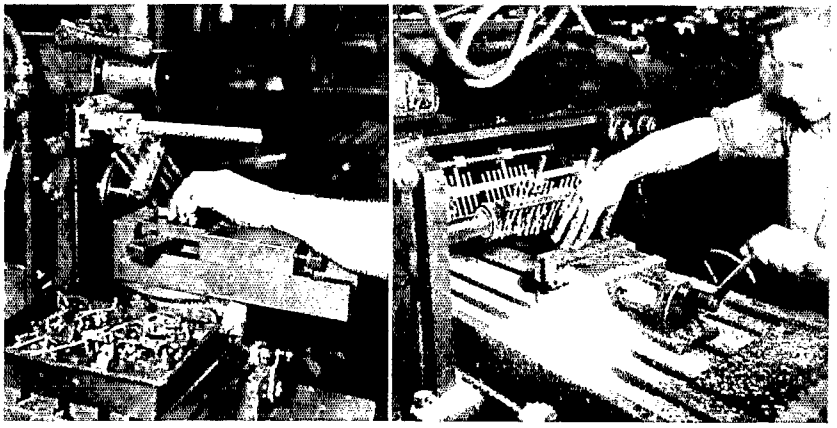
The entire guard may be moved horizontally to cover the cutters at any position on the machine, and two or three guards can be mounted side by side, giving complete coverage on wide milling operations.

The extension bars are also case hardened, and a complete stock of bars, pins, and pin-mountings of various sizes is maintained on a wall rack in the tool crib. To assure speedy set up and changes, all set screws are the same size.

The T-slot plate on the column of the machine need never be removed as it can be swung up out of the way when not in use. It can be easily adjusted or taken off without affecting the set up.

Wall rack in tool crib containing various sizes of parts for milling machine guard.





Left: application of guard to end-milling operation. Right: operator inserting work close to cutting gears protected by guard.

Safety Instruction Cards

Practical Information for the Man on the Job

SAFETY Instruction Cards are published primarily for the instruction of workers in safe operating methods. However, their distribution among foremen and operating executives is also advisable. These cards present a wealth of practical information in concise, readable form.

New cards are issued each month, and many of the previously issued cards are being revised and placed in stock. Members are invited to submit suggestions for new subjects or for the revision of cards previously published.

While these cards are not intended primarily for bulletin board use, some members make enlarged photostatic copies to serve as posters.

Miniature reproductions of 12 cards added to the list during the current month are shown herewith.

Following is a list of previously issued cards now carried in stock:

Subject	No.
Acid and caustic pipe lines, opening flanged joints	117
Acid, sulphuric—handling	242
Acid tanks, repairing	124
Cleaning out large tanks	293
Air hoist operation	142
Aprons, protective	228
Artificial respiration	165
Asphalt Workers	326
Auto tires, inflation	208
Axe, how to handle	191
Babbitt, pouring	139
Belt, to put on a pulley	8
Removing from pulley	193
Bicycles	241
Boiler gage glasses, replacing	103
Boilers, low water	339
Boxes and crates, shipping	206
Bricks, how to pile	243
Broken glass, how to dispose of	244
Building wreckers	301
Cable Clamps	36
Camp fire hazards	348
Carbon Monoxide, hints to drivers	357
Carboys, safe handling	195, 224
Carpenters	127
Carrying long materials on shoulders	39
Case hardening with cyanide	133
Chain links, hooks, castings—detecting flaws in	3
Chain slings, safe loads	63
Determining need for annealing or normalizing	267
Safe use of	151
Chemical laboratory practices	207
Chemicals, protection against	42, 280
Children and Traffic	327
Hazards to	338
Toys and playthings	359
Chlorine, safe practices	345
Containers	355
Cleaning machine parts	137
Cleaning with distillates	315
Clothing for machinists	230
For cold weather	269
For men	83
For women	84
Cold chisel, cutter or punch head, proper shape for	28
Compressed air—practical jokes	291
Precautions in using hose	356
Couplings, link and pin	46
Crane and hoist operators, advice to	58
Crane Signals	5
Cranes, locomotive (steam driven)	295
Crushed hands, avoiding	53
Cutting oils and compounds	304
Die Setters	350
Dog Bites, to avoid	175
Drill press operators	87
Driving long rods	21
Driving vehicles, attention to driving	209
Backing	198
Bad weather hints	279
Braking distances	216
Choosing routes	251
Courtesy in driving	275
Four basic driving rules	219
General suggestions	170
In plant yards	312
Inspection by driver	225
Other drivers' mistakes	303
Parking	235
Right of way	246
Setting out flares	292
"Silly Sam Drives Out"	347
Speed control	186
Stopping on highway at night	260
Traffic hand signals	335
What to do in case of accident	183
"Willie the Weaver"	336
Drums, handling	44, 132
Dust explosions, preventive measures	239
Electric line work, safety lines	96
Electric motors, starting	60
Electric truck operation	300
Electric wires, safe carrying capacity	13
Electricians	128
Elevators, inspection and repair	104
Operation	41
Freight elevator inspection	271
Sterilizing goggles	323
Excavation Workers	322
Explosives, storage	118
Opening dynamite case	157
Preparing blast with cap and fuse	294
Explosive vapor, removing from drum	171
Extension cord, fastening plug to	26
Eyes, care of	113, 358
Eye protection, making goggles	
comfortable	162
Keeping goggle lenses clean	245
Falling objects	163
Falls, general	161
Things to look out for	185
In the Home	330
Files	174
Fire, to put out clothing	23
What to do in case of	122
Fire extinguisher, soda acid	17
One-quart pump type	18
Checking for winter	264
Fire fighting, electrical hazards	247
Fire prevention, inspection check list	237
First Aid, acid and caustic burns	75
Artificial respiration	165
Burns	196
Carbon Monoxide	115
Emergency stretchers	252
Fractures	211
Frost bite	145
Minor injuries	233
Nose bleed	229
Shock	284
Simple tourniquet	73
Transporting a patient	173, 261, 273
Where to apply pressure to stop bleeding	149
Flammable liquids, storing	226
Flash points	265
Fly wheels	283
Foot comfort	316
Foundry, safe clothing for	309
Fumes, nitrous	219
Fumigating with cyanides	217
Fuses, removing and replacing	274
Garage mechanics	82
Gas leaks	180
Gas masks, identification of canisters	212
To test for air-tight fit	97
Care of (canister type)	305
Gas welding—cylinders	99
Gas and oil furnaces, lighting burners	166
Gases, explosive ranges	290
Gasoline, precautions in using	331
Gasoline blow torches	76
Gasoline engines, cranking	190
Gasoline Service Station, housekeeping	351
Glass tubing	287
Going to and from work	158
Grinding wheels, to check peripheral speeds	10
Grinding wheels, mounting on spindles	50
Flange dimensions	59, 66, 81
Handling and storage	286
Safe operation	102
Making ring test	108
Guards, use of	150
Punch press	307
Hair, protection	238
Hammer heads, fitting to handles	6
Hammer hints	31
Hand protection, discs for	33
Hand tools (See also saws)	85
Sharpening	192
Hand truck, two-wheel	126
Four-wheel push truck	156
Handling materials, warehouse and shipping room hazards	282
Carrying long and heavy pipe by hand	354
Health, general suggestions	141
Colds	125
Headaches	152
Vacation hints	221
Heat exhaustion	57, 197
Home hazards	129
Home outdoor hazards	321
Dry Cleaning	276
Fire dangers	349
Hooks, hand	71

Safety Instruction Cards are printed on white card stock, 3 by 5 inches, slightly heavier than government postcards. In any quantity the price is one cent per card (all of one kind or selection) with a minimum order of 25 cents. 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.

(Please turn to page 32)

MOUNTING GRINDING WHEELS ON SPINDLES

1. Inspect the wheel for flaws and make the "ring test." (See Safety Instruction Card No. 108.)
2. Clean the bearing surfaces of wheel, flanges and spindle so that the clamping pressure will be evenly distributed.
3. Check the speed of the spindle to make sure that it is not running too fast for the type and size of wheel.
4. Make sure that the hole in the wheel bushing is the right size for the spindle (neither too small nor too large).
5. Use flanges that are recessed and large enough to clamp the wheel well toward its circumference. (See Safety Instruction Card Nos. 59, 66 and 81 for dimensions.)
6. Use compression washers between the flanges and wheel that are as large as the flanges. (If rubber, use washers 0.125 inch thick; if blotting paper, 0.025 inch thick.)
7. Tighten the spindle end nuts just enough to keep the wheel from moving out of position between the flanges.



8. Before turning on power, make sure that the wheel runs true and will strike no obstruction.
9. Stand to one side of the wheel when first applying power.

SAFETY INSTRUCTION CARD No. 50
(Revised Sept., 1936)

CLEANING FIBER ROPE

FIBER rope is subject to rapid deterioration in a water-soaked or muddy condition. It should be cleaned promptly and allowed to dry out.



1. Hang the rope in loops over a round beam or bar standing at a convenient height, and use a hose stream to remove the mud and sand.
2. Allow the rope to dry thoroughly as it hangs.
3. When dry, the rope should be shaken or beaten to remove any particles of dirt or sand that may still cling to it. A carpet beater or a pliable switch is effective for this purpose.
4. The rope should then be stored in a dry clean place, in loose coils, where it will not be exposed to high temperature, and where the air may circulate freely through the coils.

(See also Safety Instruction Card No. 106.)

SAFETY INSTRUCTION CARD No. 360

AMMONIA BURNS

(Rescue and First Aid)

ENTER a gas-filled room only in emergency. Wear a suitable gas mask; if one is not available, tie a wet cloth over mouth and nose. Here are other suggestions:

1. Call a physician if anyone is injured.
2. If the patient is unconscious, remove him to pure air and apply artificial respiration. (See Safety Instruction Card No. 165.)
3. For eye burns, lift the eyelids and pour a two percent solution of boric acid over the eyeball; or
4. Bathe the eyes copiously with running water from a faucet or drinking fountain; or immerse the eyes in a vessel of clean water and wink the eyes repeatedly. After five minutes of water cleansing, allow two drops of petrolatum to fall on the eyeball.
5. For skin burns, remove the ammonia-soaked clothing, flood the skin repeatedly with clean water, and apply a saturated solution of picric acid. Use boric acid near the eyes. Dress the burns with picric gauze or boric acid ointment.



6. For nose and throat burns, snuff boric acid solution into the nasal passages and gargle the throat with it. Drink large quantities of water.

SAFETY INSTRUCTION CARD No. 361

These are miniature reproductions

BELTS AND BELT PULLEYS

IT IS dangerous to put a belt on, or take it off of, a moving pulley with the bare hands: always use a stick or a belt shifter. Here are other suggestions:

1. If the pulley is running at high speed, slow it down before putting on the belt.
2. Keep the hands and arms away from the belt.



3. A belt should never be run vertically unless absolutely necessary.
4. If the belt slips, use dressing adapted to the belt—never use rosin.
5. Large pulleys should be used whenever possible—never undersized pulleys, or pulleys that are too narrow.
6. Avoid using a pulley with an exaggerated crown; a high crown concentrates the greatest strain on the center of the belt.
7. The belt should not be run too tight; do not place a tightener against the tight side of a belt.
8. Never overload a belt.
9. No belt should be run faster than 5,000 feet per minute; greater life and safety are obtained if the speed is kept below 4,000 feet per minute.
10. Inspect all belts, belt joints and belt lacing at regular intervals, and make repairs promptly.

SAFETY INSTRUCTION CARD No. 362

PORTABLE POWER HAMMERS

(Digging in Concrete or Hard Ground)

1. Before starting work, learn what is underneath the surface. If gas pipes, electric conduit, sewers, water mains, or other objects are in the area, get definite information of their location (blue-prints, if possible) and avoid them carefully.
2. Make sure the power hammer and accessories are in good condition; if not, get other tools.
3. When using electricity for power, carefully check the extension cord and all connections for defects; use only equipment in good condition.
4. When air is used for power, check valves and connections carefully; be especially careful when laying down the tool that the trigger cannot be operated accidentally.
5. Never point a portable power hammer at anyone; never use the air hose as a means of practical joking.
6. Before disconnecting a portable pneumatic tool, always turn the air off at the hose control valve.
7. Wear suitable goggles to protect your eyes from flying particles.



8. If the job is near some sidewalk or other thoroughfare, place suitable screens to protect passers-by from flying particles.

SAFETY INSTRUCTION CARD No. 363

HANDLING BLACK POWDER

MANY fatal accidents have occurred to men handling black powder. Take every possible precaution, including the following:

1. Strictly observe the ordinary safety rules for the handling of all explosives.
2. Under no circumstances smoke tobacco near where black powder is stored or being used; do not even carry matches or smoking materials on your person.
3. Before starting operations, search your helper for smoking materials.



4. Wear rubber boots, or shoes with rubber soles as well as rubber heels cemented on — never fastened with nails. If shoes with leather soles or heels are worn, these should be pegged on—never fastened with nails.
5. Keep all persons not connected with the loading operations at a distance of at least 100 feet; they may be smoking or carrying fire-making materials.
6. Be sure that there is no bonfire, or fire of any other kind, in the vicinity.
7. Do not load while a compressor, power shovel, truck, or other gas or steam-driven equipment is operating in the vicinity.
8. Use only wooden tools to open powder kegs; and do not bring powder from the magazine until holes have been sprung.

SAFETY INSTRUCTION CARD No. 364

Actual size of cards 3x5 inches

GASOLINE SERVICE STATION

(Some Fuel Service Cautions)

1. Ask the customer politely to shut off his engine, if he has not already done so. Deliver gasoline only when this is done.
2. If the customer or a passenger is smoking, ask that the fire be extinguished before delivering gasoline.
3. Insert the gasoline hose nozzle firmly in the customer's tank, making sure that it has a metallic contact; this should avoid a static spark.
4. Make sure there is no leak of gasoline from the delivery hose or nozzle.
5. Watch the nozzle closely while gasoline is flowing; make sure the customer's tank does not overflow.
6. Remove the hose nozzle only after gasoline has drained from the hose.
7. Hang up the nozzle securely, and make sure that the cap is placed securely on the customer's tank.
8. Be especially careful when filling a motorcycle tank to see that there is no overflow.



9. If your clothing becomes saturated with gasoline, change the garment as soon as possible; otherwise a very inflamed and sore skin may result.

SAFETY INSTRUCTION CARD No. 365

10 COMMANDMENTS OF SAFETY



1. Thou shalt avoid all short-cuts.
2. Thou shalt never remove any safeguard or safety sign.
3. Thou shalt not use equipment without authority, nor undertake any job unless instructed to do so.
4. Remember always to follow safe practices; and if in doubt about the safest procedure, ask thy supervisor.
5. Bear in mind that carelessness and thoughtlessness are the roots of much misery and suffering, both to thyself and to others.
6. Thou shalt report to thy supervisor any unsafe conditions about the workplace, and shalt do this without being told.
7. Thou shalt watch over the welfare of thy fellow employee and help him to become a safe worker, even as thyself.
8. Take care that thy clothing is neither torn nor loose, to be caught in moving machinery; and always wear the protective clothing provided for thy job.
9. Lastly, thou shalt neglect no scratch or wound, no matter how slight it may seem to thee: get first aid promptly, for tomorrow may be too late.

SAFETY INSTRUCTION CARD No. 366

SKIDDING CAN BE AVOIDED

MOST drivers lay the fault for skidding on ice or snow, or wet or oily roads, or on loose gravel. But these are only alibis. Try these suggestions:

1. On any slippery roadway, travel at moderate speed and with extra caution.
2. Reduce speed slowly; always slow down BEFORE you wish to stop or turn.
3. Keep brakes adjusted and equalized. Never slam them on suddenly under bad road conditions.
4. Tires grip the road better if inflated moderately; hard tires skid more easily.
5. Chains may help to stop a skid, if you drive with caution; but chains cannot prevent skidding if you drive recklessly.
6. Avoid wet or icy car rails; cross at a wide angle.
7. Keep out of ruts in mud, or ice, or snow.
8. If you do skid, do not instantly slam on the brakes in a panic. Release the throttle, but leave the clutch engaged so that the engine will help to slow your car. Touch the brakes lightly, alternately exerting a little pressure and releasing them; and turn the steering wheel in the direction of the skid.



SAFETY INSTRUCTION CARD No. 367

YOUR REACTION TIME

YOU are driving your automobile. Suddenly an emergency occurs. You see it instantly, but while you realize the danger and move your foot to apply the brakes, time has gone by.

That interval is called your "reaction time."

The most alert person, scientific tests show, needs not less than half a second to get the brakes to working. Many drivers require one, or one and one-half seconds. The average is ¾ second.

Since at even 30 miles an hour your car travels 44 feet in one second, if you are an average man your car will travel 33 feet BEFORE your brakes can be applied.

Even the best brakes take time to stop a car. The scientific tests show that at 30 miles an hour on a dry road four-wheel brakes in good condition usually require 47 feet.

Add this 47 feet to your reaction time of 33 feet, and you have 80 feet as the distance in which your car CAN BE STOPPED if going 30 miles an hour.

At 40 miles an hour, the distance is 128 feet; at 50 miles it is 186 feet; and at 60 miles it is 251 feet.



Think about these distances when you are driving on the streets and highways—and don't take chances.

SAFETY INSTRUCTION CARD No. 368

FALLING WITHOUT INJURY ON ICY GROUND

WHEN about to fall on icy ground, a person usually tries desperately NOT to fall.

He contracts his body and limbs violently, throws up his arms, and falls with one small part of his body contacting the ground. His brittle bones are often broken.



Body and limbs should, on the contrary, be relaxed; the whole body ought to "unfold" flexibly in the direction of the fall.

If the feet slip on icy pavement, the relaxed body can usually "slump" to the ground with the weight distributed on thighs, hips and hands.

In falling forward, or to either side, one can learn, like the football player and the acrobat, to meet the ground with a slight roll, without injury.

In falling backward it is possible to land so nearly with hips, shoulders and hands touching the ground at the same time that the jar may be distributed harmlessly.

Even on stairs or icy steps, injury may be very slight.

Learn to relax and take the bumps with a roll.

SAFETY INSTRUCTION CARD No. 369

PORTABLE ELECTRIC LAMPS

(Some Fire and Shock Hazards)

1. Select lamps made by reliable manufacturers.
2. Avoid placing lamps with pull-chains on or close to radiators or other grounded equipment.
3. Never hold the telephone in one hand and operate a pull-chain switch with the other; never touch two lamps, or two switches, or a lamp and other grounded metal at the same time.
4. Avoid lamp shades of celluloid or other easily flammable materials; heat from the globe may ignite them.
5. Disconnect any defective lamp or cord; get an experienced electrician for all repair work.
6. Select extension cord bearing approved label, and fittings marked with current rating and maker's name.
7. Do not allow extension cord to become linked; never pinch it.
8. Avoid stepping on the cord; do not allow furniture to rest on it; never nail it to wall or floor.
9. Keep extension cord away from radiators and heating pipes.
10. If the cord shows wear, get a new cord.
11. Pulling on a cord to disconnect it from a wall socket may loosen connections in the plug; pull the plug itself.
12. Open wall sockets are dangerous; if not in use, close the socket with a screw plug.



SAFETY INSTRUCTION CARD No. 370

Safety Instruction Cards

(Continued from page 30)

Horse, a well designed 2
Horses, suggestions for handling 172
Horseplay 154
Hours of danger 256
Housekeeping, inspection list 29
  Salvaging materials 179

Ice slipping hazards 107
Ice tongs 336
Icicles 121
Inattention 177
Injured worker 310

Jacks, safe use of 93
Janitors, sweepers and cleaners 134

Kite flying 40
Knives 144
Knot, underwriters 9
Knuckle guards for trucks and wheelbarrows 248

Ladders, setting up 16
  Carrying 202
  Climbing 51
  Extension 178
  Maintenance 340
  Step ladders 262
  Working from 324
Lathes, all-purpose metal-working 39
Lead poisoning, protection 116
Lifting—safe methods 55
Linemen, care of leather equipment 288
  Protection against grounded wires 352
Linemen's climbers, to sharpen 22
Live wires, to free person from 189

Machine operators 306
Machine shop workers 299
Maintenance and repair (working on machinery) 259
Maintenance and repair men 79, 259
Safe Clothing 253
Making safety suggestions 109
Manila rope 72
  Care when not in use 14
  Care of 106, 203
  Testing in the field 231
Manila rope slings, safe loads 47
Masons, brick 135
  Stone 220
Matches 132
Metal planer operators 298
Milling machine operators 297
Monkey wrenches 204
Motormen and conductors 48

Nails, how to start 153
New employees, helping 101
  Tips to 302

Office accident causes 77
Office hazards 231
Oil storage tanks, cleaning 70
Oilers, advice to 74
Oiling machinery 147

Painters, brush—lead poisoning 289
Pedestrian traffic safety 313
Pens and pencils 272
Personal safety check list 181
Picks 176
Piling materials, general 140
  Bags of cement 249
  In process near machines 266
Pipe fitters 215
Pipe lines, blanking off 100
Pipe wrenches 188
Piping systems, identification of 20
Plant yards, safety in 318
Pneumatic hammers and chisels 52
Poison ivy 30
Poison oak and poison sumac 64
Poles, dismantling defective 45, 169
  Testing before climbing 232
Portable extension lamps 67
Posture 90
Power hammers 317
Power press operators, advice to 65
Power trucks, operation of 43
Practical jokes—compressed air 291
Punch press guards 307
Push tools for jointers and saws 38

Railroad cars, unloading 342
Railroad Crossings 328
Rescue work, broken ice 255
  Self rescue 273
Resuscitation, *see artificial respiration*
Roll scraper (for cleaning power-driven rolls) 34
Rope, fibre—maintenance 106
  Kinks in 333
Rope knots and hitches 200, 222, 246, 335
Rope hitches and slings 1, 210
Rope, protecting from chemicals 62
Rope and block sizes 28
Rowboats, general suggestions 337
Rubber gloves, care of 214
  To test for leaks 4

Safety committee chairmen 296
Safety Committeeman 341
Safety inspection, unsafe practices 325
  Mechanical check list 333
Sanitation and hygiene 308
Saws, circular—dont's 54
  Operating speeds 254
Saws, cross-cut—how to carry 194
  Hand, how to use 255
  Hand, how to start 123
  Swing, cut-off 143
Scaffold planks, identifying 32
  Safe loads for 120
  How to test 15
Scaffolds, suspended 78
  Swinging 334
Scissors and shears 240
Screw driver 267
Screw machines, hand 344
Sheaths for sharp pointed tools 184
Shoes, safety 234
Shoring trenches 167
Skidding cylindrical objects 11
Slings, angles and capacity 24
Sling chain hooks 159
Snakebites 201
Soldering 164
Spiders, "black widow" 250
Spray coating, general precautions 227
  Prevention of fires 277
Stacking cylindrical objects 7
Stacking pipe and round bars 114
Stairways, ramps and fixed ladders 37
Stairways, how to use 146
Step ladders 262
Storerooms and stockrooms 139
Suggestions, safety, making 109
Summer camp safety 320
Sunburn 199
Sunstroke 56
Swimming 330

Tackle, lifting capacity of (wooden shell blocks with manila rope) 61, 69, 86
  Lifting capacity of (steel shell blocks with wire rope) 36, 95
Tank cars, loading flammable liquids 30
  Opening dome covers 12
Unloading acids 94
  Unloading flammable liquids 105
"That tired feeling" 168
Thawing frozen pipes 131
Timbers, setting in mines 27
Toolkeepers 136
Tools, portable electric 91
  Electric hand 343
  Garden tools 314
Traffic hand signals 335
Tree felling 218
Tree trimming 205

Warning signs, colors to use 112
  Location 160
  Style of lettering 119
Watchmen, suggestions for 35
Water, life saving 223
Weights of materials, dry materials 138
  Liquids 213
Welding, electric arc 68
Wheelbarrow, how to handle 187
Wind force 270
Window cleaning, safety belts 32
  From ladders 110
Window glass, carrying 155
Wire rope, lubrication 98
  Putting on a seizing 263
  Safe loads, vertical slings 263
  Uncoiling and unreeling 49
  When to discard 19
Women shop workers 332
Working beneath a car 25
Worry 143
Wrenches, use of 111
  Track wrenches, use of 311

FIRST AID IN INDUSTRY

Preventing errors is an important job in industry. Even slight mistakes are sometimes costly. So it is with injuries; a minor wound if ignored may lead to serious infection.

The first step in preventing infection is to report all injuries promptly, because delay increases risk. Prompt thorough cleansing and application of an effective antiseptic is the first defense.

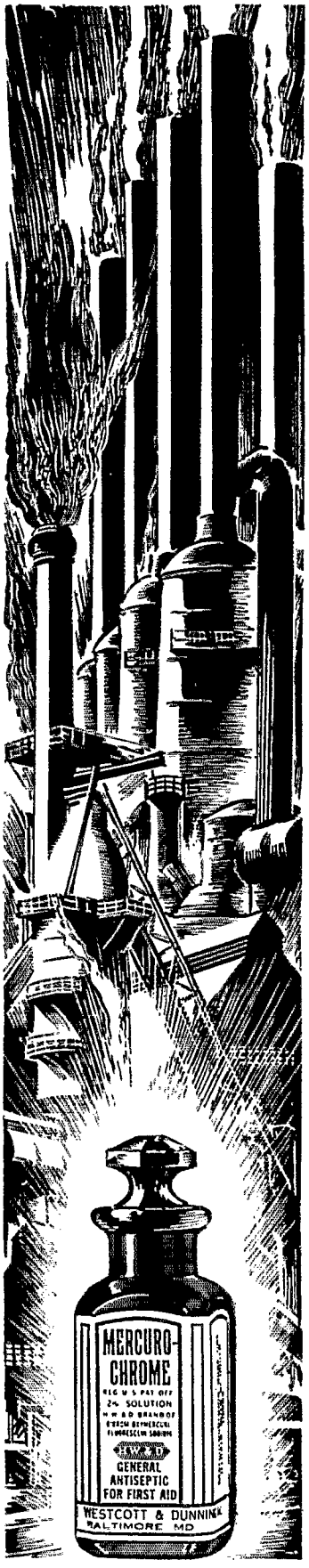
Mercurochrome is especially useful in first aid work, because application is not painful, with the result that injuries are usually reported more promptly. Mercurochrome is non-irritating and exerts bactericidal and bacteriostatic action in wounds.

Mercurochrome should be used in the first aid care of all minor wounds; in more serious cases, a doctor should be called.

This seal denotes acceptance of Mercurochrome by the Council on Pharmacy and Chemistry of the American Medical Association.

HYNSON, WESTCOTT & DUNNING, INC.

BALTIMORE HW&D **MARYLAND**



Industrial Health

A Department for Physicians and Laymen

Air Contaminants That Affect Health

By H. B. MELLER*

DURING the development of present knowledge of the influence of air contaminants on health, naturally many theories were advanced that later scientific work has modified or displaced. However, not always has the correction been as widely and thoroughly disseminated as was the original theory; this condition, perhaps, has led to some confusion.

There are available different published classifications of dusts. Included in such classifications are dusts the exposure to inhalation of which is, or is likely to be, occupational. Of dusts which are inherently toxic when inhaled or otherwise absorbed and which cause systemic poisoning, examples are lead, arsenic, mercury, manganese. Examples of dusts which have the ability to penetrate the deep lung tissues and to be retained there are quartz, flint, chert, asbestos, talc, coal, iron, clay, slate, and other types of rock dust.

In order that the discussion may not go too far afield attention will be centered upon this last group and upon pneumoconiosis, the general term used to designate lung conditions caused by dust. Silicosis, which is caused by the inhalation of free silica, has been prominent recently in the public press, sometimes in a way that made misunderstanding possible, if not probable.

What Dusts Cause Injury?

It has been established that the potentiality of silicious dusts to cause lung damage is, with very few exceptions, dependent upon their content of free Silica (SiO_2). The development of silicosis depends, therefore, upon the concentration of dust containing free silica in the air breathed. In other words, the total amount of free silica breathed and retained seems to be the primary factor; the length of time necessary for a sufficient accumulation is important, but less so than the total load.

Silica occurs also in chemical combination in silicates. Some of these compounds have been proved definitely to be relatively harmless to health, some are still in the realm of doubt, and one, asbestos, may cause the disease called asbestosis, which is the result of lung damage similar to, but not identical with nor as serious as, that produced by free silica.

The size of dust particles in the air which an individual may breathe is important. Not often are particles larger than 10 or 12 microns found in the deep lungs, except in the case of asbestos dust, where fibres as long as 200 microns have worked their way down lengthwise.

Uncomplicated Silicosis. Silicosis, uncomplicated by an infection, is more of an impairment than a disability. It is not seriously disabling until it reaches an advanced stage, and does not of itself greatly shorten the life of a silicotic. It is in cases where tuberculosis develops that the worker must be removed from his occupation.

Silico-Tuberculosis. When a silicotic dies, the immediate cause of death is usually some type of intervening lung infection, as tuberculosis. It is not known just why the presence of silica in the lungs increases susceptibility to tuberculosis, but when an adult with silicosis is exposed to tuberculosis, an active infection may occur, regardless of the previous state of health. It is thought probable that silica dust can reactivate healed tuberculosis lung lesions of the adult type; how long after such lesions have healed the reactivation is possible is not certain. Exposure of silicotics to tuberculosis or of tuberculous individuals to silica dust is serious and should be avoided.

After silicosis has become well established in the lungs, medical science has not found a way to arrest the progress of the silicotic process toward the stage of disablement except through limiting or preventing further exposure to silica dust. Nor has medical science found a way to prevent tuberculosis from being superimposed upon silicosis, except through control of contact. The course of silico-tuberculosis is chronic and is very difficult to influence by treatment, according to phthisiologists.

