



PROCEEDINGS  
OF THE  
National Safety Council

FOURTH ANNUAL  
SAFETY CONGRESS

HELD AT THE  
BELLEVUE-STRATFORD HOTEL  
PHILADELPHIA, PA.

October 20 and 21, 1915\*

\* The volume indicates that the Business Meeting and the General Session were held October 19.





## THE NATIONAL SAFETY COUNCIL

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When the history of the Safety Movement is written the employers of the country will be given a large measure of credit for taking the initiative in working out the practical problems of preventing accidents in the industries, in the homes, and in public places.

Previous to the annual meeting of the Association of Iron and Steel Electrical Engineers in Milwaukee, 1912, no unified national effort had been made to collate the facts and experiences of industrial accidents. Many agencies had made investigations and some of the leading industries had done constructive and demonstrative work. More than two hundred employers attended the first meeting of National Safety Congress and a pronounced expression of opinion was made as to the need for a national clearing-house of information which would be independent of politics and have as its sole aim the establishment of a bureau of information to which the employer could go for the cumulative experience of the industries in methods and practices for eliminating accidents in the plants.

The Second Annual Safety Congress took place in New York in September, 1913, and launched a national association, coöperative in form, and composed of safety men and the more progressive employers of the country. Headquarters for the Council were established at Chicago and business was commenced October 13, 1913. During the first year eleven hundred and thirty-one members were secured.

The Third Congress was held in Chicago in October, 1914. Here the work of the organization was perfected and a campaign of safety work inaugurated which soon made the National Safety Council the most important body of its kind on the continent. The Fourth Congress was held in Philadelphia in October, 1915, with almost a hundred per cent increase in the membership, representing approximately one hundred and fifty industries, many associations, governmental bureaus, and individuals. At the present time the Council has a membership of nearly seventeen hundred industries

### *Fourth Safety Congress*

and associations, included in which are over fifty-six hundred representatives. The Council serves over 2,500,000 workmen.

The Council is supported entirely by annual dues.

Every Monday the members receive four or five bulletins, service letters, and material designed to advance the science of accident prevention.

Twenty-three Local Councils have been organized, and thirteen Sections have been inaugurated to study the particular hazards of specific industries.

The Council knows that employers are interested in practical methods for solving the accident prevention problem and as it has the facilities to promulgate these methods and supplement them by its own sectional and other activities, the prospects for its future are exceedingly bright.

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*"Safety Work Is an Obligation  
Which Honestly May Not  
and Should Not Be Avoided"*

## **National Safety Council**

**Business Meeting**

**Philadelphia, Pa.**

**October 19, 1915**

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**R. W. CAMPBELL, President, Presiding Officer**

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### **TUESDAY MORNING SESSION**

**T**HE meeting was called to order at 10 a. m. by President R. W. Campbell.

**PRESIDENT CAMPBELL:** The Fourth Annual Meeting of the National Safety Council will come to order. Our deliberations will be opened by prayer by the Rev. James De Wolf Perry.

#### **PRAYER BY THE REV. MR. PERRY.**

Almighty God, the All Father whose mercies are over all Thy works, whose Blessed Son went about doing good, healing all manner of disease and relieving all kinds of distress among the people; who has taught us to sympathize with those who are lowly, those

## The Standard

“Not that of a man’s faith, his political creed, his religious professions, nor anything but his ability.”

who are obscure; who was Himself a wage-earner, working at the carpenter’s bench; bless, we beseech Thee, the deliberations of this meeting and their decisions and actions. Guide them with wisdom to know the things that they ought to do. Give them grace and power faithfully to fulfill the same, direct them in all their doings with Thy most gracious favor. Follow them with Thy gentle help and grant that, in all their efforts, they may promote Thy glory and the welfare of their

fellowmen. Guide and dispose those for whose benefit they deliberate. Dispose them to co-operate with them, disarm them of prejudice and suspicion and envy. Save them from interpreting false motives. Guide them in all their ways, for as much as without Thee we cannot live. Mercifully grant that in all our ways and undertakings we may follow Thy name and promote Thy purposes among men. Grant that the promise and purpose announced at the coming of Thy Dear Son may be everfulfilled, drawing nearer His kingdom by doing Thy will on earth as it is in heaven; promoting peace, glory to Thee, and peace among men. These, and all other mercies and favors that Thou may see fit to grant us, we humbly ask in the name and for the sake of Him who taught us, when we pray, to say:

Our Father, who art in heaven, hallowed by Thy name. Thy kingdom come, Thy will be done on earth as it is in heaven. Give us this day our daily bread and forgive us our trespasses as we forgive those who trespass against us; and lead us not into temptation but deliver us from evil; for Thine is the kingdom and the power and the glory forever. Amen.

PRESIDENT CAMPBELL: It is my privilege to introduce to you one who is to extend to our organization a welcome for the holding of this meeting in this city. I take pleasure in introducing Dr. F. D. Patterson, the President of the Philadelphia Local Council. Dr. Patterson. (Applause.)

## ADDRESS OF WELCOME.

DR. F. D. PATTERSON, President Campbell, Ladies and Gentlemen, Members of Our National Safety Council, Honored Guests. It is my rare privilege and pleasure as President of the Philadelphia Safety Council to welcome you here to our City of Brotherly Love and Industry. I hope that the results of the deliberations of this Council, assembled here in annual Congress, may spread forth throughout our land. The Council—conceived in the brains of such men as Campbell, Cameron, Palmer, Young, Richards, Price, and others, a little more than three years ago—first saw its birth at the Hotel McAlpin in New York in 1913. Thanks to your activity and that of the other officers of the Council, it is but natural that we should have a membership which represents the foremost industries in our land. We welcome you here to the greatest industrial city in the greatest industrial commonwealth in this country—we are proud of both our city and state.

The day is happily past when one might hear throughout the land: "Oh, Pennsylvania in general is corrupt and contented, and Philadelphia is particularly so." We, here in Pennsylvania, have seen the creation of a Department of Labor and Industry, and have had the good fortune to have it presided over by the Hon. John Price Jackson, who made the standard in his department—not that of a man's faith, his political creed, his religious profession, nor anything but his ability—that won him a place in this department of the public service. The time at my disposal does not permit my telling you of all the splendid work that he has done. Under his wise guidance our State Legislature, at its last session, passed a workman's compensation act, which act is a standard that every other state in this Union could follow with profit. They also passed a child labor bill. That child labor bill is a step forward from that upon the statute books of any other of our states, because it provides not only for continuation schools, wherein the child who must

**The New Liberty**

Means freedom  
from accidents upon  
our highways, in our  
homes and in our in-  
dustries.

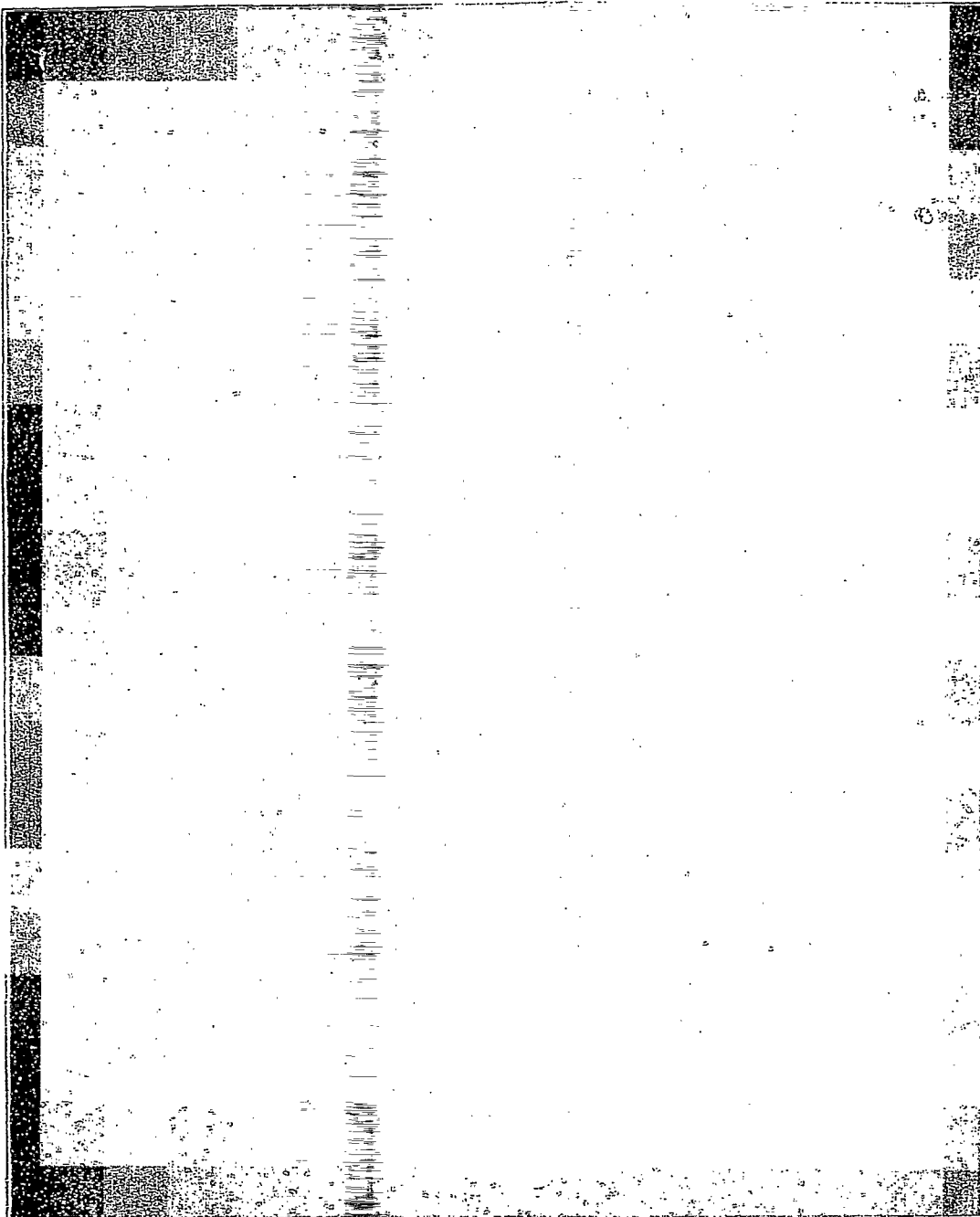
labor for his or her daily bread has the advantage of continuing the education which he was forced through poverty to discontinue, but, also in that act there is a provision that the child, before it can go into labor, must pass a physical examination, and our Industrial Board has decreed that certain diseases exclude the child from employment. And so the child who is to go into labor has the protection of a law which, to our minds, is beyond that now upon the statute books of any other state or country.

I cannot speak of the Department of Labor and Industry without telling you all of the sorrow which has come to us all through the removal by death of the chief medical inspector of the Department of Labor and Industry, Dr. John C. Price, who was a loyal member of this organization and one who labored early and late not only to promote the interests of this state and its working people, but also to spread throughout our commonwealth the news that the National Safety Council was abroad within the land. He was chairman of the committee which framed the standards which are used for the physical examination of children and I am sure that he could have no better tribute than those standards which his committee agreed upon under his wise leadership.

President Campbell, upon behalf of our city, its industries, with more than 300,000 skilled workmen engaged therein, upon behalf of our Chamber of Commerce—it is my pleasant duty to present to you the key to our city. If you will examine it you will find that here it reads "Philadelphia," and here it reads "1915." (Applause.) I would that I were some genii of old that I might have the power to endow that key with the magic of opening the doors of every factory, not only in our city, in our commonwealth, but also throughout this land, and all the rest of the civilized world; that this key would enable you to enter therein, that you might bring to the attention of the superintendents, executives, and employes of all the industries the enormous benefits which the National Safety Council is conferring upon all mankind.

America stands today as the one large Safety First country in the world. All Central Europe, as we know, is in the death grip of a war which, to my mind, is a blight upon our so-called civilization. As we stand here in the shadow of that building where the Declaration of Independence was signed, and from whose belfry tower rolled forth the peal of the Liberty Bell whose tones reached





FACSIMILE OF GOLDEN KEY PRESENTED TO THE PRESIDENT OF THE  
NATIONAL SAFETY COUNCIL BY DR. F. D. PATTERSON, ON BEHALF  
OF THE MAYOR OF PHILADELPHIA, AT THE OPENING OF THE  
1915 ANNUAL CONGRESS OF THE NATIONAL SAFETY COUNCIL



every inhabitant of the then thirteen colonies and later echoed around the world, I would that we might strike forth a new sound of liberty which would go forth so that it would reach the hearts and minds of every inhabitant upon the face of our globe; that it might say to all of them that this new liberty means the freedom from accidents upon our highways, in our homes, and in our industries; that occupational diseases shall be banished; and, as its tones roll forth let us think of those immortal lines of that poet-laureate of England who said:

“Ring out the slowly dying cause,  
And ancient forms of party strife;  
Ring in the nobler modes of life,  
With sweeter manners, purer laws.

Ring out false pride in place and blood,  
The civic slander and the spite;  
Ring in the love of truth and right;  
Ring in the common love of good.

Ring out old shapes of foul disease;  
Ring out the narrowing lust of gold;  
Ring out the thousand wars of old;  
Ring in the thousand years of peace.

Ring in the valiant man and free,  
The larger heart, the kindlier hand;  
Ring out the darkness of the land;  
Ring in the Christ that is to be.”

(Applause.)

REPLY BY PRESIDENT.

PRESIDENT CAMPBELL: Dr. Patterson, Ladies and Gentlemen—All human conduct has its reason, and there is a reason for our being here in your city today. It is eminently proper that we should be in a state and in a community of this kind for the deliberations your city and your state stand for something. Every community in which we are about to indulge. It is eminently proper because

## **PHILADELPHIA**

An atmosphere of honesty, solidity, stability, and conservatism, yet tinged with progressivism."

has its atmosphere. Yours has a distinct one—an atmosphere of honesty, solidity, stability and conservatism, yet tinged with progressivism. And there is a reason why all of that is true; for with respect to your natural resources, with respect to your capital, you stand pre-eminent among the states and the cities as one of great wealth. You have within your vaults sufficient capital to finance every enterprise that goes on within the confines of your common-

wealth. You have furnished in the past capital to develop the West, the Northwest and the South. You have today a capital per capita four times larger than the average per capita capital throughout the United States, and your wealth is more evenly and widely distributed than is that of any other state or community. You have in your industries alone invested over one thousand millions of dollars, and the daily payroll in your industries is \$700,000 in the City of Philadelphia alone—truly a solid and substantial financial situation for any city or any state.

### **SOLID AND SUBSTANTIAL INDUSTRIES.**

In your industries you excel in the number and importance and widely diversified character of products. You have over 240 different industries in the City of Philadelphia. These represent petroleum products, sugar products, the products of mines, textile industries, iron and steel manufactures, railway equipment, agricultural equipment, household utensils, finished leather goods, and hundreds of others that might be named, and are among the important industries of the country. You have the widest range of world-consumed goods of any community in the United States. You are the greatest carpet and textile section in the world. You carpet a seven-room house every twenty-eight seconds and you make ten pairs of stockings every second. The gross value of your manufactured goods per annum exceeds eight hundred millions of dollars and you have more goods being manufactured—that are carried through from

the raw product to the finished product—than probably any other community in the United States—surely a solid and substantial industrial condition, gentlemen.

As to your people, you have over 300,000 of them in your industries in this community. They are stable and permanent and not transient. Many of them represent the fourth and fifth and even sixth generation of those who have lived here since the days of Penn, and they inherit the ideals and principles that were taught to their forefathers by that great and good man. They inherit a belief in God, they inherit a belief in the honesty of toil, they inherit the belief that he taught, that honest thrift is advisable. They inherit the belief that only through industry can happiness come. Surely a solid and substantial population.

## **Your People**

Many of them represent the sixth generation of those who lived here since the days of Penn.

### **A CITY OF HOMES.**

As to your homes, of the 367,000 which you have in this city, 125,000 of them are owned by the people who live in them—a record which cannot be equalled by any other community in the country; and of those only 12,000 are frame dwellings. You live in substantial quarters, you transact your business in splendid and stable and solid office buildings. Truly, physically, you have a solid and substantial community.

As a state, with respect to your legislative activity, you have conservatively and yet progressively put on the statute books wise and constructive laws. No state excels you in your acts with respect to industry and labor. You have blazed the way, as Dr. Patterson has stated, for all of the states with your very wonderful child labor law, and your workmen's compensation law stands pre-eminent among those of the states that have legislated upon that subject. In the administration of the act relating to industry and labor, under the direction and leadership of the Hon. John Price Jackson, Commissioner of Industry and Labor of your state, you have set the Nation at

large an example of unparalleled administrative ability and activity. In point of honesty of administration, fairness, and justice between employer and employee, singleness and integrity of purpose, enlightened, and constructive interpretation, sympathetic and tactful attention to the relations between the department and those who come in contact with it, and in every phase of the activity of that office, a remarkable example of administration has been given to the world. It is one that merits warm and hearty approval and commendation from all. It is a great privilege today for me, as an observer from the side lines, to express my commendation of the conduct of that office.

PIONEERS IN THE SAFETY MOVEMENT.

As to your place in the safety movement, you have ever been in the forefront in that activity. Your state and city were among the pioneers and are now among the leaders in the movement. Your citizens were among the founders and earliest supporters of our organization and you have ever since given it your hearty and sincere support and co-operation. You have today more members in the National Safety Council and more Local Councils than any other state in the Union. (Applause.)

The safety movement itself is an honest one. It is built on the solid and substantial foundation of right—with a stable purpose and of conservative and yet progressive character. And it is therefore eminently proper, as I said at first, that a body of this kind should meet in a community in which the financial condition, the industrial condition, the condition of its people, and its administrative character have all of the same qualities.

It is a proud moment for all of us to be in conference here today and it is my privilege to accept very gratefully, Dr. Patterson, the welcome you have so cordially extended to us; and we trust that our deliberations will merit the commendation which you have given to them in advance. We thank you very much. (Applause.)

ROLL CALL AND REGISTRATION.

CHAIRMAN: The next order of business is the roll call of members. I am advised by our Secretary and by the registration office that there have been registered and have been filed proxies sufficient in number to indicate that there is a quorum of members present

in person or by proxy of those entitled to vote at this meeting. It would seem inadvisable to go through the formality of calling the roll. I would therefore appreciate it if a motion were made directing the dispensing with the roll call.

MR. CONNELLEY: I so move, Mr. President.

PRESIDENT CAMPBELL: Dean Connelley moves that the roll call be dispensed with. Is there a second?

(The motion was seconded.)

PRESIDENT CAMPBELL: It is moved and seconded that the calling of the roll be dispensed with. All those in favor will signify it by saying aye; opposed, no. It is carried.

Are there any present in person who have filed proxies with the Secretary? If so it would be a proper time for them to withdraw their proxies, so that they may not be counted twice. Are there any such present? If so please rise in your place and give the Secretary your names and the companies you represent. Hearing from none we will assume that no withdrawals are to be made.

It has been customary at this stage of our proceedings for you to be called upon to listen to an address from your President. In order that there may be accuracy of statement and that the matter may be gotten rid of as quickly as possible and that you may get to the important matters of the conference, I have put my report in writing. I will therefore ask you to bear with me in the reading of a written report. (Applause.)

#### REPORT OF PRESIDENT CAMPBELL.

Ladies and Gentlemen, Members, Representatives of Members, and Guests of the National Safety Council: It is again my pleasant task to give you greeting in this, the opening hour, of our annual meeting and Congress. This I do, and extend to you the courteous salutations of your Executive Committee and officers on whose behalf I speak.

The fourth year of our Council's activity is ringing out and a new year ringing in. At such a time it is eminently proper that we pause to look back over the past and give thought to the future.

## Safety Movement

It is an honest one.  
It is built on the  
solid and substantial  
foundation of right.

What have we accomplished and what must we plan to do? is the important question today.

Certain changes have been made in the form of organization of the National Safety Council, through amendments to the by-laws, by action of the Board of Directors at their regular meeting Oct. 13, 1914, and at a special meeting held April 30, 1915.

### CHANGES IN BY-LAWS.

The principal changes effected were the following:

*First*—Two new classes of memberships were created, viz.: Local memberships and service memberships. The first provides a membership for those persons who are not interested in the industrial problem, but who may be interested in the promotion of the activities of the Local Councils. They have limited rights and pay not less than \$1.00 annual dues, of which 80 per cent is retained by the Local Council. The second provides a membership for employes interested in safety, first aid, rescue work, etc., who must meet certain requirements to be fixed by the Executive Committee. They also have limited rights in National and Local Councils and pay \$1.00 annual dues.

*Second*—The schedule of dues was changed to place street and interurban railroads and telephone and telegraph companies on the same basis as industrial concerns, and the entire schedule, except in the case of individuals and of those who pay \$1.00 per annum, as Local or Service members, was increased in the sum of \$5.00 for each class. A schedule of dues was also added to provide for the dues of insurance companies.

*Third*—The fiscal year was changed so that it now covers Aug. 1 to July 31, instead of July 1 to June 30, as formerly.

*Fourth*—Provision was made for the filling of vacancies in nominations for directors caused by death or disqualification at the annual meeting by nominations from the floor.



*Fifth*—Changes were made in the sections relating to Local Councils to make provision for local members and for the collection of local member and other dues directly by the Local Council should it elect so to do.

*Sixth*—A new article was added to provide for the creation by the Executive Committee of autonomous subordinate organizations, such as Sections, divisions or corps, and the prescribing by that committee of the necessary regulations for the control, management and direction of such organizations and of the activities to be pursued thereby.

*Seventh*—A further amendment was adopted, providing for the amendment to the by-laws by action of the members as well as by the Directors.

## **Safety Movement**

A stable purpose  
and of conservative  
and yet progressive  
character.

### **INCORPORATION OF COUNCIL.**

It will be remembered that your Executive Committee was authorized to incorporate this Council under the laws of the State of Illinois. In giving the matter further consideration it was found that there were certain substantial objections to fully complying with the requirements of the laws of the State of Illinois, and as there was no immediate or vital necessity for incorporation, it was decided to postpone taking the action authorized and to recommend the incorporation of the National Safety Council under the laws of the State of Delaware, which seem to meet the needs of our organization better than Illinois or other states. Your approval of such action will be asked later in a resolution to be submitted by the Resolutions Committee.

### **THE COUNCIL IS PROSPEROUS.**

It has been very pleasant to us to be able to report to you that in spite of the prevailing depressed business situation, our membership has been very substantially increased by practically 100 per

cent, and so far as representatives are concerned by over 130 per cent since the last annual meeting. The number of cancellations has also been exceedingly small and in point of amount of dues almost negligible.

With the accretion in membership and by reason also of the increase in dues becoming effective June 1, our organization has been placed on a firm financial basis, with an annual income of approximately \$25,000, without taking into account the dues of additional members, the securing of which may safely be depended upon. The entire deficit reported at the last annual meeting has been wiped out and your Executive Committee is now satisfied that the present organization and the present service can be maintained for the next fiscal year well within the assured income mentioned above. It is our hope that sufficient additional income may be secured from new memberships during the year to make possible the setting aside of a substantial sum as a surplus or reserve fund to be used in emergencies or for extraordinary purposes, as well as to permit the employment of a field secretary, who may assist members and Local Councils as occasion may require, as well as devote some of his time to membership solicitation.

Our Secretary in his report, dated Aug. 17, 1915, and submitted to all members, has stated in much detail the principal activities and accomplishments of our organization during the last year and it would be idle for me to reiterate them here. Some are, however, worthy of special mention.

#### SPECIAL ACTIVITIES.

The Service Series of Bulletins have been very popular and have been a splendid contribution to the safety cause, as has been the production of the book "Sure Pop and the Safety Scouts." This book has met with a most remarkable reception and we hear nothing but flattering criticisms of it. It has already been adopted in many states and cities as a supplemental reader in the schools, and it is hoped that our members will encourage and stimulate such action in the respective communities.

Early in the year negotiations were entered into, through a joint committee, with the Boy Scouts of America for the obtaining of the practical co-operation of that organization in our work. These negotiations have progressed most favorably, and it is expected that

before the next annual meeting a definite plan will have been agreed upon and put into effect, thus bringing into the safety fold some 400,000 of America's most intelligent young people.

As announced at the last annual meeting, efforts have been made to promote the organization of our membership into Sections, to include in autonomous organizations the representatives of those industries which have special problems and hazards peculiar to their industry.

The steam railroad companies were the first to organize. An organization known as the American Railway Safety Association disbanded and practically unanimously affiliated with the National Safety Council and created our Steam Railroad Section, electing officers and a sectional executive committee, which committee has had several meetings, been very active in assisting the general office in many ways and has taken entire charge of the Steam Railroad Sectional Meeting to be held at this Congress.

The American Mine Safety Association has also dissolved and in a body affiliated with the National Safety Council, transferring all its organizations and activities to our organization as our Mining Section.

A number of those in attendance upon a recent meeting of the National Public Health Association at a Round Table Session of Industrial Surgeons, voted to request the National Safety Council to form a Medical and Health Supervision Section, and to perform the functions of a clearing-house for information on that subject in the same manner as for safety data. As the Executive Committee had had in mind the formation of such a section, its functions, however, to be limited to preventive rather than remedial phases of the subject, the plan suggested fell in readily with our own purposes.

A Public Safety Section has been planned for some time, but owing to the difficulty met with in obtaining a proper and efficient chairman, no definite organization had been effected up to yesterday.

A plan for the organization for safety work in communities and activities to be engaged in was prepared and approved by the Executive Committee. This has not yet been printed nor distributed, as it was desired to have it approved by those who will constitute the Public Safety Section before it should be issued. Mr. William P. Eno of Washington, D. C., international traffic expert, has donated to our organization the plates for his "Traffic Regulations," which

## "Sure Pop"

Has met a most re-  
markable reception  
—we hear flattering  
criticisms of it.

have been adopted by the cities of Paris, France; London, England; Washington, D. C., and New York City, for use by us in public safety propaganda. The printing of this has been also withheld pending the revision of the preface by Mr. Eno and to enable the Public Safety Section to pass upon it also.

### PUBLIC SAFETY ORGANIZATIONS.

In February last information reached the Executive Committee of a proposed new organization to

be known as the Safety First Federation. Certain of our directors, who were invited to the conference respecting the proposed organization, were authorized by the Executive Committee to invite this organization to come into the National Safety Council as its Public Safety Section. This, however, did not seem desirable to the promoters of that society. Our invitation was not accepted and the Safety First Federation was organized, limiting its field of activity to that of public safety.

We have in every way possible tried to indicate to that organization our desire to co-operate with it and to express our wishes for its success, as we think we should all welcome any activity, whether apparently competitive or not, which has for its object the conservation of human life and limb.

It was felt, however, that in view of the fact that so many of our public service members were interested in the public safety problem as well as the industrial, we must of necessity attempt to perform the same kind of service for them in the public safety field as in the industrial, and hence could not leave the field to the Safety First Federation. It is regrettable that there should be duplication of effort, but at the present time there seems no other alternative.

### ORGANIZATION FORMED AND OFFICERS ELECTED.

A meeting was called for yesterday and attended by many of those interested in the public safety problem. A section was formed, a line of activity agreed upon, and officers and committees selected to direct the work.

At this point it may be well to state that it is the hope and desire of the Executive Committee that the sectional meetings to be held on Wednesday and Thursday will effect a permanent organization in pursuance with the terms of the resolution of the Executive Committee recently adopted, providing for officers, executive committee and committees of Sections. It is also desired that other Sections than those having formal meetings at this Congress will be organized during the Congress in the same way. The advantages and benefits to be derived from such sectional organization within the Council are too numerous and self-evident to require statement. Meeting-rooms will be provided for all who may desire to get together for that purpose, and copies of the resolution of the Executive Committee may be obtained from the Secretary or at the information desk.

## **SUCCESS**

Hundreds of our members have accomplished remarkable results in accident prevention.

### **LOOKING INTO THE FUTURE.**

Many other matters of interest might be commented on, would time permit. We feel that the National Safety Council has had at least a measure of success during the last year, and we know that hundreds of our members have accomplished remarkable results in the way of accident reductions, hence a little pride in achievement, both collectively as an organization and individually may be warranted.

Much has been accomplished, but our field is large, its possibilities great, and very many things are yet to be done. Time and a larger membership and revenue incident thereto will alone make the fullest achievements possible. We can only recommend, however, for the future, a continuance of the policy of service and internal co-operation which has marked our past and a continued effort to retain the good will and co-operation of other agencies and activities that have the same or similar interests and objects.

I would also, as to the future, urge upon each of you a continuance of that high measure of co-operation and friendly sympathy

in all of our activities which has made possible whatever of success has come to us. I would also urge upon you a greater activity in the matter of obtaining new members for the Council, for with a larger membership and larger revenue, a larger and more comprehensive service can be provided for all.

In laying down the burden of my office at this time, I do so with much regret. It has been an agreeable task in pleasant lines and in congenial company. I have personally made many friends, not otherwise attainable, whose friendship has become very dear to me. I have also been very proud of the trust and confidence which you have all reposed in me by honoring me as you have, and I am deeply grateful to you all.

THANKS TO CO-WORKERS.

In this connection I desire to express my personal thanks to you all for the kindness and courtesy you have uniformly shown me and for the sympathy and support which you have all given to me when and as required, all of which has been very greatly appreciated. I would that I could properly express either for you or for myself the thanks that I feel are due to the members of our Executive Committee for the time, energy and money expended and the sacrifice that its members have made in their attendance upon the meetings of the committee and in the special committee work undertaken, as well as other endeavors. We all owe them a deep debt of gratitude and I feel that I personally should, in this public way, express my own personal appreciation of their sympathy and helpfulness and their great assistance to me in the work that has been undertaken by our organization, for all of the activity of this organization has been not the work of any one individual, but the joint and harmonious action of all of the members of its Executive Committee and in many instances of its members as well.

On behalf of that committee and your officers I would also extend to you and to each of you our thanks for your sympathetic interest and hearty co-operation during the past year in the work which has been undertaken and which alone has made possible the accomplishment of the results that have been incident to our effort.

I feel also that I would be remiss in my duty if I did not call to your special attention the remarkable activity and the excellent work of our Secretary and his efficient staff. He has put into his

work an untiring energy, zeal and earnestness that is very largely and alone responsible for whatever has been accomplished. Very great credit is due to him and to his personal activity in our interests and I feel sure that I may extend to him from all of us our very sincerest thanks. (Applause.)

#### SOCIAL AND ECONOMIC PROBLEMS.

No incident or experience is without its lesson and the war of Europe has been no exception, as there have been many important and valuable lessons for America growing out of it. We can all see, for instance, at least some defects in the national policies of the belligerents. In the main, England stands for the preservation of the rights and privileges of the individual, whereas every German is taught from the cradle up that the state is supreme and collective action the ideal. I believe that a blending of these two principles will help the American people and help us in the solution of our social and economic problem to profit by the advantages of both systems and yet not suffer from the extremes of either. In accident prevention work we aim at the preservation of the individual through the collective action of all. Employer and employe must work together for their mutual good. The safety field being a common ground upon which both should and must unite for the common good of all.

We, as men interested in the accident prevention movement and as men charged with the duties incident to our safety work, should realize the peculiar importance of our work. We stand at the dividing point between the two, and we have it within our power to so use our position that with it as an instrument every ground of difference between employer and employe may be minimized and ultimately eliminated. Our opportunity is very great to make both employer and employe see the mutuality of their interest. The solution of the safety problem can only be accomplished by tactfully removing any friction between employer and employe and by emphasizing the essential human quality of both by preaching the gospel of identity of interest. Our contribution to the world's progress can therefore be made broader than the specific limit of our duties. With this vision before you we would inspire you to more determined efforts to steadfastly make safety an established factor in social progress and the touchstone to the ideal that "Man's human-

### **"Our Secretary"**

He has put into his work untiring energy, zeal and earnestness — Tribute by the Retiring President.

ity to man will make countless thousands rejoice." (Prolonged applause.)

### **VOTE OF THANKS TO PRESIDENT CAMPBELL.**

DR. PATTERSON: President Campbell, I am sure I voice the sentiment of every member of the National Safety Council when I say to you, sir, that the members of this Council owe to you a debt of gratitude which I have no words to adequately express.

You were the pilot who took our ship and stood at the wheel upon the start of our voyage. You guided us down past the River of Doubt, with all its shallows and its obstructions, so that now with safety we reach the open sea, and the time has come, regretfully to every member of the Council, when your small boat comes alongside and the pilot is dropped. No matter what sphere of activity your duties may now call you into, I am sure that every member of the National Safety Council wishes you Godspeed and good luck.

I move, sir, that we, the members of the National Safety Council, give a rising vote of thanks to President R. W. Campbell as a small token of the appreciation of his splendid and magnificent services. (The motion was unanimously carried by a rising vote, with applause.)

PRESIDENT CAMPBELL: I only wish that I could feel that I have merited the kind things you say to me, Doctor, and the kind things that other of the friends that I have made in our organization have been saying to me. I would feel very proud if I could. But I cannot feel that very much is due to me. I have been but one of the large team that have all pulled together, and whatever you say of me is said equally of all of those others who have composed that team which has constituted your Executive Committee. Nevertheless, I am proud of and I am very grateful for these expressions of your good-will and your kindly thought of me. It is my hope that I



may always so live my life that I may merit as much approval from others as I have had from you in the associations that I may have with them. I am very, very grateful to you and I cannot say more. (Applause.)

#### ORDER OF BUSINESS.

CHAIRMAN: The next order of business would be the reading of the minutes of the last annual meeting. As these minutes are to be found in the printed proceedings in full it would seem unnecessary to read them at this meeting; and in order to expedite matters it might be in order for some one to move that the reading of the minutes of the meeting of October, 1914, be dispensed with.

MR. ARTHUR T. MOREY: I so move. (The motion was seconded.)

PRESIDENT CAMPBELL: A motion has been made and seconded to that effect. All those in favor will so signify by saying aye; contrary minded no. The motion is carried.

The next in order is the receiving of reports of the officers and committees. The first report will be from the Secretary and Treasurer.

I might add that I have been confidentially advised by the ladies, gentlemen, that if you wish to smoke it will not be objectionable to them, provided you do not do it too close to them.

We will have the report of the Secretary and Treasurer.

#### REPORT OF SECRETARY W. H. CAMERON.

SECRETARY CAMERON: Mr. President and Fellow Members—I have already presented to you the printed report of the activities of the headquarters of the Council, as follows:

##### NATIONAL SAFETY COUNCIL.

Statement of Receipts and Disbursements for the period from July 1, 1914, to July 31, 1915.

### **“Our President”**

You guided us  
down past the River  
of Doubt with all its  
shallows and obstructions. — Dr. Patterson.

## RECEIPTS.

|                                                                             |                    |                 |             |
|-----------------------------------------------------------------------------|--------------------|-----------------|-------------|
| Membership dues:                                                            |                    |                 |             |
| Active .....                                                                | \$27,383.59        |                 |             |
| Associate .....                                                             | 150.00             |                 |             |
|                                                                             | <u>\$27,533.59</u> |                 |             |
| Less refund of dues.....                                                    | 69.35              | \$27,464.24     |             |
| Sales of pamphlets, bulletins, circulars and<br>miscellaneous receipts..... |                    | 1,209.92        |             |
| Refund of expense of preparation of manu-<br>script of "Sure Pop".....      |                    | 500.00          |             |
| Amount advanced by officers for current<br>expenses .....                   |                    | <u>3,805.00</u> |             |
|                                                                             |                    | \$32,979.16     |             |
| Cash balance July 1, 1914.....                                              | \$50.08            |                 |             |
| Less overdraft at bank July 1,<br>1914 .....                                | 25.05              | 25.03           | \$33,004.19 |

## DISBURSEMENTS.

|                                                                                          |               |
|------------------------------------------------------------------------------------------|---------------|
| Salaries of Secretary and Treasurer, as-<br>sistant secretary and office staff.....      | \$11,206.35   |
| Printing of bulletins, pamphlets and circu-<br>lars, office stationery and supplies..... | 982.69        |
| Office furniture and equipment.....                                                      | 334.96        |
| Postage .....                                                                            | 1,593.30      |
| Rent of general office .....                                                             | 2,145.00      |
| Traveling expenses .....                                                                 | 647.51        |
| Telephone and telegraph .....                                                            | 392.23        |
| General office expenses .....                                                            | 840.36        |
| Expenses of various local councils.....                                                  | 1,405.55      |
| Expenses connected with distribution, etc.,<br>of "Sure Pop" book.....                   | 370.58        |
| Expenses of Third Annual Congress.....                                                   | 1,280.97      |
| Expenses of weekly bulletin service.....                                                 | 4,043.18      |
| Membership solicitation expense.....                                                     | 963.80        |
| National committee work .....                                                            | <u>318.75</u> |
| Total .....                                                                              | \$26,525.23   |

|                                |             |          |
|--------------------------------|-------------|----------|
| Loans repaid to officers ..... | \$ 3,805.00 |          |
| Loans repaid for advances made |             |          |
| prior to July 1, 1914.....     | 2,150.00    | 5,955.00 |

|             |  |             |
|-------------|--|-------------|
| Total ..... |  | \$32,480.23 |
|-------------|--|-------------|

## BALANCE.

|                    |          |                    |
|--------------------|----------|--------------------|
| Cash on Hand ..... | \$ 50.00 |                    |
| Cash in Bank ..... | 473-96   | 523-96 \$33,004.19 |

## AUDITORS' CERTIFICATE.

We have examined the above statement of receipts and disbursement of the National Safety Council, have compared it with the books and vouchers and have found it correct.

DELOITTE, PLENDER, GRIFFITHS &amp; CO.,

Chicago, Aug. 9, 1915

Accountants and Auditors.

I will just say a word in addition. Since that report was issued we have added to our membership roll ninety-five new members. Our income from July 31, 1915, to Oct. 18 was \$5,384.01, and disbursements have been \$4,884.10; leaving a balance in the bank of \$599.91. There are outstanding dues of \$926.30, and unpaid bills of \$818.41.

PRESIDENT CAMPBELL: You have heard the report of the Secretary and Treasurer. What is your pleasure?

A MEMBER: I move its receipt and adoption.

PRESIDENT CAMPBELL: A motion is made that the report be received and adopted. Is there a second to the motion? (The motion was seconded, put to a vote and carried.)

The next report to be heard, as provided for in our by-laws, is a report of the Executive Committee. The report, however, of that body has been incorporated in the address which it has just been my privilege to make, and hence it will not be necessary at this time to make another report.

The next will be the report of the Finance Committee. Is Mr. Scott here? Mr. Scott advised me that he might be a few minutes late. We will pass to the report of the Program Committee, Mr. Cameron.

## CO-OPERATION

Resolved: That the N. S. C. extends felicitations and well-wishes to the Safety First Federation.

SECRETARY CAMERON: Gentlemen, you have already received at the administration desk the completed program. This is the fourth time the program has been printed and it is now complete. I have simply to announce that practically all of the speakers that are included in the program will be here. We have eighty-five speakers on the program. I also wish to announce that three speakers that are scheduled for the banquet we believe will be here, and we hope that you will

buy your banquet tickets early so that we will have some indication in advance as to how many to provide for.

PRESIDENT CAMPBELL: Any report from the Resolutions Committee?

## GREETINGS TO SAFETY FIRST FEDERATION.

MR. ARTHUR T. MOREY: Mr. Chairman, I would like to present this resolution:

"Resolved, That the members of the National Safety Council, assembled in its Fourth Annual Congress at Philadelphia, extends its felicitations and best wishes to our co-laborers, the Safety First Federation of America, for the success of its conference now in session at Detroit, pledging them in the name of humanity our cordial co-operation in our common cause of safeguarding human life;

"Resolved, That in compliance with the suggestion offered by the committee of the Safety First Society of Greater Detroit, the President of the National Safety Council is hereby authorized and directed to appoint a committee to confer with the Safety First Federation of America as to ways and means of securing greater co-operation between the two organizations, hereby inviting the Safety First Federation of America to appoint a similar conference committee; and be it further

"Resolved, That the Secretary immediately telegraph a copy of

this resolution to the President of the Safety First Federation of America at Detroit."

Mr. Chairman, I move the adoption of the resolution. (The motion was seconded by Dr. Patterson.)

MR. J. M. EATON: Mr. President, as President of the Local Council of the city in which the Safety First Federation is holding its convention today I would like to have the pleasure also of seconding the adoption of this resolution and I suggest that we adopt it without a dissenting vote.

PRESIDENT CAMPBELL: Gentlemen, you have heard the resolution and the motion that it be adopted, seconded by the President of our Local Council at Detroit, and also a member here of the Safety First Society of Greater Detroit. Is there any discussion on the motion? If not the question will be put. All of those in favor of the adoption of the resolution will signify by saying aye; contrary minded, no. The motion is unanimously carried and the resolution adopted.

#### INCORPORATION OF COUNCIL.

MR. MOREY: As the President stated in his address and as we will recall, at the Congress in Chicago we directed that the Executive Committee should see to the incorporation of our Council under the laws of Illinois. As there is some difficulty to meet the conditions of the Council under those laws it would seem desirable to change those instructions. I will state one reason, and that is that under the laws of Illinois I believe we would have to have our members' meetings and our Congress in the State of Illinois, which of course is undesirable, as we wish to meet in other states, as we are now meeting in Pennsylvania. So, Mr. Chairman, I would like to move the adoption of this resolution:

### APPRECIATION

The care, thoroughness and skill of Philadelphia Local Council officially recognized.

"Resolved, That the instruction given to the Executive Committee by the members at the annual meeting in Chicago in October, 1914, to incorporate the National Safety Council, be amended in so far as said instructions ordered that the Council be incorporated under the laws of the State of Illinois, and that in lieu of said instruction, the Executive Committee be and it hereby is directed to incorporate the National Safety Council in the manner and under the laws of any state which in the Executive Committee's judgment are most suited to the needs and purposes of the Council."

I might further add, Mr. Chairman, that it is the intention to incorporate under the laws of Delaware. The resolution does not so state, because the possibility of something arising under those laws, so it seems better to leave it open to the judgment of the Executive Committee.

A MEMBER: I second that motion.

PRESIDENT CAMPBELL: The adoption of the resolution as read has been moved and seconded. Is there any discussion? (The motion was put to a vote and carried.)

#### RESOLUTIONS OF APPRECIATION.

MR. MOREY: As Chairman of the Resolutions Committee I would like to also submit the following resolution:

"Resolved, That the members of the National Safety Council, assembled in their Fourth Annual Congress, express to the great and hospitable State of Pennsylvania and City of Philadelphia their gratification at meeting within their borders for a purpose so in attune with the noble principles upon which the commonwealth was founded and expressing the cordial thanks for the welcome accorded them; and be it further

"Resolved, That the thanks and appreciation of the members be most cordially given to the Philadelphia Safety Council for the very evident care, thoroughness and skill with which, through its efficient committee, and in particular its President, Dr. F. D. Patterson, it has provided for the needs of the Congress and the comfort and convenience of the members; and also that our appreciation be expressed to the management of the Bellevue-Stratford Hotel for its

efficient and attentive co-operation, and to all those others who through unselfish service or other generous contributions have aided the success of the Congress and its safety exhibit; and be it further

"Resolved, That the Secretary transmit copies hereof to the proper recipients."

I move the adoption of the resolution.

PRESIDENT CAMPBELL: Is there a second to the resolution?  
(The resolution was seconded.)

Motion has been made that this resolution just read be adopted. Is there any discussion? (The motion was put to a vote and carried.)

IN MEMORY OF DR. JOSEPH AUSTIN HOLMES.

MR. H. M. WILSON: Mr. Chairman, the Chairman of the Resolutions Committee has requested me, as a member of that committee, to present the following resolution. This resolution concerns one of the three honorary members who have so far been elected by this Council:

"Whereas, We have lost through death an honorary member of the Council, the first director of the Federal Bureau of Mines, Joseph Austin Holmes; and

"Whereas, Dr. Holmes was one of the Sectional Chairmen of the Milwaukee Safety Conference of 1912, at which time the National Safety Council was organized; and

"Whereas, Dr. Holmes was one of the foremost, most consistent and efficient workers in the safety movement; be it therefore

"Resolved, That the National Safety Council, in annual Congress assembled, hereby expresses a sense of deep loss to the cause in the untimely death of Dr. Holmes; and be it further

"Resolved, That this resolution be spread on the minutes of the Congress, that a copy of it be forwarded to the widow of Dr. Holmes, and that a copy be also sent to the Bureau of Mines as an evidence of our appreciation of the helpful encouragement and aid given the Council by the Bureau of Mines under Dr. Holmes."

The resolution was seconded by Dr. Patterson.

PRESIDENT CAMPBELL: Motion has been made that the resolutions

## In Memoriam

Dr. Holmes was one of the foremost and most efficient workers in the Safety Movement.

as read, be adopted. Is there any discussion? If not, I will ask all of you who are in favor of the adoption of this resolution, as a slight additional token of our appreciation of the work of that able and wonderful man, to vote in favor of its adoption by rising. (The resolution was unanimously carried by a rising vote.)

PRESIDENT CAMPBELL: Thank you, gentlemen. The motion is carried unanimously.

Are there any other resolutions to be offered, Mr. Morey?

MR. MOREY: None that I know of, Mr. Chairman.

PRESIDENT CAMPBELL: We will hear the report from the Industrial Hygiene Committee. Is your committee ready to report, Dr. Schereschewski?

### REPORT OF INDUSTRIAL HYGIENE COMMITTEE.

DR. J. W. SCHERESCHEWSKI, UNITED STATES PUBLIC HEALTH SERVICE, PITTSBURG, CHAIRMAN.

Mr. Chairman and Members of the National Safety Council: The Industrial Hygiene Committee of the National Safety Council begs to present the following report for its work since October, 1914, the time of the last annual congress: •

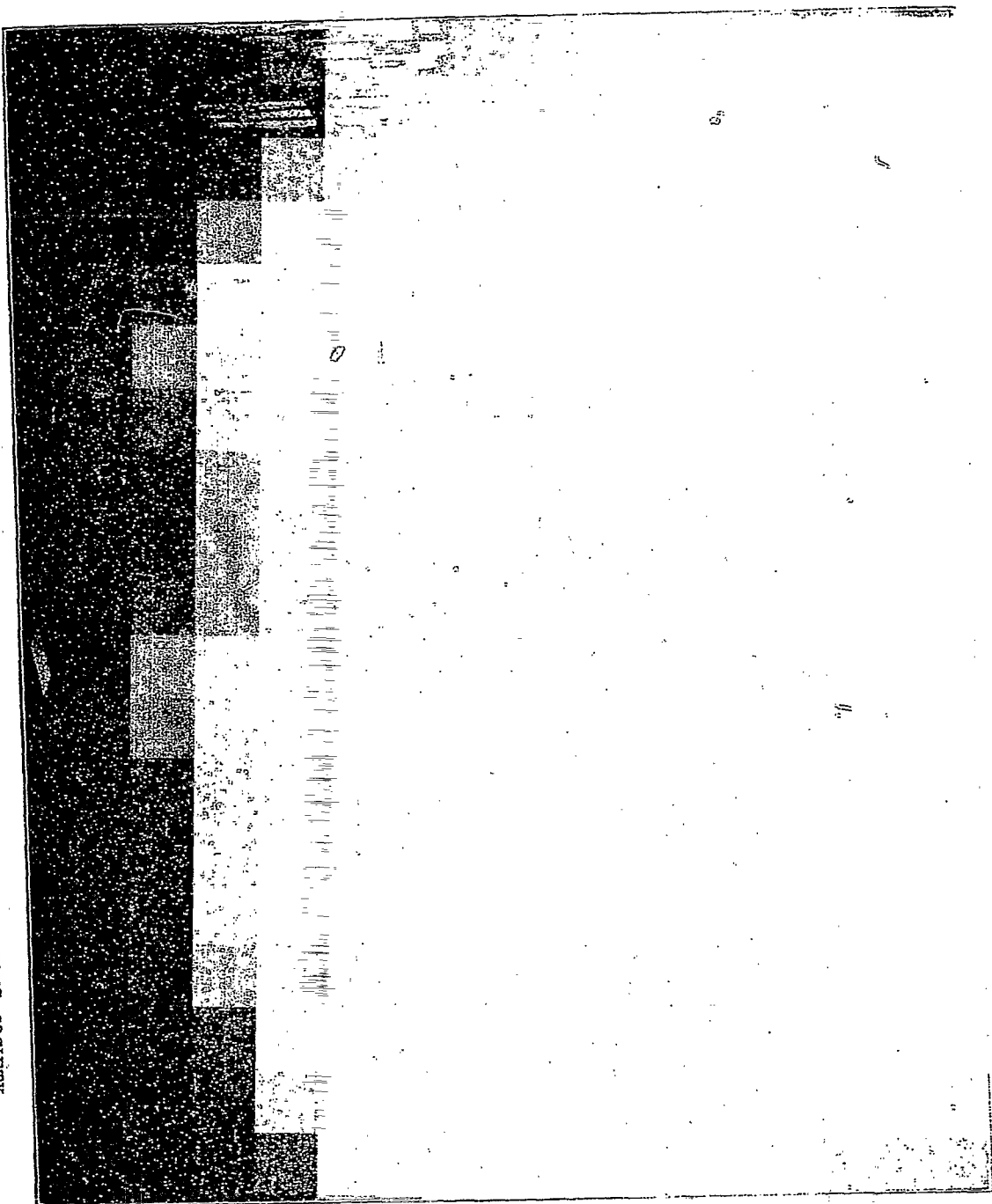
#### NEW MEMBERS OF THE COMMITTEE.

*New Members of the Committee Since the Last Annual Meeting of the National Safety Council:* The following new members have been added to the Committee:

Dr. W. I. Clark, The Norton Company, Worcester, Mass.  
Dr. Alice Hamilton, United States Department of Labor.  
Dr. A. M. Harvey, The Crane Company, Chicago, Ill.



FACTORY ILLUMINATION EXHIBIT, PREPARED BY THE ILLUMINATING ENGINEERING SOCIETY  
Educational Safety Exhibit, National Safety Council Annual Congress, 1916





Dr. H. R. M. Landis, Phipp's Institute for Tuberculosis, Philadelphia, Pa.

At a meeting of the committee, which took place in New York, March 13, 1915, the following program for future work was adopted with a view to accomplishing as much of the program as possible during the present year:

(a) The preparation of standard minimum specifications for a first aid kit and additional minimum specifications for certain industries.

(b) The preparation of minimum hygienic standards for the prevention of lead poisoning.

(c) The preparation of minimum standards for sanitary regulations in places of employment.

(d) The preparation of minimum standards in regard to the procedure for physical examinations, including causes for rejection and recommendations for modification of employment because of physical conditions of workers.

(e) The collection of data as to the cost and actual benefits from medical supervision of employes.

(f) The preparation of health bulletins on topics of personal hygiene or the prevention of disease to be published by the National Safety Council.

The following portions of this program have been accomplished during the year:

**STANDARD MINIMUM SPECIFICATIONS FOR FIRST AID KIT.**

Standard Minimum Specifications have been prepared and are presented as a separate report by the Committee to the National Safety Council.

**MINIMUM STANDARDS IN REGARD TO ILLUMINATION.**

The Committee on Legislation of the American Illuminating Engineering Society has prepared a code of minimum standards

## **Splendid Program**

A year's work for  
humanity outlined in  
a few terse sen-  
tences.

of illumination for factories, mills and other work places. It is the opinion of the committee that this code is the best code which has appeared on this subject heretofore. The minimum requirements of this code are well in accord with the necessary standards of hygienic illumination, without containing excessive or impractical requirements. The committee, therefore, recommends to the association the adoption of the recommendation of this code as a practical basis for securing minimum hygienic conditions of illumination.

#### MINIMUM STANDARDS FOR VENTILATION.

The committee has considered the standards of ventilation proposed by the American Society of Heating and Ventilating Engineers with the view of recommending their adoption by the National Safety Council. The committee, however, is of the opinion that some further study of the question is still desirable before it is in a position to make recommendations for minimum standards of ventilation because of certain physiological considerations which are still undetermined. The committee hopes to be able to present such recommendations in the future.

#### HEALTH BULLETINS.

During the year the members of the committee prepared seven health bulletins which were printed by the National Safety Council; other health bulletins will be prepared from time to time.

#### MINIMUM STANDARDS OF PHYSICAL EXAMINATIONS.

Owing to the careful study required of this subject and the necessity for collecting additional data, the committee is unable at this time to make recommendations in regard to minimum standards for the conduct of physical examinations. This it hopes to do during the forthcoming year.

#### COST AND ACTUAL BENEFITS OF THE MEDICAL SUPERVISION OF EMPLOYEES.

Data is being collected on this subject; the work, however, has not progressed sufficiently to enable the committee to present a final report.

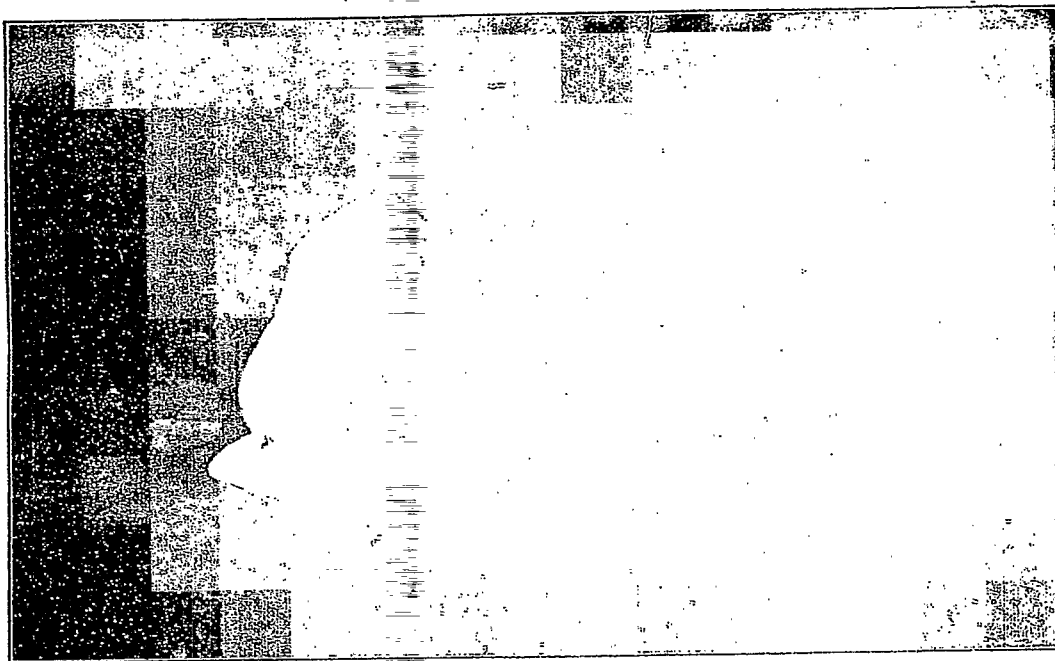


Fig. 1

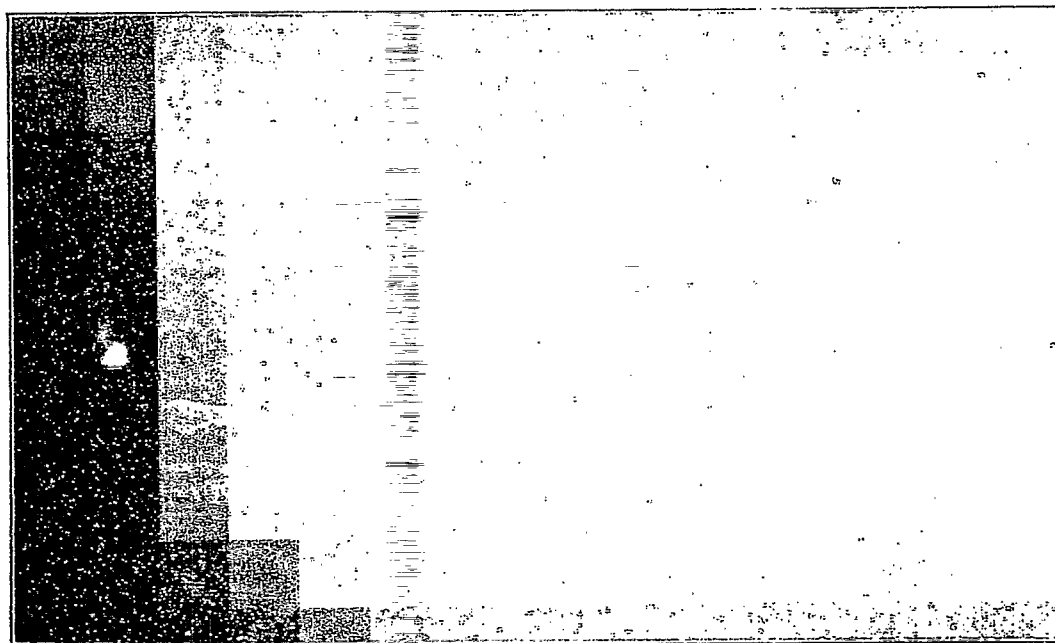


Fig. 2

2. The second part of the document focuses on the implementation of internal controls to prevent fraud and ensure the accuracy of financial statements. It outlines the key components of a robust internal control system, including segregation of duties, authorization procedures, and regular monitoring and evaluation.

3. The third part of the document addresses the challenges faced by organizations in managing their financial resources effectively. It discusses the importance of budgeting, forecasting, and cost management, and provides practical tips for improving financial performance.

4. The fourth part of the document explores the role of technology in modern accounting and finance. It discusses the benefits of using accounting software and the importance of staying up-to-date with the latest technological advancements in the field.

5. The fifth part of the document concludes by emphasizing the importance of a strong financial foundation for the long-term success of any organization. It encourages organizations to adopt a proactive approach to financial management and to seek professional advice when needed.

## STANDARD DIRECTIONS FOR RESUSCITATION FROM ELECTRIC SHOCK.

The committee has prepared a set of directions for the resuscitation of persons who have received shocks from electric conductors. These directions represent the best information on this subject available at the present time. The committee recommends that these directions be approved by the National Safety Council for adoption and subsequent publication as the standard first aid procedure for this condition.

## WHAT TO DO FOR ELECTRIC SHOCK.

First—With a single quick motion free the man from the current, moving the man or the wire as the case may be. Use any dry non-conductor (e. g., clothing, board, rope). Do not use metal or any moist material. While freeing the man from the live wire shut off the current if you can, or call someone else to do this.

Second—Start artificial respiration *at once*. Do not stop to loosen clothing now as every second is of value. Proceed as follows:

1. Turn the man over on the belly with arms fully stretched forward, and face to one side so that the mouth and nose are free for breathing. (See illustrations.)
2. Rapidly remove any foreign object (tobacco, false teeth, etc.) from the mouth by passing the forefinger between the cheek and the teeth to the back of the last tooth and sweeping it across the mouth. (See illustration.)
3. Kneel straddling the man's thighs, facing the head; rest the palms of both hands half way down the back, thumbs toward the middle line with fingers spread over the lower ribs. (Fig. 1.)
4. With your arms held straight, swing slowly forward, bearing the weight of your body gradually but not violently upon the man. (Fig. 2.) This act should last three seconds.
5. Swing backward quickly, so as to remove pressure suddenly, returned to the position shown in figure 1.
6. Repeat the act of swinging backward and forward twelve times a minute—no faster; you may do this by keeping time by your own deep breathing.
7. As soon as you have started artificial respiration, and while you are continuing it, an assistant should loosen tight clothing around the neck, chest and waist.

## Electric Shock

Don't lose your  
head! Secure prompt  
medical attention.

8. Send someone for the doctor as soon as possible, but don't go yourself.

9. Keep up the artificial respiration without interruption until the doctor comes.

10. Do not give remedies or stimulants by the mouth.

11. Give the man plenty of fresh air and keep him warm.

12. Don't lose your head! Keep cool! Prompt attention immediately after the accident will save more lives than the best medical attention

later. (Adopted from Illinois Steel Company.)

### WORK FOR THE COMING YEAR.

During the forthcoming year the committee hopes to continue this work on the lines which are laid down in its program for the present year.

### NEW MEMBER.

It is recommended that Dr. Otto P. Geier be added to the committee.

Respectfully submitted,

J. W. SCHERESCHEWSKY,  
Secretary for the Committee.

PRESIDENT CAMPBELL: Gentlemen, you have heard the report of our Industrial Hygiene Committee. What is your pleasure with respect to it?

DR. PATTERSON: I move the report be received and adopted. (The motion was seconded.)

PRESIDENT CAMPBELL: Motion is made that the report be received and adopted. Are you ready for the question? Any discussion of the report? (The motion was put to a vote and carried.)

We will hear the report of the Standardization of Safety Devices Committee, by Mr. R. J. Young.



REPORT OF STANDARDIZA-  
TION COMMITTEE.

R. J. YOUNG, MANAGER, DEPART-  
MENT SAFETY AND RELIEF,  
ILLINOIS STEEL COMPANY.

Mr. Chairman and Members of the National Safety Council: The report of your Standardization Committee will be very brief. After making its report to the Third Annual Congress, your committee prepared a questionnaire which was sent to more than a dozen industries and bureaus, but the small percentage of answers received and the wide variance of those answers caused your committee to feel that it was practically impossible at this time to lay down specific standards, even of a general nature. And I can say here that if you could see the answers to this questionnaire you would thoroughly agree with me.

Your committee feel that the establishment of safety standards must be preceded by a careful scientific study, usually of a laboratory kind, and as it, of course, has been impossible for the National Safety Council to supply the means for such laboratory investigation, the committee is unable to recommend standards on a basis of its own investigation, and believe that it can best perform a useful function in calling attention to the various sources from which standards can be expected and obtained.

The national engineering and scientific societies are becoming increasingly interested in the subject of safety and by their appointed committees and laboratory investigations, together with the efforts of associated insurance companies, government bureaus, etc., are gradually producing standards which are worthy of acceptance by any industry, and for the present, at least, your committee would prefer to act in an advisory capacity and as a clearing-house to disseminate information emanating from these sources.

We had thought of presenting to you the recommended standards as set forth in the answers to our questionnaire; in a general way giving the majority opinion on the subjects treated, but we feel

## **Safety Standards**

Must be preceded  
by careful scientific  
study—usually in a  
laboratory.

there would be a grave danger in so doing, because of the impossibility of treating this subject in any manner other than that cited above.

PRESIDENT CAMPBELL: I think that those of us who have been more or less familiar with the work that seems to have been placed upon the shoulders of this particular committee appreciate more than the rest of you can the real task that it has been. What is your pleasure with respect to the report of this committee?

MR. PATTERSON: I move you the adoption of the report. (The motion was seconded.)

PRESIDENT CAMPBELL: It is moved and seconded that the report be adopted. Any discussion?

MR. H. W. FORSTER: Mr. President, it was rather difficult to hear back here and I think some of us would be glad to know just what the specific recommendation of the committee was.

PRESIDENT CAMPBELL: Will you restate it, Mr. Young, please?

MR. YOUNG: In substance we stated that it was impossible for us at this time to lay down any specific standard, even in a general way, and the committee, for the time, at least, prefers to act as a clearing-house in disseminating information which is being gathered by the scientific bodies and insurance companies through laboratory tests, and that will be handled, I presume, through our weekly bulletin.

PRESIDENT CAMPBELL: With the explanation made by the chairman of the committee are you ready to vote on the motion to adopt the report of that committee? (The question was called for and put to a vote and carried.)

Mr. Scott is now in the room. If he will, please come to the platform and make the report of the finance committee.

#### REPORT OF THE CHAIRMAN OF THE FINANCE COMMITTEE.

C. B. SCOTT, MANAGER BUREAU OF SAFETY, MIDDLE WEST  
UTILITIES COMPANY, CHAIRMAN.

Mr. Chairman and Members of the National Safety Council:  
You have received the Treasurer's annual report of moneys re-

ceived and disbursed by the National Safety Council, as well as his auxiliary statement showing the condition of the Council's financial affairs to this date. It remains to me to say only a few words about the financial policy of the Council during the past year.

The serious depression in business, both immediately before and after the last Annual Congress, brought serious problems to the Council. From Aug. 1, 1914, until Jan. 1, 1915, the income of the Council was not sufficient to pay its expenses, and your Finance Committee, under the direction of the Executive Committee, made a thorough investigation of the methods of conducting the Council's business in the hope that it could suggest some method of curtailing expenses. After much serious consideration, the Executive Committee, upon recommendation of your Finance Committee, recommended that the Council continue its general service to members in the hope that business would improve and the temporary loan made by the officers could be paid off when the bulk of the Council's revenue became payable in June. Your committee's hopes have been realized and, since Jan. 1 to date, the monthly income has been sufficient, not only to pay all the Council's legitimate expenses, but to discharge the loan indebtedness so that now the Council is practically out of debt and the hope for the future is that it will not be necessary to feel dubious about successfully financing the work of the Council.

#### INCOME OF THE COUNCIL.

Practically every member signified his willingness to pay the slight increase in dues covered by the amendment to the by-laws, which became effective June 1. With this added help the present expectancy of revenue from membership amounts to \$25,000.00 per year. Only \$110.00 has been lost by the Council since its organization through cancellation of memberships. It is believed, therefore, by your committee that the Council can reasonably expect a continuation of this financial support. The last fiscal year showed an income of \$10,000.00 from new memberships. The memberships are still increasing in about the same ratio, so that it is reasonable to assume that the income of the Council for next year will amount to approximately \$35,000.00.

Under the recommendations of your Finance Committee, which have been approved by the Executive Committee, the policy of the

## SUCCESS

The last fiscal year showed an income of \$10,000 from new memberships.

Council will be not to increase the general expenses of the Council until a fund of, say, \$5,000.00 can be established to take care of extraordinary expenses and to provide a working-fund for the "lean period of the year." It is contemplated, however, to add to the working-staff such additional help as may be necessary to provide improved and increased service and to cover a wider field of activities in about the same proportion as the memberships and revenue

increase. It is believed by your committee that the work of the Council has only begun, and that in a few years the income will be largely increased and permit an increase in the staff commensurate with the importance and volume of the national work undertaken by your Council.

### SATISFACTORY SERVICE RENDERED.

The entire revenue this year has come from membership dues. The Council has not had to be supported by any contributions. The officers of the Council and your committee believe that the question of membership is not one of difficulty in getting people to pay the dues, but to convince them of the necessity and practicability of the service. On the other hand, we believe that the slow growth in the membership, and the continuance of these members, means satisfaction with the service rendered.