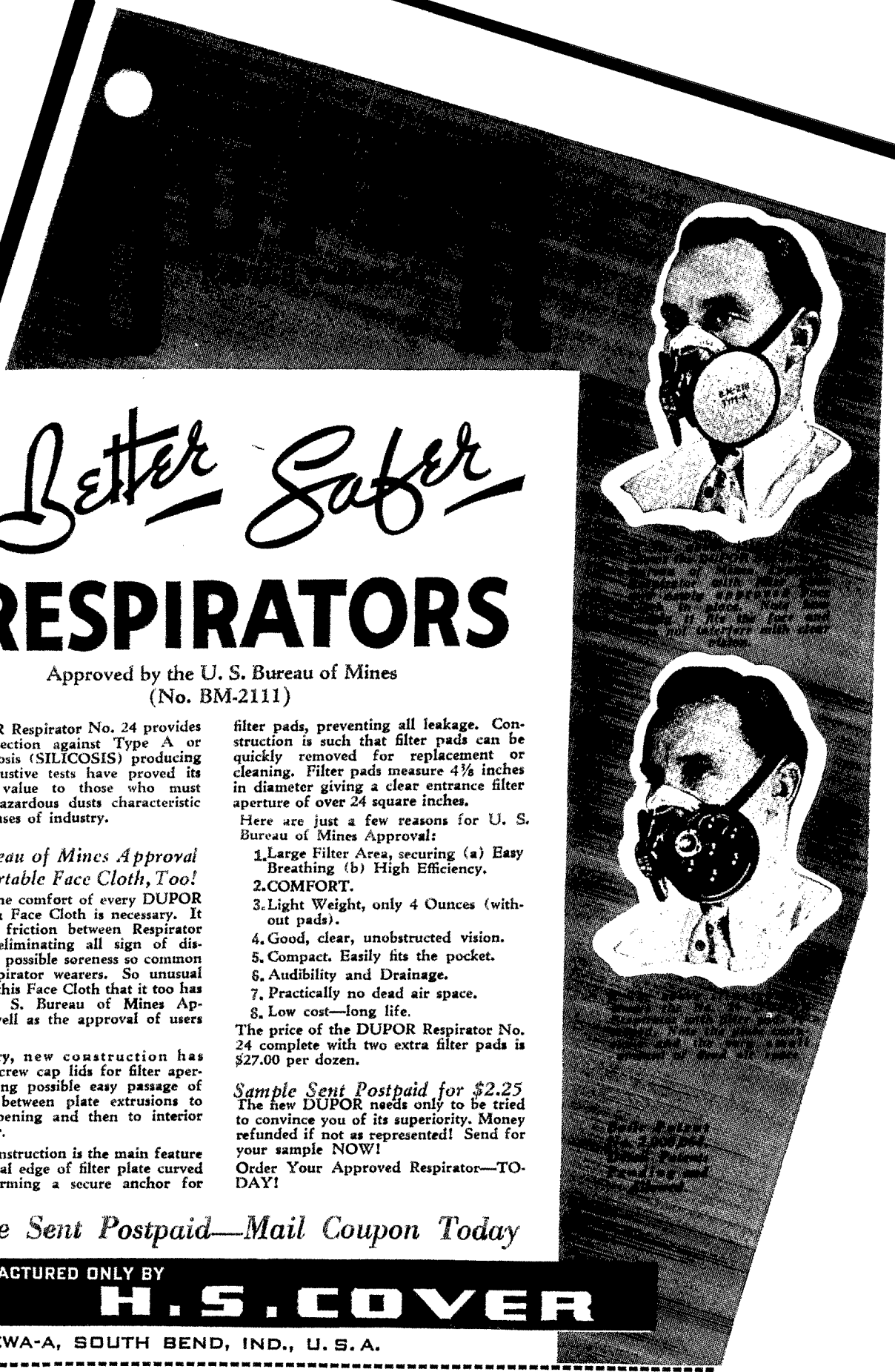
Medical Control

As a basis for intelligent determination of the physical fitness of a man for a job in a dusty trade, physical examination, with stereoscopic roentgenograms of the chest, is necessary. Along with this study goes, naturally, the preparation of an occupational history with detail as to the exact nature of previous work and of exposure to industrial dust —not a valueless recording of occupations as "laborer," "machinist," etc. Dr. Sayers of the U. S. Public Health Service, has developed a method of securing information for a proper occupational history; among others, Cummings, of Saranac Laboratory, also has worked out a useful history blank.

Standards have been developed for the diagnosis of silicosis. There is also a suitable technic for taking roentgenograms of the chest in order to bring out the characteristic lung changes.

Periodic physical examinations, including roentgenograms, are essential if employers are to be enabled accurately to learn the effect of individual exposure and intelligently to transfer affected workmen to lower dust concentrations before serious injury has been done, or to work out a system of rotation where indicated as desirable in order that ex-

*Managing Director, Air Hygiene Foundation of America, Inc.; Head, Air Pollution Investigation, Mellon Institute of Industrial Research, Pittsburgh, Pa.



Better Safer
RESPIRATORS

Approved by the U. S. Bureau of Mines
(No. BM-2111)

The DUPOR Respirator No. 24 provides needed protection against Type A or Pneumoconiosis (SILICOSIS) producing dusts. Exhaustive tests have proved its inestimable value to those who must brave the hazardous dusts characteristic in many phases of industry.

U. S. Bureau of Mines Approval on Comfortable Face Cloth, Too!

To add to the comfort of every DUPOR Respirator, a Face Cloth is necessary. It absorbs the friction between Respirator and Face, eliminating all sign of discomfort and possible soreness so common to most respirator wearers. So unusual in design is this Face Cloth that it too has received U. S. Bureau of Mines Approval, as well as the approval of users everywhere!

Revolutionary, new construction has eliminated screw cap lids for filter apertures. Making possible easy passage of filtered air between plate extrusions to protected opening and then to interior of respirator.

Safety of construction is the main feature with marginal edge of filter plate curved inwardly forming a secure anchor for filter pads, preventing all leakage. Construction is such that filter pads can be quickly removed for replacement or cleaning. Filter pads measure 4⅜ inches in diameter giving a clear entrance filter aperture of over 24 square inches.

Here are just a few reasons for U. S. Bureau of Mines Approval:

1. Large Filter Area, securing (a) Easy Breathing (b) High Efficiency.
2. COMFORT.
3. Light Weight, only 4 Ounces (without pads).
4. Good, clear, unobstructed vision.
5. Compact. Easily fits the pocket.
6. Audibility and Drainage.
7. Practically no dead air space.
8. Low cost—long life.

The price of the DUPOR Respirator No. 24 complete with two extra filter pads is $27.00 per dozen.

Sample Sent Postpaid for $2.25

The new DUPOR needs only to be tried to convince you of its superiority. Money refunded if not as represented! Send for your sample NOW!

Order Your Approved Respirator—TODAY!

Sample Sent Postpaid—Mail Coupon Today

MANUFACTURED ONLY BY

H. S. COVER

CHIPPEWA-A, SOUTH BEND, IND., U. S. A.

H. S. COVER, South Bend, Ind. Dear Sir: ☐ Please rush me your SAMPLE OFFER (post paid). I enclose $2.25 to cover cost. ☐ Please rush me one dozen DUPOR Respirators No. 24, for which I enclose check for $27.00.

*Name*_____

*Address*_____

*City*_____

*State*_____

posure may be intermittent. Such examinations are helpful also in showing the efficiency of engineering control methods.

The ability to place responsibility in case of claim for injury is no small part of the value of such initial and periodic examinations.

Asbestosis. Clinical experience has shown that the inhalation of a sufficient amount of asbestos dust causes a serious type of fibrosis, which is not accompanied by an unduly high incidence of tuberculosis.

Other dusts and silicate compounds so far studied produce, at most, only a mild non-progressive reaction in the lungs, provided there is no significant amount of free silica in their composition. While not serious clinically, such conditions may give rise to considerable litigation.

Adequate statistics on morbidity and mortality from occupational disease, to serve as a basis for effectively focussing the efforts to study and control dust diseases of the lungs are non-existent.

Preventive Engineering

It would be needless repetition to attempt to discuss in a technical way the engineering phases of dust control. All interested are referred to *Industrial Dust*, by Drinker and Hatch, issued in August of this year, which deals comprehensively with the subject; U. S. Bureau of Mines Information Circulars 6840 and 6848, by Harrington and Davenport, a review of literature on *Prevention of Dust Diseases;* U. S. Public Health Service Bulletin 217, by Bloomfield and DallaValle, on *The Determination and Control of Industrial Dust;* Report Z9 of the American Standards Association; and to the U. S. Bureau of Mines for a list of approved protective devices.

It may be said that, in general, the engineering specialist can and will devise the necessary equipment to meet the conditions specified to him. But the setting of limits of permissible dust concentration is not his but the physician's responsibility. The engineer is concerned with keeping dustiness to or below the limits at present considered satisfactory.

Methods of Determining Dust

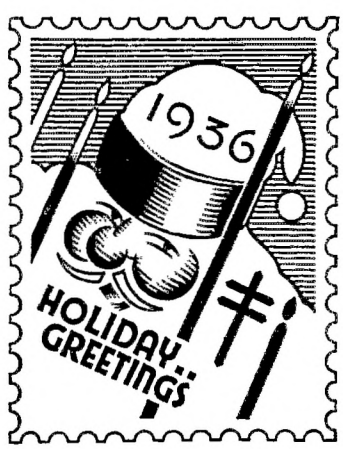
Some dusts (as lead) are determined by chemical methods and the concentrations in air are recorded gravimetrically as milligrams per cubic meter. Others (as silica, where size is a factor in determining dangerous particles), are given by count. Neither method gives the whole story, but in both cases it may be possible to secure the information necessary for the purpose.

In one report this statement occurs: "There is no doubt in the mind of anyone familiar with the present dust-sampling and dust-estimating methods that they will be amended and changed from time to time. At the present writing we would advise the use of the simplest possible procedures where dust control alone is in question. If one wishes to obtain values which can be compared with published data, it is generally necessary to copy with considerable care the technic used in the original case. This is another way of admitting the annoying fact that results by one method are usually not comparable to those obtained by another method."

In another place, the report says: "It is very doubtful if any useful purpose is served by determining accurately extremely dense dust concentrations—the only excuse for such data is to show the skeptic that the workplace is much dustier than it should be . . . . .

"It is probable that any sampling procedure which fixes concentrations in groups 100 per cent apart is sufficient and that the results of any attempts to come closer to the concentration at the moment of sampling are simply misleading. Thus ranges such as 0-5, 5-10, 10-20, 20-40, etc., suffice for dust control."

Particle Size. As dust particles in the lungs are of the order of 1 micron, with rarely a particle over 10 microns, dust control for hygienic reasons should be aimed at particles in the size range found to have been breathed and retained. Again quoting: " . . . . . if one could avoid use of the dusts of 1 micron or less or exclude them from the dust which passes a 325-mesh screen, nearly all dust diseases would be eliminated." But to avoid the use of or to exclude these dusts involves very practical limitations. The thought here is to stress the desirability of study and experimentation in the direction indicated by the committee making the report.



Protect Your Home from Tuberculosis
BUY
CHRISTMAS SEALS

Dust Elimination

Obviously, it is better, when possible, to purchase equipment already supplied with exhaust hood, rather than to have to worry to fit one to equipment not designed to be hooded. Thus the responsibility for potential efficiency is upon the manufacturer.

There is available comparatively little information upon which to base the scientific design of hoods. The Preventive Engineering Committee of Air Hygiene Foundation includes in its recent report a table of minimum air velocities to capture certain industrial dusts (for use in granite cutting, grain elevators, paint spraying, sand pulverizing, electric welding, electric plating, quarrying and mining, and hatters' fur.)

For protective equipment such as dust respirators, air supplied masks, sand blast helmets, and goggles, very complete information is available, because of the work of the U. S. Bureau of Mines, the Bureau of Standards, and the American Standards Association in preparing and issuing specifications to be met if the equipment is to be used under conditions where approval is necessary.

Of course, all agree that, where possible, dust should be controlled at the source, and protective equipment used where this action cannot be accomplished.

Permissible Dustiness

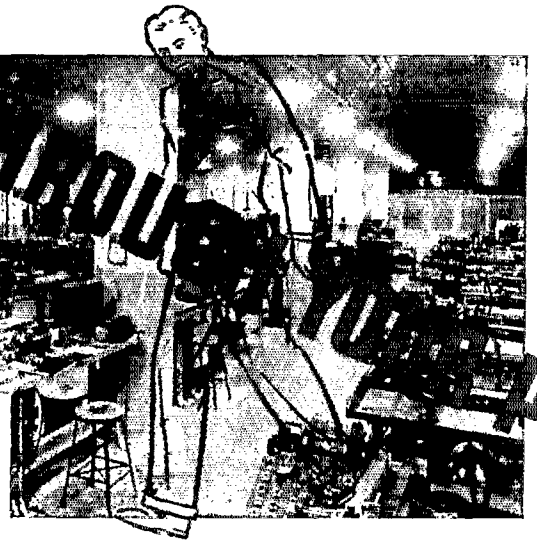
There are various figures that have been and are being used as guides to permissible dustiness where free silica is present. It should be noted that many of the data were not determined as the medical requirement, but as being attainable in good practice and apparently satisfactory from a safety standpoint.

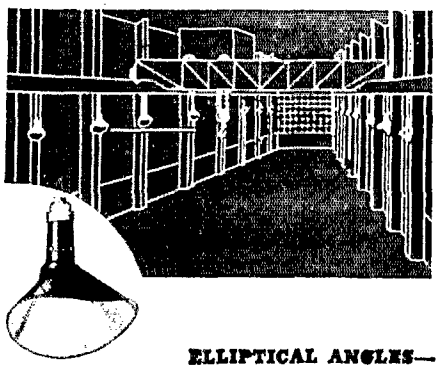
In South Africa the figure is 1 milligram per cubic meter (or 300 particles per cubic centimeter, or approximately 8.5 million per cubic foot).

Dr. Lanza found in 1917 in the Joplin, Mo., district that, with good engi-

(Please turn to page 65)

A WALK THROUGH YOUR PLANT...





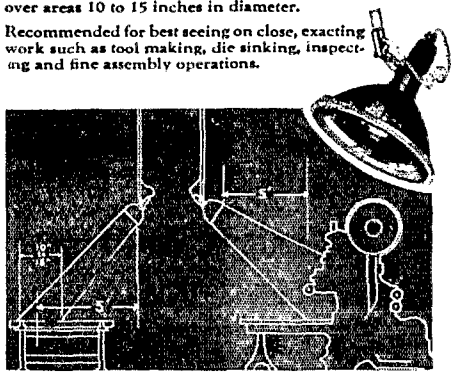
ELLIPTICAL ANGLES—

Lighting from the side solves the problem of location of lighting fixtures in many industrial plants where craneways or obstructions make it impossible to mount reflectors overhead.

Benjamin Elliptical Angle reflectors when installed as illustrated provide good illumination on both horizontal and vertical surfaces and are so located as to be out of the way. They are particularly advantageous for erecting shops, foundries, craneways, etc.

INTENSIFIER—Typical of many specialized lighting applications of the intensifier in providing supplementary high intensity lighting up to 200 footcandles over areas 10 to 15 inches in diameter.

Recommended for best seeing on close, exacting work such as tool making, die sinking, inspecting and fine assembly operations.



will tell you NOTHING ABOUT LIGHTING!

Inadequate lighting is rarely self evident. The production, profit and ACCIDENT losses it causes are seldom obvious. Therein lies the danger... the reason why the suspicions of even the most vigilant executive are often disarmed.

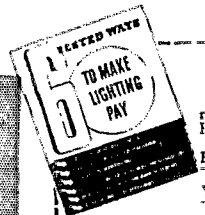
To provide SAFE SEEING for employees is profitable as well as humanitarian. Adequate light increases employes' efficiency as well as reduces compensation rates and conserves the workers' eyesight.

Whether or not your plant is utilizing, to the maximum, the science of modern industrial lighting can best be determined by a CHECKUP made by a lighting specialist. The making of this CHECKUP is one of the most important services rendered to industry by the Benjamin organization. The first step is the return of the coupon for complete details.

BENJAMIN TRADE MARK

Lighting Equipment





Benjamin Electric Mfg. Co., Dept. NSN
Des Plaines, Illinois

I'd like to go into this subject of lighting, so send me "6 TESTED WAYS TO MAKE LIGHTING PAY" and details of your Checkup Service.

Firm Name _____

Your Name _____

Address _____

City _____ State _____

Wood Shapers

Industrial Data Sheet D-W 3

A. Problem

1. What are the hazards of wood shapers and what precautions should be taken in their use?

B. Hazards

2. The principal hazards are those of injury by bodily contact with the knives, or with splinters thrown by the knives, or knives being thrown from the shaper head.

C. Discussion

General

3. The wood shaper is one of the most dangerous woodworking machines because of the high speed at which the knives revolve and the fact that in most instances the work is fed by hand past the knives. Wood shapers should be of heavy, rigid construction. All vibration and chatter should be avoided. The floor about each wood shaper should be made of or covered with non-slip material. Cylindrical cutting heads should be used wherever permitted by the nature of the work.

Guards

4. The cutting head of each wood shaper should be provided with a guard which will keep the operator's fingers away from the cutting edges of the knives. (See Note X.) Wood shaper work is of such variety that a universal guard cannot be used for all operations. Several types of shaper guards are described as follows:

a. *Vertically Adjusted Guard*—This usually consists of a barrier or cage which encloses the knives and can be moved up and down manually, as operations require. It is held in place by a thumb screw and vertical rod mounted on the machine table. It can be used with or without a table guide. The stock is fed under the guard.

b. *Hinged Guard*—This consists of a barrier that may be lowered in front of the knives and is held in place by hinged brackets. It may be raised or lowered manually to accommodate the size of stock being cut or, when necessary, to change knives. A thumb screw, operating on a rack and pinion, may be used to give the guard lateral adjustment. Counterweights or springs may be used to allow the guard to rest with desired tension on the piece being machined.

c. *Pressure Guards*—For many operations, guards may be mounted directly on the table top or on the table guide. These guards may be equipped with pressure members which will press against the work and lessen the danger of kick-backs. The teeth or bearing surfaces on these guards are usually of wood. The guards should be clamped tightly in place.

d. *Ring and Cap Guards*—When curved pieces of wood are machined and guides cannot be used, or where the machine table must be kept free of attachments, protection rings are the best type of guard. The ring or cap may be metal or wood and should be fastened onto the spindle as close as possible to the cutting knives. The device may revolve with the cutters or be attached loosely on the spindle. Circular plates with rounded edges that curve down over the cutters as far as possible, may be used also. The diameter of the rings or plates should always be slightly greater than the greatest spread of the knives.

Exhaust Hoods

5. The use of exhaust hoods is highly advisable, that the table may be kept clean of shavings and objects that may be thrown by the revolving knives. It is desirable to have adjustable hoods installed so that they be swung around and be effective for any of the various kinds of cutting that may be necessary on a particular machine. Hoods should be made with a wide flat side that will lie on the table top.

Jigs or Fixtures

6. Stock is often of such shape that it must be clamped in a holder before being machined. Holders should be carefully designed to make sure that the stock clamping mechanism is dependable. The inside jaws which clamp directly against the stock should be lined with some abrasive. Holders or fixtures should be checked periodically, and if the abrasive has become worn, it should be replaced before further use is made of the holder. On small holders, sharp pins may be necessary for holding the stock in place. These points may be broken and it is of greatest importance to see that they are replaced before the holder is again put in use. Guards and chip breakers may also be mounted on a holder and afford the operator greater protection from the hazardous point of operation.

Operating Rules

a. When a blade is removed from a shaper spindle for sharpening or for some other purpose, all other blades should be removed at the same time. This is to prevent other blades from being hurled from the spindle in case the machine is started accidentally.

b. Accumulations of stock or of finished work should not be allowed on the table.

c. Rubbish, shavings, stock, or other objects or materials should not be allowed on the floor where they may be a tripping hazard to the machine operator.

d. Working forms or patterns or holders should be used wherever possible. Care should be taken that the work is securely fastened in these fixtures.

e. When a table guide is used the operator should be sure that it is well fastened and will not slip.

f. Only sharp knives of the same bevel and balance, free of burrs or other imperfections should be used.

g. Short knives should not be used. They are dangerous because the shaper collars do not get enough bearing to hold the knives securely.

h. Before tightening the knives in place, the operator should make sure the collar surfaces are free of burrs or foreign material which will prevent the knives having an adequate bearing.

i. The operator, before starting his machine, should make sure the knives are securely fastened in place and that all guards are in the proper position.

j. Operators should not wear gloves, loose neckties, loose sleeves, or ragged or torn clothing of any kind. They should wear goggles which will protect the eyes against dust or flying particles. (See Note Y.)

k. When performing any operation on or about the spindle, other than operating the machine, care should be taken to see that the power is locked off.

l. Inexperienced or unauthorized persons should not attempt to operate wood shapers.

m. Do not "back up" on a cut. Running material in the direction of rotation of the spindle, instead of against it, is dangerous.

n. Operators should avoid taking deep cuts or feeding the stock too rapidly.

o. Operators should be particularly careful in machining wood that contains cross grains or knots, as these may cause the hands to be thrown into the knives or cause kickbacks.

p. Operators should not rest their hands near edge of material being cut.

q. The hands should not be used to remove objects or materials from around knives; a brush should be used for this purpose.

r. Operators should not tamper with guards nor make them inoperative in any way.

s. Operators, before leaving the machine, should make sure the power is shut off.

t. When an operator is shaping a piece of wood, others should not disturb him nor distract his attention by talking or by fooling about his work place.

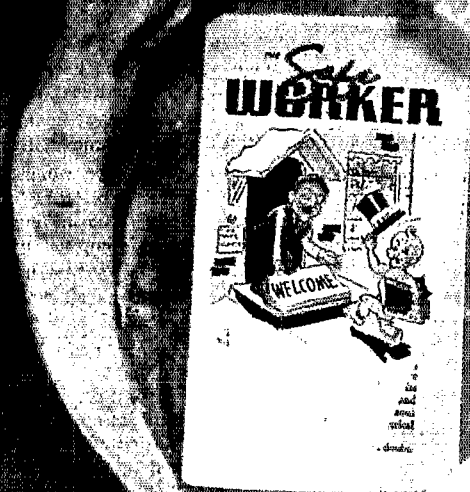
u. Whenever an operator observes an unsafe condition or unsafe practice, he should report it without delay to the foreman.

NOTE X: The National Safety Council will, upon request, furnish the names and addresses of firms who are able to supply satisfactory shaper guards.

NOTE Y: Detailed information on suitable goggles will be found in National Safety Council Safe Practices Pamphlet No. 14 "Goggles."

National Safety Council, Inc.
20 North Wacker Drive
Chicago, Ill.

Here's the Answer — in a Nut Shell



IN more than a thousand plants—in all parts of the country—200,000 workers look forward to the SAFE WORKER each month with pleasurable anticipation.

They read it—enjoy it—and then take it home to the family.

Each issue, handy pocket size, with attractive color cover, features straight-from-the-shoulder, practical helpful talks about safe work habits, housekeeping, efficiency, loyalty—and about people.

There is fun in it too—plenty of humor—and innocent satire—in short, punchy stories about work and workers—and in the many clever cartoons drawn exclusively for it.

Employers everywhere tell us that as a safety educator and morale builder it is worth many times its cost.

Send for a sample copy! Look it over—read it—and you will want to hand a copy to every employee each month. Note the low cost for quantity orders. Some plants purchase as many as 5,000 copies monthly!

SCHEDULE OF MEMBER PRICES

25 to 100 copies	4c each per month
101 to 500 copies	3½c each per month
501 to 1000 copies	3c each per month
1001 to 3000 copies	2½c each per month
3001 and over copies	2¼c each per month

No transportation charges up to 1,000 copies—larger quantities F. O. B. Chicago.

No charge for imprinting on orders over 1,000 copies—Prices for imprinting on orders for less than 1,000 copies sent on request.

NATIONAL SAFETY COUNCIL, Inc.
20 N. WACKER DRIVE, CHICAGO

BEN TON

The Bulletin Board

A page for those who maintain the Show Windows of Safety

Conducted by STAN KERSHAW

Timely Posters

DECEMBER and January represent the closing of one year and the beginning of another, and to those who live in the less temperate climates they mean, ice, snow, slush and sleet, and special hazards.

To the man using safety posters these two months mean that he must keep his displays in tune with the season—with the seasonal hazards as well as the holiday spirit. They also mean that it is an appropriate time to tell his people, by means of his bulletin boards, just how much safety has meant to them during the year and how important it is that the good work be carried on with renewed effort.

The following list should be helpful in the selection of suitable posters:

No. 5951-B: 17 x 23 inches, 4 units. "Merry Christmas—May your Christmas be Merry and one of good cheer, may safety be with you each day of the year."

No. 5932: 9 x 12 inches, 1 unit. "Preventing fires in winter is different. Please make a special effort to prevent fires this time of the year." This poster contains additional copy explaining why winter fire hazards are different.

No. 5917-B: 17 x 23 inches, 4 units. "What chance would you have if you were doing sixty on a wet highway and a car suddenly cut in front of you?" The illustration shows a truck skidding into another vehicle.

WHEN you write your order for posters, avoid the possibility of its being misinterpreted. It is disappointing to open a package of posters and find that it does not contain the selection you wanted.

The following simple precautions will minimize the chance of error in filling your order:

1. *Write all poster numbers plainly.* Remember, a two with a short tail may look like a seven, a nine with a small loop may likewise look like a seven, etc., etc.

2. *If the poster number has a suffix, B, D or C, be sure to include it.* These suffixes indicate the size and may check a misinterpretation of the number itself.

3. *Print your own name and the name of your company plainly.* Some signatures are difficult to read, and a misdirected shipment of posters may be delayed or even lost.

No. 5933: 9 x 12 inches, 1 unit. "What to do if you have a cold?" This poster contains four pertinent recommendations.

No. 5394-B: 17 x 23 inches, 4 units. "When it rains, snows, freezes—Drive slowly."

No. 5954: 9 x 12 inches, 1 unit (Full color process poster). "Accidents make others suffer too." The striking picture on this poster shows a little boy selling papers in a snow storm.

No. 5974: 9 x 12 inches, 1 unit. "Bad weather may excuse a delay but never an accident." The illustration shows a truck being driven in bad weather.

No. 5966: 9 x 12 inches, 1 unit. "Service without accidents," is the caption of this public utilities poster. It shows linemen at work in a snow storm.

No. 5275-B: 17 x 23 inches, 4 units. "Let's hold our accident record down." Here is a good score sheet type of poster providing an opportunity to show the accident standing in the form of a curve.

No. 2553-B: 17 x 23 inches, 4 units. "Keep fit—safety requires clear thinking—clear thinking requires good health." The picture shows a man skating.

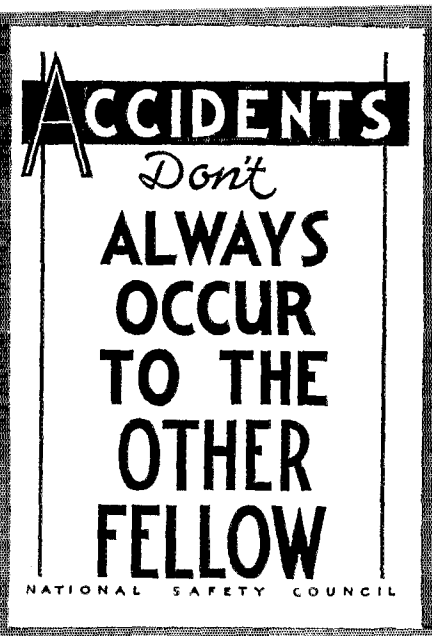
No. 5311: 9 x 12 inches, 1 unit. "Carbon monoxide kills without warning. The exhaust from all gasoline engines contains this deadly gas—Look out for it particularly in closed garages or closed cars—Protect yourself with plenty of fresh air."

Classified List of Posters on Outstanding Subjects—July-December, 1936

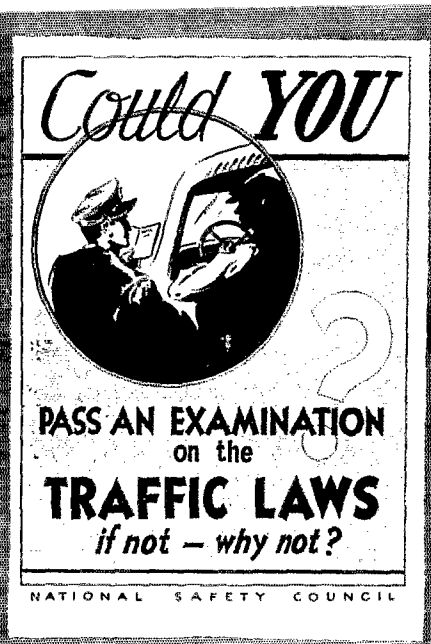
SUBJECT	1936 ISSUES OF THE NATIONAL SAFETY NEWS IN WHICH POSTERS ARE ILLUSTRATED					
	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Cleaning, oiling, adjusting and feeding machinery	5080, 5822		5123	5151, 5530		4432, 5589
Clothing	5077 5456, 5811	4662	5875	5899, 5165	4752	5417
Explosions, electricity, heat, etc.		5103	5879	5912, 4718		5210, 5957
Eye and face protection	2521			5900	4106	4612
Falling objects	5458, 5817		4687	5906	5451, 5936	
Falls of workers		4663, 5845	5512	5532		5583, 4441
Fire prevention	2877	5841	5891-B, 5893-D		5932	5963
First aid	5829-B, 2778-B 4512		4065-B, 4700	5921-B		
Guards	4632	4958	5883	5924	5089	4437, 5958
Hand tools	4629	5006	5867	5903, 5908	5557, 4753 4533	5962
Handling objects	5082	5846, 2089-B 5482	5868, 5510	5168	5942, 5575	5498
Harmful substances						5383
Health	5201	4761	5877	5916-B	5933	5959
Hoisting and conveying	4154			5387	5930, 5943	
Horseplay and distracted attention		5849	5516, 4316		5931, 5940	5595
Housekeeping		5491	5141	5443	5929, 4652	
Infections	5815	5492-B	5889-B		5404	4301
Rules	4319			5546	4706	4356
Safety shoes	4546	5110	5513		5562	4461
Stepping on or striking against objects (including nails)	5460			5907	5941, 5566	5599



5417 9x12 inches 1 unit



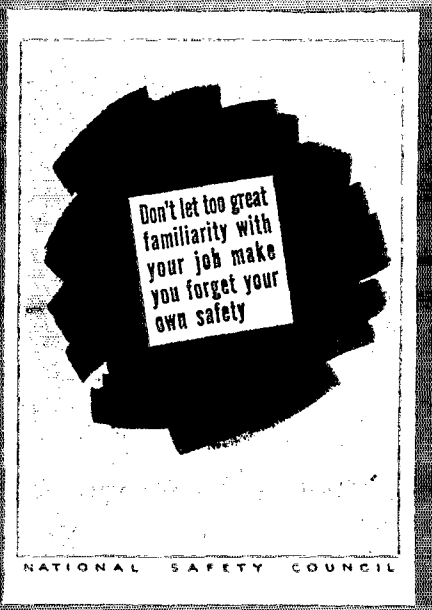
5970 9x12 inches 1 unit



5592 9x12 inches 1 unit



5983 9x12 inches 1 unit



5967 9x12 inches 1 unit



5958 9x12 inches 1 unit



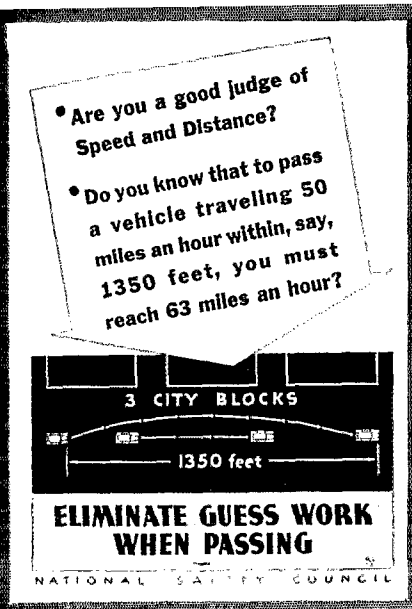
223 9x12 inches 1 unit



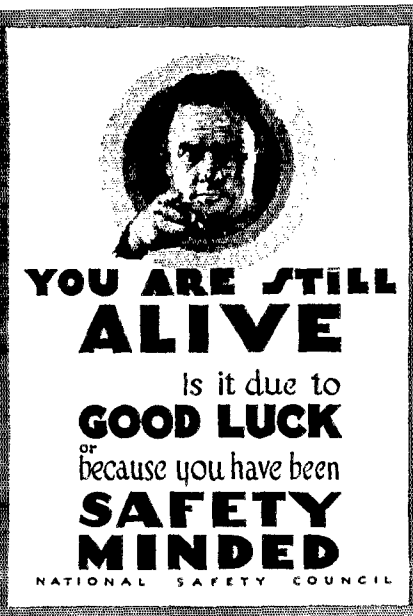
5593 9x12 inches 1 unit



5089 9x12 inches 1 unit



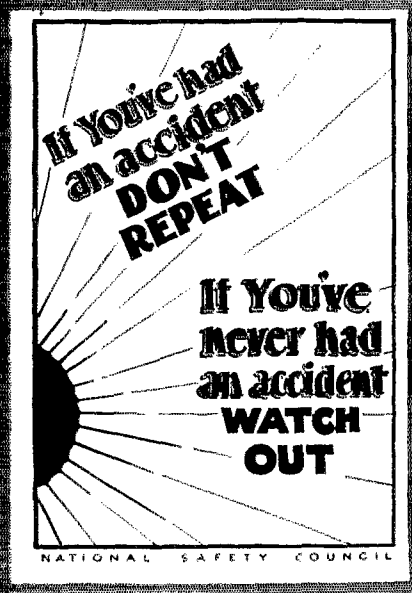
5979-B 17x23 inches 4 units



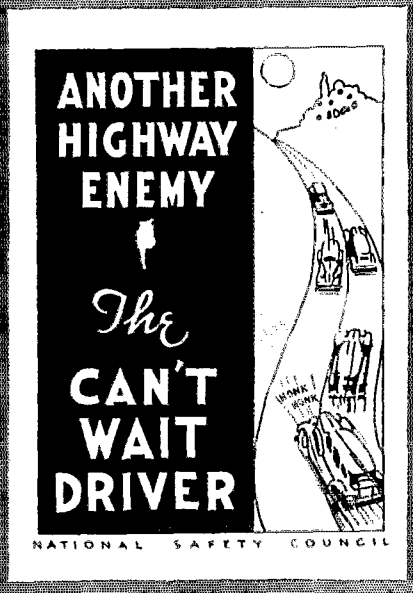
5980-B 17x23 inches 4 units



5978-B 17x23 inches 4 units



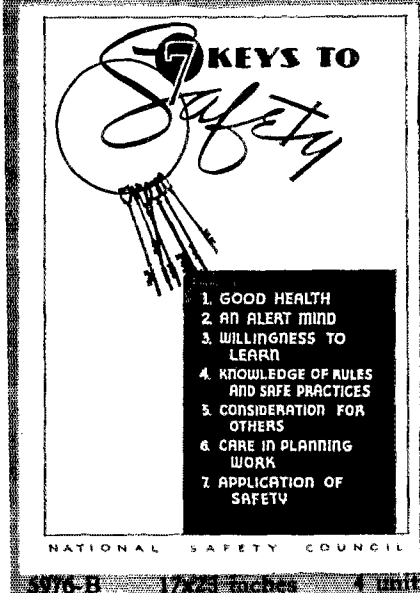
5985-B 17x23 inches 4 units



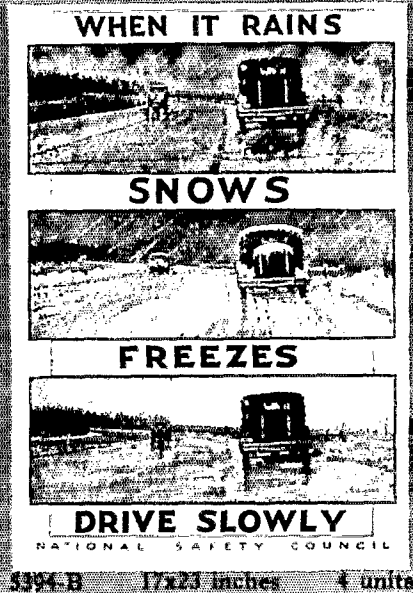
5984-C 25x38 inches 8 units



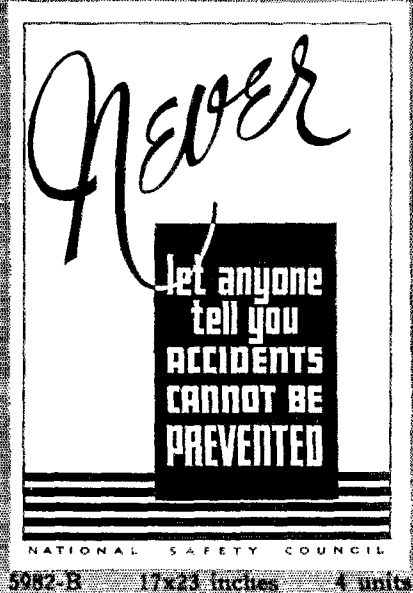
5644-B 17x23 inches 4 units



5976-B 17x23 inches 4 units



5394-B 17x23 inches 4 units



5982-B 17x23 inches 4 units

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



(Full Color Process Poster)

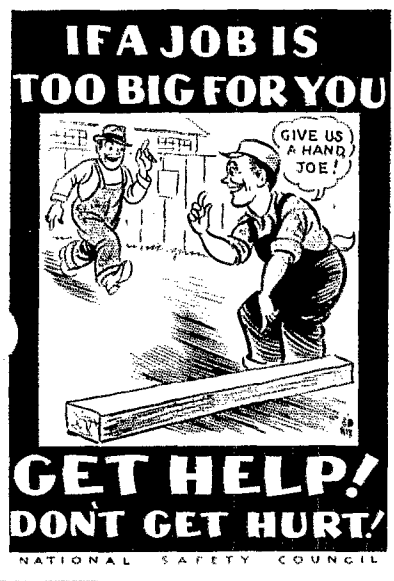
5584 9x12 inches 1 unit



5585 9x12 inches 1 unit



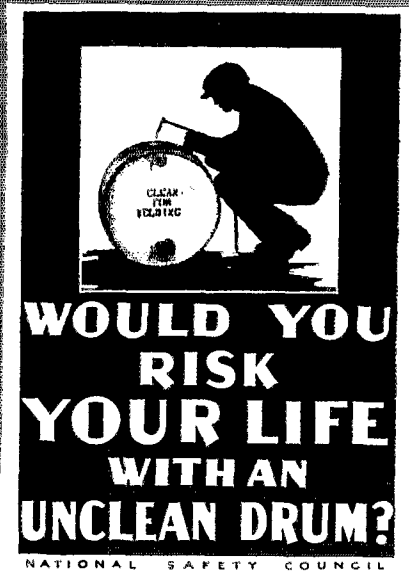
5599 9x12 inches 1 unit



5498 9x12 inches 1 unit



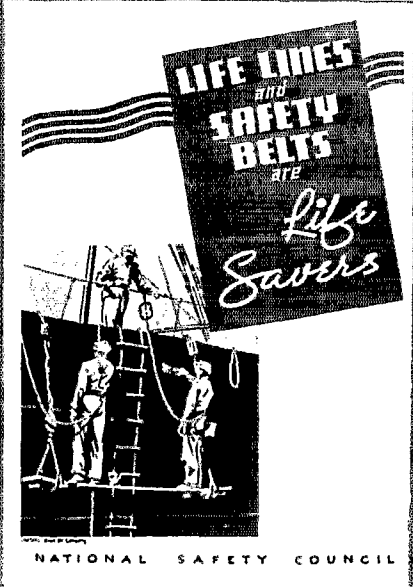
5971 9x12 inches 1 unit



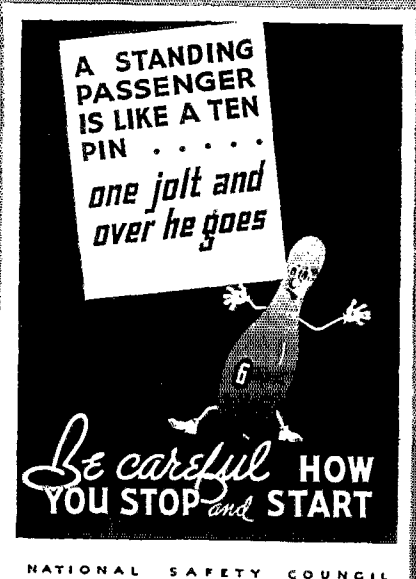
4227 9x12 inches 1 unit



2282 9x12 inches 1 unit



5956 9x12 inches 1 unit



5972 9x12 inches 1 unit

DECEMBER, 1936

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



(Full Color Process Poster)

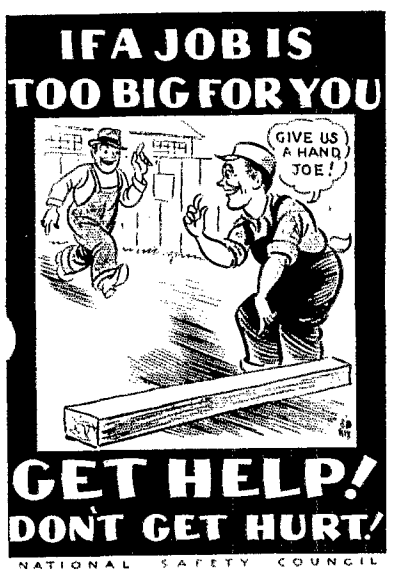
9x12 inches 1 unit



5585 9x12 inches 1 unit



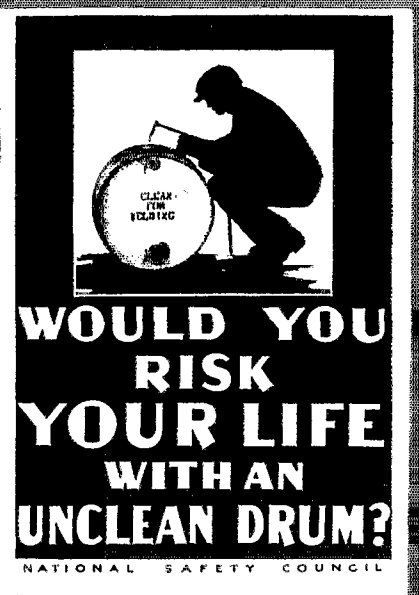
5599 9x12 inches 1 unit



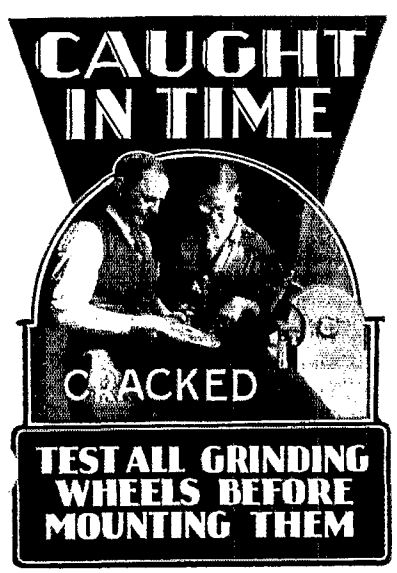
4098 9x12 inches 1 unit



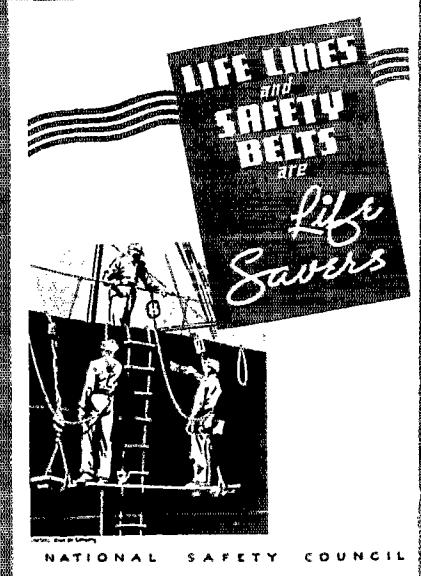
5971 9x12 inches 1 unit



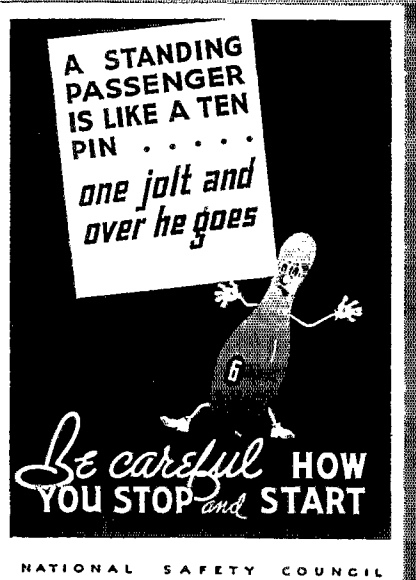
4227 9x12 inches 1 unit



5282 9x12 inches 1 unit



5956 9x12 inches 1 unit



5972 9x12 inches 1 unit

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



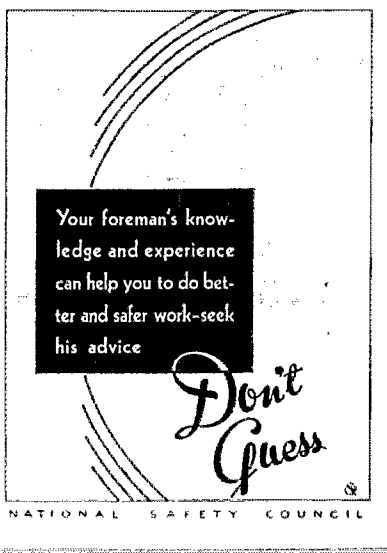
5600 9x12 inches 1 unit



5961 9x12 inches 1 unit



5974 9x12 inches 1 unit



5965 9x12 inches 1 unit



5969 9x12 inches 1 unit



4441 9x12 inches 1 unit



5068 9x12 inches 1 unit



4356 9x12 inches 1 unit



5959 9x12 inches 1 unit



5975 9x12 inches 1 unit



5966 9x12 inches 1 unit



5960 9x12 inches 1 unit



5541 9x12 inches 1 unit



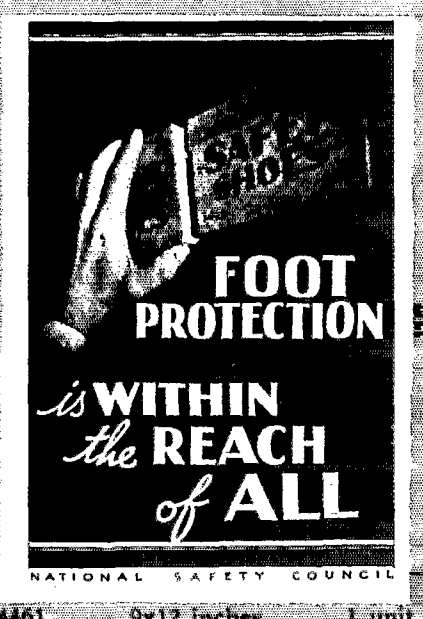
4612 9x12 inches 1 unit



5383 9x12 inches 1 unit



5115 9x12 inches 1 unit



4461 9x12 inches 1 unit

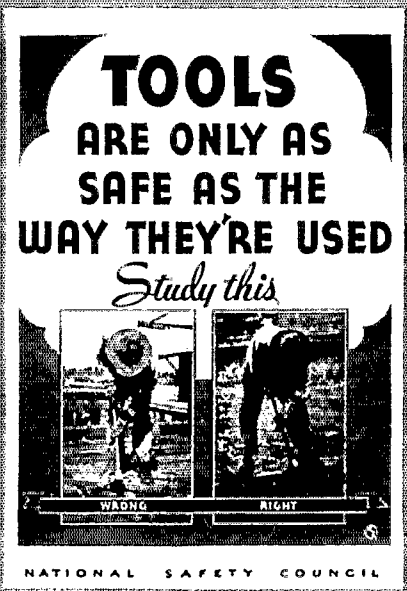


5590 9x12 inches 1 unit

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



4437 9x12 inches 1 unit



5962 9x12 inches 1 unit



4800 9x12 inches 1 unit



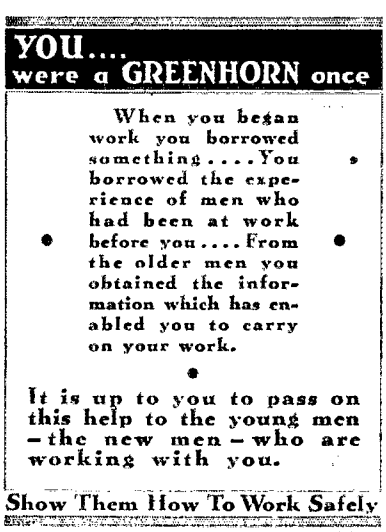
5352 9x12 inches 1 unit



5957 9x12 inches 1 unit



5589 9x12 inches 1 unit



5594 9x12 inches 1 unit



5595 9x12 inches 1 unit



5964 9x12 inches 1 unit

Heard at the Congress

Excerpts from addresses at sessions of the Twenty-fifth National Safety Congress

Safety's Representatives

The employee representation plan, which has proved so successful in past years, is an excellent medium for carrying out both a safety program and an industrial relations program.

Among the representatives are men from every department. The fact that they are representatives is proof that they are leaders, that the men listen to them and respect them in their judgment. If, therefore, we can sell the representatives on the value of safety, we have a number of influential proponents who are unofficial safety representatives, and whose efforts supplement the instruction which has been passed down to the superintendents and foremen.

These representatives, whose duty it is to be interested in everything that affects the welfare of their constituents, will, without making the formal inspections that are the duty of the Safety Department, bring to light unsafe practices that might, for a time, at least, elude the eye of the most vigilant safety inspector. But we encourage our representatives to report such practices, and when they are reported we make haste to correct them.

Sometimes these practices are reported to the representatives by workmen who cannot help but be impressed with the prompt attention given their complaints or suggestions when they are passed on to the management by the representative.

—J. A. Voss, Director of Industrial Relations, Republic Steel Corp. (Metals Section)

What Are The Facts?

As a result of accident investigations we have been able to determine the cause of many accidents and prevent their recurrence.

Under our system an investigation is really made on every accident reported. To complete the report which we require on each injury the foreman or supervisor must, in addition to giving a detailed description of the accident, answer a few questions which cannot be answered without at least a partial investigation.

For example, he must state who, in his opinion, was responsible for the accident; was the accident avoidable; and what has been done to prevent a recurrence.

—A. W. Breeland, Supervisor of Safety, Lone Star Gas Co. (Petroleum Section)

A Barometer Of Success

Just as car loadings are the barometer of a nation's business, so car collisions are the barometer of a street railway's success in accident prevention.

The car collision type of traffic accident is the only type that street railway men can hope to reduce to zero. While we can indirectly assist in making the motorist or pedestrian more accident conscious, we certainly can hope also to control our own operators to the extent of practically eliminating collisions between our own vehicles.

If accident prevention efforts of the larger street railway companies served only to eliminate all car collisions eventually, we could feel compensated for that effort.

—Col. J. H. Andrews, Assistant to the President, Philadelphia Rapid Transit Co. (Transit Section)

Fighting Fate and Fear

Four factors—thoughtlessness, familiarity, fear and misunderstanding—can still play havoc with a good safety record, even though all the workmen are in accord with the safety program. Every program must be backed up by a consideration of the human element and the weaknesses of human nature. No general program can touch this matter individually, so a great responsibility lies with the superintendent and foremen, for they alone can influence the attitude of the workmen along these lines.

A plant with a good safety record must continually fight fate and fear. Workmen will strive to build a good record and suddenly lose heart in fear that something is bound to happen. Instead of being on the lookout to see that something doesn't happen, they are continually watching for something *to* happen.

A good safety record should never be taken for granted, and steps must be taken to see that the employee's favorable attitude does not change to one of fear and fatalism.

—Frank B. Kimball, Superintendent, Middlefield Plant, New Haven Trap Rock Co. (Quarry Section)

The Invaluable Questionnaire

Personal appearance of safety men at all safety meetings in scattered units of production is not only impractical but next to impossible in the producing division of the Petroleum Industry. Yet, in the interest of uninterrupted safety consciousness, it is necessary that regular educational work be carried forward. The questionnaire has proved itself valuable in stressing safety, whether the safety man be present or be a thousand miles away.

It serves as a modified conference method without the presence of the trained conference leader.

In preparing a questionnaire it should be borne in mind that the true objective is not to determine how well the question may be answered, but rather to provoke serious thought and discussion.

Subjects should preferably be based on accident causes. For instance, analyses of accident causes have long pointed to "lack of knowledge" as one of the foremost fundamental causes. Further break-down and study of accident causes falling under the lack-of-knowledge group makes it easy to isolate specific machinery, tools and equipment where greater knowledge on the part of workmen is indispensable to safety.

When the safety man has engineered his problem this far, he has left only the actual mechanics of writing his questionnaire.

—Henry W. Boggess, Superintendent of Safety, Sinclair Prairie Oil Co., Tulsa, Okla. (Petroleum Section)

The First Five Minutes

The first five minutes after an injury takes place often have a very important bearing on the ultimate outcome. Efficient and effective first aid may save a life or prevent infection or other complications that may double the seriousness of the primary injury.

There should always be someone with proper first aid training immediately available where a group of workmen is located.

—Dr. V. C. Baird, Humble Oil & Refining Co. (Petroleum Section)

TRADE MARK 'TABLOID' BRAND FIRST-AID

THE OUTSTANDING PROTECTIVE VALUE...

of 'TABLOID' FIRST-AID to the factory worker is reflected in the selection of this famous equipment by leading industrial organizations everywhere.



'TABLOID' FIRST-AID No. 744
13¼ x 12 x 2¼ inches
Designed for use as a wall-case for work shops and factories

'TABLOID' FIRST-AID presents scientifically developed, modern equipment designed to meet a variety of industrial needs. Efficient, reliable and easily-applied, these products are indispensable protective requisites.

Please send me descriptive literature regarding 'Tabloid' First-Aid.

Firm Name_____

Address_____

_____

Individual's Name_____

Official Capacity_____

BURROUGHS WELLCOME & CO. (U.S.A.) INC.
9 & 11 EAST FORTY-FIRST STREET
NEW YORK CITY

Associated Houses:

LONDON (ENG.) MONTREAL SYDNEY CAPE TOWN MILAN
BOMBAY SHANGHAI BUENOS AIRES

Safety Through Health

The relation between industrial health and industrial safety is as clear and inevitable as the relation between cause and effect. Not only is industrial health the cause where industrial safety is the effect, but also industrial *ill* health is the cause in a very large number of instances where industrial *accidents* and *injuries* are the effects.

The pace of industrial production is gaged for industrial health. Stragglers slow down the industrial procession. This slowing down process, resulting from ill health, causes additional expense for unproductive labor and at the same time handicaps the rate at which productive labor produces.

It is much easier to obtain a very satisfactory degree of industrial health in a smaller plant than the description of what has been done in the larger plants would lead one to believe. For industrial health in a small plant is merely a matter of a part-time physician and a full-time competent nurse. Such a program need not be expensive, particularly when two or more small plants in a locality join together so that the aggregate number of employees approaches the figures which the full-time nurse and the part-time doctor can handle effectively.

If the large establishment finds it economical and profitable to have a health program, the small plant will likewise find it so in direct proportion. The more effective the health program, the more effective the accident prevention program.

—Joanna M. Johnson, R. N., Director of Nursing Service, Employers Mutuals, Chicago. (Meat Packing, Tanning and Leather Industries Section.)

The Engineer Safeguards Health

If I were asked, "Can the engineer prevent the majority of occupation disease cases?" my answer would be "yes." Obviously, with the exception of those diseases brought about through a sudden or accidental contact with a poisonous material or a virulent disease producing organism, if the exposure were controlled by engineering technique, then there would be no occupational disease.

Each individual occupational disease exposure must be studied, analyzed and controlled individually. While general data may be available upon common exposure, the solution can be found only in individual treatment. Such exposure cannot be compared to ordinary safety engineering efforts. A circular saw is a circular saw wherever it may be operated, but industrial disease exposure varies within plants and certainly varies between different manufacturing establishments, even though they may produce a like product or article.

—Reuel C. Stratton, The Travelers Insurance Company. (Occupational Disease Session.)

The Special Privilege Evil

Outstanding in connection with the automobile hazard is the failure to achieve strict and impartial enforcement of the law. The rapid growth of automobile traffic, with deaths far in excess of all other deaths due to crime, has caught the courts, the prosecutors and society unaware.

Traffic offenses were at the beginning looked upon as trivial matters where undue influence, special privilege and favors would do little harm. That system of special favors has been tolerated by citizens, judges, prosecutors and policemen alike, while side by side with it and partly because of this, automobile traffic has become the greatest death-dealing force in our civilization.

—Judge John Gutknecht, Municipal Court, Chicago. (Street and Highway Traffic Section.)

Visualizing Safety

Even with a safety-minded foreman the average worker does not have a comprehensive picture of safety, and for this shortcoming the safety engineer is largely to blame.

First, in many cases he is not qualified to be a safety engineer because he is still of the bolt-and-nut variety, and while he may know how a machine should be guarded, he knows little of the human machine and how to protect it. He should be a student of human engineering.

Second, he has not presented sufficient facts about the human machine to provide management with a clear conception of the great problem of human engineering confronting every industry today.

And third, most of his efforts have been to induce the worker to see job safety only, instead of attempting to increase the worker's range, giving him a panoramic picture of the benefits of accident prevention in all its phases.

I know of no case, where a complete investigation has been made of an accident, in which the well informed worker, with a real picture of the job and the safety program, was found responsible.

—Charles A. Miller, Supervisor of Safety, The Texas Company. (Petroleum Section)

The First Requisite

In nearly all major marine disasters one factor necessary for saving life has been found missing. Without efficient leadership the finest crew will go to pieces in a tragic crisis, with resulting added loss of life. The first requisite of a ship officer is leadership—the ability to command men.

—Captain J. H. Tomb, U. S. Navy (retired) Superintendent, New York State Merchants Marine Academy, New York City. (Marine Section).

Why Construction Safety Lags

Nationally the Construction Industry stands twenty-sixth among the 30 industrial classifications in accident frequency. There is no tenable alibi for this position. The Construction Industry has dangers, but the normal hazards encountered by construction workers are no more pronounced than those of workers in other groups. Yet these other groups are constantly demonstrating that accidents can be prevented.

Why? Simply because they have gone at the work of prevention intelligently, persistently, and in a spirit of cooperation.

The Construction Industry holds its present rating in relation to safety simply because it chooses to. It has never, either nationally or along state lines, taken safety seriously enough to hurdle a few barriers of prejudice, take up the work of accident prevention methodically and give it consideration equal to that directed toward production and profits.

Thomas P. Kearns, Superintendent, Division of Safety and Hygiene, Industrial Commission of Ohio. (Construction Section.)

Protecting The Public

Accidents involving the public are not only more numerous but also more costly and troublesome than any other type. A frequent and important contributing factor in such accidents is the physical condition of that part of the plant's property accessible to the public.

Docks must be kept free of chips and particles of ice. Stairways leading to the docks must be inspected frequently

(Please turn to page 76)

Davis

PROTECTION
for men working in or around Gas

COMBUSTIBLE GAS INDICATORS

Testing tanks to see if safe for man or flame.