A superficial glance at the statement of disbursements might indicate that the percentage of general expenses was too high. It must be remembered that the actual cost of printing and furnishing material for the service of an organization like our National Safety Council will never amount to more than a very small proportion of the expenditures. For example, the \$4,000.00 spent for the weekly distribution service does not include a cent of the overhead expenses for services of the officers and employes of the Council in the collection, preparation and dispatching of this material. A financial statement such as ours can never show the cost of accumulating in-

formation, classifying it, and sending it to the many thousands of inquirers during the year. In a word, a large percentage of the Council's disbursements must necessarily be for services and overhead expenses. The value of actual material put into the hands of members week by week means an actual saving of money to the members, not to speak of the many other advantages of membership which come through meetings such as we are about to enjoy.

I am, therefore, pleased to inform you that the financial outlook of the Council is encouraging. We are glad that the membership is increasing and the financial stability of the Council is assured upon the basis of membership dues, and that the prospects are very good for a material increase in the membership and, therefore, of revenue. Every member should be interested in increasing the membership because through such increased revenue the Council will be placed in the position of increasing and improving the services to members. We should encourage our officers to take the lead in bringing to every member the latest development in experience and practice in our earnest efforts to solve the human problem and accomplish the humane results connected with the Prevention of Accidents.

Respectfully,

CHARLES B. SCOTT,  
Chairman, Finance Committee.

Chicago, Ill., Oct. 15, 1915.

PRESIDENT CAMPBELL: Gentlemen, you have heard the report of the Finance Committee. What is your pleasure with respect to it?

DR. PATTERSON: I move you, sir, that it be adopted.

PRESIDENT CAMPBELL: Motion has been made that it be adopted. Is there a second? (The motion was seconded, put to a vote and carried.)

The next report in order will be a report from our Danger Sign Committee. Are you ready to report, Dr. Patterson?

## SERVICE

Actual material  
placed in the hands  
of members means  
an actual saving to  
them.

DR. PATTERSON: Yes, sir.

PRESIDENT CAMPBELL: Dr. F. D. Patterson, chairman of that committee.

#### DANGER SIGN COMMITTEE.

DR. F. D. PATTERSON, DIRECTOR ACCIDENT AND SANITATION  
DEPARTMENT, HARRISON BROS. & COMPANY,  
PHILADELPHIA, CHAIRMAN.

President Campbell and Members of the National Safety Council: It becomes my pleasant duty as the Chairman of the Danger Sign Committee to report progress, and I trust in a few minutes, when we have the large danger sign removed from in front of our exhibit, that we will then be able to try to point out to you not only what your committee has been able to accomplish, but try to give you some thoughts on which we trust you will work in the coming year and so help the committee.

The problem of deciding upon a universal danger sign is like the problem of cutting the Gordian knot, or that the sword of Damocles does not fall upon our head. We know, and all of us know, that the problem is a two-fold one. In the first place, it is a problem as to what color or colors are best adapted for a universal danger sign; in the second place, it is a problem of shapes; what shape ought the sign to take so that it will be instantly discernible to every man who may come in contact with it, that he may know that here is danger, and that it is necessary to exercise extraordinary care?

Since time immemorial the color red has been the color for danger, and your committee is conscious of the fact that inborn in every man and woman is the knowledge that red is the synonym for danger. There are certain fundamental objections, however, to the color of red, which, until we get to be alchemists, we have not the power to overcome. We know, in the first place, that no one has ever made a red which will not turn either white or black as time goes on. We furthermore know that red is an evanescent color; that as the daylight begins to fade and the dusk comes on, the color red tends to blend with practically every surrounding color, to lose its identity and to no longer serve its purpose as an indication of danger. Your committee has tried to study this problem from every aspect. I am sure that we would be faithless to our trust did we



not recognize and consider the fact that a danger sign, in order to reach every class of the community, be he the man of high intelligence and knowledge of our language or be he the ignorant workman who has just left his native land in Europe and come to our shores with no knowledge of our language, if we did not include in any danger sign which is ultimately to be adopted as a standard by this congress a certain amount of red.

#### CHARACTER OF SIGNS.

Suggestions have been made—our good friend Mr. Palmer was the first one who thought of it—that perhaps we might make a sign out of the hand, the uplifted hand, the policeman's stop signal, and so we experimented by having these hands which you see here. It was also suggested to us that possibly the skull and crossbones which have been used on poison bottles and black-hand letters might be a polite intimation to all who came within its viewpoint that they ought to keep away. We have here some samples of types of skull and crossbones.

It has further been suggested that no sign to indicate danger would be of any value at all unless that sign had the word "Danger" on it. I myself am frank to confess that I believe that if we are to depend upon the word "Danger" in English to indicate danger, that we had better attach a phonograph to every sign so that it can say it in all the different languages.

The problem came up as to what shape the sign ought to be. It was suggested that the sign should be made toothed like we see here, so as to indicate the good old "Don't monkey with the buzzsaw."

The grave objection to targets is that they are what their name implies in many aspects. They are apt to be used by everybody to throw everything—from a chew of tobacco to a rock—in an effort to see if they can hit the bullseye, and one sign that I have here is pretty well dented.

Your committee gives thanks to the energy, the brains, the ability of the most active member of the committee, Mr. Chandler of the Dodge Manufacturing Company, who conducted a series of investigations in his plant, and last year he was able to show that he had taken this row of signs which we see here and put them in a darkened room and had the various employes of his factory come and vote upon them. The vote was unanimously in favor of 3, 5

## DANGER!

The place which  
is dangerous by day-  
light becomes doubly  
dangerous as the  
light fades.

and 7 as being the signs which were most easily discernible as the light fades out. This year he has conducted another series of experiments with his usual ability. The first of which I want to call your attention to is this row here, in which we have the red circle superimposed upon various backgrounds. In the poor light—and I want to say that in a few minutes we are going to darken this room so that you can see for yourselves in the poor light—these are in the

order in which they could be seen. The plain red triangular shaped piece of paper went out first, this next, this next, and so on, until we had the red ball on the white background the most easily seen.

### WHEN THE LIGHT FADES.

It would be ideal if our Industrial Hygiene Committee could go into every factory in the land and banish from it smoke and dirt of every kind and description. It would then be simple to take and put red balls upon a white background such as this. But every one of you men know that white in a factory lasts the proverbial thirty seconds, and white soon becomes covered with dirt and grime. Your red ball then has a black background instead of white, and as the daylight begins to fade it passes out of view. We are making an effort to try and get a sign which will be clearly discernible at the worst hour of the day. We are not trying through our plans to make one which everybody can see in the clear of the noonday. The place which is dangerous by daylight becomes doubly dangerous as the light begins to fade.

Mr. Chandler conducted a further series of experiments. We here have the skull and crossbones and the red ball superimposed on various backgrounds, and so on down to the end until we find, as I shall show you, that as the daylight fades out the ideal from our standpoint is this sign, which is, as a matter of fact, more clearly visible in the poor light more than any other sign which we have experimented with.



While your committee cannot cut the Gordian knot, it can report progress; it wants everybody here to know that we are on the job and that it is our intention not only as individuals, but also as a committee, to pursue further studies along these lines, and we want to ask the active help and coöperation of every member of the National Safety Council that they will extend to us the coöperation of trying the various signs so that we will eventually know just exactly which is the best sign.

If I can have those curtains up at the top drawn, please.

THE ROOM WAS DARKENED.

Now if this represents the falling shadows of the late afternoon, I am sure all of you will agree with me that this sign at the end—showing in the first place on a square background and in the second place showing in a circular form—is more easily seen than any of the others. This represents, we will say, 4 or 5 o'clock in the afternoon.

Your committee would emphasize certain things: The idea of putting, for instance, a red sign on a black background like this does not get the maximum of service which it should, because black and red combine themselves together. We also fail to see why the words "Safety First" should be printed on a red background in this form.

Your committee wants your help and coöperation, gentlemen. We will try to have made up a number of sample signs which will be distributed to members for them to try out, and if it meets with the approval of the Congress your committee beg to be continued in office for another year. We hope that we have started some of you thinking, and we hope that out of the thought of all of the members may come a sign which the minute any man looks at it—and I care not whether he speaks Slavish, Polish, Hungarian, Lithuanian or English or what—he will instantly say to himself: "This is danger! It means hands off to me if I am to protect myself

**"This Is Danger!"**

It means hands off  
to me if I am to pro-  
tect myself from  
harm."

from harm." Such a sign, I am sure, will be found. It will by its color, it will by its shape, arrest the attention of everyone who comes in contact with it. I thank you. (Applause.)

VOTE OF APPRECIATION.

DR. OTTO C. BEIER: Mr. Chairman, I move that the conference express its appreciation of the work of this committee and that the committee be continued for another year. (The motion was seconded.)

PRESIDENT CAMPBELL: It has been moved and seconded that the Congress express its thanks to the committee for the work it has done and that the committee be continued in office for another year to continue its study of this subject. I feel that we can very well, in adopting this motion to thank the committee, thank especially Mr. Chandler, who has done such excellent work on that committee, as Dr. Patterson intimated, for the time and energy put into the study that has been made. It looks to me as though something very constructive would ultimately come out of this work. And I think I can safely say to you, Doctor, that in adopting this motion we do so with the understanding that the co-operation of the members in any experiment you desire to make will be cordially extended to you. (The motion was put to a vote and carried.)

PRINTING OF PROCEEDINGS.

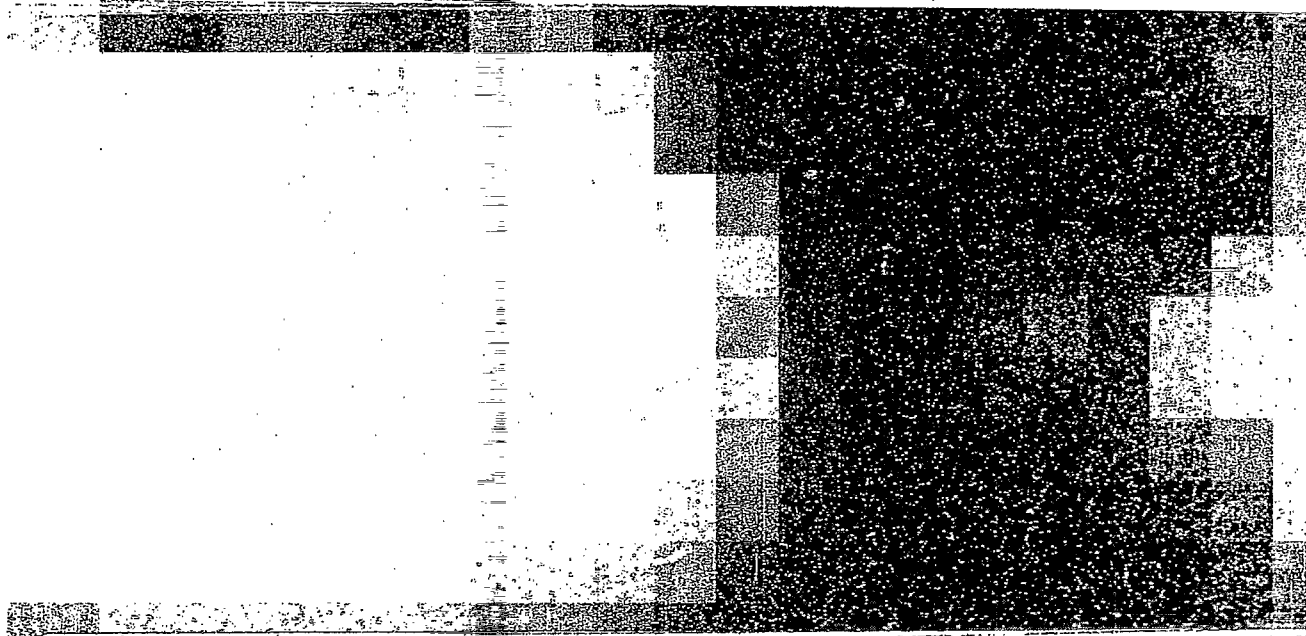
MR. FORSTER: May I inflict myself once more upon the assembly? I would like to know whether it is the plan in getting out the proceedings, or in otherwise reporting upon this meeting, to show in true colors some of the better signs? That is an expensive and difficult proposition and we could eliminate a considerable portion of those, because it is obvious that they are not likely to bring the desired solution, and if that could be done I think it would be a very valuable feature.

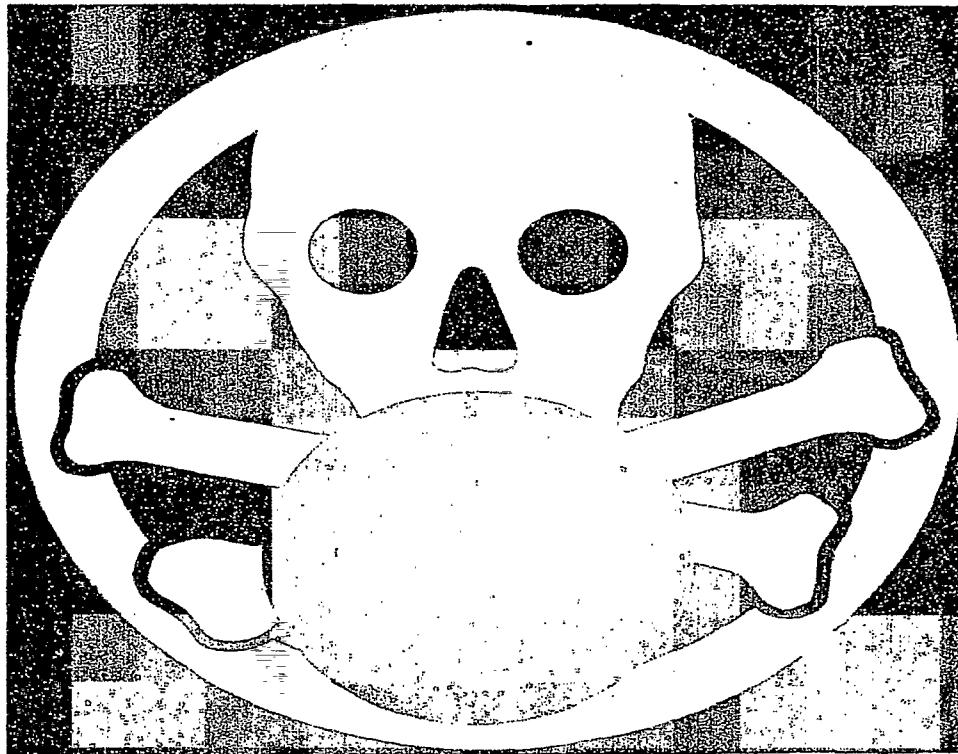
PRESIDENT CAMPBELL: The Secretary advises me that the arrangement that he has with our printer is that a few of these typical signs, that are proven most valuable, can be inserted in the printed proceedings, and if it is the pleasure of the members it will be done. I take it that if there is no objection that course can be pursued.



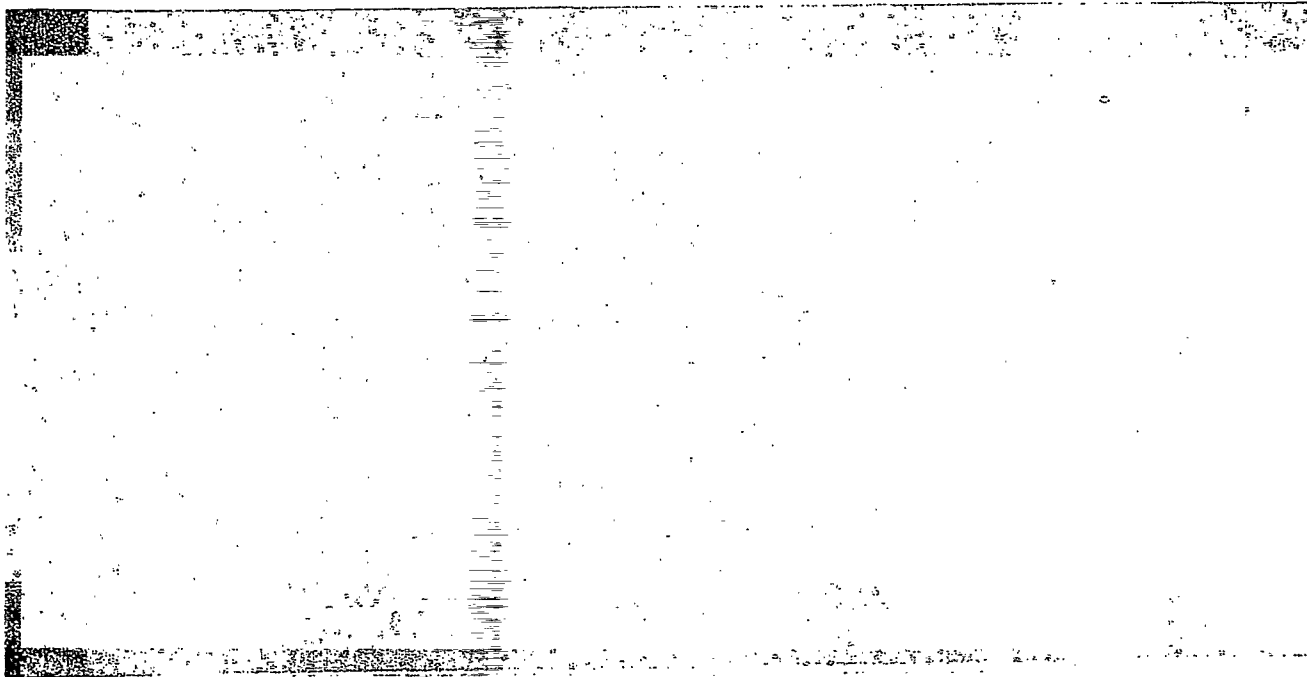


Stand this open book in a dark room, and notice the intensity of the different c





lers under unfavorable conditions of light. See report of Danger Sign Committee.



## DON'T

Doubt your safety  
beliefs and don't be-  
lieve your safety  
doubts. Be safe.

will be kind enough to give consid-  
eration to the motion which my  
friend Wilson has made.

PRESIDENT CAMPBELL: The mo-  
tion has been made that the Secre-  
tary submit to the members in bul-  
letin form a number of these signs.  
That need not, as a matter of fact,  
interfere in any way with the  
reproduction of some of them  
in the printed proceedings. And  
with that statement, are you ready  
for a consideration of the motion

as made? (The motion was put to a vote and carried.)

I assume that the Secretary will confer with the Chairman of the  
committee with respect to the particular signs that it would be  
desirable to have submitted.

### SUGGESTIONS FOR DANGER SIGNS.

MR. G. C. MARTIN (Hamilton, Ontario): May I have the privi-  
lege of making a suggestion for the benefit of the committee? The  
white on red sign there has been stated to be the best, except for  
the objection of becoming black in practice. I would suggest, there-  
fore, that it be taken into consideration as to the furnishing of suffi-  
cient white backgrounds on enameled paper, as it might be, to be  
freshly pasted on there once a week in a factory where there is a  
great amount of dirt. That will not only brighten the sign up but  
it will bring freshly before all the employes once a week, at least,  
that sign and what it means. I thank you.

PRESIDENT CAMPBELL: I think your suggestion will be valuable  
to the committee and we will be glad to have it, Mr. Martin. The  
committee will take due notice of the suggestion.

MR. WEBER: I would like to ask Dr. Patterson if the committee  
has been conferring with the city officials in connection with the  
use of these signs for street signs.

DR. PATTERSON: The committee has felt that until we could

arrive at a sign which would be the best universal danger sign it would not be wise to put it out upon the highways. Our investigations have been conducted within the factories, but so far as the City of Philadelphia is concerned I am sure that we would have no trouble at all in getting this sign put in a number of bad places, particularly as regards bad automobile turns, and have it tried out there. It is very difficult in a city—we know it from other things—

to get any expression of opinion which really might prove of value and help the committee in reaching a conclusion as to what was an ideal sign; whereas, when we try it out in factories we can put it to a vote of the employees and in that way get some tangible evidence as to what we are at.

PRESIDENT CAMPBELL: That satisfies you, does it? Is there anything further to be said on this subject? If not, we are ready to hear from our Fire Prevention Committee chairman, Mr. Forster, Chairman of the Fire Prevention Committee.

#### REPORT OF FIRE PREVENTION COMMITTEE.

H. W. FORSTER, INDEPENDENCE INSPECTION BUREAU, CHAIRMAN.

Mr. President, Ladies and Gentlemen: I suppose it is a surprise to some of you to learn that you have a Fire Prevention Committee. The facts in the case are that our sister organization, the National Fire Protection Association, has for twenty years been active in the fire protection and fire prevention field, and it was only to have what might be termed a connecting—not a missing link, I hope—a connecting link between the movement which we conduct over the country so largely and the National Fire Protection Association with its work that the committee was appointed. Your chairman, through his connection with the National Fire Protection Association, has in a few cases been able to bring to one association information regarding the operations of the other, and vice versa. And

### A Moment

Of carelessness  
may mean a lifetime  
of regret. Safety al-  
ways—all ways.

the function of your chairman is, furthermore, to answer for you any questions that you may ask that he can answer which bear upon fire prevention and fire protection. I thank you. (Applause.)

PRESIDENT CAMPBELL: The report of the Fire Prevention Committee is before you. What is your pleasure?

MR. YOUNG: I move its adoption. (The motion was seconded, put to a vote and carried.)

PRESIDENT CAMPBELL: Is Dr. Meeker here now? If so we will hear the report of the Committee on Accident Statistics.

MR. PALMER: Mr. Chairman, Dr. Meeker was unexpectedly called to New York and I think he intended to be back in the city today. But for him I might say, as you know, that committee met yesterday and a written report has been or will be presented through the Secretary to the Executive Committee. You are familiar, having been in that meeting, with the work that they have done and what they purpose to do.

PRESIDENT CAMPBELL: I might briefly state then for the committee what I understand will be the character of this report, and that is that following the report submitted at our Congress in Chicago in 1914 this committee appointed several sub-committees to take up three different phases of the accident statistics work: One the classification of industries, one the classification of causes of accident, and third the classification of injuries. The first two subjects have been very well considered, both by our committee and by an organization that was created to assist all the representatives of all the state and Federal departments in the administration of labor laws in their jurisdiction. The latter organization had a meeting in Seattle at which the first two of these problems were fairly well solved; the third has not yet been concluded. The committee had intended submitting as its report, and a recommendation that they be adopted, the findings on the first two points to this Congress and also as a report of progress what has been done with respect to the third point, and with a further suggestion that the entire report be received and that it be referred to the Executive Committee for its further consideration and action. (The full report follows.)



**REPORT OF THE ACCIDENT STATISTICS COMMITTEE.**

**DR. ROYAL MEEKER, COMMISSIONER OF LABOR STATISTICS.  
WASHINGTON, CHAIRMAN.**

Mr. President: The Accident Statistics Committee of the National Safety Council submits the following report:

We recommend the adoption of the uniform classification of industries recently adopted by the National Association of Industrial Accident Boards and Commissions at its meeting in Seattle, Sept. 30 to Oct. 2, 1915.

This classification is the result of the joint labors of this committee co-operating with the committee appointed by me, as directed by the Joint Conference on Standardization of Accident Report Forms and Tabulations, held at the La Salle Hotel, Chicago, Oct. 12 and 13, 1914, and the Committee on Statistics and Compensation Insurance Cost, appointed by the National Association of Industrial Accident Boards and Commissions, at a special meeting held at the La Salle Hotel, Chicago, Jan. 12 and 13, 1915. Harmonious action by the three committees was the more easy by reason of the fact that several of those most interested in securing uniformity and standardization were members of some two of the three committees and Mr. E. H. Downey was chairman of two committees and a member of the third committee.

The membership of the three committees is as follows:

**ACCIDENT STATISTICS COMMITTEE OF THE NATIONAL SAFETY COUNCIL.**

Mr. Royal Meeker, U. S. Commissioner of Labor Statistics, Washington, D. C.; Mr. E. H. Downey, Chief Statistician, Industrial Commission of Wisconsin, Madison, Wis.; Mr. Leonard W. Hatch, Chief Statistician, State Industrial Commission, Albany, N. Y.; Mr. L. R. Palmer, Department of Labor and Industry, Philadelphia, Pa.; Mr. F. L. Hoffman, Statistician, The Prudential Insurance Company of America, Newark, N. J.; Mr. C. L. Close, Manager, United States Steel Corporation, New York; Mr. J. B. Douglas, United Gas Improvement Company, Philadelphia, Pa.; Dr. Francis D. Patterson, Director, Department of Sanitation and Accident Prevention, the J. G. Brill Company, Philadelphia, Pa.; Mr. W. B. Spaulding, Chairman, Central Safety Committee, St. Louis & San Francisco Railroad Company, St. Louis, Mo.; Mr. David Van Schaack, Director, Aetna Life Insurance Company, Hartford, Conn.

## **The Best Thought**

In the entire country is given freely to advance the Cause of Safety First.

Commerce Commission, Washington, D. C.; Dr. A. M. Edwards, Bureau of the Census, Washington, D. C.; Mr. C. E. Scattergood, Chairman, Statistical Committee, Workmen's Compensation Service Bureau, New York, N. Y.

### **COMMITTEE ON STATISTICS AND COMPENSATION INSURANCE COST.**

Mr. E. H. Downey, Chairman, Chief Statistician, Industrial Commission of Wisconsin, Madison, Wis.; Mr. Fred C. Croxton, Chief Statistician, Industrial Commission of Ohio, Columbus, O.; Mr. W. N. Magoun, Chief of Workmen's Compensation Bureau, Massachusetts Insurance Department, Boston, Mass.; Mr. Floyd L. Daggett, Chairman, Industrial Insurance Commission, Olympia, Wash.; Mr. Robert K. Orr, Manager, State Accident Fund, Lansing, Mich.; Mr. H. E. Ryan, Associate Actuary, New York Insurance Department, New York; Mr. Royal Meeker, U. S. Commissioner of Labor Statistics, Washington, D. C.

The committee of the joint conference met in New York City, Dec. 1 and 2, 1914, all members being present. At this meeting a partial classification of industries into divisions and schedules was worked out and agreed to. The committee of the National Association of Industrial Accident Boards and Commissions met at Chicago immediately after appointment on Jan. 13, 1915, and voted to adopt the primary and secondary headings worked out by the committee of the joint conference. Considerable progress was made in the further subdivision of industries into groups and classifica-

### **COMMITTEE ON CLASSIFICATION OF INDUSTRIES.**

Mr. E. H. Downey, Chairman, Chief Statistician, Industrial Commission of Wisconsin, Madison, Wis.; Mr. F. C. Croxton, Chief Statistician, Industrial Commission of Ohio, Columbus, O.; Mr. L. W. Hatch, Chief Statistician, State Industrial Commission, Albany, N. Y.; Mr. W. N. Magoun, Head of Workmen's Compensation Bureau, Boston, Mass.; Mr. W. J. Meyers, Statistician, Interstate

tions. Individual members were assigned specific portions of the task to work out and present at a future meeting of the committee. The committee met a second time at Columbus, Ohio, July 21, 22, and 23, 1915. Mr. C. H. Verrill attended as the representative of Mr. Royal Meeker, United States Commissioner of Labor Statistics. All other members of the committee were present except Mr. Daggett and Mr. Ryan. In addition, Mr. L. W. Hatch, Chief Statistician

of the New York State Industrial Commission, and Dr. I. M. Rubinow, President of the Casualty, Actuarial and Statistical Association of America, were present by invitation. At this meeting the classification of industries was practically completed.

It is essential that a uniform scheme of classification shall be worked out by representatives of official bodies and private organizations concerned. For that reason the classifications adopted at the Columbus conference were submitted to a committee of three, which met in New York City, Sept. 14, 15, and 16, 1915. This committee consisted of Mr. L. W. Hatch, Chief Statistician, State Industrial Commission, Albany, N. Y., authorized to represent the Committee on Statistics and Compensation Insurance Cost of the National Association of Industrial Accident Boards and Commissions; Dr. I. M. Rubinow, Chief Statistician, Ocean Accident and Guarantee Corporation, Ltd., New York, N. Y., authorized to represent the Workmen's Compensation Service Bureau of New York, and Mr. W. N. Magoun, head of the Workmen's Compensation Bureau, Massachusetts Insurance Department, Boston, Mass., authorized to represent the Massachusetts Rating and Inspection Bureau.

To assist in the deliberations of this conference committee the following experts were invited to be present: Mr. Williams Newell, Safety Engineer, State Fund, New York; Mr. Grant Earl, Chief Inspector, Workmen's Compensation Service Bureau of New York; Mr. William B. Shoe, Chief Safety Engineer, Ocean Accident and Guarantee Corporation, Ltd., and Mr. David S. Beyer, head of the

## **Every Element**

**The Nation, the State, the corporation and the individual contribute freely to the Safety Movement.**

Accident Prevention Department, Massachusetts Employes Insurance Association.

The conference committee spent three entire days in considering the classification groupings. The classification code of the Workmen's Compensation Service Bureau was altered in some particulars, and the classification groupings as adopted by this committee at Columbus were somewhat modified, and certain suggestions made by the Massachusetts Rating and Inspection Bureau were incorporated. The final result was an agreement by the conference committee on a complete table of classification groupings acceptable to the representative of each organization present.

The classifications agreed upon at this conference were submitted by mail to the members of the Committee on Statistics and Compensation Insurance Cost, were duly approved and submitted as the unanimous report of that committee to the National Association of Industrial Accident Boards and Commissions, at Seattle, and were duly adopted by this body.

Your Committee on Accident Statistics, therefore, feels that this table of classifications, so carefully and painstakingly worked out, is by far the best scheme of classification that has thus far been devised. Minor modifications may be made from time to time as conditions and experience seem to make necessary. Your committee, therefore recommends the adoption of these classification groupings herewith submitted.

The table of classification groupings is drawn up in accordance with the following arrangement: (1) Divisions, (2) Schedules, (3) Groups, (4) Classifications.

#### DIVISIONS:

There are seven principal divisions or primary headings corresponding to those adopted by the committee appointed by Mr. Meeker already referred to. These divisions are: (a) Agriculture, (b) mining and quarrying, (c) manufacturing, (d) construction, (e) transportation and public utilities, (f) trade, (g) service.

#### SCHEDULES.

The seven divisions are divided into schedules corresponding to the secondary headings of the committee appointed by Mr. Meeker. Those secondary headings explain the details into which the primary

headings are separated. For example, the primary heading "Manufacturing" is divided into eighteen schedules such as lumber and wood, leather, textiles, chemicals, paper, etc.

#### GROUPS.

The group headings, of which there are between 250 and 300, are the most important in the series, and show a refinement of the secondary headings. Each group heading is intended to be significant of the industries covered under it, and it is the belief of the committee that these tertiary or group headings will prove acceptable to the various industrial accident boards and commissions for general use in tabulating their accident data.

#### CLASSIFICATIONS.

The final subdivision consists of the classification of industries appearing in the manuals used by insurance companies in connection with their writing of workmen's compensation insurance, without alteration. These final subdivisions are of little value to industrial accident boards and commissions, except to the extent that they act as an index to show what industries are intended to be covered by the respective groups.

Your Accident Statistics Committee is able at this time only to report progress in the work of the classification of causes of accidents and the classification of the nature of injuries.

Respectfully submitted for the Accident Statistics Committee of the National Safety Council.

ROYAL MEEKER, Chairman.

Oct. 20, 1915.

#### DIVISION A—AGRICULTURE.

- Schedule 1—General Farming. Group 1. (Undivided.)
- Schedule 2—Dairy Farming. Group 2. (Undivided.)
- Schedule 3—Stock Farming. Group 3. (Undivided.)
- Schedule 4—Garden and Truck Farming. Group 4. (Undivided.)
- Schedule 5—Operating Agricultural Machinery (not by farmer).
- Group 5. Cotton ginning and pressing. Group 6. Farm machines (n. o. c.).

## LADDERS

The slipping ladder causes 6,000 deaths and 200,000 accidents every year in the United States.

### DIVISION B—MINING AND QUARRYING.

Schedule 1—Mining. Group 7. Coal mines, anthracite. Group 8. Coal mines, bituminous. Group 9. Precious metal mines. Group 10. Iron mines. Group 11. Copper mines. Group 12. Other base metal mines. Group 13. Mineral mines. Group 14. Oil and gas well operating. Group 15. Other mineral well operating.

Schedule 2—Quarrying. Group 16. Building stone quarries.

Group 17. Quarrying and stone crushing. Group 18. Cement rock. Group 19. Sand and clay digging.

### DIVISION C—MANUFACTURING.

Schedule 1—Stone Products. Group 20. Stone crushing; no quarrying. Group 21. Stone cutting. Group 22. Stone grinding. Group 23. Carborundum. Group 24. Cement and plaster; no quarrying. Group 25. Lime. Group 26. Plaster and artificial stone products. Group 27. Stone products (n. o. c.).

Schedule 2—Clay Products. Group 28. Brick and tile (including underground mining). Group 29. Brick and tile (no underground mining). Group 30. Potteries.

Schedule 3—Glass Products. Group 31. Glass, plate or window. Group 32. Glass, not plate or window. Group 33. Mirrors, signs and ornamental glass. Group 34. Optical goods.

Schedule 4—Ore Reduction and Smelting. Group 35. Ore reduction. Group 36. Gold and silver smelting. Group 37. Iron smelting. Group 38. Copper smelting and refining. Group 39. Other metals smelting and refining.

Schedule 5—Rolling Mills and Steel Works. Group 40. Steel making. Group 41. Rolling and tube mills. Group 42. Structural iron and steel. Group 43. Wire.

Schedule 6—Metal Products. Group 44. Foundries. Group 45. Lead. Group 46. Forging. Group 47. Architectural and orna-

mental iron work. Group 48. Safes. Group 49. Sheet metal ware. Group 50. Sheet metal work. Group 51. Stamping. Group 52. Hardware. Group 53. Eyelets, pins, etc. Group 54. Cutlery and hand tools. Group 55. Small arms. Group 56. Stoves, heaters, etc. Group 57. Plumbing, gas and electric fixtures. Group 58. Wire products. Group 59. Beds and springs. Group 60. Copper and brass goods (n. o. c.). Group 61. Jewelry, watches, etc. Group 62. Plating and galvanizing. Group 63. Cutting and welding. Group 64. Metal goods (n. o. c.) (undivided).

Schedule 7—Machinery and Instruments. Group 65. Boilers and tanks. Group 66. Engines. Group 67. Agricultural machinery. Group 68. Textile machinery. Group 69. Machinery (n. o. c.). Group 70. Fine machines. Group 71. Machine shops (n. o. c.). Group 72. Electric apparatus and appliances. Group 73. Instruments (professional or scientific).

Schedule 8—Vehicles. Group 74. Railroad cars. Group 75. Carriages and wagons. Group 76. Automobiles. Group 77. Motorcycles. Group 78. Bicycles. Group 79. Aeroplanes.

Schedule 9—Lumber and Wood. Group 80. Logging. Group 81. Saw mills. Group 82. Planing mills. Group 83. Cooperage. Group 84. Boxes. Group 85. Carpentry. Group 86. Turning. Group 87. Furniture. Group 88. Upholstering. Group 89. Rattan and willow ware. Group 90. Veneer goods. Group 91. Brooms and brushes. Group 92. Household utensils. Group 93. Musical instruments. Group 94. Canes, etc. Group 95. Wood preserving and fireproofing.

Schedule 10—Leather. Group 96. Tanning and dressing. Group 97. Fur. Group 98. Embossing leather. Group 99. Shoe stock. Group 100. Boots and shoes. Group 101. Gloves. Group 102. Harness, bags, and belting. Group 103. Leather goods (n. o. c.).

Schedule 11—Rubber and Composition Goods. Group 104. Gut-

## UNBELIEVABLE

Dynamite and airships are less dangerous than ladders in causing serious accidents.

ta percha. Group 105. Rubber reclaiming. Group 106. Rubber tires. Group 107. Soft rubber goods. Group 108. Hard rubber goods. Group 109. Celluloid. Group 110. Celluloid goods. Group 111. Insulation. Group 112. Bone and ivory. Group 113. Printers' rollers.

Schedule 12—Chemicals and Allied Products. Group 114. Chemicals. Group 115. Baking powder and yeast. Group 116. Glue. Group 117. Ink, blacking and polish. Group 118. Dyes, paints and colors. Group 119. Drugs and medicines. Group 120. Pharmaceutical supplies. Group 121. Extracts. Group 122. Fertilizers. Group 123. Explosives. Group 124. Gases. Group 125. Fats and oils (animal). Group 126. Oils, cottonseed. Group 127. Oils (vegetable), all other. Group 128. Petroleum and allied products. Group 129. Coke and charcoal. Group 130. Turpentine and rosin. Group 131. Soap. Group 132. Starch and glucose. Group 133. Matches.

Schedule 13—Paper and Paper Products. Group 134. Pulp mills. Group 135. Paper. Group 136. Stationery. Group 137. Boxes. Group 138. Fibre goods. Group 139. Paper products (n. o. c.).

Schedule 14—Printing and Publishing. Group 140. (Undivided.)

Schedule 15—Textiles. Group 141. Wool preparation. Group 142. Woolen goods. Group 143. Cotton goods. Group 144. Silk. Group 145. Linen. Group 146. Carpets and rugs. Group 147. Oilcloth and linoleum. Group 148. Batting, wadding, and shoddy. Group 149. Cordage. Group 150. Burlap and jute. Group 151. Knit goods. Group 152. Lace, embroidery and webbing. Group 153. Finishing textiles.

Schedule 16—Clothing and Furnishings. Group 154. Clothing. Group 155. Shirts, collars, etc. Group 156. Furnishing goods. Group 157. Headwear. Group 158. Miscellaneous needle work. Group 159. Laundering, cleaning, and dyeing.

Schedule 17—Foods, Beverages, and Tobacco. Group 160. Flour and grist mill products. Group 161. Baking. Group 162. Coffee and spices. Group 163. Beet sugar refining. Group 164. Sugar refining—cane. Group 165. Confectionery. Group 166. Dairy products. Group 167. Slaughter and packing houses. Group 168. Canning and preserving. Group 169. Malting and brewing. Group



170. Bottling—under pressure. Group 171. Bottling—not under pressure. Group 172. Distilleries. Group 173. Fermented liquors. Group 174. Tobacco. Group 175. Ice.

Schedule 18—Miscellaneous Manufactured Products (not otherwise classified). Group 176. Lead pencils and crayons. Group 177. Advertising and art novelties. Group 178. Photographic and pyrographic goods. Group 179. Sporting and military goods. Group 180. Buffing wheels, washers, and steam packing. Group 181. Butchers' and dairy supplies. Group 182. Soda water apparatus. Group 183. Artificial limbs. Group 184. Painting (shop). Group 185. Photography. Group 186. Diamond cutting. Group 187. Taxidermists.

DIVISION D—CONSTRUCTION.

Schedule 1—Wrecking and Moving. Group 188. Raising and wrecking. Group 189. Blasting.

Schedule 2—Grading, Excavating and Foundations. Group 190. Surveying. Group 191. Clearing and grading. Group 192. Excavating and pile driving. Group 193. Drilling. Group 194. Tunnels and subways. Group 195. Ditch digging with pipe laying. Group 196. Canals. Group 197. Masonry.

Schedule 3—Erecting. Group 198. Structural iron erecting. Group 199. Metal construction (outside). Group 200. Concrete construction. Group 201. Signs, awnings, etc. Group 202. Fence construction. Group 203. Carpentry—outside. Group 204. Building construction (n. o. c.) Group 205. Painting, plastering, and decorating (outside). Group 206. Roofing. Group 207 Dams, breakwaters, etc. Group 208. Railroad construction (all kinds). Group 209. Boat and shipbuilding (wood). Group 210. Boat and shipbuilding (steel or iron). Group 211. Yachts and row boats. Group 212. Boat and ship repairing and rigging.

Schedule 4—Finishing, Equipping, and Installing. Group 213. Metal construction (within buildings). Group 214. Elevator erection, passenger or freight. Group 215. Metal appliances; installing within buildings. Group 216. Millwrighting. Group 217. Plumbing and heating. Group 218. Electrical equipment. Group 219. Marble, tile, and plaster blocks (within buildings). Group 220. Carpentry work (within buildings). Group 221. Plastering, painting and decorating (within buildings). Group 222. Paving (outside).

## Almost Useless

An unsafe man,  
like an unsafe ma-  
chine, must be made  
safe or go to the dis-  
card.

Ice harvesting. Group 231. Grain elevators. Group 232. Refrigerator cars. Group 233. Oil distributing. Group 234. Garages. Group 235. Gasoline supply stations. Group 236. Riggers and safe movers. Group 237. Horseshoeing.

Schedule 4—Stock Yards. Group 238. (Undivided.)

Schedule 5—Transportation by Water. Group 239. Vessels. Group 240. Sailing vessels. Group 241. Fisheries. Group 242. Barges, lighters, and canal boats. Group 243. Stevedoring. Group 244. Weighing and tallying. Group 245. Marine wrecking.

Schedule 6—Public Utilities (not transportation). Group 247. Electric light and power. Group 248. Telephone and telegraph. Group 249. Natural gas. Group 250. Gas works. Group 251. Waterworks. Group 252. Steam heating or power companies. Group 253. Garbage works and sewage disposal plants. Group 254. Pneumatic tube companies; operation. Group 255. Irrigation works. Group 256. Crematories.

Schedule 7—Pipe lines.

### DIVISION F—TRADE.

Schedule 1—Offices. Group 257. (Undivided).

Schedule 2—Stores. Group 258. (Undivided).

Schedule 3—Yards. Group 259. (Undivided).

Schedule 4—Salesmen and Agents—(outside). Group 260. (Undivided)..

### DIVISION E—TRANSPORTATION AND PUBLIC UTILITIES.

Schedule 1—Steam Railroads.  
Group 223. (Undivided.)

Schedule 2—Electric Railroads.  
Group 224. Street railroads.  
Group 225. Elevated railroads and  
subways.

Schedule 3—Cartage and Stor-  
age. Group 226. Drivers and sta-  
blemen. Group 227. Chauffeurs.  
Group 228. Express companies.  
—operation. Group 229. Stor-  
age and warehousing. Group 230.

DIVISION G—SERVICE.

Schedule 1—Domestic. Group 261. Care, custody, and maintenance of buildings. Group 262. Care of grounds. Group 263. Hotels, restaurant, and clubs.

Schedule 2—Personal. Group 264. Theatres. Group 265. Amusements, indoor (other than theatres). Group 266. Amusements, outdoor. Group 267. Individual service.

Schedule 3—Professional. Group 268. Inspectors and appraisers. Group 269. Institutions. Group 270. Teachers and instructors. Group 271. Undertakers. Group 272. Motion pictures.

Schedule 4—Municipal and Public. Group 273. (Undivided).

MR. YOUNG: I move you that the Executive Committee be empowered to accept at its discretion the report of this committee to be rendered at a future date. (The motion was seconded by Mr. Ayres, put to a vote and carried.)

PRESIDENT CAMPBELL: We will now hear the report of the Committee on Education. Mr. Lew R. Palmer is the chairman and I am sure his report will be of interest to every one present. Mr. Palmer.

REPORT OF EDUCATIONAL COMMITTEE.

LEW R. PALMER, PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY, CHAIRMAN.

Mr. Chairman and Members of the National Safety Council: Your Educational Committee held its first meeting this date at 2:00 P. M., with the following members present: Clifford B. Connelley, Dean, School of Applied Industries, Carnegie Institute of Technology; Lew R. Palmer, Pennsylvania Department of Labor and

**Right Thinking**

The prevention of accidents is largely a question of the right mental attitude.

Industry, representing Commissioner John Price Jackson; Peter Roberts, D.D., Secretary Educational Department, International Committee Y. M. C. A.; Mrs. Joseph R. Wilson, Philadelphia, Pa.; H. H. Wheaton, Specialist in Immigrant Education, United States Bureau of Education, Washington, D. C. Mr. Millard B. King, Director of Bureau of Vocational Education for the State of Pennsylvania, was present at the invitation of the committee.

Mr. Palmer acted as Chairman and Mr. Wheaton as Secretary.

Dean Louis E. Reber's outline of the plan to be submitted to the Executive Committee was read to the committee, who approved same and directed the secretary to present same to the Executive Committee of the National Safety Council.

Following this Mr. C. W. Price of the Wisconsin Industrial Commission presented a special verbal message from Dean Reber, and the suggestions made were approved by the committee:

SUGGESTIONS APPROVED.

(a) Approach the engineering schools first, making an appeal by circular letter that suitable safety instruction should be given with courses, so that each engineer will know the first principles of safety.

(b) Develop the Lewis Institute plan gradually as a model for similar institutions.

(c) Circularize the superintendents of schools, suggesting courses and lectures.

(d) Designate a representative officially to speak for the N. S. C. at meetings of educational associations.

(e) Develop a book for continuation schools.

After full discussion the committee agreed upon the following division of its work, and assignment of investigations and activities to various members, provided the Chairman, Dean Reber, who was absent, shall approve:

1. Dean Connelley—Co-operating with J. H. Nicholson, Chairman of the Boy Scout Safety First Plan Committee, in educational work, first-aid training and safety instruction. Investigation with reference to technical schools.

2. Dr. Roberts—The Y. M. C. A. and mining schools.

3. Mrs. Wilson—Parent Teachers' Association, Home and School League, Y. W. C. A., and allied associations.
4. Professor Breckenridge—Universities, colleges, seminaries and higher institutions of learning.
5. Professor Franklin—Engineering schools.
6. Commissioner Jackson—State industrial directors of vocational education; organization of material from state manual, technical and continuation Schools.
7. Mr. Wheaton—Red Cross, National Educational Association and State Educational Associations.

At this point the Committee wishes to recommend that Dr. Luther H. Gulick of New York City be appointed a member of the committee, and that he be assigned to cover the National Playgrounds' Association and the Campfire Girls of America.

The general policy worked out by the committee necessitates first, that members of the committee to whom special subjects or agencies have been assigned, investigate the first-aid training, safety instruction, type of organization, administrative features, needs and facilities of each, compiling this data and submitting it with recommendations to the committee's chairman. Second, that the committee correlate all material secured, prepare texts, bulletins, pamphlets, and outlines of courses for use by the public schools, technical schools and other institutions of learning, and by the various private agencies immediately interested in first aid and safety education. Third, promote the use of this material by the above-mentioned public institutions and private agencies acting as distributors. Fourth, recommend to the Sectional Committees of the National Safety Council the use and promotion of the educational standards worked out by the Educational Committee.

The committee then discussed the Lewis Institute plan, suggested by President Campbell of the National Safety Council. A copy of this plan is hereto attached. The plan was approved by the committee and is recommended as a basis from which to develop a standard for such schools.

It was agreed that members of the committee, investigating particular subjects, should call upon the various sectional committees to supply data and human interest material so as to avoid a duplication of work.

## **"Good Old Days"**

In the old-time powder mill an extra roof or two was always kept on hand for emergencies.

### LEWIS INSTITUTE PLAN.

**Suggestions**—It is suggested that each speaker be provided with a list of the topics to be included in this series of lectures, along with an outline of the subjects to be covered in each of the other lectures. Each speaker should then be requested to keep within the subject outlined for his lecture.

**Lectures**—1. Accidents. 2. Principles of Safeguarding. 3. House-keeping and Yards. 4. Buildings. 5. Buildings (continued). 6. Fire Causes and Fire Protection. 7. Railings, Fences, Scaffolds and Portable Ladders. 8. Power Plant Hazards (other than electrical). 9. Transmission Machinery. 10. Woodworking Hazards. 11. Foundry Hazards. 12. Machine Shop Hazards. 13. Hand-Tool Hazards. 14. Electrical Generating Equipment Hazards. 15. Electrical Utilization Hazards. 16. Material Handling Equipment Hazards. 17. Elevator Hazards. 18. Railroad Hazards. 19. Personal Safeguards, Personal Effects, Clothing. 20. Special Risks. 21. Mines. 22. Employment of Workmen. 23. Education of Workmen. 24. Safety Committees. 25. First Aid. 26. First Aid (continued). 27. Welfare Work in Plants. 28. Welfare Work Outside of Plants. 29. Studies of Accidents. 30. Industrial Diseases. 31. Industrial Diseases. 32. Sanitation. 33. Home Hazards.

**Lectures (outline of each)**—1. Accidents: This lecture is intended to interest the students in the subject of accident prevention by pointing out the great losses through accidents. (a) To the employer. (b) To the community. (c) To the man and his family.

### SCOPE OF THE WORK.

It is also intended to point out the scope of the work and to indicate the relations between various divisions so that the students may get a general idea of what the work is, and, during future lectures,

bear in mind the place and the importance of each subject with respect to the whole.

2. Principles of Safeguarding—This lecture is intended to point out the reasons for safeguarding, the means of safeguarding (general) and the effects of safeguarding. The results of partial protection, of unsubstantial protection, of inconsistent protection, etc., to be indicated.

All of the above to include educational effect of protection as well as the direct prevention of accidents.

The fundamental causes of accidents, such as falling of men and materials, to be discussed. (See Lecture 5.)

3. Housekeeping and Yards—This is to include the general subject of cleanliness for all locations, followed by a special discussion of yard hazards which will include: (a) Illumination—Not covering the theory of illumination excepting as yard conditions make it necessary to do so. The advantages of high and low lighting should be pointed out including the effect on railroad men. Means of indicating special yard hazards at night should be discussed. (b) Pits and other falling and tripping possibilities. Means of guarding under various conditions. (c) Industrial tracks. (d) Clearances.

Note—Do not conflict with lectures 4, 5, 7, 16, 18, 22, 23, 24, 27, 32.

4 and 5. Buildings—This is to cover: 1. Egress. Including various kinds of fire escapes, etc. Necessity for capacities. 2. Stairs. Giving rules for construction and safe use of. 3. Fixed Ladders. Design, use of, etc. 4. Platforms and Walkways. 5. Windows. Types, advantages, window washing, location. 6. Skylights. 7. Illumination. Ceiling designs, etc. 8. Floors. 9. Do not conflict with 6, 7 and 17.

6. Fire Causes and Fire Protection—The common causes of fires and means of avoiding. Gasoline, matches, smoking, etc.

## **Too Common**

If nearly all accidents are "common" the reasons for them are common.

7. Railings, Fences, Scaffolds, and Portable Ladders—Standard safeguards and methods. State Regulations.

Philadelphia, Pa., Oct. 18, 1915.

The report of the committee was received with much interest and Mr. Palmer was congratulated upon the clearness of the report and the wealth of information it contained.

GENERAL DISCUSSION.

PRESIDENT CAMPBELL: There remain but one or two items of business. I think, before we pass to the matter of hearing the report of the Nominating Committee and the election of Directors, it might be well to ask if there are any members present who desire to say anything with respect to meetings that are to be held in the way of Sectional Meetings or of Local Council gatherings or other meetings that they desire to get together. I understand that one or two have some such announcements that they desire to make at this time and before we begin to disperse, I will give them an opportunity to be heard. Are there any such?

MR. WILSON: I want to ask all those present who are interested in the Mining Section to leave their names at the desk or see me at some time in order that we may arrange between us the method of organization, consideration of by-laws to be enacted, the election of officers, and to that end I am going to ask that you come to the desk outside—the registration desk—immediately after the adjournment of this session.

PRESIDENT CAMPBELL: May I suggest that you take the Pink Room, Mr. Wilson, for that meeting? It is just off the corridor beyond the desk—a room in which you can be to yourselves.

ROUND TABLE ANNOUNCEMENT.

MR. PRICE: My Round Table, the one I happen to be appointed to preside over, comes at the tail end of the program. I have a fear that some men won't stay over for that Round Table so I want to say this: We hope to make that Round Table, gentlemen, a Round Table of experience along what I believe to be the most important line, namely. "How to Reach the Workman, How to In-



terest Him, How to Get Him Awakened?" It is going to be the Round Table where the old scouts like R. C. Richards and Young will have their say, but principally it is going to be a Round Table for the men who perhaps are not so familiar with the big game of educational work and safety, and I hope you men will stay over and help make that a great Round Table.

MR. AYRES: I most heartily endorse the remarks of Mr. Price, because they embrace features that I am most heartily interested in. While I am identified with the iron and steel industry I see nothing pertaining to that in this conference, but as he has most aptly stated, it is how to reach the workmen, by educational work or otherwise, and it may be the last on the program, but I believe it will be the *piece de resistance* in the menu of this conference.

MR. WOLTZ: I would like to ask that all present who are interested in the iron and steel industry make arrangements to meet sometime during this conference for the organization of a Section. I would suggest Friday morning. The Congress is not supposed to last over Friday, but I have always suggested that we do not have enough time at this conference to go into work thoroughly, and I would suggest that Friday morning, unless some one else has another suggestion to make.

#### SECTIONAL ORGANIZATIONS.

PRESIDENT CAMPBELL: May I offer this suggestion to you, Mr. Woltz? At the close of the meeting I had intended to explain to all of you what the desire of the Executive Committee had been with respect to these Sections, and I might at this point do so and save some further difficulties.

The Executive Committee has been very anxious to have a large number of sectional organizations created. The most practical way to do that will be for those of you who have your Sectional problems and are here together to have a meeting and effect that organization during the time of this conference. The Executive Committee has adopted a resolution in conformity with the requirements of our by-laws, in which we provide for an autonomous organization of Sections. We are providing a very nominal form of organiza-

**Tell Him the Truth**

—  
"How to reach the  
workman, interest  
him and get him  
awakened?"

tion, the election by members of the Section of a Chairman, Vice-Chairman and Secretary; the Chairman thereupon to appoint four committees, the names and duties of which will be mentioned in the resolution, and time need not be taken here to describe them, which three officers and four chairmen of committees, with such other committees as the Section may find it desirable to create and provide for in the by-laws which they will adopt, will constitute

the committee of the section and will have charge of the activities and questions that arise in that particular section, all under the general direction and supervision of the Executive Committee of the National Council. A member of the Executive Committee was appointed last night to be present at each of the Sectional meetings which are to be held tomorrow and Thursday, and one has been delegated to meet with the Public Safety Section and with the Section on Interurban and Street Railways, and we desire that any others who would like to form a Section here that are not thus provided for will do so in the manner suggested by Mr. Woltz. But I think, Mr. Woltz, with all due respect to you, it would be better if you would have your preliminary meeting immediately at the conclusion of this one, which will adjourn very shortly, in a room which will be found by hunting you up. Everybody knows you, and if all the men in the iron and steel industry will join with Mr. Woltz some one of the members of the Executive Committee will be there to explain what the Executive Committee desires done in connection with the organization of sections and the organization will thus be speeded considerably, Mr. Woltz.

MR. WOLTZ: I will accept that; in this corner room here, if that is agreeable.

PRESIDENT CAMPBELL: The Red Room?

MR. WOLTZ: Yes.

**PRESIDENT CAMPBELL:** The Red Room for the Iron and Steel. Now are there any other Sectional groups? Mr. Robinson of Pittsburgh.

**MR. ROBINSON:** You refer to the possibility of local organizations getting together here for the purpose of discussion of their interests. I would suggest that there are a good many representatives here from the Pittsburgh District, and I think it would be very helpful to us if we could arrange a meeting at say 4:30 this afternoon for all members and representatives from Pittsburgh and vicinity in one of the committee rooms here.

**A MEMBER:** The Green Room.

**MR. ROBINSON:** And I hope it will be possible for one of the members of the organization or one of the members of the Executive Committee to be present and give us some advice as to forwarding our interests in the local field.

**PRESIDENT CAMPBELL:** Your suggestion is a very timely one and one that is very welcome, because it will mean additional activity in your district, and we will be pleased to assign you the room mentioned at 4:30 o'clock, if the general program has been completed at that time, which I think it will be.

**MR. WOLTZ:** Will you pardon me a moment? There have been three or four persons present who have suggested that inasmuch as there was a very small attendance yesterday at the meeting of the local council conference, at which there was quite a good deal of important business to come before it, that we have another meeting of all the officers, because it will be announced on the placard in the corridor, and the name of the Section is going to be over the door of the room in which the meeting will be held. They will be in the hall directly after the meeting, the members will be in the

## **EDUCATION**

**It requires more than printed rules to cause men to observe safety precautions and use safety devices.**

hall, where everybody can see us as they come out of the elevators, and in addition to that the name will be on the door and you can't miss your rooms.

MR. WOODHEAD: Mr. Chairman, I represent the Laundry Sectional Meeting and I want to issue a special invitation to all the ladies present to hear Miss Jane Seymour Klink, Manager of the Welfare Department of the Pilgrim Laundry. She is deeply interesting to any one who is in welfare work among girls and women in factories of any description. The Laundry Section ought to be especially interesting to all the ladies present.

PRESIDENT CAMPBELL: If there are no other announcements to be made at this time, it will be understood that if any of you representing industries for which no public announcement has been made at this time with respect to organization will approach either Mr. Cameron or myself we will very gladly arrange with you for the appointment of your organization committee and will at the same time see to it that public announcement is made at subsequent meetings of the time and place of your meetings for the purpose of organization. We hope that a number of other sections than those which have been already named will get together here and will organize. If any of you are desirous of ascertaining who is here from your industries and will come to the information desk the registration cards are being indexed according to your industries and you can find who else is here in the industries in which you are interested by inquiring at the desk.

#### PROGRAM OF ENTERTAINMENT.

Before going on with the formal business session I think it would be desirable for us to have stated to us that form of entertainment which has been provided for us through the kindness of our Philadelphia Local Council, and I will ask Mr. Patterson to again inflict himself upon you and tell us what he has in store for us. (Applause.)

DR. F. D. PATTERSON: President Campbell, Ladies and Gentlemen—We have a number of things planned which we hope will make your stay within the City of Philadelphia one which will long

be pleasantly remembered. Knowing that the ladies who come to honor the National Safety Council by attending its Congress have a very keen interest in shops, I have been able to arrange, at 2:30 this afternoon, with Mr. Wanamaker's personal representative to meet you at the Chestnut street door and take you ladies and try to show you what we believe to be the greatest store in the world—the Wanamaker store.

Tomorrow afternoon at 2 o'clock, through the courtesy of Col. James Robinson—the able, efficient, competent Chief of Police of the City of Philadelphia—we have had placed at our disposal the police boat Ashbridge. Shortly after 2 o'clock this boat will leave Race street wharf, about ten minutes' walk from the hotel, and we will proceed down the Delaware river, will show you League Island and will show you the many points of interest to be seen in the City of Philadelphia and our sister city of Camden, N. J., on the opposite shore.

Thursday afternoon we believe that the ladies will be particularly interested to see what we know to be a fact, that Philadelphia has the most beautiful suburbs of any city within our Union. Automobiles will be at the front door of the Bellevue-Stratford and they will take you for a ride through Fairmount park, which is the largest park in connection with any great city in the world; will take you out in the country, where you may get away from the din of the factory and the factory smoke.

I want to urge on every person who is here at this meeting of the National Safety Council that they make it a special point to attend our banquet to be held here in this room on Wednesday evening. Three speakers are coming to tell us, with words of wisdom, all that is right that we should know. Governor Brumbaugh, who is the executive head of this great Commonwealth of Pennsylvania, has honored the National Safety Council by accepting our invitation and will be here to make a speech at that banquet. Mayor Blankenburg—and no city ever had a better or a more efficient Mayor—will make another of the speeches, and the Hon. Edson S. Lott of New York, is the third.

The program, as far as the menu is concerned, is all that the stomach may desire, and I am sure that three such luminaries as the Governor of this commonwealth, the Mayor of our city and Mr. Lott, that the mental feast will be one which will be well suited

## **SOMETIMES**

Even the people who always seem to know just what to do sometimes forget to do it.

to the brains of this Council. Gentlemen, please come to the banquet. We want to fill this room to overflowing. (Applause.)

**PRESIDENT CAMPBELL:** I think, gentlemen, after hearing the report of the President of our Local Council, particularly as to his acquaintance with the Chief of Police, we can understand how he has kept out of jail so long. (Laughter.)

In connection with that I would urge upon you your very early registration at the desk for your banquet tickets. I would like to feel that we have been able to get a very large number of you at this banquet. It is the one time when we can get away from practicalities and deal in the ideals of our work and it is the hope of those of us who are interested in the banquet that we will be able to get at that banquet something in the fashion of the larger side of our humanitarian work, namely, its ideal side. And so we would like to have you there to get that idea of our work, as well as the practical one which you will get at our business and formal sessions.

### **MEETING OF DIRECTORS.**

There will be a meeting of the old and the newly elected directors at the hour of 5 o'clock in a room that will be designated. The directors should not forget that, as the important business, there will be the election of an Executive Committee to serve for the next year.

The Public Safety Section of the Interurban and Street Railway Section will remember their meeting at 8 o'clock in the Red Room, illustrated lectures following.

I am reminded that a number of exhibits of one character or another are to be found on the mezzanine and second floor. If any of you have any time or interest I feel that you would probably be repaid by visiting them. They are presented by friends of our cause and those who have something to show us along safety lines in our safety work, and you will be repaid by a visit to what they have to show you on the upper floors.

It will be remembered that it has always been the policy of the National Council to avoid as far as possible any commercialism and we have therefore never endeavored to have any very large commercial exhibit in connection with our Council meetings, as we preferred to subordinate this phase of the work to the one that we consider to be more important—one of conference and exchange of ideas.

The next order of business will be the report of the Nominating Committee. Its chairman is not present, but Mr. Bennett will make the report for the committee as one of its members.

### **You Know Better**

Than to do a dangerous act simply to show some one you are not afraid to do it. Be careful.

#### **REPORT OF NOMINATING COMMITTEE.**

**MR. F. G. BENNETT:** Mr. Chairman, this report is rather short. The Nominating Committee, acting under the requirements of the by-laws, has prepared a proposed list of members to fill vacancies on the Board of Directors, caused by expiration of terms, resignation, death or otherwise, and this proposed list has been approved by the members of the committee after careful consideration. It was sent out to the entire membership some time ago in accordance with the requirements of the by-laws.

Mr. W. H. Cameron, Secretary National Safety Council, Chicago. Dear Sir: We, the Nominating Committee, appointed by the President of your Council, with the approval of the Executive Committee, as provided by Section 8 of Article VI of the By-laws of the Council, and as further provided by Section 9 of Article VI of the By-laws, present to you our report of nominations for successors to the Directors whose terms of office shall expire October 20th, 1915, as well as to fill the vacancies of five Directors, elected to serve for two years, who have either died or resigned since their election.

#### **NEW DIRECTORS TO SERVE UNTIL THE ANNUAL MEETING OF 1916.**

John R. Brownell, Superintendent of Safety, Industrial Accident Commission, San Francisco, Cal.; H. A. Bullock, Staff Assistant

to President, Brooklyn Rapid Transit Company, Brooklyn, N. Y.; John Calder, Willett, Sears & Co., Boston; E. F. Carry, First Vice-President and General Manager, American Car and Foundry Company, Chicago, Ill.; Dr. L. W. Chaney, United States Bureau of Labor, Washington, D. C.; Howell Cheney, Cheney Brothers, South Manchester, Conn.; Marcus A. Dow, General Safety Agent, New York Central Lines, New York; Geo. T. Fonda, Safety Engineer, Bethlehem Steel Company, South Bethlehem, Pa.; H. W. Forster, Chairman, Committee on Safety to Life, National Fire Protection Association, and Chief Engineer, Independence Inspection Bureau, Philadelphia, Pa.; C. M. Hansen, Secretary, Department of Accident Prevention, Inspection and Merit Classification, Workmen's Compensation Service Bureau, New York; Dr. A. M. Harvey, Crane Company, Chicago, Ill.; C. H. Howard, President, Commonwealth Steel Company, St. Louis, Mo.; L. A. Larsen, Assistant to Vice-President, American Locomotive Company, New York; Edson S. Lott, President, United States Casualty Company, New York; H. W. Moses, Superintendent, Welfare Department, Edison Electric Illuminating Company of Boston; W. J. Olcott, President, Oliver Iron Mining Company, Duluth, Minn.; E. K. Prichett, Secretary, The Macey Company, Grand Rapids, Mich.; J. A. Robertson, Chairman, Central Safety Committee, and Manager, Camera Works, Eastman Kodak Company, Rochester, N. Y.; H. D. Sharpe, Treasurer, Brown & Sharpe Manufacturing Company, Providence, R. I.; S. F. Shattuck, Treasurer, Kimberly-Clark Company, Neenah, Wis.; J. C. Smith, Safety Engineer, Inland Steel Company, Indiana Harbor, Ind.; L. B. Somerby, Factory Manager, General Railway Signal Company, Rochester, N. Y.; W. B. Spaulding, St. Louis & San Francisco Railroad Company, St. Louis, Mo.; Dr. W. H. Tolman, Director, American Museum of Safety, New York, N. Y.; Robert J. Young, Manager, Department of Safety and Relief, Illinois Steel Company, Chicago, Ill.

NEW DIRECTORS TO SERVE UNTIL THE ANNUAL MEETING OF 1917.

L. A. DeBlois, E. I. DuPont de Nemours Powder Company, Wilmington, Del.; Dean Clifford B. Connelly, Carnegie Institute of Technology, Pittsburgh, Pa.; Dean L. E. Reber, University of Wisconsin, Madison, Wis.; J. M. Guild, Safety Agent, Union Pacific



Railroad Company, Omaha, Neb.; Sidney A. Johnston, State Factory Inspector, Missouri, St. Louis, Mo.

Respectfully yours,

F. G. BENNETT,

Chief Safety Inspector, Buckeye Steel Castings Company, Columbus, Ohio.

EARL B. MORGAN,

Safety Engineer, Commonwealth Steel Company, Granite City, Ill.

J. S. PENDLETON,

Assistant to Manager, Carpenter Steel Company, Reading, Pa.

W. C. WILSON,

Claims Attorney, Delaware, Lackawanna & Western Railroad Company, New York, N. Y.

H. J. BELL, Chairman,

Safety Inspector, Chicago & North Western Railway Company.

Nominating Committee.

Chicago, Ill., Aug. 9, 1915.

PRESIDENT CAMPBELL: The report of the Nominating Committee is before you. I suggest that it be accepted. Is there a motion to that effect?

MR. CHANDLER: I move to accept the report of the Nominating Committee. (The motion was seconded, put to a vote and carried.)

#### ELECTION OF DIRECTORS.

PRESIDENT CAMPBELL: The next order of business is the election of Directors. There are no vacancies, as we are advised, either by death or disqualification, in any of the offices of Director, nor are there any created in the same way in that list of nominations which has been submitted by the Nominating Committee. There are, therefore, no nominations to be called for from the floor. No members' ticket has been presented, therefore the problem of electing our Directors should be a simple one. The tellers who have been appointed by the Executive Committee are Mr. J. B. Douglass, Mr. Fonda and Mr. Worth, and they should be instructed to cast the ballot of the membership for the twenty-five men named to fill the three year term and the five men named to fill the unexpired term

## OHIO

Has a State Officer, on salary, who is devoting all his time to the teaching of safe practices to employees.

of those Directors whose offices are vacant through disqualification, resignation or death whose term expire in 1917. Do I hear such a motion?