Locating leaks in underground pipes.

CHEMICAL FILTER RESPIRATORS (GAS MASKS)

Protecting men while gauging tanks.

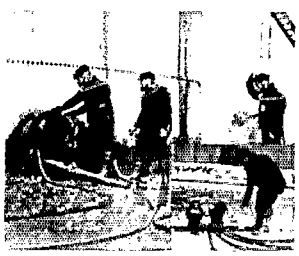


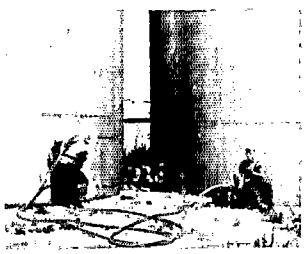


Protecting men against industrial gas.

HOSE MASKS

Cleaning tanks with motorized positive pressure blower hose masks.





Using a hose mask with velocity blower.

● Davis Engineers are considered authorities on methods for detecting explosive mixtures, for protecting men against gas, and for resuscitating men unfortunate enough to get knocked out.

To afford the fullest protection, the apparatus must be not just good but without possible flaws. Davis Protection has earned the highest of standings. Its service is broad, covering the many dangerous situations in industries.

INHALATORS



Resuscitating victims of asphyxiation.

DAVIS EMERGENCY EQUIPMENT CO., INC.

CHICAGO, ILL. • NEW YORK CITY • HOUSTON, TEX.

DAVIS EMERGENCY EQUIPMENT CO., LTD., San Francisco and Los Angeles, Cal.



Trophies won in four annual contests of the Public Utilities Section on display at the main office of the Central Illinois Light Company at Peoria.



Officials of the Shell Petroleum Corp., St. Louis, inspecting the trophies which Walter F. Jones, personnel manager, brought home from the Congress at Atlantic City.



Right: Thousands of persons who pass the main office of U. S. Rubber Products, Inc., at 58th and Broadway, New York, have stopped to look at these trophies.

They're Proud of Their Trophies

FROM Broadway to the Pacific coast, members of the National Safety Council are displaying proudly the trophies and certificates of merit won in the sectional no-accident contests. Nor are the honors confined to the U. S. A.; members in Canada and South America also received recognition for outstanding achievement in accident prevention.

Newspapers all over the country have published stories of the safety honors won by companies in their communities, and the trophies have been displayed in the most conspicuous locations available. Realizing the value of a reputation for safety, the trophies have been displayed in show windows where the public, as well as employees, could see them.

Most conspicuous among the locations chosen for the display of trophies is that of the United States Rubber Products, Inc., at the busy corner of 58th and Broadway in New York City. In one of the ground floor show windows of the company's home office building are displayed five plaques and one certificate of merit. These were presented to representatives of the company's widely scattered plants at the Twenty-fifth National Safety Congress in Atlantic City.

For four consecutive years the Central Illinois Light Company, Peoria, Ill., has captured first place in Group A, Combination Gas & Electric Division of the Public Utilities Section Contest. Following the Atlantic City Congress the four trophies were displayed in one of the company's show windows against an attractive background of safety posters.

When the Grey Iron Foundry of the American Rolling Mill Company at Ashland, Ky., won the trophy in Foundry Division of the Metals Section for the second consecutive year, the company wished to show its appreciation of each employee's share in the accomplishment. Miniature replicas of the plaque were made and presented to each employee in the foundry. Recognizing the part that protective devices had played in establishing the two-year safety record, the company also presented miniatures to the manufacturers who had supplied the plant with safety equipment.

President Sloan Sponsors G-M Safety Campaign

TO ENCOURAGE a further reduction of accidents in every General Motors plant, Alfred P. Sloan, Jr., president of General Motors, is personally sponsoring a six months' safety campaign beginning December 1 and continuing to June 1, 1937. On the eve of the campaign, General Motors safety experience is the best in its history. Approximately 8000 foremen will be enrolled in this drive.

"There is a specific reason or cause for every accident in our plants," said Mr. Sloan in announcing the award. "Whether it is due to individual carelessness, the fault of a machine or some other condition, it varies in each case. The fact remains that when we eliminate the causes of accidents, we eliminate accidents. We have made remarkable progress in this direction during the past two years.

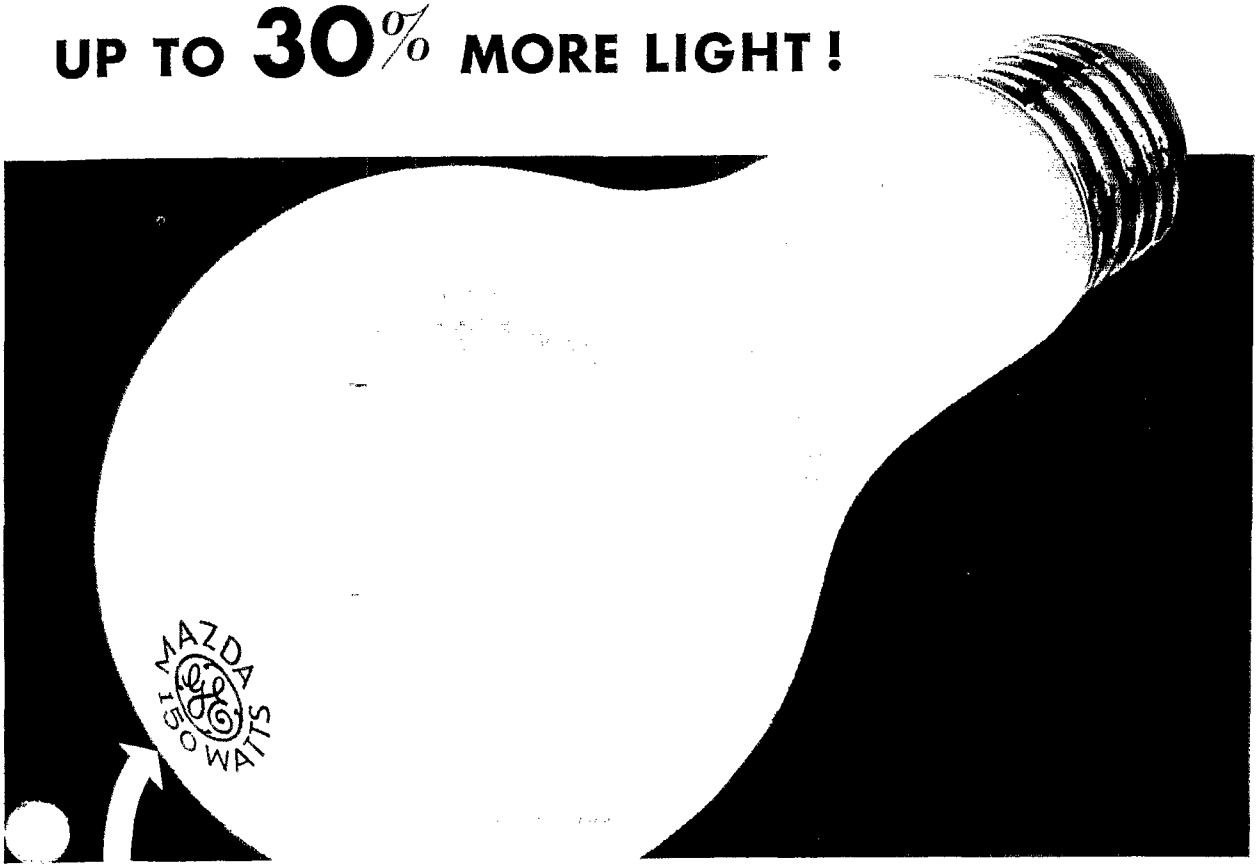
"At this time, I am happy to sponsor a campaign designed to reward those who make the greatest effort toward eliminating hazards, thus preventing accidents."

The campaign will center on the foreman as the key man, and 250 awards to foremen will be made at the end of the contest. Details of the contest have already been sent to each plant where group meetings will be held for further discussion.

The awards will be assigned on recommendation of an award committee of plant executives which will keep a constant check on safety progress. Factors determining the rating include safety performance (based on lost time accidents), hazard elimination, safety education and good housekeeping. Rating sheets will be provided the committee to keep accurate tabulations.

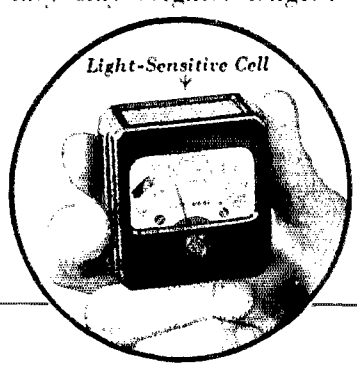
At the conclusion of the contest, ratings will be tabulated and the foremen making the most outstanding contributions toward the reduction of accidents will be declared winners of the "Sloan Award."

THIS MARK ON A LAMP . . . MEANS UP TO 30% MORE LIGHT!



. . . . *they stay brighter longer*

YOU can't save money on light by buying inferior bulbs. "Electric Eye" tests show they waste as much as 30% of the light you pay for. Poor light handicaps your workers . . . increases errors . . . slows up production. Why take chances on bulbs that waste light when those bearing the G-E mark of quality cost so little? Next time you order bulbs, make sure they are Edison MAZDA lamps. Be sure the monogram is on the end of every bulb . . . *it means they stay brighter longer!* General Electric Company, Nela Park, Cleveland, Ohio.



USE THE G-E LIGHT METER TO MEASURE YOUR LIGHTING

The General Electric Light Meter tells whether employees are getting enough light for easy seeing, and is helpful in checking from time to time on whether this amount of light is being maintained. Costs only $11.50. For further information write to General Electric Company, Dept. 166, Nela Park, Cleveland, Ohio.

EDISON MAZDA LAMPS

GENERAL ELECTRIC

Design for Living Safely

(Continued from page 13)

thought, to rescue human life and limb from the table of the gambler—these must be the objectives of the most widespread, the most obvious, and the most spectacular efforts in behalf of safety.

But while we prosecute this attack on behavior with unabated vigor, we must not forget that its ultimate success will be measured by how well the technical man is doing behind the scenes to create a safer environment for the safer behavior. In my judgment we still have room for substantial technical progress that will make for a higher degree of public safety without undue sacrifice of progress.

This is most evident, perhaps, in the field of public facilities. Nowhere is it more evident, for example, than in the field of highway transportation, now on the spot as the most hazardous of all public functions.

When the engineer of private industry approaches the safety problem, he can deal with a centralized and stable management. He has but to relate safety to the social and economic values involved, and he can find out very quickly where he stands.

But the public works engineer has no such set-up. When he must deal with safety in his works and structures, he can do so only as a designer, generally answerable only for cost. And in many cases, the cost for which he is answerable is first cost alone; he is not in position to get credit for the social or economic savings of his design.

Moreover, he has no centralized stable authority with which he can plead his case. His immediate superior is a public office holder, sometimes a politician, but always subject to the vicissitudes of politics; in today and out tomorrow, therefore, not over-conscious of long-term values. In a few cases the authority over design may be sufficiently well-coordinated with administration as to achieve some measure of overall responsibility, but frequently even such coordination is absent.

Consider, for example, the plight of the highway departments, that must build and maintain the permanent way required by modern highway transportation.

Today, of all public services, this is the most criticized public function on the score of safety. Naturally, great attention has been devoted to the behavior aspect of this function. Many new laws governing the operation of motor cars have been passed; many more are proposed. Communities have been organized from the children up to achieve higher standards of highway behavior. Automobile manufacturers have been urged both to improve their cars in the interest of safety and through their promotional efforts to improve the drivership of their customers. All this is necessary and admirable; it should be continued.

But all the while, the still, small voice of the highway engineer may be heard if we listen carefully, telling us that he, too, can contribute towards improving the conditions that today challenge the united efforts of the safety movement. "What of the environment?" he asks. While we try to hold drivers to safety, "under the conditions," what about improving the conditions? Can we not cut the toll of highway accidents and yet conserve to the community the benefits made possible by progress in automotive technology?

What the Engineer Can Do

Obviously the highway engineer cannot supply the answer to the whole problem, but he can offer a well stocked armory of devices which will enhance safety without impeding progress. He can build wider roadways with center separation of opposing traffic. He can revise his alinement and grades to improve sight distances. He can sign and signal his highways to reduce the hazard of the unexpected by night as well as by day. He can illuminate his main highways for night driving so as to reduce the nervous tension and counteract the demoralizing glare of opposing headlights. He can improve the design of intersections and crossings, both highway and railroad. He can design shoulders and guard-rails to reduce the hazards of driving off the road and to provide for necessary parking off the traffic lanes. He can improve roadway surfaces to curtail the risk of skidding. These are but a few of the means by which the highway engineer today can improve the physical plant.

But it is not merely in the realm of the physical plant that public facilities call for special consideration in this matter of public safety. Consider once again the special case of the highway. More and more it becomes evident that safe highway operation requires a greater measure of the coordination that is found in industrial practice. Our state highway departments should become departments of highway transportation. They should be responsible not alone for the design, construction and maintenance of the permanent way; they should be responsible for every aspect of traffic engineering on the public highways, for signal control, for the administration of highway patrols, for the examination and licensing of drivers and vehicles, and for the education of the public in the most intelligent use of the public highway facilities.

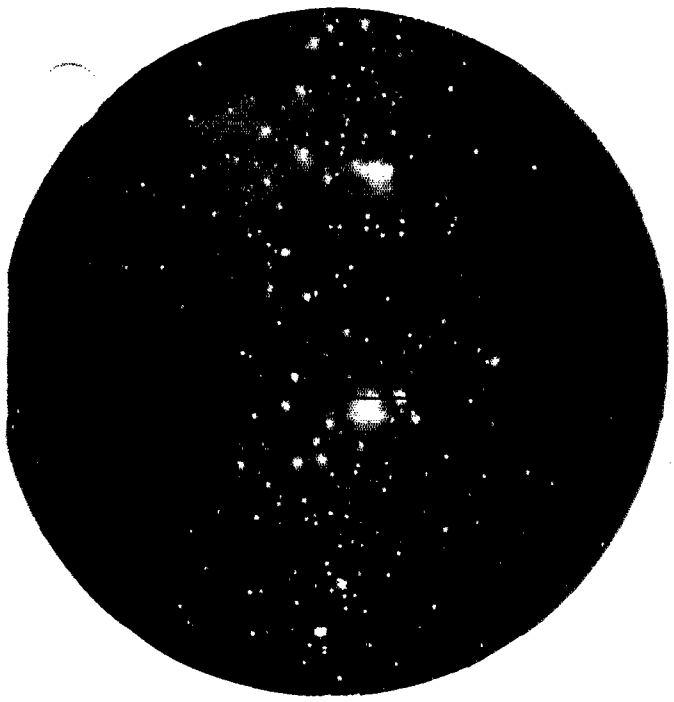
In another respect the highway engineer is handicapped in his effort to do his part, and if the National Safety Council wants to do something toward improving physical conditions, it can well lend its weight towards removing that handicap.

I refer to the wholesale diversion of the revenues collected by the states from the highway users. If highway administrators are going to bring their highway plant up to the requirements of safety and keep it there, they have need of all the revenues that now are being collected from the highways as gasoline taxes or registration fees. These revenues, originally levied on highway users for the explicit purpose of meeting their highway needs, are required more urgently today than ever before.

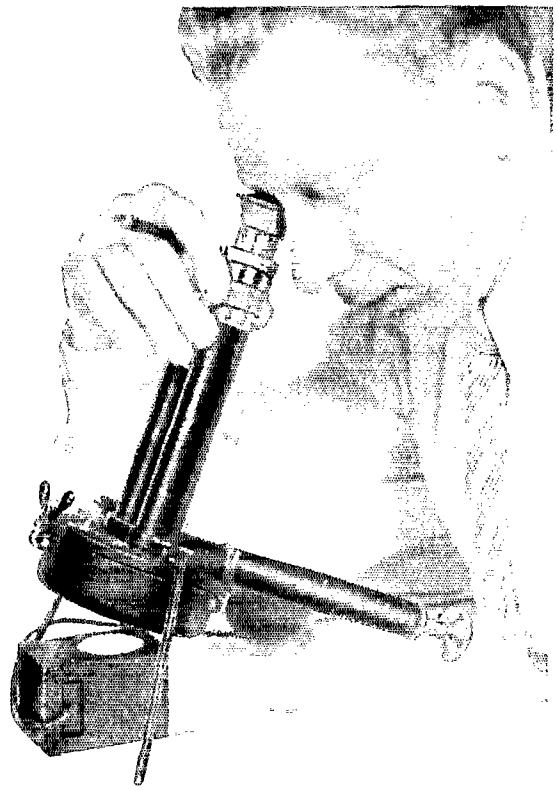
Right now in every state in the union there is need for a re-construction program that will do more than bring the main trunk routes up to the minimum standards of adequacy and safety required by modern traffic. As part of this program, or closely related to it, we have need for many projects of highway improvement adjacent to the large cities and towns, in order to reduce congestion and eliminate hazards.

To carry on such programs along with the normal extension and improvement of the highway systems, requires every cent of revenue collected from the highway users. But at this very juncture, we have seen, during the last few years, a wholesale misuse of these funds for other purposes. Whatever defense may have been offered for this practice in the name of relief, the time is about here when the demands of safety should be heard and heeded.

May I in conclusion leave with the National Safety Council the suggestion that it devote more and more of its efforts in behalf of public safety to holding up the hands of the engineers charged with the design and maintenance of public structures and facilities?



Reproduction of an actual field showing dust particles and counting scale.



KNOW THE DUST CONCENTRATION

in your plant

The first step in eliminating dangerous dust conditions in your plant is a comprehensive investigation to discover just what the dust conditions are—the quantity, size and nature of dust particles in the air in every part of your plant.

The B & L Dust Counter was designed in collaboration with and at the request of one of the leading insurance companies for the purpose of providing an easy, quick and accurate means of measuring dust conditions.

This instrument incorporates an air sampler, a dust counting microscope and a micrometer disc for measuring particle size. Twelve samples of air may be taken on one slide and examined immediately "on location" or later in privacy.

Thus with this B & L Dust Counter you can obtain and preserve for future needs a complete record of dust conditions in your plant.

For complete details, write to Bausch & Lomb Optical Co., 681 St. Paul Street, Rochester, N. Y.

Bausch & Lomb

BAUSCH & LOMB OPTICAL CO.
681 St. Paul St., Rochester, N. Y.
Please send me complete details on the New B & L Dust Counter.
Name _____
Address _____
Company _____
Title _____

WE MAKE OUR OWN GLASS TO INSURE STANDARDIZED PRODUCTION

FOR YOUR GLASSES, INSIST ON B & L ORTHOGON LENSES AND B & L FRAMES

THE SAFETY LIBRARY

By MARY M. WELLS LIBRARIAN, N. S. C.

BOOKS AND PAMPHLETS

Accident Analysis

ACCIDENTS AND THEIR PREVENTION. *By H. M. Vernon. Published by the Cambridge University Press, London, 1936. May be obtained in the U. S. from MacMillan Co., 60 Fifth Avenue, New York City.*

Mr. Vernon, a former investigator for the Industrial Health Research Board, gives in this book a thorough analysis of the accident situation in Great Britain. Statistical data formerly scattered through several publications have been brought together in convenient form. In addition, Mr. Vernon has given extended consideration to methods of reducing accidents of various types. Safety engineers in America will be interested to find that British methods of accident prevention are nearly parallel to their own.

An entire chapter is devoted to a discussion of accident-proneness. Most of the evidence on this subject (including studies made in the United States) is summarized, and considerable attention is given to various tests that have been designed to measure the degree of accident-proneness. Another chapter covers the influence of personal factors: general health, age, experience, mental attitudes, fatigue and alcohol consumption. This is followed by a chapter on environmental factors such as temperature, lighting, night work, and the speed of production.

The difference in traffic accidents in Great Britain and in this country is strikingly illustrated by a tabulation of highway fatalities. The figures cover all types of road accidents, but nearly all the deaths involve motor vehicles. In 1933 there were 7,134 deaths, of which 3,517 or 49 per cent were pedestrian fatalities. This proportion is about the same as in the U. S. In contrast, 1,324, or 19 per cent were bicyclists, compared with less than 1 per cent for this country. Deaths of motorcyclists amounted to 18 per cent of the total in Great Britain, while they constitute less than 2 per cent here. On the other hand, occupants of passenger cars, buses, and trucks made up only 14 per cent of the British total while these deaths amount to more than 50 per cent of the comparable total for the U. S.

According to the available data, motor vehicle deaths in Great Britain number about 45 per ten million gallons of gasoline consumed, while in this country the rate is only 23. British cars, however, operate more miles per gallon, thus lessening the significance of this difference. Based on population the British death rate is only half as high as ours. It is interesting to note that Great Britain has had a Drivers' License Law, with examination, since January 1, 1935. About 400,000 drivers will be examined this year.

Mr. Vernon discusses railway, factory, and mine accidents in considerable detail. Many of the accident totals are related to employment, which makes it possible to obtain rough comparisons with the experience of workers in this country. The data on home and public (not motor vehicle) accidents are limited to deaths, but the discussion gives a fairly clear picture of British experience.

A. D. BATTEY.

Home Safety

OUR HOMES. *Edited by Ada Hart Arlitt, Ph. D., Professor and Head of the Department of Child Care and Training, University of Cincinnati. Foreword by Mary L. Langworthy, President, National Congress of Parents and Teachers. Published by National Congress Parents and Teachers, 1201 Sixteenth Street Northwest, Washington, D. C. Price: Cloth binding 50c, paper 25c.*

"Our Homes" was inspired by the recognition that important as is the school in molding children into normal, healthy and useful citizens, it is impotent if children return to homes that do not supply the essentials to the spiritual, mental, and physical development of the child. With this realization, cooperation was sought from leaders in fields of pertinence to the home, and their contributions constitute the chapters of this book.

Its interesting chapters range from the development of the family through the ages to the family's place in the present-day community. They embrace modern home making and all its complexities from home management, budget making and buying to the actual planning of a new home.

The seriousness of the accident problem in the home, the types of accidents and the age groups that constitute the greatest number of home deaths are presented. Responsibility for a knowledge of home hazards is placed on the parents, as is the duty to educate their children in safety and enforce the necessary regulations. The remarkable record of American industry in saving lives is cited as proof that intelligently supervised safety effort can reduce accidents, and measures are prescribed and activities suggested through which parents can cooperate in solving the home accident problem.

RAYMOND G. ROSS.

Grinding Wheels

THE USE OF ABRASIVE WHEELS. 5TH ED. *Published by H. M. Stationery Office, London, England, 1936. May be obtained from British Library of Information, 270 Madison Ave., New York City. (Home Office, Safety Pamphlet No. 7) Price 30 cents. (Pamphlet).*

Health Hazards

RECENT CHANGES IN THE PAINTERS' TRADE. *By Dr. Alice Hamilton. Published by the U. S. Department of Labor, Division of Labor Standards, 1936. For sale by the Superintendent of Documents, Washington, D. C. Price 10 cents. (Bulletin No. 7) (Pamphlet).*

Labor Legislation

DIGEST OF STATE AND FEDERAL LABOR LEGISLATION ENACTED SEPTEMBER 15, 1935 TO SEPTEMBER 15, 1936. *Published by the U. S. Department of Labor, Division of Labor Standards, Washington, D. C., 1396. (Pamphlet) (Bulletin No. 9).*

Respiratory Protection

LIST OF DEVICES FOR RESPIRATORY PROTECTION APPROVED BY THE U. S. BUREAU OF MINES. *Published by the*



THE NEW Dockson

TURRET-TYPE WELDING SHIELD

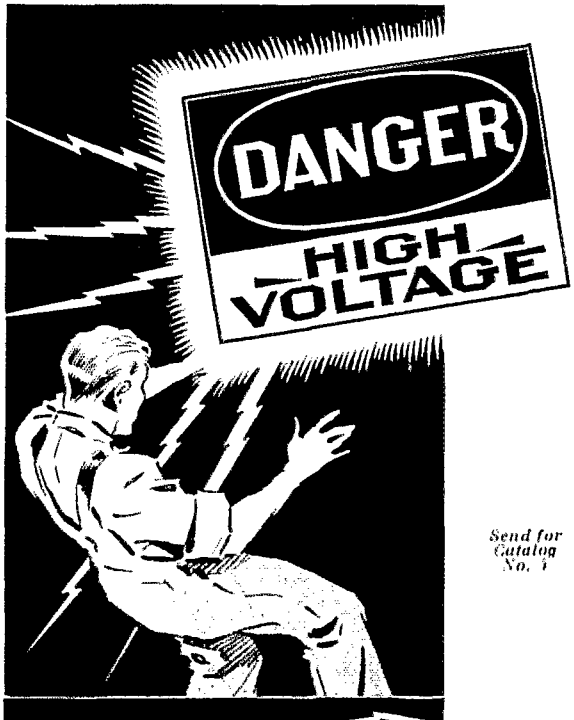
PATENT APPLIED FOR

The welding shield of which many have dreamed—

- Rivetless face piece formed from one seamless fibre sheet.
- Really safe — no electrical contact can be made through the face shield.
- Sanitary — easily disassembled for complete sterilization.
- Lens holder of a heat and spark resisting rubber compound that reduces breakage and allows instant changing of clear cover plate without removing colored glass.
- Available in either helmet or hand-shield type.

Ask your Dockson Distributor or write direct

C. H. DOCKSON CO., 2885 E. GRAND BLVD., DETROIT, MICH.



Send for Catalog No. 7

for

Quality — Dependability — Service *use*

Stonehouse Accident Prevention Signs

Well rounded safety programs call for definite warning signs to help protect workers and the public from needless accidental injuries. Stonehouse Signs, on 18, 20 or 30 gauge steel, are available from stock in standard colors to meet practically every industrial need. Special wordings to order.

"Since 1863"

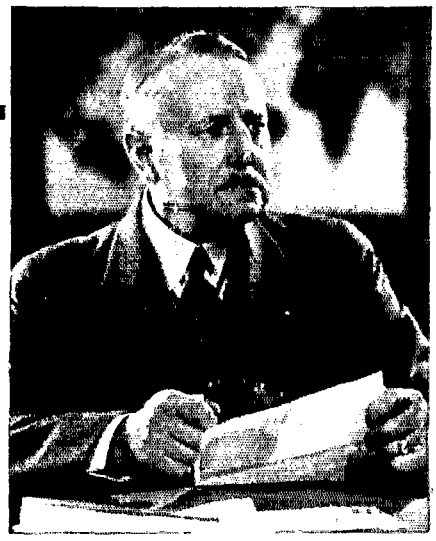
Stonehouse SIGNS, INC.

Manufacturers

9th at Larimer Denver, Colo.



ACCIDENT PREVENTION *Steel*• SIGNS IN STANDARD COLORS AND DESIGNS



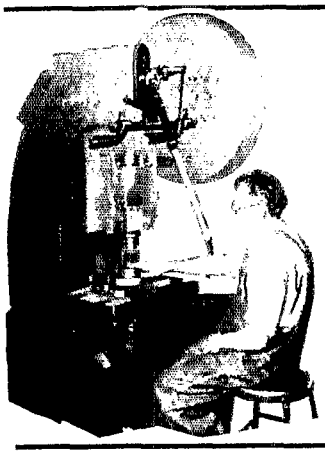
"Let's give FINNELL a chance to show us"

That's all we ask—a chance to show you . . . to show you how to treat the type of floor in your building . . . to show you whether you should use wax or soap and water, and how often and with what methods . . . to show you how to get results without using costly cleaners, abrasives or any other 'easy way' of floor maintenance that will ruin your floors in a short time . . . to show you how to choose exactly the right machine to maintain your floors in perfect condition . . . in a word, to show you how you can actually get clean floors without cost.

In giving us this opportunity, you do not commit yourself in advance to any expenditure of money. It is simply a challenge to us to prove our statements—a challenge which we gladly accept. We would not dare to do so were it not for (1) our complete line of floor machines, including sizes both large and small and models of various types, (2) our full line of floor treatments, including waxes, soaps, soap powders and cleaners and (3), above all, our third of a century of specialized experience in helping institutions of all kinds to keep their floors clean and beautiful at a saving.

FLOOR SURVEY FREE. Upon request from you by letter or by wire, a trained Finnell representative will call on you, make a scientific study of your floor conditions and floor requirements and give you a report showing the method best suited to maintain your floors and the probable results. Address: FINNELL SYSTEM, INC., 2212 East Street, Elkhart, Indiana.

FINNELL SYSTEM
EST. 1906
OF FLOOR MAINTENANCE



Low Priced—Simple
Easily Attached
WIESMAN
SAFETY PRESS GUARDS

Sweeps the operator's hand out of the way as the press descends—*no interference with productive motion*—no "slow-up" in production. Real press protection at low cost.

Use the Wiesman on all makes and types of power presses—right or left hand stroke. Send for details—prices.

Wiesman Mfg. Co.
31 South St. Clair St. DAYTON, OHIO, U.S.A.

U. S. Bureau of Mines, Washington, D. C., 1936. (Free) (I. C. 6918).

Textile Industry

REPORT ON CONFERENCE BETWEEN EMPLOYERS, OPERATORS AND INSPECTORS CONCERNING FENCING OF MACHINERY AND OTHER SAFETY PRECAUTIONS, FIRST AID AND TEMPERATURE IN WOOLEN AND WORSTED FACTORIES. *By W. B. Lauder. Printed and published by H. M. Stationery Office, London, England, 1936. May be obtained from the British Library of Information, 270 Madison Ave., New York City. Price 15 cents. (Pamphlet).*

X-Ray

X-RAY PROTECTION. *Published by the National Bureau of Standards, 1936. For sale by the Superintendent of Documents, Washington, D. C. Price 5 cents. (Handbook H.B.20) (Pamphlet).*

PERIODICALS

Accident Statistics

ACCIDENTS IN 30 MANUFACTURING INDUSTRIES, 1933 AND 1934. *By M. D. Kossoris and S. Kjaer. In U. S. Bureau of Labor Statistics, Monthly Labor Review, October 1936, p. 846-856.*

Accidental injuries in manufacturing industries increased in both frequency and severity in 1934 over 1933, as shown by reports to the Bureau of Labor Statistics covering 6,437 identical establishments in 30 manufacturing industries. The frequency rate for the group as a whole rose from 19.25 in 1933 to 20.18 in 1934, and the accompanying severity rate from 2.23 to 2.69.

Commercial Fleets

SAFETY MEASURES ENABLE PEORIA BAKERY FLEET TO REDUCE DELIVERY COSTS 30 PER CENT. *An interview with C. E. Jones, Manager, The Midland Baking Company. In Fleet Owner, November, 1936, p. 18-19, 73.*

Compressed Air

INDUSTRIAL OPERATIONS IN COMPRESSED AIR. *By Ole Singstad. In Journal of Industrial Hygiene and Toxicology, October, 1936, p. 497-523.*

Health Hazards

THE CAUSATION OF PNEUMOCONIOSIS. *By Philip Drinker. In Journal of Industrial Hygiene and Toxicology, October, 1936, p. 524-535.*

The various pneumoconioses and their causative agents are discussed. The effects of carbon, carbonates, of gypsum and of iron oxides are also discussed. Errors made in estimating the composition of dust from samples which have settled upon rafters instead of using

samples taken from the air are emphasized. In defense of the use of standards of dustiness the experience in South Africa, where such standards have been applied successfully for many years, is cited.

CHROME NICOTINE TOXICITY: I. FEEDING OF NICOTINE SULFATE, TANNATE, AND BENTONITE. *By R. H. Wilson and F. DeEds.* II. THE EFFECT OF NICOTINE-CONTAINING DIETS ON THE BLOOD SUGAR CONCENTRATION OF THE ALBINO RAT. *By R. H. Wilson and F. DeEds. In Journal of Industrial Hygiene and Toxicology, October, 1936, p. 553-570.*

HEALTH HAZARDS IN THE PLASTICS INDUSTRY. II. BAKELITE. *By M. R. Mayers and M. Silverberg. In New York State Department of Labor Industrial Bulletin, October, 1936, p. 324-326.*

Recommendations: (1) Sanitary engineering methods directed toward the removal of all unnecessary dusts and fumes would tend to eliminate the vast majority of dermatitis cases. Those individuals who are found to be hypersusceptible should be watched, and if they show no signs of developing an immunity should be transferred to other types of work. (2) Where possible, bakelite powder should be stamped out into pellets before filling moulds, instead of being scooped up in powder form for this purpose. (3) Workers should be provided with lockers for their clothes, uniforms and adequate washing facilities. (4) Excessive temperatures now present around ovens used for fusing bakelite powder should be reduced to proper limits.

Asked and Answered

SAFE SOLVENTS

QUESTION: In our shop, where tractors and various kinds of farm equipment are overhauled, gasoline used to clean the greasy parts of the equipment is kept in open containers holding two to four gallons.

Our shop foreman is of the opinion that there is no particular danger in having gasoline in the open containers, contending that the potency of the fumes is dissipated and that it is less dangerous than to have the gasoline kept in closed receptacles and applied to the machinery with rags.

What is your recommendation on this pro-



One of the most severe tests for any shoe can be found in the building and construction trades. Shoes having RAW-CORD Soles and Heels are being worn by thousands of workers in these trades, as well as in many others. Firm, Sure footing is essential to the safety and comfort of all industrial workers. Plant managers and personnel directors unhesitatingly recommend RAW-CORDS to their employees, because they are Safe, Comfortable and cost no more than shoes having ordinary soles and heels. Shoe dealers everywhere have RAW-CORDS in stock, ask for them by name.

The Lima Cord Sole & Heel Co., Dept. 7-F, Lima, O.

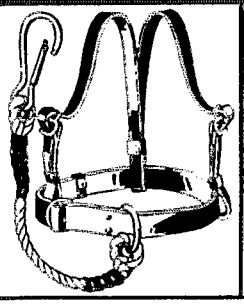
Fully Protected by Patents--Any Infringements Will Be Prosecuted

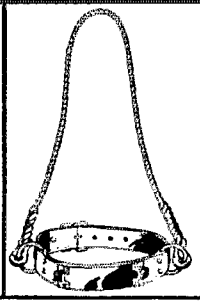
GRO-CORD

NON-SLIP SOLES AND HEELS

BUHRKE Belts for Railroad Men.

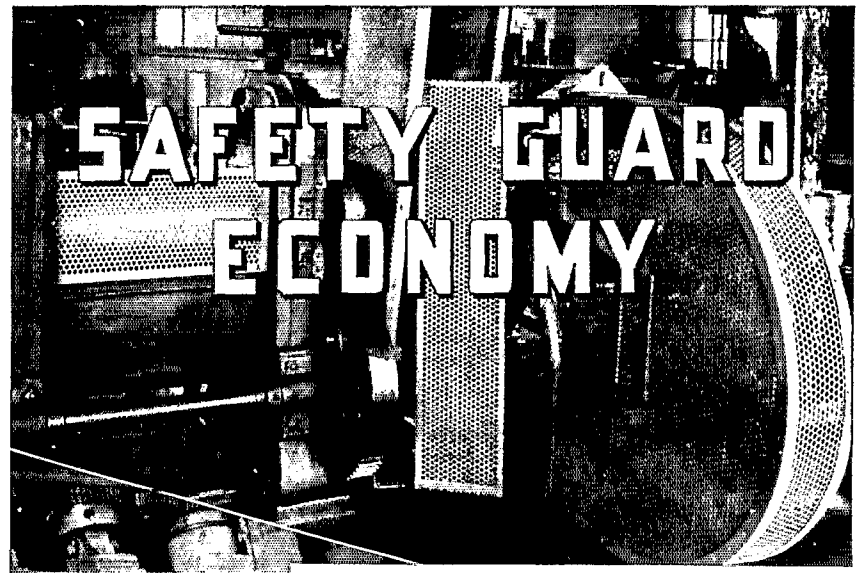
No. 1131 Car Runner's Safety Belt This special belt was designed for the protection of workmen in switching and dropping cars. Belt is made of leather or impregnated webbing. Worker prevented from falling to tracks.





No. 1130 Locomotive Safety Belt and Safety Sling Designed to protect workman on any operation above the running board on a locomotive where it is required to put any stress on wrenches, bars or other equipment which might cause him to fall.

R. H. BUHRKE CO.
4538 Fullerton Ave.
CHICAGO, ILL.





Out of the Way Places

When you make your next plant inspection, be sure to notice those more or less out-of-the-way drive belts, motors, shafting or other equipment that should be guarded, but that have been neglected due to their location. It is a good policy to protect every hazard even though the chance of accident is seemingly small.

It is real economy to protect your workers from possible injury and it is Safety Guard Economy when you do so with H & K Guard Accessories. They are furnished ready for easy and quick assembly by your handy man in his spare time.

All H&K Guard Accessories are under inspection service of Underwriters' Laboratories, Inc.

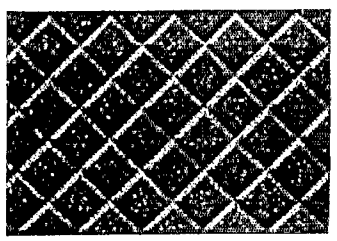
The Harrington & King Perforating Co.

114 Liberty St. NEW YORK, N. Y.
5645 Fillmore St. CHICAGO, ILL.

FERALUN Anti-Slip Treads (*Also Bronzalun, Alumalun and Nicalun*)

PREVENT ACCIDENTS ON STAIRS and FLOORS

A hard metal matrix into which is cast an abrasive next in hardness to the diamond, assuring durability and anti-slip efficiency.



Specify Feralun and Be Sure

American Abrasive Metals Co.

IRVINGTON, NEW JERSEY

cedure in a shop where grinding wheels and similar equipment operate?

ANSWER: There is an ever-present hazard of a flash—ignition of the vapors and liquid—if two pieces of metal should strike together or if friction should create a static charge.

Gasoline vapors are heavier than air. They do not rise, but settle to the ground, and remain in pockets along the floor, particularly when there is insufficient ventilation. Where cross currents of air have not disturbed or removed them, gasoline vapors have been known to travel from one room to another along the floor and finally to reach an open flame, where they have been ignited and flashed back to the original container.

In your case there may be sufficient ventilation to remove the hazard of fumes traveling from room to room. Nothing, however, can obviate the hazard of ignition from metallic or static sparks under your present procedure.

There is little need to use the low flash point solvents, such as gasoline, particularly when it is now possible to obtain equally efficient solvent cleaners which have a relatively high flash point and can be handled with a greater degree of safety. The latter solvents are produced by practically all of the large petroleum companies and can be obtained from your local distributors. If gasoline is used, it should be kept in safety cans of the type approved by the fire insurance carriers.

Further information regarding these hazards may be obtained from industrial data sheet D-Gen. 13, "Removing Oil and Grease from Metal Parts," and from Safe Practices Pamphlet No. 54, "Industrial Explosion Hazards."

DIRECTIONAL SIGNALS

QUESTION: We are interested in obtaining information regarding the present status of directional signal accessories to be placed on the rear of motor vehicles, including trucks and semi-trailers.

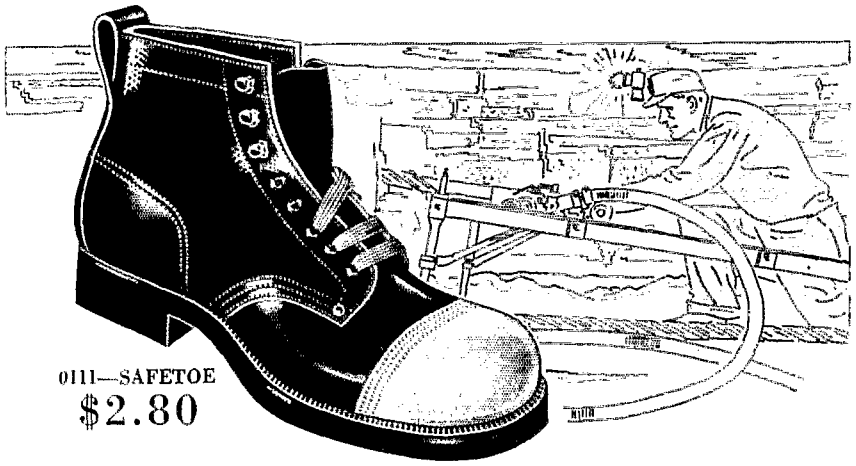
I understand that the motor vehicle law in Pennsylvania includes this signaling device. The proposed safety regulations of the Interstate Commerce Commission also mention such accessories.

Which states require this device as part of the motor vehicle regulations?

ANSWER: Twenty-four states now require such devices when the vehicle is so loaded or constructed as to make hand signals invisible. The rule establishing "when hand signals are invisible" varies in several states. The Connecticut law, for example, establishes a distance on the center line and 25 feet in the rear of the vehicle as a point from which the signal must be visible. Other states require such devices when the body extends in excess of certain specified distances beyond the outside of the driver's cab—15 inches in California (Pennsylvania and Virginia 24 inches or more from the center of the steering post). Missouri requires such devices on all enclosed vehicles.

The 24 states requiring directional indicators are Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Louisiana, Massachusetts, Michigan, Missouri, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Virginia and Washington.

A booklet entitled "Equipment Requirements for Motor Vehicles," containing a chart of these requirements, has been prepared by the National Highway Users' Conference, National Press Building, Washington, D. C.



0111—SAFETOE
$2.80

NOW! RAWHIDE TIPS

A new and revolutionary SAFETOE feature!

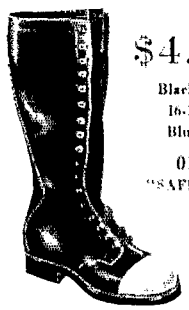
Safety Engineers!

Send for a sample of this SAFETOE Shoe with the rawhide tip. Ask for Model 0111—"SAFETOE."

Longer life, greater protection... these and other advantages are assured by the new SAFE-TOE with the steel toecap now covered by rawhide. Actual wear tests prove the amazing toughness of the rawhide tip... prove that it greatly lengthens the life of the shoe, enabling the shoe to give "new shoe service" long after others are discarded.

This new feature is ideal for coal miners, and others whose shoe tips are subjected to extremely hard wear.

Besides the rawhide tip, this SAFETOE Shoe has other important features which make it so outstanding for safety, protection, comfort and wear. They include:



$4.25
Black Elk
16-Inch
Blucher
0100
"SAFETOE"

- Steel Box Toe
- Riveted Steel Shank
- Chrome Leather Middle Sole
- Black Elk Upper Leather
- 14-Iron Composition Sole
- Rubber Heel
- Sole Clinch Nailed and Sewed to Upper

Safety Engineers will render a real service to employees by recommending this revolutionary shoe. Write or wire for details and sample.

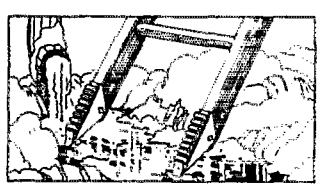
Brown Shoe Company
ST. LOUIS

BROWNbilt SAFETOE SHOES

Ladders Will *HOLD* On ICE

WHEN EQUIPPED WITH SAFE-HI LADDER SHOES

A spike ... *Self-Sharpening* ... is another dependable feature of Safe-Hi Ladder Shoes. Cutting deeply into Ice, the spike holds ladder securely in working position.



Specify SAFE-HI!

These ladder shoes reduce danger of ladder-slipping accidents. They combine, in one practical unit, the essential traction elements for every working condition.

ROSE MANUFACTURING CO., 2121 Welton St., Denver, Colo.

Let's Look at Scaffolds

(Coninued from page 22)

Fifth. *The erection of the scaffold under competent supervision to the standard adopted.*

Careful selection of the design and type of scaffold is to no avail if the structure is not so built. Care must be taken to see that a brace is not omitted, that railings are in place, proper nailing is carried out and that the completed structure is built strictly as designed and planned. An apparently trivial omission may cause a serious accident.

Remember that very frequently no detailed plans and specifications are prepared for scaffold erection. Hence, when men are constructing a scaffold, interfere with them as little as possible while the work is in progress. Taking a man away temporarily or distracting his attention may cause him to overlook an important brace or leave one nail in a splice where five or six may be required for safety.

Sixth. *The safe maintenance of the scaffold throughout the duration of the job.*

Scaffolds should be inspected at least once during each working day. It is surprising what men will sometimes do to a structure on which their lives depend. An inspection may reveal a missing transverse brace, knocked off by a workman who considered it unnecessary and in his way. One missing brace might cause a gradual distortion of the structure, resulting in collapse. Too often I have seen where a scaffold had been cut off five or six feet from the ground to make room for some operation. At best, diagonal braces should have been installed to adjacent poles.

Let us refer again to the matter of selecting men of the right type not only to construct scaffolds but also to work on the platforms after they are built. Some excellent mechanics who are normally calm and possessed become nervous and shaky on ladders and scaffolds.

Never force such men to work at elevations. Put them to work elsewhere. Often workmen will attempt to conceal their fear. Take a look now and then at men working on scaffolds, especially the new men, and order down those who appear timid and hesitate to move about. Also bring down the clown who tries to demonstrate his prowess and utter disregard of danger.

Acknowledgment. The author acknowledges the assistance received in preparing this article from the Travelers Insurance Company, the National Safety Council and Mr. F. A. Davidson. Much material was also taken from the Manual of Accident Prevention in Construction of The Associated General Contractors of America.

A Safe Place to Work

(Continued from page 24)

that division at or near the top of our safety contest.

PLACING THE BLAME. Investigation is made of all accidents, followed by a written report on the causes. After such testimony, which resembles a coroner's inquest, responsibility is established. The big boss checks this thoroughly.

Formerly the superintendent signed the report, and in 95 per cent of the cases the injured man was entirely to blame Now the truth is brought out and neglect is frequently uncovered. For instance, a die maker received two broken arms when a 9 16-inch bar bent in a screw machine while he was working on a drill press. The report showed that the screw machine lacked a place to bolt a guide pipe. The drill press was only 16 inches away from the revolving bar. The victim tried to jump away but a die had been dropped on the floor by the drill press.

So three supervisory failures were brought to light. You don't find such information in a foreman's report.

TRAINING OUTSIDE CONTRACTORS. Contractors working within your plant during new construction work must carry insurance, and too often their safety work stops there. Therefore we are endeavoring to issue safety rules to protect open holes, prevent flashes from arc welding, rope off all overhead jobs, and clean up after the job is completed. We are hoping that all small contractors will eventually practice safety.

EDUCATION AND TRAINING. In addition to the features of the safety program already described, we have plant publications, large bulletin boards, 16 x 12 feet at each gate, a regular foreman training program, and some medium of teaching employees, such as our plan of holding mass meetings in all divisions. Such a combination of ideas will stimulate the action that eventually produces a safety record.

A SURVEY OF POTENTIAL ACCIDENTS. The survey is made by one who knows safety. Departments having a negative experience are indicated on a chart which points out that potential accidents exist. In direct proportion to the past accident experience of that department, it was demonstrated conclusively that superintendents and foremen are not hazard conscious. So our present program tends toward the present great problem of locating potential accidents and training executives in charge in hazard detection.

NATION-WIDE SERVICE

EAST

NEW YORK
E. D. Bullard Company
1775 Broadway
and
W. S. Wilson Corp.
123 Varick St.

PITTSBURGH
Safety First Supply Co.
Brady Building

PHILADELPHIA
J. A. Hunt Co.
2036 Sansome St.

BRAINTREE, MASS.
Direct Sales Co.
108 President Road

SOUTH

CHATTANOOGA
C. D. Genter Company
2109 Broad St.

MID-WEST

DETROIT
C. H. Dockson Company
2885 E. Grand Blvd.

CHICAGO
E. D. Bullard Company
215 South Leavitt St.

GREEN BAY, WIS.
Safety Service Company
108 No. Quincy St.

DULUTH
W. P. & R. S. Mars Co.
324 W. Michigan St.

HOUSTON
E. D. Bullard Company
[illegible] Main Street

WEST

SAN FRANCISCO
E. D. Bullard Company
275 Eighth Street

LOS ANGELES
E. D. Bullard Company
1229 South Olive St.

SALT LAKE CITY
E. D. Bullard Company
1620 Yalecrest Avenue

SEATTLE
Sundfelt Equipment Co.
3315 First Ave., South

Everything BULLARD in Safety



Split-Crown Construction Protects Heads Better Than Any Hat Tested

Industry after industry, testing Bullard's HARD BOILED HATS in competition with other makes, finds that Bullard split-crown construction protects heads better than any other make.

In tests made recently on one of the country's largest construction jobs* a one pound steel rivet was dropped perpendicularly through a 25 foot pipe onto a HARD BOILED HAT. The split-crown completely absorbed the impact and the hat showed no mark whatsoever where the rivet struck.

If you want to find out how HARD BOILED HATS will protect YOUR men and lower YOUR compensation losses, get in touch today with our nearest office. We'll be glad to arrange a demonstration.

*name available on request

BULLARD



Frank

Patented Aug. 25, 1935—any infringement will be prosecuted.

DEPENDABLE LEG PROTECTION

Reduce accidents and compensation costs with these protective leggings. "FRANK" LEGGINGS are built for:—

1. SAFETY
2. SERVICE
3. COMFORT

In use in nearly 1000 Foundries, Steel plants and Welding shops.

Write for complete folder

THE SAFETY CLOTHING COMPANY

Manufacturers
"Everything from a pair of goggles to an asbestos suit"

Knee Leggings Hip Leggings Spats 3804 Payne Ave. Cleveland, Ohio

August Kaems Dies Suddenly



AUGUST L. KAEMS, whose contributions to the prevention of accidents on power presses entitle him to a lasting place in Safety's hall of fame, died suddenly on October 24. He was on his way to Rockford Illinois, while working out of the Davenport office of the Employers Mutuals as a member of the company's safety engineering staff.

Mr. Kaems was associated with the Industrial Commission of Wisconsin in the early days of the Workmen's Compensation Law. Showing unusual ability in the safeguarding of punch presses he specialized in this branch of safety. For many years he was with the Simmons Company at Kenosha, Wis., where he developed many ingenious guards and automatic feeds which reduced hazards while increasing output. For many years Mr. Kaems and his power press safety devices were a regular feature of the National Safety Congresses. And he never lacked interested audiences for his demonstrations.

At the age of 72, when most men have retired from active duties, Mr. Kaems joined the safety engineering staff of Employers Mutuals at Wausau, Wis., and was still working energetically in the cause of safety at the time of his death.

Of August Kaems it can be said that his work saved thousands of hands and fingers and that the results of his inventive genius will continue to safeguard operators wherever power presses are operated.

DERMA-SAN

DISINFECTANT



Prevent Oil Dermatitis with **DERMA-SAN!**

YOUR MEN do better work when you sterilize cutting lubricants with Derma-San. For Derma-San keeps oil dermatitis out of your plant. By protecting your workers against this serious skin disease, it saves compensation and medical costs. By eliminating oil infections, it increases efficiency and production. Guard your men with Derma-San. Add 1 pint of Derma-San to 35 gallons of cutting lubricant, and kill pus-forming germs before they attack your workers.

Derma-San is ideal for all general plant sanitation.

The HUNTINGTON LABORATORIES Inc.

DENVER HUNTINGTON, INDIANA TORONTO

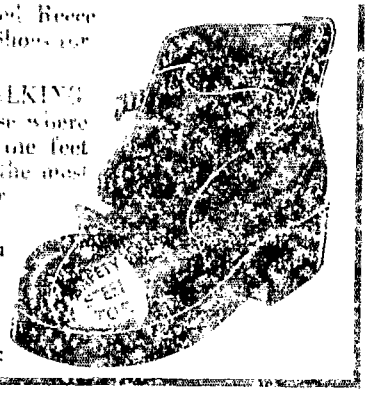
Cold Weather Shoes

A well known brewmaster has used Reece "PERFECT ROCKER" Wooden Sole Shoes for years. He says:

"I recommend the REECE 'L. A. WALKING' boots and shoes as the very best for use where floors are wet and cold. They keep the feet dry, are very durable—and are by far the most comfortable wooden sole shoe I ever saw."

Guaranteed waterproof—made with or without steel or fibre toes.

Write for complete catalog



REECE WOODEN SOLE SHOE CO., INC.

Columbus Nebraska

Signal Trucking Service, Ltd., Los Angeles, Calif. One-year—19; two-year—5; three-year—9; four-year—4.

Sperry Flour Company, San Francisco, Calif. One-year—12; two-year—3.

Storm Stage Corporation, Highland Falls, N. Y. Two-year—2; four-year—8.

Tasty Baking Company, Philadelphia, Pa. One-year—2, three-year—2.

Toronto Star, Ltd., Toronto, Ltd., Can. One-year—1.

U. S. Army, Pittsburgh, Pa. One-year—1; two-year—1.

U. S. Engineer Office, Chicago. One-year—2; two-year—1; three-year—2.

U. S. Engineer Office, Cincinnati, Ohio. One-year—1.

U. S. Navy, Washington, D. C. One-year—"; two-year—27; three-year—4; four-year—1.

Walgreen Drug Company, Chicago. One-year—4.

Western Transit Co., Hutchinson, Kans. Two-year—2.

William Wrigley, Jr., Co., Chicago. One-year—37; two-year—51.

October 6-November 6

Summary: One-year awards, 298; two-year awards, 192; three-year, 73; four-year, 42; five-year, 86; and six-year, seven. Total, 698.

Firms whose employees shared in the awards are:

Aero Mayflower Transit Co., Indianapolis, Ind. Two-year—10.

Alamito Dairy, Omaha, Neb. One-year—3.

Aldine Industrial School District, Houston, Tex. One-year—2.

Automobile Shippers, Inc., Detroit. One-year—2.

Baltimore Transfer Co., Baltimore, Md. One-year—2; five-year—1.

William Bell, Toronto, Ont. One-year—1.

Bingaman Motor Express Co., Inc., West Reading, Pa. One-year—3; two-year—1; three-year—2; five-year—1.

Black and White Cab Company, Seattle, Wash. One-year—4; two-year—16; three-year—".

A. G. Boone Company, Atlanta, Ga. One-year—1; two-year—1.

Border Transit Ltd., Peterboro, Ont. Four-year—1.

Boston Store, Inc., Chicago. Two-year—1.

Bowman Dairy Company, Chicago. One-year—43; two-year—14; three-year—5; four-year—4; five-year—16.

Carr's Transport, Owen Sound, Ont. One year—1.

C. W. Chapple Coal Co., Flint, Mich. One-year—1.

Chicago & Suburban Refuse Disposal Co., Chicago. One-year—1; two-year—1; three-year—2; four-year—2.

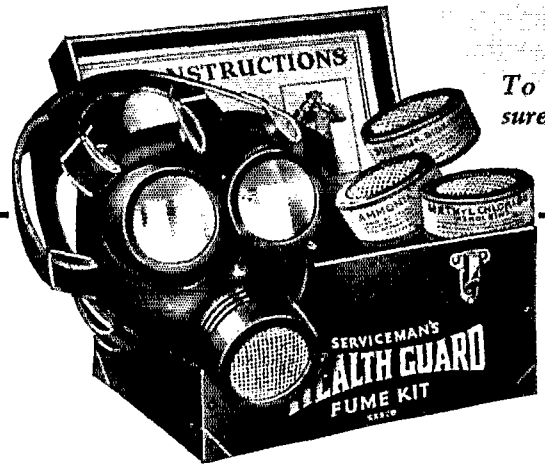
Columbus Railway Power & Light Co., Columbus, Ohio. One-year—8; two-year—10; three-year—11.

Commander-Larabee Milling Co., Minneapolis, Minn. One-year—1; three-year—1.

Community Public Service Co., Ft. Worth, Tex. One-year—15; two-year—39; three-year—14; four-year—8; five-year—59.

Dalton's Bus Line, Timmons, Ont. Two-year—9.

Danforth Bus Lines & Toronto Coach Lines, Toronto, Ont., Can. Two-year—1.



To be sure!

It should go along on every job!

CESCO HEALTHGUARD FUME KIT

In work where it is advisable to be prepared for occasional leakage of fumes, this kit is very handy. It has proved to be "just the thing" in innumerable applications. The mask is light, has no unnecessary bulk and fits snugly, forming a proper seal. Exhaled breath is fully expelled. Available with filtering cartridges best suited to refrigerants and other industrial gases. Write for bulletin.

CHICAGO EYE SHIELD CO., 2323 Warren Blvd. **CHICAGO, ILL.**

A NATIONAL SERVICE *for* PRODUCTION—SAFETY

Members of and Distributors of ASSOCIATED GUARD MANUFACTURERS pool their products and facilities to the end of giving a national service:

A (1) on standard approved safety equipment for mechanical hazards; (2) removal of industrial health hazards from dust or fumes, and (3) supplying safety apparel from head to foot.

B EVERY POINT of OPERATION guard is placed on the proposition of being the BEST for its particular purpose without affecting output. Refund of money paid will be made on written disapproval of any state or insurance inspector.

C ALL EXHAUSTS for collecting dust or fumes at source and pneumatic cleaning equipments are guaranteed to be in full compliance with all codes of the state, requirements of compensation carrier, also specifications of the American Standards Association.

D All apparel is guaranteed of best quality.

Inquiries are solicited. Information freely given without obligation.

Members of and distributors of ASSOCIATED GUARD MANUFACTURERS
Central Office, 4139 W. Kinzie St., Chicago, Ill.

BRAINTREE, MASS.
Direct Sales Co.
108 President Road

BROOKLYN, N. Y.
Surty Mfg. Co., Inc.
665-88th Street

BUFFALO, N. Y.
Frontier Meter Works
259 Hazelwood

CHICAGO, ILL.
Surty Mfg. Co., Inc.
4139 W. Kinzie St.

CLEVELAND, OHIO
Positive Safety Mfg.
4408 Perkins

CLEVELAND, OHIO
The Safety Clothing Co.
3801 Payne Ave.

HOLLISTON, MASS.
Safety First Shoe Co.

NEW YORK, N. Y.
Allen Billmyre Corp.
220 East 42nd St.

PHILADELPHIA, PA.
Sureway Mfg. Co.
Fox & Clearfield Sts.

SEATTLE, WASH.
C. H. Bacon
815 E. Prospect

ST. LOUIS, MO.
St. Louis Blow Pipe Co.
1948 North 9th St.

WEST BEND, WIS.
Newton Eng. Works

IN SAFETY THE BEST IS NONE TOO GOOD



● On line construction—in the hands of electricians—where danger is an accepted part of the day's work—Public Utilities everywhere safeguard their men with the best in equipment. Pliers—Climbers—Safety Straps and Belts—Grips—all carry the Klein trademark.

"Since 1857" the name Klein on linemen's equipment has stood for the finest in quality. When life's at stake there can be no compromise with safety. That's why, invariably, the safety engineer demands Kleins.

SENT FREE ON REQUEST

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



DISTRIBUTED THROUGH JOBBERS

Mathias KLEIN & Sons

3200 BELMONT AVENUE, CHICAGO, ILL.

Slogans Reveal Interesting Slants on Safety

MAKING a few words mean a lot—that was the problem of participants in the tenth of the National Safety Council's monthly Safety Calendar Prize Contests.

Prizes in the October contest were awarded on the basis of the best safety slogan turned in. The slogan could concern home, highway or industrial safety. The only restriction was that it be limited to 12 words.

Judging by the variety of entries, the "slogan mindedness" often attributed to this country has not been overestimated. Entries were received from the factory, the home and the classroom, and many interesting slants on safety were revealed.