DR. PATTERSON: I move you that that be done. (The motion was seconded.)

PRESIDENT CAMPBELL: Motion is made that the tellers appointed and those named cast the ballot of the membership for the following named persons as Directors to

serve for three years. (The motion was put to a vote and carried.)

Mr. Douglass, are you ready to report?

### REPORT OF TELLERS.

MR. DOUGLASS: Mr. President and Gentlemen—The Tellers' Committee duly met and counted the number of proxies, finding that in all there were 441, and as Chairman of the Tellers' Committee I hereby cast the vote of those 441 members in favor of the members whose names were read by the President.

Number of Proxies on Council List, duly checked, 431. Later Received and Checked: Individuals, 4; Companies, 6. Total 441.

Your tellers cannot at this time learn the number of votes to which the six companies are entitled and have therefore accredited each company with but one vote.

Registered attendance at 12:15 o'clock, 394; the number present not registered will probably bring total to 425.

GEORGE T. FONDA.

W. E. WORTH (by Mr. Roberts.)

J. B. DOUGLASS, Chairman.

PRESIDENT CAMPBELL: And for the other members present in person?

MR. DOUGLASS: And for the other members present in person.

PRESIDENT CAMPBELL: The report of the tellers is before you.

The vote has been cast and I take pleasure in declaring the gentlemen whom I have named elected for the terms mentioned respectively. They will remember that they are expected to attend the meeting of the directors at 5 o'clock at the room that will be designated at the desk.

Is there any unfinished business to be brought before the members? I personally know of none. Is there any new business that any of you desire to bring to our attention?

### **Safety Exhibit**

Ohio has a circulating exhibition of safety devices, lighting systems, and hygienic standards.

## **NOMINATIONS FOR CONVENTION CITY.**

### **CLEVELAND.**

MR. STEPHEN W. TENER: I wish to offer the following resolution:

"Resolved, That the Fifth Annual Conference of the National Safety Council be held in the City of Cleveland."

This resolution is accompanied by letters of invitation by the Mayor of Cleveland and the Chamber of Commerce. I recognize the fact that the resolution will naturally be referred to the Executive Committee for action, as it cannot be formally acted upon here. Mr. Goodwin of the National Chamber of Commerce is here and will, at an opportune time, lay before the Executive Committee many reasons for backing me up in Cleveland's claim. I will bring to their attention the accommodations that will be found in Cleveland. I may incidentally remark that the Hollenden Hotel, in view of the next convention, started yesterday to enlarge that building. The Statler Hotel is adding 300 rooms, which will give them a thousand rooms, and with these will be new and enlarged meeting rooms. And while the Executive Committee must handle this subject there are three reasons we want to put before you in your

meeting here why I think Cleveland should be honored: In the first place, the Governor of Ohio is a member in good standing in the National Safety Council, and so far as I know he is the only Governor who is a member. We should hold the meeting in Ohio, at least, in honor of that distinguished member. Second, the gentleman who preceded me spoke about reaching workmen, that that was the most important thing we had on hand. Now about a year and a half ago, while at Columbus, I talked to a member of the Industrial Commission there, asking him if he had analyzed the accidents being reported, and had it been impressed upon him the number of accidents due to carelessness among the men themselves. He answered in the affirmative and said: "We must go after the men; not letting up on the employers, but we must have a campaign of instruction on the men." Acting on that a very efficient safety director was appointed and he has been holding meetings. He is finishing in Cleveland today, holding most instructive meetings among employes, and employes only, and his remarks are directed entirely to employes. He does not mention the employer except in a complimentary way, perhaps. And he says, and I think he is correct, that Ohio has taken the lead in that work—a man designated by the Governor to go directly to the industries and talk directly to the men and impress upon them that it is their duty to reduce accidents in conjunction with their employer.

The State of Ohio, as a state proposition, had a very elaborate safety exhibit at Columbus last January, at which you, Mr. President, were present and delivered an important address. The Governor thought that this should be an annual matter, an annual affair, and that it should be held always in Columbus. But wiser counsels prevailed and it was shown that it should be a circulating exhibition, so to speak, and very naturally Cleveland got the second exposition, because it was the largest industrial center of the state. That exhibition—absolutely as a state proposition—is to be repeated in January, a very large, comprehensive exhibition of the safety devices, and not only safety but industrial matters, along the line of lighting and also prevention of diseases.

Now if this Council will meet in Cleveland, as it should, next October, it will be a very important prelude to the exposition which is to be held in January. I hope the Executive Committee will give my resolution its very earnest thought and consideration.

## DETROIT.

MR. J. M. EATON: Mr. President, I move the adoption of Mr. Tener's resolution, with the understanding that it be referred to the Executive Committee. In saying so I want to say that Detroit also has a Statler Hotel, which is being enlarged and is quite some newer than the one in Cleveland. Now our Governor does not belong, and for that very reason the next Congress should come to Detroit. I think if it came to Detroit they might get the Governor. They do not need to go there, because they already have him. Also all boats are headed towards Detroit.

## NEW YORK CITY.

MR. CARL M. HANSEN: Mr. President, I have the advantage of representing a city that does not have to build any more hotels. We have ample facilities for all in the city of New York. I most strongly urge upon the Executive Committee that they give careful consideration to the holding of the next annual conference in the city of New York, and at the same time it be seriously considered whether or not it would not be wise to have in conjunction with such conference a safety exhibit which we have had every year in New York under the auspices of the American Museum of Safety. I ask the Executive Committee's kindly consideration.

PRESIDENT CAMPBELL: Gentlemen, we are deeply grateful for these invitations. It is always pleasant to the Executive Committee to know that we are welcome and to know that we have more than one or two places to consider in determining where we will hold our next Congress. It is a very gratifying thing to know that there are so many cities that are interested in the purposes of this organization to such an extent that they desire to have us with them. We appreciate your invitations—Mr. Tener, Mr. Eaton and Mr. Hansen—and I think the suggestions should be noted as received and a motion made that the several invitations be referred to the Executive Committee for their consideration. That would be the regular course to pursue, as suggested by Mr. Tener. If such a motion is made I will be glad to put it.

MR. OTTO C. GEIER: I move that the invitations be presented to the Executive Committee, and speaking upon Mr. Tener's mo-

## DETROIT

All boats are headed toward Detroit—and the Fifth Annual Congress of the N. S. C.

tion, I come from the rival city of Cincinnati, but at this time I will not grant all the things he said about Cleveland, of course, but I want to join him in urging that this conference come to Cleveland next year. I am sure that Ohio is warm on the subject of industrial welfare, and I am sure this will be stimulated next year by going to Cleveland.

PITTSBURGH.

MR. GREENWOOD (Youngstown, Ohio): No representative here from Pittsburgh has urged the claims of that city for the next meeting. The question of bringing the proceedings of this Congress to the attention of the workingman should be considered in selecting a place for the next meeting and I do not think that a more desirable place could be selected, if that be taken into consideration than the city of Pittsburgh. I am not authorized as a member of an industry located in that city to invite you there, but I urge that you take into consideration, along with the others, the argument of the great number of workers in the Pittsburgh district.

PRESIDENT CAMPBELL: Thank you. It will be done, Mr. Greenwood. The motion has been made that the matter of these suggestions be referred to the Executive Committee. (The motion was put to a vote and carried.)

Is there any further discussion desired?

MR. MARTIN: Mr. President, I just wanted to make one suggestion. I come from Canada. I have not heard any other voices from there, and I am not looking for the convention next year. But I hope that there is a good time coming when this Congress will be called international (applause), and when that good time comes I hope we will see this intelligent body meet in Canada. As I come from the good City of Hamilton—where there are some \$60,000,000 of good United States money invested and we have many splendid citizens there from this country—I am sure they will be glad to

give you a splendid welcome and a glad hand. I do not ask for the convention until after the war is over, then come over and join us with peace and happiness. (Applause.)

PRESIDENT CAMPBELL: Are there any other suggestions? Are there any remarks to be made on the motion?

TORONTO.

MR. WYSE (Toronto): Mr. President, I would like to suggest that when that time comes and we have peace that Toronto have due consideration.

PRESIDENT CAMPBELL: I may say for the information of the members that there are this year seven representatives from Canada at the Congress and we are hoping that we may have more next year. (Applause.) I think if the time shall ever come when we can feel that Canada is with us on this matter that there will never be any backwardness on the part of the United States members in joining with the Canada members in changing the name National Safety Council to International Safety Council. (Applause.)

Mr. Cameron calls my attention to the fact that I might just as well let you know that we are almost international in character, in that we have members in Australia, China, Japan, India, Scotland and England. Glasgow is corresponding now, Mr. Cameron says, about forming a Local Council. (Applause.)

EL PASO.

MR. KYLE (El Paso, Texas): I see that the East is well represented and I want to offer a hearty invitation to come to the West, or Southwest, especially as I represent the Southwest and it seems, as this is the National Safety Council, the largest safety organization I know of, it would be fitting that they should come to the largest state in the Union, and in that way they might reach El Paso,

## **TORONTO**

**"There will never  
be any backwardness  
in changing the name  
to the International  
Safety Council."**

as the largest city in the largest county in the largest state in the United States. (Applause.)

PRESIDENT CAMPBELL: Gentlemen, the motion has been made. All those in favor will signify so by saying aye; contrary minded, no. The motion is carried and the question will be referred to the Executive Committee.

Is there any new business to be brought before the members before adjournment?

MR. WILSON: Mr. President, I have no new business to bring before the convention but we have with us a delegate, our Vice-President, Mr. Palmer, to that great Safety Congress which was recently held in San Francisco, and if, in the wisdom of the President, there is time for it, I believe that many of us might like to hear in a few words from Mr. Palmer something of the accomplishment of that Congress.

PRESIDENT CAMPBELL: Gentlemen, what is your pleasure? Shall Mr. Palmer be given the floor or is the hour too late? The motion is made that Mr. Palmer be given the floor for three or four minutes. All those in favor signify so by saying aye; contrary minded, no. Mr. Palmer will take the platform instead of the floor.

#### REPORT OF DELEGATE L. R. PALMER.

MR. L. R. PALMER: As Mr. Wilson said, we were both at San Francisco attending the Local Council's conference in connection with the Panama Pacific International Exposition, which was also held under the auspices of the California Industrial Accident Commission. They had three days' sessions there and heard some very good papers. They had some lively discussions and I am sure that when it is put in written form that it will be a valuable contribution to the literature sent out by our national body.

Along with that, and under the auspices of the National Safety Council, was held the Red Cross First Aid and the American Mines' Safety Association mine-rescue demonstrations, both of which it was my pleasure to assist in and officiate at, and I would like to say here what I neglected to say there, that it was one of the finest demonstrations of real humanitarian effort that I have ever seen. Those



miners from the mines, and particularly from the West—there being only one company, as I understand, from as far east as Illinois—they did work there that the surgeons, the trained surgeons, could scarcely equal in some of our best hospitals. It so happened I met a young surgeon coming out on the Canadian Pacific who landed in San Francisco, and I met him again as a judge at the first-aid demonstration. He said: "Palmer, I tell you that half of the doctors in the Johns Hopkins Hospital could not equal the work that is being done by those men." It is safe to say that there is many a life being saved through their efforts.

Now those men are training hard, three and four nights a week, after their day's labor, just for the work that we are all interested in and working for. An opportunity was given me at San Francisco to pay that tribute, but, owing to a misunderstanding as to who was really to make the presentation and the remarks there, I neglected to do it. I want to go on record as saying that that is one of the best pieces of work that I have ever seen.

In the six or seven days that I was in San Francisco I presided or spoke before some ten safety meetings. In behalf of the National Safety Council it was my pleasure to receive for the National Safety Council the commendatory medal issued by the directors of the International Exposition, and I only wish that I had had the eloquence of our President to have accepted it in the proper way and befitting to our National Council.

On the way to San Francisco I stopped off with my father and mother in Tacoma, and while there, with the assistance of some of the members of the Industrial Commission, we organized a Local Council at Tacoma, Wash. They are doing a splendid work out there. They are co-operating with the Red Cross, who has a man in the lumber industry and going into the lumber camps, that is not only teaching first aid, but through his membership in the National Safety Council is one of the best and most effective safety boosters and safety talkers that I have ever seen. In one of the largest mills on the Pacific Coast he talked before a meeting of workmen of over 600 men. The representative of the American Red Cross is going to send other men into the safety field if we will just co-operate with him in teaching them the necessary safety work. It is a big country out there and it is hard to cover it in three minutes. (Applause.)

## **Mine Safety**

**The first aid and mine rescue work of the A. M. S. A. will be continued by the National Safety Council.**

**PRESIDENT CAMPBELL:** Gentlemen, I want to call your attention to one thing that we could not emphasize in our address and that was that the work that has been done by the American Mine Safety Association in the matter of this first aid and mine rescue contests will be carried on in the Mining Section of the National Safety Council and there will be up for consideration by our Executive Committee the matter of enlarging that matter of contests to include,

so far as the first aid is concerned, all of the industries as well; so that we hope that we may enlarge that field of activity, if our plans prevail, by having those contests under the auspices of this association.

Is there anything further to be brought up as new business?

**MR. SINN:** Mr. President, if I may talk for just one moment, I want to go on record as saying that the Lehigh Valley Local has started drilling first-aid teams. Every night we have a number of workmen coming from the industrial plants that are in the membership of the Lehigh Valley Local, and these men are being trained by a surgeon and physician who is a member of the National Guard of the State. We hope to have a meeting early in the spring. I think it is work that all the locals should follow.

**PRESIDENT CAMPBELL:** It is a splendid idea, and work that should be submitted to the local council.

Remember that if we adjourn at this time it is the final adjournment with reference to matters that can be brought up in accordance with the provisions of our constitution and by-laws, so that if you have anything to say do it now or forever after hold your peace as far as the meeting of members is concerned this year. If not a motion to adjourn will be in order.

On motion the meeting adjourned.

## LOCAL COUNCIL REPORTS

### MAHONING AND SHENANGO VALLEY LOCAL COUNCIL.

YOUNGSTOWN, Ohio, July 19, 1915.—Mr. W. H. Cameron, Secretary and Treasurer, National Safety Council, Chicago, Ill. My Dear Mr. Cameron: Herewith find the Annual Report of the Mahoning and Shenango Valley Local Council No. 2 of the National Safety Council, for the year ending June 30, 1915.

Regular meetings of the Council were held July 21, 1914; Nov. 17, 1914; Dec. 15, 1914; Jan. 19, 1915; Feb. 16, 1915; March 16, 1915; April 20, 1915; May 18, 1915, and June 15, 1915. In addition, special meetings were held on Oct. 6, 1914; Dec. 1, 1914, and Dec. 8, 1914.

On June 16, 1914, a dinner was given at the Ohio Hotel, at which about 100 persons were present. The principal speaker was Mr. Duffy, a member of the Industrial Commission, who spoke on the safety work of the commission, and the difficulty they were having in securing the right kind of man for safety director, to have charge of the accident prevention work under the commission. Dr. Sol. Hartzell, a member of the State Commission for the Blind, had an illustrated talk on the "Conservation of the Vision."

The council has had up with the State Board of Health the matter of making a survey of the state looking to the more complete record of persons affected with trachoma. We have been informed that it is the intention of the State Board of Health to take this matter up as soon as funds can be secured to do so.

A second dinner was given on March 30, 1915, at the Hotel, Ohio, at which time there were about 200 present. The principal speakers were, Mr. W. W. Fitch of the Goodrich Rubber Company, Dr. Mock of Sears, Roebuck & Co., Dr. Sherman of the Carnegie Steel Company, and Dr. Chaney of the Department of Labor. The subject for discussion at this dinner by the speakers was

"Physical Examination of Employees." It was a most enthusiastic meeting.

A public meeting under the auspices of the Council was held at Sharon, Pa., on April 9, 1915, at which there was an attendance of over 800. This was addressed by Mr. Kennedy, our President; Mr. Warnock, our Vice-President, and Dr. McCurdy, the Chief Surgeon of the Youngstown Sheet and Tube Co. It is the intention of the Council to hold these meetings more frequently, as this one demonstrated the enthusiasm that could be aroused by such meetings.

Arrangements have been made to have Mr. Victor T. Noonan, the safety director for the Industrial Commission of Ohio, address a number of manufacturing plants on safety work, but owing to meetings of the State Safety Committees in Cleveland, this was postponed to a later date.

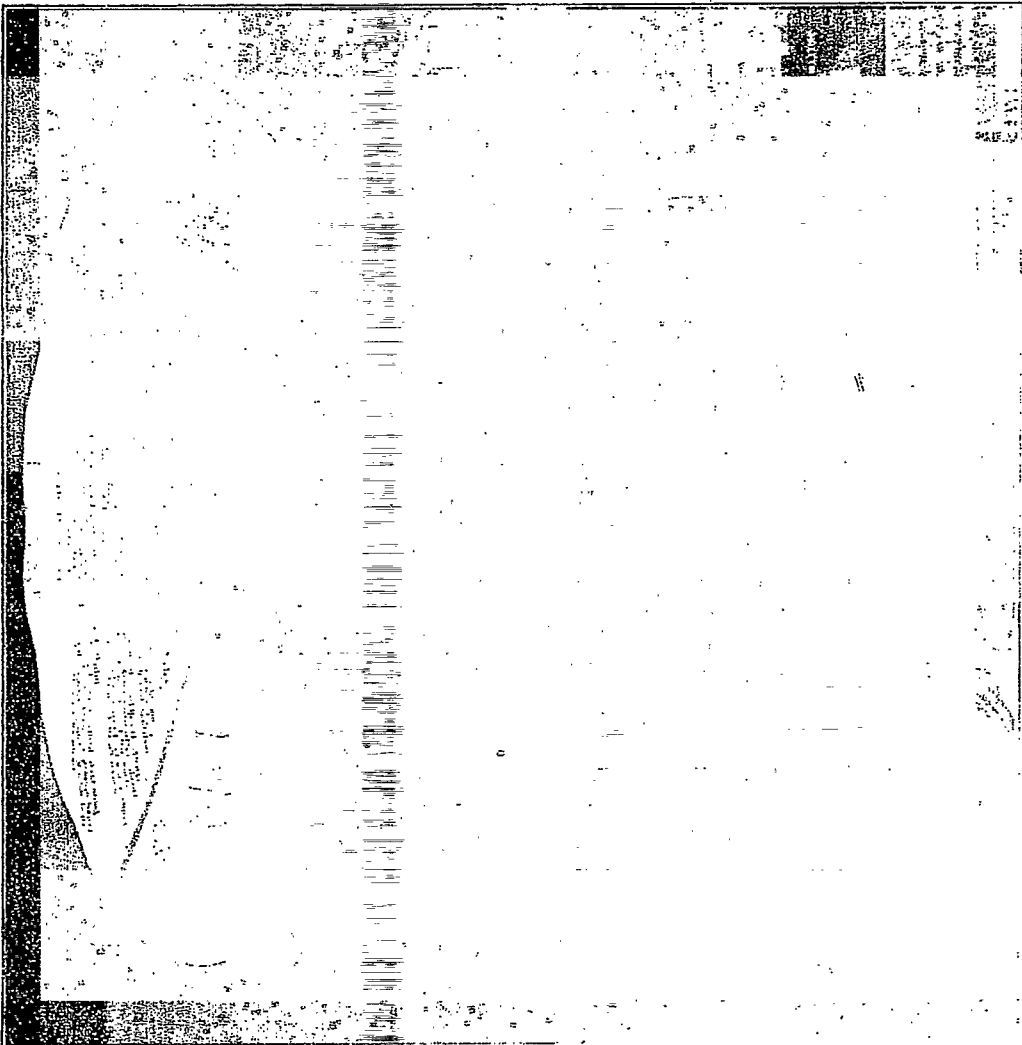
During October, November, and December, five special meetings of the Council were held to discuss rules to be proposed to the Committees having in charge the formation of safety rules to be promulgated by the Ohio Industrial Commission. Invitations to these meetings to the number of 500 had been sent to firms in Northeastern Ohio and the attendance at some of these meetings ran as high as eighty. The discussions brought up by the rules proposed were most instructive and the work performed was a great help to our President, Mr. Kennedy, who is a member of the committee appointed by the State Industrial Commission to formulate its safety rules.

A number of the members of the Council had been requested to address various meetings at different places.

The Council participated in the First Annual Exposition of the Ohio Industrial Commission, and had a booth that was decorated with photographs and safety devices contributed by various members of the Council.

At the next exposition of the Industrial Commission, to be held at Cleveland, arrangements have been made by the Council for the use of a small committee-room, which will be furnished as a rest and lounging room, where persons from the Local Council, with their friends, can go for rest while attending the convention.

Various matters pertaining to public safety have been taken up with the city or county authorities.



(In background)--BULLETIN BOARDS

(In foreground)--"ROUND TABLE" PLAN FOR LOCAL COUNCIL MEETINGS

Educational Safety Exhibit, National Safety Council Annual Congress, 1915



The Council has made a slow but prosperous growth during the year, and it is hoped that the coming year will see a material increase in membership and effort looking to the promulgation of the work of the National Safety Council. Very truly yours,

J. M. WOLTZ, Secretary Local No. 2.

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CHICAGO LOCAL COUNCIL.

HARRY J. BELL, SAFETY INSPECTOR, CHICAGO & NORTH WESTERN RAILWAY, PRESIDENT.

Safety First is not a question of dollars and cents. It is an honest, earnest endeavor to wipe out the accident business. If, by doing so, money is saved, certainly that is an honorable thing to do.

Any man who does not do everything consistently possible to help the cause of Safety First, at every opportunity, is not performing his full duty to himself, his fellow employes or the company which pays him to do his work in a safe manner.

When men come to appreciate that their lives and their limbs are their most valuable assets—and the American workman is rapidly reaching that understanding—they will of their own accord eliminate accidents.

In our work in Chicago Local No. 3 of the National Safety Council we have endeavored to impress these facts on the workmen, employers of labor, and the men who are devoting their thought and energy to the conservation of human life and limb. Because of the co-operative and efficient work done by the officers and friends of Chicago Local we feel that we have accomplished in a measure at least what we set out to do.

Our Council has each month held an open meeting, generally with a very good attendance, and we have reached a great many people through every available channel. How much good we have done is best indicated by the fact that the safety movement in the district with which we are immediately concerned has spread quite thoroughly and consistently, and the companies with whose records we

## Local Councils

The work of the Local Councils is one of the most important functions of the National body.

are familiar have very largely reduced their accidents. And that is, logically, the real result we are striving to obtain.

With our knowledge of the tremendous possibilities of the National Safety Council, and our own ambition to make Chicago Local No. 3 stand out as pre-eminent, we hope to be able to do much more to promote that good work.

Dec. 12: Fort Dearborn Hotel, eight-five present. Speaker, George Shepard, Illinois Steel Com-

pany. Motion pictures shown by H. L. Brownell. Round Table.

Jan. 13: Fort Dearborn Hotel, forty present. Alexander Shane, speaker. Address also by Mr. Seacord, representing Cook County Coroner. Round Table Discussion. Motion pictures.

Feb. 16: City Club. Address by Arthur T. Morey. Discussion. Motion pictures. Attendance of about two hundred.

March: Members' meeting. Address by R. W. Campbell. General discussion. Attendance of seventy-five.

April 20: City Club. Address by D. R. Kennedy of Youngstown. Motion pictures. Music. Round Table. Attendance, 150.

May 25: City Club. General Round Table Discussion. Talk by Alexander Shane. Attendance of one hundred. Motion pictures.

September: Members' meeting. General discussion in connection with Fourth Annual Safety Congress. Attendance of seventy-five.

Oct. 13: General meeting. Address by R. W. Campbell. Discussion. Plans for Annual Congress. Report of Committee on Transportation and Hotels. Report of Committee on Nominations.

In addition to this there were held almost every month a meeting of the officers of the Council, constituting the executive committee, to discuss ways and means of furthering the work of the Council. These were general luncheon meetings, at which the attendance varied from ten to twenty-five.



## PEORIA LOCAL COUNCIL.

PEORIA, Ill., July 21, 1915—Mr. W. H. Cameron, Secretary, National Safety Council, Dear Sir: On May 10, 1915, the Public Safety Committee of the Peoria Association of Commerce was organized, Mr. Avery having been appointed chairman. Mr. R. S. Wallace, vice-president of the Local Council is also vice-chairman of this committee. Mr. R. W. Bailey of the Peoria Railway Company, Mr. J. Wachenheimer of Callender & Co. and Mr. Walter B. Wilde of the Hart Company, who are members of the Peoria Local are also members of this committee. The writer is secretary of the committee.

A copy of the minutes of the meeting of May 12 was sent to you. There have been no further meetings of either the Public Safety Committee of the Local Council, but the co-operation of these two bodies with county and city officials is gradually making the city streets safer.

At the forming of the Public Safety Committee it was decided to work right along with the Peoria Local Council in all ways possible. There has not been much done in the way of industrial safety generally, as each of the members of the Local Council was busy getting his own organization into shape and on a practical basis. However, several discussions have been held among the members concerning public meetings and no doubt these will be held during the next year.

I am enclosing herewith copy of the Rules for the Regulation of Street Traffic issued by the Police Department of the City of Peoria. White lines have been painted on the down-town streets marking off the safety lanes for pedestrians and automobiles. The police are giving every effort to enforce the rules and regulations and pedestrians and drivers are falling in line very nicely. Very respectfully yours,

L. M. STACY, Secretary.

**PROGRESS**

Each member was busy getting his own organization into shape on a practical basis.

## LEHIGH VALLEY LOCAL COUNCIL.

Lehigh Valley Local Council No. 5 can report progress during the twelve months ending June 30, 1915. During this period, the membership of our Local has been increased from twenty-eight to forty industrial companies. All of these companies are busily engaged in promoting Safety First as outlined by the National Safety Council and all are showing active interest in the regular Local Council meetings.

It was thought advisable during the year to change the time of regular Local Council meeting to the second Friday in the month, these meetings coming bi-monthly instead of monthly. This was not done, however, because of lack of interest, but the idea was to work up larger subjects for discussion at the regular meetings which was not possible when these meetings were held more frequently.

In the fall of last year Lehigh Valley Local Council No. 5 assisted the Department of Labor and Industry of the State of Pennsylvania in placing a formidable display of safety devices at the various fairs in Eastern Pennsylvania. Some of the members of our Local were present at these exhibits and explained to many interested persons the work of the National Safety Council. Literature was distributed and as a result several memberships were obtained.

Similar co-operation was given the State Department at the time of its Annual Safety and Welfare Conference at Harrisburg, at which time a large booth was set up at the Exhibition Hall showing the organization of the Pennsylvania Locals of the National Safety Council. An active campaign was made for new members at this conference, the result of which was quite gratifying.

The second Annual Public Safety Meeting of Local No. 5 was held in the Lyric Theatre, Allentown, on April 21, 1915. This meeting was largely attended and was addressed by Commissioner J. P. Jackson of the Department of Labor and Industry of Pennsylvania and Mr. R. W. Campbell, President of the National Safety Council of Chicago, Ill. Some of the latest safety films were used at this meeting and were, as usual, very effective.

At the present time the members of Local No. 5 are endeavoring to work up and complete an efficient first aid system in each of their respective plants, sending men from their respective organizations to attend first aid classes under the supervision of qualified

surgeons. These men are to be formed into teams and as soon as possible Local No. 5 will hold a competitive first aid meet for its members, the winning team receiving a silver cup, which will be held for one year. In addition, individual prizes will be given each member of the successful team. There is a keen spirit of rivalry between the various companies making up the membership of Lehigh Valley Local Council No. 5 and the meeting is looked forward to with a very great amount of interest. Respectfully submitted,

GEO. T. FONDA, Secretary and Treasurer.

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#### PITTSBURGH LOCAL COUNCIL.

There were five conference meetings of the Council held with an average attendance of 110. A large percentage of the persons attending these meetings were men employed in the industries in the Pittsburgh district. Although at two of our meetings over a thousand invitations were sent to business men and those not connected with industries in which safety work is well-established there were very few responses. It might almost be said that those attending the meetings were men on safety committees and those who were directly responsible for the safety work in the plants where they were employed.

At all of the meetings there were at least two speakers, their subjects being such that should have excited general interest. Following the speakers a discussion was held which generally took the form of a round-table meeting.

The list of speakers and their subjects follow:

R. L. O'Donnel, Pennsylvania Railroad, "Work of the Pittsburgh Local Council."

W. H. Cameron, Secretary and Treasurer, National Safety Council, "Work of the National Safety Council."

L. R. Palmer, Pennsylvania Department of Labor and Industry, "Some Safety Work the Boy Scouts Are Doing."

S. B. McCormick, University of Pittsburgh, "The Safety Movement."

C. B. Auel, Westinghouse Electric and Manufacturing Company, "Education For Safety."

## Preparedness

To avoid accidents it is necessary to be able to foresee the results of certain causes.

C. E. Ralston, Jones & Laughlin Steel Company, "Organization for Safety."

W. A. Hall, Yale & Towne, Manufacturing Company, "Safe Practices in the Use of Portable Hoisting and Conveying Units."

J. D. Ayres, National Tube Company, "Safety Practices in the National Tube Company."

J. W. Welsh, Pittsburgh Railways Company, "Safety Work of the Pittsburgh Railways Company."

J. B. Donnelly, Pittsburgh Railways Company, moving pictures showing familiar scenes about the streets of Pittsburgh and dangers to be avoided, with thoughtless habits which endanger others.

T. H. B. Patterson, Public Safety Department, City of Pittsburgh, "Work of the Pittsburgh Department of Public Safety." Illustrated by lantern slides.

John Price Jackson, Pennsylvania Department of Labor and Industry, "Safety and Welfare Work Being Done in the State of Pennsylvania."

L. H. Burnett, Carnegie Steel Company, "Welfare Work of the Carnegie Steel Company."

"Organization for Safety" was the subject of the one round table meeting of any considerable length which we had.

A committee was appointed by the Council to gather lantern slides and blue-prints of safety appliances that had been constructed by companies in the Pittsburgh district. The idea of this committee was to get together working drawings of such appliances, so that plans that had been made by one company of appliances which were found to give satisfaction, would be available to other companies and thereby cut down the expense of studying these problems. The committee was composed of the following members: C. B. Auel, Westinghouse Electric and Manufacturing Company, Chairman; F. P. Feehan, Pennsylvania Department of Labor and Industry; C. E.

Ralston, Jones & Laughlin Steel Company, and E. M. Peake, Carnegie Steel Company.

The committee reported at the May meeting. Their report was very enthusiastically received.

The following is a list of the members of the Pittsburgh Local Council: Lee M. Unger, H. T. Bennett, H. A. Berg, David Pryde, H. M. Bailey, C. S. Frye, F. F. Slick, R. C. Taylor, E. Thomas, L. H. Burnett, E. M. Peake, W. G. Thuring, C. F. Albrecht, H. P.

Shields, D. R. Ferguson, G. D. Chamberlain, Thomas D. Nelson, William Stewart, J. W. Wyke, A. F. Coulter, all of the Carnegie Steel Company; C. B. Auel, D. C. Pultney, of the Westinghouse Electric and Manufacturing Company; L. A. Way, Duquesne Steel Foundry Company; W. S. Tallman, J. A. Reninger, J. M. Baum, J. W. Edmonds of the Central Tube Company, C. E. Zortman, R. L. O'Donnel of the Pennsylvania Railroad Company, W. J. Hart, C. E. Ralston of Jones & Laughlin Steel Company, Chas. H. Hubbard, T. H. B. Patterson of the Department of Public Safety, E. W. Pitman, McClintic-Marshall Construction Company; W. T. Gauss, Bell Telephone Company; H. M. Wilson, U. S. Bureau of Mines; McConway-Torley Company; H. H. Laughlin, Jones & Laughlin Steel Company; George W. Case, University of Pittsburgh; J. Denny O'Neil, Commissioner Allegheny Company; A. H. Thompson, Wallace M. Reid & Company; C. B. Connelley, Carnegie Institute of Technology; H. H. Robertson, Asbestos Protected Metal Company; S. B. McCormick, University of Pittsburgh.

## Preparedness

And to make preparations to forestall unexpected events.  
Be sure of Safety.

### DETROIT LOCAL COUNCIL.

DETROIT, Mich., Sept. 27, 1915—Mr. W. H. Cameron, Secretary and Treasurer, National Council for Industrial Safety. Dear Mr. Cameron: In accordance with the provisions of Section 4, Article 9 of the Constitution and By-Laws of the National Safety Council,

I beg to submit the following report as Secretary and Treasurer of the Detroit Local Council No. 8 for the period covering date of Sept. 1, 1914 to Sept 1, 1915.

Membership—Total number of firms and individuals not representing firms, fifty-seven.

The unusual success of the safety movement in the city of Detroit through the able efforts of the National Safety Council with the assistance given by Detroit Local Council No. 8 had been a source of gratification to the officers and members of the Local Council. Safety in this city has taken wonderful strides within the past year, particularly with those who have become members of the National Safety Council. The constant efforts of the National Safety Council to educate the employers has in turn resulted in the education of the employes and the accidents in many plants which the Secretary has had the opportunity to observe, while showing a fair percentage of reduction in all accidents, has shown a greater percentage of reduction in major accidents, and it is hoped that with a continuation of the efforts that have been made and aided by the campaign of education that has been formulated by the National Safety Council, that eventually our major accidents at least will be practically eliminated.

On Sept. 1, 1914, Detroit Local Council No. 8 had its first annual meeting and the following officers were elected and committees appointed: L. B. Robertson, President; James V. Cunningham, Vice-President; E. D. Alexander, Secretary and Treasurer; E. S. Raymond, Chairman Membership Committee, and J. M. Eaton, Chairman Program and Publicity Committee.

Subsequently, on Nov. 6, 1914, a new committee was formed on safety exhibits and Mr. E. G. Allen was appointed chairman of that committee.

It was impossible to abide by the contemplated schedule of the meetings each month of the Detroit Local Council No. 8 on account of the fact that the Legislature of this state was in session during most of the months of the winter season, at which session so many matters were taken up of essential importance to manufacturers that it was necessary for the officers of the Local Council to spend most of their time in Lansing.

Through the efforts of Mr. J. M. Eaton, on Dec. 4, 1914, we

received an invitation from Mr. Byers H. Gitchell, Secretary of Detroit Board of Commerce, to hold our safety meetings in the magnificent new building of that organization.

The first meeting of Detroit Council No. 8 of the National Safety Council was for the purpose of a general discussion among the members to get the members' ideas of a contemplated program for the ensuing year. The meeting was presided over by Mr. L. B. Robertson, President of the Local Council and the attorney for the Ford Motor Company. He addressed the meeting and spoke principally of the success of the annual meeting of the National Safety Council, held in Chicago, Ill., in Oct., 1914. He was followed by Mr. J. M. Eaton of the Cadillac Motor Car Company, who outlined the program for the ensuing year, in which he made it clear that the efforts of the preceding year to interest the employers had been largely successful and that for the year 1914-15 our efforts should be concerned with interesting the employees. At this meeting Mr. George J. Mobley of the Solvay Process Company tendered us the use of the Solvay Gymnasium for the purpose of holding neighborhood meetings and Mr. F. H. Hadrich of the same company assured us of his earnest co-operation in every possible way to strengthen interest in the safety movement.

Upon the motion of Mr. Hadrich, duly seconded and unanimously carried, the Secretary was instructed to forward to the Hon. Fred L. Keeler, Superintendent of Public Instruction of the State of Michigan, a resolution acknowledging the great value of his campaign for the prevention of accidents and injuries.

Our second meeting was held on Jan. 7, 1915 at the Detroit Board of Commerce. We issued some 1,200 tickets for admission, passing the tickets around to the foremen of the various organizations who were represented and in consequence at this meeting we had an attendance of approximately 800 men who are actually in contact with the workmen whose education means so much to the success of our organization.

This meeting was presided over by Mr. A. H. Young, Supervisor of Safety and Labor of the Illinois Steel Company of Chicago, Ill. Mr. Young delivered a heart-to-heart talk to the men present, which accomplished far-reaching beneficial results and it was the consensus of opinion among the men present that Mr. Young had delivered the

## Convention City

The Executive Committee of the National Safety Council has awarded the 1916 convention to Detroit.

most practical and pleasing address that was possible under his subject of "How to Interest Workmen in Safety."

Following Mr. A. H. Young's address, Mr. J. M. Eaton presided over a short round table discussion in which ideas on the subject of the evening were freely discussed.

Our next meeting was likewise held in the auditorium of the Detroit Board of Commerce on April 5, 1915, at which meeting Mr.

Dudley R. Kennedy of the Youngstown Sheet and Tube Company of Youngstown, Ohio, spoke on "The Future for Safety First." This meeting was presided over by Mr. J. M. Eaton and it was preceded by a dinner. Some 300 people attended this meeting and Mr. Kennedy's address showed such a comprehensive grasp of the subject as to arouse great enthusiasm and interest.

This meeting was likewise honored by the presence of Miss Gertrude Beeks, Secretary of the Welfare Department of the National Civic Federation, who gave us a short address, expressing interest in our efforts and giving us valuable information concerning the organization which she represents.

It is to be especially noted that during the week of our meeting of April 15, 1915, we had a photographic safety exhibit loaned to us by the National Safety Council, which was on exhibition in the lobby of the Detroit Board of Commerce. This exhibit was very interesting and created an interest in the principles of Safety First among members of the Board of Commerce and of the National Safety Council which could not help being of value.

It has been a source of great disappointment that owing to the reasons before set out we were unable to have a greater number of meetings during the past year, but it is to be hoped that during the present year we shall be able to carry out the program originally contemplated, namely that of a meeting each month. Respectfully submitted,

E. D. ALEXANDER, Secretary and Treasurer.



**GRAND RAPIDS SAFETY  
COUNCIL.**

GRAND RAPIDS, Mich., Aug. 6, 1915—Executive Committee, National Safety Council, Chicago, Illinois. Gentlemen: Herewith beg to hand you report of the activities of Grand Rapids Safety Council No. 13 for the season 1914-1915.

**SAFETY RALLY**—The activities of the Grand Rapids Safety Council No. 13 for the season 1914-1915 were opened with a safety rally, which was held Nov. 10, 1914, at the Grand Rapids Association of Commerce rooms. This meeting was in the form of a banquet, and was addressed by Mr. R. W. Campbell, President of the National Safety Council, who outlined fully the work of the National Safety Council, what it had accomplished thus far, and what its plans were for the future. Rev. A. W. Wishart of Grand Rapids spoke on the "Moral Phase of the Safety Movement," and the impetus given the Safety movement in Grand Rapids by the addresses of these two speakers was very gratifying to the local officers. The meeting was well attended, there being about 250 present.

**FIRST ROUND TABLE MEETING**—The first round table meeting was held Dec. 2 and was conducted by Mr. A. H. Young, Supervisor of Labor and Safety of the Illinois Steel Company, Chicago. Mr. Young also addressed the dinner meeting of the committee of 100 of the Grand Rapids Association of Commerce.

**SECOND ROUND TABLE MEETING**—The second round table meeting was held Dec. 1 and was conducted by Mr. E. K. Pritchett, President of Grand Rapids Safety Council No. 13.

**THIRD ROUND TABLE MEETING**—The third round table meeting, held Feb. 11, was conducted by Mr. E. A. Meves, Secretary of Grand Rapids Safety Council No. 13.

**FOURTH ROUND TABLE MEETING**—The fourth round table meeting,

**Convention City**

**Detroit the Beautiful — Michigan the Ambitious — Arrange your vacation for October 16 to 21, 1916.**

held May 4, 1915, was conducted by Mr. R. K. Merrill, Safety Supervisor of the American Seating Co., Grand Rapids.

Copies of the Minutes of these meetings having been furnished in detail to the Secretary of the National Safety Council.

**ADDRESS BY C. B. SCOTT**—On Jan. 6 Mr. C. B. Scott of the Bureau of Safety of the Middle West Utility Co., of Chicago, addressed a meeting of over 200 men of Grand Rapids, who were allied with public utilities. The meeting was in charge of Mr. J. J. McVain of the Grand Rapids-Muskegon Power Company, and was presided over by Mr. E. K. Pritchett, President of Grand Rapids Safety Council No. 13.

**PUBLIC SAFETY CAMPAIGN**—In public safety work the officers of the Local Safety Council created considerable interest through stereopticon lectures delivered at several of the churches, engineers' associations and other places in this city. Twelve lectures in all have been given.

During the week of Jan. 15 a public safety campaign was instituted for the education of school children and adults, and Mr. C. L. Brownell of Chicago assisted very materially by delivering stereopticon lectures at several of the schools and churches as well as to the employes of the street railway company of this city. These meetings, eight in number, were all well attended.

**WORKINGMEN'S MASSMEETING**—On Friday evening, Feb. 26, a large massmeeting of workingmen, addressed by Mr. James A. Kennedy, member of the Michigan Industrial Accident Board, was held at the Press Hall in this city. At this meeting two moving picture films, "A Workingman's Lesson" and "An American in the Making," are shown.

**CO-OPERATION WITH OTHER ORGANIZATIONS**—The officers and members of the Grand Rapids Safety Council co-operated with the Public Safety Committee of the Grand Rapids Association of Commerce in all its activities and assisted materially in drafting the new traffic ordinance recently adopted by the city of Grand Rapids.

Have also co-operated with the Vigilance Committee of the Grand Rapids Automobile Owners' Association and a marked reduction in the number of automobile accidents due to careless driving has been noted.

Efforts have been made to interest the Builders and Traders' Exchange in incorporating a Safety Department in their Exchange, and while the safety movement has been looked upon with favor by this exchange no definite action has been taken as yet regarding the installation of a permanent safety department in their exchange.

**NEW MEMBERS**—Thirty-seven new members were added during the year, including the Board of Education, and four firms from cities adjacent to Grand Rapids.

**LAST MEETING**—The meetings of the season were brought to a close by a banquet which was held at the Morton House Tuesday, April 13, and was attended by about 150 factory managers and superintendents, several of whom came from Travers City, Cadillac, Muskegon, and other Michigan cities. Mr. Prichett, President of Grand Rapids Safety Council No. 13, presided at the meeting, which was addressed by that able propounder of safety counsel, Mr. C. W. Price of Wisconsin. His address was exceedingly interesting and those who travelled many miles to hear him felt well repaid for their trip.

The last half hour of the meeting was devoted to round table discussions and many interesting experiences in safety work were discussed. The minutes in detail for this meeting were furnished to the Secretary of the National Safety Council.

**SECOND ANNUAL MEETING**—The second annual meeting and election of officers is to be held the third Tuesday in September. This being our first year of organized safety activity, and as many interesting problems presented themselves, and from experiences gathered through various round table and other meetings conducted throughout the season, we feel assured that the season of 1915-1916 will be a very successful one.

**CONCLUSION**—We beg to assure the members of the Executive Committee, as well as the officers of the National Safety Council, that an organized effort will be made during the coming season to materially increase the membership of Grand Rapids Safety Council No. 13.

Yours for Safety,

E. A. MEVES, Secretary.

## Clean Places

Cleanliness is necessary everywhere.  
Fires do not start in clean places.

### TOPICS DISCUSSED AT ROUND TABLE MEETINGS.

First Round Table Meeting—"How to Promote Safety Organization in Plants," "Methods for Educating Workmen in Accident Prevention." Meeting closed by showing stereopticon slides of modern guards, etc.

Second Round Table Meeting—"What Methods Do You Employ to Prevent Accidents Caused by Dangerous Piling of Materials, Falling Objects and Slipping Ladders?" "What is Your Method of Keeping Aisles Cleared?" "How Do You Protect Men Unloading or Loading Cars Against Injury?" "What Method Do You Employ to Prevent Workmen Starting a Machine on Which Some One Is Making Repairs?" Meeting closed by showing stereopticon slides showing the right and wrong way of doing things.

Third Round Table Meeting—"How to Go About Safeguarding," "First Aid and Medical Attention."

Fourth Round Table Meeting—"Do You Prevent Accidents by Instructing Workmen Regarding Dangerous Practices?" "Do You Give Publicity to Accidents Which Have Happened?" "What Are You Doing to Prevent Loss Due to Unsanitary or Dirty Conditions?"

### ROCHESTER CHAMBER SAFETY COUNCIL.

OFFICERS: President, J. A. Robertson; Vice-President, Dr. John F. Forbes; Secretary, W. Roy McCanne; Assistant Secretary, Chas. E. Hall.

EXECUTIVE COMMITTEE: H. O. Alderman, Dr. Harold H. Baker, G. T. Amsden, B. Carson, Arthur Castle, E. B. DeLand, G. R. Fuller, A. I. Jones, S. J. Kearns, E. M. Lowenthal, R. A. McDougall, H. S. Moody, W. J. O'Hea, F. H. Swan, D. Symington, L. B. Somerby, L. M. Todd, P. S. Wilcox, T. H. Yawger.

**SUB-COMMITTEES:** Program, E. M. Lowenthal, Chairman; Membership, W. J. O'Hea, Chairman; Factory Safety Organization, P. S. Wilcox, Chairman; Standardization of Safeguards, L. B. Somerby, Chairman; Physical Examination, Dr. Harold H. Baker, Chairman; Public Accidents, T. H. Yawger, Chairman; Safety Education in Schools and Homes, Dr. John F. Forbes, Chairman.

On July 23 the first annual report was read and adopted by the Executive Committee and forwarded to the Secretary of the National Council in accordance with the National Council Constitution and By-Laws.

On Sept. 10 the Executive Committee approved of the suggestion that Sept. 27 be observed as Safety Sunday in the churches and the co-operation of the Ministerial Union and other associations was solicited. Arrangements were also made at this meeting for the "People's Safety Show" to be held Sept. 30 in Convention Hall.

On Sept. 29, at a meeting of the Executive Committee, plans for the Safety Show were approved and final arrangements completed.

On Sept. 30 the People's Safety Show at Convention Hall opened at 8:15 o'clock with a moving picture film entitled "The Making of a Convert." Mr. F. C. Schwedtmann, Chairman of the Accident Prevention Committee of the National Association of Manufacturers, gave an address on "History and Progress of Accident Prevention in the United States." This was followed by a motion picture film, "Assembling of an Auto," after which Mr. Ralph C. Richards, General Claim Agent of the Chicago & North Western Railway Company, addressed the meeting on "Co-operation in the Safety Movement." A new motion picture film, "Carelessness and Caution—A Fire Lesson," was then given its premier performance. Every available seat in Convention Hall was filled and many hundreds were turned away. This was probably the largest meeting ever held under the auspices of the Rochester Chamber of Commerce.

On Oct. 9 a meeting was held to discuss "Tentative Standards for

### McKinley Said:

"This Republic  
can never fail so  
long as the citizens  
are vigilant" — for  
Safety.

Safeguards," as submitted by the National Council to be considered at the Third Annual Congress held in Chicago, Oct. 13 to 15.

On Oct. 13, 14 and 15 five representatives of the Rochester Chamber Local Council attended the Third Annual Congress in Chicago.

On Oct. 29 the meeting of the Executive Committee was devoted to considering the financial condition of the Local Council, reports of various committees, and mapping out of program for winter meetings.

On Nov. 24 the meeting of the Executive Committee was devoted to arranging for the annual meeting, which, according to the Constitution and By-Laws, should be held on the first Wednesday in December, and an amendment to the Constitution and By-Laws proposed to change the name from Rochester Chamber Local No. 9 to Rochester Chamber Safety Council.

The annual meeting of the Council was held in the Chamber of Commerce rooms on Dec. 2. Reports were made by the officers, amendments to the Constitution and By-Laws approved, same officers re-elected, and the same chairmen of committees appointed for the ensuing year. A full report of the Committee on Safety Organization in Factories was made by Mr. P. S. Wilcox, Chairman of that committee, assisted by Mr. Akerly, Secretary of the committee. Recommendations of this committee were unanimously approved by the Local Council and organization charts distributed.

On Jan. 8, 1915, the Executive Committee met and made arrangements for a meeting of the entire membership on Jan. 21. Tickets were ordered printed and sent to superintendents and foremen of the plants of the various members. Plans were presented by the Program Committee for a public safety rally to be held in February. A Committee on Statistics was appointed by the President to collect figures on reduction of accidents in Rochester.

On Jan. 21 a meeting of the full membership of the Council was held at the Chamber of Commerce rooms. Mr. L. B. Somerby, Chairman of the Standardization of Safeguards Committee, submitted his report. A round table discussion of the various recommendations of the committee followed and the report was referred back to the committee to revise the specifications in accordance with results of the round table discussion. Mr. Stephen W. Tener, Manager of the Accident and Pension Department of the American Steel

and Wire Company was then introduced and gave an illustrated talk on "Safeguarding Machinery."

On Feb. 2 the Executive Committee invited Mr. R. A. Hamilton, Commissioner of Public Safety of the city of Rochester, to be present as its guest to discuss the feasibility of erecting safety signs at blind street crossings. A subcommittee was appointed to co-operate with the Commissioner and an additional subcommittee was appointed to co-operate with the Automobile Club of Rochester regarding safety signs and to report on objectionable legislation.

On Feb. 15 the Executive Committee met and further considered the matter of safety signs. Samples were submitted and a report of the subcommittee appointed to co-operate with the Automobile Club of Rochester was also presented. Program of the safety rally to be held on Feb. 23 was presented by Mr. Lowenthal, Chairman of the Program Committee, and was approved. An appropriation for making moving pictures of dangerous practices and street scenes was authorized.

A safety rally was held at Convention Hall on Feb. 23, and the following program was presented to about 2500 people:

- 8:00 P. M.—Motion Picture.
- 8:15 P. M.—Introductory remarks by President Robertson.
- 8:20 P. M.—Introduction by President Robertson of Mr. Yawger who read the report of the Public Accidents Committee.
- 8:30 P. M.—Introduction of Commissioner of Public Safety R. A. Hamilton by President Robertson.
- 8:35 P. M.—Introduction by President Robertson of Chief of Police Joseph M. Quigley.
- 8:45 P. M.—Motion Picture.
- 9:00 P. M.—Introduction by President Robertson of Sergeant A. Killip of the Rochester Police Department.
- 9:10 P. M.—Introduction by President Robertson of John Gillespie, Commissioner of Police of Detroit, Mich.
- 9:40 P. M.—Motion Picture.

On Feb. 25 the Executive Committee met and received a report from the subcommittee on safety street signs. The resignation of Mr. James Barnes of the C. T. Ham Manufacturing Company was

## DIVIDED

"A house divided  
against itself cannot  
stand." We must all  
push Safety work.

received and accepted. Mr. S. J. Kearns, Superintendent of the Rochester Division of the New York Central & Hudson Railroad, was appointed to succeed Mr. Barnes on the Executive Committee. Recommendations were made to the officers and trustees of the Chamber of Commerce to oppose certain bills which had been advanced in the Legislature.

On March 13 the Executive Committee met and considered the proposed amendments to the Constitu-

tion and By-Laws of the National Safety Council. Several matters of business were also transacted at this meeting.

On March 30 the Executive Committee met and received a report from Dr. John F. Forbes, Chairman of the Committee on Safety Work in Schools and Homes. He also submitted plans for the organization of a Junior Safety Council, using the boys' clubs of the grammar schools as a foundation. Mr. Herman J. Norton, Physical Supervisor of Schools, spoke on the subject and outlined the possibilities of safety education along these lines.

On April 15 the boys' clubs were assembled at East High School and plans for a Junior Safety Council were outlined. An exhibition of moving pictures on safety subjects was given the boys.

On April 23 the Executive Committee met and it was reported that plans for a Junior Safety Council had been submitted to the officers and trustees of the Chamber of Commerce who voted to give it their hearty approval and support. The President appointed a Ways and Means Committee to raise funds for the distribution of literature in connection with the Junior Safety Council.

On April 26 the first meeting of the Junior Safety Council was held at the Chamber of Commerce rooms. The attendance at this meeting consisted of six boys from each grammar school, who had been appointed as a safety committee. The chairman of each committee reported accidents in the neighborhood and possible means of preventing a recurrence of similar accidents. To those present this was one of the most interesting meetings that had ever been con-



ducted in the city of Rochester. It presented possibilities for great results in the future.

On May 25 the first round table discussion conducted under the auspices of the Rochester Chamber Safety Council was presided over by Mr. J. C. Parker of the Rochester Railway and Light Company. Afterwards Mr. Marcus A. Dow, Manager of the Safety Department of the New York Central Railroad, spoke on "Safety First and the Human Element."

On June 23 the Executive Committee met and considered the increase in dues for membership in the National Safety Council. The resignation of Dr. E. H. Wolcott as a member of the Executive Committee was received and accepted. Dr. Harold H. Baker, Medical Examiner of Bausch & Lomb Optical Company, was appointed to succeed Dr. Wolcott. It was decided to defer action of the raising of finances for the Junior Safety Council until September, on account of the campaign for erecting the new Chamber of Commerce Building.

The present membership of the Rochester Chamber Safety Council consists of forty-nine firms or corporations, employing approximately 23,844 workers; also eleven individuals. Accompanying this report is a complete list of members of the Executive Committee, chairmen of the subcommittee and financial report, all of which show that the Local Council is in a flourishing condition.

This is a complete report of the activities of the Rochester Chamber Safety Council No. 9 for the year ending June 30th, 1915. The officers and Executive Committee feel that something has been accomplished but that there are still greater opportunities. The increase of membership has not been as large as we had hoped, but owing to the many other activities and business depression in Rochester this year, it was felt that the time was not opportune to conduct such a campaign. The Membership Committee promises to produce results this fall, and a considerable increase in membership is expected. The Council also believes that in organizing the Junior

### French Proverb

"We hardly find  
any person of good  
sense save those who  
agree with us."

Safety Council they have originated an idea which will spread rapidly and be of great benefit in reducing street accidents and educating children to be more careful, and through them their parents, in this way reducing public accidents to a considerable extent. All of which is respectfully submitted.

J. A. ROBERTSON, President,  
JOHN F. FORBES, Vice-President,  
W. ROY McCANNE, Secretary,  
CHAS. E. HALL, Assistant Secretary.

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#### NEW YORK LOCAL COUNCIL.

New York Local Council No. 14 of the National Safety Council was granted a charter in 1914, but for various reasons, chiefly the continued absence from the City of Mr. Neill who was elected Chairman, the organization was not completed. It was considered advisable, therefore, early in 1915, thanks to the efforts of our National Secretary, Mr. Cameron, and a few members of the National Safety Council with what the organization was doing, to reorganize on a more enduring basis. Consequently, on the occasion of one of Mr. Cameron's visits to the city, March 6, 1915, an organization committee was appointed, of which Mr. Marcus A. Dow, Safety Agent of the New York Central Lines, was elected chairman. In response to Mr. Dow's invitation, which was sent to all members of the National Safety Council in New York, thirty-five attended the meeting held at the Biltmore Hotel, March 17. At this meeting by-laws were adopted and officers elected.

Under the by-laws "anyone having his residence or place of business in New York or within fifty miles of New York, where no Local Council exists, is eligible to membership," the purpose being to comprise within the scope of Local Council No. 14 not only New York City proper but its environs. It was thought that after a sufficient number of members had been secured in leading cities contiguous to New York, Local Council No. 14 would be sponsor for the organization of Councils in such localities.

The following officers were elected for the ensuing year (until January, 1916):

Mr. Marcus A. Dow, President,  
Mr. Carl M. Hansen, First Vice-President,  
Mr. Lancaster Morgan, Second Vice-President,  
Mr. L. A. Larsen, Secretary,  
Mr. G. M. Cooper, Treasurer,  
Mr. C. L. Close, Chairman, Ways and Means Committee.  
Mr. H. A. Bullock, Chairman, Publicity Committee,  
Mr. J. L. Murrie, Chairman, Membership Committee,  
Mr. W. G. King, Chairman, Program.

The first meeting of the New York Local Council was held April 20, 1915, at the Railroad Y. M. C. A., which was attended by about 125 members and others interested in the preliminary work of the New York Council. We were privileged to hear at this meeting from our National President, Mr. Campbell, on the subject "The National Safety Movement," illustrated with slides. This address was followed by a talk given by our President, Mr. Dow, on the subject "Plans of the Local Council."

After the meeting of April 20 plans were made for a second public meeting in June, but due to the rapid approach of hot weather and the absence from the city of many of our active members, it was considered wise to postpone further meetings until Fall.

Another difficulty we experienced was due to the fact that Mr. Murrie, Chairman of the Membership Committee—perhaps our most important committee—reported about this time that he would be unable to take up the work, consequently, we were left without assistance in this direction. The Local Council has been fortunate, however, in securing the services as Chairman of this important committee of Mr. Roger W. Straus, Secretary of the Labor and Welfare Department of the American Smelting and Refining Company. During the summer months this committee has been organized upon a working basis and now has nine members, all of them representing companies of considerable influence along safety lines in this vicinity.

At a recent meeting of the Executive Committee it was unanimously decided to consider each member of the Executive Committee ex-officio a member of the Membership Committee, so that as a matter of fact our Membership Committee is made up of seventeen members of the Council.

The Membership Committee has been organized and plans are being made for the fall and winter campaign. The first gun will be fired at a meeting to be called Oct. 15, the program for which, however, has not been definitely planned.

It may interest the other Local Councils to know that our Executive Committee has a regular monthly meeting on the last Friday of each month throughout the year, i. e., we do not discontinue work as an Executive Committee even during the summer months.

The membership of the National Safety Council in New York has not increased rapidly since the organization of the Local Council, chiefly because so little opportunity was given to the Membership Committee to organize and the fact that officers were not elected until just preceding the warm weather and the vacation period. So far as we have been informed, however, but one member has resigned while a number of accessions have been made. We now have approximately 95 members and 158 representatives. Our membership covers twenty-five different industries. Respectfully submitted,

L. A. LARSEN, Secretary.

*Practical Application of Common Sense  
Will Advance the Happiness, Welfare and  
Prosperity of Both Employer and Employee*

## **National Safety Council**

**General Session**

**Philadelphia, Pa.**

**October 19, 1915**

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**HON. JOHN PRICE JACKSON, Chairman,**  
Commissioner, Department of Labor and Industry, Harrisburg, Pa.

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**J**OHN PRICE JACKSON (Department of Labor and Industry): You are to be congratulated on having as your presiding officer at the beginning of this session, a man not only competent for presiding, but a man whose competence has been demonstrated as a promoter of the welfare of the industrial classes of this country.

As it happened, your regular presiding officer—not necessarily your proper one—was detained by order of the chief administrator of the state; and when the Governor calls, we obey the summons. I might add that Governor Brumbaugh sincerely hopes that the National Safety Council will do great good in Pennsylvania. He is deeply interested in the purpose of this Council and tomorrow night, at the banquet, will express himself to that effect.

The National Safety Council might be defined as an idea, a

**Lincoln Said:**

"I don't think much of a Man who is not wiser today than he was yesterday." Avoid Accidents Today.

central thought or purpose around which is gathered an organization of men. What is that idea, or ideal? It is the practical applying of common sense in a way that will advance the happiness, welfare, prosperity and safety of both the workers and the employers of this commonwealth by reducing the number of accidents that endanger life and health in our industrial establishments and in our public life. That is the central idea or ideal, and it is fraught with

fruitful possibilities for the good of humanity.

The President of this organization, with the Secretary and the board of managers, are devoting much of their time—without compensation—to the development of this idea. Scattered all over the country are members also deeply concerned in the movement, who are giving their time, contributing their money, and developing new centers and circles for the promotion of this work.

If there are any in this audience who are not members of the National Safety Council—I am not an agent for increasing membership, if you please—but if any persons here have ambition to be of human service, I would especially urge them to associate themselves in the work of advancing the ideal which is represented materially by that organization.

I particularly am pleased, as, of course, we all are, that Philadelphia was selected for the convention this year. Philadelphia is preëminently an industrial city. It is a city with thousands of diversified industries. The machinery of these industries produce textiles and turn out many other products, great and small, from timber and the metals. The output of Philadelphia industries is enormous. It pleases me also that this convention is assembled within the boundaries of the State of Pennsylvania, which is preëminently the great industrial leader of the United States. [Applause.]

I am gratified at the applause with which you have greeted this sentiment, because I observed that it came from guests from Ohio,

Massachusetts, Wisconsin, and residents of other states, so that it is an unbiased tribute to Pennsylvania.

An especial reason why the National Safety Council should convene here is that if a circle with a fifty-mile radius were drawn from Philadelphia as a center, there would probably lie within the circumference the greatest industrial community to be found in any equal area in our country.

It is especially fitting that this convention is here this year. The people of Pennsylvania, of Eastern Pennsylvania, are realizing to a marked degree the necessity of promoting the safety ideal, both as an economic factor in our industries and as a humanitarian principle toward our people. Therefore, this convention comes to this locality at a time when its seed will fall upon fertile ground, and, sprouting, will unquestionably bring forth great fruit.

Pennsylvania's Workmen's Compensation Act goes into effect on the first of next year. By that enactment the workman injured in his employment, disabled for more than fourteen days, is automatically insured and protected against the loss of wages incident to his injuries. He receives during the period of his disability an amount to aid him in sustaining himself and family during the time that he is unable to work. It is a splendid idea that has spread throughout the United States. And let me add in this connection that, although we occasionally hear criticisms of such systems, the great bulk of the manufacturers of this state—and I am more or less familiar with them—are welcoming this new system. But we need now, particularly, activity and interest in the promotion of the Safety First idea, not only because of its high humane purpose, but also in order that we may adapt ourselves to the workmen's compensation system and operate it successfully without serious financial injury to the industrial system.

May I say—although I suppose it was said this morning—that the members of the National Safety Council will certainly receive,

## Be a Man

"The way to be nothing is to do nothing." To be a Safety First man is to practice what you profess.

in the promotion of their ideal, the full coöperation of the administration of this state and of the department of that administration with which I am connected. I believe the great manufacturing interests and the labor interests of the state will give you the same full coöperation.

We all thank you for coming here, because of the good that you are going to do us. I was sorry not to be able to introduce Chancellor McCornick, an old friend of mine, or Mr. Wilson, but I find great pleasure nevertheless in making the next introduction—a man who has been a leader of this great movement in Ohio; a man who has been active as a Director of the National Safety Council; a man who has taken part in many local Council meetings; who has given his time and energy to this work without thought of financial recompense; a man who is the brother of a former Governor of this state, who gave large energy and exertion toward obtaining legislation to advance the state in the safety ideal, and who accomplished the enactment of much of that legislation. I know we will all take great pleasure in listening to one who is an old friend to many of us—Mr. Stephen W. Tener. [Applause.]

#### SAFETY AS AN INDISPENSABLE PART OF AN EFFICIENT MANUFACTURING ORGANIZATION.

STEPHEN W. TENER (Manager, Accident and Pension Department, American Steel and Wire Company): I think I am 51 per cent correct in saying that the result of anything undertaken by an efficient manufacturing operation, must, to prove that it is indispensable to that operation, be reflected in either the cost, quality or quantity of the goods produced, and part of what I have to say to you today has to do with the saving in dollars and cents through the safety movement, accomplished on the one hand by design and on the other incidentally. I am purposely omitting any reference to a safety organization as a humanitarian agent; that important feature of the work might well be made the subject of a special paper.

Of prime importance in the way of a money saving deliberately sought for through safety is the matter of compensation paid to workmen, either directly or through the medium of an insurance company or a state fund, under the provisions of the various Workmen's Compensation Acts.



It is obvious that the maximum of safety is absolutely indispensable to a manufacturing establishment operating as a self insurer, as the benefit resulting from a reduction of accidents is immediate. A self insurer in most of the states, not being required to pay a premium or pay into any fund in advance, suffers no draft on his exchequer until an accident has actually occurred. This theory of insurance of letting every tub stand on its own bottom has followed in the train of workmen's acts and has given rise to merit rating. In this connection, as an indication of the absolute necessity of the highest type of safety work, if the employer expects to profit by the merit rating schedule, a Massachusetts Commission has the following to say:

"Reductions in any rate must be justified by the removal of causes of accidents which were previously present," and

"It must also be kept in mind that the goal of schedule rating is the elimination of those accidents which can be prevented."

Schedule rating means, if it means anything, that the manual rate represents simply the best actuarial guess. Policy insurers, as distinctive from self insurers, also realize handsome returns through merit rates based on the elimination or reduction of accident hazards. This is especially true of the mutual insurance companies. I have knowledge of wire drawing plants carrying coverage in a mutual being given a reduction from the established manual rate of 15 per cent, publishers of 16 7-10 per cent, emery wheel manufacturers of 26 7-10 per cent, jute manufacturers of 45 7-10 per cent. In one case where the merit rate was 25 per cent under the manual rate, this reduction having received the stamp of approval of the state insurance commissioner as the result of an independent investigation ordered by him, the mutual company carrying the risk returned to the policy holder at the end of the year a cash dividend of 30 per cent amounting to \$15,000 with further substantial dividends to come out of the surplus. This single example is an all-sufficient endorsement of industrial safety work, showing as it does a very substantial cash return.

In the study and application of Workmen's Compensation Acts we are apt to regard these statutes as being merely legal vehicles for ascertaining the amount of and method of paying compensation to which an injured man or the dependents of an employe losing his life in the service are entitled, whereas the very first words

## EFFICIENCY

Must be proven in the cost, quality or quantity of the goods produced or in effectiveness of safety work.

of the title of the Indiana Act reads: "An act to promote the prevention of industrial accidents." The Massachusetts title includes these words "And to the prevention of such injuries" and California reads "Providing for safe and hygienic conditions." A manufacturing establishment operating under these laws without a well organized safety department will lay itself open to adverse criticism to say the least.

Let us now consider some examples of substantial cash returns derived incidentally from safety work, though the actual amount saved would be difficult of ascertainment.

For many years there was but one method employed to stop a gear driven wire drawing block—the foot treadle—and on account of its location the wire drawer in operating the treadle was exposed to an acute accident hazard when there was a snarl of wire either on the block or on the floor reel. A few years ago an auxiliary block stop was devised which can be operated by hand at a point remote from the block and which also operates automatically through the tipping over of the floor reel. This auxiliary stop is the most important safety device that has been introduced into the wire drawing trade, and in addition to being a veritable life saver it has reduced scrap, through fewer strands of wire being broken, has increased the output materially and these advantages have been reflected in the earnings of the men in a very agreeable manner.

Safeguards of skeleton type made of pipe, angle iron or woven wire fabric around the crank, eccentric and crossheads of engines have been superseded by tight dustproof covers made of sheet steel, with the result that the waste oil from these oiled parts is confined and controlled, the parts of the engine subjected to friction are protected from dust and grit, so also is the surplus oil, and a pronounced saving has been effected by the recovery of more of the waste oil and a lessened expense in the filtration of it.