When the harvest of entries was sifted, C. A. Kelly, 2929 Fourth Ave., Hibbing, Minn., was declared winner of the first prize of $20. Mr. Kelly received a calendar from the Jones & Laughlin Steel Corp., Virginia, Minn. His prize-winning slogan, short and to the point, was, "Sound judgment—that's safety."

The second prize of $10 went to Ralph C. Shaffer, 810 E. Denny Way, Seattle, Wash., who received a calendar from the Virginia Dock & Trading Co., Seattle. He submitted the slogan, "Let every inch of pavement be your safety zone."

To Arthur G. Keefe, 1016 S. E. Hawthorne Blvd., Portland, Ore., went the third prize of $5. Mr. Keefe received a calendar from The Pullman Co. His slogan was, "The wheel of life spins on the axis of safety."

Winners of the 15 one dollar prizes were:

J. Arthur Knox, New Sheffield, Pa. Calendar from Jones & Laughlin Steel Corp., Aliquippa, Pa.

Mrs. Robert Hamilton, 1727 Walton Ave., New York City. Calendar from Stokes Coal Co., New York City.

W. E. Johnson, 6242 St. Lawrence Ave., Chicago. Calendar from Brashear Freight Lines.

Miss Elizabeth J. Moore, 25 N. Liberty St., Asheville, N. C. Calendar from Carolina Power & Light Co.

B. B. Udy, Stotesbury, W. Va. Calendar from Koppers Stores, Inc., Stotesbury.

William O. Gears, Jr., 23 Buena Vista St., Wilmington, Del. Calendar from E. I. du Pont de Nemours & Co.

Jack Roush, 493 Connecticut Ave., Rochester, Pa. Calendar from Duquesne Light Co., West Bridgewater, Pa.

Miss Jacquelyn McWin, Staunton, Va. Calendar from du Pont Rayon Co., Waynesboro, Va.

Henry Lind, Oakland, Calif. Calendar from Westlake Junior High School.

A. J. Conine, East Syracuse, N. Y. Calendar from Conine Coal Co.

Louis Conrady, Huntington Beach, Calif. Calendar from The Texas Company.

Henry W. Delaney, 35 Malta Ave., Ballston Spa., N. Y. Calendar from American Hide & Leather Co., Ballston Spa.

Mrs. Eileen Collingwood, 102 Westmont Ave., Silview, Del. Calendar from The Pullman Company.

Joe Giganti, 909 Bond Street, Peoria, Ill. Calendar from Keystone Steel & Wire Co.

Edith Serenson, 756 Morris Park Ave., New York City. Calendar from Church E. Gates Co., New York City.

The judges were forced to weed out many entries at the outset because they exceeded the 12-word limit. Many were also ruled out on the grounds of ambiguity, since a slogan, to tell its message, must be simple to understand. Since the object of the contest was to find new ways to express the message of safety, slogans which had already been used in some media of the National Safety Council, and which were submitted by contestants, were also laid aside.

Judges of the competition were Dr. C. H. Watson, President, The National Safety Council; Harry Guilbert, Director, Bureau of Safety and Compensation, The Pullman Company, and John F. Ireland, Poster Division, National Safety Council.

The final contest of the year is of a novel type, and it dispenses entirely with the safety theme. Contestants are asked to take any or all of the letters in their name and reconstruct them into some clever sentence or phrase. For example, the letters in the name William Jerome Smith can be re-arranged to form the sentence, "I will merit some ham."

There are no other restrictions in this rush for the final distribution of cash awards in the National Safety Council's Contest series. The lid is off!

A recent survey made in Philadelphia set the average accident cost to the individual at $55.00 for the hospital bill and $27.00 for the physician's services. In addition, the injured spent an average of 15-½ days in the hospital and more days at home without work, according to the Chicago Motor Club.

He was the kind of motorist who thinks a locomotive whistles at crossings just to keep up its courage.

Air Contaminants

(Continued from page 36)

neering practice, a figure of 1 milligram per 100 liters of air could be attained.

The U. S. Public Health Service, in its study in the anthracite region of Pennsylvania, found that 50 million particles per cubic foot with 5 per cent quartz in the coarse dust and 10 million particles per cubic foot with 35 per cent quartz were apparently satisfactory and often were attained.

The figure of 10-20 million particles per cubic foot for granite dust with 35 per cent quartz content is often quoted from the Vermont granite studies and the U. S. Public Health Service.

Some metal-mining companies have gone further, setting the maximum of permissible dustiness at 5 million particles per cubic foot.

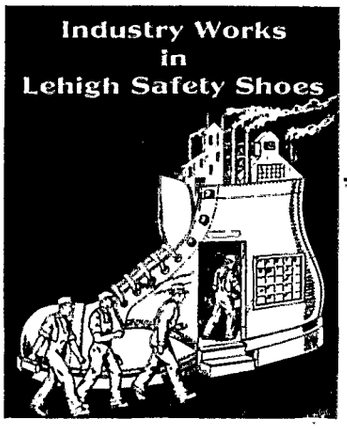
Certainly, there is a degree of air cleanliness that is safe, from the standpoint of concentration of harmful dust. But the engineer may find himself in the position of practically being forced to control any dust, harmful or otherwise, if he would protect his employers against suits at common law and the possibility of award of damages to men who have breathed dust containing little or no free silica. A dusty workplace is difficult to defend in court. Neither courts nor compensation boards, and certainly not juries, have seemed to be greatly impressed with a low silica dust count in an otherwise dusty atmosphere.

By engineering means it is possible in many cases to reduce dustiness below figures established by limited medical studies. In view of the limited nature of these studies to the present time, and in view of the lack of understanding of many physiological problems associated with the breathing of dust, it seems justifiable to set standards of dustiness as far below the medically determined levels as practical engineering permits.

A Novel Extinguisher

WHEN firemen responded to an alarm which reported an automobile ablaze on a highway near Mission, Texas, they found the fire out and the motor splattered with the dripping remains of ripe tomatoes, according to a story in *The Weekly Underwriter*.

The driver explained that a farmer driving by had seen his predicament and offered the tomatoes as fire extinguishers. The men had bombarded the blazing engine with the tomatoes and the fire was quickly extinguished.

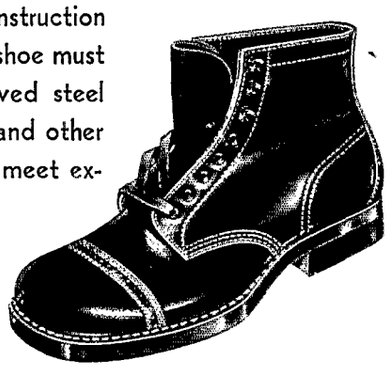


Registered U. S. Patent Office

More Safety • More Comfort

The 'margin of safety' is of paramount importance in the construction of Lehigh Safety Shoes. Each shoe must be equipped with the improved steel box toe—the stitching, soles and other construction features must all meet exacting specifications.

In addition, the use of high-grade leather, specially designed lasts and a wide variety of patterns assure a comfortable pair of shoes for every industrial need.



839—Black Elk Blucher, Leather Sole and Rubber Heel, EE 5-12.
838—As Above, Except Chrome Leather Middle Sole, Grid Rubber Outsole and Rubber Heel, EE 5-12.

LEHIGH SAFETY SHOE CO., INC.
31 S. SEVENTH ST. ALLENTOWN, PA.

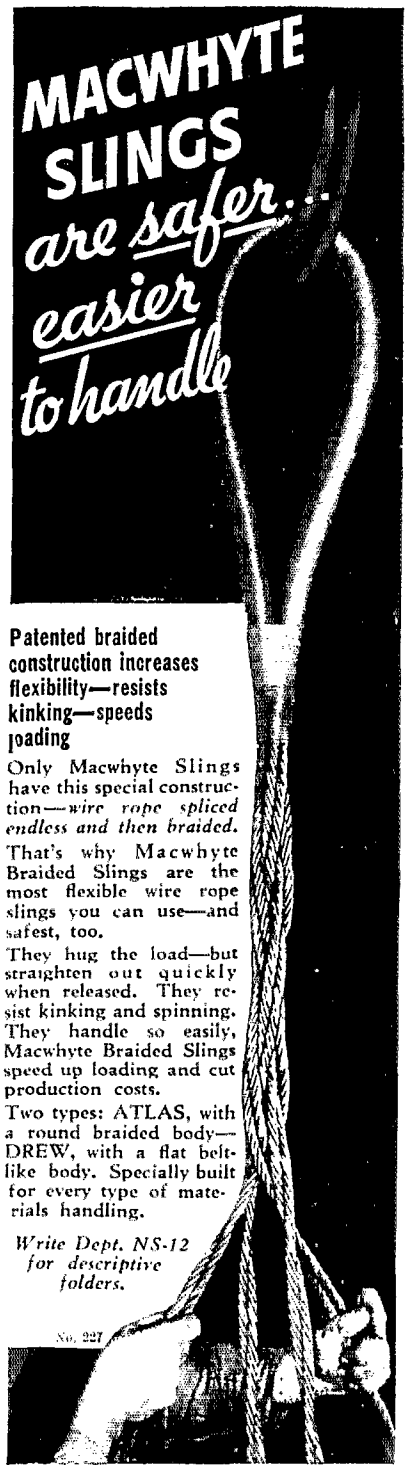


No. 136

IPCO SAFETY HAIR NET

- For all industrial operations where girls are employed around machinery and power driven equipment. Holds hair in place, out of the eyes and lessens the chance of accidents.
- Manufactured of heavy rayon silk with an elastic strand which entirely encircles the head. Will not shift or slip; stays firmly in place.
- Attractive in appearance and will give months of satisfactory service.
- Furnished in the following colors: Blue, red, black and light, medium and dark brown.

INDUSTRIAL PRODUCTS COMPANY
Accident Prevention Equipment
800 W. Somerset Street Philadelphia Pennsylvania



Patented braided construction increases flexibility—resists kinking—speeds loading

Only Macwhyte Slings have this special construction—*wire rope spliced endless and then braided.*

That's why Macwhyte Braided Slings are the most flexible wire rope slings you can use—and safest, too.

They hug the load—but straighten out quickly when released. They resist kinking and spinning. They handle so easily, Macwhyte Braided Slings speed up loading and cut production costs.

Two types: ATLAS, with a round braided body—DREW, with a flat belt-like body. Specially built for every type of materials handling.

Write Dept. NS-12 for descriptive folders.

No. 227

MACWHYTE COMPANY, Kenosha, Wisconsin

MACWHYTE WIRE ROPE *Slings*

ATLAS • DREW • MONARCH

Personals



J. D. BERMAN has been appointed chief of the Safety and Health Department at Hawthorne Works of the Western Electric Company, Chicago, succeeding the late Elmer J. Smith.

Mr. Berman's service with the Western Electric Company began in 1905 and during the succeeding years he received several promotions. He has been chief of the Plant Maintenance Division, the Specialty Products Production Division, and the Stockkeeping Department. He has been an energetic exponent of safety at Hawthorne Works since 1920 when he took charge of plant maintenance work.

More Sections Elect Officers

Since the November National Safety News went to press the following sections have completed the election of officers:

Cement

General Chairman—Fred B. Hunt, Nazareth Portland Cement Co., Nazareth, Pa.

Vice-Chairman—W. J. Worthy, Medusa Portland Cement Co., Toledo, Ohio.

Secretary—A. J. R. Curtis, Portland Cement Assn., Chicago, Ill.

News-Letter Editor—Jack Dempster, Canada Cement Co. Ltd., Port Colborne, Ont., Canada.

Rubber

General Chairman—J. M. Kerrigan, U. S. Rubber Reclaiming Co., Inc., Buffalo, N. Y.

Vice-Chairman in Charge of Program—R. A. Bullock, Corduroy Rubber Co., Grand Rapids, Mich.

Secretary—R. W. Morse, The Firestone Tire and Rubber Co., Akron, Ohio

News-Letter Editor—Oliver Hopkins, U. S. Rubber Products, Inc., Providence, R. I.

Transit

General Chairman—A. E. Parker, Winnipeg Electric Co., Winnipeg, Canada.

Vice-Chairman—R. A. McArthur, Public Service Coordinated Transport, Newark, N. J.

Vice-Chairman—E. E. Grover, The Columbus Railway, Power & Light Co., Columbus, Ohio.

Secretary—C. J. Long, United Traction Co., Albany, N. Y.

News-Letter Editor and Publicity Committee Chairman—Ernest G. Cox, Chicago North Shore & Milwaukee Railroad Co., Highwood, Ill.

POSITION WANTED

Safety engineer with 12 years active experience in safety work in the steel industry wishes to contact an industrial organization needing a man well grounded in all phases of safety work. Age 34, married. Middle west location preferred. Address Box 302, NATIONAL SAFETY NEWS.

GENERAL CHAIRMEN



D. L. ROYER
ASSE-Engineering



M. A. CLARK
Automotive



FRED B. HUNT
Cement



WILSON PALMER
Meat Packing, Tanning and Leather Industries



C. M. ALLEN
Metals



J. M. KERRIGAN
Rubber



W. W. WOOD
Steam Railroad



WM. C. KNOELK
Street and Highway Traffic



T. A. WILSON
Textile



A. E. PARKER
Transit

More Westinghouse Divisions Win Safety Honors

Two divisions of the Westinghouse Lamp Company have been awarded Certificates of Merit at the main offices, Bloomfield, N. J., by the Newark Safety Council for noteworthy safety performance.

E. C. Thoms, superintendent, Lamp Manufacturing Division, accepted the award for the Large Lamp Departments, presented in recognition of a total of 814,716 man-hours worked in twelve months as of June 30 without a disabling injury.

A similar award was made to Dr. A. M. Hageman, manager, Engineering Department. On May 30 this Department had completed two years without a disabling accident having then an exposure of 556,926 man-hours. Although the personnel of the Engineering Department are largely trained technicians, skilled operators and graduate engineers, this is the first time a Certificate of Merit issued by the Council has been earned.

Both of the awards were made before a group of Department Heads by E. L. Root of the Celluloid Company, Newark, a trustee of the Newark Safety Council and chairman of its Operations Board, and Fred M. Roseland, secretary-manager of the Council.

Barber (finishing the lathering of a customer): "No, sir, there's no carelessness allowed by our employer. Every time we cut a customer's face it means a fine of twenty-five cents."

Then he added, brandishing his razor: "But today I don't care a rap. I backed a winning horse yesterday and drew $25."

Keep the Packing Room Safe and Clean WITH VACUUM

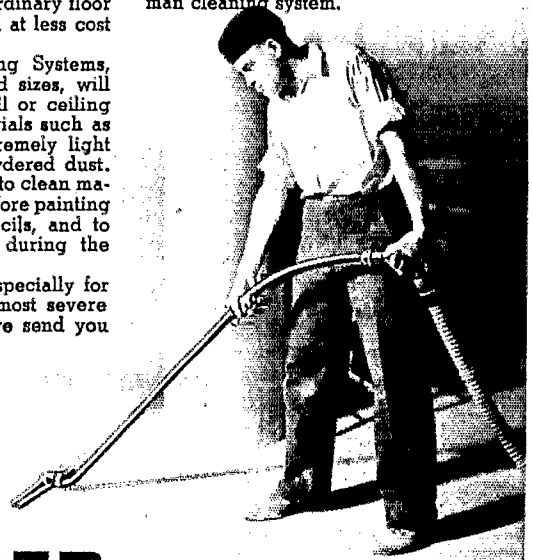
Vacuum cleaning in the packing or shipping room has three distinct advantages: It protects the employees; it keeps dust away from the finished goods and containers, and it does the ordinary floor cleaning quicker, better and at less cost than any other method.

Spencer Vacuum Cleaning Systems, designed in many types and sizes, will clean any kind of floor, wall or ceiling surface; remove bulky materials such as sand or coal dust, and extremely light materials such as lint or powdered dust.

Spencer Systems are used to clean machinery, to clean products before painting or finishing; to remove stencils, and to pick up or hold materials during the manufacturing process.

These systems are built especially for long-life service under the most severe industrial conditions. May we send you the bulletin?

A single unit is readily piped to all floors of any building, and light-weight vacuum hose, connected to special Spencer Vacuum Tools, provides a universal one-man cleaning system.



SPENCER HARTFORD
CENTRAL AND PORTABLE VACUUM CLEANING SYSTEMS
S-71

THE SPENCER TURBINE COMPANY, HARTFORD, CONN.

GOT A PENCIL*?

Here's a Crossword† Puzzle any SAFETY ENGINEER Can Solve



Across
1. An effective carbon-dioxide fire extinguisher. (Used for protection of thousands of industrial plants.)
2. Snuffs out, extinguishes. (LUX carbon-dioxide does this faster than any other type of extinguishing agent.)
3. Blazes, conflagrations (which destroy over $250,000,000 in industrial property each year).

* *Send for answer book* containing solution to your most hazardous fire protection problems.

† This isn't really a crossword puzzle. But then nobody has a cross word for LUX.

Walter Kidde & Company
121 West Street Bloomfield, N. J.

SAFE TOOLS



WILLIAMS' "NON-SPARKING" SAFETY WRENCHES Drop-Forged from *BERYLLIUM-COPPER*

DESIGNED for use wherever a spark might produce an explosion. Drop-forged from *Beryllium-Copper*, accurately heat-treated—strong, tough and hard—these wrenches are non-rusting, non-corroding, non-magnetic. Practically as strong as steel wrenches of similar size and design. Single and double head patterns in a wide range of sizes.



WILLIAMS' "VULCAN" HOIST HOOKS and EYE BOLTS

DROP-FORGED, heat-treated, proof-tested to 50% beyond their rated "safe working" load, Williams' "Vulcan" Hoist Hooks and Eye Bolts are famous for strength and safety. Hooks in Shank and Eye Patterns; Sizes ½ to 25 tons. Identified by the orange tip.
Eye Bolts in Plain and Shoulder Patterns, shanks blank or threaded; Sizes 1/5 to 16 tons.
Write for literature.

J. H. WILLIAMS & CO.
75 Spring St. New York
Western Warehouse and Sales Office, Chicago
Works, Buffalo, N. Y.
Headquarters for: Drop-Forged Wrenches (Carbon and Alloy), Detachable Socket Wrenches, "C" Clamps, Lathe Dogs, Tool Holders, Eye Bolts, Hoist Hooks, Thumb Nuts and Screws, Chain Pipe Tongs and Vises, etc., etc.

WILLIAMS
SUPERIOR DROP-FORGED TOOLS

Know Your Chains

(Continued from page 26)

employees in the use of equipment. We stressed all the points discussed in this article, selected inspectors, established central repair stations, posted safeload charts in conspicuous places, insisted upon good housekeeping in caring for chains; in fact, we did everything possible to make our lifting equipment safe.

We found that while chain failures had been reduced to a remarkable degree, we were still having them. Examination of chains after the failures indicated that there was still overloading but many failures were being caused by inherently defective chains, and we were buying the best dredge chains on the market. Investigation revealed that the double-refined wrought iron dredge chain which several generations of chain makers had perfected did not answer our purpose.

We found that failures due solely to reduction of material by wear were less common, and that next to misuse, our greatest trouble was failure at the weld. In general these weld failures were due to:

1. Scale and dirt between the joining surfaces of the weld.
2. Welding at low temperature.
3. Overheating, causing burnt and brittle metal.
4. Progressive deterioration in service.

It was found that hammering the scarfs produces small depressions in which scale and dirt were imprisoned when the outer edges of the weld were properly united. Thus non-adhesive areas were formed within the weld which sometimes extended to the surface of the metal, visible only as very fine cracks.

If a weld is made at low temperature, the edges of the weld are not properly closed, as these parts cool first. This defect by hammering is sometimes unintentionally concealed. Perfectly good welds sometimes have rough edges which may mislead even an experienced chain examiner.

Since our supposedly time-tested equipment had failed in spite of our best efforts, we immediately set about finding a solution. In our preliminary investigation we decided to consider all available types of chains.

Of the several samples submitted by manufacturers, we found only one that showed any marked advantage over the others in tensile strength, ductility, and strength of welds. On several check tests this chain performed exactly as it did in the first experiment. I might add that these alloy chains are still in service after three years' use and their present condition indicates that they will be in service for some time to come.

Alloy chains are now standard in all Otis plants. They are used in all sizes in which they are available, from 9/32 to 7/8 inch. They have been in general use for a year and a half without a single instance of failure due to defective material or workmanship.

As a matter of comparison, I would like to cite the following figures of safe loads for the double-refined wrought iron dredge chain and for the alloy chain. The standard safety factor of four is used in each instance.

Size (Inches)	Dredge Chains (Pounds)	Alloy Chains (Pounds)
½	4,500	14,400
9/16	5,580	18,000
5/8	6,930	20,600
¾	10,140	42,000
7/8	14,000	
1	18,600	
1 1/16	21,150	
1⅛	28,800	
1¼	34,500	

It is apparent, therefore, that the alloy chains provide an additional margin of safety with less bulk.

The North Wind Doth Blow

(Continued from page 15)

The greater use of lights and the strain of starting a stiff, cold motor, will tax a battery heavily. Thus this item should be tested frequently. If the battery does run down, and it is necessary to crank by hand, the operation must be done carefully to avoid strain or a broken arm. The crank should be gripped between the fingers and the heel of the hand—that is, the thumb should be on the same side of the crank as the fingers. Then, in the event of a backfire, the crank will spin harmlessly out of the hand. Cranking should be done with short strokes, starting at the bottom of the turn and pulling up. No attempt should be made to "spin" the motor.

Running boards should be kept free of ice.

If the windshield is not equipped with an automatic defroster, some glycerine should be kept on hand to rub on the glass if sleet begins to fall or ice forms. A small pouch of common salt, tied to the windsheld wiper so that it will contact the ice, will accomplish the same purpose.

DEPENDABLE
As The Rising Sun



A prominent Safety Engineer for a large steel company walked into our booth at the National Safety Congress in Atlantic City and said:

"The reason I specify STEEL-GRIP gloves and safety clothing is because the quality of your merchandise, and the organization behind it, is *dependable*."

It pays to delegate responsibility to dependable firms. When you specify STEEL-GRIP you are not only assured of receiving merchandise that does not skimp on protection, and merchandise whose quality does not vary, but you are doing business with an organization who are equipped to give you technical advice. We understand the necessity of specific safeguards for special jobs.

With business on the upgrade, Safety Engineers and Purchasing Agents are unusually busy Executives these days. Management looks to them for results.

Sources that are supplying technical service and dependable merchandise are important to these men.

LET US SERVE YOU



INDUSTRIAL GLOVES CORPORATION
725 GARFIELD BLVD.
DANVILLE, ILL.
Chicago Detroit
Newark

Safe Driver Awards

SAFE driving awards, issued for no-accident driving of motor vehicles, totaled 982 during the period from September 6 to October 6. The awards are made on the basis of records submitted to the National Safety Council by member companies.

The distribution of awards was as follows:

One-year no-accident records, 428; two-year, 267; three-year, 77; four-year, 112; five-year, 96; six-year, two.

Firms whose drivers received recognition are:

Alamito Dairy, Omaha, Nebr. One-year—2.

Ambrose Bus Service, Dunellen, N. J., One-year—3.

Athey-Brooks Motors, Inc., Parkersburg, W. Va. One-year—4.

Baltimore Transfer Co., Baltimore, Md. One-year—8; three-year—1.

Bamby Bread Company, Inc., Bridgeport, Conn. One-year—11.

Blue Bus Lines, Batavia, N. Y. Two-year—1.

A. G. Boone Company, Columbus, S. C. One-year—2.

Boston Store of Chicago, Inc., Chicago. One-year—4.

Bowman Dairy Company, Chicago. One-year—76; two-year—44; three-year—22; four-year—14; five-year—75.

Bowman Dairy Company, Lombard, Ill. One-year—6; two-year—9; three-year—2; four-year—2; five-year—11.

Bowman Dairy Company, Oak Park, Ill. One-year—9; two-year—2; three-year — 2; four-year—5; five-year—4.

Capreol-Sudbury Bus Service, Capreol, Ont., Can. One-year—1.

Central Illinois Electric & Gas Co., Rockford, Ill. One-year—3.

Champlin Refining Co., Oklahoma City, Okla. One-year—5.

City Ice & Fuel Co., Cleveland, Ohio. Five-year—2.

The Courier Company, Camden, N. J. One-year—7; two-year—2; three-year—1; four-year—1; six-year—2.

Crown Coach Company, Joplin, Mo. One-year—23.

Cumberland & Westernport Transit Co., Frostburg, Md. One-year—2.

Decatur Cartage Co., Decatur, Ill. One-year—5; two-year—2; three-year—1.

De Luxe Cab Company, Toronto, Ont., Canada. One-year—1; two-year—1.

De Luxe Transportation Co., North Bay, Ont., Can. One-year—1.

Detroit Pure Milk Co., Detroit, Mich. One-year—4; two-year—4.

Dealers Transport Co., Kansas City, Mo. One-year—1.

Eddy Bakery, Butte, Mont. One-year—8.

Eddy Baking Company, Great Falls, Mont. One-year—7.

Eddy Bakery, Havre, Mont. One-year—3.

Eddy Steam Bakery, Inc., Helena, Mont. One-year—2.

Eddy Bakery, Lewistown, Mont. One-year—3.

Eddy Bread Company, Missoula, Mont. One-year—4.

C. C. Embro, Esq., Guelph, Canada. Three-year—1.

The Fait, Chicago, Ill. Two-year—1; four-year—1.

Florida Motor Lines, Jacksonville, Fla. One-year—7; two-year—2; four-year—1.

James A. Forbes, Sarnia, Ont., Can. Three-year—1.

General Foods Sales Co., Inc. One-year—17; two-year—24; three-year—13; four-year—69.

General Mills, Inc., Minneapolis, Minn. One-year—7; two-year—1.

Lanze B. Gowans, Taxi, Sarnia, Ont., Can. One-year—1.

Huron Portland Cement Co., Detroit, Mich. Two-year—1.

Interstate Cotton Oil Refining Co., Sherman, Texas. One-year—5; two-year—9.

Jersey Creamery Co., Detroit, Mich. One-year—7; two-year—9;; three-year—2.

Kakoska Freight Lines, Saginaw, Mich. One-year—3.

Koppers Gas & Coke Co., Clifton, N. J. Three-year—2.

John Lang, Jr. and A. Lang, Jr., Sarnia, Ont., Can. Three-year—1.

Morgan Packing Company, Austin, Ind. One-year—10; two-year—16; three-year—9.

L. A. Nance Bus Lines, Inc., Ada, Okla. One-year—9.

National City Bus Lines, Inc., New York City. One-year—1; two-year—1.

Newburgh Bus Corporation, Newburgh, N. Y. One-year—1; two-year—18.

Nickles Bakery, Inc., Martins Ferry, Ohio. One-year—1.

Nolde Brothers, Richmond, Va. Three-year—1.

Northwest Casualty Co. (school bus drivers). One-year—16;; two-year—10; three-year—1.

Oklahoma City Mill & Elevator Co., Oklahoma City, Okla. One-year—3; two-year—2.

Peoples Gas Company, Glassboro, N. J. One-year—1; two-year—3; four-year—2; five-year—1.

Phoenix City Street Railway, Phoenix, Ariz. One-year—3.

Proctor Creamery, Detroit, Mich. One-year—8.

Red Star Milling Co., Wichita, Kansas. One-year—1.

R. J. Reynolds Tobacco Co., Winston-Salem, N. C. One-year—12.

Phillip B. Richards, St. Thomas, Ont., Canada. Two-year—1.

Roanoke Railway & Electric Co., Roanoke, Va. One-year—2; two-year—3.

Safety Motor Transit Corp., Roanoke, Va. One-year—1; two-year—3.

San Francisco Examiner, San Francisco, Calif. One-year—1.

Santa Fe Trail System, Wichita, Kansas. One-year—17; two-year—6.

Schuylkill Transportation Co., Mahanoy City, Pa. One-year—3; four-year—4; five-year—3.

DEPENDABLE
As The Rising Sun



A prominent Safety Engineer for a large steel company walked into our booth at the National Safety Congress in Atlantic City and said:

"The reason I specify STEEL-GRIP gloves and safety clothing is because the quality of your merchandise, and the organization behind it, is *dependable*."

It pays to delegate responsibility to dependable firms. When you specify STEEL-GRIP you are not only assured of receiving merchandise that does not skimp on protection, and merchandise whose quality does not vary, but you are doing business with an organization who are equipped to give you technical advice. We understand the necessity of specific safeguards for special jobs.

With business on the upgrade, Safety Engineers and Purchasing Agents are unusually busy Executives these days. Management looks to them for results.

Sources that are supplying technical service and dependable merchandise are important to these men.

LET US SERVE YOU



INDUSTRIAL GLOVES CORPORATION
725 GARFIELD BLVD.
DANVILLE, ILL.
Chicago Detroit
Newark

Safe Driver Awards

SAFE driving awards, issued for no-accident driving of motor vehicles, totaled 982 during the period from September 6 to October 6. The awards are made on the basis of records submitted to the National Safety Council by member companies.

The distribution of awards was as follows:

One-year no-accident records, 428; two-year, 267; three-year, 77; four-year, 112; five-year, 96; six-year, two.

Firms whose drivers received recognition are:

Alamito Dairy, Omaha, Nebr. One-year—2.

Ambrose Bus Service, Dunellen, N. J., One-year—3.

Athey-Brooks Motors, Inc., Parkersburg, W. Va. One-year—4.

Baltimore Transfer Co., Baltimore, Md. One-year—8; three-year—1.

Bamby Bread Company, Inc., Bridgeport, Conn. One-year—11.

Blue Bus Lines, Batavia, N. Y. Two-year—1.

A. G. Boone Company, Columbus, S. C. One-year—2.

Boston Store of Chicago, Inc., Chicago. One-year—4.

Bowman Dairy Company, Chicago. One-year—76; two-year—44; three-year—22; four-year—14; five-year—75.

Bowman Dairy Company, Lombard, Ill. One-year—6; two-year—9; three-year—2; four-year—2; five-year—11.

Bowman Dairy Company, Oak Park, Ill. One-year—9; two-year—2; three-year — 2; four-year—5; five-year—4.

Capreol-Sudbury Bus Service, Capreol, Ont., Can. One-year—1.

Central Illinois Electric & Gas Co., Rockford, Ill. One-year—3.

Champlin Refining Co., Oklahoma City, Okla. One-year—5.

City Ice & Fuel Co., Cleveland, Ohio. Five-year—2.

The Courier Company, Camden, N. J. One-year—7; two-year—2; three-year—1; four-year—1; six-year—2.

Crown Coach Company, Joplin, Mo. One-year—23.

Cumberland & Westernport Transit Co., Frostburg, Md. One-year—2.

Decatur Cartage Co., Decatur, Ill. One-year—5; two-year—2; three-year—1.

De Luxe Cab Company, Toronto, Ont., Canada. One-year—1; two-year—1.

De Luxe Transportation Co., North Bay, Ont., Can. One-year—1.

Detroit Pure Milk Co., Detroit, Mich. One-year—4; two-year—4.

Dealers Transport Co., Kansas City, Mo. One-year—1.

Eddy Bakery, Butte, Mont. One-year—8.

Eddy Baking Company, Great Falls, Mont. One-year—7.

Eddy Bakery, Havre, Mont. One-year—3.

Eddy Steam Bakery, Inc., Helena, Mont. One-year—2.

Eddy Bakery, Lewistown, Mont. One-year—3.

Eddy Bread Company, Missoula, Mont. One-year—4.

C. C. Embro, Esq., Guelph, Canada. Three-year—1.

The Fair, Chicago, Ill. Two-year—1; four-year—1.

Florida Motor Lines, Jacksonville, Fla. One-year—7; two-year—2; four-year—1.

James A. Forbes, Sarnia, Ont., Can. Three-year—1.

General Foods Sales Co., Inc. One-year—17; two-year—24; three-year—13; four-year—69.

General Mills, Inc., Minneapolis, Minn. One-year—7; two-year—1.

Lanze B. Gowans, Taxi, Sarnia, Ont., Can. One-year—1.

Huron Portland Cement Co., Detroit, Mich. Two-year—1.

Interstate Cotton Oil Refining Co., Sherman, Texas. One-year—5; two-year—9.

Jersey Creamery Co., Detroit, Mich. One-year—7; two-year—9;; three-year—2.

Kakoska Freight Lines, Saginaw, Mich. One-year—3.

Koppers Gas & Coke Co., Clifton, N. J. Three-year—2.

John Lang, Jr. and A. Lang, Jr., Sarnia, Ont., Can. Three-year—1.

Morgan Packing Company, Austin, Ind. One-year—10; two-year—16; three-year—9.

L. A. Nance Bus Lines, Inc., Ada, Okla. One-year—9.

National City Bus Lines, Inc., New York City. One-year—1; two-year—1.

Newburgh Bus Corporation, Newburgh, N. Y. One-year—1; two-year—18.

Nickles Bakery, Inc., Martins Ferry, Ohio. One-year—1.

Nolde Brothers, Richmond, Va. Three-year—1.

Northwest Casualty Co. (school bus drivers). One-year—16;; two-year—10; three-year—1.

Oklahoma City Mill & Elevator Co., Oklahoma City, Okla. One-year—3; two-year—2.

Peoples Gas Company, Glassboro, N. J. One-year—1; two-year—3; four-year—2; five-year—1.

Phoenix City Street Railway, Phoenix, Ariz. One-year—3.

Proctor Creamery, Detroit, Mich. One-year—8.

Red Star Milling Co., Wichita, Kansas. One-year—1.

R. J. Reynolds Tobacco Co., Winston-Salem, N. C. One-year—12.

Phillip B. Richards, St. Thomas, Ont., Canada. Two-year—1.

Roanoke Railway & Electric Co., Roanoke, Va. One-year—2; two-year—3.

Safety Motor Transit Corp., Roanoke, Va. One-year—1; two-year—3.

San Francisco Examiner, San Francisco, Calif. One-year—1.

Santa Fe Trail System, Wichita, Kansas. One-year—17; two-year—6.

Schuylkill Transportation Co., Mahanoy City, Pa. One-year—3; four-year—4; five-year—3.



Style "A"

Price $15.00

Fits any rail from 40 to 110 lbs.

Good Practice— Plus Safety . . . .

Bracing car wheels with wood blocks is dangerous and often costly.

M & M Rail Clamps

the safest and surest possible stop for car wheels—they provide safe conditions and guard against accident and property damage.

M & M Rail Clamps

are recommended for use on runways in repairing cranes, on loading platforms, temporary sidings, etc.

Industrial Products Company

Accident Prevention Equipment

800 W. Somerset St., Philadelphia, Pa.

ARMSTRONG



Safe because it's an ARMSTRONG WRENCH with the Drivelock

In socket wrenches, specify "ARMSTRONG" *for safety.* The patented ARMSTRONG Drivelock locks socket to extension, extension to ratchet—makes of every assembly a safe, rigid tool that will not fall, knock or pry apart. *Takes all standard sockets.* All sizes, all types, singly or in sets. Sockets, chrome-vanadium-steel, chrome plated. Write for Catalog W-35.

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

339 N. Francisco Ave., CHICAGO, U. S. A.

Decatur Cartage Co., Decatur, Ill. One-year—3; two-year—4.

Harold Doyle's Taxi, North Bay, Ont. One-year—1.

John Dubeau, Timmons, Ont. Two-year—3.

Embro's Taxi, Guelph, Ont. Three-year—1.

Farwest Cab Company, Seattle, Wash. Three-year—1.

Herbert Fedy, Kitchener, Ont. Three-year—1.

Sanford Fischer, Kitchener, Ont. Two-year—2.

Florida Motor Lines, Jacksonville, Fla. One-year—6; two-year—4.

Gainesville Gas Co., Gainesville, Tex. One-year—1; four-year—1; five-year—2.

Joseph H. Gannam, Port Colborne, Ont., Can. Two-year—1.

General Foods Corp., New York City. Three-year—3.

General Foods Sales Co., Inc., San Francisco. Four-year—1.

General Mills, Inc., Minneapolis, Minn. One-year—2; two-year—1.

Lanze B. Gowans, Sarnia, Ont. Three-year—1.

Frank Harris (school bus driver), Chelan, Wash. One-year—1.

Herrin Transportation Co., Houston, Texas. One-year—6.

Huntington Coach Corp., Huntington, N. Y. One-year—1; two-year—2; three-year—1; six-year—2.

J. A. Irving, Port Dover, Ont. One-year—2.

Johnson Bus Line, Inc., Milford, Mass. Three-year—1.

Norman Kelley, Baysville, Ont. One-year—1.

Kerrville Bus Co., Kerrville, Tex. Two-year—1.

Robert Kirby, Sarnia, Ont. One-year—1.

Koppers Gas & Coke Co., Clifton, N. J. Two-year—1.

Lansing Dairy Co., Lansing, Mich. One-year—13; two-year—11.

Larrowe Milling Co., Detroit. One-year—8; two-year—1.

Lawrence Baking Co., Lansing, Mich. Two-year—5; three-year—1.

Percy Lazenby, Norwich, Ont. Three-year—1.

Elbert Lindsey, Otsego, Mich. One-year—3.

Louisiana Ice & Coal Co., Inc., New Orleans. One-year—9; two-year—4; four-year—2; five-year—1; six-year—3.

Marathon Linen Supply Co., Detroit, Mich. One-year—2; two-year—1.

Morgan Packing Co., Austin, Ind. One-year—5; two-year—1; three-year—1.

Motor Convoy, Inc., Atlanta, Ga. One-year—3.

National City Bus Lines, Inc., Long Island City, N. Y. One-year—2.

National Ice & Coal Co., West Allis, Wis. One-year—2; two-year—1; three-year—1; four-year—5.

Niagara Taxi Co. One-year—1.

Oklahoma City Mill & Elevator Co., Oklahoma City, Okla. One-year—1.

Oregon Dye House, New Bedford, Mass. Five-year—1.

George Pantia, Roseland, Ont. Two-year—1.

Pfeiffer Brewing Co., Detroit, Mich. One-year—30.

Red Star Milling Co., Wichita, Kans. One-year—1.

R. J. Reynolds Tobacco Co., Winston-Salem, N. C. One-year—20.

Phillip B. Richards, St. Thomas, Ont. One-year—1; three-year—1.

James Ritchie, Guelph, Ont. Four-year—1.

Roseland Bus Lines, Toronto, Ont. Three-year—1; four-year—3.

City of Saco, Maine. One-year—6.

Savannah Electric & Power Co., Savannah, Ga. One-year—1; two-year—2.

Sawmiller Coal Co., Syracuse, N. Y. One-year—2.

George Scheuer, Inc., Scranton, Pa. Two-year—3; three-year—5; four-year—3.

Sharp's Taxi, Galt, Ont. Three-year—1; four year—2.

Southern United Ice Co., Jackson, Miss. One-year—7; two-year—4; three-year—3; four-year—3; five-year—4; six-year—4.

Sperry Flour Co., San Francisco, Calif. One-year—9; two-year—9.

Springfield Transportation Co., Springfield, Ill. One-year—3; two-year—1.

Sweitzer Creamery, Grosse Pointe, Mich. One-year—8; two-year—4; three-year—2.

Tasty Baking Co., Philadelphia. Two-year—2; three-year—1; four-year—4.

Taylor Produce Co., Battle Creek, Mich. One-year—8; two-year—1.

Taylor Produce Co., Kalamazoo, Mich. One-year—2; two-year—4.

Toledo Blade, Toledo, Ohio. One-year—1.

Toronto Star, Ltd., Toronto, Ont. One-year—1.

Travers Coach Line, Barrie, Ont. Two-year—1.

Triple Cities Traction Corp., Binghamton, N. Y. Two-year—1.

U. S. Engineer Office, Memphis, Tenn. One-year—1; two-year—2.

U. S. Engineer Office, Nashville, Tenn. One-year—4.

U. S. Navy, Washington, D. C. Three-year—3.

Utah-Idaho Central Railroad Co., Ogden, Utah. Two-year—1; three-year—1.

Vanbro Construction Corp., New York City. One-year—9; four-year—1.

Varady Trucking Co., East Chicago, Ind. One-year—2.

Weil-McLain Co., Chicago. One-year—10.

Wichita Mill & Elevator Co., Wichita, Kan. One-year—1.

Wichita Transit Corp., Ft. Worth, Tex. One-year—4; two-year—2; four-year—1; five-year—1.

William Wrigley Jr. Co., Chicago. One-year—5; two-year—8.

In the hills of Arkansas, a son was born to one of the natives. As he grew from infancy he never spoke a word and his parents raised him as a deaf mute. The father pampered his son because of his infirmity.

One day, many years later, the father was in the orchard when he was attacked by an enraged bull. The old man was bent over at his work and did not notice the bull.

"Look out, Paw," the son shouted. "Here comes the bull."

The father ran to safety and was overjoyed that his son had found his speech.

"Nope, Paw," the son replied, "I just ain't had nothing to say before."

"Now," said the teacher, "which boy can name five things that contain milk?"

"I can!" shouted a freckle-faced youngster, "butter, an' cheese, an' ice cream, an'—an' two cows."

The Honor Roll

Details of no-accident records in excess of 400,000 man-hours, or 300 working days, are invited for this department

James B. Clow & Sons

More than half a million safe man-hours were accomplished during the past year by the Coshocton, Ohio, Works of the James B. Clow & Sons Company. The record, which began October 16, 1935, and reached a mark of 547,492 man-hours on October 17 of this year, is still unbroken. An average force of 281 workers is employed.

Consolidated Paper Corp.

The Belgo Division of the Consolidated Paper Corporation, Ltd., at Shawinigan Falls, Quebec, had operated 227 safe days, up to October 2, when a disabling injury terminated the record. Man-hours during this period totalled 1,055,468. The mill employs an average of 625 workers and manufactures chemical and mechanical pulp and news print. In 1929 there were 77 disabling injuries at the mill, giving a frequency of 30.53.

General Electric Co.

The two Cleveland, Ohio, factories of the Incandescent Lamp Department of General Electric Company completed the first ten months of the current year without a disabling injury accident, reaching a total of 1,876,754 safe man-hours. The record was still intact at the date of reporting, November 9. The combined force of employees totals about 1,200.

San Joaquin Light & Power Corp.

Two creditable safety records have been established within the organization of the San Joaquin Light & Power Corporation, Fresno, California. On September 26 the Taft District crew completed a 10-year period, a total of 452,337 man-hours, without a single lost-time injury. The record was unbroken on October 30, the date of reporting. Though the crew is small, any one of the men may have to handle any one of the variety of jobs, ranging from "trouble-shooting" to handling material and equipment in the store-room.

In the Merced District the company's crew operated from December 4, 1933, to September 30, of this year, a total of 352,896 man-hours, without a lost-time injury. These employees handle both urban and suburban gas and electric transmission and distribution.

Universal Atlas Cement Co.

A run of 553 days without a disabling injury was recorded on October 31 of this year by the Waco, Texas, plant of the Universal Atlas Cement Company.

On October 26, the Universal (Pittsburgh) Pa. plant set a new record for the entire company, having operated 2,000 days or more than 2,000,000 man-hours in safety.

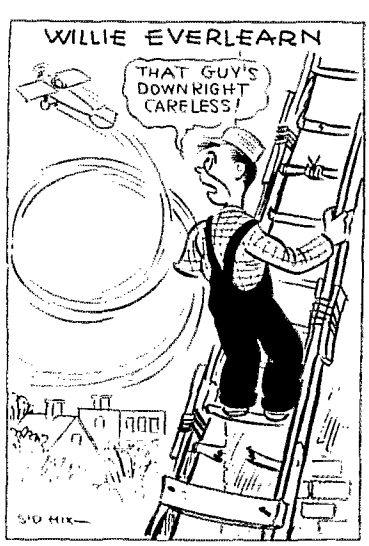
On October 30, the Hudson, N. Y., plant duplicated a former performance when it completed 12 consecutive months without a disabling injury.

Despite the fact that accidents in the cement industry are more common during curtailed operations, the frequency rate of the Universal Atlas Cement Company has decreased 72.42 per cent in the last four years.

Western Clock Co.

A record of 7,136,532.6 accident-free man-hours, made by the Western Clock Company, La Salle, Ill., was terminated October 13 when an employee suffered a strain. An average of 2,655 employees participated in the record, which began June 19, 1935.

This accident thwarted Westclockers' attempt to beat their previous championship record of 11,114,599.8 man-hours established February 6, 1935. However, the second achievement ranks fifth among the ten best safety records reported to the National Safety Council.



Coming Events

Of Interest to Safety Men

Nov. 30-Dec. 4, New York City

American Society of Mechanical Engineers, Annual Convention. Secretary, C. E. Davies, 29 W. 39th Street, New York City.

Dec. 4-5, Tulsa, Okla.

State-wide Safety Conference. E. H. Poe, president, Tulsa Safety Council, 700 Oklahoma Safety Building., Tulsa, Okla.

April 13-15, New York City

Eighth Annual Greater New York Safety Conference. (Hotel Astor). Julien H. Harvey, executive vice-president, Greater New York Safety Council, 60 East 42nd Street, New York City.

October 11-15, Kansas City, Mo.

National Safety Council, Twenty-sixth National Safety Congress. W. H. Cameron, managing director, 20 North Wacker Drive, Chicago.

Justrite MANUFACTURING COMPANY

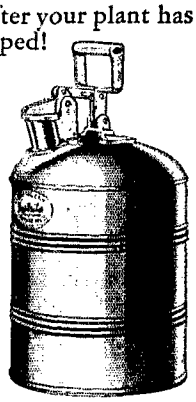
Approved! —By the Underwriters Laboratories and by the Associated Factories Mutual Fire Insurance Companies

LOWER Insurance Rates

Justrite Safety Products pay for themselves—many times over—with lower insurance rates...after your plant has been Justrite-equipped!

JUSTRITE Safety Can

...approved for safe handling of gasoline, benzine and other volatile liquids. The Justrite Safety Can saves evaporation... as well as on insurance rates. There is a Justrite for every plant and purpose... 1 pint to 5 gallons.

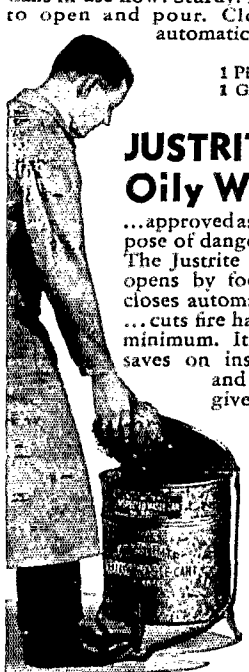


2, 3 and 5 Gallons

Thousands of Justrite Safety Cans in use now! Sturdy. Easy to open and pour. Closes automatically.



1 Pint to 1 Gallon



JUSTRITE Oily Waste Can

...approved as a safe way to dispose of dangerous oily waste. The Justrite Oily Waste Can opens by foot pressure and closes automatically. It's safe ...cuts fire hazards down to a minimum. It's economical—saves on insurance rates... and constructed to give years of service.

Sizes: 6, 8, 10 and 14 Gallons

Justrite Safety Products are sold by leading Hardware and Mill Supply Jobbers

If your supplier does not have Justrite Equipment, write to:

SAFETY PRODUCTS DIVISION

Justrite MANUFACTURING COMPANY

2087 SOUTHPORT AVE., CHICAGO, ILL.

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

New Aid to Dust Control

For use in determining the degree of danger of dusty operations, Bausch & Lomb have developed and are offering to Industry through the Willson Products, Inc., Reading, Pennsylvania, an instrument which simplifies in a remarkable manner the problem of dust control.



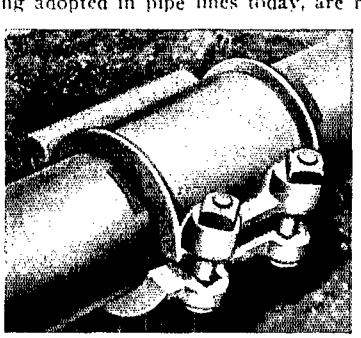
There is nothing to set up where count is to be taken. The operator can enter the room, take the sample and leave in less than 15 seconds without interfering with routine or interrupting production. Requiring no skill to operate or technical supervision, daily or hourly checks of dust conditions can be readily made.

This new dust counter, reports the company, combines in one unit the necessary air sampling device and a dark field microscope viewing and counting system. No accessory laboratory equipment is needed. Suitably cased for transporting, the complete outfit weighs but twelve and a half pounds.

Clamp for Pipe Leaks

Easily applied clamps for stopping leaks in pipes, regardless of size or pressure, are in valuable use today—on pipe lines carrying air, gases, liquids, solutions, etc. They are applied while pipe lines are in service except upon extremely high-pressure lines.

The increasing demand for pipe clamps of this type, as well as the higher pressures being adopted in pipe lines today, are responsible for the radically redesigned pipe clamp, a product of the M. B. Skinner Co., 3648 W. Sample Street, South Bend, Indiana.

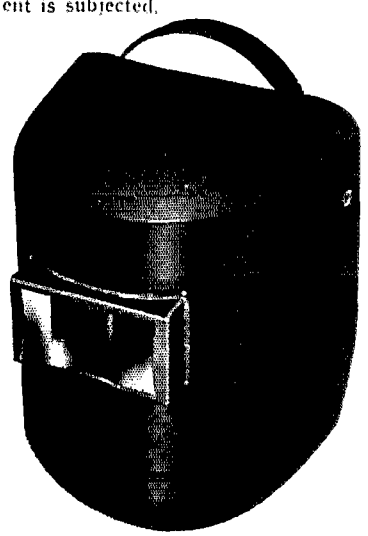


The company states that the new specifications for these clamps require a metal of higher tensile strength, uniform density and hardness—a metal composition which was adopted regardless of price because of its suitability. To absolutely insure that every clamp is as perfect as humanly possible, this company has installed sufficient new testing equipment to test every clamp under a pressure of 3000 lbs. before it leaves the factory.

These clamps are utilized when leaks show up in steam, hot water or vapor pipe going back into service, or when the first frost splits or bursts exposed pipes.

New Welding Shield

The C. H. Dockson Company, 2880 E. Grand Boulevard, Detroit, Michigan announces their new "Turret-Type" arc welding helmets and handshields developed to meet a demand for safe, shockproof and sanitary welding shield, light in weight yet capable of withstanding the severe service to which this type of equipment is subjected.



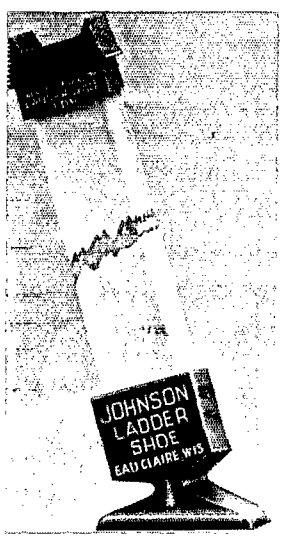
The company states that the helmet has many features of value, one being a rivetless face piece formed from one seamless heavy gauge fibre sheet, reducing the possibility of electric shock through the shield, also permitting easy sterilization and cleaning. The Turret-Type construction allows the use of heavy gauge fibre without increasing weight but insuring exceptionally long life.

A unique lens holder made from a special oil resisting rubber compound highly resistant to flying sparks and hot metal particles is so designed that light cannot penetrate to the interior of the shield. It also acts as a shock absorber should the welding shield accidentally be dropped, and is removable from the helmet proper. The clear cover plate is easily and quickly changed from the front side without disturbing the colored filter lens.

All helmets are furnished with adjustable headbands equipped with detachable head pads. The head pads are also replaceable without tools. Handshields are furnished with corrugated fibre handles.

Ladder Shoe Top

The Johnson Ladder Shoe Co. of Eau Claire, Wisconsin, has recently inaugurated a ladder shoe top to fit standard ladders. The small lip at the top of the ladder yields to any surface, prevents marring of walls and side slipping, and making it possible to put a ladder against pipes or

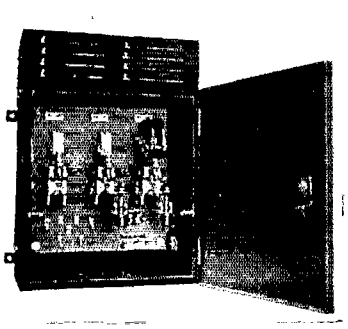


any uneven surface as might be found in factories and power houses. The shoe top is moulded of one piece of rubber as is their ladder shoe.

New Direct Current Mill Type Starter

For providing a universal, compact, standardized unit suitable for use with a wide range of motor sizes and requiring only reconnection of the self-contained resistors to give proper resistor values, The Electric Controller & Mfg. Company, 2683 E. 79th St., Cleveland, Ohio, announce the new EC&M Type RD Director Current Mill type Starter.

These starters employ the new EC&M type RD mercury acceleration relays which permit a time range of ½ second to 2 seconds per step. They are adjustable for this time range by means of an accessible thumb screw and lock nut arrangement which readily permits changing the amount of mercury thru which the rubber



Watch YOUR STEPS

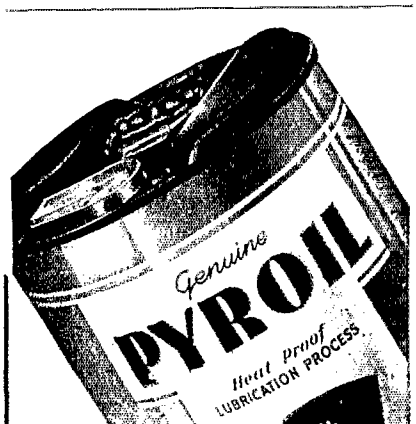


MOST EMPLOYEES WON'T WATCH THEIRS

Keep plant steps, floors and ramps slip-proof with PLASTIC FUT-SURE Prevents accidents, injuries, layoffs due to falls. Easy to apply—economical to buy, PLASTIC FUT-SURE provides a safety factor no plant can afford to overlook. Write for folder and prices. Do it today—before slippery floors cause another accident in your plant.

GENERAL ABRASIVE CO., INC.
2075 College Ave.
Niagara Falls, N. Y.

PLASTIC FUT-SURE
FOR SAFER WALKING SURFACES



PYROIL STOPS CORROSION

Recognized as of decidedly great importance is improved Pyroil's definite ability to inhibit corrosion on bearings and metals—to stop destructive corrosive action. In addition, Improved Pyroil increases film strength of lubricants as much as 30%. Reduces surface tension, lowers temperatures, increases power output.

Highly interesting laboratory and field data, supplying facts of Improved Pyroil's important functioning, sent FREE on request. No obligation. Manufactured and Guaranteed by Pyroil Company, W. V. Kidder, Founder, 244 LaFollette Ave., LaCrosse, Wis., U. S. A.

Every Container Bears this Signature

Founder

Heard at the Congress

(Continued from page 50)

and maintained properly. Persons who have no business in the plant must be discouraged from wandering about the permises. Children, through their parents, must be educated to refrain from clambering about the delivery trucks in search of pieces of ice.

—Ivan L. Scott, safety director, Bureau of Safety, Chicago. (Refrigeration Section)

The Steward's Department

We have heard much of safety in the deck and engine departments of vessels in the American Merchants Service, but seldom is the steward's department singled out for consideration of its many hazards and their control.

On some ships the accident frequency in this department is even higher than in other and seemingly more dangerous occupations. Most of these hazards can be eliminated by adopting and using safe equipment, together with careful supervision of men in the galley, pantries, mess rooms, store rooms and refrigerating compartments.

In our own organization we inaugurated, some years ago, a cooking school where many of the commissary's force served their apprenticeships. The school gives them a chance to learn our methods; it gives them a good elementary training and tends to make them safety minded. It enables us to familiarize them with the type of cuisine we desire which results in a contented crew; and it also gives the company the opportunity to teach them our requirements in cleanliness, service, courtesy and cooperation with other departments.

—Robert F. Hand, Assistant General Manager, Marine Department Standard Oil Company of New Jersey. (Marine Section.)

Through the Ice

(Continued from page 20)

they could not climb out by breaking their way a hundred feet to shore.

Skating alone on a woodland lake or stream is courting serious consequence. A companion, whether skating with you or not, will be in a position to render prompt aid or to call assistance in case of accident. Persons working nearby offer the same protection. If you must go out alone, carry a pair of spikes in your pocket, and a pole over your shoulder if possible.

When crossing a stretch of ice of unknown thickness, carry a pole about 10 or 12 feet long which can be used to climb out on when laid flat on the ice across the hole.

Couples or groups skating on more or less isolated areas should take the precaution to secure and place on the shore where it will be immediately available some form of rescue equipment, such as a plank, preferably not less than 10 feet long, a stout pole of similar length, a ladder, or a rope.

A coil of ⅜-inch clothesline, 50 to 100 feet long, carried by one member of the party, provides an effective means of rescue. The coil may be carried with a minimum of inconvenience when slung across the shoulder.

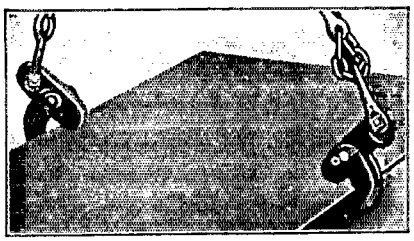
A person finding it necessary to enter the water to make a rescue should remove at least his shoes, stockings, coat and lower outside garments. After repeated experiments, it was determined that progress could not be made for any considerable distance by one person fully clothed in attempting to tow another fully dressed.

Underwriters' Laboratories Reorganized

TO CLARIFY its position as a nonprofit service corporation, Underwriters' Laboratories has been reorganized without capital stock. The National Board of Fire Underwriters, which contributed to the original cost of the enterprise and under the direction of which it was established and has been maintained, continues its sponsorship.

The new charter recites among the objects: "By scientific investigation, study, experiments, and tests, to determine the relation of various materials, devices, constructions and methods to life, fire and casualty hazards, and to ascertain, define and publish standards, classifications and specifications for materials, devices, construction and methods effecting such hazards, and other information tending to reduce and prevent loss of life and property from fire, crime, and casualty."

In meetings held recently at the Laboratories' principal office and testing station in Chicago the immediate consummation of the transfer to Underwriters' Laboratories, Inc., the new corporation, of the going business of the 35 years old Illinois company was arrived at. There will be no changes whatever in the management and technical personnel and no interruption of the various research, scientific testing and follow-up activities.



THE SAFE WAY

NEVER SLIP Safety Clamps for use in handling boiler plate either vertical or horizontal constitute the safe sure way to perform this operation. They have many advantages over old-fashioned hooks and chains because they do not have a tendency to slip, as the weight of the piece pulls the clamp tighter.

Costly accidents can be avoided and considerable money saved when Never Slip Safety Clamps are used. The safe way is the only profitable way.

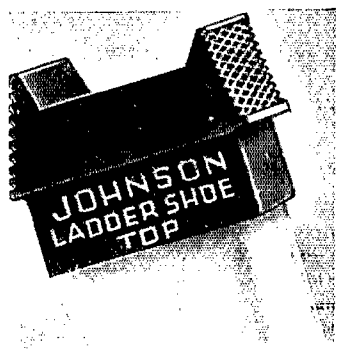
Write for complete details

Never Slip Safety Clamp Co.

P. O. Box 448

Grand Central Annex, New York, N. Y

—IMPORTANT—



WE have found after a long and careful survey of ladder safety the importance of a shoe at the top as well as at the bottom of the ladder.

We are happy to announce our new ladder top shoe which will be known as the Johnson Ladder Top. They are simple in construction and marvelous in performance. They will not mar walls and are conformable to any surface, rough or smooth. They will reduce the side slipping of the ladder.

Order from your dealer or direct.