Substantial and roomy overhead oilers' platforms, easily accessible

by stairways, erected in the first instance as a safety measure solely, have greatly increased the ground that the oiler can cover in a given time.

In a wire nail machine—due to the adjustment and position of a certain cam eccentric—the hammer stock will at times slide forward voluntarily, so to speak, sometimes breaking the dies when they come together and not infrequently lacerating or cutting off a finger of the operator who might at the time be adjusting the dies. This accident hazard, both to the person of the operator and to the steel dies, has been entirely eliminated by the simple device of a pin inserted in the hammer stock.

Staging planks of a laminated structure have proven to be ever so much safer than ordinary planks, and as they will outlast planks many times over, their use effects an economy in lumber.

Automatic couplers on mold buggies and open hearth charging cars, primarily a safety device pure and simple, the suggestion to introduce which was at first adversely criticised, have not only proved their value as a safety feature, but have as well proven to be a tremendous saver of time in handling cars.

As in the case of the auxiliary stop on the wire drawing block, previously mentioned, the same idea applied to galvanizing frames has greatly reduced the production of scrap in that particular department.

Long spouted oilers in conjunction with glass bodied oil cups are time savers. A department which ordinarily took a day to oil can now be covered in not over two hours and in this category may be placed the long handled electric lamp remover and the cut out lamp hanger, both of which were first introduced as safety measures.

The suggestion to introduce vacuum systems for cleaning lime dust laden floors, on the principle of the now common vacuum carpet cleaner which has become a household necessity, was at first looked upon with skepticism if not scorn, but this device has

## Compensation

"An act to promote the prevention of injuries"—this is the theory of all up-to-date safety legislation.

resulted in an entirely unlooked for return in dollars and cents in that the lime thus recovered is bagged and sold as a byproduct.

But when all is said and done, when the final figures have been cast up and the money saving of all safety devices assessed at its true value, there remains to my mind a superior and overwhelming reason indicating that safety work is indispensable to an efficient manufacturing organization. I refer to the fact that the safety movement, particularly in the larger corporations, has been the most potent factor introduced into the industries during the past five years in bringing employer and employe together and in creating a better feeling between them.

Old-line firms, or partnerships and limited co-partnerships, have practically disappeared when there is any considerable amount of capital invested, and the advent of big business and corporate management brought to an end the dominating influence of the owner or proprietor, which held sway during the days of small partnerships. In the old days the employer, who was the owner, through force of circumstances kept in close touch with his employees, knew many of them by name and between them there existed a certain degree of familiarity.

With the coming of large corporations the owner disappeared from view and to the employees he became a mythical personage. Now, under the beneficent influence of up-to-date safety organizations, the visica of the employer, the man who formerly took a personal interest in the welfare of his employees, is again appearing on the industrial horizon, principally through the work of interlocking and overlapping safety committees, organized through all departments of the manufacturing establishment, these committees being called together for an interchange of views and to consider suggestions, looking toward an elimination or reduction in the accident hazard. A superintendent seeking ways and means of reducing cost, improving the quality or increasing the output of a certain department, discusses the subject with the head of that department and perhaps one or two of the latter's lieutenants. Naturally he does not discuss the subject with the foreman of another department, as the latter would not be possessed of any superior knowledge, nor would he be directly interested. The superintendent would not send a committee from Department A to Department B in an effort to effect economies along the line of the

three factors mentioned, but it is through the effort of such inter-department committees as this, that the safety movement in a plant progresses. Safety organizations in a manufacturing plant handle a subject of interest to all employees from the superintendent to the laborer. In this connection I wish to cite just one case—and such cases might well be multiplied: A laborer, unable to speak the English language, engaged at cutting scrap on a pair of alligator shears, was asked by the safety committee of the mill then on duty if he had any recommendations to make that would reduce the accident hazard with the operation of the shears exposed. He recommended that a certain guard on the knife of the shears be made a little higher or a little longer. This simple recommendation was immediately complied with and he was told not to hesitate about speaking to his foreman should he at any time discover other accident hazards which could be eliminated. This man was particularly pleased over the fact that the committee and his foreman, through their action, recognized in him a potentiality of value quite beyond his value as a laborer receiving the lowest daily stipend. He felt proud of the fact that he had been consulted, and it seems to me that in cases of this kind the true meaning of the “dignity of labor” is well exemplified.

A few days ago I asked a superintendent of a plant employing one thousand men to name the subject of all conferences held at the plant at which representatives from all departments were in attendance. His reply was “Safety matters only.” I wish to repeat and emphasize this question and answer, for they contain the idea—the thought to which I am now trying in a feeble way to give expression.

A Safety First organization is decidedly inclusive in character, and therein lies its main strength. Take for instance the present meeting. In this room are gathered together men from all over the United States, representing substantially every branch of industry, with a large contingent of persons who, while not representing industry, are more or less dependent upon it, all gathered together for a common cause. Compare this with the usual run of conventions. I recently examined a list of eighty-one conventions booked by the Convention Board of the Cleveland Chamber of Commerce. Not one of these conventions bears the comprehensive character that is found in the meeting of the National Safety Council. For in-

## RESULTS

The Safety First Movement has founded the greatest Get-Together Club in America—and for a worthy purpose.

stance the Electric Vehicle Association of America, being of interest only to Electric Vehicle manufacturers, dealers and the usual camp followers; likewise the National Brick Manufacturers' Association and more especially the great American Iron and Steel Institute, which will meet in Cleveland on Friday of this week, an institute of predominating influence, yet with an interest confined to the iron and steel trade. What may be said of the inclusiveness

of this National Safety Council meeting applies with equal force to a safety organization in a single industry.

I have seen painted in twelve-inch letters on the wall of a foreman's dining-room in a large plant the slogan "Harmony-Team Work-Success."

Every employer of labor knows and appreciates the value of harmony and team work, and from my point of view these two attributes can best be developed by the bringing together of all classes, of employees and the employer, thus providing a channel for an open and intimate exchange of views, recommendations and suggestions and this is exactly what safety conferences are accomplishing. On the Safety First movement has been founded the greatest Get Together club in America, and if no other reason was advanced to prove that safety was an indispensable part of an efficient manufacturing organization this alone would suffice. (Applause.)

### THE DEVELOPMENT OF THE SAFETY IDEA.

CHANCELLOR S. B. McCORMICK (University of Pittsburg): *Mr. President, Ladies and Gentlemen:* I am sorry that owing to an engagement at Easton this evening it is necessary for me to take an afternoon train and, therefore, I appreciate very much the opportunity to say what I have to say now, much as I regret not being here when Dr. Jackson arrived.

I was quite pleased, Mr. President, to note in your address this morning the reference to the conception of individuality and of liberty which is entertained in Great Britain and in Germany; that of Great Britain being our own. And as I realize that circumstances in the making of this nation in its past history not only caused us to adopt the English conception, but to put emphasis upon it, owing to the necessity of developing a new country, laying foundations at the very beginning for our institutions and for our industries—for everything, indeed, that we have—it is perfectly obvious that we must face a problem which is peculiarly our own. We know, too, from what we have accomplished and from the spirit that is in us, that we, even though a nation of individualists, will never be content until we have for ourselves realized the efficiency that belongs to the system in Germany. In other words, it is our business as individual men in this country, controlling all its destinies, upon our individual initiative to develop a social system which will be our own and which will be as efficient as any in all the world.

## RESULTS

It is our business  
to develop a social  
system which will  
be as efficient as any  
in all the world.

Sometimes, perhaps, we have thought that we might have accomplished things which we have not accomplished; that we might have paid attention to matters which have been put aside. Yet I myself have never found it in my heart to express one word of criticism for any past failure in the presence of the splendid achievement which has been ours during our past history. It only means that there are things for us to do that have not yet been done. If, for instance, we have solved the great problem of production, as very largely we have solved it, and have neglected other things in that process, it only means that we have developed a kind of men in America capable of solving any problem, even the more difficult one of equitable distribution of the rewards of industry, and solving that problem for the well-being of all our people. [Applause.]

Regard for human safety is, of course, no new thing, yet the safety idea as we know it now and as we are trying to develop it

now is relatively a new thing. It begins, of course, in the instinct of self-preservation common to all people and all animals. In its present form, as we are now seeking to develop it, it is really one of the finest products of our modern civilization. Passing over from the selfish regard for one's own personal safety, it is now coming to be a thing which, in this Congress and in other like assemblies, we are trying to work out for all people, and especially for those whose employment involves hazards which must constantly be guarded against.

It is indeed a far cry from Cain's question: "Am I my brother's keeper?" down through the period of the cavedweller, through the long period in most nations when all life has been held lightly, and in some where it is scarcely valued at all, on down to this present time when infinite care is taken to guard and preserve it. But care and concern for life are an evidence of the development and perfecting of our modern civilization—just as it is the lack of it, wherever it appears, which indicates that the civilization of which we have in past times been so proud may yet lack certain elements to make it complete.

This increased regard for human safety, for the conservation of all kinds of human resources, has not only adequate but most obvious motives. It springs, first of all, from a sort of selfishness, in that many people—most people, perhaps—cannot any longer endure to see or to imagine unnecessary injury or suffering on the part of other people. It is a thing, therefore, which involves imagination; just exactly as it is the lack of imagination rather than cruelty, perhaps, which has in times past made people indifferent to the hurt and sufferings of others. As an example, when Hayward, a few years ago, told the story of the different crimes or murders which had been committed, his seeming indifference to the suffering he caused indicated the absence of imagination, inability to put himself in another's place, rather than bloodthirsty savagery, which it seemed to be. Only as the American people develop fineness of imagination shall we be able to develop fineness of sympathy; and both are essential to the perfecting of the social order as it ought to become.

Another illustration of this lack and of our consequent failure to see the larger relationships of conduct is that of the man who stays in his office on election day because he is very busy and



cannot spare the time, and that of the other man, an election officer, perhaps, who will count a certain number of votes for his friend which were not cast for him. Neither of these men is necessarily a bad man. One is simply overzealous for his business, failing to think of his country; the other is simply overzealous for his friend, failing to understand the significance of what he does. Neither of these two men has permitted his imagination to picture to him the part democracy must play in human affairs, and that if it shall ultimately triumph it must prove itself, must show that it has the sovereign right to be—and that it can do this only as each citizen holds his suffrage as a sacred trust for humanity. Neither of these men realizes that each, in his own way, is thrusting a knife into the very heart of democracy, and is thus destroying the hope of the world.

This is perhaps the first and fundamental basis of this new movement for the safety of mankind. Of course, it is also based upon a juster conception of man himself as a social, over against a mere individual, factor. Individuality has been our glory in America in the days gone. It will continue to be our glory in the future; but I conceive that for full realization of the individual there must, from now on, be a fuller recognition of the social dependence and relationship of men in society. After all, a man is of very little worth if he stands by himself. It is only as he touches his fellows that he develops capacity to achieve. His primary obligation is not to himself, nor to his talents, nor to his training, but to the people among whom he lives and who chiefly make possible, not his success only, but his developed personality. The recognition of this fact, ever growing in this present day, is one of the fundamental ideas of the safety movement.

Again, men are coming more clearly to realize, at least in America, that an individual life is an indispensable economic factor in human affairs. The most costly thing in all the world is a human life. Even a tree has great value, not because of the uses to which, hewn and polished, it may be put, but because in order to produce it there must be a certain number of years of growth in the process; and the ordinary man dislikes to see a tree cut down unless it is necessary to do it, just from that fact. To produce a man—again we must get our imagination to work—to produce a man it is not only necessary that his parents shall deny themselves in the earlier and

## Developing Men

We have developed men capable of solving any problem—even that of equitable distribution of rewards of industry.

tender years of childhood and boyhood, but it is necessary that the individual boy himself shall go through a certain process of study, of training, of development, simply in order that he may become a man. When one adds to this the cost of making him a skilled man, able to do the world's work, one can very readily understand how priceless a thing a man is economically, and how absolutely criminal it is that there should be any unnecessary waste of the life so costly in its production. This fact constitutes at least one element of the awful crime that is going on over in Europe today. A person may comment freely upon the situation in Europe without attempting, at this time, to apportion blame for it to any particular nation. We look aghast at the thing simply from the economic standpoint; that nations are willing to pay the cost of producing men, only to hurl them into the mouth of destruction, without the possibility of renewal for a long number of years to come. It is a crime for which there can be no justification save only the justification that without it right, the fundamental principle of righteousness and justice and truth, would be forever sacrificed.

Thus we can very readily understand that through the development of a finer sympathy, a more vivid imagination; through the better conception of the social organism of man; and through the more perfect realization of the economic cost of every factor which makes up the whole scheme of present day living, we are coming to learn what underlies the safety movement, whereby larger effort is made to conserve human life and human value up to the very limit of ability.

Of course, the result will always be short of desire, for with the best of purpose and effort, human carelessness will perhaps always operate. Always, perhaps, there will be the miner entering the mine with uncovered light; the reckless man driving his automobile regardless of danger to pedestrian; the mechanic who is careless

through very familiarity with the tools he uses. It is our business, however, to reduce the number of that kind of people down to the very minimum, so that there shall come to be, in every department of activity in this nation of ours, a maximum of care for one's self and one's neighbor, every man conscientiously coöperating with the men who are giving their time and their thought and their money to the conservation of human resources.

### **The N. S. C.**

Typifies a "larger effort to conserve human life and human value up to the very limit of ability."

What a splendid idea it is, when we come to think of it, this new idea of safety and Safety First; this new idea of the value of a man! We in this country have dreams, you know, of how we are to be the leader among the nations; dreams of how we are to take the first place, not in the resources we have or in the power we can wield or in the number of our population, but the first place among the nations in our willingness and ability to bring good to the peoples of the world. Now, if we are to realize this ambition to be first, it will be because the ideas we originate and work out into our national life are the very best ideas in all the world. We are a very great people, a very altruistic people, a very intelligent people—perhaps the most intelligent people and most altruistic people on the face of this earth. But leadership requires more than goodness of intention and more than widely disseminated intelligence. There must be the ability to lay hold on new ideas and work them out, the ability to think through propositions, economic, political, industrial, social, ethical. We must develop in ourselves this power if we are ever to come to the place we dream of, the place of leadership among the nations of the earth, and if ever we are in America to demonstrate the worth of democracy and uphold its right to be the servant and political savior of mankind. We must solve the problems of America before we can proclaim our fitness to solve the problems and heal the hurts of the people of other nations.

The safety movement is one of these great ideas which America must foster and develop, for it concerns not human life only, but

human happiness, human wellbeing, human society. It not only begets good will between employer and employe—and an investment of good will is the most productive and profitable of all investments—but it aids the state in the care of dependents and in every way promotes the social and economic prosperity of the people. Of course, it cannot be realized quickly, nor realized in its completeness until we come to see that the safety idea extends to the mental development of men, to the cultivation in them of love for the beautiful, and to the care of soul and spirit, and includes all that relates to man in the entire circle of his being and relationship and destiny. But in the measure in which we come to understand these things, in the measure in which we come to appraise rightly human life as God has ordained it, in the measure in which we care for it in its entirety, in that measure will this organization accomplish the purpose for which it has been called into being.

It was because it seemed to me it was one of the great movements of modern times that in the very beginning of it I connected myself with it, and pledge myself to aid in every way that the society may accomplish its mission of good will and economic and social wellbeing in the country we love. [Applause.]

PRESIDENT CAMPBELL: The next address in order as shown by our program will be one entitled "Public Safety and the Railroads." We have one of our leading railroad safety experts who will entertain us upon that subject. I will ask Mr. W. C. Wilson, claims attorney of the Delaware, Lackawanna & Western Railroad Company, to give his paper.

#### PUBLIC SAFETY AND THE RAILROADS.

MR. W. C. WILSON (Claims Attorney, Delaware, Lackawanna & Western Railroad Company), Mr. President, Ladies and Gentlemen: Safety First, in its capacity as first aid to the uninjured, perhaps rightly may be considered to be a conspiracy to rob the doctor and the undertaker. As its objects are the preservation of life and limb, and therefore the pursuit of happiness, it may be said to fall strictly within our constitutional rights and prerogatives. It is at least one form of railroad activity in which a man can engage without danger of going to jail. The Sherman anti-trust law does not touch even the hem of its garment; standpatters do not condemn it, even though

it is a new fangled notion. The Progressives have not only embraced it but have appropriated it for campaign purposes. Labor unions generally have accepted its principles and the Interstate Commerce Commission has placed its approval upon it by saying in its 1912 report:

"Great possibilities in the solution of the problem of accident prevention lie in the so-called Safety Committees which have been organized on many roads. By making Safety First the dominant idea in the minds of employees and continually pointing out methods of its attainment an important step in the right direction is taken."

It was not so very long ago that railroading in this country was in its infancy. Roadbeds, motive power and equipment were primitive. But the prophets of those days, with an abiding faith in the future and a courage which knew no retreat, ran their rails through the valleys, over the mountains and across the plains, adopting the standards of construction then in vogue. No sooner had they been built than the mighty and unceasing rush of population began to overtax the railroad facilities and require readjustments to meet these increasing demands. From that day to this the railroads of this country have been in a state of evolution. The engineering departments have been called upon to build and rebuild their lines. The motive power and equipment departments have been obliged to revise their specifications again and again. The operating departments have been pushed to the limit to devise new and improved methods to meet the requirements of a traffic which was growing by leaps and bounds. Then again, these conditions imposed financial obligations which many roads were unable to stand. Receiver-ships were common and even the strongest were, at times, in danger of default if not bankruptcy. Nevertheless, under these trying conditions it must be conceded that the development of the American railroad to its present state of efficiency has been the greatest triumph yet achieved by American genius, aided by indomitable pluck and perseverance.

It is evident that, under these circumstances, the refinements of railroading would receive scant attention. It was railroading in the raw, and millions of property were squandered and countless human

## **Safety Work**

**Is an investment  
of good will in the  
most productive and  
profitable of all busi-  
ness enterprises.**

lives and limbs were sacrificed to this untamed juggernaut. It requires more stable conditions than have existed in which to cultivate the organized humanities. Human life was doubtless as sacred in former days as it is now but there were not so many safeguards thrown around it. The Safety First movement itself was an evolution, and when the time was ripe it stepped out, as an angel of light, into an industrial world that was ready to receive it—an old and

yet new revelation of the duty of man to man.

Safety First as a distinct and organized movement started on American railroads in 1910, when Mr. Richards of the Chicago & North Western sounded the bugle call and began his campaign. Since that time its growth has been phenomenal until at the present time practically no railroad in this country, big or little, is without some form of safety organization.

While it may not be strictly germane to the topic assigned to me I believe as a necessary prelude something should be said about the development of the movement thus far.

It is hardly necessary for me to say in this presence that we found the personal equation to be the most important factor; but how to reach and influence it effectively was the most difficult problem to be solved. Naturally, the first efforts were directed toward correcting unsafe physical conditions along the road. These were open to observation. Most of them could be corrected by the expenditure of a little time and money. A great and important work has been accomplished in this regard. It was early recognized that the great body of employees must be reached and enlisted in the cause before any fundamental success could be achieved. For this purpose mass meetings are held at principal division points, at which speeches are made by officers and men, and stereopticon views and moving pictures displayed, illustrating the safety idea.

In addition to mass meetings the men are being reached by Safety First literature. Bulletins, pamphlets and magazines are being pub-

lished and distributed broadcast among employees and their families. Out of this abundance of talking and writing has developed a new class of literature, earnest, virile and abounding in hot shot which has caused the railroad man to sit up and take notice.

This warfare against carelessness and inefficiency has developed a new ideal among railroad employees, which is writing its record every day in improving the conditions under which men work and in bringing to the railroad men of this country a clearer vision of their duty to themselves, their families and the public at large, in the protection of life and limb and in the prevention of avoidable accidents.

The results are most encouraging. The latest authoritative statistics available are furnished by the advance sheets of the report of the Interstate Commerce Commission covering casualties of all classes on steam railroads for the quarter ending June 30, 1915. It says:

"As compared with returns for the corresponding quarter of 1914 the figures show, for train accidents, a decrease of 18 in the number of persons killed and of 561 injured; for other than train accidents a decrease of 162 killed and of 1,722 injured; and for railroad industrial accidents an increase of 14 killed and a decrease of 2,109 injured, making a net decrease, all classes, of 166 in the number killed and of 4,392 in the number injured."

There was a decrease of 185 in the number of collisions and a decrease of 443 in the number of derailments. As compared with the corresponding quarter of 1914 there was a decrease of 655 in the number of train accidents. Doubtless a number of elements have contributed to these results, but in the face of such a splendid record who shall say that the Safety First Movement on American railroads has not made good, or that all honor should not be given to the officers and men who by their effective co-operation have helped to secure such a conspicuous victory.

But what has the public done in reducing casualties on the rail-

## A CONSPIRACY

Safety First, in its capacity as first aid to the uninjured, is a conspiracy to rob the doctor and the undertaker.

roads? Practically nothing. Seventy-two per cent of the fatalities charged against the railroads for the year ending June 30, 1914, were neither employes nor passengers; they were outsiders, representing the general public. Twelve times as many people were killed in highway crossing accidents as were killed in train accidents. Nearly three times as many trespassers were killed as employees, and this includes the whole body of railroad employees of all classes.

It is evident, therefore, that the public should be vitally interested in this railroad safety problem. It may not concern the man in the street what conditions exist in the operation of the adjacent factory, but he can not assume that attitude with reference to railroad operation. When a passenger, he places the safety of his life and limb in the care of the company. He has a right to rely upon the soundness of its operating rules. But the rules are dead and worthless things if they are not executed by competent and careful employees. An efficient railroad employee, therefore, is both a public and a private asset. He will observe the operating rules not only because they are rules but because they are right; not only because irregularities may subject him to discipline but because he has adopted the principle of Safety First as his rule of conduct.

But building up and maintaining a body of careful and efficient employees does not solve the problem. We can control our own employees to a degree but we can not control the public. Railroad efficiency is matched by public inefficiency. Railroad carefulness is neutralized by public carelessness. Casualties to employees are going down; casualties to the public are going up.

Do you know that of the 265 passengers killed on American railroads for the year ending June 30, 1914, only 85 were killed in train accidents? What happened to the 180? Forty-eight were killed by falling from cars, 69 while getting on or off cars, 47 by being struck or run over at stations or in yards, and 16 from miscellaneous causes. Without attempting to relieve the railroad companies from any responsibility which may rest upon them for these casualties it is safe to say that a large percentage of them could have been avoided by the exercise of greater care on the part of the injured persons and that many of them were due to their rank carelessness.



How did it happen that 69 passengers were killed and 2,788 passengers were injured in getting on or off cars? Of the death cases unquestionably the great majority were caused by the passengers trying to get on or off moving cars. The injury cases came from a variety of causes: Too great haste, baggage and bundles which obscured the sight and occupied the hands, the distraction of babes in arms and children, inattention to the tread of the steps, and the distance of the lower step of the car to the station platform, high heels and narrow skirts, and in addition to this a natural confusion of mind of the infrequent traveler in boarding and alighting under strange conditions.

How do you account for the fact that 48 passengers were killed by falling from trains, exclusive of those injured while boarding or alighting?

An examination of the record would show that in most cases the passenger unnecessarily placed himself in a position of danger. These were caused by passengers standing on car platforms while the train was in motion and especially by passengers standing on car steps long before the train had reached their station, so that the moment it stopped, indeed usually before it stopped, they could jump and run for home or office.

How did it happen that 47 passengers were killed by being struck and run over at stations and yards? Some of these accidents were due doubtless to the carelessness and sometimes the extreme carelessness of railroad employees, but the greater part were caused by indifference to danger on the part of those injured. When not fenced in passengers will swarm over the tracks, sometimes at considerable distance from the station platform, and take all kinds of chances of being struck by moving cars or engines, just because they follow an idle fancy to stroll around and kill time. Time survives, but they do not.

Based upon these official records, supplemented by the experience of all those who are charged with the duty of investigating such matters, it is clear that too often there is a spirit of utter recklessness on the part of the traveling public which materially helps to swell the list of casualties on American railroads.

There is another prolific class of accidents in which the public has a joint responsibility with the railroads—those which occur at highway crossings. In the year ending June 30, 1914, 1,147 persons

## TRESPASSERS

Seventy-two per cent of railroad fatalities for 1914 are not chargeable to passengers or employees, but to trespassers.

were killed and 2,935 were injured at railroad highway crossings—a total of over 4,000. The railroads are making large yearly expenditures in the elimination of grade crossings and this policy will be consistently pursued even though at great cost. Frequently the unwillingness of municipalities to join with the railroads, and sometimes their active opposition, have held up progress in this direction to the disadvantage of all concerned. In addition to this work

of elimination new and improved safety devices are being installed and the number of flagmen and crossing gates or barriers has been largely increased. Some roads, notably the Long Island, have displayed large signs and posters at important crossings warning the public against careless driving. But notwithstanding these admittedly improved safety conditions, there will be an increasing number of highway crossing accidents, due to the perilous situation caused by the phenomenal growth of the automobile traffic.

There is scarcely an issue of the daily press which does not contain the record of some horrible automobile accident at a railroad crossing. With everything in his favor—a machine presumably under perfect control, no horses to become frightened and unruly and the power to stop almost instantly, if exercising even a minimum of caution—the driver, disregarding warning signals even to the extent of often plunging through the safety gates, sends his machine upon the tracks only to be struck by the swift and powerful locomotive and hurled to his death.

The courts have taken cognizance of this increasing peril, not only to the automobilist but to the traveling public. The United States Circuit Court of Appeals, in a recent decision, said:

“With the coming into use of the automobile, new questions as to reciprocal rights and duties of the public and that vehicle have and will continue to arise. At no place are those relations more important than at the grade crossings of railroads. The main consideration hitherto with reference to such crossings has been the

danger to those crossing. A ponderous, swiftly moving locomotive followed by a heavy train, is subjected to slight danger by a crossing foot passenger, or a span of horses and a vehicle; but, when the passing vehicle is a ponderous steel structure, it threatens not only the safety of its own occupants, but also those on the colliding train. And when to the perfect control of such a machine is added the factor of high speed, the temptation to dash over a track at a terrific speed makes the automobile, unless carefully controlled, a new and grave element of crossing danger. On the other hand, when properly controlled, this powerful machine possesses capabilities contributing to safety. When a driver of horses attempts to make a crossing and is suddenly confronted by a train, difficulties face him to which the automobile is not subject. He cannot drive close to the track, or stop there, without risk of his horse frightening, shying, or overturning his vehicle. He cannot well leave his horse standing, and if he goes forward to the track to get an unobstructed view and look for coming trains he might have to lead his horse or team with him. These precautions the automobile driver can take, carefully, and deliberately, and without the nervousness communicated by a frightened horse. It will thus be seen an automobile driver has the opportunity, if the situation is one of uncertainty, to settle that uncertainty on the side of safety, with less inconvenience, no danger, and more surely than the driver of a horse. Such being the case, the law, both from the standpoint of his own safety and the menace his machine is to the safety of others, should, in meeting these new conditions, rigidly hold the automobile driver to such reasonable care and precaution as go to his own safety and that of the traveling public."

The terrible toll which is being paid each year by this class of accidents demands that remedial action be taken both by the railroads and the public.

During the year ending June 30, 1914, 5,471 persons were killed

## Grade Crossings

Twelve times as many people were killed in crossing accidents as were killed in train accidents.

and 6,354 were injured while trespassing on railroad property. In spite of all that has been said and done to minimize this evil the slaughter goes on undiminished. It seems even to flaunt itself with brazen effrontery, asking what we are going to do about it. Primarily the responsibility must rest with the public. This is so because the people make the laws and in the last analysis public officials will administer the law according to public sentiment. It may surprise you to know that thirty-five states have no laws specifically prohibiting trespassing on railroad tracks. Some have such laws but with penalties so trivial as to make them a farce; if not, then the average magistrate will proceed to make them a farce on his own hook.

Nowhere in Europe is there any such record of casualties. Heavy penalties are enforced against trespassing on railroad tracks and as a result the number of injuries due to railroad trespassing is only about 5 per cent of the number in this country.

This evil is nation wide. It has been characterized by Mr. Marcus A. Dow in his striking article on the subject as "A Nation's Neglect," but notwithstanding the many efforts which have been made to improve the situation it is still the nation's neglect in all essential particulars.

In securing the highest standard of safety in railroad operation the coöperation of the public is essential. Such coöperation must not stop at simply wishing the railroads good luck in their task. The people as a whole must be trained along safety lines and the laws and the courts in administering the laws must embody and enforce safety standards which represent the enlightened convictions of the people. There must be the same painstaking effort in the education of the public as has been put forth by industrial concerns in the education of their employees. The fact is that the people as a whole have lagged far behind in this safety propaganda. As an illustration, laws have been enacted recently with the object in view of relieving the traveler on the highway of any legal duty to look or listen at railroad crossings under certain circumstances. As an easy way of avoiding crossing accidents it is argued in some quarters that the railroads eliminate grade crossings. It might also be said with equal force that the way to stop a drought is to make it rain.

There must not only be coöperation, but it must be organized

coöperation. Sporadic efforts will produce no lasting effect. The problem is nation wide and too big for individual or disassociated action and I believe the National Safety Council is in a position to wield a powerful influence in molding public opinion in organizing the people in a campaign against the crime of carelessness.

May we speed the day when the ideals for which this Council stands shall be realized, when railroads and all employers of labor will vie with the people and public officials who represent the people in reducing the perils to life and limb which lurk about us on every hand, and in the prevention of these avoidable casualties which are such a blot upon the fair name of our country. (Applause.)

PRESIDENT CAMPBELL: Our next paper will be on "The Safety Idea as Related to Credit Granting," by Mr. Charles E. Meek of the National Fire Protective Association.

#### THE SAFETY IDEA AS RELATED TO CREDIT GRANTING

CHARLES E. MEEK (American National Bank, New York; President of National Fire Protection Association, and Past President of National Association of Credit Men): Definite results are always welcome to those seriously interested in the work of an organization like the National Safety Council.

Your records are doubtless filled with a mass of evidence of such a convincing nature that the doubting Thomases, of which there is always a plentiful crop, are in danger of being persuaded that there really is something of value in coöperative action.

My eyes were opened as to what the safety movement really means when a few days ago I visited a large manufacturing plant, and in the course of conversation with the company's financial manager was told that about eighteen months ago the company added to its staff of experts a safety engineer, and that the result was highly satisfactory, for at the end of the fiscal year it was found that less than one hundred dollars had been paid out to injured employees. I was told that every inch of this vast plant, where thousands of men are employed, had been treated to a full dose of safety methods. This treatment not only produced actual results in reducing the chances of accidents to the minimum, but it eased the minds of the managers, giving them more opportunity for the development of their regular work. The safety expert of

## Safety Doctor

**"Every inch of the vast plant had been treated to a full dose of safety methods" with splendid results.**

this company is consulted regarding every proposed change in the plant and its machinery, and nothing is left undone for the protection of life and limb.

There is an important consideration which should not be lost sight of, namely, the effect of safety methods on the expense account. The highly successful manufacturer is the one who is able to keep down the cost of production; protection against accidents will help to accomplish this.

It is impossible to find a single argument why the introduction of the safety principle into any business is not a good investment. In fact, there is everything in its favor. At the same time, you are doubtless experiencing the same uphill fight in the development of your work that other organizations have experienced. This should not be a cause for discouragement, but rather should be an incentive. There is more satisfaction in winning a hotly contested fight than to have an easy walk-over.

For twenty years the National Association of Credit Men has been engaged in educating our business men in the application of safety principles to the granting of credit. It has endeavored to impress upon its members that the giving of credit should be based upon substantial facts, and that the "take a chance" idea is gambling, pure and simple. The credit man of today keeps in close touch with the business of his customers. He watches every development and does not hesitate to criticize the weak points, or commend the strong points, in the policies of those with whom he deals.

A highly important factor in credit work, and one strongly emphasized of late years, is that of fire insurance and fire protection. It is on this common ground that the National Association of Credit Men and the National Fire Protection Association meet. The credit men discovered that a great many of their customers either neglected to protect themselves against loss through fire or handled their insurance so indifferently that it oftentimes was of no value. A

vigorous campaign was started, in which printed matter and speakers were used to show the necessity for full insurance placed with responsible companies, and every one was urged to know thoroughly and live up to the requirements of the insurance contract. No opportunity was lost to impress upon every one that a credit unprotected against danger of loss through fire belonged to the "take a chance" class and should not be tolerated.

Questions regarding insurance were introduced into financial statement forms, and the mercantile agencies aided the movement through special work. Today the relation of fire insurance and fire protection to credits is on this basis: Insurance reinforced with fire prevention methods stands first; insurance, alone, ranks next; the use of fire prevention methods without insurance is third; and the absence of both insurance and fire protection removes every excuse for the extension of credit. Fire prevention methods not only reduce the hazard, but also the cost of the insurance. In some instances the latter is probably the only incentive to their use, but in many cases a broader view prevails and consideration is given to protecting life and removing, so far as possible, the unpleasant experience of having a life's work destroyed.

While great progress has been made by the National Association of Credit Men in this direction, the work is by no means finished. It has, however, reached a point where it is handled with less difficulty. In view of this, why not seize the opportunity to advance another step by encouraging the employment of safety methods, or, in other words, place a premium upon their adoption, in the same manner as outlined in the reference to fire protection? By adding to the financial statement form a single question, the attention of thousands of business men will be attracted, many of whom will realize the value of the safety movement. There are some who might consider inquiry into this subject as impertinence, but there is every justification for it, for the reason that bankruptcy

## Keeping Tab

The credit man of today keeps in close touch with the (safety) business of his customers.

has frequently followed accidents where loss of life or serious injuries have occurred; and it is the duty of every credit man to use his influence toward the elimination of every cause of bankruptcy. An employee who has met with a preventable accident is no longer an asset, but belongs in the liability column, and it is the overloading of this side of the ledger which results sooner or later in failure. In my work I have visited manufacturing plants of every description and invariably have carried away an impression as to the business ability of those responsible for their management. The clean, light workshop, where every precaution against fire and accident is taken, is evidence of good management, and under such conditions the product is bound to be superior, all of which tends to influence a higher credit standing.

Employers are doubtless often discouraged by the lack of appreciation on the part of their employees, who fail to use the means provided for the safety of their lives and limbs. The other day I stood in front of a large plant, the entrance to which was crossed by several railroad tracks. A subway had been provided, at each end of which stood a prominent sign reading, "Don't Cross the Tracks—Use the Subway." As it was close to the noon hour, I waited to see how many would follow the sign and was not surprised to see it entirely disregarded, for not a single person used the subway. A splendid exposition of our "jay-walking" habit.

It is estimated that 35,000 workers were killed and 2,000,000 injured during 1914.

During the same year \$236,000,000 worth of property was destroyed by fire.

In the same period 18,000 business failures occurred, with liabilities of \$358,000,000.

This tremendous waste is being fought by your organization, together with the National Fire Prevention Association and the National Association of Credit Men. How closely related is the work of these organizations; for in the last analysis it is the conservation of life, property and credit that they are all standing for. It is an uphill fight, full of discouragement; and when one considers that in spite of the vigorous campaign carried on for years against fire we keep on burning up about the same amount annually, isn't it a strong indictment against the intelligence of the American people?



I assume that your work is not limited entirely to your members and those eligible for membership, but that you are spreading the doctrine of safety broadcast throughout the country. The extent to which work of this character can be carried on depends, of course, upon the funds available for such a purpose. The two organizations I represent have to an extent solved this question. They have developed from their membership men who can intelligently and interestingly discuss questions pertinent to their policies. These men have invaded the public platform, the meetings of trade organizations of every character, and the school house. And the last-named is an effective working place, for if we get the youngster thinking the right way, we are saved the hard job, later on, of converting a grown-up. There is little expense connected with this; it means, more, a sacrifice of time. The development of classes for the study of the theory of credit and the present methods applied to the management of a credit department, has far exceeded the brightest hopes of those responsible for their introduction. Men are today being shaped up for business better than ever before—a profitable investment in the long run.

A great national safety movement is on the way. It embodies the same principles the organizations I have named stand for—the protection of the lives, property and credit of the people of the United States. The great problem of this movement is of a financial nature. Just think of it! The American people will burn up during the next few years property the equivalent of which would build all the battleships and fortifications needed.

In closing, I present to you the greetings and good wishes of the organizations I represent, and pledge to you their cordial coöperation. As time goes on may these three great business organizations become more closely bound together, for we are engaged in a righteous cause and are building for the future prosperity of America and its people. [Applause.]

#### THE VITAL IMPORTANCE OF THE TRAINED NURSE IN INDUSTRIAL WELFARE WORK.

MISS FLORENCE HUGHES (Superintendent Palmerton Neighborhood House, New Jersey Zinc Co., Palmerton, N. J.): Upon first thought the subject assigned to me appealed to me as being one

## **The New Industrialism**

We are shifting  
the center of the in-  
dustrial universe so  
that it revolves  
around the man who  
works.

upon which all would be so well agreed, and one in which the facts are so self-evident that it was not open to discussion, and therefore there was nothing to be said. Then I reflected that perhaps those who were preparing the program knew the needs and interests of the expected audience better than I.

The welfare field is not a new one in which to find the nurse. The industrial world has been gradually opening its doors to the profession, but the broader scope

of industrial welfare work is one into which the nurse has most recently entered.

I presume that the most of us here represent some corporation. The trust—that great octopus upon whom so much attention has been focused, and of whose wrongdoings we have all been made familiar—I am not going to discuss any pros and cons of that subject, but I do want to say, that out of all the publicity, the exposed wrongs which in so many cases did, and do, exist, there is arising the new order of organized industry—the new type of corporation, and gradually we are shifting the center of the industrial universe so that more and more it revolves around the man who works, rather than solely around the question of product and profit.

In approaching the nurse's part in this new scheme it is impossible to point to any one path or outline, any one method of procedure, either for the nurse or the industry, for it would be hard to find any two with the same needs on the part of the employees or the same requirements on the part of the organization. Wherever the work may be or whatever its scope may be there is one essential which we have to consider—the element which enters into success in any work which deals with human beings—personality. Therefore, the corporation which wants vital work done by the trained nurse must know the essentials which it ought to demand in the way of qualifications—for without certain of these essentials the work will fail, no matter how well equipped, or what salary is paid. The nurse's cap is not always a halo which spells perfec-

tion. The first qualification, as in all skilled work, is that the nurse should be well trained. You may think that this is too obvious to need mentioning, but it is not, for I do not mean well trained simply in the profession of nursing—I mean that in addition to her hospital and professional training, the industrial welfare nurse needs to be trained in social work, and needs to be trained in district visiting; and to have proven to be fitted for both of these phases of work, if she is to be a vital factor in your efforts to do industrial welfare work.

After ascertaining the question of this varied training—and here let me say that one way in which to find nurses who have had this specialized training is through the American Red Cross Service—the next asset of importance is for the nurse to be well and strong. She needs also to have a good mentality—by which I mean a mentality that is warranted to have common sense, good judgment and discernment. She also needs tact; to know how and when to mind her own business, to have patience, and to know how to fight for a cause when needed, and to be a humane, human being. I am not describing an impossible being, for I know of several who measure up most favorably to these standards—I have also, unfortunately, known such pronounced illustrations of the lack of some of these qualifications that I can not refrain from giving them to you as warnings. The first is a nurse who went into a corporation, armed with all the qualifications needed except that she did not have tact and did not know how to mind her own business. She had an abundant energy and did splendid professional work. She organized classes, gave lectures, in fact was a host in herself. But the office, not hers but the company's, was not screened—she thought it was a bad example and the company was compelled to buy screens for peace sake. Any condition at the plant which did not meet with her approval became the object of her campaign, and no director's meeting was safe from her, until it became a question as to

## One Essential

There is one essential which we have to consider—personality. There can be no real safety work without it.

who was running the plant—the nurse or the company. Numbers at least were on the company's side and the nurse was dismissed—a distinct loss but a great relief.

In another instance a nurse went into one of our large corporations with apparently all the needful qualities, but unfortunately proved to have an unbalanced sympathy. One of the heads of this corporation told me that she could never be "held off" when a case needed relief. No matter how important a business interview he might be having, he would be compelled to give her an audience while he heard the urgent tale of woe, and only by giving money, coal or whatever help was needed—right then and there, could his business affairs proceed. At the time I heard the story he was looking for a trained nurse. There are other instances I could cite, where lack of dignity and proneness to gossip have proved stumbling blocks to the success of otherwise well-equipped people, and so I have put my first emphasis upon personal qualifications.

When the right nurse is found her field of labor is practically limitless. If you do not, some of you, realize this, here are some of her problems: The one you will all concede, and many will think will cover her work—is nursing of the sick and injured—that is but a small part of her work. The teaching of sanitation and hygiene, the teaching of prevention of disease, come next in order. But she must also conduct a never-ending campaign for infant welfare, she must be ready to act as a Children's Aid Society, she must help to solve the problems of child labor, she must know how to deal with the drug and dope fiend, she must fight the liquor evil, help the shiftless and useless, she must know the industrial laws of her state, and she must be on the watch for causes of absence from labor, and help in the problem of fitting the right man to the right job—one of the outcomes of medical examination of employees, in which the nurse is also of great assistance. Can she do all this alone and unaided? No, but she must often be the sole discoverer of all these needs and be the one to lead the needy to the right source for relief. In order to make it possible for the nurse to include the various phases in her field of work she needs unlimited co-operation along each line of her work. She can not successfully teach sanitation unless it is possible for employees to work under sanitary conditions and their families to live in sanitary houses. She cannot consistently teach prevention of disease

unless the corporation is doing all in its power to prevent and overcome occupational and other diseases. And so the nurse comes into close relations with the industrial and civic problems of her community.

The nurse whom we have at Palmerton has been an important factor in helping us to get at living conditions in the foreign homes and to understand their needs, both from our standpoint and from theirs. She has been largely instrumental in making the bungalows for small families popular in preference to the larger houses, overcrowded with boarders. One of the regular duties of our nurse is to call each morning at the employment office for the list of men reported off duty. These are at once followed up and the company soon knows whether the absence is a legitimate one, or whether it is a case of too much drink. Another feature in this follow-up work is that it makes it possible to put a check upon quite a common practice of a man reporting off—making one visit to a doctor's office in which he complains of some ailment, stomach or otherwise—receives some medicine, loafs at home a week and receives sick benefit money from his lodge, and then goes back to work—in reality not having been sick at all.

All cases of accident at the plant are at once reported to our company surgeon, examined and if necessary, treated at the hospital. But many minor injuries not reported to the foreman, and "bom-buls," as all boils and like ailments are called, are often brought direct to the nurse for treatment. The men sometimes receive unexpected treatment from the nurse. Not long ago, at a wedding celebration, a visitor from Wilkesbarre had celebrated too freely and as a result hit his wife over the head with a bottle. Fortunately, the nurse happened to be in the neighborhood. While she was dressing the woman's head her husband was seized with another quarrelsome attack and started to finish the work he had begun on his wife's head. That was more than the nurse could stand for, and taking him by the collar she shook him good and hard and then sat him down with vigor in a chair. The man sat in surprised silence for a moment and then asked, "All policemen in Palmerton women police? Me go Wilkesbarre." We were glad to let him return.

The nurse, upheld by our chief of police and the company, is making wife-beating unpopular in Palmerton. One woman, who

## THE NURSE

Must know many things and be prepared for almost any emergency — her field of labor is practically limitless.

had moved up from Bethlehem had occasion to call upon the nurse for repairs after having been beaten by her husband. The husband was warned that it must not happen again. The warning was not heeded, of course. So, on the next occasion, the nurse called upon the chief of police. Philip spent a few days in the lock-up. When he came out he was told that the next time he would be sent up to Mauch Chunk jail and when he came out the company would

not give him a job again. The man replied: "Whose wife is this woman? She my wife, not company's wife. Me move Bethlehem." But he reckoned without his host, for his wife refused to leave Palmerton. That was a year ago, and just the other day when Philip had some trouble with a foreman and quit his job, threatened to leave town, his wife refused, saying it was the first time Philip had been good and for a year "he no beat." It was necessary for her to intercede in his behalf, and he is once more on his job and bids fair to have to remain, or go away without his wife.

When we had our last annual "town clean-up," it was the trained nurse who had most influence in getting the foreigners to clean out cellars and backyards. It was she who gathered together a squad of men and led them to an open lot which sadly needed cleaning. When they were through and filed home at five o'clock, shovels over their shoulders, they said, "Good-bye Missus, we like woman section boss." I could tell many ways in which the nurse becomes identified with the whole life of her community, but I shall refrain from any more except one, which from a small and humorous beginning led to an important climax. A Slavish woman was trying to raise some geese. They had hatched too early and it was only with vigilant care that she succeeded in keeping five of them. Early in their history one of them broke its wings. It was a matter of great amusement among the neighborhood workers when we learned that the nurse had been sent for and had set and

bound the wings to cardboard. But they grew to be perfectly good wings and we had almost forgotten Minnie and her geese, when one day the nurse met Minnie coming weeping down the road followed by three bright green geese. It was with difficulty that the story was learned. Some workmen, who worked on some construction work just across the creek from Minnie's house had taken the geese at night and painted them. The nurse and Minnie and the green geese and the policeman went to the justice of the peace. The result was that the workmen paid \$5 apiece for the geese, including the two that died, lost their jobs and had to leave the town. These may seem like drastic measures, but the geese were being raised for market and meant good money. If the men had escaped to enjoy their joke, the many foreigners living in the section adjacent to the new plant would have been victims of further practical jokes. As it was, it was the only one attempted. These cases to which I have been referring all show the nurse in relation to the welfare phase of her work. You can not separate the two and say, "Now, the nurse is doing welfare work and now she is doing industrial work," and yet it is possible for the industrial work to so monopolize the nurse's time that the welfare work, other than physical welfare, is a small unit in her work.

I know of instances where the nurses' work is confined wholly to dispensary work, others to nursing of injuries and plant illnesses, others where in addition to this the nurse gives talks at the plant on hygiene and sanitation. This I call industrial work, for it deals with the workman from the standpoint of his physical welfare as a working unit and in relation to his work alone. It protects the corporation and adds to the efficiency of the corporation as its direct aim. The benefit to the workman is the indirect factor. The same holds good, of course, where the nurse is employed for women and girls. Many of you have your works located on the outskirts, perhaps in the center of a city or large town, and have

## THE NURSE

Must often be the sole discoverer of the needs of her people and be the one to lead them to the right source of relief.

been saying that these instances do not fit your case. Probably they do not. Your conditions are entirely different from those I have been describing. But that does not alter the fact that your workmen or women have homes, or a barren or overcrowded place that takes the place of home, and if your nurse is to be of vital importance in their welfare she must know their home conditions, for back of all poor workmanship and inefficiency lie the problems of unsuitable food, poor housing, late hours, wrong use of recreation time, etc.

If, you say, you have too many employees to be looked after, too much work to be done and the nurse cannot follow them outside, I say get more nurses and let them alternate in the field work and indoor work, so that they can deal intelligently with their problems and do vital work. The up-to-date employer is usually broad-minded enough to see that healthy and contented employees mean better work and it is only through the combination of industrial betterment and practical welfare work that we can have healthy and contented workmen and women.

I am going to quote to you some direct testimony that was given to me when I asked one of the officials of a large corporation for some of the good results he had noticed as an outcome of the trained nurse's work. He said: "The nurse, by keeping in touch with all cases of ill employees, effects through her service a more speedy return of the man to his work. This means a gain in plant efficiency. She undoubtedly prevents actual illness and attendant loss of time, in many instances, by urging ailing employees to consult a physician. Before we had a nurse much time was lost by men who were detained at home to attend to a sick wife or child. Since we have had the nurse this feature of home cares is left to her, thus relieving the men for their work." "Another feature of the duties of our nurse is the giving of advice for proper diet and nourishment of the employee and his family. The results of this are effective in efficiency." "And," quoting the gentleman who was speaking, "the following may seem questionable, but it is true; we have had numbers of instances where intemperate employees who have been helped by the nurse in recovering from their sprees, who through shame or appreciation, or both, have actually given up drink." This nurse is doing industrial welfare work of vital importance.



I will close by saying that the trained nurse who will be able to give the best service and do the most vital work for all concerned is the one whose employer has at heart the general welfare of his employees, and thinks of them as fellow human beings. (Applause.)

### STANDARDIZATION OF SAFEGUARDS

CARL M. HANSEN (Secretary, Workmen's Compensation Service Bureau, New York City): The subject itself is so big that to attempt to cover it in twenty minutes would be folly. At best it will be possible to hit the high spots only, because each industry as such would require a volume in order to do justice to it.

I shall not confine my remarks to safeguards as they are popularly defined; that is, as usually viewed, a safeguard is some afterthought or attachment designed to conceal or cover an existing danger which has been overlooked in original design of the machine or equipment. To confine ourselves to such items would be entirely inconsistent with principles which our experience as safety engineers has developed. We must go further and view the entire subject from its very basis, making it thereby impossible also to confine ourselves to machinery and equipment. We must, in addition, take under consideration the structures in which such equipment and machinery is housed, because they present often as serious a menace to life and limbs as do any individual object.

I take it we are all agreed as to the necessity of uniform standards.

First, standards are necessary for the buyer and seller of equipment in order that they may buy and sell intelligently and profitably, whether the equipment under consideration be complete machines, attachments thereto, or the structure in which it is to be located.

Secondly, standards are necessary for the governors and the governed to avoid favoritism or apparent favoritism in the framing and applications of rulings.

Thirdly, to come home to the particular field in which I am engaged, standards are necessary for the insurer and the insured in order that the insurer may value on a predetermined specific basis the hazard in the plant of the prospective insured.

Fourthly—and this is the most important—only through stand-

## A Safe Machine

Equipment is safe enough only when it is as safe as that piece of equipment can possibly be made.

ardization will we ever be able to actually achieve results in reduction of the tremendous waste occasioned by accidents. We must adopt standards as high and as nearly correct as engineering skill and human ingenuity can possibly frame them. And then, when adopted, we must insist upon their enforcement with equity and fairness to all. To put it in terse phrases: Our standards must be high, comprehensive, practical, simple and positive.

By high standards, I mean that a piece of equipment is safe enough only when it is as safe as that piece of equipment can possibly be made and only when it is as safe as any other piece of equipment which will perform the function for which it is designed in such a way as to afford all possible protection to life, limb and property from accident and fire hazards. In other words, the first great principle before us as a basis for safety standards is "That the standards adopted afford all possible safety to the operator of the equipment, to surrounding workmen and in case of fire that it afford protection for the property involved." That, in other words, is axiom Number 1 in safety geometry.

Other principles forming the foundation for standards are amplifications of, or deductions from, the first. A safeguard for instance, should be, if possible, automatic in its action, application or operation, thereby removing those uncertain human factors, as knowledge, memory and involuntary acts, etc.

Forgetfulness, for example, is not a crime deserving capital punishment; it is one of the universal inherent frailties of humanity. The problem is, therefore, to destroy as far as possible the interrelationship between safety and the universal human shortcomings, which can be done by designing the safeguards on machines and equipment so that if a man's acts are essential to his own or someone else's safety, it becomes mechanically necessary for him to perform this act before proceeding with his task.

This brings us to the third principle, namely, "That a safeguard

be, if possible, an integral part of the machine itself, that it be part of the original design of the machine rather than as has already been mentioned—an afterthought."

Make the safeguard as essential to the operation of the machine as the driving pulley or the gears. A manufacturer of machine tools should consider it an insult to have a buyer add to his product certain now recognized essentials after it has been installed. The designer of the machine or the equipment, after having considered the productive capacity of the machine, should equally consider the fact that every machine must receive constant or intermittent attention from an operator. He should on that basis make the provisions necessary to safeguard the operator. He, the designer, is particularly the one who is best able to do it, because he can do it cheaper and better than any one else.

The foregoing applies particularly to machines and equipment under contemplation, that is, something that is going to be effected in the future, but unfortunately we cannot "scrap" all the machines and tools now in use and replace them with modern types embodying the above principles. We must, as practical men, consider existing installations and here it naturally becomes necessary to solve the problem by extra attachments. Still, part of the foregoing principles can be employed here also. Safeguards for these machines can be so designed, manufactured and erected that they become an integral part of the equipment, that they become an essential operating part of the machine, and that should be the basis upon which inventive genius should exert itself. It is a sad commentary, but none the less a fact, that certain manufacturers of safeguards in their advertisements, for instance, call attention to and feature qualities in their product in direct opposition to these principles. For example, we often note a manufacturer of sawguards featuring in his selling arguments as an advantage the fact that "the guard can be easily removed" or "thrown out of the way at will." The

## A Safe Man

Has overcome human factors—lack of knowledge, lapse of memory and involuntary acts.

gentlemen who use that argument are—undoubtedly not with premeditation, but unconsciously—working against the entire safety movement. The safeguard manufacturer who instead of the above would feature such arguments, as “cannot be removed” or “can only be removed or adjusted by using a key” or “is essential for the operation of the machine;” would be on the home run to perfect safety. A device embodying such principles will prevent the careless or ignorant employee from becoming a menace to himself and fellow workmen.

It is a foregone conclusion, however, that by patching old installations we will never achieve that degree of safety as will be possible when the safety idea is truly embodied in the original designs. We must look to the future for evolution in industrial methods, machines and tools, to give that maximum safety which on account of past neglects cannot be obtained at the present time. The standard requirements of all machine and equipment builders in the future should be safety, efficiency and convenience. These three cardinal principles should be embodied in the original design, with always Safety First.

A fourth principle is involved in standardization. That is, “a safeguard shall not materially diminish the output or efficiency of the machine to which it is applied.” Unless a safeguard meets that requirement it will never obtain wide use and unless it complies with that principle, there is something radically wrong with it. The man who designed it did not have a clear understanding of the problem he was about to solve. Many are the ideas advanced which have seemed to meet every requirement except that one and for that reason the devices were thrown away by the user and antagonism to all safety requirements was aroused in his mind. That, therefore, gentlemen, is one of the real fundamentals of the problem and can be solved only by close coöperation as between the practical and technical men.

The foregoing principles applied will not only give a high standard but will give a comprehensive standard, standards which will apply equally to Pennsylvania, California, Massachusetts, South America or Europe, whether it involves a machine, a safeguard or an entire building. They will be simple, so he who runs may read. They will be positive, that is, they will do something or cause something to be done or absolutely prevent something from

being done, rather than simply serving as a suggestion for doing the act or performing the functions part of the time only, thereby still leaving the chances for accidental injury if they have demanded the confidence of the operator and caused him to depend upon the safeguard for unfailing action.

The next question naturally is "Where can we obtain such standards?" Well, "Where have we gotten our industries?" "Where did we get electric lights, modern transportation methods, materials for modern buildings?" The answer is obvious. They are all the product of constructive, practical and educated minds and in this problem we must look also to men who can take theory and apply it practically to working conditions. In doing this, we may occasionally find something we were not looking for or we may look for one thing and find another, but the great majority of safety standards must come from the application of preconceived theories. The principles outlined must be assumed to be true and with them in view we must take the case under consideration; advance new theories, apply them, test them in application, revise the effected details, and thereby produce standards that will in fact advance the art we are working in by adding safety in larger proportions. The accepted safety principles must be applied by analytic thought in a constructive way. We must take existing hazards and analyze them, find why the hazard exists, what are all the contributory causes, what is the weight of each, and then supplement the thought by constructive work and criticism.

We cannot stop using brick because brickmaking is dangerous. We must find a way to make brick safely. We cannot destroy an industry. We must construct an industry in which the equipment will perform the necessary functions safely without wasting raw materials, tools, money or men. We must remember that men's lives and limbs are worth money to society and are worth still more money to the men themselves.

But coming back to the source of standards, as has already been stated, they must be developed by the minds of the men who have made the industry that requires them. Legislators, as such, never made an industry, never designed a machine. No! The engineers are the forerunners of civilization and peaceful vocations. The engineers are, therefore, the men we must look to for standards. We can, to be sure, support our engineering standards with favor-

**REMEMBER**

Men's lives and limbs  
are worth money to  
society and are  
worth still more  
money to the men  
themselves.

able legislation. That's all right. But we cannot look to our legislators to produce these standards, which, unfortunately, we have done in the past.

To illustrate a typical case of the differences of legislative and engineering standards—long ago the danger of moving elevators and open shaft doors was demonstrated and realized by the killing and maiming of hundreds of individuals. The legislators, seeking to eliminate the hazard, passed

statutes to the effect that it was unlawful for an elevator operator to start his car until the doors of the shaft were closed and latched. That is a typical standard produced by a legislative body. But that does not prevent the recurrence of elevator accidents. It does not because it is impossible to enforce the act in time to stop the accident. The only thing that a ruling like that does is to establish responsibility for accidents after they have occurred, without saving any lives or limbs.

Now consider how the engineer would set about to solve the same problem. He analyzes the mechanism, finds the contributing causes which produce the hazard, and re-designs his elevator so that it is a physical impossibility for the operator to reproduce the dangerous condition. This, by making it necessary in order to obtain motive power for his machine to close the door first, thereby positively preventing the elevator from starting until the danger point has been eliminated. The engineer, in other words, is not particularly interested in placing personal responsibility for the accident. He tries to ignore the human equation by compelling the operator of the elevator to perform a certain act, which act prevents the conditions to obtain that which actually produced the accident. This same theory can be applied down through the endless lines of mechanical contrivances used in modern industries, and if so applied, standards complying with all the principles heretofore outlined will be produced.

Assuming now that a manufacturer of machinery or equipment

is perfectly willing to conform to the principles here outlined, how is the purchaser to know whether or not—if such claims are advanced for a given product—they are actually true? The question, in other words, is "Shall a manufacturer's statement as respects his own product be accepted as *prima facie* evidence of compliance with these principles. I think not. Any man when discussing his own particular product is naturally biased. It is human to be so. An

impartial body, representing neither the buyer nor the seller, should sit in judgment as to the degree of compliance with the principles involved. Only through such a medium will we ever get absolute justice. Who shall constitute that body? Under what auspices shall it exist? I know the answer from many quarters will be at once—"The Government." Now here, permit me to state I am as loyal a supporter of our Government as any American. In fact I am too loyal to permit delegated to that Government any function which can be as well or better performed by its citizens. I do not believe we should extend paternalism any further than it already exists, and I am anxious, further, to see a plan adopted which will be reasonably certain of enforcement and to that end we must view it from its economic aspect as the strongest compelling force in existence. After once, in other words, having adopted a certain standard as complying with the principles herein outlined, it may be well to give them legislative support. It is a well founded axiom, however, that no legislation can be enforced to a greater degree than does it meet with the approval of the governed, and this is particularly true in a democracy. Therefore, if we can reënforce the legal standards with an economic incentive, we are likely to achieve better results.

Who has the greatest direct economic interest in safety standards aside from the employers? I think we will agree that underwriters of the hazards have. The insurance companies stand in a unique position to this whole question. They are neither sellers nor buyers

## GOVERNMENT

No function  
should be delegated  
to the Government  
which can be better  
performed by its  
citizens.

of machinery and therefore may well be considered unbiased as respects the nature of the standards; except it is in their economic interest to have them as high as practically possible on the thesis that "the greater the safety, the lesser the loss." They further have the economic incentive to offer the employer in the form of lower insurance rate, where that employer complies with the standards, an incentive often far more effective than legal requirements. Through the Underwriters' Laboratories, the fire companies have for years maintained such standards with signal success and good results. Is it not logical therefore, to extend the scope of operation of that institution to embrace the casualty field as well? In other words, it is admitted the engineers in the different industries must, in connection with the engineers of the insuring interest, establish the standards for that particular industry. After such adoption, however, it is essential that it be definitely established whether the standards are continually being complied with on the machinery, equipment or other product turned out by the different manufacturers. The buyer is entitled to be able to know at a glance by some universally adopted mark on the machine whether or not it meets all requirements. The seller on the other hand, is entitled to know that all competitors are required to comply with the same standards as he is. As the insurer is the final arbiter as to whether or not the machine is properly guarded so as to entitle it to recognition in rating, he should be governed solely by that adopted mark of approval. On this plan we would get results; we would obtain uniformity from the beginning, starting with the original design of equipment. (Applause.)

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After an informal discussion moving pictures were shown.  
The meeting then adjourned.



*"Your Own Property Is  
in Danger When Your  
Neighbor's House Burns"*

## National Safety Council

### Cement Sectional Meeting

Philadelphia, Pa.  
October 20, 1915

**ROBERT S. SINCLAIR, Chairman**

Chairman of the Association of American Portland Cement Manufacturers'  
Committee of Accident Prevention and Insurance

**T**HE MEETING was called to order by the Chairman shortly after 9 A. M., with about sixty-five persons present. The Chairman spoke briefly. He opened the meeting by giving a comprehensive résumé of the history of the accident prevention work of the Association of American Portland Cement Manufacturers, dealing with its activities and scope. He dwelt upon the encouraging fact that the Association figures for 1915 to date show a decrease of about 40 per cent in the number of fatalities when compared with the corresponding figures for last year. He then made some very pertinent remarks on the importance of educational work and the great efficiency of safety committees in plant accident prevention work. This, he said, was conclusively shown by his own experience in connection with an inspection by the New York Compensation Rating Board. His company had spent a considerable sum in the construction of mechanical and structural safeguards, for which he expected to obtain some premium rebate. He thought that the work of the safety committee might result in a small additional rebate, but as a matter of fact the inspection resulted in their obtaining nearly three times as much rebate or credit for the

educational work as that awarded for the mechanical safeguarding. He laid considerable emphasis on the foregoing statements.

The Chairman then introduced Mr. R. A. Medina, of the Independence Inspection Bureau, with a few remarks on Mr. Medina's work as an accident prevention engineer.

ACCESSIBILITY—DEALING WITH THE IMPORTANCE  
OF STANDARD WALKS, PLATFORMS,  
STAIRS, LADDERS, ETC.

R. A. MEDINA,

ENGINEER, INDEPENDENCE INSPECTION BUREAU.

*Gentlemen:* I don't know whether you think that Mr. Sinclair, in introducing me, painted me black or white. I am not satisfied just what he did, but I am afraid some of us will assume that it was black. He made a reference to having papers this morning—and I am sorry to say that I have not prepared a paper, but have a few notes here, which I will use to make a more or less *ex tempore* talk, regarding this as informal.

Regarding accessibility, my subject, I think there are two points to be considered: First, what in the cement plant must be accessible; and, secondly, how are we going to make it safely and practically accessible? In going over in my mind some of the accidents that I know have happened in cement plants, and some of the conditions that I know of that must certainly make causes for accidents, I have made a short list of some of the difficulties that have to be overcome.

First of all, I have placed bearings, boxes. I think we are all agreed that most every bearing in the cement plant should be oiled, and should be felt occasionally to see whether or not it is growing hot. In many plants that is not the practice. In one plant I visited it was the practice to let the boxes go unoiled so that, by the different squeaks, one could tell whether the elevator was running or not. We have to get at the bearings if we want to have an efficient plant; but we have got to make each bearing easily accessible.

Secondly, we have got to get at our belts for dressing, at our chains for lubricating, and at our belt-shifters and clutch-levers. We have got to get at the spouts, at the gates in the spouts or

chutes; and, in passing, I would say that this is, perhaps, one of the difficulties that is given the least attention in cement plants. I have seen a man crawl out on an angle-iron roof truss to get at a gate, lean down and slam it shut, and then crawl back over this angle-iron again. That is not safe accessibility.

Next, we must make accessible the tanks and hoppers, particularly the openings in them that we use for measuring—for getting into the tanks to repair them, and so on.

We must make all the valves in the plant accessible; we must be able to get at the steam-valves; we have to get at the water-valves and air-valves; and, as you all know, a great many of these valves are located high above us, so that we cannot reach them, unless by a portable ladder, which is probably hard to find when needed.

Next, we must get at the different parts of elevators and conveyors for inspection and repairs.

We must get our samples. We must be able to sample from our conveyors and elevators, as is often done. Sometimes I have seen used sampling machines which we have to get at occasionally.

We have to get at the mill-feeds very often.

We have to get at our motors for lubricating and inspection, and so that the electrician can have them in absolute working order at all times.

We have to get at the electric switches. Electric switches are mostly located in the power-plant, where there is a switch-board, but sometimes in different parts of the plant.

#### AN UNSAFE PRACTICE.

I know of an installation in a power plant which, to my mind, was anything but desirable. This small switchboard for power and lighting was located in the engine-room, about, I should say, 25 feet above the floor, and directly over a platform used to get to an idler-bearing. In order to get at this switchboard, which, by the way, was a very poor board, without handles on the switches, it was necessary to climb a set of steps—loose steps—climb out on the top of those steps, place one foot on the platform-railing, and reach up at arm's length in order to get at the switches.

Those are the chief things we must make accessible in our plants. The question is, how are we going to do it? What are we going

## TROUBLE

"What is the use  
of trying to save  
yourself trouble  
when it is so easy to  
borrow it?"

stop to take the longest way, the safest way, but take a short cut. The other day I was in a cement plant and saw two very fast-moving belts completely railed off. There was a clutch over on one side and one on the other side of this railed inclosure; and I watched. The operator wanted to shut that machinery down very quickly, and what did he do? Instead of walking around the path made for him—he was in very much of a hurry, as we mostly are—he stepped from one side over to the other, over the tops of these railings, directly over these belts, which, if he had fallen on them, would have dashed him into eternity—undoubtedly. There was a case where a man took a chance; and there are many other cases that I could mention, if we had the time.

### IDEAS FROM WORKMEN.

They are the things we have got to look out for—we have to make our means of accessibility as short as possible; and to do that we have to find the way and see the way of going about these things. The men are the ones that have to do these things day after day and year after year; and they know how they will do it. We cannot go into a plant and say: "The way to do this operation is to oil this bearing, and then that one, and then this one." The man who has had the experience knows he can do it in a given time by oiling the second one first, perhaps; and so, if we watch him, we get certain other ideas regarding building platforms and walkways that we never would have thought of ourselves.

to use—ladders, stairways, walkways, and platforms, and where are we going to use these things? In speaking of that subject, one of the first things is avoiding so many short cuts. We all know that our operating men in cement plants take short cuts—we call it taking chances; but I firmly believe that nine-tenths of the gentlemen present in this room will take a short cut without regard to danger time and time again. And the same happens in a cement plant; you won't

As to the difference between a ladder and a stairway: To get to overhead walks, are we going to use stairways or ladders? Are we going to use portable ladders or permanent ladders? I believe that wherever we can get rid of a portable ladder we are doing a great thing from the accident prevention standpoint. First of all, we want to have permanence in our stairs; we want to have a stairway of a proper pitch, properly railed, leading to these overhead walks and platforms; and if we cannot get in a stairway, then we might put in a ladder—an iron ladder, making it permanent. Very often we find ladders used as stairways; by that I mean pitched so that a man could use them as a stair. He faces outward in going down the ladder, instead of stepping onto the ladder, facing it. In one plant I found it has been the practice, when they wanted to build a stairway, to go out in the woods, cut down some small trees, and bring them into the plant and dry them a little bit. In about ten minutes they had a stairway. That is not the way to build a stairway. I think we are all agreed on that.