Johnson Ladder Shoe Co.
Eau Claire Wisconsin

INDEX TO ADVERTISERS

American Abrasive Metals Co. 60
American Mason Safety Tread Co. ...77
American Mutual Liability Ins. Co. ..4-5
American Optical Co. 8
Armstrong Brothers Tool Co. 72
Associated Guard Manufacturers 71

Bausch & Lomb Optical Co. 55
Benjamin Electric Mfg. Co. 37
Brown Shoe Company 62
Buhrke Company, R. H. 59
Bullard Company, E. D. 61
Burroughs Wellcome & Co. (U.S.A.) Inc. 49

Chicago Eye Shield Co. 71
Columbus-McKinnon Chain Co. 69
Cover, H. S. 35

Davis Emergency Equip. Co. 51
Dockson, C. H. Co. 57
Dracco Corporation 69

Finnell Systems, Inc. 58

General Abrasive Co. 76
General Electric Co. 53

Halperin Co., Inc., A. E. 77
Harrington & King Perforating Co. ...60
Huntington Laboratories, Inc. 63
Hynson, Westcott & Dunning, Inc. ...33

Industrial Gloves Corp. 70
Industrial Products Co. 65-72
Inland Steel Co. 2
International Shoe Co. 3

Johnson Ladder Shoe Co. 77
Justrite Mfg. Co. 73

Kidde & Co., Inc., Walter 67
Klein & Sons, Mathias 64

Lehigh Safety Shoe Co. Inc., ...65
Lima Cord Sole & Heel Co. 59

Macwhyte Co. 66
Mine Safety Appliances Co. .. I. F. Cover

National Safety Council, Inc. 39
Never Slip Safety Clamp Co. 77

Pulmosan Safety Equip. .... I. B. Cover
Pyroil Co. 76

Reece Wooden Sole Shoe Co. 63
Rose Mfg. Co. 62

Safety Clothing Co. 61
Safety Equip. Service Co. .. Back Cover
Sherwin-Williams Co. 7
Spencer Turbine Co. 67
Stonehouse Signs, Inc. 57

Wiesman Mfg. Co. 58
Williams, J. H. Co. 68
Willson Product, Inc. 1

"It must be awful to be a bill collector. You must be unwelcome wherever you go."

"On the contrary, practically everybody asks me to call again."

Mr.: "I've just had my life insured for $5,000."

Mrs.: "That's nice. Now I shan't have to keep telling you to be careful every place you go."



MASON ABRASIVE IRON, BRONZE, ALUMINUM AND NICKEL SAFETY TREADS

Mason Safety Treads reduce tripping and slipping hazards and maintenance costs on all types of stairs. Aluminous abrasive imbedded in the wearing surface prevents slipping, whether wet or dry. Wide selection of Treads to fit your particular stairs, new or old. Provide safe, durable protection against slipping hazards.

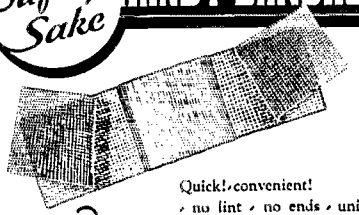
Write for samples!

AMERICAN MASON SAFETY TREAD CO.
LOWELL, MASS.

IN STOCK AT TEN PLANTS
RYERSON STEEL-SERVICE
Agents in All Principal Cities

FOR *Safety Sake*

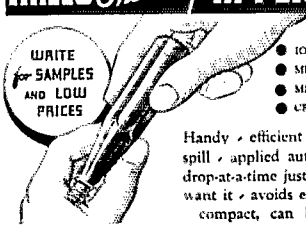
HALCO'S UNIPLAST HANDY BANDAGE



3 Styles
- WATERPROOF
- PLAIN
- MERCUROCHROME

Quick!-convenient! - no lint - no ends - unit dressings in individually sealed glassine envelopes - adhesive perforated for air circulation - ½" to 6" widths. Send for samples and low prices.

HALCO One Drop APPLICATOR



with
- IODINE
- MERTHIOLATE
- MERCUROCHROME
- CREOSOTE WASH

Handy - efficient - will not spill - applied automatically drop-at-a-time just where you want it - avoids evaporation compact, can be carried

A. E. HALPERIN CO. Inc.
Home of Halco Safety Products
267 ATLANTIC AVE. BOSTON, MASS.

THE BUYERS' SERVICE

All firms listed below are advertisers in this issue—See Advertisers' Index Page 77.

A

Accident Prevention Service
National Safety Council, Inc.

Abrasives
American Abrasive Metals Co.
American Mason Safety Tread Co.
General Abrasive Co.

Adhesive Tape and Plaster Remover

Alarms, Fire
Mine Safety Appliances Co.

Ampoules, First Aid
Davis Emergency Equip. Co.

Anemometers
Bullard Company, E. D.
Mine Safety Appliances Co.

Aprons
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Arresters, Dust
Associated Guard Manufacturers
Bullard Company, E. D.
Dracco Corporation

Awards, Prize
Mine Safety Appliances Co.

B

Badges and Buttons
Bullard Company, E. D.
Mine Safety Appliances Co.

Bags, Tool, Linemen
Burke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co., The

Belts, Linemen
Burke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Klein & Sons, Mathias
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Belts, Safety
Burke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Klein & Sons, Mathias
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Belts, Tree Trimming
Burke Company, R. H.
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Belts, Window Cleaning
Burke Company R. H.
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Rose Mfg. Co.
Safety Clothing Co., The

Blankets, Fireproof
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Blankets, Linemen

Blockers, Mine Car
Industrials Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Blockers, Railroad Car
Bullard Company, E. D.
Industrial Products Co.
Safety Equipment Service Co., The

Blowers, Hose Mask
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.

Blowers, Portable, Electric
Associated Guard Manufacturers
Spencer Turbine Co.

Buckets, Hoisting
Burke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.

Bulletin Boards
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co., The

C

Cans, Oil
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

Cans, Waste
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Justrite Mfg. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co., The

Chain, Factory
Columbus-McKinnon Chain Corp.

Chairs, Posture

Chairs, Safety, Bosnswain
Bullard Company, E. D.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Clamps, Rail
Industrial Products Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The

Clamps or Sockets
Armstrong Bros. Tool Co.
Never Slip Safety Clamp Co.
Williams & Co., J. H.

Cleaning Equipment Abrasive
Pangborn Corp.

Cleaning Systems, Vacuum
Associated Guard Manufacturers
Spencer Turbine Co.

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

Clothing, Acid Proof
Industrial Products Co.

Clothing, Fireproof
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Corp.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Clothing, Linemen

Clothing, Weatherproof
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Collectors, Dust
Associated Guard Manufacturers
Dracco Corporation

Compounds, Cleaning
Industrial Products Co.
Safety Clothing Co., The

Containers, Explosive Liquid
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Justrite Mfg. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co., The

D

Detectors, Gas
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

Detectors, Indicators, Recorders, Carbon Monoxide
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

Detectors, Pyrotannic
Mine Safety Appliances Co.

Disinfectants and Deodorants
Huntington Laboratories, Inc.

Dust Control Systems
Associated Guard Manufacturers
Dracco Corp.

Dust Counter

Dusters, Rock
Mine Safety Appliances Co.

E

Emblems, Safety
Mine Safety Appliances Co.

Exterminator, Rodent

Extinguishers, Fire
Bullard Company, E. D.
Kidde & Co., Inc., Walter
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Eyesight Surveys

F

Fans, Exhaust
Associated Guard Manufacturers
Dracco Corporation

Films or Slides, Safety, For Rent and Sale
National Safety Council, Inc.

First Aid Equipment
Bullard Company, E. D.
Burroughs-Wellcome Co., (U.S.A.) Inc.
Davis Emergency Equipment Co., Inc.
Halperin Co., Inc., A. L.
Hynson, Westcott & Dunning, Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Co.
Safety Clothing Co., The
Safety Equipment Service Co., The

Flags, Danger
Burke Company, R. H.
Bullard Company, E. D.
Industrial Products Co.
Safety Equipment Service Co., The
Stonehouse Signs, Inc.

Flashlights, Permissible
Bullard Company, E. D.
Davis Emergency Equip. Co.
Industrial Products Co.

Floor Cleaning Machines, Electric
Finnell Systems, Inc.

Flooring Material, Safety
American Abrasive Metals Co.
American Mason Safety Tread Co.
Associated Guard Manufacturers
General Abrasive Co.
Industrial Products Co.
Inland Steel Co.

Footwear, Rubber
Bullard Company, E. D.
Industrial Products Co.
Lehigh Safety Shoe Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Fountains, Drinking, Factory
General Electric Co.

Fumigants

G

Germicides

Germicides, Cutting Oil
Huntington Laboratories, Inc.

Glass, Safety
American Optical Company
Associated Guard Manufacturers
Bullard Company, E. D.
Chicago Eye Shield Co.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The
Willson Products, Inc.

Gloves and Mittens
Bullard Company, E. D.
Chicago Eye Shield Co.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Goggles
American Optical Company
Associated Guard Manufacturers
Bullard Company, E. D.
Chicago Eye Shield Co.
Cover, H. B.
Davis Emergency Equipment Co., Inc.
Dickson Co., C. H.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The
Willson Products, Inc.

Gongs, Sirens, Horns and other Signaling Devices
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.

Gratings, Safety

Guards, Chip and Spark
Associated Guard Manufacturers
Bullard Company, E. D.
Chicago Eye Shield Co.
Industrial Products Co.
Safety Clothing Co., The
Safety Equipment Service Co., The

Guards for Edged Tools
Burke Co., R. H.

Guards, Flywheel
Associated Guard Manufacturers
Harrington & King Perforating Co.
Industrial Products Co.

Guards, Foot and Toe
Bullard Company, E. D.
Chicago Eye Shield Co.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Guards, Gear
Associated Guard Manufacturers
Industrial Products Co.

Guards, Grinding Wheel
Associated Guard Manufacturers
Industrial Products Co.

Guards, Jointer
Associated Guard Manufacturers
Industrial Products Co.
Safety Equipment Service Co., The

Guards, Kick Press
Associated Guard Manufacturers

Guards, Portable Lamp

Guards, Lathe
Associated Guard Manufacturers

Guards, Planer
Associated Guard Manufacturers

Guards, Power Press
Associated Guard Manufacturers
Chicago Eye Shield Co.
Industrial Products Co.
Wiesman Mfg. Co.

Guards, Lamp, Safety
Associated Guard Manufacturers

Guards, Safety
Associated Guard Manufacturers
Bullard Company, E. D.
Harrington & King Perforating Co.
Industrial Products Co.
Safety Clothing Co., The
Safety Equipment Service Co., The
Wiesman Mfg. Co.

Guards, Saw
Associated Guard Manufacturers
Bullard Company, E. D.
Industrial Products Co.
Safety Equipment Service Co., The

Guards, Shaper
Associated Guard Manufacturers
Industrial Products Co.

Guards, Trendle
Associated Guard Manufacturers

H

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

Hats, Safety
Bullard Company, E. D.
Davis Emergency Equip. Co.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The

Heat Cramp Preventives
Davis Emergency Equip. Co.
Fairway Laboratories, Inc.
Industrial Products Co.

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

Hoists, Electric

Holders, Tool
Armstrong Bros. Tool Co.

Hooks, Safety Belt
Burke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Equipment Service Co., The

Hooks, Safety, Hoisting
Columbus-McKinnon Chain Corp.
Industrial Products Co.
Marwhyte Co.

Hospital Equipment
Bullard Company, E. D.
Burroughs-Wellcome Co., (U.S.A.) Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

I

Inclinators, Carboy
Bullard Company, E. D.
Industrial Products Co.
Safety Clothing Co., The
Safety Equipment Service Co., The

Indicators, Flammable Vapor
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

THE BUYERS' SERVICE

All firms listed below are advertisers in this issue—See Advertisers' Index Page 77.

Inhalators
Bullard Company, E. D.
Davis Emergency Equip. Co., Inc.
Mine Safety Appliances Co.

Insurance
American Mutual Liability Insurance Co.

J

L

Ladder Shoes or Feet
American Abrasive Metals Co.
American Mason Safety Tread Co.
Associated Guard Manufacturers
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Johnson Ladder Shoe Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Rose Mfg. Co.
Safety Clothing Co., The

Ladders, Safety
Bullard Company, E. D.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.

Lamp Hangers

Lamps Safety
Benjamin Electric Mfg. Co.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

Lanterns, Carbide
Bullard Company, E. D.

Lanterns, Electric
Bullard Company, E. D.
Industrial Products Co.
Justrite Mfg. Co.
Mine Safety Appliances Co.

Leathers, Hand
Bullard Company, E. D.
Industrial Gloves Corp.
Industrial Products Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Leggings
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Lighting Equipment, Industrial
Benjamin Electric Mfg. Co.
General Electric Co.

Line Hose

Lockers and Hangers for Clothing
Industrial Products Co.

Locks, Lamp
Industrial Products Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

Lubrication
Pyroil Company

M

Machines, Floor Cleaning, Electric
Finnell Systems, Inc.

Markers, Traffic
Safety Equipment Service Co., The

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

Mats, Standing, Safety
American Mason Safety Tread Co.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.

Metal, Expanded
Associated Guard Manufacturers

Metal, Perforated
Associated Guard Manufacturers
Harrington & King Perforating Co.

Meters, Light Testing
General Electric Co.
Industrial Products Co.

Movers, Railway Car
Bullard Company, E. D.
Industrial Products Co.
Safety Equipment Service Co., The

O

Oxygen Breathing Apparatus
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

P

Pacs, Miners'
Lehigh Safety Shoe Co.

Pads, Knee
Associated Guard Manufacturers
Bullard Company, E. D.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

Paint
Sherwin-Williams Co.

Poster Service
National Safety Council, Inc.

Protectors, Arm
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The

Protectors, Finger
Davis Emergency Equip. Co.
Industrial Gloves Corp.
Industrial Products Co., The
Safety Clothing Co., The
Safety Equipment Service Co., The

Protectors for Linemen
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Gloves Corp.
Industrial Products Co.,
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Safety Equipment Service Co., The

Publications, Safety
National Safety Council, Inc.

Pulleys, Fuse
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

Pumps, Oxygen
Mine Safety Appliances Co.

R

Respirators
American Optical Company
Bullard Company, E. D.
Chicago Eye Shield Co.
Cover, H. S.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Pulmosan Safety Equipment Corp.
Safety Clothing Co., The
Safety Equipment Service Co., The
Willson Products, Inc.

Resuscitation Equipment
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Mine Safety Appliances Co.

Rope, Wire
Macwhyte Company

S

Scaffolding, Safety

Screw Drivers, Non-Skid
Associated Guard Manufacturers
Industrial Products Co.

Seats, Toilet, Sanitary

Shades, Eye, Non-breakable
Associated Guard Manufacturers
Bullard Company, E. D.
Chicago Eye Shield Co.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Clothing Co., The
Safety Equipment Service Co., The

Shades, Window, Industrial

Shoes, Safety, Factory and Foundry
Associated Guard Manufacturers
Brown Shoe Company
Bullard Company, E. D.
Industrial Products Co.
International Shoe Co.
Lehigh Safety Shoe Co.
Mine Safety Appliances Co.
Safety Equipment Service Co., The

Shoes, Wooden Sole
Industrial Products Co.
Safety Clothing Co., The

Signs, Accident Prevention
Bullard Company, E. D.
Industrial Products Co.
Mine Safety Appliances Co.
Safety Clothing Co., The
Safety Equipment Service Co., The
Stonehouse Signs, Inc.

Sirens and Signals
Bullard Company, E. D.
Industrial Products Co.

Sleeves, Rubber

Slings, Chain
Columbus-McKinnon Chain Co.

Slings, Safety, Wire Rope
Macwhyte Company

Soap
Huntington Laboratories, Inc.

Soles, Shoe, Non-slip
Lima Cord Sole & Heel Co.

Sterilizing Equipment

Straps, Safety
Bulrke Company, R. H.
Bullard Company, E. D.
Davis Emergency Equipment Co., Inc.
Industrial Products Co.
Klein & Sons, Mathias

Stretcher Units
Davis Emergency Equip. Co.
Industrial Products Co.

Sweat Bands for Goggles
Halperin Co., Inc., A. E.

T

Tents, Pneumonia
Mine Safety Appliances Co.

Testers, Fuse

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

Tools, Marking or Stamping

Tools, Non-sparking
Bullard Company, E. D.
Industrial Products Co.
Pulmosan Safety Equipment Corp.

Torches, Blow
Klein & Sons, Mathias

Treads, Safety
American Abrasive Metals Co.
American Mason Safety Tread Co.
Associated Guard Manufacturers
Industrial Products Co.
Inland Steel Co.

Treads, Safety Car Step
American Abrasive Metals Co.
American Mason Safety Tread Co.
Associated Guard Manufacturers
Bullard Company, E. D.
Inland Steel Co.

Trestles, Safety, Extension
Industrial Products Co.

Trophies

V

Valves, Oxygen
Mine Safety Appliances Co.

Vending Machines, Sanitary

Ventilating Equipment
Associated Guard Manufacturers
Dracco Corporation
Pangborn Corp.

W

Washers, Safety for Grinding Wheels
Industrial Products Co.

Washroom Equipment, Industrial

Welding Equipment
Davis Emergency Equip. Co.

Wrenches, Hopper Car
Industrial Products Co.
Safety Equipment Service Co., The

Wrenches Non-sparking
Industrial Products Co.
Williams & Co., J. H.

Wrenches, Open End
Armstrong Bros. Tool Co.
Williams & Co., J. H.

Wrenches, Pipe
Armstrong Bros. Tool Co.
Williams & Co., J. H.

Wrenches, Socket
Armstrong Bros. Tool Co.
Williams & Co., J. H.

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 North 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 . . . . . .

The Accident Barometer

Prepared by the Statistical Bureau, National Safety Council

ACCIDENTAL DEATHS OF ALL TYPES increased 5 per cent in September, compared with the same month last year. The estimated total was 8,560. Motor vehicle deaths rose 2 per cent, while other public fatalities and occupational deaths were about the same as last year. The bulk of the advance was due to a jump of 13 per cent in home accidental deaths. The addition of the September estimate makes the nine months' total of accidental deaths 83,160, which is 8.6 per cent more than the comparable total for last year.

OCCUPATIONAL ACCIDENTAL DEATHS occurring in September numbered about 1,400. There was no change from September, 1935, despite indications of an increase in employment. The January-September total of these deaths is estimated to be 13,100, or 6.5 per cent above last year's comparable figure of 12,300. About half of this increase is believed to consist of the excessive heat deaths that occurred in July and August. In the inter-plant contests of community safety councils the September frequency rate per million man-hours was 10.36, or 12 per cent less than in September, 1935, and the severity rate per thousand man-hours was 0.55—down 17 per cent from last year. The nine months average rates were: frequency, this year 11.82, last year 14.06; severity, this year 0.75, last year 0.77. In the three sectional contests conducted by the National Safety Council the frequency rate for September was 9.00 or 7 per cent above September, 1935. The nine months average rate also showed an advance—9.97, compared with 8.75 for last year. Industrial Commissions in 18 states received reports of 547 deaths in October, which represents less than 2 per cent increase from October, 1935.

All Accidental Deaths

January-September

1936	83,160
1935	73,170
1934	75,477

(U.S. Census Bureau total for 1934; National Safety Council estimates for 1935 and 1936.)

COAL MINE FATALITIES in September numbered 102, or 8 more than occurred in September, 1935, according to records of the U. S. Bureau of Mines. However, the increase in production was greater, and the death rate per million tons of coal mined dropped from 3.22 to 2.52. The rate for anthracite mines was 2.66, which is the lowest rate for this branch of the industry since May, 1933. During the nine months of 1936 the bituminous mines rate was 2.26, or 11 per cent lower than last year, and the anthracite mines rate was 5.09—down 9 per cent.

STEAM RAILROAD ACCIDENTS occurring in July resulted in 554 deaths and 3,038 injuries, according to the Interstate Commerce Commission. Compared with July, 1935, deaths were up 10 per cent and injuries 30 per cent. Locomotive and motor train mileage increased 15 per cent. However, deaths of trespassers showed a drop of 5 per cent and injuries a reduction of 12 per cent. Also, there were only 2 passenger deaths compared with 3 in July, 1935. The seven months' total of deaths was 5 per cent above last year's figure, and injuries were 24 per cent higher. The employee death rate per million man-hours advanced from 0.24 to 0.25 and the injury rate from 6.91 to 8.33. Grade crossing fatalities rose from 853 to 909.

MOTOR VEHICLE DEATHS in September totaled 3,420, or 2 per cent more than were recorded in the same month last year. This advance, plus an upward revision of the August estimate, brings the nine months' total to 25,920, or 1/3 of one per cent above the comparable figure for 1935. The eight months' total of gas consumption was 9.7 per cent above the same months of 1935, which indicates that if the death totals were stated as death rates based on gas consumption this year's rate would be about 8 per cent below last year's.

COMMERCIAL VEHICLE ACCIDENTS in September averaged 1.75 per 100,000 vehicle miles for the fleets participating in the National Fleet Safety Contest. The average rate for September, 1935, also, was 1.75, indicating no change in average accident frequency. However, truck accidents alone went down 2 per cent from 2.58 to 2.52, and bus accidents increased 12 per cent from 0.92 to 1.03. The passenger car rate remained at 1.28 For the first three months (July to September) of the present Contest the rate for all types of vehicles averaged 1.75, or 2 per cent less than in the comparable period of last year.

PUBLIC (NOT MOTOR VEHICLE) DEATHS totaled 1,400 in September, just equalling the total for September, 1935. However, this is a drop of one-third from the August, 1936 total, due principally to the absence of excessive heat as a cause of death. The nine months' estimate of "other public" fatalities is now placed at 14,800, or 9 per cent above last year's comparable figure.

HOME ACCIDENT DEATHS continued to climb during September, reaching a total of 2,600. It is estimated that there were only 2,300 in September, 1935. There were increases in fatal falls and asphyxiations, which were partially offset by a decrease in burns. Deaths of children under 5 years and of persons over 64 years old increased sharply, while the totals from 5 to 64 years showed some decrease. The nine months' total of home deaths is estimated at 31,600, or 34 per cent above last year's comparable total of 23,600.

Looking ahead . . . .

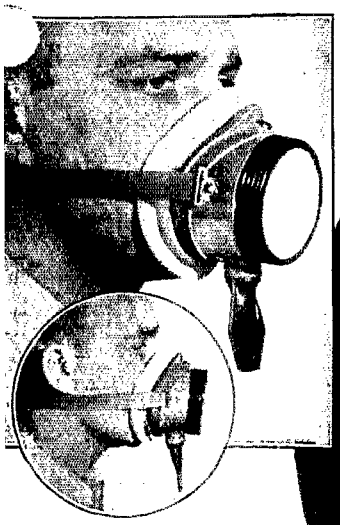
The total of accidental deaths for December will probably be higher than for any month this year except July and August. Motor vehicle fatalities will be near the peak, and deaths from falls will be about as numerous as in any earlier month. Fatal burns and asphyxiations will probably show a considerable gain over the fall months, although the season's high point for these deaths usually comes in January or February.

●

THESE items summarize briefly the monthly reports collected by the National Safety Council to show current accident trends. Certain reports are analyzed more fully in other monthly publications of the Council, devoted to industrial, traffic, commercial vehicle, home, and school safety. In addition, the Council's annual statistical report "Accident Facts," contains detailed information on all types of accidents.

One of "M" SERIES
DUST RESPIRATORS

New! M-1100 DUST RESPIRATOR. *Approval BM-2109 of U. S. Bureau of Mines.*



Pulmosan Respirators

MORE THAN 30 TYPES for DUSTS-FUMES-GASES SMOKE-SPRAY MISTS



Below—
R-150 Chemical Cartridge Respirator. For paint spray, organic fumes, etc.



Below—
GR-230 Goggle Respirator. One piece moulded rubber.



Right—
R-300 Canister Respirator.



Protecting your workers against hazardous breathing conditions is a vital safety measure. It is a scientific job, requiring the proper protective device for each specific danger.

Your problem is simplified by turning to PULMOSAN for respirators, helmets, hoods and masks. The line is complete for every purpose. And you may draw upon our thorough knowledge and experience to help you overcome your breathing hazards.

Pulmosan Respiratory devices meet the strictest requirements and are standard equipment in thousands of plants thruout the country. Send coupon below for literature of complete line.

CHOOSE PULMOSAN ..and be Safe!

PULMOSAN SAFETY EQUIPMENT CORP.
Member: Industrial Safety Equip. Ass'n.
176 Johnson St., Brooklyn, N. Y.

Mich. Distributor: THE BOYER-CAMPBELL CO., Detroit
Lake Superior Dist. Distr.: W. P. & R. S. MARS, Duluth, Minn.

FILL IN and MAIL

NSN-12

Pulmosan Safety Equip. Corp.,
176 Johnson St., Brooklyn, N. Y.

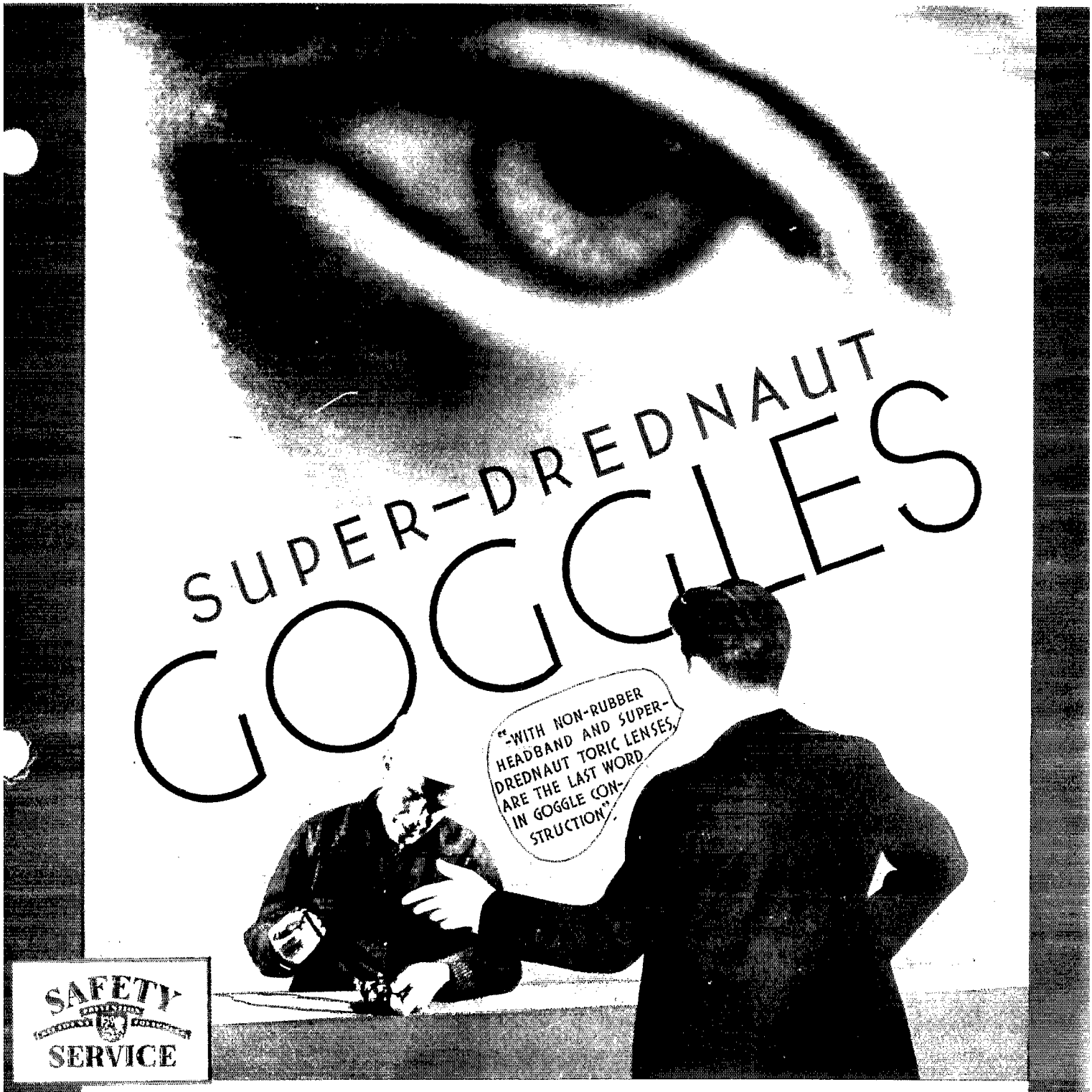
Gentlemen:
Please send file of Respirator literature.

Firm.....

Address.....

City..... State.....

Attention of.....



"You're telling me," says Jim, the shop foreman, "I've used Super-Drednaut Goggles before, Bob, and I can say, without exaggeration, that the new Non-Rubber Headband supplied on these Super-Drednaut Goggles has contributed more comfort to our men than any other improvement in goggle construction that I know of—it contains no rubber, yet provides the necessary tension, and when once adjusted, *stays* adjusted."

"Yes, Jim, and what's more, this *New* Super-Drednaut Lens is Toric or curved in form, ground from fine optical glass without distortion or surface defects, special annealed and gives a much greater protection than the ordinary flat lenses. It's the *curve* that makes them strong."

"You're right, Bob, nothing but Super-Drednaut for me."

Both Management and Men appreciate the *added* protection and comfort that only Non-Rubber Headbands and Toric-Curved Lenses provide.

Why not let us send you a pair for your examination—No obligations.

THE SAFETY EQUIPMENT SERVICE COMPANY

Basil W. Nutt, President — **1228 St. Clair Avenue, Cleveland, Ohio**

Manufacturers and Distributors of Accident-Prevention Equipment

For Added Protection
SPECIFY SUPER-DREDNAUT
TORIC-FORM LENSES—
THEY'RE *Curved*