As to platforms, first of all they must be rigid, and as wide as we can have them; make them to fit in with the rest of our equipment, so as not to make the use of them impractical. We must rail them. It is getting to be the practice, these days, to place toe-boards on platforms, to keep loose materials from falling to the floor below. Now about the railings for these platforms; I was talking yesterday with a man who has had considerable experience with safety work in the chemical industry; and he said they had just built a railing around a pickling-tank; they had built in three feet high, and then they had their first accident. A man sat on the railing to eat his lunch, fell backward, and emerged—pickled. This shows clearly that we must build railings so that a man doesn't have a tendency to sit on them. Build them just a little bit higher. A height of about forty-two inches has been found correct from this standpoint.

### Only One Enemy

There is no neutrality if you enlist in the war against accidents and fight for Safety First.

Another thing about walkways and platforms is the matter of projections in them that cause a man to trip and fall. These should be avoided as much as possible.

Dust is a great proposition in a cement plant; and time and time again I have seen solid wooden platforms when the dust load had deflected a ten-foot platform probably a foot or more. That is not a safe condition. You want to get rid of this dust; filter it, if you can.

#### BEST TYPE OF FLOORING.

I think the best type of flooring to use is a grating or perforated metal or something of that sort. Often I have found the screens from mills used as platforms and walks; and although those may not be used in some cases, in others their use is proper. In one case where those screens were used I found projecting bolts and holes, and things of that sort; it only goes to characterize the general methods of makeshift safeguards that existed in that particular plant.

In closing, I want to bring out one point regarding the relation of platforms and walks to the operating machinery. If an accident happens—let us say a man crawls out on a loose plank, which we find in a great many plants instead of platforms, to oil a bearing; the bearing is close to a belt and pulley (the pulley not protected); the man slips on the platform and throws his arm into the spokes of the pulley, and his arm is broken or he is killed—where is the fault? Is it because that pulley wasn't covered or we didn't protect the platform, or because the man is careless—walks right into danger? To my mind it is possible to have all those causes enter into that accident; and if we can prevent one of those causes we go a great ways toward preventing the accident; if we can prevent all of them it is *impossible* for the accident to happen.

Therefore, I say that we must not be satisfied at building good platforms and walkways; but we must temper that with the education of our operatives and the reasonable protection of moving parts. I thank you, gentlemen. (Applause.)

#### DISCUSSION.

A MEMBER: I would like to ask why you build iron stairways. My experience has been that an iron stairway is liable to become charged with electricity.

MR. MEDINA: That depends upon the electric wiring, to a great extent. I think we are agreed that in a cement plant, with the kind of labor that we have in many cases, it is pretty hard to keep the wiring in good shape; but I don't think that the fact that a stairway is liable to become charged should prevent us from building them of iron. In the same way any other metal structure in any plant might become charged provided the wiring was defective. I don't know whether that answers your question or not.

A MEMBER: Mr. Chairman, we think the practical experience has been that an iron stairway and any other kind of iron work becomes very slippery under cement. The wooden would wear out sooner, but it would be a safer tread.

MR. MEDINA: It might be a good plan to call upon some of the cement men that are here as to their experience regarding the slipperiness referred to.

THE CHAIRMAN: There must be some of those here who have had experience with iron walks and iron stairways in that respect.

MR. HESS: Mr. Chairman, most of our stairways are iron. We have angle-iron in the corner of the stairway, with perforated iron right back of it, and there is no slip to it at all, and no wear to it. I read in the books about belts being protected in engine-rooms. There was a passage provided under the belt so that a man could pass underneath. That part would be all right, I think, if you can do it; but is it not more dangerous to pass right in front of the engine, where the cylinder-heads can come out, than to walk through a belt? I know that we had experience with three of our engines—the cylinder-head going out and the man going around in front of his engine. I had a talk with one of our men this week and asked him whether it would be good policy to have a passage through a belt or to go around the front of the engine. He said: "I would rather not go around the front of the engine. If the belt gives out, it gives notice, while the cylinder-head will not give you notice—it would come right out."

MR. MEDINA: I think that is a very pertinent suggestion, Mr. Hess. I would say, however, that the guarding of any belt is dependent on the local conditions. If you happen to establish a standard for protecting engines, it will probably not fit each case

## Safety First

He is free from danger who, even when safe, is on his guard. Be a Safety fan.

imaginable; and I also think there isn't any degree of safety in walking through a belt, no matter how strong it is, if you can help it; so that I think if you have got to get through to your engine-room through the belt it is six of one and a half-dozen of the other.

A MEMBER: I would suggest that it is under the next paper.

THE CHAIRMAN: It may be somewhat pertinent as a matter of accessibility. We have had some

testimony to the effect that iron walks or stairways do not become slippery, and there must have been considerable experience with them. It would be interesting to know if any one here has, in their experience, found that iron stairways or walks have become dangerously slippery.

MR. HESS: I have had experience with plain iron being slippery, but not with perforated iron. We are now using perforated iron.

### GRATED METAL WALKWAYS.

A MEMBER: Wooden walks are really dangerous. In our place we find there is great risk of fire, as a rule. They are never safe for a great length of time, as they are often overloaded and the cause of a great many accidents by breaking. I don't think a solid metal walk is much safer than a wooden walk, except for stability. Our company has gone through the experience of wooden walks; I think it better and I think they have found it so, too, to use grated metal walkways and grated steps on stairways. They allow no place for cement or dust to collect. We all know that a stair loaded with a half or one inch of dust, and I have seen them with the dust three inches thick, is not a very safe thing to step on; whereas if it is a grated walk, it is impossible for any dust to collect on it, and it is also impossible to slip on a grated walk.

MR. HILL: In regard to the desirability of wooden stairs and walkways, I have seen them in use in the kiln room of a certain plant, giving access to the elevators, coal tanks, and cooler tops.



These walks, used regularly in order to reach the machinery, to which they give access, were in several places burnt almost through from the hot clinkers falling on them, and were anything but safe; and that applies directly to the undesirability of wooden construction in relation to both the fire hazard and the safety of the employees.

In regard to stair treads, I know that some of the companies use channel-iron filled in with concrete, the surface of the concrete slightly roughened. Now, the slipping possibilities on such a surface are, in my opinion, negligible, because it corresponds very closely to several of the abrasive materials gotten out particularly as safety treads.

EXPANDED METAL, CHANNEL IRON AND CONCRETE.

MR. GUNNING: After considerable examination of our walkways we are going to do away completely with wooden walkways and put up gratings. We are now trying the expanded metal, and, for our permanent stairs, are replacing all the wood with the channel-iron and concrete, as Mr. Hill has suggested. We have quite a number of these stairways and they are very satisfactory. I believe the grated walkway is the best walkway, and you can get very good results with bar iron on edge spaced about an inch and a half apart. We have found it very satisfactory.

MR. RAWSON: We have recently tried what they call in Canada "Ferro-Dovetail"; it is the same as that which the Brown-Hess people put out. It is the ideal platform, as you can lay the material right on a couple of angles and then put about an inch or an inch and a half of concrete on top of it. It makes a walk that is easily built, doesn't take very much time to construct, and will stand pretty near the same amount of strain as the steel work will carry.

THE CHAIRMAN: Does it act as a reinforcement?

MR. RAWSON: Yes, as a reinforcement.

**Lincoln Said:**

"I don't think much of a man who is not wiser today than he was yesterday."

A MEMBER: For several years our company has been using iron walks and stairways; some of them are perforated—the majority, I think—and I think during the whole of that time there has never been an accident due to them. I don't altogether agree with the use of expanded metal and cement filling for the simple reason that it acts as a great collector for dust, which is something we want to keep off our walks. We do not want anything that will allow dust to accumulate; and I don't think there is anything better than a perforated walk or stairway when it comes to a question of safety. When the steps become slippery they need renewing. I think there is much greater danger in a solid walk, platform, or stairway where dust will accumulate and which gives every possibility for a man to slip or stumble over things hidden under the dust than in the perforated or grated style, which is self-cleaning and "non-slip" in character.

THE CHAIRMAN: I inferred that the solid construction almost entirely referred to stairways.

MR. MEDINA: These solid concrete reinforced slabs are used for treads, and not for walks; is that not so?

A MEMBER: No, sir. They are used for walkways.

MR. YOUNG: In comparing gratings with perforated platforms, the surface exposed for the collection of dust is very much smaller in a grated platform than in a perforated—very much smaller. There is practically no horizontal surface in a grated platform for catching dust.

A MEMBER: When I speak of perforated platforms, I do not wish to eliminate the grated platform. I mean any platform at all that has openings in its surface to permit dust to filter through.

*(It was here necessary to transfer the meeting to a much larger room, due to the unexpectedly large attendance.)*

THE CHAIRMAN: As we have an opportunity and care to, I think may be the members would like to have a few words from you (addressing Mr. Richard H. Gunagan), as to the character of the work that we do from the insurance company's point of view, because in doing safeguarding work not only is the safety end of it, as far as the lives of the workmen are concerned, most important, but, there is another important feature, and that is that

we get some financial return for it, if it is possible, in the shape of a credit in insurance rates, where insurance is carried; and there are certain technical requirements about that that might be not quite complied with when it might be just as easily done in accordance with the insurance company's requirements as not; but if they are not quite understood, one might miss the credit by not entirely understanding the matter.

### SAFEGUARDING BELTS AND SHAFTS

MR. RICHARD GUNAGAN

Engineering Department, the Fidelity and Casualty Company,  
New York City.

If we are to say that all belts and shafts are to be guarded, regardless of local conditions, it makes the problem a hard one to solve. It is easy enough to believe that belts and shafts should be guarded, but to know how and why they should be guarded is a far different matter; therefore we should view the problem from as many different viewpoints as we can. The law, statistics, insurance company regulations, and the employer's own point of view should be taken into consideration.

Laws intended for the prevention of industrial accidents and fixing a relation between the employer and employee have been passed in almost every State in the Union. These laws have been further augmented by the passage of Workmen's Compensation Acts for the purpose of better protecting the employee and his family. Laws regulating the protection of belts and shafts are now in force in twenty-five different States.

Unfortunately, there are no two States having the same law covering this subject. The laws of the Commonwealth of Pennsylvania read, in part, as follows:

"The owner or person in charge of an establishment where machinery is used shall provide belt shifters or other mechanical contrivances for the purpose of throwing on or off belts or pulleys. Whenever practicable, all machinery shall be provided with loose pulleys. All . . . . belting, shafting, set screws . . . . and machinery of every description shall be properly guarded."

We are informed that along these lines the State of Illinois has enforced the guarding of over 43,000 belts and pulleys, and compelled the removal of over 18,000 set-screws. These changes cost the employers over \$4,000,000. It has become no longer a question

## Stop, Look, Listen

He who will not listen to Safety may have to listen to the sound of an Ambulance Gong.

of expense and trouble, but a necessity. This being true, it behooves us to study the problem with the greatest care and to obtain exact knowledge before we lend our aid to the making of more laws, for, in order to be just to the employers of different States, laws should be uniform through the country. Mere laws not intelligently made will not solve the problem. The excuse that the burden is ultimately borne by the consumer is a poor one if the expense is needless and not justified.

There is a right side and a wrong side in this as in every other question. We all want to be on the right side, and one of the best mediums we have is our own National Safety Council.

### EXACT AND UNIFORM INFORMATION.

Many of the States are now collecting statistics covering every cause of accident. Claims under Workmen's Compensation Acts in thirty States are furnishing statistics that will be of the greatest assistance to us. The Workmen's Compensation Service Bureau of New York has adopted a standard form for the use of the various companies in order that exact and uniform information may be obtained. In this work they make use of the Hollerith Tabulating Machine System. Think of the value of this work, which will give exact information on every State where Workmen's Compensation laws have been enacted!

To illustrate what a small part of accident prevention is concerned with belts and shafts we find, in a report of the Industrial Accident Board of Massachusetts, a statistical digest of about 9,000 accidents, of which 475 were fatal. The number of belting accidents reported as fatal was 6; shafting and set-screws were responsible for 9 fatalities. This gives a total of but 15 deaths due to belts and shafting.

The Industrial Commission of Wisconsin, in a digest of 1,486 accidents, covered a period from 1911 to 1914 of about thirty-one months, showed the following:

|                                |     |
|--------------------------------|-----|
| Accidents due to belts.....    | 217 |
| Accidents due to shafting..... | 74  |
| Accidents due to pulleys.....  | 55  |
| Accidents due to set-screws..  | 35  |

377

From New York accident reports  
for two years, 1912 and 1913:

|                        |     |
|------------------------|-----|
| Belts and pulleys..... | 124 |
| Shafting .....         | 33  |
| Set-screws .....       | 11  |

None fatal. 168

## Use Your Brain

You can teach a  
parrot to say "Safety  
First" but he won't  
know what it means.  
Do you?

Insurance companies fully appreciate all the various conditions bearing on the subject, and, therefore, view the problem in its broadest scope. The employer, as a client whose interest is to be conserved, must be furnished safe insurance at the lowest possible cost. Insurance companies will not insure against breaking the law, but at the same time, in their inspections, they cannot act as a police power. They have been the pioneers in accident prevention work, and have always considered every phase in order that no unnecessary hardships should be imposed on any one concerned.

The Workmen's Compensation Service Bureau has affiliated with the Underwriters' Laboratories, and the label of the Underwriters' Laboratories on any article will mean that it has been inspected for its safety qualifications as well as others. This system alone will almost solve the problem.

Insurance companies recognize the value of guards in giving credits in the schedule rating of the plants inspected. This amounts to as much as 40 per cent of the manual rate. Belts and shafts make up a part of this percentage, according to their number and class. Unguarded transmission belts and shafts have a charge levied against them varying from 25 cents to \$1.00 in premium, based on the character and extent of the hazard presented, and with no limit on the total charge under this class. Belts and shafts on working machines, when fully guarded with the other danger points, receive a credit per machine, and it is this class of belt and

shaft danger which, when removed, forms a portion of the credit given the risk. A great deal can be accomplished by giving due consideration to the plant equipment. If this can be done in part before installation, so much the better. Like other details of management, plant inspections should be thorough, frequent and at regular intervals. The designer of a plant carefully takes into consideration buildings, boilers, steam engines, generators, and other prime movers along with the machine tool equipment and the product to be turned out, but the transmission machinery, that is, the belts and shafts, is often overlooked and left to work out its own salvation. When we stop to consider that a 12-inch belt on a 30-inch pulley running at 100 R. P. M. will transmit about 25 H. P. we realize that it needs attention.

#### REGULATIONS FOR BELTS.

Natural regulations would appear to be that horizontal belts should be guarded when within 7 feet of the floor or platform level; vertical and inclined belts should be guarded to a point 6 feet above the floor, or if a railing is used, it should have at least 15 inches clearance and be  $3\frac{1}{2}$  feet in height. If necessary, a toe-board might be placed to protect the opening where the belt passes through the floor.

Belts should run true at proper speed. They should not be made of short lengths, and their size should be suitable for the horse-power to be transmitted. Excessive belt tension should be avoided. Splices should be glued, jointed smoothly, and securely riveted. If metal fastenings are used, care should be taken that there are no exposed metal parts. Raw-hide lacing should be smooth and flat, with the ends cut off and turned in. Hooks, clips, and wire lacings are often a source of injury. Hangers and hooks should be provided for belts when idle, as belts should not rest on running shafts or against the rims of revolving pulleys.

Belt-shifters should be permanent, convenient, and always within reach of the operator. They should be positive in their action, and so locked as to prevent the belt from creeping from the loose to the tight pulley. Shifting belts by hand should not be done on any belt, regardless of size: it should be done only by using a belt pole or a proper shifter.

A three-inch shaft revolving at 100 R. P. M. transmits about 25 H. P., and to allow such a shaft with a projecting set-screw or keyway to come in contact with the person or clothing is almost sure to result in a fatal accident. Inspection should be made of the method of securing stringers to structure, the method of securing and spacing hangers. All shafting should be perfectly aligned with couplings running true and pulleys firmly secured. Revolving shafting should be guarded where exposed by being encased in such a manner as to effectively prevent any part of the body, hair, or clothing of the operator from coming in contact with it. Vertical and inclined shafts should be encased to a height of six feet from floor or platform level. Horizontal shafting less than six feet from the floor or platform level should be completely encased or protected by a standard railing. All shaft dead-ends seven feet or less from floor or platform level should be cut off or protected by enclosing in metal casings.

Shafts which run along the floors should be entirely protected. Pipe railings with proper clearance may serve the purpose. Revolving shaft covers or tubes have proved satisfactory under these conditions. Wire-mesh, expanded or perforated metal can be used to advantage in the construction of shaft guards.

Hangers should be strong and properly secured to the structure. They should be self-oiling, self-adjusting, and self-aligning. Drip-pans and cups should be securely fastened so that if struck with ladders or material they will not be displaced.

Pulleys are deserving of frequent inspection, as castiron arms may be cracked. A hammer test will detect such flaws. Loose pulleys should be so designed as to be readily oiled, and, if close to a hanger, should be completely guarded. Large size and high-speed fixed pulleys should be well secured and keyed to shafts. They should be perfectly balanced and run true. Arms of pulleys can be guarded by metal discs. Pulleys, where the space between them is less than the width of the belts, should be guarded or else the pulley should be flanged.

Platforms giving access to belts, shafts, and pulleys should be substantial and so placed that the transmission machinery may be easily reached. They should, preferably, be of the grating type, so as not to hold dust. Standard railings and toe-boards should be provided where necessary.

## CLOTHING

Don't wear loose baggy clothing where it is liable to be caught in machinery.

Attention should be paid to the clothing worn by employees, especially oilers. Flowing neckties, torn sleeves, or loose overalls should not be allowed. Oiling should be done by one man and never while the machinery is in motion. Oil-cans should be furnished with suitable spouts. Portable ladders should have hooks at the top ends, and the lower ends provided with non-slipping feet or metal points.

All collars, whether solid or splits, should be round and free

from exposed set-screws. Set-screws should either be recessed or protected by flanges on the collar. Couplings should have no exposed nuts or bolt-heads. Flexible couplings should be free from projecting studs, keys, buffers, or exposed nuts and bolt-heads. Projecting keys should be covered with metal caps.

Clutches should be so placed that machinery can be conveniently started and stopped. Every floor, every room, and every machine should be under separate control if the operator is to be properly protected. Clutches should be positive in their action, and so designed that they will not engage unless operated. Worn frictions should be renewed. All clutches within seven feet of floor or platform level should be guarded.

On countershafts, loose pulleys and spindles should receive constant attention and not left until they run hot and "freeze" in the bearings. The method of lubrication should be perfect. All parts should line up true with driving pulley. Countershafts should be so placed as not to foul or crowd belts or machines.

All set-screws on revolving parts, where exposed to contact, should be countersunk or protected by covering with a smooth surface. It has been reported that 1,500 people are killed or injured every year in the United States by projecting set-screws. Manufacturers of safety set-screws have given a great deal of attention to the problem, and furnish safety set-screws in all sizes and kinds to meet every requirement. Exposed set-screws are a constant menace to life and limb. The hazard may be overcome at a small



cost in any one of the following ways: By countersinking, having the set-screw slotted to take a screwdriver, or hollow, to permit the use of a socket wrench, by covering with a sheet-metal plate or metal caps or by covering with a wooden ring. The use of string and leather around set-screw heads is not recommended.

The advertisement of a manufacturer of set-screws reads as follows:

"The need of safety set-screws is so well recognized by those who are familiar with the use of set-screws in manufacturing plants and industrial works and the danger of loss of life and the consequent liability of tremendously extensive damage suits caused by the use of projecting set-screws which are so evident to owners of factories and mills that it has now come to be regular shop practice to use safety set-screws."

#### OLD-FASHIONED SET-SCREWS.

Another manufacturer has covered it as follows:

"With the old-fashioned set-screw destruction comes with warning."

Even the lowest type of society's enemies gives some warning of intended destruction, but the set-screw with projecting head, never. The only time you see the head of a projecting set-screw is when it is not revolving—when it is harmless. If you have to learn a danger by experience, you'll get the experience sooner or later where set-screws with projecting heads are in use.

In the materials to be used in the construction of guards we have a choice between wood and metal. Guards made of wood naturally appeal to those in wood-working trades and guards of metal to those in the metal-working trades. Circumstances, as a rule, will decide.

Wooden guards may be either open or solid. If solid, they do not permit of ready inspection and may add materially to the fire hazard. For example, vertical wooden guards connecting two

## TODAY

Never put off until tomorrow the Safety work you should have done yesterday.

floors might be decidedly hazardous. Wooden guards also collect grease and dust, thus adding still further to the fire hazard.

Where wire-mesh guards are objectionable, due to their collecting dust, then, of course, some substitute, such as iron piping or structural iron shapes, may be used. In addition to the pipe railing heavy wire screens or sheet metal may be attached to the railing for the ready removal of guards. Sockets should not project above the floor. Hinged sides on guards prove very convenient at times.

Metal guards can be readily made from expanded or perforated metal. The metal should be free from burrs and the edge protected and reinforced by structural shapes, or else bent up on edge. This depends upon the material, whether it be expanded or perforated metal. Wire-mesh guards, when made of heavy gauge wire, may be more expensive to fabricate than expanded or perforated metal, due to the higher cost of the wire workers over the machinists.

#### MOST GUARDS ARE QUITE SIMPLE.

Guards should be substantially constructed, light, and, where possible, so constructed as to admit of visual inspection. Hinged covers may be used where necessary. Guards may appear, when in place, as complicated in construction, whereas in fact most of them are quite simple. Belt-guards should be made strong enough to offer protection in case of a belt breaking while running. This can hardly be expected of a shafting guard. A guard that hampers the operator, reduces his output, or increases the danger, fails in its design. Insofar as is possible we should all exert our efforts toward the standardization of guards.

The excuse so often given that only one man is exposed to danger from a belt or shaft is not worthy of consideration. This principle soon finds a way to have but one man exposed to any danger-point. The isolated engineer has just as much right to protection as the workman, one of a group.

Changes take place in the design of machines from day to day, and what may be modern and up-to-date, may be obsolete before the machines wear out. Therefore, it may be cheaper to buy a new machine, with the safety attachments incorporated in the original design than to attempt to make the old machine safe. Accordingly, buy your machinery properly guarded. If a machine is new

in design, have all the safety features taken care of by the designer.

The installation of motor drives does not, as a rule, entirely eliminate belts and shafts, which, for a long time to come, will play an important part in the industrial plant. It may mean that, in time, main line and jack-shafts, together with counter-shafts, will be eliminated, but often motors are placed on the floor near the machine and belts and shafts are simply brought into closer contact with the operator. If belts and shafts are exposed, they should be guarded.

Last, but not least, if you know of a better and safer way to effect any guarding, *do it* and then tell others. If you do not know yourself, inquire of manufacturers of safety appliances. If they cannot tell you, communicate with the National Safety Council.

(Applause.)

#### DISCUSSION

THE CHAIRMAN: This paper is open for discussion; and in connection with safeguarding belts, it occurs to me that in the case of the law regulating belts there are some requirements, I believe, on the part of the Compensation Bureau, that guards shall be a certain distance away from the belts. Is that not true, Mr. Gunagan?

MR. GUNAGAN: They make a statement that—"Vertical belts shall be inclosed;" or, if there is a clearance of fifteen inches, then your pipe railing—36 inches, about, is the standard. I have heard the criticism of some of the inspectors that the insurance companies figure too exactly. I don't believe that that keen point of demarcation is made, and, knowing that a man is guarded by a rail 33 or 34 inches high, perhaps more, which meets the condition, if I were the employer I should certainly take issue in case the effectiveness of the protection was disputed. It is no easy task for a man to spend money for guards and then, because somebody else, perhaps, has a different opinion, know that it must be all wiped away; and I feel, from that point alone, how careful every one should be.

MR. HARDING: Do you regard a shaft about six feet above the floor as dangerous?

MR. GUNAGAN: Guarding shafts does not depend on their size, because even if a shaft were only an inch in diameter and had anything on it that would catch a man's clothing, it might prove fatal

### Call Attention

To all tools, machines, or appliances you know to be unsuitable, improper or defective.

to the man. You might go up to a four- or five-inch shaft and, of course, have that much more headway, and the same catastrophe or accident would happen; and so it is stipulated that you must guard that shaft. I am not making the distinction there that the State law shows, because that is a different thing. If you put a boxing around that shaft, the fire insurance man may come along and raise the rate of insurance, but if you have a shaft exposed, you have got things so the

man is liable to come in contact with the thing and get hurt.

MR. HARDING: We have had suggestions in regard to safety-belts. We have used safety-belts with a rope on them fastened at the top to keep a man from falling down onto the pile of stone. We put a man on the top of the pile and the stone fell down and hit the man—impracticable, because we have to put another man up there to hold the rope so that the man won't fall down on the pile.

#### BELT GUARDS AND BELT MEN.

MR. MEDINA: I would like to say something regarding the protection of belts and the consequent danger of applying guards in case the belt breaks. It is absolutely practical to build a guard that will resist belt-breaking—and I think there are gentlemen in this room who can substantiate that statement. I don't think that applies to a wooden guard at all; and the tendency is in these days to get away from wooden guards entirely and use metal; and I have seen cases where a mill, driven by perhaps a 40-horse-power motor—something of that sort—has had its belt protected by  $\frac{1}{8}$ -inch iron—in an angle-iron frame; and I have seen the places where the belts have broken and simply dented those guards. I don't think it is impractical to protect a belt against breaking.

MR. HARDING: What kind of a mill do you operate?

MR. MEDINA: I don't operate a mill.

MR. HARDING: I am a Safety First man, and the company I

am with believe in it—just as much as anybody in the business; but your suggestions along impractical lines don't appeal to me.

MR. MEDINA: I absolutely agree with you; and I brought that point up to show you that it was practical, as I have seen it done.

MR. HARDING: That may be, in some cases. Take a cement-mill: every well-regulated cement-mill has a belt-man, whose job is to see that the belts are kept in good condition. We have had a lot of accidents; we have had inspectors from the liability insurance company write enough suggestions to choke a boiler-shop: you don't get anywhere; and when I ask them, "Do you recommend these things?" "Yes." "How much will they cost?" "I have not experimented." "We will give you the job." Then they can't do it for \$5,000: it is all impracticable! The cement manufacturer is looking for something practical: he is not looking for a lot of hot air, because that doesn't get him anywhere.

#### PRACTICAL WORK NEEDED.

At what time of day do the most accidents happen in the cement-mills?

MR. MEDINA: Mr. Hill could tell us that.

MR. HARDING: From 11 to 11:30, and from 4 to 4:30, in the change of shifts. It is the practical thing that the manufacturer wants. You can make a lot of rules. I have been in this game about twenty-eight years, running mills. It is something practical that is needed.

MR. YOUNG: Do you claim that this is not practical?

MR. HARDING: You can guard, but it doesn't amount to anything, because the minute a man's eye sees something moving, it is the best Safety First proposition he can meet.

MR. YOUNG: There should not be a moving shaft which is not guarded allowed anywhere in a cement-mill.

## INSURANCE

Safety First is the  
best insurance you  
can get—both for  
yourself and family.

MR. HARDING: I do not agree with you on that.

MR. RAWSON: In guarding belts we put in two upright 8-inch channels near the pulley, with lugs in the floor, so that they can be removed; between these is placed 3-inch plank on edge to catch the belt; and if it comes off it is absolutely stopped by this barrier. I think this scheme very satisfactory.

THE CHAIRMAN: Is there any further discussion of this paper?

A MEMBER: What are considered the best handbooks on safeguarding standards? For instance, Mr. Gunagan has spoken of the 36-inch height when the railing guards are used. I can not remember all these things, and would like to know whether there are any handbooks which would help in getting these standards, so that we can erect safeguards according to standard practice?

#### VALUE OF ILLUSTRATIONS.

MR. PALMER: In connection with that, the gentleman said Pennsylvania standard. Our inspectors (speaking as the Chief Inspector of Pennsylvania), have a sort of guide for them, and it is the means of their explaining to the employer what a guard is and what proper care is—we have furnished all of them a copy of the Universal Standards, put out by the Workmen's Compensation Bureau, and I think it covers practically all of the standards that we have out. It gives your inspector a chance to go into a plant and show something—if you can show a man a picture of something, he understands it a great deal better than if you say it is 15 inches away and so high or less than that and so much higher. The picture makes it stick in his mind. Some of you know those standards; they are colored; the safeguard part is colored green, and it is of a convenient size, and is a good means of educating your safety man. I am of opinion the Universal Standards adopted by the Bureau are open to being obtained by any manufacturer. Are they not, Mr. Gunagan?

#### BOOKS ON SAFETY.

MR. GUNAGAN: Yes, sir. Any of the books can be purchased for \$3.50; but, on the other hand, in order to facilitate matters—I shall be pleased to hear from you: as far as our company is concerned we would only consider it a compliment and an honor for you to address us.

THE CHAIRMAN: I imagine it would be well worth while for manufacturers to have those books when they are putting in any improvements of the kind—to put them in, where they can, in conformity with the standards.

MR. GUNAGAN: The books are so designed that the information they give a man is a keynote as to what are the best standards in all parts of the world, and it is indeed a guide: you can hand it to your foreman and say, "Here! it carries out an idea;" and, likewise, the Independence Inspection Bureau have certain standards.

A MEMBER: They would apply in all states if they are good.

A MEMBER: If we follow out the standards embodied in the book published by Mr. Hansen, will that apply to the Pennsylvania State standards—cover your requirements?

MR. PALMER: There are just a few minor differences, but that doesn't make any material difference: you can change the dimensions, when you build guards, to suit the Pennsylvania standard; but you have a pattern there—a picture of what Pennsylvania wants you to do. I don't think there is any regulation but what practically that regulation is covered in the Universal Standards.

MR. RENINGER: The Lehigh Company is operating plants in four States, and all our superintendents have been taught to use the Universal Standards book and make all their guards according to those standards.

INTERSTATE STANDARDS FOR SAFEGUARDS.

MR. PALMER: I hold here in my hands the names of the officers of the Governmental Section of the National Safety Council, and one of their objects will be to make interstate standards for safeguards. Colonel Bryant—it has been officially announced—has accepted the offer to become the chairman of it; and, being a member of the National Safety Council Executive Committee, I am to act temporarily as the secretary of that section until they get organized.

A MEMBER: One thing that will come up in Pennsylvania with regard to the cement industry, to show the fairness of the Department of Labor and Industry in that connection, is that in your standards of the Workmen's Compensation Bureau, you will see

## Not in Safety Work

One way to make  
yourself disagreeable  
is to explain to folks  
that they are wrong.

the "Permission for Passageways under Belts," and you have quite a good deal of that in the cement trade; but where you want permission to have a passageway under a belt in the State of Pennsylvania, it is taken up with the Department of Labor and Industry, and the inspection decides whether the passageway will be permitted.

MR. BROBSTON: I regret very much that my good friend Mr.

Harding does not think it is possible to protect shafting and belts sufficiently. Both Mr. Gunagan and Mr. Medina certainly made it very plain that individual conditions would have to be met in a great many cases, and neither one of them claimed that any particular type of guard would be applicable to all cases; but I think that all the practical men will agree that it is not only advisable, but necessary, to protect all belts and shafting in some way, if they are 6 feet or less from the floor, so that our workmen will not step into them or run against them, or be injured in any manner by a moving belt or shaft; and I think that we have all had experience enough to state that, by studying out each individual proposition, we can arrive at a satisfactory guard for both the shafting and the belts.

### REBUILDING CEMENT MILLS.

MR. HARDING: If that's the case, all the cement mills in the Lehigh Valley will have to be rebuilt, Mr. Brobston.

MR. BROBSTON: We are rapidly rebuilding them on those lines. (Applause.)

THE CHAIRMAN: We know that, notwithstanding the questions that Mr. Harding has raised, he is doing some very substantial work along the safety lines.

MR. HARDING: The statement that I have made is this: we believe in Safety First, but we don't believe in furnishing a child's nurse and a doctor and a wet-nurse to go around to every man we have got. We believe that the proposition, Safety First, is nearest to



the heart of my company; we have our hospital; every man in our plant is directed to see his physician between now and the first of January; we are taking care of our men. If a man is careless, we discharge him; if we know a man to be careless, we won't employ him. I had a doctor at our mill for a month examining men, even taking their blood-pressure, to determine their physical condition; but it is practical ideas, not theoretical ones, that I am looking for.

THE CHAIRMAN: I am going to introduce Mr. Hill without any further ceremony; and Mr. Hill is personally known, I presume, to most of you here. To those who may not have that privilege, I would say that the accident prevention work of the Association of Cement Manufacturers had grown so that the secretary, and those in the office who had been attending to it, could not find the time to give it proper attention; so Mr. Hill was engaged specially for that purpose, and he has been giving his entire time and attention to that work.

#### THE SAFEGUARDING OF BINS, HOPPERS, AND TANKS

ROBERT BRINTON HILL, DEPARTMENT ACCIDENT PREVENTION AND INSURANCE, ASSOCIATION OF AMERICAN PORTLAND CEMENT MANUFACTURERS, PHILADELPHIA, PA.

Mr. Chairman and Members of the National Safety Council: Bins, hoppers and tanks are as integral a part of the manufacture of cement as the kilns and grinding-mills. They are located in every department, and absolutely indispensable. Their position requires, in order to make them easily accessible, the use of ladders or the installation of walkways and platforms.

Before going into the subject of making conditions as nearly fool-proof as possible, it might be well to take up several accidents, reports of which have been received at the office of the Association of American Portland Cement Manufacturers.

### Safety First

"Does not necessitate a child's nurse and a doctor and a wet nurse to go around to every man."

Reports of fatal accidents occurring in the various cement companies, received over a period of years, and, therefore, dependable, shows that 10 per cent of the total number of deaths were due to accidents occurring in and around bins, tanks, and hoppers. Hence the importance of the question.

#### FATAL ACCIDENTS.

The first fatal accident of which I will speak had no witnesses. However, the mill-runners in the raw department noticed that one of the fuller mills was not feeding properly, and accordingly shut down the mill in order to investigate the trouble. They found the deceased smothered in the hopper over the mill, with his body upright and his feet sticking out at the bottom. No one saw this man go to his death, but, nevertheless, whether he stepped off a walkway and fell in, or deliberately entered the bin in order to inspect the feed, the result was the same.

The second fatality occurred in a shale-bin having a flat bottom, with a row of spouts  $5\frac{1}{2}$  feet apart which discharged into cars running on a track beneath the bin. The victim's duty was to see that the spouts fed properly, and in one corner of the bin was a little room or housing in which the man was safe from falling or sliding shale. It was occasionally necessary to leave this housing and go up on top of the shale-pile in the bin. Shale, on this occasion, it is supposed, had arched over a spout and caved in under the weight of the man. He was later found dead near one of the spouts. The bin was about half full at the time of the accident, and no material was being delivered to it.

In the third accident the report fixes the cause as "smothered to death by being caught in a slide of stone." The accident occurred in a stock-box in the raw department, the injured man having been employed as a stock-box tender for two years. Unfortunately, details of this accident are not available.

The fourth death was due to the hare-brained practice of under-cutting piles of cement when hoeing to the conveyor from the bin. Here is an accident which conclusively demonstrates the futility of depending upon the intelligence or common sense of the workmen—only too often it's entirely lacking.

At 10 o'clock one night in the kiln-room a certain workman went to find out the amount of coal in a coal-box. The kiln-room was

well lighted, but the report says that it seems certain that he opened the manhole of the coal-box and placed a *lighted match* inside to see where the coal stood. The coal-dust was set afire, and ignorance and thoughtlessness claimed another victim. He died five days later as the result of his burns.

Here's another coal-tank fatality: According to the report the deceased was on top of the coal-bin, and as the material was hanging, it failed to feed the screw properly. The workman took a piece of pipe and punched it into the bin to make the coal feed. The material gave way suddenly and caused the flood which was ignited by the kiln. The man, in trying to get down from the top of the bin, slipped and fell from the ladder, a distance of about six feet and through the flame. The fire lasted only a few seconds, but the man was killed.

It is recollected that at the time of this accident a certain individual expressed the feeling that the victim should have had forethought enough to jump out of the window nearby instead of attempting to go down the ladder from which he fell. The sentiment is on a par with that expressed by a New York employer who, when the matter of proper fire-escapes was being discussed, said that no escapes were necessary from the second floor, as the employees (the majority of them girls) could easily jump out of the windows!

And so I could go on with the rehearsal of more accidents and fatalities occurring in and around bins, tanks, and hoppers.

#### CARELESSNESS, THOUGHTLESSNESS AND IGNORANCE.

From the accidents I have mentioned and others, reports of which have been received by the Association, it is easily appreciated that the chief cause of accidents around bins, tanks, and hoppers is a lack of properly enforced operating rules. The accidents are the result of carelessness, thoughtlessness, and ignorance, and they are not due to any mechanical dangers of the devices themselves. For this reason the problem is of an educational nature, and calls for active intelligent supervision on the part of foremen.

In turning to the safeguarding feature of the problem it must be realized that there is little moving machinery around bins, tanks, and hoppers, and that, therefore, the prime consideration is not the mechanical safeguarding, but the enforcing of strict and pertinent operating rules. The only machinery connected with the

## Bad Habits

Keep out of debt  
and danger. Both  
are alluring but are  
poor friends to make.

containers is the screw conveyor, which conveys the material from the container to the next point in the manufacturing process.

As a rule, tanks and hoppers are arranged in rows—over kilns or grinding-mills. They must be reached with more or less regularity, and, therefore, it is important that substantial walkways running along the line of containers be built. Walkways are very important along coal tanks and boxes, as attested by the facts of

the last accident mentioned, where the workman fell from a ladder in his haste to escape being burned. In this case the walkway would have served as a means of escape, as well as being placed primarily to give access to the tanks. Walkways should run the entire length of the row of containers, and preferably have stairs or permanent ladders at each end. The use of ladders for access to individual tanks or boxes is not desirable—ladders should be eliminated wherever possible, as they are the cause of numerous accidents.

Where walkways cannot be run over the tops of the containers, they can be placed along the side and have platforms giving access to the individual hoppers or tanks.

All tanks, boxes, and hoppers should have tight-fitting covers. Manholes should be located where walkways run over the top, not in line with the walkway, but at one side, so that they are easily accessible, and at the same time the walkway is open for its entire length, even though men be in the tanks and the manholes open. Manhole covers should be solid, hinged, gravity closing, and kept locked at all times, except when men are actually working in them. The key should be in the possession of the department foreman, and if it is necessary to enter the tank or hopper, let the foreman be notified and have him personally superintend the work and be responsible for the safety of his men.

It is recommended that small holes be provided in tank tops large enough to admit a measuring stick. These holes should be located near the walkway, so that a man can determine the height

of the material in the container without leaving the safety of the walkway or opening the manhole.

Loose manhole covers are undesirable. They may be removed by any one, authorized or not. They are often left off and the manhole left open. For this reason the above recommendations are made.

Manhole-cover handles, where covers are acting as part of a floor, should be of the type which, when not in use, drop into a recess in the covers, thus presenting a smooth surface.

The safety of stock-bins depends to a great extent upon their original design. One company had two fatalities during a year in the same bin, due to slides of material, while a workman was in the bin seeing that the spouts were being fed. In order to obviate this hazard they are rebuilding these bins, putting in a V-shaped bottom, so that spouts are fed with little or no attention from the bin-tender.

#### THE HUMAN ELEMENT.

We will now turn to the human element, which in the cement industry plays so important a part in accident prevention work. After having made conditions as nearly accident proof as possible, the education of the employee and the enforcing of operating rules must be considered.

The majority of these accidents, as is true of all accidents, are due to either carelessness or ignorance. The sad fate of the man who placed a lighted match in a coal-box emphasizes the need for careful supervision of all work by the foreman. Men should be forbidden to enter tanks or hoppers on their own initiative, and in case of trouble, they should immediately report to their foreman for instructions.

The following accident occurred in one of the member companies' mills. A kiln-room foreman and his assistant entered a raw feed tank to discover why the kiln was not being properly fed. They had safety belts and ropes attached to them when they entered the

### An Able Body

Is the reward of Safety. Untold misery is the penalty of carelessness or thoughtlessness.

tank, but on finishing their work they undid them and intended to climb out of the tank. Before they got out they were both overcome by gas present in the tank, and fell back into the tank. The foreman died of asphyxiation, and his assistant was in the hospital for weeks as a result of the accident. This brings us to the importance of supplying safety belts and ropes, insisting on their use whenever a tank or hopper is to be entered, and the educating of the men to put them on before entering and to keep them on until they are safely out of the tank.

#### SAFETY ROPES.

A man or men working in a tank should always have a fellow-workman nearby in a safe place and keeping careful watch over his or their safety. Men in tanks should have their safety ropes attached to something permanent outside the container. In the event of their helplessness, they can be pulled out from above, and if still conscious and physically able, they can pull themselves out. The men stationed to watch them should watch and do nothing else. They should never leave their posts while workmen remain in the containers unless other men take their places.

It is common practice to hoe cement from bins to the conveyor leading to the packing department. A man can accomplish more with less effort by indulging in the reprehensible practice of undercutting piles and causing small slides. This practice should be prohibited and made a cause for immediate discharge.

The chances workmen take are almost unbelievable, and for this reason the habit of caution must be drummed into them. Men working around bins, tanks, and hoppers should be informed of the dangers incident to the work, and of the accidents which might occur to them. They should be made to realize the importance of their always being sure of their safety before starting any piece of work. (Applause.)

#### DISCUSSION

THE CHAIRMAN: Has anybody had any experience in connection with this subject that they would like to bring before the meeting, or any unsolved problems in connection with this that they would like to bring up?

MR. FORTUIN: I would like to ask Mr. Hill a question with reference to undermining, which we call bridging. How can you

prevent it, when the men are taking cement out of a bin? When drawing from a bin, you have got to get a certain amount of material out and cart it a short distance; the top of the material in the bin will sometimes bridge over—it is not undermining, and it is not the fault of the bin.

MR. HILL: You mean that in taking material from a bin it may arch over, causing a dangerous condition? The minute such a condition is found, workmen should leave the bin, and the arch be broken down from above.

MR. FORTUIN: It is a case of the material working out; and there is no access to permit of working overhead. Then how will you take care of it?

MR. HILL: Every bin should be accessible from above.

MR. HARDING: Let me make a suggestion in regard to the designing of a bin, and it is one of the most important features in regard to bins. In the Lehigh Valley a great many bins are built in a certain way—because they were built that way about forty years ago they are still being built that way. In cement-mills the bins are being built larger and larger, in order to give greater storage capacity. Some are built with concrete walls, some plants using one method and some another. We have a slab stockhouse at our place, built some years ago, and there are some cracks in it. We are reinforcing it with iron and steel columns inside, taking out the wooden bins and putting steel columns in place of wooden ones.

As to the suggestion in regard to locks on manhole covers—a lock on a manhole would last about twenty-four hours; and if you could get to the lock, you couldn't get the key in it, because it would be full of cement.

MR. SPACKMAN: It seems to me that the main cause of most accidents in bins is the failure of the bin to flow, which involves the necessity of a man entering the bin to start the flow by manual labor. I have been able to overcome this difficulty very largely, in a number of bins, by inserting in the bins perforated pipes, through which air at high pressure is forced. This will break up the arching and cause the bin to flow without the necessity of

## The Root of It

Seventy-five per-  
cent of accidents can  
be reached only  
through organization  
and education.

any one entering it, and I believe that if this scheme is followed out, it will greatly reduce the necessity of men entering a bin until it is practically empty.

Another device I have found valuable in determining the quantity of material in a bin is, instead of a rod, a flexible cord with foot-marks on it, and a light attached to the end. The material in the bin is very apt to have a funnel-like surface, and it is difficult to form a correct estimate by putting a rod

down; but if you have your cord laid off in feet—your lamp-cord with a lamp on the end, the man can make a very close estimate without going into the bin.

MR. PALMER: I would like to stay with the Section through this entire meeting, but it is impossible. However, before I go, I would like to say a word here and get out.

While I was in San Francisco, attending the National Safety Council, Dr. Tucker, of the Riverside Cement Company at Riverside, California, presented a very splendid paper, and showed some mighty interesting films. I am sure your Association, if you have not already seen them at some time, could make very good use of them. Dr. Tucker is also one of the best safety men that I have seen—and when you say that before the Cement Association it means something. He spoke, in connection with the bins, of some accidents that they had in bins. I cannot describe the conditions of the accidents, but he mentioned that they had, since those accidents, installed a means of sounding an alarm in case of trouble—the alarm being sounded by the second man stationed at the bin in case of accident. He said that later on a man was caught in a bin; the bell was rung, sounding the alarm, and assistance came. Dr. Tucker seemed to think this a very good plan.

Now I want to say just a word about the standards—the standards of safety. The standards should be practical; and at Harrisburg, Dr. Jackson has relied on the men from the industries, and



particularly men from your Association, to assist our industrial board in developing practical standards. He is a man who has been out in the industries—a consulting engineer; and I, also, have had some experience in plant safety work and know this: that simply just guarding your machines cannot effect a reduction of more than 25 per cent in your accidents. What our inspectors going into the plants of Pennsylvania are preaching is that 75 per cent of the accidents can be reached only through organization and education; but we do say this much,—and I said it in our plants when I was out and around—that safety begins at the top. We cannot say to the employee in the busy mill: “We have made our plant reasonably safe.” We have got to clear our own dooryard and our office, or else we haven’t any foundation to stand on.

Pennsylvania doesn’t think that simply guarding a few machines settles the question. They know that it is a bigger problem, and it is mighty hard to educate and to organize, but, you must organize, and through organization, educate.

Speaking for the National Safety Council, as the First Vice-President, I want to thank you for the splendid work that you are doing. Pennsylvania can consider herself mighty fortunate to get the messages that will come from this meeting. It is going to help all the cement people in the national organization to state that it was not considered necessary to establish a separate cement section organization because you are doing the work so well. That, I think, indicates the Council’s recognition of your standing. Please, if there is anything that you think can be done to improve the service of the National Council, in the way of this sectional work or any other, write to the officers, and they will be very glad to consider the suggestions. We are here to give service, and we consider that you are simply part of us.

I also want to say that I am glad that you had Mr. Sinclair as your Chairman today. (Applause.)

## PENNSYLVANIA

Doesn’t think that simply safeguarding a few machines settles the question of accident prevention.

THE CHAIRMAN: Mr. Palmer has referred to the minutes of this meeting, and I want to say that we are endeavoring to take notes that will cover the discussions here. They will be sent to all those who desire them; and such suggestions, for instance, as Mr. Spackman just made about some device for bins and other things that come out, may be valuable to the members, and they may care to follow them up. If, in speaking about any of these suggestions, you will be kind enough to talk loud enough so that the stenographer can get the notes, we will be in position to give you a pretty fair résumé of all that is said here.

Mr. Young, Chief Engineer of the Alpha Portland Cement Company, has been kind enough to consent to give us a talk on Safeguarding Coal Mills, which is a matter of vital interest to every cement manufacturer. Mr. Young.

#### SAFEGUARDING COAL MILLS

W. J. YOUNG, CHIEF ENGINEER, ALPHA PORTLAND CEMENT COMPANY, EASTON, PA.

Mr. Chairman and Members of the National Safety Council: The problem of safeguarding coal mills is the greatest safety problem with which the manufacturers of Portland cement located in the eastern part of the United States have to deal.

Where gas or oil is not used as a fuel in kilns, bituminous coal reduced to a fine powder is essential with the present system of manufacturing Portland cement, and we are compelled to dry, pulverize, convey, and store it. We have in this department the same machinery risks that prevail in the other departments of a cement mill, but I will not attempt at this time to cover this subject, as the discussion of the hazard of coal-dust explosions which is peculiar to the coal mill will occupy our time profitably.

The Accident Prevention Bulletin No. 17, entitled, "Coal Dust Hazard," published in May, 1914, by the Independence Bureau for the Association of American Portland Cement Manufacturers, is a clear presentation and discussion of the problem of safeguarding coal mills operated today. This Bulletin, after citing a list of accidents in which 23 men lost their lives, describes the cause of the explosions and points to the best practice for preventing them. If we follow the rules laid down in this Bulletin in operating the

present-day coal mills, we will reduce the explosions to a minimum. The report of the cause of the explosions given in this Bulletin agrees with our experience in the operation of coal mills. We have found in almost every case a careful investigation of an explosion in the coal mill disclosed the fact that it occurred in falling coal-dust, and many explosions have resulted directly from attempts to clean up some part of the coal mill.

I believe we will all agree that, even in the best operated coal mills of the present day, there is always the latent danger, and, while it is true by extreme care we succeed in operating for long periods without explosions, it is equally true that explosions occur without any known change in the conditions or care in operation.

We all know that coal-dust in bulk (as in storage) and layers (as it collects on all horizontal surfaces and in every recess or irregularity in the coal mill) is not explosive, but when, for any cause, it is scattered in the air, forming a cloud of coal-dust, and flame enters this cloud, the coal-dust is almost certain to burn violently, causing what we know as a flash or explosion. We do not always have the flash when the flame comes in contact with the cloud of coal-dust, because the mixture is either too rich or too poor. Many experiments have proved that flashes can occur when a very small amount of coal-dust is suspended in the air. The flash is often small and causes little damage to property, yet even the small flashes sometimes result in serious injury to employees. When the flash occurs in a large quantity of coal-dust suspended in the air, the explosion becomes very violent and often results in serious damage to property and death or injury to several employees. They have been known to occupy several hundred cubic yards of space and spread out into the open air for distances as great as 100 feet.

The Alpha Portland Cement Company has for several years kept a record of the explosions in the coal mill which caused injury to its employees. This record shows that 90 per cent of the explosions can be readily traced as occurring in falling dust, and in 50 per cent of them the falling dust was caused by cleaning up some part of the coal mill. Moreover, our experience has been that large explosions occur in dust falling from a considerable height, and that no flash of large size has occurred in dust falling from a distance of less than six or eight feet, and we have never had a flash in dust on the floor of the coal mill.

## Our Problem

Is to prevent the proper mixture of air and coal dust from coming in contact with the flame.

As before stated, we are compelled to dry, pulverize, and store bituminous coal for burning clinker, and I am satisfied that all the elements necessary for an explosion always exist in the coal mills of the present day. That is, we have the coal dust, air, and flame always present, and our problem is to prevent the proper mixture of air and coal dust from coming in contact with the flame. Nearly all the cement manufacturers to-day are using great care in the operation of coal mills, and the men operating them are properly instructed, yet explosions still occur and will continue until we change the design of our coal mills.

Fire is always present in the furnace of the drier, in the hot clinker discharged from the kiln and the kiln itself. Fire is also often started in the driers by overheating, in the pulverizing mills, elevators, and conveyors by friction. It is also often present in the dust collected in the crevices and on horizontal surfaces, where it exists often for a considerable time, burning so slowly that it is not discovered by the operators. An inspection of the horizontal surfaces of a coal mill will often show an irregular line of burned coal running sometimes for several feet. We cannot dry, grind, and pulverize coal without fire, but we can and should prevent the mixture of air and coal-dust which would cause an explosion, and, while care in the operating of the department has much to do with it, yet we can fully accomplish it only by designing the coal mills so that there is no place for the dust to collect above the level of the mills and reduce the places for dust to collect above the floor level to a minimum.

The problem then is largely one of design, and I think it would be well to consider it under the following heads:

LOCATION.

BUILDING.

DRYING.

PULVERIZING.

ELEVATING AND CONVEYING.

BINS.

POWER AND TRANSMISSION.

*Location.*—The coal mill should be placed convenient to the kiln mill, separated from it by a fire-proof wall or, better still, by a motor or power shed surrounded by fireproof walls. The other three sides of the coal house should be exposed, and it should be separated from any other building by at least 75 feet.

*Building.*—By a proper design of the coal mill building we can reduce the hazard in this department to a minimum. The coal mill building of the present day is entirely too high, and constructed in such a manner that there are plenty of places for the collection of dust at distances of from 15 to 40 feet above the floor level. A proper designed coal mill should be a shed roof, concrete building, with just enough head room for the economical operation and repair of the grinding machinery. The partition wall between the drying and pulverizing rooms should have no opening at all. The building should be well ventilated by open spaces just under the roof. No horizontal surfaces should be permitted inside the building, except the tops of the mills, line shaft and mill piers. The structure should be without any possible place for the collection of dust, with windows and doors flush with the inside of the building, and so constructed that there is no offset on the inside face. Even the openings in the walls should have no horizontal surfaces, but should slope sharply to the outside. The roof should be entirely of reinforced concrete, and all wall surfaces should be finished as smooth as the walls of an office or dwelling. In a building constructed in this manner it is impossible for sufficient dust to collect to cause an explosion.

*Drying.*—The drier should be designed so as to prevent the gases at a high temperature from coming into contact with the coal. The temperature of the gases should be under the control of the operator at all times, with instruments placed for indicating and recording this temperature for the direction of the operation and information of the superintendent.

## FRANKNESS

Safety men are often the severest critics of industry, and they place the blame where it properly belongs.

*Pulverizing.*—The mills used for pulverizing coal should be dustless.

*Conveying.*—All dried or pulverized coal should be conveyed in dustless screw conveyors. No screw conveyor should be permitted inside the coal mill building excepting the one carrying the pulverized coal from the grinding mills, which should be placed below the floor level.

*Elevator stacks* should be entirely outside the coal mill building, constructed of concrete, and just large enough for proper clearance for the buckets of the elevators, with no bearings allowed inside of the elevator stack.

*Bins.*—The bins for storing, drying, and pulverizing coal should be erected entirely outside the building, and, if any part of the bin is allowed to extend inside the building, it should be without offset of any kind for the collection of dust.

*Power and Transmission.*—The power necessary for the operation of the machinery in the coal mills, all the line shafting and drives, excepting drives for the grinding mills in certain types, should be in a building separated from the drier and pulverizer room by fireproof walls. (Applause.)

#### DISCUSSION

MR. HARDING: How often do you suggest that coal-houses be cleaned, considering conditions in the Lehigh Valley today?

MR. YOUNG: It is a physical impossibility to keep the present-day coal-house clean. It is hard for me to state how often they should be cleaned—I would say about every five minutes. (Laughter.)

MR. HARDING: With regard to ventilating coal-houses, I have had coal-houses ventilated at the top by slots in the roof monitor, where large fires have occurred; then I have had coal-houses where incipient fires have taken place, where the ventilation is along the eaves of the roof of the house. The best method we have had of fighting fire in the coal-house is with cement—just take cement and throw it right on the coal-dust, thus putting the fire out. We put out one or two fires in that way. Now, you say no conveyors above the floor level: how do you propose to feed this ideal coal-house, with no conveyors above the floor level?

MR. YOUNG: No conveyors above the coal-house floor level. I stated that the conveyors that are above the floor level should be entirely outside of the building, in the open air.

MR. HARDING: How would you feed this drier?

MR. YOUNG: Very simple matter to spout it down to the drier from outside the building.

MR. HARDING: Are you going to have this drier down below the floor level?

MR. YOUNG: Below the floor level?

MR. HARDING: You say that the screw conveyors should be below the floor level. You have got to get the coal into this drier in order to dry it.

MR. YOUNG: The coal-screw carrying the coal to the drier should be entirely outside of the building—above it; and the bins should be on the top of the roof.

A MEMBER: While this is applicable to the manufacture of cement, I also have had experience in the use of pulverized coal; and the speaker has just said that the building should be low. We are crushing in the neighborhood of 2,000 tons of coal a day. We lift it 165 feet, at the rate of a ton and a quarter every twenty-nine seconds. We get the nut and the slack and the dust. The company which I represent, which is a subsidiary of the Steel Corporation, has had one or two very disastrous explosions from coal-dust. Our plant was investigated as to the safe preparation of this fuel. We know that coal as a fuel is desirable in two conditions: the ideal condition is the gaseous one; and the next one is the pulverized or powdered form; but the gaseous is less explosive—is more controllable. When reduced to impalpable powder, it is more dangerous.

As I stated, we raise it 165 feet. We have a steel structural building; the crushers are at the very top of that building; but all the substructures have all the horizontal ledges capped with a deep concrete covering, so that there can be no possibility of lodgment of the dust—and so long as you do that you are on safe ground. It is the accumulation of it in a powder form, with the proper equiva-

## The Old Quaker

Thought the first thing to do was for everyone to get a broom and begin on his own doorstep.

lent of air and the presence of a naked light, which constitutes that trinity that causes explosions, as you call them, and means disaster to the plant in which it exists.

Now, it can be safely handled, and I agree with the speaker on a great many of his points, and as to the one who asked how often a coal-mill should be cleaned, it reminds me of the old Quaker who thought they ought to clean up the town. He thought the first thing to do was for every one of the people in the town

to get a broom and begin on his own doorstep. So it means vigilance, and constant attention to it; and if cleanliness is a virtue, and a godly virtue, why, then, it behooves us in the manufacturing world to be vigilant and to be cleanly in all our operating pursuits. No matter how much or how often or how long the dirt accumulates it is a menace.

The Carnegie Steel had a violent experience in an inclosed building where they were crushing coal. The National Tube Company had a similar one at Lorain, Ohio, and the National Tube at McKeesport also has had similar accidents. They have all begun to build in the manner mentioned at first. Now, of course, the coal goes to the highest point; it is crushed; the dust comes down; there is no chance of lodgment; and there are no inclosures below the bins which receive the coal. The dust is passed into the conveyor, and then the loose dust is cleaned up from the surface of the ground. No naked lights are permitted in that structure—everything pertaining to it is electrical. I heartily agree with you in many of your recommendations, and I speak for the benefit of the others—that coal in the pulverized state is almost on a parity with gunpowder.

### DUST EXPLOSIONS.

MR. SPACKMAN: This question of dust explosions—not only coal-dust, but all dust explosions—is one about which, it seems to me, there is an inexcusable ignorance or disregard. The necessity of preventing a lodgment of it is a very important one, especially



with all driers, where spontaneous combustion can start. A flash will go through the loose dust in the air, that may make an explosion, though it only occupies a cubic foot of air space; that starts the air moving and you bring all the dust down.

What I experimented with was keeping the air moist. In Germany, where they are very careful in these things, in the dyewood industries, and where they are handling wood, they require hygrometers around, and the air must be kept saturated—and there no dust explosion can take place, where the air is highly saturated with water. I wondered whether anything had been done along that line with coal-houses. In Germany they treat the dust-producing mill the same as a powder-mill.

A MEMBER: We did experiment with moistening the dust; but we didn't find it of any benefit. By observing necessary precautions in not allowing it to lodge any place or to accumulate it was unnecessary to moisten it.

MR. YOUNG: In the pulverized state coal is highly explosive. I have seen six or seven explosions in rapid succession and not one-half of the dust burned. It is astonishing how that dust does hang onto the horizontal surfaces.

#### LIGHTING COAL MILLS.

MR. MEDINA: I would like to ask Mr. Young if he could tell us something about his experience with lighting coal-mills. That is, it is a recognized hazard that the bursting of an electrical globe can set fire to coal-dust. The Bureau of Mines has experimented along that line, and I wondered what Mr. Young's thoughts were.

MR. YOUNG: I cannot tell you anything about it. You see, I presuppose that fire exists in the coal-house all the time—and it does.

MR. MEDINA: Don't you think we can eliminate a great deal of this fire?

### In Germany

They treat the dust-producing mill the same as a powder mill—explosions are rare.

MR. YOUNG: You are going to continue to have explosions; because the fire is bound to be there. Even the static electricity from belts will cause explosions and has been known to cause explosions.

MR. MEDINA: Taken in connection with the subject that we are driving at, don't you think it is necessary to do all we can to eliminate fire, even though we have presumably an ideal mill?

MR. YOUNG: Yes, but I wanted to make it plain that we must prevent the vapor mixture, coal-dust, and air, because we can't protect ourselves entirely against fire from that cause unless we do. A bursting incandescent globe would likely cause an explosion if it happened in a coal-dust cloud.

LIGHT FROM THE OUTSIDE.

MR. MEDINA: Where there is hazard from oil-vapors, and in water-gas plants, where there is the hazard of gas, sometimes the practice is to light from the outside; that is, there are openings in the wall in which the lights are located, and glass coverings on the inside so that the light is all from the outside; and the switches and fuses and wiring are on the outside of the mill. I wondered if you had given that matter any thought.

THE CHAIRMAN: I would say, in regard to the danger of ignition from the bursting of electrical globes, that engineers claim that there is very much less danger from the Tungsten lamp than from the ordinary carbon lamp. The use of the Tungsten lamp reduces this hazard very greatly.

Any further questions to ask Mr. Young? Any further discussion of this very interesting subject? If not we will pass on to conveyors and elevators. I suppose we all look upon a screw conveyor as a necessary evil and Mr. Reninger, of the Lehigh Portland Cement Company, has been kind enough to prepare a paper on this subject. Mr. Reninger.

## SAFEGUARDING CONVEYORS AND ELEVATORS

HENRY A. RENINGER, SPECIAL REPRESENTATIVE, LEHIGH PORTLAND CEMENT CO., ALLENTOWN, PA.

*Gentlemen:* It gives me great pleasure to be here today, more particularly to listen and learn from the other speakers than to speak myself, for they are all men experienced in the cement business. However, I shall be pleased to open the discussion on the Safeguarding of Elevators and Conveyors by giving you our experience and methods in protecting these useful pieces of machinery.

In the present advanced period of activities, manufacturing and industrial concerns are vitally interested not only in capacity and production, but in the conservation of human life. Plant efficiency was at one time based upon barrels produced per man, and the labor item being a large part of the producing cost. This naturally reflected upon the machine operation, and considerable care and attention were given to keeping these to high efficiency. In the excitement of keeping up the pace men were maimed and killed to such an extent that the cost of accidents offset this advantage. Thus, from a conservation and cost point of view, has accident prevention thrust itself upon us to such an extent that the Safety Department is becoming a necessary and important department of an industrial concern.

*Elevators and Conveyors* are a necessary evil, and until we find some better way of transporting the materials used we must put up with the present styles, and since we have them, we must protect them in one way or another. I have no doubt you all have done much toward guarding them, and I hope to hear what some of the rest of you have accomplished. If you have not done anything in protecting these dangerous pieces of machinery, begin now, for with guarded elevators and conveyors a great many of the serious and more of the slight accidents will be eliminated, and as that is what we are all striving for, *get busy!*

In the Lehigh plants we are using the belt and chain bucket elevator in raising the various materials to bins and stock-boxes and coolers; the belt conveyors in transporting stone, coal, and clinker—the scraper line is used for stone, clinker and coal, and the screw conveyor for the pulverized raw material, coal, and cement.

## Get Busy

If you have not  
done anything in  
protecting dangerous  
pieces of machinery,  
begin now—get busy.

Taking them up one after another, let us consider the bucket elevator. It was not so many years ago that these elevators were entirely unguarded; the pit was open, and all had a chance to fall into it, not to mention being hit by falling material or falling elevators. The elevator carrying the pulverized material was the first one inclosed, —with wood—but the pit itself was left open.

Then came the guard-rail. The drives, shafting, sprocket, chain,

and belt were exposed. The oiler crawled through and around them, risking his life many times a day, and we had many accidents. But a change has taken place. *Safety First* is now the slogan throughout the land, and every manufacturer is paying some attention to safeguarding. What has been the result? We began studying our accidents. The association compiled statistics and we know that in 1914 we had twenty-one accidents with elevators.

To protect our employees and ourselves we found that the safest way to protect the elevators was to inclose them entirely. Angle and sheet iron bolted makes a firm and safe casing. This applies to all but the clinker elevator guards. Doors have been left at top and bottom, so as to allow for repairs or cleaning out a choke. These doors must be kept closed and locked, to be opened only by the foreman in charge of the department or of the repair gang. The sprockets, chains, and dangerous pieces of shafting are either protected by standard hand-rails or guarded with wire mesh or expanded metal.

The making of the guards is slow work, but we hope by spring to have all our conveyors cased in and all dangerous parts guarded.

The *Belt Conveyor*, which is from appearances usually slow moving, and considered, perhaps, the least dangerous of all the types used, had 22 accidents to its credit in 1913 and 37 in 1914.

"Riding on belt conveyors is strictly prohibited," and immediate discharge is the result of disobeying this rule. If this practice can be stopped, some accidents can be avoided, but guards are necessary.

Where tilting belts or trippers are used, the runway or floor openings should be protected by railings along the openings farthest from the belt. A top rail with a toe-guard 12 inches high will protect the openings and keep the runway clean. Grating or heavy mesh screening can also be used to prevent men from stepping into openings where there are no railings.

The intake of the belt on the end of the pulleys and spokes is guarded completely by a guard of angle-iron and mesh screening.

Where a belt is of considerable length, a step or walkway over it should be provided, with standard railings on both sides. Where a belt discharges through a floor opening, a sheet-iron guard, 3½ feet high, is provided. By protecting your belts with high guards or high toe-guards your runways are kept clean, thereby eliminating a hazard.

*Scraper Lines* have two accidents to their credit for 1913 and the same number for 1914.

The ends of our lines are guarded on the turn with a wire-mesh guard; the sides are protected for a distance of two feet, and at several places railings have been erected to prevent a person coming in contact with the line. A sheet-metal guard placed along the rails, as high as the rolls, and fastened securely about 1 inch from the rail is a big protection. If such a guard is used, attaching it in sections, it is unnecessary to remove the entire guard for repairs.

*The Screw Conveyor.*—Too much attention cannot be paid to safeguarding this conveyor. The prevention of one accident will more than pay for time and labor involved in guarding this "meat-chopper." We have learned that from experience—and experience is costly. There were 27 accidents in 1913 and 34 in 1914. With safeguards, this number can be reduced. All screw conveyors in our stock-houses or elsewhere are covered with substantial grating. This grating is made with bar iron ½-inch x 1¼ inches, spaced 1½ inches apart and on edge. The same is held by two rods running

### **"Meat Choppers"**

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through the iron bars, which are spaced with cut pipe washers. But in the latest gratings the ends are turned and riveted through on 1½-inch angles. Grating is in 6-foot sections, each section bolted to the floor. The old-style loose wood or sheet-iron coverings have been discarded.

Overhead conveyors above floor are made with sheet-iron trough and sheet-iron lids. Lids are fastened in place with hinges. All overhead conveyors are easily accessible; runways and platforms make it easy to get around, and therefore lessen the danger. The gratings are removed for repairs only, and then by the foreman after he has stopped the conveyor. While repairing, an additional precaution is taken—the clutch is loosened or locked, or the chain thrown off. The oil or grease cups are flush with the floor, space enough being allowed to turn down without danger, as gratings are at least 6 inches above the conveyor.

While we have been doing a great deal of work in safeguarding elevators and conveyors, we have not completed our task, for as long as one wooden trough, screw conveyor with the loose wooden cover, and the open-bucket elevator are in existence, safeguarding is not complete.

We know from experience that, although we have done a great deal of work in safeguarding our plants, the number of accidents recorded this year is considerably larger than in 1914, because this year even all minor accidents are being reported; but while the number of accidents is larger, the fatal, permanent, and serious accidents are considerably less than in 1914.

The association reports show 67 accidents by conveyors in 1913, and 99 accidents for 1914, but we have no reason to say that safeguarding does not bring results. However, with all machines safeguarded, the work of *safety* is but 30 per cent complete, for it is the education of the man which is going to count in the long run. It is by education that our records will show fewer accidents, for, guard as you may, it is not possible to make all guards *fool proof*.

#### DISCUSSION

THE CHAIRMAN: Any discussion of this subject? Captain Renger, what do you do in the event of the screw conveyor being choked—when it is locked?

MR. RENINGER: The foreman is notified, and he stops the conveyor.

THE CHAIRMAN: Can that be done in time to prevent any injury?

MR. RENINGER: Sometimes it can; sometimes it cannot.

THE CHAIRMAN: However, that is what you depend on?

MR. RENINGER: Yes, sir, we depend on that. It is a dangerous proposition. We would like to do away with conveyors—we have too many accidents; but we cannot remove the conveyors under present manufacturing conditions.

THE CHAIRMAN: According to statistics that the Association has gathered, quarry accidents in 1913 and 1914 were about 25 per cent, if I remember aright, of our total accidents; and while that same percentage may not hold on a day's lost basis, yet the very large percentage shows the great importance of our accident prevention work in connection with quarries. Mr. Croll, Superintendent of the Atlas Portland Cement Company, has prepared a paper on the Safeguarding of Quarries. Mr. Croll.

### SAFEGUARDING QUARRIES

A. J. CROWL, GENERAL SUPERINTENDENT, THE ATLAS PORTLAND CEMENT COMPANY.

Mr. Chairman and Members of the National Safety Council: I have been asked by the Program Committee of the National Safety Council to make a few remarks regarding the safeguarding of quarries. The remarks which I will make will have reference to the safeguarding as practised at the plants of our company, The Atlas Portland Cement Company.

We consider the quarries one of the most hazardous departments of our industry, and consequently have taken special precautions and adopted special rules to prevent accidents. These rules and regulations relate to the different operations in the quarry, the handling of dynamite, the storage of the same, the loading and shooting of holes, the protection of employees from slides of rock, as well as the safeguarding of such machinery as is in use.

## DYNAMITE

Men unloading cars or working in magazines are required to wear rubber shoes

The care of dynamite begins upon receipt of the car at the plant. When the car is received, the seals are checked and compared with the shipping notice. After this the dynamite is stored in concrete magazines and kept under lock and key until used. The same man is always in charge of the magazine, and no strangers are allowed anywhere near it. A record is kept of the dynamite taken from the magazine, and this is compared with the blasting foreman's record

of the dynamite used in order to check the amounts; any dynamite drawn from the magazine and not used by the blasters is returned. We have our magazines, as well as the thaw-houses, surrounded by earth embankments. The men unloading cars or working in the magazines are required to at all times wear rubber shoes, which are provided for this purpose.

Dynamite is never stored or left in the same building with caps, exploders, or fuse. In cold weather, when it is necessary to thaw dynamite, it is thawed in separate houses built for that purpose, and the employees are not allowed to thaw it in any other way. The thawing houses are kept at a temperature below 100° F. Our rules for opening dynamite boxes require that they be not opened in the powder magazine, and that they be opened by the use of a wooden wedge and a wooden mallet which are supplied.

In transporting the dynamite from the magazines or thawing-houses to the drill-holes it is required that the boxes be so packed that there can be no movement or shifting in the wagon or cart, and in no case are the employees allowed to carry caps, exploders, or fuses at the same time they are handling dynamite. Smoking or the carrying of matches while handling dynamite is strictly prohibited.

In preparing for a large blast, which consists of the shooting of a number of well drill-holes, careful preparations are made to protect all employees. No one is allowed in the danger zone of the quarry floor. Before charging the holes they are examined



to be sure that there are no loose stones or earth above that are likely to fall.

In loading holes no more men than are necessary are used in the powder gang, and the same men are used at all times for this purpose.

In tamping the dynamite in these deep-well drill-holes, nothing is used but a wooden pole. This pole is free from nails and from any iron or steel, and is kept clean and free from grit and gravel.

When the pole is brought up out of the hole, it is rested on a canvas pad one inch thick. The holes are tamped by pressing on the tamping pole and not by ramming. When we are through loading, all dynamite left is returned to the magazine.

In inserting exploders into cartridges we open the paper at one end and insert a pencil-shaped piece of wood, then put in the exploder, pull the paper around it, and tie it with a string. This we consider very necessary to prevent misfiring.

In getting ready to fire, the lead wires are never connected with the exploders until we are ready to make the blast. In connecting the exploder wires, we see that all joints are secure and well made, and insulating tape is used on the connections and bare spots. The batteries are not connected until the signal for the blast has sounded and all the men are in a place of safety.

Before any shot is fired, a signal is sounded consisting of a certain number of blasts of a whistle. The number of blasts of the whistle indicates the location in the quarry at which the shot is to be fired, these signals being known to all the quarry employees. In case the quarry is near a public road, men are sent out to notify the public.

After the blast is shot it is required that the blasting foreman make an examination to see that all the shots have been fired, and that there has been no misfire, and until he gives the signal the men are not permitted to leave their places of safety.

It is the duty of the foreman to see that the pile of rock is safe

## SMOKING

Or the carrying of matches while handling dynamite is strictly prohibited. Be careful.

at all times and that it is not undercut. This is to afford protection to the men against slides of rock.

The machinery used in connection with the quarry is guarded in the usual manner, all gears and moving parts being protected.

No strangers are allowed in the quarries, and fires are very carefully guarded against.

No blasting is done in our quarries except between sunrise and sunset, and at no time on Sunday.

In conclusion, I would say that every precaution is taken in our quarries to prevent accidents. We believe that as few men as possible should be exposed to danger in the handling of explosives, and that only men thoroughly familiar with the same should be allowed to handle them. The men should be taught that dynamite or other explosives are dangerous, and that they should be handled accordingly. We tell our men to handle dynamite as they would a box of eggs which they owned and did not wish to break.

We believe that the best protection the quarry employee can have is a careful, conscientious, and competent quarry foreman and quarry superintendent. (Applause.)

#### DISCUSSION

THE CHAIRMAN: Is there any discussion of Mr. Croll's paper? I think all experience points to the fact that there is no part, in any of our manufacturing establishments, where discipline is more necessary than in the quarry; and that, it seems to me, emphasizes the point that Mr. Croll lays stress upon in closing his paper; that is, the great responsibility that rests upon the foreman.

A MEMBER: What method do you use for thawing dynamite? You say you use a thawing-house?

MR. CROLL: Yes, hot-water heat from outside the house.

MR. HARDING: What is the largest charge you have ever fired in your quarries?

MR. CROLL: I don't know offhand.

A MEMBER: You say "outside heat." Do you get that from your plant?

MR. CROLL: No, from a separate boiler which supplies heat for the thawing-house only.

MR. YOUNG: I would like to tell of an experience we have had, and see what you think of it, in connection with Mr. Harding's report. About three months ago there was a shot of 37 holes, about 60 feet in depth which were being made ready for firing. Always before we had a separate switch-house that was portable—that was carried about when they fired these special shots; but this time there was a motor-shaft driven by air-pressure which was handy; and the man in charge allowed himself to be overpersuaded and they fired it from this switch. The switch was open, and the electrician was getting up his wires; he connected up one of the wires, and as he touched the point for connecting the other wire the explosion took place. Now, it didn't cause any accident, because everybody had been warned and was out of the way; but the current was so weak that it only fired part of the holes.

Then came another mistake. After an examination by the man in charge he decided to connect again and fire the charge. He did it, with the result that a great number of men were injured—one man 350 to 400 feet away, inside of the mill itself, lost his arm from the blast. We had two mills located near each other, and from one we obtain power to fire blasts. We purchase power once in a while from the power company. This particular day we had taken power to run a trolley-car, and this shot, we believe, was fired from the ground—through the ground.

This is a case that happened with us. I would like to know from Mr. Croll what he would do—what precaution he would take in case of failure to go off—say of a hole 150 to 160 feet high, a deep well hole—what he would do in that case?

MR. CROLL: In that case, I would put it up to the quarry superintendent. [Laughter and applause.]

MR. HARDING: How many exploders do you use in a hole?

MR. YOUNG: We have made several experiments with shooting with exploders; and after a time we decided that it took an exploder for every two boxes of dynamite to get the proper results, and made that our practice—to have an exploder for every two boxes of dynamite.

## **We Tell Our Men**

To handle dynamite as they would a box of eggs which they own themselves and not wish to break.

MR. SPACKMAN: How do you load your deep holes? How do you get the dynamite down to the bottom? Do you lower it down, or just drop it?

MR. CROLL: We drop it down.

MR. MEDINA: I would like to ask several of the gentlemen who have had experience with loading deep holes whether they think it is practical to use the lowering devices on the market—I don't know whether they are on the market

or not, but they are in use in some places—for tripping a trigger by the use of a rope when the dynamite is near the bottom of the hole. I don't know whether any of you have used that device or not, but there has always been a question in my mind as to whether it is entirely practical or not.

MR. YOUNG: You know how it is: If you have never had an accident you keep on using the same practice; but we have never heard of an explosion happening in a cement quarry from dropping the explosive down into the hole. The reason for that is, the hole being so irregular, there are so many obstructions that it does not allow the explosive to fall as it would in open space: it goes down with a gradual fall in many cases; especially is that true when you are loading with 4-inch cartridges. We use 5½-inch holes.

MR. HARDING: We use 4¼-inch—our holes are 115 feet deep.

MR. WARNER: Does Mr. Croll do block-holing?

MR. CROLL: To a certain extent, surely.

MR. WARNER: In loading a series of block-holes, what practice do you require of a man doing that work, in carrying his explosives with him, with caps and with fuses, and in the cutting of cartridges to a suitable size, as, for example, we are confronted by that problem quite extensively, and a man has to climb over a pretty

rugged lot of rock to get at the different points where he wants to work. We require him to carry a little wooden box, with three or four cartridges, some exploders, and fuse. The amount of dynamite that any hole requires—it might be one or two inches of a stick—has to be cut off a cartridge. Is there dangerous practice in any of those features which we could avoid?

### The Foreman

The best protection the quarry employe can have is a careful and competent foreman.

MR. CROLL: We do very little block-holing that requires less than a stick, as we load entirely by steam-shovel. It is only very large rocks that are block-holed.

MR. HARDING: What percentage dynamite do you use?

MR. CROLL: I couldn't tell you right offhand.

MR. HARDING: 60, 30, or 40?

MR. CROLL: Oh, 40 and 60.

MR. YOUNG: I would like to say, in answer to some of this gentleman's questions, it is not good practice to let the man that carries the dynamite also carry the exploders.

MR. HARDING: Our electrician is the man that fires the shots from instructions from the quarry boss—the quarry boss signals him when to fire; he is the one responsible for closing the switch. We have operated along that line with deep-hole firing now for about four years, and so far have had very good success, very few accidents—haven't had any accidents, so far as explosions go; hope we won't have any. We never have the dynamite delivered at our plant until the day we are going to fire it.

In reference to the concrete magazine, we have simply a wooden shed; we make it like a powder-mill. In other words, if there is any explosion going to take place, we are going to let it go. A powder-mill is built with ends left open, and when the explosion takes place, it lifts the roof, throws the sides down, and there is the end of it.

MR. CROLL: Your powder-magazine is a wooden building?

MR. HARDING: Yes, a wooden building.

A MEMBER: Why are two kinds of dynamite used? We have very good success in using only one percentage dynamite.

MR. CROLL: There seems to be a large difference of opinion among quarry foremen and superintendents as to whether one percentage or two should be used. Some use one and some two. We do it in our own practice—some places we use one, some places two.

A MEMBER: We are using one kind successfully. Our holes are 60 to 100 feet deep.

MR. HARDING: Do you find that using 40 per cent throws out the bottom?

A MEMBER: Yes, sir.

A MEMBER: Isn't one stronger than the other, so that one would go off quicker than the other?

MR. FORTUIN: Sixty per cent is used in the bottom, for the reason that there is so much toe there that it requires greater strength to throw it out—it doesn't require so much at the top. That is the reason we mix it up. If you have a straight face high up, you could use 40 per cent or 50 per cent alone. The method of loading all depends upon the character of the face.

THE CHAIRMAN: I judge from Mr. Harding's remarks about wooden powder-magazines that the State of Pennsylvania possibly permits a wooden powder-magazine, but I imagine they don't elsewhere. In New York State they require them to be fireproof and bullet-proof—and it is interesting to know whether in Pennsylvania they allow wooden magazines.

A MEMBER: I think the concrete house is built with a weak end which offers only a slight resistance to any explosion.

MR. HILL: The Bureau of Mines has conducted experiments with powder-magazines and found that the cement-mortar magazine, made with a 1:3 mix, using fairly fine gravel as aggregate, was almost entirely disintegrated by the force of explosion, so that no

large fragments were thrown—and that is the magazine they recommend—fireproof, waterproof, and bullet-proof.

MR. CROLL: We would consider a wooden magazine a very dangerous thing around a plant, because a rifle-bullet could be shot into it and explode it at any time.

MR. HARDING: If you use a dynamite that you can drop 100 feet without having it explode, a rifle-bullet wouldn't explode it. We have dropped dynamite down in our quarry that didn't explode. Take 60 per cent nitroglycerin dynamite, such as is made by some other powder companies, and probably what you say is so. If you use non-freezing safety-powder, you get very good results.

MR. MEDINA: Some dynamite might explode, and other dynamite might not explode, under presumably the same conditions.

MR. HARDING: Some dynamite explodes if you look at it; some dynamite explodes if you don't look at it at all—just because at the psychological moment it lets go.

MR. MEDINA: Take two sticks of dynamite of the same chemical composition. Is it possible to burn one stick without exploding and to have the other one explode under similar circumstances?

MR. HARDING: You will have to ask Mr. Du Pont that. I am not a powder man.

THE CHAIRMAN: Gentlemen, we have completed our formal program inside the time that was allotted to us. The persons who are gathered together here don't have an opportunity to get together very frequently, and if there is any other subject that any one would like to take up, we are not strictly confined to the program. If not, I would say that the National Safety Council hopes to make this kind of meeting one of the features of their regular annual congress, and it is hoped that this meeting has been interesting enough to gather you together again on a similar occasion.

We are indebted to the gentlemen who have been kind enough to prepare these papers that have opened some interesting discussions; and we are also under obligation to the National Safety Council for affording us the opportunity to get together in this meeting. The chair will be very glad to entertain a motion of

thanks to the National Safety Council for affording us this opportunity before we adjourn. Will someone be kind enough to make that motion?

MR. YOUNG: I make that motion.

THE CHAIRMAN: It is moved and seconded that we extend a vote of thanks to the National Safety Council for their invitation, the arranging of this program, and affording us this opportunity of getting together.

[Motion carried.]

MR. FORTUIN: Is it the intention to have these papers published and distributed among the members?

THE CHAIRMAN: Yes.

MR. YOUNG: I move we adjourn.

THE CHAIRMAN: If there is no further business, the meeting now stands adjourned.



*Do Your Utmost to Prevent  
Accidents. It Is Part of Your  
Day's Work ∴ ∴ ∴ ∴ ∴*

## **National Safety Council**

### **Laundry Sectional Meeting**

**Philadelphia, Pa.**

**October 20, 1915**

**E. G. TRIMBLE, Chairman**

**Manager, Employers' Indemnity Exchange, Kansas City, Mo.**

**T**HE Laundry Sectional Meeting held on Wednesday, Oct. 20, 1915, showed convincingly that this important industry is eager to co-operate in the nation-wide movement of Safety First. Formal steps were taken to establish and give it an individual and distinctive place in the National Safety Council. A constitution and set of by-laws had been provided, and, with the consent of the meeting, were presented by the chairman. After reading, it was voted to adopt same. Those present proceeded to elect officers as follows:

E. G. Trimble, chairman.

M. F. Wilkinson, vice-chairman.

T. M. Jenkins, secretary.

There were more than eighty people present, all of whom showed a keen interest in the proceedings, and their appreciation of the papers read and addresses given clearly showed their desire to further this splendid and humane work.

The program was as follows:

"An Ideal Laundry Plant—Emphasizing Welfare Work," Miss Jane Seymour Klink, manager Welfare Department, Pilgrim Laundry, Brooklyn, N. Y. —

"Danger Features in Laundries, Including Extractors and Flat Work Ironers," M. F. Wilkinson, president Wilkinson Laundry Company, Reading, Pa.

"Automatic Covers on Hydro-Extractors," C. W. Price, assistant to the commission, Industrial Commission of Wisconsin, Madison, Wis.

"Pneumatically Operated Laundry Machinery," J. Dewey, master mechanic, American Laundry Machinery Company, Rochester, N. Y.

"Some Danger Places in the Average Laundry and How They May Be Safeguarded," John Woodhead, safety engineer, Employers' Indemnity Exchange, Kansas City, Mo.; illustrated with lantern slides.

In addition to the above program, important points were taken up and discussed by those present, including Mr. Hansen, author of "The Universal Analytical Schedule of Rating and Inspection," and Mr. W. G. Ashton, commissioner of labor, State of Oklahoma.

The chairman in his opening remarks pointed out that the laundry had become a big industrial factor and a power to be noticed. He called attention to the specialized machinery required in the steam laundry of today, and how special instructions should be given to employes on Safety First, the fundamental principle of which is self-preservation and watchful care for the life and limbs of our fellow men. The first number on the program was an address by Miss Jane Klink of the Pilgrim Laundry, Brooklyn, N. Y. Miss Klink, being unable to attend on account of sickness, sent a paper which was read by the chairman.

At the request of the chairman, Mr. Hansen gave a brief but interesting talk on the aims of his system, which is now in use in many states. He said that one of the results of safeguarding and credit-rating for same was the saving of \$900,000 of life and limb in one year, and that the system has been substantiated by five years' experience, sufficient data having been gathered during that time to justify what might appear to be drastic measures to some

plants concerned. The meeting developed, in the main, two very important matters:

First—The social welfare of laundry employes.

Second—How to bring a laundry to the highest point of safeguarded efficiency.

WELFARE AND SAFETY WORK.

That welfare and safety work tends to better understanding and more cordial relations between employer and employe has been most amply demonstrated. In the instance provided at this meeting, it was found that the employes take their lunch in a well-appointed dining room, the menu being of a wholesome nature and the charge for same nominal. A trained nurse and dispensary are provided for "first aid." During the winter season social entertainments of various kinds are arranged at stated periods, the employes working hand in hand to make each event a success.

By the means of quiet talks and an earnest desire for their welfare, employes are taught to cultivate a "four-square" moral life and a sincere attitude to the employer, with the result that dishonesty is but little known and when the time comes to sever their connection with the firm this testimonial is invariably given by the employe: "I feel the better for having worked in your plant."

The moral, Mr. Laundryowner, is: Show your employes that you are interested in their welfare and you will be repaid with better service and a co-operative spirit that will leave no necessity for the labor organizer to enter your doors.

EFFICIENT SAFEGUARDING.

The matter of protecting life and limb by efficient safeguarding brought forth many excellent short talks on the following subjects:

"Fencing the Flat Work Ironer."

"Automatic Covers for Extractors."

"Suitable Guard for Body Ironer."

"Standard Gears for Belts, Pulleys and Flywheels."

"Eliminating the Slippery Starchy Floor," etc.

The flat work ironer has been found to exact the highest percentage in "limb" value. It was strongly urged that all laundrymen

## CO-OPERATION

The essential feature of modern existence is team work.

No one is too great or small to respond.

consin the matter has received such close attention that the Industrial Commission has made it a law that each laundryman must equip his extractors with the "foolproof" cover. The difficulty of attaching this latest device to some of the old extractors has been solved by a mechanic in the city of Janesville, Wis.; although the invention is yet only in its first stages of demonstration, it has been proved to be successful in many instances and will no doubt be on the market in a short time. In the State of Oklahoma it has been found that nothing but the automatic extractor cover will do. Within the last six months three arms have been lost on account of extractors not being so equipped. When the commission of Wisconsin made the "fool-proof" cover law they found the laundrymen ready to co-operate heartily. This example, it is to be hoped, will be supported by all employers in the laundry industry throughout the United States. Safety First is a most humane movement and its principles have been placed on the efficiency plane in dollars and cents. This has been proved, especially in the State of Wisconsin, where a distinct credit off the basis rate is given for extractor cover efficiency. This credit, it was pointed out, can surely be likened unto an investment of money in a dividend paying proposition.

Standard guards for belts, pulleys and flywheels, it was suggested, should be made up of a framework of angle iron or iron pipe, filled in with perforated iron, which is much more durable, more sightly and less of a fire feeder than a guard made of wood.

take the necessary precaution and provide adequate fencing, whereby operators will be prevented from reaching over the rolls. In this particular, human appeal is not enough; the best safeguard against crushed and burnt limbs being a proper fence on all four sides of the machine.

### AUTOMATIC COVERS FOR EXTRACTORS

The value of the automatic cover for extractors has been fully substantiated. In the State of Wis-

The concluding item in the program by John Woodhead, safety engineer of the Employers' Indemnity Exchange and Employers' Indemnity Corporation of Kansas City, Mo., was an address illustrated with lantern slides showing some danger places in laundries and how to safeguard them, which very appropriately and graphically emphasized many of the features previously brought up. That this address has done good wherever it has been given was clearly shown in that several persons present, who had seen and known of it before, stated that they had come for the express purpose of seeing and hearing it again.

## EXPERIENCE

Shows that the greatest sociologists of today are our engineers — Safety men.

### AN IDEAL LAUNDRY PLANT—EMPHASIZING WELFARE WORK.

MISS JANE SEYMOUR KLINK (MANAGER WELFARE DEPARTMENT, PILGRIM LAUNDRY, BROOKLYN, N. Y.)

Some eleven years ago the Women's Municipal League of Manhattan asked me to undertake an investigation of laundries for the purpose of learning their conditions in regard to ventilation and sanitation. I knew nothing of laundries, but if I were to investigate I must at least know what I was to look for.

I encountered much nebulous matter in the way of tales concerning disease and crushed limbs, but specifically I started out with the idea to look for set screws, whirling belts, and dark rooms. I encountered neither one, but found all three, although in by no means so many cases as I had been led to expect. I learned, as we used to say when we began our childish compositions, that there are many kinds of laundries—French laundries, bulk laundries, private bundle laundries, Chinese laundries, a few hand laundries, and others "too numerous to mention."

On the whole, eleven years ago the general conditions in the

laundries were not by any means perfect, yet better than I had thought to find. Within the last few years I have revisited many of those plants and have noticed a great change. The best ones are better, the poorer ones have improved, and I find in visiting plants here and there in the United States that the general conditions of work in laundries are better than conditions in many other occupations. They are above the average.

What has made the change? It is not so much that the clothes may be washed better, for that is a result inherent more from competition in business than from outside influences. Neither is it so much a change in equipment, because that would necessarily follow from improved methods of work. There is a real vital change in conditions. Such things as lighter workrooms, better floors, carefully guarded machines, locker facilities, etc., have been provided because employers are realizing that the human factor is the important factor in their work. The topics chosen for discussion give concrete proof of this fact.

#### THE PILGRIM PLANT.

Most of the ailments in life are due to disturbances in the stomach and digestive apparatus. Hence a lunchroom has been established where a simple, well balanced meal may be had at cost. The surroundings are pleasant, the table linen clean, the china whole, the silver polished.

We all run the risk of being ill; therefore, the employes of the Pilgrim have organized and maintain a mutual aid society, with dues at 1 per cent of the weekly salary of each employe. The amount collected from the employes each week is duplicated by the firm, and this fund takes care of illness for periods from one day to eight weeks in a year. Membership in the society prevents apprehension for the future. There is also a death benefit fund.

The Pilgrim plant is equipped with bubbler drinking fountains, which supply filtered water, cooled in summer to the right temperature for health, by passing over chilled pipes.

The Pilgrim employes work forty-nine hours a week. One full hour is given at noon and there are rest periods of five minutes every one and one-half hours to prevent the accumulation of fatigue poisons in the system.

A careful watch is kept over each employe to note the first sign

of illness or unusual fatigue, for we want the men and women in our employ to be strong and healthy.

In order that our employes may be mentally alert, numerous plans have been devised for their diversion and instruction. There is a well patronized traveling library; occasional talks on timely topics; dramatic entertainments, minstrel shows, etc., from two to five times a year. There are regularly organized monthly meetings in charge of the officers of the company, when policies are discussed, suggestions given and plans formulated for the betterment of the business and those in the business. A monthly paper, "Pilgrims' Progress," is published by the employes; the September issue was devoted to Safety First and over one hundred contributed their parts toward upholding standards of carefulness.

It is my privilege as welfare manager to be concerned with the attitude and development of this human factor, and to create and foster the right attitude in the employes, to encourage and assist their development through the constant maintaining of that right attitude is to me the aim of welfare work.

I want my people to stand four-square to the world. Strong physically. You cannot look at the world in a straightforward way nor regard your particular task in the world in the right manner if your angle of vision is sharpened by indigestion or out of plumb through crooked heels, or obstructed with any bodily ailment. Therefore, a hospital room has been provided for the welfare of the employes, and the following figures show the necessity for its existence:

HOSPITAL RECORD.

|                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|-----|
| Treated for various ailments and illnesses.....                                                                         | 515 |
| Treated for slight accidents, burns, scratches, cuts, bruises,<br>received either at home or in plant.....              | 60  |
| Severer hurts sent to physician for treatment and necessitating<br>absences of from two days to one week in length..... | 5   |
| Total number treated in hospital from July, 1914 to July,<br>1915 .....                                                 | 580 |

MONTHLY MEETINGS.

A regularly organized meeting of the overseeing help with the president in charge holds monthly sessions, when policies are discussed, suggestions given, and plans formulated for the betterment

## HAPPINESS

Depends not so much  
on means and oppor-  
tunities as on the  
capacity of using  
them.

of the business and those in the business.

A similar monthly meeting is held of the salesmen with the treasurer in charge, which has the additional feature of a supper and a smoker. A monthly meeting of the factory committee, composed of a member elected from each department, which exercises a helpful influence all through the plant in assuming personal responsibility for the member of each department.

### SOCIAL SERVICE.

We never talk down to our people, but as one said last week on leaving: "I have learned so much here that I shall always be thankful for my four and a half years in the Pilgrim." We want our people mentally strong and always looking for the "beyond"—that is, everywhere. Morally upright. Creeds differ, but the old-fashioned principle of truth, honesty and loyalty are always the same, the ten commandments are a safe guide, the Golden Rule is a good rule to measure by, and we try, sincerely and earnestly, to endeavor to be on earth what good people hope to be in heaven. The question is not "what is right for the other man to do, but what is right for me to do." As an illustration in perfectly good faith, we have had one umbrella stolen in four years! We have 480 silver knives, forks and spoons. In two and one-half years one spoon disappeared. We do not want our people perfect, for then we should be uncomfortable, but we try to help them to be honest, God-fearing men and women.

Physically strong, mentally alert, morally upright, what is the other side of the square?

Pilgrim employes are socially helpful. We are not put into this world alone. We need each other in our work and in our play, and we do not play enough. So every Tuesday evening we play. Each department in turn takes a Tuesday evening, employes' friends, parents and sweethearts being invited. Recently the collar depart-



ment gave a reception to a member who was leaving to get married. On another occasion the ladies' clothes department gave a "children's party" at which many of the young people appeared as children from one to ten years of age, wearing costumes of striking originality. At another "Tuesday" the shirt department gave a barn dance and still again the office force held a masquerade ball.

There is another way in which we try to be socially helpful, and that is in inducing our people to form the habit of saving money regularly.

This year we saved \$770 for our vacations, and the Christmas savings for 1915 amount to nearly \$2,000. Also, many have started saving for their vacations in 1916. The following plan has worked very well with us, and some others might wish to try it. Payments are arranged so that they may be made weekly by means of stamps through a period of fifty weeks. They may begin with 2 cents the first week, 4 cents the second, 6 cents the third, adding 2 cents each week, until at the end of the period of fifty weeks they will have \$25.50, or they may begin with a payment of \$1 the first week, 98 cents the second week, 96 cents the third, etc. In either case the amount saved is \$25.50. In January, 1916, we expect to start a series of 100 employees who wish to save for the next Christmas. Many of these savings are transferred to the bank.

Socially helpful! The men or women are indeed poverty-stricken who have nothing in themselves to give to others. Abnormally selfish are those who will not give as God hath prospered them, to relieve the sufferings of those less fortunate than themselves. I do not wish to boast, but I am glad to say that the Pilgrims give and give largely. It matters not whether it is to fill Thanksgiving baskets, or big red stockings to Dayton sufferers, the Red Cross, or a building for the Y. W. C. A., we give from ready and willing hearts, for we really try to live up to our motto, "Non solum nobis" ("Not to ourselves alone").

## GROUCHES

Prunes are better  
than pills — educa-  
tion better than  
fault-finding and  
scolding.

## THE INTIMATE RELATION.

But there is a closer, more intimate relation. We try to help each other by giving of ourselves, by being patient, gentle, trying to overcome our many faults, and by reason of that overcoming to help others to become good, square women.

"Where does the laundry work come in?" you ask. The work is always there. By it we live and move and have our sustenance; but these things move in and around and through our work, keeping us in close touch with it and with each other, giving us the attitude of helpfulness so that we try to create an atmosphere which is just as real to us who breathe it, and are inspired by it as all the stones, bricks and mortar of our beautiful plant.

Do you say: "This sounds like a Sunday school." Little do I care what it sounds like. This one thing I know that, added to the strength of a strong organization, permeating it, vitalizing it, making it a real live, growing organism, is the practical carrying out of the Golden Rule, "Do unto others as you would that they should do to you," and this I consider to be the essence of welfare work. (Applause.)

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DANGER FEATURES IN LAUNDRIES, INCLUDING EXTRACTORS AND FLAT WORK IRONERS.

M. F. WILKINSON (PRESIDENT WILKINSON LAUNDRY COMPANY, READING, PA.)

When I received an invitation from Mr. Cameron to take an active part in this meeting and discuss "Danger Features in Laundries, Including Extractors and Flat Work Ironers," I was inclined to turn it down, as I felt there were many men far more capable of handling the subject. After considering the matter I realized if everyone would decline such an invitation there would be no movement in the safety question.

Comparing the laundry industry with other industries, I consider it one of the least hazardous, and Pennsylvania state reports will verify this statement. Out of 9,508 accidents reported for May and June, the laundry industry shows eight; six of these were males and two females. Two of the injuries to males were serious

(which means disability for fourteen days or more); the minor injuries were six of the eight, which means disability less than fourteen days. Considering the number of employees in laundries in the state, this is a small number; at the same time we may have some serious hazards, but not if employers use a little precaution.

Where shafting and belts are used, naturally we have the same dangers as any plant, such as the set screw, low shafting and unguarded belts. Laundries in general have gas-heated machines and iron stoves using forced air with gas and the danger to employees who do not or will not keep their faces away from open end of machines or over the stoves when lighting them.

Bad belts, bad floors, habit of letting starch get over the floor where employees walk—in other words, carelessness.

Crowding of machines too close together, not allowing room for operators. This feature may have existed more in the past than it will in the future, for it occurs mostly in old plants started in small places or dwellings, then additions to machinery having been made without getting extra room. Most plants now being built are allowing for expansion.

Burns, considered by many a necessity to the business, are far less than they used to be and will grow less in future, due to more room, better light, and pipes being covered and located better.

Lack of light is as dangerous as any one thing and is one of the easiest of hazards to guard against if considered when building.

Ventilation is a necessity from a sanitary standpoint, the absence of which becomes a hazard, for any employee working in a poorly ventilated room (no matter what occupation) becomes dull and careless.

The old bosom machine, no doubt, has its dangerous features, as does all roll machines, especially at point of contact, but unless operator becomes careless are not very dangerous.

Old-style shifters on washers are somewhat dangerous, but as these machines are the shortest lived in the plant, they are fast disappearing and hardly worth considering.

#### ACCIDENTS USUALLY SERIOUS ONES.

The extractor, a machine considered as dangerous as any in the plant, looks harmless and is harmless, or nearly so, if operators do not get careless. Few accidents occur, but what do usually are

## Most Men

Do not realize the hazard of their occupations and for that reason do not use due precaution.

serious. Extractors become dangerous when not fastened down properly, not loaded evenly or run at excessive speed, allowing the rubbers to become hard, which will crystallize the shaft—then no one can tell what may happen or where the basket may go or what damage it will do. Time was when baskets would break, but this feature has been improved by the manufacturer until such cases are rare.

The careless habit of operators putting brakes on hard and quick, overloading, and goods put in loose are practices in most all plants and hard to guard against, as carelessness of the employe comes up again, but if canvas covers are used the goods cannot jump out near as easily. Men on extractors with small loads, not loaded evenly, try to get the machine going by holding rim of basket to help steady it. Some even help stop machine by holding a rag or net against basket—a careless and dangerous habit, as well as to try to punch down the canvas cover in the middle before the machine stops. In either case if one's hand catches the arm will most likely go at the shoulder. Besides canvas covers, all extractors should have metal covers or lids, but as this subject will be covered by someone else I will not enlarge on it.

Flat Work Ironers.—When these machines were called mangles they sounded dangerous. While some danger is connected with them, they are considered by some people to be the most dangerous in a laundry, which I think is not the case. In fact, I consider them no more dangerous than any roll machine, except there are more operators on them than the other machines. Operators become more careless on these than most any other machine in the plant.

### SPECIAL HAZARDS.

The point of contact is, of course, more or less dangerous, and if not guarded by doffer roll or guard, careless operators will, in spite of all you can tell them, put their hands over the guards, no

matter how guards are applied, or will remove guards at times to accomplish some work in the easiest manner.

Long four-in-hand ties or ribbons hanging down so as to catch under rolls, finger rings, bracelets or flowing sleeves; in fact, anything that can catch in or under the rolls are a menace to operators.

Turning on steam quickly when machine is cold, or not allowing the air to escape—quick heating up—causes quick expansion of the metal and constant expansion and contraction will cause crystallization. The machine should not be stopped at same place every night, for by so doing it will cause unequal expansion and contraction at water line. As there is, in most cases, some water left in the machine, all these help to cause explosions, and I think you will notice most explosions happen in the morning soon after steam is turned in, caused mostly by quick expansion. The effect of these explosions you are all familiar with, and no one can tell how bad the results may be.

#### LIGHT AND VENTILATION.

I have used the words careless and carelessness several times, for I consider these and lack of light and ventilation the most dangerous hazards in the laundry industry, with emphasis on the carelessness on the part of employes themselves. Careless help is a detriment to the laundry industry, not only from accident point, but from work turned out as well.

In some cases the employer is as careless as the employe. I saw an extractor running some time ago with the brake broken. The proprietor was operating the machine himself. When he wanted to stop it he took a piece of goods, holding on to the rim of the basket. I asked him why he did not have it fixed and he replied that no one operated the machine but himself, but I saw an employe operating the machine before I left his laundry.

I tried to show him his mistake, but he looked at the fifty cents

### Making Good

It is every man's wish to make good, yet very few of us understand wherein that state exists.

it would cost and the little trouble. This, I admit, was a small laundry, but all plants are judged by such when an accident happens.

To me it appears if carelessness of operators or help could be overcome accidents would be reduced at least 75 per cent, which shows the most dangerous features in laundries is careless help or carelessness. No matter how much you tell them, they become over-confident or, if seems, case-hardened to danger of accident.

*"Our First Rule: Save Life  
First. When That Is Done  
Protect Our Property"*

## **National Safety Council**

**Mining Sectional Meeting**

**Philadelphia, Pa.**

**October 20, 1915**

**H. M. WILSON, Chairman**

**Associated Companies, Pittsburgh, Pa.**

### **MINING SECTION.**

**T**HE Mining Round Table Sectional Meeting held in connection with the Fourth Annual Safety Congress of the National Safety Council was called to order at 9:30 a. m., October 20, 1915. About 100 were present.

Mr. H. M. Wilson of the Associated Companies, Pittsburgh, Pa., acted as chairman and Mr. Joseph H. White of the Bureau of Mines acted as secretary.

The following is a list of the prepared speeches that were delivered:

#### **THE PROGRAM.**

1. "The Bureau of Mines as a Factor in Mine Safety,"  
Van H. Manning, Director, Bureau of Mines, Washington,  
D. C.
2. "Sanitation as a Safety Factor in Mining,"  
J. H. White, Sanitary Engineer, Bureau of Mines, Pitts-  
burgh, Pa.

3. "Fatalities and Diseases in Coal Mining Districts,"  
Dr. W. A. Lynott, United States Bureau of Mines, Pittsburgh, Pa.
4. "Accident Prevention in Metal Mines,"  
B. F. Tillson, New Jersey Zinc Company, Franklin Furnace, N. J.
5. "Accident Prevention in Coal Mines,"  
R. Dawson Hall, Editor *Coal Age*, New York City.
6. "Safety in Electrical Installations in Mines,"  
H. H. Clark, United States Bureau of Mines, Pittsburgh, Pa.
7. "Fire Prevention in Mines,"  
John Lloyd, Efficiency Engineer, Lehigh Valley Coal Company, Wilkes Barre, Pa.
8. "Mine Accident Prevention and Workmen's Compensation,"  
H. M. Wilson of the Associated Companies, Pittsburgh, Pa.

## INFORMAL DISCUSSION.

The following is a list of those who participated in the informal discussion of the various papers:

Sim C. Reynolds, Safety Inspector, Aetna Insurance Company.  
 Dr. Peter Roberts, Secretary, Industrial Dept., Y. M. C. A.  
 Dr. Backs, Chief Surgeon, W. J. Ramey & Co.  
 H. J. Brown, Keystone Plaster Company, Nova Scotia.  
 Dr. Lloyd Nolan, Superintendent, Health Department, Tennessee Coal, Iron and Railway Company.  
 Dr. W. S. Rountree, Tennessee Coal, Iron and Railway Company.  
 B. F. Tillson, New Jersey Zinc Company.  
 C. E. Tobey, General Superintendent, Mining Department, Delaware, Lackawanna & Western Railway Company.  
 H. G. Davis, Superintendent, Mining Department, Delaware, Lackawanna & Western Railway Company.  
 John Lloyd, Efficiency Engineer, Lehigh Valley Coal Company.  
 C. E. Pettibohne, Chief Safety Inspector, Pickands Mather Company.  
 W. G. Wildin, Division Superintendent, Lehigh Coal and Navigation Company.  
 R. Dawson Hall, Editor *Coal Age*.



Edwin Ludlow, Vice-President and General Manager, Lehigh Coal and Navigation Company.

D. Lloyd, Mining Department, Delaware, Lackawanna & Western Railway Company.

H. M. Wilson, Associated Companies, Pittsburgh, Pa.

Joseph H. White, Sanitary Engineer, Bureau of Mines.

THE BUREAU OF MINES.

In the discussion of Mr. Manning's paper the benefits derived by mining companies co-operating with the Bureau of Mines was discussed.

Following Mr. White's paper the financial return of sanitation and social welfare work was discussed. By improving conditions at a gypsum mine by ventilation and washhouses mining costs were reduced 60 cents per ton. The reduction of 4 cents per ton by one large company could be accounted for in no other way than by sanitary and social welfare work. Care of sanitary privies and the design of miners' washhouses were discussed. It was brought out that many details of best sanitary methods in and around mines had not yet been perfected.

The discussion of Mr. Tillson's paper developed that suggestion boxes did not bring good results, only 285 suggestions, in one instance, coming from a labor force of 20,000. Men would tell their suggestions to a safety committee but would not write them. Some felt that it was difficult to introduce a bonus system for least time lost on account of accidents among organized labor. An employer of 10,000 strongly organized men stated that no opposition was encountered in his operations, members of the union being on the safety committee for each mine. In his work, instead of giving a bonus, a loving cup was presented annually to the district having least loss of time due to accidents.

Advantages were claimed for a constantly changing safety committee, members of which served for two weeks, only one member changing at a time. This permitted a great number of the workmen to be connected with Safety First movement in an official manner.

At a general safety meeting of all the workmen, held by district inspectors of a large company; the local foremen and bosses were not permitted to be present, so that the men would not have any hesitancy in criticizing unsafe methods or practices of their bosses.

## Watchfulness

The "more competent,—alert class" of our workmen received the fewest injuries.

Nature of accidents were discussed. One safety inspector told how the regular hoisting engineer was knocked senseless by a crank while lowering fifteen men in a 350-foot shaft; the reserve engineer, present on the platform while miners were being raised and lowered, stopped the cage without an injury to any of the men on the cage. The superintendent of one colliery stated that 70 per cent of the accidents with his company occurred at the working face.

### HAND AND MACHINE MINING.

R. Dawson Hall's paper aroused an interesting discussion. Statistics from two bituminous mines—one worked by hand mining and the other by machine—showed that more accidents occurred in the machine mine than in the hand mine. Mr. Hall believed that this was because hand miners were a more competent, alert class than the loaders found in connection with a machine mine. It was said that in the anthracite mines there were many less accidents where machines were used than where hand mining was done, and that the mining machine was considered a great safety device by the anthracite men.

It was discussed whether accidents should be quoted as so many per thousand men employed or as so many per million tons mined. Divergent views were voiced. Some held that from the point of view of the operator accidents per million tons mined was the fair way to judge, but from the point of view of the individual miners the accidents per thousand men employed was the important consideration.

Dr. Lynott's paper brought up the question whether steel lockers or ceiling hooks were better for a miners' wash and change house. It was generally believed that if properly installed either lockers or ceiling hooks would give satisfaction. The importance of ventilating each locker and the necessity of spacing the ceiling hooks suitable distances apart (about thirty-six inches) was emphasized.

Some companies use both ceiling hooks and lockers, the hooks being used for the mine clothes and the lockers being used for the street clothes.

Favorable comments were made on Mr. Clark's paper on "Safety in Electrical Installations in Mines."

In discussing Mr. Lloyd's paper on "Fire Prevention in Mines," one manager told how high insurance was reduced by installing fire fighting equipment and having well-drilled fire squads at each mine.

Although fire lines were present in each gangway, there is a marked tendency not to keep these extended to the working face, simply through carelessness.

One superintendent described an emergency fire-fighting car, maintained by his company, which was subject to the call of any of the mines much the same as a mine-rescue car. The equipment of the car consisted of 500 feet of 2½-inch pipe in 10-foot lengths, brattice cloth, axes, wrenches, saws, nails, etc.

A division superintendent displayed blue prints, which were a part of his system of preparedness for fighting fires. These prints showed in each gangway the location of water pipes, the air lines into which water might be turned in case of fire, the valves, outlets, etc. The foremen of each mine were quizzed periodically not only as to their knowledge of their own mine, but all the company mines, so that in case of necessity they could assist their fellow foreman.

Fire fighting in metal mines was also discussed. It was brought out that a smouldering piece of timber in a metal mine might produce carbon monoxide gas sufficient in quantities as to be dangerous.

R. A. Quin, General Manager of the Susquehanna Coal Company, at the Edgewood Park meet of the Susquehanna and Lytle concerns gave the following facts concerning the companies:

#### RESCUE AND FIRST AID MEN.

The companies have 200 rescue men drilled in the use of breathing apparatus, 325 first-aid men, not including those who have had

### Good Business

"There are 1,000 men employed to save life and 13,000 men to be protected." And they got results.

training and have been advanced to higher positions, 50 safety inspectors employed by the company to provide for the protection of their men, and 475 persons employed as foremen and assistant foremen and men in like positions, whose duties while partly economic are first and foremost to seek safety.

Roughly speaking, there are 1,000 men employed to save life and 13,000 men to be protected. Mr. Quin said that as a result of the efforts to guard their men from danger, fatal accidents in the first eight months in 1915 were only 17 against 32 in the previous year. He regarded it, as indeed all must, as a full recompense for the time and money spent.

#### BASE RATE ESTABLISHED.

Mr. Wilson's paper, "Mine Accident Prevention and Workmen's Compensation," brought up an interesting exchange of views on the four methods of obtaining compensation insurance. The four methods discussed were: Self-insurance, mutual insurance, state insurance and stock insurance. The system of The Associated Companies, which is a company made up of ten large casualty companies whose special business is to insure mines, was described. A base rate of so many dollars per hundred dollars of payroll has been established for each mining state. This rate was fixed after a careful study of accidents and hazards in each state. Each mine applying for insurance is carefully inspected and a reduction in the state rate is offered for every safety measure adopted, or, conversely, an increase in state rate is required for neglecting reasonable precautions. By this method companies attempting to operate mines safely do not shoulder the burdens of those who operate indifferently.

#### BUSINESS SESSION.

A committee consisting of Mr. B. F. Tillson of the New Jersey Zinc Company, Mr. John Lloyd of the Lehigh Valley Coal Company, and Mr. W. G. Wildin of the Lehigh Coal and Navigation Company, was authorized to draft by-laws which would govern the Mining Section of the National Safety Council.

#### REPORT OF COMMITTEE.

The committee submitted the following by-laws, which were read and unanimously adopted:

BY-LAWS.

NAME.

Section 1. This organization shall be known as the MINING SECTION OF THE NATIONAL SAFETY COUNCIL.

OBJECT.

Section 2. The object of this Section shall be to promote the science and practice of safety in metal and coal mining, quarry and open pit operations; to recommend the adoption of approved methods and appliances for safety, first-aid, and rescue work; to promote the adoption of proper safeguards against injury or loss of life or property; to promote the standardization of recording and rating of hazards and accidents, and to obtain and circulate information on these subjects.

MEMBERSHIP.

Section 3. Membership shall include all members of the National Safety Council who shall be interested in the activities and purposes of this Section and who shall signify to the Secretary of the National Safety Council, or to the Secretary of this Section, their desire to affiliate.

OFFICERS.

Section 4. The officers of this Section shall be a Chairman, three Vice-Chairmen, and a Secretary, who shall have the usual duties of such officers and whose terms shall extend to the annual meeting of this Section following that of their respective election, or until their successors are elected.

ELECTION OF OFFICERS.

Section 5. Nominations of officers shall be made by a Nominating Committee of three appointed by the Chairman of the Section, which committee shall report at the annual meeting its recommendations, which report shall be followed at said meeting by the election of officers for the ensuing year. At this meeting other nominations may be made by any members. Nominees should be selected, as far as practicable, to represent various branches of the mining industry with appropriate geographic distribution.

**YOU!**

Never mind who  
was your grandfa-  
ther—what are you?  
Are you a Safety  
man?

#### MEETINGS.

Section 6. There shall be an annual meeting of the members of the Section held during the period of the Congress of the National Safety Council, notice of the time and place of which meeting shall be posted at the information desk of said Congress. Other meetings of members may be held on due call and notice by the Sectional Executive Committee.

#### COMMITTEES.

Section 7. The affairs of the Section shall be conducted by a Sectional Executive Committee which shall be composed of the Sectional Chairman, three Vice-Chairmen, and a Secretary, and the Secretary of the National Safety Council, who shall be ex-officio a member thereof, and the Chairman of the following four standing committees, which committees shall be appointed by the Sectional Chairman.

1. Membership and Publicity Committee.
2. Standardization Committee.
3. First-Aid and Rescue Training and Contests Committee.
4. Program and Publication Committee.

#### IN GENERAL.

Section 8. The Sectional Executive Committee shall appoint such other officers of committees and amend these by-laws or adopt other laws and do such other acts and engage in such activities as may be needed to wisely further the objects of the Section.

#### SUPERVISION BY NATIONAL SAFETY COUNCIL.

Section 9. This section shall be under the direction of the Executive Committee of the National Safety Council. All by-laws and amendments thereto, activities, expenditures, literature, bulletins and published data of this Section shall be subject to the prior approval of the Executive Committee of the National Safety Council and all publications of the Section shall be under the name of the Section

as a Section of the National Safety Council.

The same committee was also authorized to act as a nominating committee and it submitted the following names as officers for the ensuing year. These men were unanimously elected:

OFFICERS ELECTED.

Chairman—Mr. H. M. Wilson of The Associated Companies, Pittsburgh, Pa.

First Vice-Chairman—Mr. B. F. Tillson of the New Jersey Zinc Company, Franklin Furnace, N. J.

Second Vice-Chairman—Mr. H. G. Davis of the Coal Mining Department, Delaware, Lackawanna & Western Railway Company, Scranton, Pa.

Third Vice-Chairman—Mr. W. A. Luce of the Ellsworth Collieries Company, Scranton, Pa.

Secretary—Mr. H. M. Wolfen, Bureau of Mines, Pittsburgh, Pa.

## Should Be

“One example is worth a thousand arguments.” Have you learned your Safety lesson?

### THE BUREAU OF MINES AS A FACTOR IN MINE SAFETY.

VAN H. MANNING, DIRECTOR OF THE UNITED STATES BUREAU OF MINES.

Mr. Chairman and Members of the National Safety Council: One of the most important results of the work of the Bureau of Mines since its organization has been the development of the movement for great safety and better health conditions in the mining, metallurgical, and allied industries in the United States.

To show the relation between mine inspection service and the fatality rates at coal mines from 1870 to the close of 1914, and to illustrate the effectiveness of close inspection, I submit a few statistics which should be of interest to you. The coal produced in the non-inspection states is less than 1 per cent of the total at the present time.

The fatality rates per 1,000 men employed in inspection states, in 1870 and 1914, are, respectively, 5.93 and 3.22. The number of fatalities per million tons mined was 13.47 for 1870 and 4.78 for 1914. The number of tons of coal produced per fatality in 1870 was 74,238, while in 1914 it was 209,261. The number of tons of coal mined per man per year in 1870 was 444, while in 1914 it was 673 tons. During the first ten years of mine inspection the fatality rate per 1,000 men employed remained practically stationary, while the number of fatalities per million tons mined showed a slight reduction. From 1897 to 1907 the number killed per 1,000 employed increased considerably, reaching the highest point in 1907, from which year there has been a marked decline. The increase in the fatality rate from 1897 to 1907 is not necessarily due to less efficient mine inspection. The conditions under which the mines were operated were changing. The mines were growing deeper; there were more old, abandoned workings in which gas and dust would have a tendency to accumulate; haulage systems were more extensive; electricity had been introduced into the mines, and more men were employed in the individual mines than in former years, so that in case of a gas or dust explosion the likelihood of trapping more men was greater by reason of a larger number of men being employed. During this period there was an influx of foreign laborers, many of whom came from the agricultural districts of South-eastern Europe; they had no experience in mining and did not know the English language, and, hence, were not capable of understanding and carrying out orders that were made in a tongue foreign to them. Although the inspection service has been increasing in efficiency from year to year, the various hazards, as noted above, are increasing. The increased fatality rates, due to mine disasters, from 1897 and culminating in 1907, have been the means of the passage of more stringent laws for the operation of coal mines. States are establishing rescue and first-aid stations, and nearly every large mining company has its safety engineer and Safety First committee, with the necessary rescue and first-aid equipment.

#### CO-OPERATIVE AGREEMENTS.

An educational campaign on mine-accident prevention has been conducted since 1907, with the result that there is much closer co-operation of miner, foreman, operator and inspector than in former



years. The work of these various agencies has resulted in a gradual decline in the fatality rate from 1907 to 1914.

The Bureau of Mines has been able to work out co-operative agreements with many of the State agencies having to do with the reduction of accidents, and has received the hearty support of the mining companies throughout the United States in all of its efforts to reduce the hazards of this great industry. In conducting its campaign for the increase of safety in the mining industries, the following general plan of co-operation between the National Government and other large agencies has been adopted: (1) That the National Government conduct the necessary general inquiries and investigations in relation to mine safety, and disseminate, in such a manner as may prove most effective, the information thus obtained and the conclusions reached; (2) that each State enact needed legislation and make ample provision for the proper inspection of mining operations within its borders; (3) that the mine owners introduce improvements with a view to increasing safety as rapidly as the practicability of such improvements is demonstrated; and (4) that the miners and mine managers co-operate in drafting and enforcing safety rules, regulations and laws. The States—miners, mine owners and other agencies—are now showing a commendable willingness to co-operate with the National Government in this safety work.

The Bureau of Mines is only one of several agencies working to accomplish a great end, and its activities can be most beneficial only in those cases wherein it is co-operating with individuals and organizations who have an interest in the matter of safety.

#### INVESTIGATIONS CONDUCTED BY BUREAU OF MINES.

Among the principal investigations conducted by the bureau tending toward the reduction of coal mine accidents are those relating to gas and dust explosions, the use of explosives and electricity and a study of safety lamps. It has also done much work in the development of mine-rescue and first-aid apparatus, and has conducted a campaign of education whereby these appliances may be used most effectively. Thousands of the ablest miners are now able to administer first aid to their injured fellow workman. Suffering is reduced and many lives saved.

When Congress first authorized the investigation of the causes

## HUMANITY

"The Bureau's efforts are being directed toward the preventing or arresting of explosions."

of mine explosions it was not generally believed that coal dust alone could spread an explosion throughout the mine. Now that the explosibility of coal dust has been demonstrated by the bureau through work in the laboratory, in the field, and in its experimental mine, the bureau's efforts are being directed toward the devising of effective and practicable methods of preventing or arresting explosions. Through the development and use of rock-dust barriers and other

devices the intensity of future coal-mine explosions will most certainly be decreased. A systematic investigation has been made of the possibility of coal-mine explosions starting from improper use of explosives or using improper explosives, or from electric sparks, miners' lamps, mine fires or other agencies. Various tentative conclusions and proposed recommendations regarding proper precautions are now being tested on a practical scale in the experimental mine near Pittsburgh.

The bureau has carried on a number of investigations into the nature of explosives used in mining operations, with a view to changing the character of explosives so as to meet the needs of the various branches of mining, and especially to increasing safety in coal mines. Both the wrong use of explosives and the use of an explosive not suitable for certain classes of work have resulted in coal-mine disasters. The bureau has brought about what is little short of a revolution through the introduction of new types of low-temperature, quick-flame powders, designated as "permissible explosives," in the more dangerous coal mines of the country.

In the bituminous coal mines of the United States, the fatality rate from explosives, per 10,000 men employed, has been reduced from 3.39 in 1903 to 0.96 in 1914, largely as a result of the use of "permissible explosives."

The investigation of explosives is also important to metal miners, whose health and efficiency are seriously affected by the use of explosives.

## ELECTRICAL HAZARDS.

Through the activity of the bureau in calling attention to dangers in the use of electrical machinery in mines, manufacturers have devised safer types of apparatus and States have enacted stricter laws governing electric installations. An investigation of electric lamps for miners has resulted in greatly improving the types now offered for sale. In regard to safety lamps, other than electric, tests have been made to ascertain the comparative merits of different types of safety lamps, including their usefulness in furnishing light to miners, their relative safety, and their value in indicating the presence of explosive gas.

In considering the Bureau of Mines as a factor in mine safety, it must be remembered that the greatest good can only be accomplished where there exists a spirit of co-operation and a willingness on the part of each agency, state, federal and individual, to assist each other. (Applause.)

**CO-OPERATION**

"The greatest good can only be accomplished where there exists a spirit of co-operation."

## SANITATION AS A SAFETY FACTOR IN MINING.

JOSEPH H. WHITE, SANITARY ENGINEER, UNITED STATES  
BUREAU OF MINES.

Mr. Chairman and Members of the National Safety Council: Some thirty years ago there was launched a nation-wide movement—intensely human in its purpose—which was based upon the discovery that much sickness was unnecessary. Before that time sickness had been accepted as inevitable; much of it was found to be preventable, and agencies for conserving health were established all over our country whose motto was "Prevention Is Better Than Cure and Far Cheaper."

Following in the wake of health conservation came accident prevention. Accidents had been accounted for by a vague "hard-luck" or "price-of-progress" theory. The *real* reason was that accidents

had *not* been given the proper consideration. The proof of this is the big reduction in accidents since the policy of numerous large industries has been defined with clearness in the terse but extremely significant phrase "Safety the First Consideration," or Safety First.

The purpose of these two great movements is identical, namely: The conservation of human life. In considering safety in mining, protection from disease should be considered as well as protection from accidents—make sanitation a true *safety* factor. In considering this subject, favorable as well as unfavorable elements affecting the health of mining people will be touched upon.

#### UNDERGROUND CONDITIONS.

What are the underground conditions under which the miner works which might have an influence upon his health? First, the circulation of air through coal mines, which is essential in order to prevent disastrous explosions, insures for the coal miner a steady supply of wholesome air. As a rule the temperature conditions in the mines are about the same year in and year out and this absence of variations is perhaps slightly conducive to good health.

The question of fatigue has been receiving attention by investigators of occupational diseases. In mining this, perhaps, is not serious. Most miners work only eight hours and the periods of rests—while waiting for cars, changing drills, timbering, repairing track, etc.—during those eight hours is an alleviating consideration. Moreover, in most states, the compensation rate per ton is so high that a reasonable day's wages can be made without dangerous overexertion. In many mines modern devices have been introduced for replacing or lessening the muscular labor of the miners. Finally, due to the unsteadiness of mining work, the number of days spent in the mine per year is perhaps considerably less than the number of working days in other occupations, so that they can hardly complain of being overworked.

The effect of the dust inhaled into the lungs by the miner while at work is of importance. It has been held by some investigators that coal dust is not only harmless but is actually a preventative against tuberculosis. Some say it is the germicidal quality of the coal dust that causes the miner to be immune from pulmonary tuberculosis; others attribute the immunity to the stimulating effect of

the coal dust on the lung tissue. Contrary views are held. There may be some uncertainty about coal dust, but it has been pretty definitely proven that in certain metal mines the hard, sharp, silicious dust particles produced in the drilling and blasting fill the lung cells and make the victim susceptible to disastrous infection by tubercle germs. Certain mining companies are introducing water drills and water spraying devices for the purpose of allaying this dust and remedying this evil. In certain states legislation is requiring these installations.

As a general rule, coal miners do not drink much water while at work. They quench their thirst by tea or coffee which they carry along in their dinner buckets. The tea, having been boiled, eliminates the danger of infection, but does the miner get enough water for the physiological functions of the body and is the stimulating effect, due to this steady use of the tea or coffee, injurious? Due perhaps to the warmer temperature in some metal mines, the miners drink more water than coal miners. They either carry this in their buckets or flasks or very often the company transports it to convenient places in cans, kegs, and water cars of various types. In some mines modern sanitary bubbling fountains are installed at the different levels. Improvements along these lines are being steadily introduced.

#### SANITATION.

Chiefly because privacy has not demanded them, underground toilets have not been installed in many mines. Toilet conveniences underground are more common in metal mines than in coal mines, due perhaps to the less perfect ventilation of the metal mines which would give rise to disagreeable odors if nuisances were committed indiscriminately. The absence of dirt or shale, as in the gobs of the coal mines, for covering the stools, also makes the need of underground conveniences in the metal mines more marked. Portable dry closets, toilet cars and a few water-flush closets are in use. In many mines the use of these conveniences is rigidly enforced, and men found committing nuisances indiscriminately are promptly discharged. In certain places the sanitary disposition of feces is necessary to prevent the dissemination of hookworm and the revolting disease caused by this parasite, as the temperature and moisture condition of the mine is often ideal for its propagation.

## To Be Clean

"It is difficult to measure how great a health agency is the miners' wash and change house."

### MINERS' WASH AND CHANGE HOUSES.

Curses are often changed into blessings. The very dirtiness of mining has compelled the miner from time immemorial to take a daily bath. It is questionable if members of any other occupation bathe so frequently and so consistently as do miners. There was a time—and with some mining companies there still is—when this daily bath of the miner was taken under the most trying conditions,

in the washtub before the kitchen stove. In many places now a wash and change house is established near the exit of the mine, so equipped that the miner may remove his soiled and sweated working clothes, take a shower bath, dress up in his clean street clothes and return to his home looking more like a clerk than a miner. It is difficult to measure how great a health agency is the miners' wash and change house. Wash and change houses are now required by law in seven mining states and though not required by law, they have been introduced voluntarily in eleven other mining states.

### MEDICAL AND HOSPITAL SERVICE.

In most mining communities the men and their families receive medical, dispensary, and hospital service under what is known as the "contract system." A fixed sum, usually about \$1.00, is deducted each month from the wages of the miner in return for which he may summon the doctor whenever he or any of his family do not feel well. Thus, on the slightest symptom of illness, the people do not fail to get medical treatment and there is not the danger of delaying, in the hope of saving a doctor's bill, until the disease has reached an acute stage, as is so often the case in other communities. This system often keeps one doctor in touch with the physical status of all the men, women, and children in the community, and undoubtedly it is an agency for making the health of a mining community better than that of an independent, diversified village.

**FOOD SUPPLIES.**

The quality and method of handling the food supply is an important element in the health of a community. So much has been written against the company store of mining towns, the compulsory trading therein, extortionate prices charged, that in many states the company store has been legislated out of existence. Undoubtedly in the past there were good grounds for this criticism; it was the abuses of the system, not the system itself, that was at fault. Much can be said in favor of the company store. Because of the credit system it can extend, it can do a large volume of business, carry a better and more complete grade of merchandise, and sell at lower prices. Company stores are usually housed in light, well-ventilated buildings, are equipped with modern conveniences and appurtenances, and the clerks are as a rule neatly uniformed. The large company store in the mining village is more hygienic and healthful and of better appearance than the small competitive stores of an independent village of similar size. The company store possesses both the advantages and dangers of any other monopoly. From observations of a large number of stores within the past two years, I believe its advantages on sanitary and hygienic accounts does much to outweigh its dangers on other accounts.

**Usually the Case**

"It was the abuse of the system, not the system itself that was at fault." (The company stores.)

**WATER AND WASTES.**

It is impossible to make a general statement regarding the domestic water supply of mining villages, as some very good and some very bad conditions have been observed. In respect to quality of water furnished, it is believed that mining villages are as well off as other villages of similar size, but in respect to the conveniences, that is, the extension of the water lines into the houses, the mining villages are inferior.

As a rule the sewer facilities of a mining community are not as good as are found in other places. This is perhaps due to the tem-

porary and uncertain life of the mining village, which does not, perhaps, warrant an investment in a sewer system. In most mining towns dry closets are in use and some shocking conditions formerly prevailed around these filth holes, but these have steadily improved as the knowledge of diseases caused by such has been disseminated.

The cleanliness of the streets, alleys, and yards in a mining village depend largely upon the interest that officials of the company take in these matters. Mining towns are like the proverbial little girl with the naughty little curl: "When they are good they are very, very good, but when they are bad they are horrid." This is due to the fact that the inhabitants of many mining towns have no proprietary interest in the town—they own no property and consider their presence there but temporary. Insanitary conditions and premises often result from this indifference. Some companies formerly thought that their obligations were fulfilled if they had an annual clean-up day. Living for a year amidst the gradually accumulating filth, rubbish, and the general by-products of life, is not conducive to good health, and many mining villages have now regular weekly scavenger service whereby all the debris is moved away from the zone of habitation.

#### HOUSING CONDITIONS.

The improvement in the character of the houses in mining villages is very notable in recent years. The old-time "mining patch" is becoming a thing of the past. Men following mining dwell and raise their families in mining villages, not "camps" as formerly. Congestion has never been as serious in mining communities as in the crowded tenement districts of large cities. Miners have usually dwelt in cottages, so that there has always been plenty of sunshine and good air in circulation. In the colder climates, perhaps, the miner has had too much air—the flimsy box houses with cleats over the cracks not furnishing sufficient shelter. Well-lighted, well-ventilated, warm, attractive houses are now found in most of the recent mining villages. Fences are built around the lots and neat yards and attractive gardens have supplanted the rubbish heaps of bygone days.

#### ADMINISTRATION.

The final health element to which your attention is drawn is the system of administration of the mining village. This is a most potent factor—it pervades all the others.



Even when scientific truths are well established, it requires time for these to become absorbed by the people at large. Sinister influences are slow working and it is difficult to bring people to realize their danger. Many of the insanitary evils are of just such an insidious nature. They do not, like accidents, have the spectacular effect which grips our feelings, stirs our sympathies, and challenges our efforts. Sanitary evils insinuate themselves into our daily lives, doing their damage in a quiet, cumulative manner. The vitiated air of an overcrowded bedroom does not, like mine gas, announce its deadly work by an explosion. In spite of strenuous educational efforts it will be some time before the housefly is considered a real danger. Mining companies about to introduce sanitary reforms may expect their efforts to be received with indifference by some of the people who are to be most benefited. Many mining villages are owned and administered by the company; and the delays, wastes, prejudices, and politics of a self-governing community do not have to be overcome in introducing sanitary improvements. This system reposes great power in the hands of the mining officials—great responsibility accompanies this power.

Many large mining companies are making wholesome improvements in the living conditions of mining towns, and as a whole company-controlled mining towns are perhaps healthier places to reside in than independent diversified villages.

The administration of a modern mining town with its variable human units and expanding social life must be handled differently from the practice in the past. The time is coming when the town management and mine management will be separated. The management of a *modern* mining town can no longer be considered as a mere side issue of the mine superintendents' duties. One cannot proceed far in any constructive mine town program before he sees that the mine superintendent cannot run the mine and the town without doing an injustice to them both and to himself also. In no sense is this intended to discredit the ability of mine superintendents; as an all-around, broad-gauged, level-headed, energetic type of man, the average mine superintendent has not many superiors and few equals in any industry. Our eyes, however, cannot be closed to this fact: If the old-time mining camp, with all its primitiveness and its inadequacy, suffered largely because the mine superintendent could give it scant attention, how manifestly impossible will it be

### **With the Men**

**"It is absolutely necessary for the mine superintendent to keep in first-hand touch with conditions."**

for him to find time to manage a modern, complex mining town, particularly when we realize that his underground duties are steadily increasing and the work of removing coal or ore becoming more involved. Already some mining men are decrying the fact that mine superintendents are spending too much of their time on the surface and in the office, and are shifting the more disagreeable but vitally important underground duties into the hands of their subordinates. These min-

ing men feel that it is absolutely necessary for the mine superintendents to keep in first-hand touch with conditions in the mine if the material is to be mined economically and safely.

In conclusion, attention is again called to the fact that sanitary improvements should go hand in hand with the Safety First movement. An attempt has been made to point out the debits and credits of the mining occupation. Before inaugurating a sanitary campaign, it would be well for each company to consider all these conditions and to make a comprehensive program so that the worst evils will be corrected first. It will be some time before perfection is reached; in the meantime it is important that the most good be squeezed out of every dollar spent on this kind of work. (Applause.)

### **FATALITIES AND DISEASES IN COAL MINING DISTRICTS.**

**DR. W. A. LYNOTT, UNITED STATES BUREAU OF MINES,  
PITTSBURGH, PA.**

Mr. Chairman and Members of the National Safety Council: The Bureau of Labor Statistics of the United States Department of Labor has published bulletin No. 157 on Industrial Accident Statistics, illustrating the importance of the industrial accident prob-

lem. This bulletin presents an estimation that 25,000 fatal industrial accidents occurred among American wage earners during 1914, and that approximately 700,000 accidents occurred which involved a disability of more than four weeks' duration.

The industries which contribute to the greatest number of fatal accidents are railroad and agriculture work, each causing about 4,200 fatalities a year. Building and construction work cause only 1,900 and general manufacturing about 1,800. The rate of fatal accidents among metal miners is 4 per 1,000, in fisheries and navigation 3 per 1,000, and in manufacturing 0.25 per 1,000. The last figure is based upon a grouping so broad as to have small value, as the group includes everything from the iron and steel industries in which the accident rates are high, to the textile and clothing industries in which the rate of fatal accidents is practically negligible. Among coal miners, of whom are about 750,000 employed, the rate of fatal accidents is 3.5 per 1,000 or 2,625 deaths annually.

A century ago coal mining was conceded to be a most hazardous occupation, and we are told a society was formed at that time for the prevention of accidents in mines. This society was instrumental in having the English government appoint a special committee to inquire into the cause of accidents with a view of suggesting some means of prevention.

Since the investigations were started by the Bureau of Mines, there has been an increase in the general interest taken by miners, mine owners and the general public in all questions relating to safety. Despite the fact that there has been a considerable increase in the amount of coal mined and in the number of coal miners employed, there has been a decrease in the number of fatalities in mining operations. The loss of life resulting from fatalities in mines represents but a very small proportion of the great loss that is being sustained in the peaceful prosecution of the industries of our country. The chief idea in the minds of the American people

## The Result

"There has been an increase in the general interest taken by miners, mine owners and the public." Result—less accidents.

at this moment is, can they further reduce the unnecessary loss of life?

FATALITIES IN COAL MINES.

Statistics, as compiled by Albert H. Fay of the United States Bureau of Mines, for 1914, show that fatalities in coal mines in the United States were 334 less than during the preceding year. The principal causes of accidents that show a material decrease were coal dust explosions, 96 per cent; haulage, 11 per cent; and falls of roof and pillar coal, 10.6 per cent. The net decrease in underground fatalities was 14 per cent.

There were 331 fatalities due to gas explosions as compared with 91 in 1913, making a net increase of 240. Of the total gas explosion fatalities, 261 were due to four serious explosions. There were slight increases in accidents due to explosions and electricity. There was also a net increase of 26 fatalities in shaft accidents, or 42 per cent, while on the surface the net increase was 5, or about 3 per cent. The net decrease for the year for both underground and surface accidents at coal mines as compared with 1913 was 12 per cent, while there was a reduction of 12 per cent in the number of fatalities. There was also a reduction of 10.5 per cent in the production of coal.

The United States Geological Survey estimates the production for 1914 as 510,000,000 short tons as compared with 570,048,125 tons for 1913. The fatality rate per 1,000,000 tons of coal produced in 1913 was 4.89 and in 1914, 4.81. With the exception of 1912, when this rate was 4.41, the 1914 rate is the lowest yet recorded for the United States. The amount of coal produced per fatality in 1914 was 208,078 short tons, which, with the exception of 1912, is the largest on record. The production per fatality in 1913 was 204,685 tons; 1912, 222,469 tons, and in 1907, 144,325 tons. There were 316 lives lost in disasters in which more than five men were killed at one time as compared with 464 in 1913, a net reduction of 148, or 32 per cent, in this class of accidents.

It is not possible to attribute these lower rates to any one particular influence. The decreased rate of fatalities may be assigned to any of the following agencies or to a combination of any or all of them:

1. Closer and more careful inspection by the state inspectors.
2. Better enforcement of laws and regulations by the operators.

3. Miner's realization of the dangers attending his daily work and his efforts to reduce accidents due to the educational campaign conducted in his behalf.

4. The more general use of safety or electric lamps in gaseous mines.

5. The use of permissible explosives.

6. Humidifying dusty mines.

7. First aid and mine rescue training.

8. Enactment of industrial accident compensation laws.

9. Last but not least, the co-operation of all concerned.

#### VENTILATION.

In well-ventilated mines the atmospheric changes due to breathing of men and animals, burning of lamps, decay of mine timbers and the firing of shots are very small as compared with the changes due to occlusion of oxygen by the coal and the extrusion of gases from the coal, roof and floor of the mine.

Nearly all mines throughout the United States are under the supervision of state mining departments, whose representatives make frequent inspections. Many operators also employ their own inspectors, who, in connection with their regular inspections of safety conditions throughout the mine, ascertain the amount and character of air in circulation. In a mine the temperature of the air approaches that of the ground and varies little from one season to the next, thus affording an even temperature for the miner in which to perform his work. Some mines are naturally damp while others are made so in order to prevent coal dust explosions, and this would seem to prove harmful to miners, but very little complaint has been heard from this source because most working places are well ventilated.

Constant fresh air which is supplied to the miners is free from certain impurities usually found in outside air in thickly populated sections. Where mines have a low temperature, germs which cause tuberculosis, pneumonia, etc., do not seem to propagate, hence the miner is not subjected to as many dangers in this respect as people in other walks of life.

Many surgeons in the mining districts say coal dust retards the growth of tuberculosis, others claim coal dust destroys tuberculosis

## **TUBERCULOSIS**

In eighty-one coal camps with a population of 33,395 not more than 50 miners had tuberculosis.

germs, then others are of the opinion that coal dust prevents tuberculosis. The latter opinion seems to possess merit, as a visit through eighty-one coal mining districts with a total population of 33,395 inhabitants, revealed the fact, from statements by camp physicians, that not more than 50 miners were tuberculosis victims. It is true you will find tuberculosis among the families of miners, but the majority of miners themselves seem to have a certain immunity.

In days gone by many of the miners were asthmatic victims, due, it is thought, to imperfect ventilation or an excess of carbon dioxide. Among the miners of today rarely, if ever, do you find asthmatic conditions because of the better ventilation. It was thought coal dust had a tendency to cause asthma but in mines where you find excessive dust accumulation with perfect ventilation, little or no asthma will be observed among the miners.

After all, the work of a miner is not arduous. Most of the mines work eight hours a day, but the actual labor performed by the miner does not ordinarily amount to over six to seven hours. Delay is caused by waiting for cars, track repairing, luncheon, etc.

### **DRINKING WATER IN MINES.**

It has become a custom among miners, particularly coal miners, to fill the tops of their dinner buckets with tea to be used for drinking purposes. Water is not used a great deal to relieve thirst. This in a measure is a very good practice as the germs are previously destroyed in the boiling of water preparatory to making of tea. Water, however, is used by some miners but the character of the domestic supply in many of the mining districts is far superior to the water supply of some cities. Deep wells, ranging from 100 to 400 feet, are found in many mining districts. The water from some of these wells is softened before it reaches the consumer. Marked improvements along these lines are being steadily introduced.

## TOILET FACILITIES IN MINES.

Bowel discharges are in a measure responsible for the dissemination of the hookworm. Dr. Hotchkiss of the Public Health Service states that mines having a temperature above 72 degrees Fahrenheit, sufficient moisture to make them damp, and less than 2 per cent salt or 0.1 or 0.2 per cent acid or alkali, are favorable for the development of the hookworm disease. Most coal mines, however, have a temperature and humidity low enough (about 60 degrees Fahrenheit) that the hookworm has not an ideal home for propagation. The dejecta is permitted to remain in the mine, but so few cases of hookworm have been found in the coal mining districts that the sanitary disposal of human excreta has not been considered necessary.

**SANITATION**

Seven states have passed laws compelling operators to establish wash and change houses.

## WASH AND CHANGE HOUSES.

The operators in many mining districts throughout the country realize the importance of providing wash and change houses for the miners and have expended large sums of money to bring about this change. Recently the Legislatures of Kansas, Arizona, Illinois, Indiana, Montana, Oklahoma and Pennsylvania passed laws compelling all mine operators to install wash and change houses for convenience of employees. Where washhouses are installed it means several changes; the clothes a miner will wear leaving his home in the morning will be exchanged for working clothes at the mine; when his days work is done another change is necessary. Few miners, however, object to the extra work entailed. The work of a miner being dirty it necessitates a daily bath. As few mining homes are provided with bathtubs, a washtub in the kitchen is usually employed. Generally speaking, the miner bathes more frequently and consistently than followers of any other occupation in the United States.

## MINE SURGEONS.

The diseases prevalent among miners are colds, tonsilitis, grippe and intestinal troubles. Rarely do you find cases of infectious fever or epidemics. There is a reason. In nearly all mining camps doctors are paid on contract system. The operators deduct \$1.00 a month for the married miners and 50 cents a month for the single miners. This entitles them or their families to call a doctor whenever occasion demands. A physician employed at a mining camp is a very hard-worked man; on the slightest symptom he is called. If the nature of the illness be serious no delay is occasioned in getting proper treatment. The doctor is in constant touch with the people and if epidemics are found the people are warned immediately and an effort will be made to check the spread of the disease. In cities and independent and diversified communities this is not the rule; the doctor is paid for each visit and usually his services are not requested until the symptoms are pronounced. In cities and villages a number of doctors may have private practice, each doctor treating his own patients, and he may find five or six cases of infectious diseases but will not consider them alarming. His neighboring physician may be employed similarly but as there is no health department and no discussion of physical ailments the whole city or village may be involved before the true condition is known. Hence the mining district with one physician in charge, who keeps in constant touch with the physical condition of all the men, women and children, is undoubtedly the only agency for making the health of a mining community a better risk.

## TUBERCULOSIS RARE IN MINING CAMPS.

In nearly all cities you will find crowded tenements. Congested play houses and congested street cars are conducive to the propagation of tubercular, pneumonia and grippe germs. Pneumonia, tuberculosis and grippe are rare in mining camps because the homes are usually sufficiently separated, no street cars are in evidence, play houses are not common and rooms are not congested. The homes of many miners are well ventilated, well lighted, warm, attractive and clean. Still more progress along this line should be encouraged.



## WATER SUPPLY, GARBAGE AND SANITATION.

Many mining communities obtain the domestic water supply from deep wells. The operators have realized that if a man is well he is able to work and they are improving conditions so his physical condition will not be impaired by impure water, insanitary conditions and environments. Sources of contamination have been removed and usually the supply of water in each camp is up to the standard. In cities where typhoid is prevalent the source of infection is not always traceable but in mining camps, only one water supply being used, the mine physician is in a position to trace the source almost immediately, if the source of infection be the water.

The sanitary disposal of garbage and ashes in the mining camps is now realized by the operators to be conducive to good health. They know that diseases are caused by the throwing of refuse into yards and nearly every mining camp may now boast of garbage and ash receptacles. The operators remove the contents of the receptacles weekly or semi-weekly, as the occasion demands. Fences are built around the lots and neat yards and attractive gardens have supplanted the rubbish heaps of by-gone days.

Unfortunately all camps are not supplied with closed or vault closets. One open closet in a camp may contaminate all the residents in the community, or flies gathering in outhouses may carry germs from human refuse back to the homes. However, the operators are trying to eliminate this nuisance and in a measure are succeeding. In many camps vault closets are supplanting the abominable, death dealing, open outhouses, and in a comparatively short time this nuisance will be entirely abated.

## CREEK BEDS.

Until two or three years ago many outhouses abutted on creeks and the water was insufficient to carry the excreta down the stream. Hence a source of infection was permitted to remain undisturbed and many of the operators did not realize the need of lessening the danger. Within late years this nuisance is being abated and very few closets are now found along the creeks. Refuse from kitchens, including tin cans, often found a resting place in the creeks, in many instances blocking the streams, and stagnant water was in evidence. Fortunately this also is being attended to and

## **Your Buddy**

Don't expect your helper to be as good a workman as you are. He isn't; he's a helper.

most of the streams are now free from obstructions and pollution.

### CONCLUSION.

The health of the miner compares favorably with the health of people in other walks of life. His labors are free from mental work; he is accorded sufficient rest; he receives medical attention at the onset of disease; and the air during his working hours is free from impurities. (Applause.)

## ACCIDENT PREVENTION IN COAL MINES.

R. DAWSON HALL, ASSOCIATE EDITOR, COAL AGE, NEW YORK.

Mr. Chairman and Members of the National Safety Council: A careful analyst of the conditions favoring accident prevention must close his eyes to the outcome of his figures and accept facts even when they do not coincide fully with his preconceived ideas and wishes. It is in this manner that the investigator must approach the question as to the effect of coal-cutting machinery on the hazards of mining. If it be proved that such machinery is the cause of more fatalities per ton mined than hand operation—as has been alleged by former State Inspector John Dunlop of Illinois and Thomas Moses, General Superintendent of the Bunson Coal Company in that state—then it behooves us to study diligently how the difficulties can be met.

Hitherto, too often we have been supplied with only the vaguest of generalizations. It is not sufficient to prove that in one district where machines are much used accidents are many, in proportion to the number of men employed, and in another where they are less generally used the accident rate is low. This may be only a coincidence. In Pennsylvania, for instance, where the argument has been advanced by State Inspector Thomas K. Adams, there is a marked difference between the machine districts in Western Penn-

sylvania and the districts in the central portion of the state where machines are on the whole in less general use. In this connection it is essential to note that the coal is not so thick in Central Pennsylvania and consequently inspection of the roof is easier and the rock has a shorter distance to fall.

Propping also is not so difficult and is proportionately less expensive and therefore likely to be more prodigally used. The Freeport coal, which is worked in the central counties of the state, has a roof which is probably as dangerous or more dangerous than that of the Pittsburgh bed. But that treacherous coal seam is largely worked out and the beds now being mined in Central Pennsylvania have an excellent roof. In fact, there are very few beds which have a more reliable covering than the Lower Kittanning.

Consequently in endeavoring to exhibit the dangers or the immunities of machine mining relative to hand digging, or shooting from the solid, it is well to compare the work in neighboring districts and in the same bed and to avoid making comparisons between conditions essentially different.

#### VALUE OF ACCURATE REPORTS.

In the State of Illinois an exceptionally complete report is made annually of all the details under which mining is conducted. The beds worked are carefully noted in connection with every operation and entries are made from which may be determined the manner of working—by hand, by machine or by combined hand and machine methods. For this reason, probably, Illinois has often been regarded as a good point to choose for this investigation, though the inquiry might be made successfully in some other states.

By ascertaining what the percentage of accidents per ton is in the machine mines in any one bed and comparing it with that in the mines worked entirely by hand, it seems as if it might be

### Your Shoes

"Every man is the  
proprietor of his  
own shoes. Be on  
the good side of  
Safety

possible to form some definite conclusion as to the relation between the safety of the two methods as mining is actually practiced, and in at least one instance that attempt has been made. The results promise to be the more valuable because the areas over which any one bed is worked are small and the roof and other conditions probably not largely variant.

Of course, the work in some of the beds is so inconsiderable that it would be obviously unfair to draw any conclusions from fatality and production records. The fatal accidents and outputs of these beds have been obtained and tabulated but the percentages have not been calculated for this table because if stated they could not fail to be misleading.

The estimates here quoted have been based on the tons produced, and not on the number of men employed. The writer believes that this is the correct plan. Industry demands unfortunately a certain tonnage per annum regardless of deaths. No one is prepared seriously to propose a restriction of output. Coal is such an essential in the well-being and even in the preservation of the life of everyone that while the loss of life in mines is deplorable and is to be prevented as far as possible, no one seriously considers closing our mines to assure a reduction of those accidents we so much deplore. Consequently we have to discover a means of mining which will permit us to secure the tonnage desired with the minimum of fatalities per ton.

However, those who base their rates on the number of men employed, as insurance men are sometimes prone to do, will naturally desire to see the figures calculated on that basis. Valuable as such a calculation would be, nothing has been done as yet to the knowledge of the writer in this direction.

It has been suggested that to obtain the relative hazards of machine and hand mining we compare the fatalities from falls of roof, coal and slate and to that end these accidents have been carefully segregated. As a result it may be deduced that in the machine mines operating bed No. 5 there were 1.442 fatalities per million tons produced. In the hand mines of the same bed the fatalities will show only 0.930 lives lost per million tons, giving apparently a fatality rate of 55 per cent higher in the machine mines due to machine operation. The tonnage of No. 5 bed was, however, small,

so that the evidence, even if our method of calculation is sound, is not really enough to justify any definite conclusions.

The statistics of No. 6 bed are corroboratory and even add to the strength of the presentment. In that bed the class of fatalities thus arbitrarily selected embraced only 0.972 deaths per million tons in hand mines as against 1.906 per cent in machine mines, a difference of 96 per cent. By adding the fatality rates of both beds it will be found that the machine rate for these supposedly significant causes is 1.8293 per million tons whereas the hand rate is 0.9589 per million. The machine-mining fatality rate for these specified causes is 90.7 per cent in excess of the hand-mining rate.

But several objections may be taken to a method of comparison which relieves the record of hand mining from many of the accidents undoubtedly sequent on its adoption and includes many machine-mining fatalities which may be due more to the personnel of the men employed to load after machines. To correct the first difficulty—that of overlooking many of the dangerous conditions from hand mining not covered by falls of roof, coal and slate—an attempt should be made to base the comparison on a larger class of accidents which for want of a specific all-embracing term have been grouped under the column headed "Certain specific fatalities."

#### SHOOTING FROM THE SOLID.

It is necessary to explain what these should be and consequently it should be noted that the introduction of machinery reduces considerably the practice of shooting from the solid, which in Illinois is quite dangerous and yet is permitted by law. Machine mining by excluding solid shooting makes fatalities from dust explosions less frequent. To the deaths from falls of roof, coal and slate should therefore in all justice be added those from shooting accidents in both hand and machine mines. These are unfortunately quite numerous. Thus two men were killed in a hand mine in No. 5 seam from an explosion caused by firing two dead holes, one man was killed by the afterdamp resulting from this explosion. A driver was killed by flying coal, this evidently being due to the violence of a shot. A miner met death in a similar manner and a shotfirer in exploding his holes traveled with the current thus laden with impure gases and was suffocated as a result of his indiscretion. This raises the fatalities from 8 to 14.

## WASTES

Accidents are wastes. In the modern scheme of things waste has to go.

It seems fair to regard these fatalities as the outcome of heavy firing due to the failure to undercut by machine. But this does not need to be proved absolutely if they are also charged up to machine mining where like fatalities occur. In machine mines operating No. 5 seam no such accidents as these can be found. Had they occurred they should be added because we should include like fatalities in both lists in order to secure perfect impartiality in our record.

But there are fatalities of a class which can be rightly charged to machines alone, though there was only one of these in No. 5 bed. That fatality was due to contact with an electric-machine wire. This death would most evidently not have occurred had hand mining been the practice. As a result then of this revised method of classification the machine work in No. 5 is found to be but little more dangerous than hand work. The fatality rate in hand mines is 1.628 per million tons and in machine mines 1.682 or less than 4 per cent higher.

The following accidents were added to the fatality list of the hand mines in bed No. 6: Men killed (1) by a premature explosion of powder, (2) by a shot which the victim had just ignited and (3) by a shot blowing through between entries. As a result the loss of life in No. 6 hand mines is raised to 22.

In the machine mines of No. 6 are added the following accidents: A man was drowned when rafting pipes in a pond, another was killed in a shot explosion, a third was mangled by his mining machine, a fourth fell into a tank of boiling water, a fifth was killed by an explosion of dynamite caps in a box containing permissible powder and a sixth man was killed by the falling of a machine jack down a shaft. Perhaps some of the accidents in the hand mines might just as well have occurred in those worked by machines, but as they belong to the type of accidents prevalent in hand mines for the sake of fairness they have been included in both lists of accidents.

The boiler accident and that due to rafting may have resulted not from mining-machine equipment, but from the use of electric haulage, but wherever a doubt was possible the accident has been accredited to the form of mining practiced at the mine. This has been done with consistency. The result, just or unjust, shows that hand mining in No. 6 caused a loss from the selected causes of 1.125 men per million tons mined and machine mining a loss from similar causes of 2.192 men per million tons. Thus, by this method of calculation, which is still open to objection, the deaths in machine mines are 95 per cent higher than in hand mines.

Combining the results for beds Nos. 5 and 6 it is found that, granted our manner of calculation is permissible, in hand mines the fatality rate is 1.278 per million tons and in machine mines 2.108, making the machine fatality rate 65 per cent larger than the rate in hand mines.

Realizing that any choice of fatalities on the part of the writer of this article would appear liable to bias, he has endeavored to vindicate himself by figuring all the fatalities regardless of cause. He must preface his indulging in a manner of calculation which he conceives some might desire by saying that of all methods this is the one most subject to warranted unfavorable criticism.

#### COMPARISON OF FATALITIES.

Owing partly to an accident in a hand-mined working in which four men lost their lives in an explosion of gas the number of fatalities of all kinds in the hand mines of No. 5 seam is 3.255 per million tons, whereas the fatalities in machine mines in the same seam from all causes is only 2.643 per million tons mined. The difference is 23 per cent in favor of machine mining.

But in No. 6 seam the showing is not in favor of machines. In this bed that method of operation in this hit-or-miss manner of calculation shows fatalities of 3.145 per million tons while hand

## ALWAYS

Every accident is  
a notice that some-  
thing is wrong—  
men, methods or ma-  
terials.

mining took only 2.403 lives per million tons. Machine mining thus calculated gives a figure 31 per cent higher than hand mining.

Bulking mining in both No. 5 and No. 6 seams together it is found that there were 2.663 lives lost per million tons in hand mines and 3.062 lives per million in machine mines. The difference is 15 per cent.

The year taken for these figures was one in which at no one time were more than four lives lost, so it may be said that there are no catastrophes to make figures unrepresentative. If anything the possibility of a great disaster is more threatening in mines where solid shooting is the rule than in mines where the coal is undercut and as great disasters in bituminous mines are more likely to occur in hand mines with solid shooting than in machine mines with carefully undercut coal the absence of a great disaster in 1913 probably militated against the relative record of the machine mines.

Undermining by machine reduces also the number of mine fires, which are often the occasion of catastrophes of the first magnitude. Heavy shots demand the limiting charge and often contain more than this amount of powder and consequently mine fires and explosions are far more likely to occur in hand or solid-shooting mines.

#### ANALYSIS OF FIGURES.

It may be added that a careful analysis of the figures of the year before (1912) showed that a similar result would be reached if the matter were followed to a conclusion, for the fatalities due to falls of ground in machine mining were found to be much more numerous in proportion to tonnage than those due to the same cause in hand mines, but as said, these figures are not as some think determinative of the relative hazards of the two forms of mining.

At one point in this paper it was suggested that the figures might well err because they did not consider the personnel of the men engaged. It is proper that this consideration should now be given attention. In the mines of No. 5 seam worked by machine only one machine worker was killed, yet there were 6 men killed by falls of ground. Thus less than 17 per cent of the fatalities from rock and coal falls occurred to men who were actually cutting with a machine.

The evidence from No. 6 bed is almost as striking and because it is of large volume is even more corroboratory. There were 40



men killed by falls of ground in the machine mines of No. 6 seam; of these only 11 were machine runners or helpers. Thus the actual machinemen killed constitute 27.5 per cent of all men killed by falls of ground.

Of course some men who work with machines may be termed "miners" in the report but even if all the 5 miners (one is excluded who was taking out props and the coal fell upon him) killed by falls of coal in that seam in machine mines were really machinemen then the percentage would only rise to 40 per cent.

FATALITIES IN THE DIFFERENT COAL BEDS OF ILLINOIS DIVIDED AMONG OPERATIONS USING HAND OR MACHINE METHODS YEAR ENDING JUNE 30, 1913.

| Number of seam | Method of working | Tons produced | Fatalities from Falls of Ground |                |                   | Certain Specified Fatalities |                |                   | All Fatalities |                |                   |
|----------------|-------------------|---------------|---------------------------------|----------------|-------------------|------------------------------|----------------|-------------------|----------------|----------------|-------------------|
|                |                   |               | Number                          | Tons per death | Per mil. ton tons | Number                       | Tons per death | Per mil. ton tons | Number         | Tons per death | Per mil. ton tons |
| 1              | Hand              | 332,488       | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 1              | Machine           | 9,288         | 0                               |                |                   |                              |                |                   |                |                |                   |
| 1              | Both              | 157,999       | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 1 & 2          | Hand              | 66,382        | 0                               |                |                   |                              |                |                   |                |                |                   |
| 1 & 2          | Machine           | 442,991       | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 2              | Hand              | 4,619,043     | 55                              | 923,808        | 1.082             | 55                           | 923,808        | 1.082             | 11             | 419,913        | 2.381             |
| 3              | Hand              | 80,119        | 0                               |                |                   |                              |                |                   | 0              |                |                   |
| 4              | Hand              | 1,136         | 0                               |                |                   |                              |                |                   | 0              |                |                   |
| 4              | Machine           | 12,016        | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 5              | Hand              | 8,001,254     | 8                               | 1,075,156      | 0.930             | 14                           | 614,375        | 1.628             | 28             | 307,188        | 3.255             |
| 5              | Machine           | 4,160,651     | 6                               | 693,441        | 1.442             | 7                            | 594,379        | 1.682             | 11             | 378,241        | 2.643             |
| 6              | Both              | 767,503       | 1                               |                |                   | 1                            |                |                   | 2              |                |                   |
| 6              | Hand              | 19,556,670    | 19                              | 1,029,298      | 0.972             | 22                           | 888,939        | 1.125             | 47             | 416,099        | 2.403             |
| 6              | Machine           | 20,985,456    | 40                              | 524,636        | 1.906             | 46                           | 456,205        | 2.192             | 68             | 317,961        | 3.145             |
| 7              | Hand              | 788,206       | 2                               |                |                   | 2                            |                |                   | 2              |                |                   |
| 7              | Both              | 1,235,551     | 0                               |                |                   | 1                            |                |                   | 3              |                |                   |
| 10             | Hand              | 21,021        | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 1              | Hand              | 5,190         | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 1              | All               | 499,755       | 1                               |                |                   | 1                            |                |                   | 1              |                |                   |
| 1 & 2          | All               | 509,353       | 0                               |                |                   | 0                            |                |                   | 3              |                |                   |
| 2              | All               | 4,619,043     | 5                               |                |                   | 5                            |                |                   | 11             |                |                   |
| 3              | All               | 80,119        | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 4              | All               | 13,146        | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 5              | All               | 13,529,493    | 14                              | 953,833        | 1.085             | 21                           | 944,258        | 1.552             | 41             | 329,965        | 3.030             |
| 6              | All               | 41,330,332    | 61                              | 677,846        | 1.476             | 72                           | 574,032        | 1.742             | 116            | 356,296        | 2.807             |
| 7              | All               | 1,256,572     | 0                               |                |                   | 1                            |                |                   | 2              |                |                   |
| 10             | All               | 5,190         | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 2              | Long wall, hand.. | 4,279,949     | 5                               | 855,989        | 1.168             | 5                            | 855,989        | 1.168             | 11             | 389,086        | 2.570             |
| 3              | Long wall, hand.. | 53,622        | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 5              | Long wall, hand.. | 259,800       | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| 7              | Long wall, hand.. | 451,428       | 0                               |                |                   | 0                            |                |                   | 0              |                |                   |
| All            | Long wall, hand.. | 5,495,627     | 5                               | 1,099,125      | 0.910             | 5                            | 1,099,125      | 0.910             | 11             | 499,602        | 2.002             |
| All            | Hand              | 34,497,807    | 32                              | 1,078,056      | 0.928             | 42                           | 821,376        | 1.217             | 88             | 392,020        | 2.551             |
| All            | Machine           | 25,610,322    | 46                              | 556,747        | 1.796             | 53                           | 483,215        | 2.069             | 80             | 320,130        | 3.124             |
| All            | Both              | 1,734,729     | 2                               |                |                   | 2                            |                |                   | 6              |                |                   |
| All            | All               | 61,842,918    | 81                              | 763,493        | 1.310             | 98                           | 631,050        | 1.585             | 178            | 357,474        | 2.797             |

(In compiling this table two fatalities have been omitted—a man who was killed while handling a keg of powder with his lamp on his head and one caught between a motor and a trip of loaded cars. In each case the report was not sufficiently clear as to the manner of operation of the mines. Neither of the accidents has any real relation to the relative dangers of hand and machine mining.)

## RULES

"The miners must guard themselves before the roof shows the least sign of stress or failure."

One cannot avoid the inference that the use of machines was only a secondary cause for the bulk of the accidents. It determined rather the character of the men than the intrinsic degree of danger.

The primary cause of the fatalities was the character of men employed. The miner who does all the extraction himself can come and go as he pleases and never find he must wait for his place to be cut. The better skilled miners are attracted by these freer condi-

tions of labor. The men who work in the machine mines are on the whole not the equal of the men in the other mines as far as safety is concerned. Many do not know English and for this reason cannot be instructed in safe mining.

It should be stated also that falls of coal in No. 6 seam constitute a danger even in hand mines. Four men were killed in the year under consideration. This is 21 per cent of the men killed by falls of ground in the hand mines of that same seam, despite the fact that almost all the coal in hand mines is shot from the solid and not undercut.

Nevertheless it should be urged that timbering in machine mines should be as mechanical as cutting. Nothing should be left to inspection and judgment. The roof should be propped liberally and promptly with systematic profusion before it gives an indication of weakness and this should be done even if the props must later be removed in the further handling of the machine. When the working of the roof cannot be heard because of the din of the machine, the miners must guard themselves from disaster by protecting the roof from fracture before it shows the least sign of failure or stress.

The use of shortwall and punching machines will make conditions safer for both machine runner and miner. But above all, if machine mining is to become a better risk, the operators must take care that opportunities for work are made so favorable that the best men will not gravitate to the hand mines. (Applause.)

**SAFETY IN ELECTRICAL INSTALLATION IN MINES.**

H. H. CLARK, UNITED STATES  
BUREAU OF MINES, PITTSBURGH, PA.

Mr. Chairman and Members of the National Safety Council: If we do not consider the responsibility of the individual miner, which is, of course, a factor, the reduction of electrical accidents in mines depends, first of all, upon the operators of the mines and their attitude towards the safety movement. Second, upon rules or instruction as to how to safeguard electrical installation, and, third, upon an organization to carry out such rules and instructions.

**FAVORABLE TO THE SAFETY MOVEMENT.**

At the present time it seems as if the sentiment of the operators was favorable to the safety movement, and some of them have adopted rules to govern the installation and use of electricity in their mines. Such rules will, of course, go through many stages of development before they become both effective in the cause of safety and acceptable to the operators of the mines. Their final form will probably be a code of rules included in the mining laws of the various States. Some states have already adopted such a code. That of Pennsylvania is one of the best.

If such rules are effective it will be because they are instructive as well as capable of enforcement by law. Since conditions are so various, rules that would cover all contingencies would be impractically voluminous and therefore something must be left to individual judgment. It follows therefore that much will depend upon the personnel of the organization that is to carry out such instructions. It has always seemed to me that the safety of electrical installations rested largely with the men who have charge of the underground electrical work and the support that they received from their superiors. A capable electrical force is a first essential for safety.

**Responsibility**

“The reduction of accidents depends, first of all, upon the attitude of the mine operators.”

## A LARGE FACTOR OF SAFETY.

I want to put especial emphasis upon the efficacy of a large factor of safety in mine electrical work. Electrical accidents are caused by combinations of circumstances that would be considered fanciful if one were to cite them as the basis for installing safeguards. Here is an illustration of this: The combination consisted of a trip of cars, an electric locomotive, a slippery rail, and six men in one of the cars with a small tin can of black powder standing on the iron drawbar that passed along the bottom of the inside of the car. The motorman in starting applied sand, the motor lost its contact with the rail, the current ran back along the drawbars just as the jerk of starting knocked over the powder can, which fell in such a way that its cap struck a bolt that was in connection with the rail. Now it happened that dirt collected in service had insulated the cap of the can from the can itself and the current passed through the powder within the can and the resultant explosion burned the six men very badly.

On another occasion the combination of a thunderstorm, a tree, a fissure in the rock over an entry and a man standing directly beneath the fissure with one foot on the rail, caused the death of the man and the injury of one of his companions. Of course accidents of this sort are infrequent. I mention them only to give point to my contention that electrical accidents happen in most unforeseen ways, and to support my opinion that a large factor of safety is essential to the reduction of electrical accidents.

The factor of safety is the saving grace, but sometimes it is not easy to obtain recognition for it. The need of it in a general way is not denied but frequently it is hard to prove where the factor of safety ends and unnecessary expense begins.

## CAUSE AND EFFECT.

Where the problem is a simple one it is not difficult to secure the adoption of safeguards. For instance, it is manifest that a man will be seriously injured if he falls into a shaft, hence shaft openings are usually protected with guards and gates. It is evident that men will be hurt if a cage starts while men are getting onto it. Hence we have signals to control the operation of cages. It is admitted that high tension conductors are dangerous and the con-

ductors are usually fenced off in places where men gather and warning notices are posted there. These problems are simple ones. It is easy to see the connection between cause and effect. But when the problem becomes more obscure and all the factors that may cause an accident cannot be marshalled into view simultaneously, it is not so easy to recognize the possibility of danger, and in order surely to prevent disasters factors of safety must be used.

The factors of safety that I have in mind relate to all parts of the electric system and include such things as the use of good materials, sturdy equipment, soldered joints, switches on all branch circuits, adequate devices for interrupting the circuit, first class, conscientious workmanship, and finally real inspections that serve to keep handles on switches, copper wire out of fuse blocks, insulation on conductors and the whole electrical system in repair.

To sum up: Granting that operators are favorably disposed toward the safety movement, the reduction of underground electrical accidents depends upon:

1. A code of rules for guidance.
2. A capable underground electrical force.
3. The adoption of a large factor of safety.

Rules, electricians, factor of safety—and the greatest of these is the Factor of Safety. (Applause.)

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### FIRE PROTECTION AND FIRE FIGHTING AT THE MINES.

JOHN LLOYD, EFFICIENCY ENGINEER, LEHIGH VALLEY COAL COMPANY, WILKES-BARRE, PA.

Mr. Chairman and Members of the National Safety Council—This paper will be devoted exclusively to the Anthracite Mines of Pennsylvania.

Fire hazard, in connection with breakers, engine-houses, fan-houses, and miscellaneous colliery buildings, until recently was considered very great, practically all of such buildings being of wood construction. The breakers, structures of all-wood construction, constitute the highest risk, a fair average amount of lumber con-

## PROGRESS

In five years great progress has been made toward eliminating fire risks in coal mines.

tained in one of these structures being about 800,000 feet, board measure.

In the last five years great progress has been made toward eliminating fire risks, all new buildings being constructed of fireproof material. Modern breakers are being constructed, using an all-steel framework, with sides and roof of corrugated iron and floors of reinforced concrete, thus rendering them practically indestructible by fire. This same construction is fol-

lowed in the case of other colliery buildings, tile being sometimes substituted for the corrugated iron for sides and roof.

Considerable improvement is also noticeable in the precautions taken to safeguard existing frame buildings from destruction by fire. Breaker structures are provided with a complete system of fire lines, water barrels, buckets and liquid fire extinguishers. Practically all of the coal companies have a well organized and efficient fire brigade at each colliery, consisting of about ten men, in charge of a fire chief, who makes a daily inspection of all fire fighting apparatus. The brigade holds a practice drill about twice each month, at which times a fire alarm is sounded in the same manner as is in vogue in city fire departments, a certain number of blasts of the whistle signifying an outbreak of fire at some particular locality. In order to give some idea as to the promptness with which a brigade can respond to such an alarm, it may be interesting to note at this point that within *thirty seconds* after the sounding of the alarm, 200 feet of hose has been placed into position and water brought to play upon the flames.

In some instances the fire brigade is also required to assist the colliery foreman in keeping the premises cleared of accumulated rubbish, and to see that all refuse is properly disposed of.

### SPRINKLER SYSTEMS.

In addition to the above-mentioned fire-fighting equipment, the Lehigh Valley Coal Company has installed an efficient sprinkler

system, which is entirely independent of the regular fire system, and I understand that other anthracite producers contemplate adopting such a system or have already done so. The operation of this sprinkler system is not automatic, but it is so arranged that one man can put the system in use, instantly flooding the interior of the structure. Tests of this system before a committee of the Underwriters' Association of the State of Pennsylvania have resulted in a substantial reduction in the high rate of insurance on buildings so equipped.

The sprinkler system consists of a main standpipe of sufficient capacity to carry all of the water passing through the spray nozzles and is carried to a point about ten feet higher than the uppermost spray, from which point a return pipe is carried down to the upper floor of the building, where branches are taken off to supply water to this particular floor. From this point the pipe is reduced in size and carried to the floor below, where a cross is inserted and the main return again reduced, and so on down to the bottom of the structure. No valves are used, with the exception of one on the main line. This system, when in operation, fills the interior of the structure with a steady downpour of water, similar in effect to a heavy rainstorm.

#### SPARK ARRESTERS.

The duty of safeguarding property against loss or damage by fire naturally devolves upon the property owner, and every precaution is taken with this object in view. The small locomotives utilized in the transportation of the coal between the various points of the colliery operations are all equipped with spark arresters and a down draft exhaust in order to eliminate the possibility of fire from this source, and stringent rules are enforced against the careless deposit of loose, combustible materials in and about the colliery buildings and yards. In addition, regularly appointed inspectors are placed in the field, whose duty it is to carefully examine, at stated intervals, all fire-fighting apparatus, to see that it is always

## PRECIOUS

Carefulness costs  
you nothing and its  
value cannot be  
measured. Safety  
First.

maintained in the highest state of efficiency and ready for instant use, as well as to investigate every nook and corner for the presence of combustible waste materials. These inspections tend not only to maintain the premises in good condition with respect to fire risk, but also have the effect of placing the colliery foremen continually on their guard against any infractions of existing rules governing the maintenance of equipment and the promiscuous deposit of inflammable rubbish in out-of-the-way places.

#### OUTSIDE EQUIPMENT.

The collieries also are not entirely dependent upon their own fire-fighting facilities, as arrangements are made with city and borough officials to tender all possible assistance, upon request, even though the colliery is not located within the boundaries of the municipality, special hose connections being provided when necessary.

As a result of the adoption of the various precautionary measures herein enumerated, it will no doubt be of interest to touch briefly upon the frequency of fires about the collieries and the approximate amount of damages incurred by reason thereof. The number of buildings destroyed or damaged by fire are comparatively few and the monetary loss very low as compared with the amount of protection carried, and as a matter of general information, it has been ascertained, from figures furnished by one of the largest producing companies in the anthracite coal fields, that for the past ten years the average annual loss by fire did not exceed 2/100 of 1 per cent of the total amount of insurance carried.

Mine fires in the anthracite region are of frequent occurrence but in the majority of cases are of trifling importance, as they are quickly detected and extinguished before any damage is done. In some sections though, especially when the pitch of the seams is over 30 degrees, it is very difficult to detect a fire until it has gained considerable headway and it is equally as difficult to combat. In some cases, many hundreds of tons of coal must be removed before the fire is reached. The mines are fairly provided with fire-fighting equipment, such as water pipes on the main roads, fire hose and liquid fire extinguishers.

Rescue apparatus and smoke helmets are provided to guard against accidents and to revive any one that might be overcome by smoke or after-damp.



## STIMULATES INDIVIDUAL EFFORT.

The question might be asked what has all of this to do with safety, and my answer would be that it has a far-reaching effect, because it helps to stimulate individual effort. These men, who are organized for the protection of property, are also interested in the protection of human life. They are enthusiastic workers in the safety and first-aid movement. While our first duty is to do everything possible to prevent accidents, we must not overlook the fact that accidents will always happen and that the unfortunate must be cared for.

In first-aid work the anthracite regions are well organized, every colliery having from six to forty men—depending on the size of the colliery and the number of men employed. We have also a well-organized and fully equipped force of men trained in the use of smoke helmets and mine rescue apparatus. (Applause.)

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MINE ACCIDENT PREVENTION AND WORKMEN'S  
COMPENSATION.

HERBERT M. WILSON, DIRECTOR OF THE DEPARTMENT OF  
INSPECTION AND SAFETY, THE ASSOCIATED  
COMPANIES, PITTSBURGH, PA.

Mr. Chairman: The mining industry is one of the most fundamental, the greatest in point of magnitude and geographic distribution, and the most diverse in its hazards to health, life and property, of any of the industries. In magnitude it is second only to agriculture in the production of natural resources. It far exceeds agriculture in the amount which it contributes to the freight transportation of the country, furnishing over 60 per cent of the total railway freight. There are approximately 1,047,000 men employed in coal and metal mining and quarrying.

Under these circumstances, and especially in view of the hazards of mining, it is surprising that so little attention seems to have been given the industry by insurance. This is not strange, however, in view of the paucity of knowledge in the past concerning the causes of accidents in mines and the means of preventing them, in con-

## **MINE FIRES**

The introduction of comparatively inexpensive fire-fighting appliances, the adoption of proper regulations,

sequence of which it has been necessary to protect the insurance company by placing the premium rates so high that they have been practically prohibitive.

The field for mine insurance is as extensive as is the industry, and in view of the rapid development in recent years of scientific knowledge concerning the causes of mine accidents and the means for their prevention—as developed through the investigations of the Federal Bureau of Mines—this field may now be

considered a virgin one in which to write insurance. It is only necessary that the insurance companies give expert study to the risks to property, health and life in mines for them to ascertain the conditions under which they may offer reasonable insurance protection.

### **MINE FIRES.**

The causes of mine fires and the means of preventing or combating them have been clearly set forth in a report of the Mine Fire Committee submitted to the National Fire Protection Association in May, 1912, as well as in a paper by the author before the same association in New York in May, 1911, and in one before the Miners and Mechanics' Institute at Urbana, Ill., which latter treated largely the question of fireproof construction in mines. I quote below from the paper delivered before the National Fire Protection Association in New York, May, 1911:

"Fires in mines are a far greater menace to life and property than is generally appreciated. Two of the most serious disasters in coal mines within the last few years—one at Cherry, Ill., and the other at the Pancoast mine, near Scranton, Pa.—originated from trivial causes. Two of the most destructive disasters in metal mines in recent years—at Tonopah, Nev., and Copperhill, Tenn.—resulted from similar causes. At Deadwood, S. D., one million dollars were spent in fighting a metal mine fire.

"The nature of the combustible material found in metal mines

offers varying but usually good opportunities for the spreading of a fire. While the progress of a fire might, at first, be slow, in some cases it may spread quickly and involve a large area and result in tremendous damage if not promptly extinguished.

"Among the most fruitful causes of mine fires are—in approximate order of importance—the ignition of timbers, wooden stoppings and brattice cloths; the ignition of hay or oil-soaked materials by open torches; the ignition of coal by blown-out shots or explosions of fire damp or coal dust, or the improper use of explosives; surface fires communicated to the mine through the shaft or tunnel; underground furnaces and boiler plants; ignition by friction of oily, wooden rollers or rope haulageways; fires occasioned by spontaneous combustion of coal, timber or greasy waste.

"The introduction of comparatively inexpensive fire-fighting appliances, the adoption of proper regulations, and the institution of a reasonable system of fire drills will minimize fires and confine others to a brief period of time with little damage to life and property."

## MINE FIRES

The institution of a reasonable system of fire drills will minimize fires with consequent little damage to life and property.

### HEALTH OF MINE WORKERS.

The health of the miner has in recent years received much consideration from some of the larger mining companies, from the Bureau of Mines, and from a few of the life insurance companies, and many of the problems bearing on the health of mine employes, gathered together as they frequently are in company-owned towns, have been amplified in detail in technical papers and miners' circulars issued by the Bureau of Mines. Among the more important problems affecting the health of mining communities, and which call for consideration by those responsible for the management of mining towns, are such underground conditions as the means of caring for human and animal excrement, the prevention of dissemination of germ diseases such as tuberculosis, hookworm and

typhoid, and those diseases of the respiratory organs due to the breathing of finely divided rock dust; such housing conditions as water supply, sewerage, and company medical and hospital service. These latter are all of a kind not dissimilar from those familiar in surface industries, though they are more readily controllable under company management.

Finally, the miners' wash and change house, including its facilities for keeping the miner in good health through the medium of cleanliness, has been discussed in recent technical publications.

There is no doubt that the conditions of health and sanitation in company-owned mining towns should be under better control than in other communities of the same size, since the owning company has the power, and should have the desire, to improve these conditions.

Regarding the elements affecting the general health of the miner, such as the disposal of garbage, crowding in tenements, insanitary toilets, bad house drainage, unhealthful or illy ventilated living rooms—these are all matters easy of analysis and of remedy. The one great drawback to the introduction of better sanitary and living conditions in and about mines has been heretofore, and will continue under certain conditions still to be, the uncertain tenure of life of the mining town—the fact that the mine may be worked out in a few years, wherefore it would not pay to introduce the more permanent sanitary improvements. A careful study, however, of all of the conditions bearing upon this subject leads to the belief that the miners' health should be as good as that of other industrial workers, since he resides usually in uncongested communities, breathes, in the average well-ventilated mine, air free from impurities, and labors under conditions free of mental stress or the rush of the city worker.

#### CASUALTIES IN MINES.

The subject of casualties in mines, their causes and the means for their prevention, has been admirably set forth in the numerous bulletins, technical papers and miners' circulars issued by the Bureau of Mines, and embodying the results of its tests and investigations. The statistical data gathered by the Federal Bureau, and based on the statistics gathered by the state mine inspection departments, furnish a fairly adequate basis on which to rate the hazards of accident insurance in mines.

These statistics show that in 1913 there were injured in the mines and quarries of the United States 168,380 men, and that 3,651 men were killed. More important, from an insurance standpoint, they show that since the creation by Congress of the Bureau of Mines, with its exhaustive tests and investigations concerning mine accidents and their causes, there has been a constant and very great reduction from year to year in the number of accidents and injuries to miners. Thus, in 1907, there were 3,197 fatalities in the coal mines alone; in 1910 there were 2,840, and in 1914 only 2,451—a reduction of 23 per cent in seven years—though in the same time the number of employes in coal mines increased from 655,418 to 742,868, or 12 per cent. For metal mines and quarries approximately the same ratios are believed to obtain, though the statistics for these branches of the industry are less complete prior to 1911.

#### PREVENTION OF ACCIDENTS.

Using coal mining as a basis for examination of the causes and possible means of preventing injuries by the application of appropriate safety measures, we find that the ratio of fatalities to serious injuries is about 1 to 3.33, and of each to slight injuries about 1 to 8 and 1 to 2.4 respectively. Of the total fatalities over 48 per cent are due to falls of coal or roof, nearly 15 per cent to haulage, 5 per cent to use of explosives, 3 per cent each to electricity and mine fires, and to that apparently most serious, because most appalling, cause, the catastrophes due to explosions of mine gas or coal dust or both, are due but 14 per cent.

As an aid to applying preventive measures it is possible to so analyze the separate hazards which go to make the sum total of each of these causes as to warrant the assertion that, within a comparatively few years—and already for some of the most progressive mining companies—the accidents from some of these causes may be almost eliminated and others greatly diminished in number and severity, or duration of disability, to an extent which the author ventures to predict may, in the aggregate, amount to a reduction of at least 50 per cent.

With these facts as a basis it is possible for insurance underwriters to write mine accident insurance, under workmen's compensation legislation, with reasonable safety, and already ten of the strongest American and British casualty insurance companies

have organized an association for this purpose. This promises to be a powerful factor for protection of the mine owner and the mine worker under workmen's compensation acts, and to exert a potent influence for increasing safety in mining. This influence will result from the fact that The Associated Companies have applied the well-known fire and liability principle of schedule rating based on careful technical inspection, whereby a reduction in insurance rate can be offered for every safety measure adopted, and, conversely, an increase in rate for every neglect of or increase in hazards.

In conclusion, it is the belief of the author that the large mass of well-digested statistical data gathered in the last few years by the Bureau of Mines, and the vast fund of information being now rapidly acquired and made public through that Bureau, as a result of its investigations and tests concerning the causes and the possible means of preventing mine accidents, insurance interests will soon be in a better position with respect to underwriting the life, fire and casualty risks in the mining than in any other industry. (Applause.)

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After an informal discussion the Section adjourned.

## Field Contests and Prizes Awarded

### MINING SECTION.

#### NATIONAL SAFETY COUNCIL.

(SUCCESSOR TO THE AMERICAN MINE SAFETY ASSOCIATION.)

FORT WORTH, TEXAS, MAY 1, 1915, FIRST AID, INTER-COMPANY.

(STATE-WIDE.)

Thurber Team—Lee Americus, Cesare Piacenzo, Joe Pagliai, Saverio Passoni, Marco Andrei, Contri Rinaldo.

The first first-aid contest ever held in the Texas coal field took place at Fort Worth May 1, in the Chamber of Commerce Auditorium. Eight teams contested. Team No. 2, composed entirely of Mexican miners, and Team No. 7, all Italian miners, tied for first place. Both teams were from the long-wall mines at Thurber, Tex. Some of the judges were from the Fort Worth Medical College, and some were practicing physicians in the city. A feature worthy of note is that there were no prizes offered. The contestants, as their transportation expenses, amounting to as much as \$10.00 per man for some teams, were borne by the companies and local miners' unions, did not expect prizes, and came for the honor of winning the contest only. However, after it was concluded, they were informed that the American Mine Safety Association had provided medals for the winning teams. Probably no other contest has been held under just these circumstances. There was great earnestness and good feeling manifested. The teams were trained by K. H. Chisholm, of the bureau, and the Texas operators and miners rendered all possible efforts to make the contest a success.

#### CONTESTS IN THE SOUTHERN DISTRICT.

E. B. Sutton under date of May 5 reports as follows: Two contests are being arranged for in May, one at Pineville, Ky., May 15, and one at Birmingham, Ala., May 29. There will be a field day and contest at Big Stone Gap, Va., July 2 and 3 and another in early autumn at Knoxville, Tenn.

In anticipation of the Birmingham meet, the Republic Iron and Steel Company held an intra-company contest between their first aid organizations at Republic, on March 27, in which 14 miners' teams, two boys' teams, and three ladies' teams participated. From 1,500 to 1,800 people attended the meet, after which a barbecue was served by the company. Again, on April 17, the

company held a field day among its negro first aid organizations in which 12 negro miners' teams were represented, which was well attended, and the company officials and many others visited both meets.

On April 10 the Brookside division of the Sloss-Sheffield Steel and Iron Company held a field day at Cardiff in which four first aid teams from Brookside and Cardiff participated.

On April 17 the Alabama Fuel and Iron Company held a field day among its men in which seven white first aid teams and eight colored teams participated. The day was declared a holiday, and at noon the general manager, C. F. DeBardeleben, gave the men a barbecue. Music was furnished by a string and a brass band.

The Maryland Coal and Coke Company contemplates holding a first aid meet at Sipsey on May 8. The Republic Iron and Steel Company intend to hold another field meet in May at which will be represented first aid organizations from its coal mines and furnace operations; the management expects that at least 25 teams will participate.

On May 15, the Kentucky Mining Institute will hold its annual institute meeting and field day at Pineville, Ky., and it is expected as many as 25 to 30 teams will participate. G. T. Powell is at this writing making a tour of Eastern Kentucky with Car 3, preparing teams for that event. J. M. Webb and W. T. Burgess will be actively engaged in perfecting first aid organizations in Alabama until after the Birmingham contest. After June 1 it is expected that Webb will review first aid organizations in Virginia for the Big Stone Gap meet, July 2 and 3, after which he will instruct first aid teams in Tennessee for the Knoxville meet. Webb's subsistence expense in practically all of this work has been and will be borne by the mine operators.

#### CANTON, ILL., MAY 1, 1915, FIRST AID, INTER-COMPANY.

(STATE-WIDE.)

1. Gillespie.
2. Herrin.

W. D. Ryan reports an enthusiastic and satisfactory contest at Canton on May 1.

The teams taking first, second and third prizes made scores of 98½, 98 and 97½, respectively; the next two teams tied with a score of 96.

The teams were rated by giving them three problems and averaging the results.

There were 11 teams in the contest and a judge for each team. By rotating the judges, three passed on the merits of each team.

Ryan states further that great credit is due to First Aid Miner W. W. Fleming for the work he did in Illinois prior to the Canton meet.

#### BUTTE, MONT., MAY 9, 1915, FIRST AID, INTER-COMPANY.

1. Anaconda, Anaconda Copper Mining Company—Pat. McGuire, Joe Boyd, J. W. Stuart, W. F. Murray, Chas. Collins, Anthony Thomas, Roas Barclay.



2. High, Ore., Anaconda Copper Lining Company—Thos. Murray, J. C. Patterson, Kenneth Chisholm, Ralph Crawford, Douglas Crawford, Dan J. Harrington.

3. Washoe, Washoe Reduction Works.

Brief mention of this contest was made in the May record. The following is quoted from the Butte Daily Post of May 10:

"Two thousand spectators watched the first aid contests held yesterday at Columbia Gardens Ball Park under the auspices of the American Mine Safety Association and directly under the direction and authority of the officials of the United States Mines Rescue Bureau, J. L. Boardman and his assistant, G. W. Grove, first aid instructor, who have been in this locality for several weeks imparting instruction to classes of miners. It was the first of such contests ever held here. The success with which the event was accompanied almost guarantees that it will be annual. The enthusiasm and sincere work of Mr. Boardman and Mr. Grove is responsible for its success. They worked for such a contest since they came to Butte and the results justified their fervent efforts. The work of the various teams was an education to the large crowd."

The highest average rating was 99¼ per cent, made by a team from the Leonard mine, which won the American Mine Safety Association's medals. The lowest average was 92⅔ per cent. Cash prizes amounting to over \$300 were awarded.

A demonstration of rescue work was given by men wearing breathing apparatus in a temporary gallery or drift built of canvas on the surface.

HUNTINGTON, W. VA., MAY 14, 1915, MINE RESCUE AND FIRST AID.

(INTERSTATE.)

FIRST AID.

1. Louisville C. & C. Company, Goodwill, W. Va.—Fred J. Bailey (captain), C. C. Bailey, Geo. R. Scott, John Mitchell, Ralph Shrewsbury, Mason Kelly (Pat).

2. Empire Coal Company, Landgroff—P. K. Randall (captain), Peter Farquason, G. A. Leyton, E. S. Swim, C. Maners, E. Hall (Pat).

3. Consolidated Coal Company, Fairmont—Alex. Thorn (captain), S. Higginbotham, J. R. Walthour, H. S. Bell, W. G. Keener (Pat).

MINE RESCUE.

1. Pocahontas Cons. Coal Company, Pocahontas, Va.—R. C. Cofel (captain), Wm. Evans, Frank Stevens, J. A. Demshock, A. Hall.

2. Thacker C. L. Company, Thacker Mines, W. Va.—A. F. Marshall (captain), J. R. Aliff, Geo. Massing, C. E. Horn, P. M. McClosky.

3. Solway Coal Company, Big Sandy, W. Va.—J. R. Booth (captain), O. W. Helmadollar, M. G. Cline, C. H. Sowers, Geo. Booth.

This meet, held under the auspices of the coal operators of the Norfolk and Western field in connection with the U. S. Bureau of Mines, Huntington

Chamber of Commerce and the West Virginia State Medical Association, was the first State-wide first aid and mine rescue meet ever held in West Virginia. The efficiency of bureau methods of instruction was well demonstrated. From the first stop of Car 8 at Elkhorn, last November, to the final stop at Chat-taroy in May, this meet had been earnestly discussed, with both operators and the employes, by every member of the car crew, so that much interest and enthusiasm was manifested. Twenty-six teams participated in the first aid contest, and eight of these in the mine rescue meet. Problems in the first aid contest consisted of one and two men and team events. The judging of this contest was under the direction of representatives of the American National Red Cross, assisted by those of the West Virginia State Medical Association. The judges in the mine rescue contest were Messrs. Wallace, Ryan and Schoew.

A team of the Louisville Coal and Coke Company took first prize in the first aid contest and a team of the Pocahontas Consolidated Coal Company won the mine rescue contest. The Pocahontas team wore their own 1911 type Draeger apparatus, equipped with helmets. Prizes with a total value of \$194.50 and \$102.50 were offered in the first aid and mine rescue contests respectively.

Car 8 reached Huntington the night of May 8. Messrs. Jones, Seip and Parker, with the assistance of the Huntington Chamber of Commerce, constructed the mine, smoke house and wooden explosion gallery, laid off the field and had everything ready by the night of the 13th. Prior to the meet, Doctor Lynott gave the doctors selected as judges of the first aid contest suitable instructions. J. W. Paul was present. Two explosions were demonstrated in the gallery, one in the morning, the other in the afternoon, with satisfactory results. Three thousand enthusiastic spectators were present. Music was furnished by the Huntington concert band. The following letter was published in the Bluefield Telegraph of May 23, 1915:

LETTER PERFECT IN FIRST AID WORK.

"Editor Bluefield Telegraph.

"Dear Sir: As a visitor to the first aid meeting held at Huntington on the 14th day of May, I was astonished at the remarkable way in which the teams, made up as they were of miners, etc., performed the problems of first aid to the injured which were given them. There was not one team there that did not know exactly what they had to do, and how it should be done and done well. They were all letter perfect in team work and efficiency. The fact that six teams tried for first place in the full team events, fifteen men in the one-man event and fourteen in the two-man events, shows how hard it was for the judges to pick the winner. My first inquiry was, 'Where did these men, whose occupation is hard manual labor, acquire the skill, knowledge and dexterity which they possessed?' This seems to have been the one thing which most forcibly struck all those attending the contest. The fact of the matter seems to be that the men on mine rescue car No. 8, who have been in the field for the last few months, have at all times given their

services freely and ungrudgingly to the training of these teams. Indeed, they have gone even further. They have tried to stir up an interest in the art of 'keeping little hurts from getting big,' and the great principle of helping one's fellow man, thereby bringing each and all into a closer brotherhood. Too much praise cannot be given these men for what they have undertaken and for the results obtained, as evidenced by the meet at Huntington. The operators on the Norfolk and Western should be thankful for having had the rescue car in the field, and no doubt the operators in other fields of the state will be as pleased when the car reaches their district. As a result of the display at Huntington, these other operators should no longer merely be pleased to have the car in their district, but should demand that they, too, be given a chance as soon as possible to reap the benefits of the training given by the mine rescue crew of Car No. 8.

"Each for all is good,  
All for each is better,  
Fighting for ourselves,  
Brotherhood we fetter."

Yours truly,

McKERRACHER.

Landgraft, W. Va.

PINEVILLE, KY., MAY 15, 1915, FIRST AID, INTER-COMPANY.

(STATE-WIDE.)

1. W. G. Duncan Coal Company, Greenville, Ky.—T. J. Ancon, E. E. Taurants, J. H. Spence, S. E. Hite, W. L. Cash, J. F. Middleton.
2. Castro Team, Cont. Coal Corporation—John Barton, Walter Green, Elijah Burke, Jas. P. Barton, Clarence Barton, Gregory Bruce.
3. Stonega Team—Big Stone Gap, Va.

At the annual meeting of the Kentucky Mining Institute, Frank H. Cassell, of Louisville, discussed the further development of the Eastern Kentucky coal fields and its relation to Louisville manufacturing and mercantile interests. Senator Joseph Bosworth, of Middleboro, laid stress on the importance of good roads. W. N. Ewald, of Louisville, proposed that the association employ an expert to visit the mining camps and make plans to promote the social welfare of the miners. F. P. Wright, of Bevier, was unanimously elected president of the association and Ivan P. Tashof, of Lexington, was re-elected secretary and treasurer. Seven vice-presidents were elected.

The meeting was closed by a first aid contest under the direction of E. B. Sutton of the bureau. Many prizes were awarded by Mayor W. L. Moss. The first prize went to Team No. 1 of the W. G. Duncan Coal Company, of Greenville; Continental Coal Corporation Team No. 20 was second; the Stonega team from Big Stone Gap, Va., third; and the Continental Barker Team No. 2, fourth.

FORT SMITH, ARK., MAY 18, 1915, FIRST AID, INTER-COMPANY.

1. Calhoun, Okla.—N. M. Duncan (captain), Lee Todd, Geo. Conway, William Brown, Arthur Stout, Grover Poe.

2. Jenny Lind—Hugh Howard, Sam Corbin, F. L. Johnson, Richard Vick, Jas. Mooney, Pat. Mooney.

3. Hartford, Ark.—L. Oewig, John Conroy, Garrett Clayborn, Jesse Pedyard, Jas. Braddock, Luther Parks.

The following is abstracted from a newspaper report under date of May 19:

"Hardly so large a crowd was in attendance as could have been hoped, because of work being very slack in most of the Arkansas mines, but the audience took a keen interest in the contest. The problems were complicated and required knowledge and skill, the discount sheet was drastic, but every team stayed above the ninety mark in its average on the three problems. Six teams reported for the contest. The judges, local physicians, rotated with each problem, no judge ruling twice on the same team. The Calhoun (Okla.) team took first place in the team event and the two-man event, and won the highest number of points in all events, receiving 889 points out of a possible 900. Jenny Lind (Ark.) team took first place in the one-man event and second place in the two-man and team events. The team from Paris took third place in the one-man event.

"Close scores ruled in all events. Paris and Hartford tied for second in the one-man event and worked the tie off in an additional problem. Following the contest, a demonstration was given by a trapper boy's team. Each team captain asked for and received the score cards showing the exact weaknesses of his team. Immediately following the contest, the Arkansas Mine Safety Association, a branch of the American Mine Safety Association, held a meeting and elected the following officers for the ensuing year: Dr. H. C. King, president; William McLachlin, vice president; C. J. Eskridge, secretary. Referring to the teams competing in this meet, W. D. Ryan says: 'The score demonstrates that they have been well trained, which speaks volumes for the bureau boys who trained them.'"

MCALISTER, OKLA., MAY 22, 1915, FIRST AID, INTER-COMPANY.

1. Lehigh Team—Wm. Ogilvie (captain), A. Ogilvie, T. Gold, Wm. Shoemaker, F. Bemkworth, Wm. Strang.

2. Dow Team—Thos. Fairley (captain), A. Fastick, Wm. Sherman, V. Warren, I. N. Kuykendall, Thos. Welch.

3. Krebs Team—Lewis Thompson (captain), Ed. Ralston, Lee Holstead, John Holstead, Frank Lawrence, Rock Fernald.

This was the third of the series of State-wide first aid meets for the South-western district. In spite of unfavorable weather a crowd of 500 assembled for the meet, in which nine teams competed. Krebs, Coalgate, Lehigh, Savanna, Brewer, Dow, Wilburton, Gowen and the Oklahoma School of Mines were represented, the honors going to the Lehigh team, with a perfect score on the three team problems. Dow was a close second with 97½ and the School of Mines and Krebs tied for third with 96 each. Krebs won the one and two-man events, making an exceptional record in the one-man event with a record of five perfect scores for as many successive problems.

The judges were doctors, one for each team, and they judged progressively, judging another team after each problem.

At the conclusion of the meet the Bureau of Mines motion pictures of the first national mine safety demonstration, and mining at Gary, West. Va., were shown to a capacity audience and elicited much favorable comment.

The explosibility of Oklahoma coal dust was demonstrated in an 85 by 4½ by 6-foot gallery erected on the field. Unfortunately only the first three shelves of dust were overturned so that the explosion was confined to the first third of the gallery length, but the experiment was repeated on the evening of May 24 with convincing results.

The majority of the prominent mining officials of the operators' and the miners' organizations and the district mine inspector were present. Some of the nearby mines remained idle on the day of the contest to allow the miners to attend. District Engineer J. J. Rutledge distributed the prizes, and Mine Safety Commissioner W. D. Ryan acted as announcer. Prior to the meet descriptive hand bills printed in English and Italian were sent to the various mining towns. J. W. Koster and a local committee arranged for the meet.

The Lehigh team will compete at Kansas City, probably late in June, in an interstate contest to decide which team shall be sent to San Francisco.

#### PITTSBURG, KAN., MAY 29, 1915, FIRST AID, INTER-COMPANY.

##### 1. Cherokee Team—Pittsburg Coal Company.

A first aid contest was held under the auspices of the Kansas coal operators and miners and the Bureau of Mines on the grounds of the State Normal School, with a fair representation of operators and miners, nine teams taking part. The first prize in the team event went to one of the teams of the Cherokee and Pittsburg Coal Company, Frontenac, Kansas. Two teams from the State School of Mines at Weir City, Kansas, like the Oklahoma teams from the Oklahoma State School of Mines, were composed of miners, who are studying in the mining school.

Rescue apparatus was demonstrated in a representation of a mine, constructed of boards. A demonstration of the Cornelius and Knowles electrical shot-firing apparatus was also given.

The State commissioner of labor, P. J. McBride, and all the present mine inspectors and nearly all of the former ones attended the contest. Foreman A. I. Young of the Pittsburg, Kansas, station and a local committee made all arrangements. W. D. Ryan, mine safety commissioner, acted as master of ceremonies.

#### BIRMINGHAM, ALA., MAY 29.

This meet, although the first of its kind in Alabama, was, it is believed, the biggest first aid meet ever held in the United States, if not in the world—80 teams participating. A separate contest was held in the morning between 27 negro teams. Also several ladies and boy scout teams took part.

The meet was held under the auspices of the Alabama Safety Association,

Bureau of Mines, American National Red Cross and the Alabama Coal and Metal Mine Operators' Association, and was successful beyond all expectations. Copies of the souvenir program, a work of art which contained among other things the constitution and by-laws of the Alabama Safety Association, may no doubt be procured from E. B. Sutton on request. Throughout the demonstration emphasis was laid on the rule "to practice safety first, never put your foot or hand where your eye can't follow."

The first grand prize for the white men's team, the Alabama Association Silver Loving Cup, was won by the Republic Iron and Steel Company's Palos team, rating 97½ per cent; the second grand prize, six subscriptions to "Coal Age," by Alabama Fuel and Iron Company's Acton team, rating 97½ per cent; the third grand prize, an electric blower fan, donated by the American Blower Company, by the Cardiff team, rating 97 per cent. The American Mine Safety Association's bronze medals were won by the ladies' team from Wylam, Ala., rating 96 per cent. There were several ties, for which additional prizes were awarded; it would probably have been better, time permitting, to have had the teams work off the ties.

The following abstract is from a Birmingham newspaper: "There were fifty events in the demonstrations at Rickwood Park, work done under many of the ordinary circumstances in time of trouble or accident being presented. The events were so arranged as to include practically all the probable accidents at mines and manufacturing plants. For instance, the following possibility was included: 'Driver boy, bitten on right arm by mule, bright red blood, bruise on left hip from mule kick.'

"Of course, 'Overcome by gas,' 'Hurt by fall of coal,' 'Hurt by timber,' 'Run over by cars,' 'Mashed between railroad cars,' 'Hurt by falling weights,' and so forth, were included in the events and all covered what would be done in case of necessity. The women's teams made a splendid showing, for in time of trouble the women have a duty to perform, and the training that is being given is to have effect. There is much women can do in time of distress other than provide sandwiches and coffee for those who are doing the rescue work, and the demonstrations at Rickwood gave a little insight into their training. And the boys, too, come in for a share of the work.

Moving pictures of the demonstrations at Rickwood were taken and will be shown throughout the country, as well as in Birmingham, in order that the people may get an insight into what is being done in the way of training against carelessness and the rescue work after an accident has happened."

Band concerts were given throughout the day. In the evening Bureau of Mines motion pictures were shown by H. M. Wilson in the Chamber of Commerce Auditorium to a packed house, speeches were made, and the prizes were awarded by District Engineer E. B. Sutton, who was in general charge of the day's events.

Credit is due District Engineer Sutton, Foreman W. J. Burgess, to whom especial mention is due; Foreman J. M. Webb, who was in Alabama only a few weeks before the meet, and to Dr. W. S. Rountree, for their untiring efforts to promote "safety first" in the Southern district.

## TRACEY, MONT., MAY 29, 1915, FIRST AID, INTER-COMPANY.

1. Tracey—C. S. Hall (captain), Valentine Gregrich, Steve Fontelli, P. Gillin, C. C. Fenwick, Wm. Jaap.
2. B. & B. Smelter—Pete Kommers (captain), E. J. Peterson, J. McNaught, A. Elliott, P. P. Mossaline, W. P. Stuffer.
3. Stockett (4)—John Peters (captain), Paul Tatarka, Nick Dunda, Steve Evanko, Andy Bacha, Jos. Slannia.

After three weeks of training by Car 5 in Cascade County, this contest was held between teams from Tracy, Sand Coulee and Great Falls. Foreman John Boardman superintended the affair. The first place was won by the Tracey team, who received the challenge cup for mine rescue and first aid to the injured, presented by Dr. W. G. MacDonald, which was heretofore held by the Stockett team. Each member of the Tracy team also received a \$2.00 watch. A big crowd, among whom were most of the mine officials of the district, witnessed the work. Great Falls doctors did the judging.

## FIRST AID CONTEST IN ARIZONA.

The Arizona Copper Camp, of Ray, Ariz., of May 7, describes the first of a series of first aid contests being held by the Ray Consolidated Copper Company at Ray on May 5. Four teams participated, their ratings being as follows: 91.6, 85.2, 71.8 and 64.6, indicating that the discrepancy in schedule or the method of judging must have been different from and more strict than those generally used at other meets, as the percentages made usually average from 20 to 30 points higher.

The contest was in general charge of G. W. Salisbury, formerly of Car 2, but now with the United Verde Copper Company. J. T. More, also formerly of Car 2 and now first aid instructor for the Ray Consolidated Company, represented that company at the meet.

## DES MOINES, IOWA, JUNE 5, 1915.

## FIRST AID AND MINE RESCUE DEMONSTRATION, INTER-COMPANY (STATE-WIDE).

1. Hocking—John Harwood (captain), Peter Hayward, Clyde McDonald, John Wilson, William Cherington, Ed. Throp.
2. Mystic.
3. Colfax—Noah Barker (captain).

At this State-wide field meet 11 teams competed before an audience of about 1,000. President John P. White of the U. M. W. A. opened the program with an address and was followed by Governor Clarke. A band furnished music. W. D. Ryan directed the contest, assisted by J. J. Forbes and A. I. Young, who took Car 4 to Des Moines for the occasion. H. M. Wilson also attended.

The team from Hocking, Ia., won first prize, receiving 886 points out of a possible 900, and will enter the interstate contest at Kansas City. Two teams tied for second place and worked the tie off by an additional problem. Ten Des Moines physicians acted as judges.

## MOBERLY, MO., JUNE 7.

This was the second annual first aid and mine rescue demonstration, and was State-wide. The winners will go to the interstate meet to be held in Kansas City. No report has been received from Moberly since the meet. H. M. Wilson, W. D. Ryan, J. J. Forbes, A. I. Young and Car 4 were present.

## RAY, ARIZONA, JUNE 18.

This was the second local first aid contest between teams of the Ray Consolidated Copper Company. There was only one judge, J. C. Roberts of the bureau, the mine management desired that there should be no local judges in this contest. It was decided to let three teams work at a time and to give different problems to each group of three teams. Each group of teams had received practically the same amount of training. The rules governing the contest were those found in Miners' Circular 15, and were strictly adhered to. The winning team from each group contested in the final for a handsome cup presented by the company. The team winning each local contest had its name inscribed on the cup and the team winning the cup three times owns it permanently. Two events were given to each group, the order of the groups' appearance on the field being reversed in the last event. Teams No. 2 and No. 6 participated in the final event, which was won by the American team from No. 2 mine. The work of these miners was of a high character, and the management is to be highly congratulated on the interest shown by their men. The training of the men was done entirely by J. R. More, who was formerly foreman of mine rescue Car No. 2. The contest was witnessed by a large number of miners, mine officials and citizens of the town, and great interest was evinced.

At the time of the meet nearly 75 men had been trained at this mine in first aid and were examined for certificates from the bureau. The company has had some handsome certificates engraved and proposes to issue one to every man who takes the full course in mine rescue and first aid work. It also presents a solid gold pendant for a watch fob to every man who completes the course as laid down by the safety inspector, Mr. More. The classes in first aid are held five nights of the week, and on two afternoons for the night men. The doctors stated that since the inauguration of this first aid movement three men's lives have been saved by prompt and efficient first aid to the patient prior to the arrival of a doctor on the scene. All first aid men carry first aid packets and first aid boxes are distributed at convenient points in the mine. The first aid packets are issued to the men on deferred charge and if one is used in service a new packet is issued without charge, but if maliciously destroyed 25 cents is deducted from the man's pay.

## BIG STONE GAP, VA., JULY 2, 1915, FIRST AID, INTER-COMPANY.

1. Laurel Team—C. C. Corp.
  2. Inman Team—V. I. C. & C. Company.
  3. Keokee No. 1—S. C. & C. Company.
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## BIG STONE GAP, VA., JULY 2-3, 1915.

This first aid contest and explosion demonstration was held under the auspices of the Big Stone Gap Athletic Association as a part of the Fourth of July celebration at Big Stone Gap. The mines in the entire Big Stone Gap district were closed down on these two days in order that everyone might attend. There were over 2,000 spectators at the first aid contest. The judging was done by doctors appointed by members of the American National Red Cross. Twenty-five mines of three companies were represented by 20 teams, or a total of 102 men. Cups, cash, medals, and other prizes were awarded. The first prize in the full team event was won by the team from the Laurel mine of the Coal and Coke Corporation, rating 93 per cent. On the second day, July 3, in a big wooden gallery built for the purpose, demonstrations of the relative safety of permissible explosives as compared with black powder when fired into coal dust were given under the direction of E. B. Sutton of the bureau, and proved of great interest to all those present. The Bureau of Mines was officially represented at this meet by Messrs. Sutton, Parker and Webb.

## KANSAS CITY, MO., JULY 10, 1915.

## FIRST AID AND MINE RESCUE DEMONSTRATION, INTER-COMPANY (INTER-STATE).

1. Lehigh, Okla., Team—Wm. Ogilvie (captain), Wm. Strang, Thomas Gould, Wm. Shoemaker, Frank Brinkworth, Alex. Ogilvie.
2. Frontenac, Kan., Team—James Murphy (captain), Thomas Murphy, W. A. Smith, Patrick McQuade, Thomas O'Donnell, Walter Brennan.
3. Hocking, Iowa, Team—Jack Harwood (captain), P. Hayward, W. Cherrington, John Wilson, Clyde McDonald, Ed. Thorpe.

## KANSAS CITY, MO., JULY 10.

Three thousand people witnessed this interstate mine rescue and first aid meet, in which the best teams from Iowa, Missouri, Kansas, Oklahoma and Arkansas contested for the honor of representing their district in the national meet at San Francisco next month. Everything went as planned, and the meet was a real success. The team from Lehigh, Okla., took first place and, as a result, will be sent to the San Francisco meet September 23 and 24. Funds to cover this team's expenses to and from San Francisco were furnished by operators and miners in the five States named above.

## BILLINGS, MONT., JULY 23, 1915, FIRST AID, INTER-COMPANY.

1. Butte (Leonard)—George Ethier (captain), Homer Hagens, James McLead, Saul Ryan, William Barraugh, Frank C. Deakin.
2. Butte (West Colusa)—Frank Tanhauser, R. Allen, Jas. Blakes, W. Lewin, W. Kelly, B. McDermott.
3. Anaconda (Washoe Reduction Works)—Emery Kell, Geo. Shetty, H. I. Frisbie, J. B. Boyce, E. I. Grush, Ed. Kalles.

## BILLINGS, MONT., JULY 23 AND 24.

The second state-wide first aid meet was held under the auspices of the Montana Coal Operators' Association, United Mine Workers of America, District No. 27; Anaconda Copper Mining Company, Bureau of Mines, and the American Mine Safety Association. Teams from Klein, Round-Up, Sand Coulee, Washoe, Red Lodge, Bear Creek, Stockett, Great Falls, Butte, and Anaconda were present. The committee on arrangements consisted of Henry Drennan, James Hunter, and Robert Condon, president, vice president and secretary-treasurer, respectively, of District No. 27, U. M. W. of A.; C. W. Goodale, chairman of the bureau of safety of the Anaconda Copper Mining Co., M. F. Purcell, secretary-treasurer of the Montana Coal Operators' Association; W. D. Ryan and John L. Boardman, of the Bureau of Mines.

The first day was devoted to a mine-explosion demonstration in a gallery built of boards and tar paper, a mine-rescue demonstration, and some of the first-aid problems. The rest of the first-aid problems were worked on the second day.

Prizes were awarded as follows: First prize, A. M. S. A. silver contest medals and a silver loving cup donated by Mr. McDonald of Stockett, team No. 5 of the Leonard Mine at Butte; second prize, A. M. S. A. Bronze contest medals and \$75.00, team No. 9 of West Coluse mine at Butte; third prize, \$50.00, team No. 10 of the Washoe Reduction Works, Anaconda, (tied by team No. 6 of Klein, but won in the work-off); fourth prize, \$30.00, team No. 6 of Klein; fifth prize, \$20.00, team No. 8 of Tracey. A special prize of a silver loving cup presented by the Montana Coal Operators' Association, and held for the past year by the Red Lodge team was won this year by team No. 10 of Anaconda, that team having made the highest average in the team problems.

## BILLINGS, MONT., JULY 23 AND 24.

This was the second annual first aid contest and demonstration held under the auspices of the United Mine Workers of America and the Montana Coal Operators' Association. The first aid problems were similar to those usually worked out in these contests, the report of the second day's events has not been received. The big features of the first day, the mine-explosion demonstration, is described by a Billings newspaper dated July 24 as follows:

"Immediately following this contest was the mine explosion, the feature event of the exhibition. Several men entered the demonstration mine, constructed of timbers covered with tar paper, and presently the fun began.

"The first act showed the mine examiner and his staff entering the mouth of the shaft. He returned presently and reported the finding of gas in Stope No. 3 to the mine superintendent. The superintendent hurried into the shaft to investigate. Next came a wordy argument between the trackman and a miner. This argument constitutes an important step in the development of the plot and is the direct cause of the 'accident.' All the miners excepting the dissenting trackman and miner heed the danger signal sent out by the superintendent. These two disregard the signal and meanwhile smoke poured

from the mouth of the shaft and the spectators craned forward in their seats.

"Presently there was a loud report and the trackman was hurled through the side of the 'mountain' while the entire top of the same unfortunate mountain was blown high into the air. Smoke poured forth from the 'tunnel' and the flames crackled and roared as they licked hungrily at the inflammable tar paper covering of the shaft.

"Several miners, equipped with helmets and life-saving apparatus, dashed into the stope and emerged with the 'body' of the 'entombed' miner. He was revived by the efficient work of the first aid corps. The trackman was carried on a stretcher improvised by shovel handles and 'jumpers' to a place of safety. He, too, was 'revived.' In less than ten minutes after the explosion the 'mine' was a charred and blackened skeleton of smoking timbers."

The Bureau of Mines was officially represented by W. D. Ryan, John Boardman, G. W. Grove, and Car No. 5.

#### CLE ELUM, WASH., JULY 31, 1915.

##### FIRST AID AND MINE RESCUE, STATE-WIDE.

First Aid: 1. Northwestern Improvement Company, Cle Elum No. 7—William Saul (captain), Joseph Parker, Fred Ashurst, Wilson Clarke, Henry Owens, Joseph Andreotity (patient).

2. Northwestern Improvement Company, Cle Elum No. 7 (No. 2 team)—Frank Koester (captain), Joseph Hodgson, John Stofko, William Clarke, Isaac McGee, Rudolph Mayto (patient).

3. Cle Elum No. 2.

Mine Rescue: 1. Northwestern Improvement Company, Roslyn No. 6 Mine—A. Stanfel (captain), J. M. Brose, William Bedner, A. Tometich, W. Mohar.

2. Washington-Union Coal Company—B. B. Ober (captain), John Ismay, Robert Wigley, Thomas Wigley, Thomas Kruger.

3. Roslyn No. 5 Mine (Northwestern Improvement Company)—W. A. Sneddon (captain), D. Shields, R. Lucas, J. Heathcock, Luther Floyd.

This, the second annual state-wide mine rescue and first aid contest to be held in Washington, was under the auspices of the Bureau of Mines, the American Mine Safety Association, the Washington Coal Operators, and the U. M. W. of A. The general committee in charge was composed of J. J. Carey of the Bureau of Mines; James Bagley, State Inspector of Coal Mines; Martin J. Flyzik, president of the U. M. W. of A., District No. 10, and D. C. Bottling, commissioner Washington Coal Operators' Association. W. D. Ryan and H. M. Wolfen of the bureau; C. H. Younger, chief inspector of the department of State Factory Inspection, Kirkland, Wash.; Clarence Parker, industrial accident commissioner; E. Jacobs, secretary, Western Branch of Canadian Mining Institute, Victoria, B. C., and high officials representing practically every mining company in the State were present. The prizes consisted of two silver cups furnished by Du Pont Powder Company, before the 1914 meet, one for the first aid contest and one for the mine rescue contest, which when won twice in succession become the permanent property of the winner, and \$135 contributed by mine workers, operators, and citizens of Cle

Elum. The citizens also hired a band and paid for printing and miscellaneous expenses of the meet.

The mine rescue contest, held in the ball park, just outside the city, was witnessed by 3,000 people. Seven teams participated. The first prize, the Du Pont cup, A. M. S. A. medals, and \$10 cash, went to the team from Roslyn No. 6 mine of the Northwestern Improvement Company, rating 95 per cent. This team, having won the cup in two successive meets, will retain it permanently. The second prize, \$10, was won by No. 2 team of the Washington Union Coal Company, rating 84 per cent. The judging was done by Dudley Michel, instructor in mine rescue and first aid for the British Columbia Department of Mines, Victoria, B. C., assisted by Mr. Wolfen.

Explosion demonstrations given in the manner outlined in a descriptive memorandum recently sent to all car and station men with both permissible and black powder were successfully carried out before spectators. The material for the bid wooden gallery constructed for the purpose was donated by C. C. Anderson, general manager of the Northwestern Improvement Company, and the expense of actual construction was borne by the citizens of Cle Elum.

For the first aid contest a space a block long was roped off and the surface watered and rolled. A space 95 by 25 paces was occupied by seats arranged for the comfort of the 2,000 spectators. Great interest and enthusiasm was manifested in this work. The judging was done by Dr. W. N. Lipscomb of the American Red Cross and a body of Washington physicians. First prize, the Du Pont first aid cup, A. M. S. A. medals, and \$10 cash, went to the team from Cle Elum Mine No. 7 of the Northwestern Improvement Company, which was rated 100 per cent. The second prize, \$10, was won by the Carbonado team of Carbon Hill Coal Company, rating 97 per cent.

D. J. Price, formerly of the Bureau of Mines and now in charge of the grain-dust explosion investigation for the Department of Agriculture, writes: "I had the pleasure of attending the mine rescue and first aid meet at Cle Elum, Wash., last Saturday, July 31, and was much impressed with the harmony displayed by all parties interested and the success of the various contests. The first aid work was equal to any that I have ever witnessed, and in a number of cases attracted the special attention of the doctors who were acting as judges. The co-operation between the Bureau of Mines, the operators and the miners was especially significant and indicates distinctly what can be done when all interested parties endeavor to work together."

#### ELDORA PARK, AUG. 14, 1915, FIRST AID, INTER-COMPANY.

1. Ellsworth, Ellsworth, Pa.
2. Pittsburgh Coal Company, Gallitzin, Pa.
3. Vesta Coal Company, California, Pa.

#### HARVEY'S LAKE, PA., AUG. 14.

The first aid demonstration at the annual picnic of the Delaware, Lackawanna and Western Coal Company, before 8,500 spectators, is reported to have surpassed those of former years. Although the meet was held under the

auspices of the company mentioned, teams from a number of other companies participated, 25 teams contesting. Cash prizes amounting to \$170 were distributed, the first prize of \$75 going to the Loomis inside team of the D. L. & W. Company by a rating of 100 per cent in all problems. The character of work done by all the teams was remarkable. Charles Enzian had general charge of the demonstration and contests. Toward the close of the afternoon an unexpected opportunity to demonstrate practical first aid was given to the contesting teams, when a young swimmer was severely injured in an accident on the chutes along the lake front. Within a few minutes after the accident first aid treatment was rendered which, according to reports, was solely responsible for saving the young man's life.

JACKSON, CAL., AUGUST 15.

After considerable preliminary training in this district, G. W. Riggs arranged and conducted this meet. The teams were rated as follows: Argonaut mine, 96, Plymouth mine 92, Kennedy mine 91, South Eureka mine 90½. Teams from the Central Eureka, Bunker Hill and Black Oak mines failed to appear. Mr. Riggs states that the equipment of the teams was the best he has ever seen and that all the teams made an excellent showing. About 1,000 people witnessed the entire contest. The men in the teams worked fast and neatly and each dressing was explained by Mr. Riggs to the spectators.

PALATKA, MICH., AUG. 22, 1915., FIRST AID, INTER-COMPANY.

1. Verona Mining Company.
2. Balkan Mining Company.

A contest between the first aid teams representing the Verona Mining Company and the Balkan Mining Company, one team from each company participating, was held on the lawn of the club house of the Verona Mining Company at Palatka, the winning team to be entered in the contest to be held at Ironwood, Michigan, on September 6, 1915. Five hundred spectators were present. Music was furnished by a local Italian band. The judges were Mr. Chapell, in charge of first aid and mine rescue work for the Oliver Iron Company, at Iron Mountain, Mich., and R. H. Seip, first aid miner of the Bureau of Mines. One one-man event and four full-team events were worked out. The problems were made up by the judges and the problem for each event was given the captain of each team two minutes before the event started. The teams tied with a percentage of 85%, necessitating the working of another problem. The final averages for the six problems were as follows: Verona Mining Company team, 86 5/6 per cent; Balkan Mining Company team, 86½ per cent. Both teams showed marked proficiency in their work.

BOSWELL, PA., SEPT. 4, 1915—FIRST AID, INTER-COMPANY.

1. Boswell No. 2.
2. Brothers Valley Team Pen Mar No. 3 of McDonaIdton.
3. Consolidated Coal Company team of Ocosta.

*Fourth Safety Congress*

BOSWELL, PA., SEPT. 6.

This was an inter-company contest held under the auspices of the Pennsylvania State Young Men's Christian Association and was managed by secretary George B. Landis. During the winter several teams faithfully trained and five had completed in a local contest on the Fourth of July. For two months previous to the meet, W. J. German, C. O. Roberts, and Jesse Henson of the bureau gave much time to the training of all the teams. For two weeks the mine rescue autotruck had toured the field and much interest was aroused.

On the morning of the contest 28 teams of six men each, representing companies from twenty-three mining towns, reported. At 10 o'clock a mining institute was held and a crowded house listened to addresses by Austin King, chief inspector of the H. C. Frick Coke Company, and H. D. Mason, Jr., of the bureau. Three thousand feet of moving picture films on safety, first aid, and safe methods of mining were shown.

After noon, with two bands, all of the teams paraded to the ball ground and in the presence of 2,500 people the contest was staged. The twenty-eight teams—168 men—lined up in a long row, in spaces ten feet wide, position being assigned by lot. At the sound of the gong the patient advanced to his place and at the next signal those who were to administer aid followed him and proceeded to work.

The average of scores for the three events showed four teams with 99.3 per cent each. These teams worked off the tie with the result that Orenda Team No. 3 of Boswell had 100 per cent and took first prize. The events were vigorously contested and the judges marked closely. On the ties, there were three judges to each team. The judging was done by surgeons of the American National Red Cross.

F. W. Cunningham, State mine inspector, twentieth bituminous district, to whom much of the success of the meet is due, presided at the speech making and awarding of prizes.

## IRONWOOD, MICH., SEPT. 6.

The second annual first aid contest in the Lake Superior District under the auspices of the Gogebic Range Mining Association was held in the baseball park before about 1,800 spectators. The field places for the teams were arranged in the form of an arc in front of the grandstand and bleachers. Fourteen teams took part, the first prize, \$175 to defray the expenses of a trip to the Minnesota State fair, was awarded the team from the Verona Mining Co., of the Menominee Range, rating 93¼ per cent. The San Francisco contest rules were adopted insofar as they would apply. The judging was done by Dr. A. F. Knoefel and six other doctors who came from Indiana as guests of the institute and the range association.

After the meet the winning team was presented with the American Red Cross medals by the chairman of the judges; the medals were pinned upon the breasts of the team by five ladies. Edwin Higgins acted as master of ceremonies.

## BUTTE, MONT., SEPT. 6.

The day was completed by a banquet at the Northern Hotel, where speeches were made, and the prizes presented. A resolution was adopted regretting the death of former Director J. A. Holmes and commending his life of faithful service to the mining industry.

In a former contest between various teams from the Anaconda Copper Mining Company's group of mines, and between the teams from the Boston and Montana group, one team from each of these groups was selected to contest on the above date for the honor of representing its district in the national contest held at San Francisco, Sept. 23-24. Because of the big prizes at stake, unusual enthusiasm was shown by the members of the team and the spectators, of which there were several thousand. The San Francisco contest rules governed. The finals were as follows: Original team of the Anaconda Copper Mining Co., 89%; Leonard team of the Boston and Montana group, 89%.

Foreman John L. Boardman, formerly of car 5, is entitled to much credit for the work done by his car in Montana during the past year.

## BLACK DIAMOND, WASH., SEPT. 6.

A mine rescue and first-aid contest was held between teams from the Black Diamond, Burnett and New Castle mines of the Pacific Coast Coal Company, to select a team to represent the company at the San Francisco field meet; five teams were entered. In arranging and conducting the meet the company had the cooperation of D. C. Botting, the operators' commissioner; State Mine Inspector Bagley, district vice president Ernest Newsham of the U. M. W. of A., and Foreman Corey of the bureau's Seattle station. The judging was done by a corps of disinterested doctors. The first place was won by Captain E. J. Bergin's team from Burnett with a rating of 97.6 per cent.

The most interesting event was the mine rescue contest, in which four teams participated. During the afternoon, a drenching rain fell, the sky was black, and by the time the fourth team entered the "mine" it was dark and the safety lamps and flash lights were put to practical use by the rescue men. The rescue problem was: Fire discovered at the extreme end of gangway. Enter the mine by crossing the overcast and passing through the crosscut, and build a stopping to seal off the fire. After the stopping is completed, one of the rescue team is overcome. Carry him back over the overcast to fresh air, disregarding the crosscut, and revive him. Time, thirty minutes.

That is, the victim had to be taken through a small passage of considerable length that rose on a pitch of 45 degrees, then ran on a level, and then down again on a slope of 45 degrees. The different teams used different methods to perform the feat. One strapped the victim to a board and dragged him out, another pulled him bodily without the use of the board. Captain Morgan, of Black Diamond team No. 1, which took first place, with a rating of 91.2, laid down, had the victim placed on his back, and crawled through the hole with him, thus effecting the rescue in one quarter the time used by the other teams.

As a result of the Black Diamond contest new enthusiasts for first aid and mine rescue work have been added to the thousand or more that attended the Cle Elum meet.

ROCK SPRINGS, WYO., SEPT. 6.

This first-aid meet was held for the purpose of selecting a team to represent Wyoming in the national meet held at San Francisco Sept. 23-24. The Union Pacific Coal Company, Gunn-Quealy Coal Company, Kemmerer Coal Company, and Superior Coal Company were represented by teams. The day's events were commenced by a labor day parade in which all of the first aid teams marched. The meet was held in the ball park. The wings of the park from the fence to the grandstand were marked off immediately in front of the grandstand and divided equally between the teams; a supply base 8x8 feet was allotted each team for the purpose of keeping first aid supplies immediately behind the space 8x40 feet where it performed; and a space of 12 feet was maintained between team bases. This arrangement afforded the thousands of spectators in the grandstand a clear view of all the first-aid events. The judging was done by doctors and mine officials. The progressive system of judging was adopted. J. J. V. Forbes of the Bureau of Mines acted as master of ceremonies. The first prize, the honor of representing their State at the San Francisco meet, was won by the Superior Coal Co. team from Superior, Wyo., rating 97½. The events closed with a smoker in the evening.

WALLACE, IDAHO, SEPT. 12.

This inter-company contest, the first event of its kind ever held in the Coeur d'Alene district, proved a wonderful success. Teams representing all the companies of the district were entered. The Hecla team took first prize with a rating of 99¾ per cent. In the evening a banquet was held, and speeches were made by many doctors and officials. Foreman Boardman of car 5 urged the continuance and permanence of the work so well begun. A resolution was passed that the first aid meet should be an annual affair in the Coeur d'Alene district and a general committee on arrangements was elected, consisting of Mr. Boardman, chairman, and most of the mine managers and team captains. The selection of the executive committee was left to the general committee, which will meet later to make more definite plans for the next contest.

FIRST AID AT THE RARITON COPPER WORKS, PERTH AMBOY, N. J.

The following is summarized from "The Ingot" of September:

"The rapid development of the Rariton Copper Works first-aid corps, which was organized under the direction of the General Safety Committee last February, was convincingly demonstrated to the several hundred spectators who witnessed the events held on the baseball field adjoining the plant, Saturday, September 18, 1915. During the past eight months, the class has studied first aid under the company surgeon, Dr. W. E. Ramsey. Commencing Monday, Aug. 16, a class of fifty men, five from each department, received special



instruction for a period of five days from Jesse Henson of the United States Bureau of Mines."

"The contestants marched on the field about 2:15 p. m., with drill sergeant Anthony Hansen in the lead, in perfect order, all dressed alike in grey flannel shirts and khaki trousers, and wheeled into position at the places assigned on each side of the grounds and facing the spectators, leaving a middle space reserved for the judges and officials of the meet. The judging was done by Perth Amboy physicians. Two teams participated. A tie was worked off which resulted in a second tie, necessitating still another problem. In this, team No. 9 lost by one point, which was deducted because of failure to test the improvised stretcher, thus giving first place to team No. 1, which scored 100.

Between the regular events and the two extra problems, an apparatus demonstration was given. At a given signal, smoke started to arise from a small shack and a man ran out shouting that someone was in there overcome by the smoke. Two men rapidly adjusted breathing apparatus, seized a stretcher, dashed into the dense smoke and brought out the victim. The lungmotor was applied immediately and the patient was soon "brought back to life." The shack burst into flames shortly after removal of the victim, and burned to the ground. Motion pictures were taken of the day's events. The celebration closed with a banquet, Dr. Ramsey, acting as toastmaster.

SAN FRANCISCO, SEPT. 22-24, 1915.

MINE RESCUE AND FIRST AID DEMONSTRATION—INTERSTATE.

MINE RESCUE:

1. Utah Fuel Company, Castle Gate, Utah—M. M. Detwiller (captain); Zeph Thomas; J. J. Johnson; George Clark; J. W. Littlejohn; Geo. Usher.
2. Roslyn Fuel Company, Roslyn, Wash.
3. Goldfield Cons. Copper Company, Goldfield, Nev.

FIRST AID:

1. Homestake Mining Company, Lead, S. D.—C. L. Ayers (captain); M. Ellis; B. Harwick; I. Peters; William Yaeger; F. E. Clough (manager).
2. Nevada Cons. Copper Company, McGill, Nev.
3. Bronson Coal Company, Westville, Ill.—John Krainoch; C. R. Elliott; Joe DeBarba; Steve Shafer; Strill Boots; C. E. Noonan.

The State-wide first aid meet. held under the auspices of the California Metal Producers' Association and the Bureau of Mines, was participated in by nine teams representing eight companies and nine mines. There were about one thousand people in attendance. Prizes were as follows:

Third prize, Baldwin Acetylene lamps, won by the Empire Mines Company; second prize, cup donated by Coast Manufacturing and Supply Company, to be competed for annually, won by Argonaut Mining Company; first prize, medals and silver cup donated by the California Metal Producers Association (the cup to be competed for annually), won by the Mammoth Copper Mining Company. Bronze medals of the California Metal Producers' Association were given to each member of each competing team, except the winning team. The

judging was done by twenty army and navy surgeons. Twelve Bureau of Mines employees were present.

SAGINAW, MICH., OCT. 6, 1915—FIRST AID INTER-COMPANY.

1. Saginaw, No. 2.
2. Bay City, No. 1 and 2.
3. Divided.

This first-aid contest, held during fair week, is reported to have been an unqualified success, over 5,000 people being in attendance. The bureau was represented by Dr. W. A. Lynott, who assisted in the arrangements for the meet.

PINCKNEYVILLE, ILL.

FIRST AID AND MINE RESCUE DEMONSTRATION—INTERSTATE.

1. West Frankfort Team—J. C. Duncan (captain); Roy Medill; W. Cowell; Wm. Scarrett; Thos. Dean.
2. Herrin Team—John H. Burnett (captain).
3. Du Quoin Team—Andrew Dunning (captain).

This mine rescue demonstration and first-aid meet was held in conjunction with the Perry County Fair and under the auspices of the Illinois Mine Rescue Commission. G. T. Powell and C. B. Hanratty of car 3 assisted in training men in Southern Illinois for the meet. With one possible exception all the teams have been newly organized and many of the competitors had never competed in a previous meet; further, that three mines out of the seven represented had never had an organized first-aid team prior to Sept., 1915, and that the team of the Peabody Coal Company from West Frankfort, organized by Mr. Powell, was the first to represent that company in a first-aid meet, although it has fifteen mines in Illinois.

BIRMINGHAM, ALA., OCT. 9, 1915—FIRST AID, INTER-COMPANY.

1. Palos—Republic Iron & Steel Company.
2. Dolomite—Woodward Iron Company.
3. Warner Division—Republic Iron and Steel Company.

This very successful first-aid contest and demonstration was held under the auspices of the Alabama Safety Association, in conjunction with the Alabama State Fair, which financed the meet. Twenty-four teams contested, representing 17 mines and 9 companies, and it is stated that there were fully 5,000 people in attendance. The contest was won by the team of the Republic Iron & Steel Co., Palos Division, which made a perfect score in all events.

The judging was done by doctors of the Jefferson County Medical Association. The bureau was represented by E. B. Sutton and W. T. Burgess.

BICKNELL, IND., OCT. 30, 1915—FIRST AID, STATE-WIDE.

1. Oliphant Wasson Coal Company, Bruceville, Ind.—Edgar Livingston (captain), Paul Brown; Robt. Logan; John Mosley; Glen Oliphant; Dan Ellis.
2. Knox Coal Company, No. 1, Bicknell, Ind.—Andrew Henderson; Wm. Bogle; John Stafford; Henry Thompson; Tom Gillespie; James Henderson.

3. Green Valley Coal Company, Jasonville, Ind.—H. W. Baker (captain), Jas. Divens; John M. Lowry; H. A. Lowry; Oliver Keagy; Sherman Bledsoe.

**BICKNELL, IND., OCT. 30.**

The first of the annual state-wide first-aid meets in Indiana was held at Bicknell, October 30, under the auspices of the local unions of the United Mine Workers of America, coal operators of Knox County, merchants of Bicknell, the Federal Bureau of Mines, and the American Mine Safety Association. This was one of the largest state first-aid meets of the year. Numerous prizes were awarded.

# Standard Practices in Mine Rescue and First Aid

## MINING SECTION.

### NATIONAL SAFETY COUNCIL.

(SUCCESSOR TO THE AMERICAN MINE SAFETY ASSOCIATION.)

#### RESCUE APPARATUS AND RESCUE TRAINING.

1. Breathing apparatus used for mine rescue and mine recovery work should be of such types as have passed the tests of the Bureau of Mines.
2. The course in rescue training as outlined by the Bureau of Mines schedule for educational purposes and for familiarizing miners in the use of the breathing apparatus should be followed, as should the recommendations of the bureau pertaining thereto, to the extent that for actual mine rescue work supplemental and practical training of two hours each should be taken at intervals of not more than three months. (The Use and Care of Mine Rescue Breathing Apparatus, by James W. Paul, Miners' Circular No. 4, Bureau of Mines, Washington, D. C.)
3. All mine rescue stations should be equipped with at least five breathing apparatus and the necessary accessories for the continuous operation of the apparatus for 24 hours, and at remote stations 48 hours. Such equipment should be so located as to admit of its assembly in one hour at a central point for emergency use.
4. The keeping of birds and mice at rescue stations for the purpose of detecting carbon monoxide is desirable.
5. All persons before being admitted for rescue training should present a medical certificate qualifying them for rescue work and stating that they are free from contagious diseases.
6. The Bureau of Mines should be requested to prepare lists of stations, together with the names and addresses of the persons who have completed training with mine rescue apparatus, and to list the names on a roll of honor to be submitted for publication by the press in the various mining localities. Mine rescue volunteers should be compensated for services and should be considered when promotions are being made.
7. The smoke-room is best adapted for the first course of training. In addition to the smoke-room training as prescribed by the Bureau of Mines outline, supplementary practice to be taken underground is desirable.

#### RESCUE OPERATIONS.

8. In mine rescue work untrained men should not be permitted to use breathing apparatus except when such course is necessary in the saving of

life and will not unduly jeopardize the life of the rescuer. In selecting untrained men, those should be chosen who are readily amenable to discipline.

9. A desirable outline of procedure before and after entering a mine following explosion or mine fires is as follows:

OUTSIDE ORGANIZATION.

- a. All openings should be carefully guarded.
- b. There will be a man in charge of outside arrangements who should see that ventilating appliances are put in readiness for operation when required.
- c. Competent men who can be relied upon to obey the orders given them should be stationed at all mine openings.
- d. A competent person should be placed near the mine entrance to examine all safety lamps before they are allowed to be taken into the mine.
- e. Some specified person should be placed at the mine entrance to record all persons going into and coming out of the mine.
- f. Proper food and shelter should be provided for parties engaged in rescue work.
- g. A physician should be on hand while rescue parties are in the mines.
- h. Around all openings there should be established safety lines inside of which no open lights should be allowed.
- i. A man should be placed in charge of the rescue squads to organize and have them ready to enter the mine when called upon.

INSIDE ORGANIZATION.

- a. A man should be placed in full charge of the inside operations on each shift.
- b. An advance squad under a competent leader should explore the workings in advance of the stretcher squads and the other squads who are advancing the ventilation, making repairs, etc. The squads should advance in the following order: (a) Breathing apparatus or advance squad; (b) stretcher squad should advance second when they act with breathing apparatus, otherwise to follow the temporary ventilation squad; (c) temporary ventilation squad; (d) material squad; (e) permanent ventilation squad.
- c. An inside station should be established as a base of operations. A competent person should be placed in charge to re-examine all lights before they pass to the interior of the mine.
- d. A telephone communicating with the surface should be established at the inside station and should be carried forward as fast as possible.
- e. A doctor provided with necessary supplies should be present at the inside station.
- f. No person should go in advance of the ventilating current except the advance squad, which should examine the atmosphere for gas, and examine the return air current frequently for indications of fire; also for any other dangers which are likely to exist.
- g. The advance squad, when proceeding into the mine, should mark all unexplored openings with a danger sign.
- h. Strict discipline should be maintained at all times.

10. The maximum distance rescue crews may safely proceed beyond fresh air should, owing to the different conditions in different mines and the hazardous work undertaken, be left to the decision of the trained official in immediate charge, in conjunction with the mine officials, who should be governed by the probability of being able to save human life, using the time limit on all explorations.

11. Except when absolutely necessary, the shift of rescue men should not exceed two hours. This should be followed by not less than six hours' rest.

#### RESCUE CONTEST AND RULES.

(Rules for Mine Rescue and First Aid Contests, by James W. Paul, Miner's Circular No. 15, Bureau of Mines, Washington, D. C.)

12. The outline for conducting field contests with rescue apparatus as published in Miners' Circular No. 15 of the Bureau of Mines is recommended for general adoption. The rules and table of ratings recommended for the government of such contests are as follows:

a. Each crew shall consist of five men, one of whom shall be the captain. Each man shall be provided with a breathing apparatus, safety and electric lamp, and each crew shall carry a canary bird in a cage to the base of operations.

b. The captain shall command his men by signals given by a gong or horn after the men have put on the apparatus.

c. Before putting on the apparatus the pulse and respiration of each man shall be taken by a surgeon. The apparatus shall be placed at a point convenient to each man, and upon command of the captain each man shall first examine his apparatus, make such tests as will convince him that the apparatus is in proper working order, and put it on without assistance.

d. The captains shall inspect each apparatus, noting the number of each apparatus worn and the reading of the oxygen pressure gage. Rescuer No. 1 should inspect the apparatus worn by the captain.

e. The team, with its captain, the latter wearing apparatus, shall appear before the judges, who shall be men trained and experienced in the use of breathing apparatus and lamps. The judges shall make rigid inspection of each apparatus and discount for any improper connection or adjustment of the apparatus, lamp, or accoutrement.

f. Each crew shall then be required to trot 100 yards, then immediately enter an air-tight cage containing strong formaldehyde fumes and remain 10 minutes. As the men come out of the cage their condition shall be ascertained by a surgeon to determine the pulse and respiration of each man; and if the pulse or respiration of any man is abnormal, he shall be dropped from the crew and the crew shall be penalized by heavy discount. (The weakness of a member of a crew would, of course, prevent the crew from participating in the subsequent rescue work unless a substitute should be added who successfully underwent the same test.)

g. If during the recovery work consecutive members of a crew become separated beyond an interval of two yards, a penalty will be applied.

h. Failure to stop at intervals of 300 feet for periods of one minute for resting will be penalized.

i. For not having a full charge of oxygen and a fresh charge of chemical at the time the apparatus is first put on a penalty will be applied. The committee may arbitrarily designate a supply of oxygen sufficient for one hour as a full charge.

j. For failure on the part of any member to comply with the commands of the captain a penalty will be applied.

k. A fire boss will be stationed at the entrance to the mine who will examine the safety lamps carried by the rescue crew.

l. A recorder designated by the judges will check each member of the crews as he goes in and comes out of the mine, taking his name and giving him a check as he enters and replacing on the board the check as he comes out.

12. The method of judging should be by a system of penalties or discounts such as the following:

SPECIMEN TALLY SHEET FOR MINE RESCUE CONTEST.

| Name and number of event.....                                                                        | Team No.  |    |       |
|------------------------------------------------------------------------------------------------------|-----------|----|-------|
|                                                                                                      | Discounts | 1  | 2 3   |
| 1. Apparatus not having a full charge of oxygen.....                                                 | 5         | .. | .. .. |
| 2. Apparatus not properly assembled.....                                                             | 10        | .. | .. .. |
| 3. Failure of test apparatus before putting on.....                                                  | 10        | .. | .. .. |
| 4. Failure to make record of tests.....                                                              | 5         | .. | .. .. |
| 5. Failure of captain to command properly.....                                                       | 5         | .. | .. .. |
| 6. Failure of any member of crew to obey command.....                                                | 10        | .. | .. .. |
| 7. Failure to maintain proper interval in marching.....                                              | 5         | .. | .. .. |
| 8. Failure to rest for one minute at stated intervals.....                                           | 5         | .. | .. .. |
| 9. Failure of a member to pass doctor's examination....                                              | 5         | .. | .. .. |
| 10. Failure of apparatus to deliver oxygen in quantity equivalent to the time in actual service..... | 10        | .. | .. .. |
| 11. Failure of lamps to burn or be in proper and safe condition .....                                | 10        | .. | .. .. |

SAFETY LAMPS AND ELECTRIC LAMPS.

14. No open light should be used.

15. In coal mines only such types of safety lamps and electric lamps as have passed the tests of the United States Bureau of Mines should be used. (The Use and Care of Miners' Safety Lamps, by James W. Paul, Miners' Circular No. 12, Bureau of Mines, Washington, D. C.)

16. Electric lamps unaccompanied by safety lamps should not be used unless the party is equipped with breathing apparatus.

17. Both safety lamps and electric lamps should always be used up to the point where breathing apparatus is put on, and beyond such point no safety lamps should be used except one carried by the leader of the party; if explosive gas is present in dangerous quantities, even the leader should not carry a safety lamp.

## FIRST AID METHODS.

18. The Schafer method of artificial respiration is the preferable method, provided no injury of the person to be resuscitated prohibits the use of this method.

19. In the case of dislocation of a hip or a shoulder, the dislocation should not be reduced, but the limb should be fixed in the line of deformity.

20. A man injured with a broken back should be handled as little as possible. If found in any other than recumbent position, he should be kept in that position; if found in a recumbent position, posterior splints extending from the head to the feet should be applied, or he should be laid on rolled blankets.

21. In the treatment of any fracture of a long bone it is necessary to apply splints long enough to fix the joint above and below the fracture; for example, if there is a fracture of the lower part of the leg, the splints should be applied so that they extend below the ankle and above the knee. Long splints are especially to be recommended in fractures of the legs. The forearm and arm splints designated by Dr. M. J. Shields and described in American National Red Cross textbook on first aid, page 71, are commendable.

22. It should not be the duty of a first-aid man to reduce a dislocation except of the lower jaw or a finger.

23. The triangular bandage should be used in preference to the roller bandage.

24. A first aid man should not wash a wound. The application to a wound of any foreign substance other than a sterile substance should be condemned.

25. In the case of a severe hemorrhage that is being controlled by a tourniquet, if no sterile or antiseptic dressing is available, no dressing should be applied to the wound. This suggestion is applicable to all wounds.

26. An injured person should be carried first on a stretcher, unless there be some reason for a contrary method.

27. In the case of an electric shock the current should first be either cut off or short-circuited, if possible; if not possible, the rescuer should insulate himself and remove the patient from the body that carries the current. The treatment of electric shock prescribed in Miner's Circular 5, of the Bureau of Mines, should be adopted. (Electrical Accidents in Mines, by H. H. Clark and others, Miners' Circular No. 5, Bureau of Mines, Washington, D. C.)

28. In moving an injured man his injured side should be next to the first aid men lifting him. A rescue corps bearing an injured man should in all cases have the right of way to the surface.

## FIRST AID TRAINING.

30. The duties of a first aid man are to act intelligently and efficiently between the time of an accident and the time the injured man is placed in the hands of the physician or surgeon or in a hospital.

31. The subject "Instruction; Its Kind and Amount," "Training and Practice; Kind and Amount," and "Systems of Training: Red Cross, Navy,



or New Combination; Value of a Standard System for Miners," should be treated as one subject, and the Red Cross system of first-aid training should be adopted as the standard.

32. Successful first aid work at any given mine must have the personal interest of the operating officials, the financial support of the mining company, and the coöperation of the mine physician, surgeons and employees.

33. Every mine should at all times have a sufficient number of first-aid men on duty to take care of any persons injured during any of the 24 hours of the day. The outline for conducting field contests in first aid as published in Miner's Circular No. 15, of the Bureau of Mines, is recommended for general adoption.

#### FIRST AID CONTESTS AND RULES.

34. For the larger companies having a great many mines, intra-company contests are to be preferred as against exhibitions, whereas for the smaller companies, operating only one or two mines, inter-company contests are preferable.

The rules and table of ratings recommended for the government of such contests are as follows:

a. A team is composed of five (5) men one of whom shall be captain. Any employe of a coal company may be a member of a contesting team, providing he is not a physician or a trained nurse.

b. The captain will select a patient and designate the member or members of the team to perform the event.

c. The captain will control his team in their field work by giving audible commands.

d. The captain may select himself as one of the members who will perform the event.

e. The captain or other members will not prompt the person performing the event unless he is one of the performers. This will not apply to full team event.

f. At the conclusion of any event, the captain will raise his right hand and announce his team number. The team will remain at post until relieved by the judges.

g. The teams will bring their own first aid material, including bandages, splints, blankets, stretchers, etc., and will not be allowed to leave the patient to secure material.

h. The triangular bandage will be the standard used in the contests, but roller bandages may be used and equal credit will be given for their proper use as with the triangular bandages.

i. All splints must be prepared on the field for each event requiring their use. Specially designed splints may be used, but they must be assembled during the time of each event requiring their use.

j. No practicing will be allowed on the field before the beginning of the contest.

k. The teams will be numbered consecutively, beginning at No. 1, and they will occupy their consecutive positions on the field.

l. The judges will perform their work progressively, judging such number of teams in each event as the judges may determine and announce before the beginning of the contest.

m. In events involving resuscitation, the rescue of the patient and stretcher drill, the judges may require the teams to perform separately.

n. Each judge will mark the team number, event, and discount for each team judged, sign his name and deliver, to the recorder, his record.

o. The recorder will foot up the discounts and mark points made by each team in each event. The total points will be divided by the number of events and the quotient will be the average for each team for the whole contest.

p. Time will not be an element unless the team or men performing run over the allotted time or fail to give treatment properly. All events shall commence and be finished at the sounding of a gong.

q. All exceptions to these rules must be made to the Committee on Rules not later than ten (10) days prior to the day of the contest. The decision of the committee will be final.

r. The prizes will be listed by the Committee on Awards.

35. The method of judging should be by a system of penalties and discounts such as the following:

#### DISCOUNTS FOR JUDGING FIRST AID CONTESTS.

|                                                                                              | Discounts<br>(Points) |
|----------------------------------------------------------------------------------------------|-----------------------|
| 1. Not doing the most important thing first.....                                             | 6                     |
| 2. Failure of captain to command properly.....                                               | 1                     |
| 3. Slowness in work and lack of attention.....                                               | 2                     |
| 4. Failure to entirely cover the wound or being unable to give location<br>of injury .....   | 4                     |
| 5. Ineffective artificial respiration.....                                                   | 11                    |
| 6. Splint improperly padded or applied.....                                                  | 6                     |
| 7. Tight, loose, or improperly applied bandage.....                                          | 5                     |
| 8. Insecure or granny knot.....                                                              | 4                     |
| 9. Unclean first-aid material.....                                                           | 3                     |
| 10. Failure to have on hand sufficient and proper material to complete a<br>dressing .....   | 3                     |
| 11. Lack of neatness .....                                                                   | 2                     |
| 12. Awkward handling of patient .....                                                        | 4                     |
| 13. Assistance lent by patient .....                                                         | 3                     |
| 14. Tourniquet improperly applied .....                                                      | 7                     |
| 15. Failure to stop bleeding .....                                                           | 8                     |
| 16. Not treating shock .....                                                                 | 5                     |
| 17. Failure to be aseptic .....                                                              | 7                     |
| 18. Improper treatment .....                                                                 | 12                    |
| 19. Failure to temporarily control hemorrhage previous to application of<br>tourniquet ..... | 7                     |

36. Each contest should consist of not more than five events. The judges,

who should be surgeons or first aid men, should be of sufficient number so that one judge does not inspect in any single event more than three teams, and preferably less. These judges should inspect sets of teams progressively.

37. In all contests speed should not be an essential element, but a certain time should be allotted to each event. Failure to finish in the allotted time should be discounted 1 point for each minute over time.

HOSPITALS AND FIRST AID STATIONS.

38. Underground surgical hospitals are unnecessary, but there should be deposited at different points in the mine a sufficient number of first-aid packages properly equipped with first-aid emergency dressing. In addition there should be located central first aid dressing stations at the bottom and at the surface opening of the mine.

SAFETY SIGNS AND SIGNALS.

39. Universal Danger Symbol; a circle, filled in solidly with red, making a red ball upon a white background.

40. Universal Safety Symbol; an arrow indicating the direction to safety, painted in any distinctive color, made with a chalk or other marking material, or made of metal.

41. Universal symbol for ladderway or stairway; a ladder painted in any dark color upon a light colored background.

*Accidents Are No More a Matter  
of Ill Luck Than Good Fortune  
Is a Matter of Good Luck*

## **National Safety Council**

### **Paper Manufacturers' Sectional Meeting**

**Philadelphia, Pa.  
October 20, 1915**

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**S. F. SHATTUCK, Chairman**  
**Kimberly-Clark Company, Neenah, Wis.**

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**I**N THE absence of Chairman R. B. Robertson, Mr. S. F. Shattuck, Kimberly-Clark Company, Neenah, Wis., took the chair and conducted the meeting.

Mr. E. P. Gleason, Nekoosa-Edwards Paper Company, Port Edwards, Wis., was appointed temporary Secretary.

Those in attendance at the meeting were:

E. T. Walsh.

Howard W. Taylor, Dill & Collins Company, Philadelphia, Pa.

Thomas V. Hodges.

E. J. Scott.

E. P. Gleason, Nekoosa-Edwards Paper Co., Port Edwards, Wis.

F. M. Harp, Employers' Mutual Insurance Company of New York.

H. D. Scully, Canadian Manufacturers' Association, Toronto.

G. H. Curtis, Solvay Process Company, Syracuse, N. Y.  
 W. T. Doyle, Mechanical Engineer, New York State Department of Labor.

R. S. Turner, West Virginia P. and P. Co., Mechanicsville, N. Y.  
 Joseph Gantnier, Ansco Company, Binghamton, N. Y.  
 George H. Young, Ansco Company, Binghamton, N. Y.  
 A. G. Richardson, Laurentide Company, Ltd., Grand Mère, Quebec.

W. H. Williamson, Finch-Pruyn Company, Glens Falls, N. Y.  
 E. H. Lowjan, Purchasing Agent, M. R. Wood, Lithographer, N. Y.

Frank W. Calvert, Scott Paper Company, Philadelphia, Pa.  
 F. P. Klund, Hammermill Paper Company, Erie, Pa.  
 Geb. T. Kamps, Riverside Fibre and Paper Company, Appleton, Wis.

John Wright, Aetna Life Insurance Company, Hartford, Conn.  
 Henry W. Stokes, York Haven Paper Company, Philadelphia, Pa.  
 David M. Allan, Aetna Life Insurance Company, Albany, N. Y.  
 John M. Taylor, Diamond State Fibre Company, Bridgeport, Pa.  
 R. R. Ray, Michigan Workmen's Compensation Mutual Insurance Company, Detroit, Mich.

W. I. Fell, Michigan Carton Company, Battle Creek, Mich.  
 R. P. Blake, Independence Inspection Bureau, Philadelphia.  
 W. K. Harris, Barrett Manufacturing Company, New York City.  
 A. Jones, Armstrong Book Company, Lancaster, Pa.  
 T. K. Lowry, Armour & Company, Chicago, Ill.  
 H. Liebeck, Scott Paper Company, Chester, Pa.  
 J. L. Long, Scott Paper Company, Chester, Pa.  
 S. F. Shattuck, Kimberly-Clark Company, Neenah, Wis.

The object of the meeting—to organize a Paper Manufacturers' and Allied Industries Section of the National Safety Council along the plan outlined by the Council—was discussed and approved.

The Section was then duly organized, on motion of Mr. Kamps, seconded by Mr. Klund. The vote was unanimous.

Discussion was opened on the proper name for the Section. It was brought out that the name should be broad enough to include the retailers and jobbers of the industry, as well as the manufacturers of paper and pulp. The detail name was left to the Executive Committee of the Section.

The Nominating Committee appointed, in accord with the Council plan, consisted of Messrs. Harris, Stokes and Camps. The committee reported and recommended the following officers:

President, Mr. S. F. Shattuck,

Vice-President, Mr. R. B. Robertson.

Secretary, Mr. E. P. Gleason.

The report of the committee was concurred in and the officers nominated were elected.

The Sectional Program, as outlined in the Congress Program, was then taken up, the chairman introducing the speakers and announcing the subject of the papers.

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#### SAFEGUARDING MACHINERY FOR MAKING PAPER.

EDWARD T. WALSH, PLAINFIELD, N. J.

Mr. Chairman and Members of the National Safety Council: I was somewhat surprised to be asked to address you at this convention on the subject of "Safeguarding Machinery for Making Paper." Just a year ago Mr. Carl M. Hansen, Secretary of the Workmen's Compensation Bureau, asked me to investigate the hazards of papermaking and its allied industries. In starting this investigation I decided to visit the mills and find out, by personal contact with the men employed on this work, the dangerous features of the machinery employed therein and then take up with the manufacturers of these machines the question of safeguarding the dangerous points without destroying the prime functions or purposes of the machines. In my investigations I received help from everybody I approached and can heartily express my appreciation of the splendid treatment that was accorded me.

#### IN GENERAL.

In general, all drives in the shape of belts, gears, tools and shafting should be guarded according to the methods which have been approved for this purpose. Stairways should be properly proportioned and guarded with hand rails. The working room about the machines should be generous, so that a man can perform his duties without the constant fear of being caught in the moving machinery.

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## The Work Room

The working room about the machines should be generous, so that a man can perform his duties without fear.

Proper lighting should be provided; this, not only for the benefit of the workmen, but for the greater output of the product.

### SORTING ROOMS.

There is very little hazard connected with the work in the sorting room, except that of dust and a slight hazard of contagion. In order to eliminate the dust hazard all bottoms of the tables may be screened and connected to an efficient exhaust system. In the mat-

ter of contagion there have been instances of this, but it was due to the operatives carrying away with them clothing, which they had found in the rags, and wearing it.

### DUSTING.

In general the dust machines are fairly well guarded, except the drives. These should be guarded, as mentioned under the heading of drives, generally. Some paper manufacturers have very successfully guarded the railroad dusters by enclosing the gears in a heavy wire mesh guard.

There should be a dust exhaust system, which will remove the dust from all rooms wherein the rags are prepared for the boilers. The dust is not only dangerous to the health of the operatives, but there is more or less danger of fire, due to the collection of dust on beams and other members of the building construction.

### CUTTERS.

The cutters, while appearing to be dangerous, I found to have a fair record. As the operative controls the feed roll he is more or less in the position of controlling whether his arms will be carried into the knives or not. During my investigations I heard of but one accident.

The gears and feed-roll drives should be guarded, and all knives should be covered with a hood, which should connect to the exhaust system.

**BOILERS.**

The trapdoors from the charging floor to boilers should be guarded and closed with a substantial covering when not in use. The drives to the boilers should be enclosed with the proper housings and walkways or other facilities provided for the oiler to perform his duties.

**BEATERS AND WASHERS.**

The housings over the rolls should be substantially built and firmly secured in place so that they will prevent knives flying out in the event of their becoming detached from the rolls. The drives, whether in belts or chains, should be enclosed, also the gears which operate the washers.

**JORDANS.**

Jordans are dangerous only through their belted drives, or the couplings, when directly driven by motors. These should be protected according to the approved methods. The end of the shaft which extends beyond the bearing, due to "setting up" the Jordan, should be covered with a cap.

**TANKS.**

Tanks should be placed with the tops not lower than three feet above the floor. If placed with the tops level with the floor they should be covered with a heavy plank flooring. The gears driving the agitators should be enclosed, as these form considerable hazard.

When it is necessary to enter the tanks, the driving belts should be removed, and a sign—indicating that a man is working in the tank—placed where it can be readily seen.

**SCREENS.**

The screens at the wet end of the machines should be guarded at their drives and the walkways provided with hand railing.

**LIGHTING**

Proper lighting should be provided; not only for the benefit of the workmen, but for greater output.



## WIRES AND PRESSES.

The drives to the shaker head of the wires, as well as those to the press rolls, should be guarded by housings and railings. The footboards across—from one side of the machine to the other—should have handrails, which should be securely fastened to the frame of the machine, or if fastened to the footboard these should be bolted to the frame, so as to make it impossible for a man to lean against the railing and upset.

In washing felts on the presses great care should be used that men are not pulled in. The felts should be roped or spread out from the front side and not the back. It is well to have a man stationed at the starting lever while this work is being done. Planks placed across the pits, under the presses, are a great convenience for the men, who have to do the work of washing out.

On the cylinders of the cylinder machine it is only necessary to guard the drives.

## DRYERS.

The passageway between the presses and dryers should be guarded, on the dryer side, by a wire guard or solid board partition. Also, there should be a guard over the baby dryer. It would be desirable to have more clearance between the felt rolls and dryer cylinders because of the danger of getting pinched in passing paper.

The committee appointed by the Wisconsin Commission to investigate the hazards of papermaking recommended that "doctors" be placed on all lower cylinders of the dryers. Oil pipes should be carried from every bearing on the back side of the machine to the top of the frame and there end in an oil cup, to eliminate the necessity of the oiler having to get down to the bearings to perform his work.

Gears should be housed with full housings, which are equipped with wire net, to cover the spokes of the wheel. A substantial walkway should be provided at the back side so that the upper parts of the machine may be readily reached.

## CALENDERS.

The calenders have been a fruitful source of accidents and various means have been devised to eliminate them with more or less success. The committee appointed by the Wisconsin Commis-

sion, mentioned above, recommends that if the paper feeds over the top rolls the calenders be provided with a feeding belt. This is in use in the Kimberly-Clark Company's mills in Wisconsin. The nips are sometimes guarded with round rods or angles.

The Warren flexible "doctor," which is controlled from one point on the stack, eliminates to a great extent the necessity of an operative getting up to remove foreign substance from the rolls.

A plank placed at the bottom nip forms a very effective guard.

#### REELS.

The best method of eliminating the danger of being caught in the reels is to remove the reels of paper from the frames to rewinders. Where fixed reels are used they should be so equipped that the rolls of paper cannot be reeled closer than eight inches between and eight inches above the floor. Permanent stops should be provided for this purpose.

The Warren winder, with hood over drum, is fairly safe. If the paper is threaded through, so that the drums run out, it is perfectly safe. However, it is contended that paper wound does not make a hard and close roll, as when the drums run in.

#### CUTTERS.

A great deal of attention is being given to entirely enclosing the gears and drives of the cutters. This sometimes is effectively done by a sliding partition, which drops down in front of these driving gears.

In the connection of eliminating hazards around papermaking machinery, a great deal depends upon the discipline maintained. More accidents occur during horseplay than while actually at work. The posting of reasonable rules and a rigid enforcement of the same will do more to prevent accidents than will most any other form of safeguarding.

Gentlemen, I thank you. (Applause.)

#### HAZARDS IN WOODYARDS.

S. F. SHATTUCK, TREASURER, KIMBERLY-CLARK COMPANY,  
NEENAH, WIS.

Mr. Chairman and Members of the National Safety Council: Of all the operations of the paper industry the work of the woodyards

## **The Wood Yard**

The greatest of all hazards—the human element—is at its maximum in the wood yard.

has seemingly offered the greatest difficulties to the securing of substantial results in accident reduction. The natural hazard of the work is great, and this factor, combined with its seasonableness—making necessary the employment of large numbers of new men during the wood season—is a hard combination to overcome. The greatest of all hazards, namely, the human element, is at its maximum and the chance of mechanical safeguarding is at its minimum.

As in all other lines of activity, however, safety and efficiency go hand in hand. In some of the operations of the Kimberly-Clark Company, greater efficiency has followed in the wake of our safety and sanitation campaign, but this sequence has rather been reversed in our woodyards; here greater safety has been one of the most marked results of increased efficiency and improved system.

### **CAR STAKES.**

The matter of car stakes is, perhaps, the most vexed question right now, at least, in our section of the country. For years, whether loading cars in the woods or loading out of the woodyards for the woodroom, it has been customary to use a rough stake fitted into the stake pocket and tied to the stake directly opposite by wire. The dangers to a man breaking down such a load are too well known to need description; suffice it to say that only last winter in our Niagara woodyard, a man whose duty it was to cut these car stakes was caught and pinned under the falling load and escaped death only by a miracle.

Aside from the hazard of this crude type of equipment is its cost. Firms doing logging on any scale must buy wire by the carload, and when to this is added the value of the car stakes and the labor of fitting and binding, it becomes evident that there is eventual economy in resorting to an automatic stake, which can be used many times over and which can be tripped without danger to life and limb. The Industrial Commission of Wisconsin has

interested itself in this matter and their committee on logging rules has recently submitted its findings to the Northern Hemlock and Hardwood Manufacturers' Association with the recommendation that the following order be adopted by the commission:

"On logging roads owned by lumbermen, the stakes or binders used on logging cars to hold the load of logs in place when being transported, must be so designed as to make it possible for the operator to loosen or disengage the stakes or binders when standing away from the front of the car and in a safe position."

## **The Remedy**

**As in all other  
lines of activity,  
Safety and Efficiency  
go hand in hand in  
the paper industry.**

The above recommendation, which will undoubtedly soon have the force of law in Wisconsin, does not cover cars owned by railroads, for the reason that the Industrial Commission does not have jurisdiction over railroads, but the fact is that lumbermen are practically unanimous in their condemnation of the old type of stake and the hope is expressed that the railroads may see their way clear or be otherwise induced to equip their cars, used in the logging service, with the automatic stakes.

The one essential feature of an automatic car stake is that it can be tripped when the man is standing either on the opposite side of the car or at one end and many good devices are to be had, either patented or home made, at a cost of \$25.00 to \$50.00 per car.

### **CHAINS.**

The Central Safety Committee of our company has consumed more time, endeavoring to formulate arbitrary rules and regulations governing use of chains, than it has put on any other single subject in the last two years. We have tried to set a limit at which chains should be discarded on account of stretch and to set arbitrary dates when chains should be sent in for annealing, but the net re-

sult of our deliberations has been to go the round of the circle and come back to reliance upon the common sense of an experienced chain man. In our woodyards the chain inspector makes a semi-weekly inspection, link by link, of every chain, and the top loaders and others whose safety depend upon the strength of chains are instructed to—and do—make daily and sometimes hourly inspections of the chains they are working with.

#### DERRICK CARS.

The noticeable reduction in hazards and consequent lessening of accidents has come through the introduction of the derrick car. This equipment not only makes it possible to do the work of the woodyard in a safer and more economical fashion, but it automatically reduces the normal woodyard crew 30 to 40 per cent, which in itself is a big factor in the safety equation. The use of the grab bucket makes it possible for a man to stand off at a safe distance both in the loading and unloading process. Our original derricks were equipped with a beam 70 feet long, which we used until one of them capsized one day, pinning a man underneath the bed of the car on which it was mounted, after which a 14-foot section was taken out of the middle of the beams, leaving them at 56 feet, which we believe to be the safe length for this service. In our Kimberly woodyard we reduced the number of accidents last season 40 per cent and the lost time on account of accidents 64 per cent, principally through the use of the derrick cars.

#### THE HUMAN ELEMENT.

In my opening paragraph I referred to the unusual hazard of woodyard work and to the prominence of the human element. This is well reflected in the record of 86 consecutive accidents occurring in our Niagara woodyard, showing that 41 out of these 86, or 48 per cent of the total, were caused by falling or rolling logs. Sixteen accidents, or 18 per cent of the total, were due to slips and falls; 6 accidents, or 7 per cent, were the fault of fellow workmen, while 8, or 9 per cent, were due to the improper or careless use of the pickaroon. Thus, 82 per cent of the entire number may be chargeable to the inherent hazards of the industry and the carelessness and inexperience of the workmen. In other more favored sections

of the country it may not be necessary to resort to the labor agency in rush seasons, but unfortunately in Wisconsin we have many times been forced to this extremity. The Safety Bulletin, the printed page, the public meeting and the personal word of caution all help some, but so long as inexperienced men must be put up against dangerous jobs the accident rate is bound to be high. Therefore, let us be open to every modern device and improvement, which promises to do this heavy and hazardous work better with a smaller number of more experienced men. (Applause.)

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SAFETY INSTRUCTIONS AND WARNINGS FOR  
SPECIFIC DANGERS IN PAPER PLANTS

E. P. GLEASON, NEKOOSA-EDWARDS PAPER COMPANY,  
PORT EDWARDS, WIS.

Mr. Chairman and Gentlemen: I have been asked to bring to your attention and open for discussion some of the specific dangers in paper plants and safety instructions and warnings for them.

Coming from Wisconsin—a very active safety state, and from one of the larger paper industries of the state—I have considerable valuable and interesting data to which I can hardly more than call your attention in the brief ten minutes allotted me.

Let us consider first: Is the paper manufacturing industry a dangerous one? The 1914 records show that this industry employed approximately 3.6 per cent of the men, had 7 per cent of the compensatable injuries, and was fifth among the twelve classified industries in number of accidents. These are in order:

1. Woodworking,
2. Metalworking,
3. Construction,
4. Public utilities and transportation,
5. Paper working industries,
6. Food, beverages and tobacco,
7. Mining and quarrying,
8. Leather working,

## ACCIDENTS

So long as inexperienced men must be put up against dangerous jobs the accident rate will be high.

9. Vehicle manufacturing,
10. Others—Chemical, laundry, printing, etc.
11. Textile industries,
12. Miscellaneous.

### A DANGEROUS INDUSTRY.

Surely these figures show paper manufacturing to be a dangerous industry and well worthy of the attention to safety work which it is getting and will get from those interested, and the more intimate knowledge that we, who are familiar

with the details of the mills, possess, confirms this statement.

Having established our position let us classify the accidents, taking those of our company as a fair example.

For the first nine months of 1915 there occurred in our mills—employing approximately 600 men—eighty-seven accidents on account of which the employees lost one day or more of time. They were divided as follows:

| Item No.    | CAUSE OF ACCIDENTS                      | No. of Acc'dts | Total  |
|-------------|-----------------------------------------|----------------|--------|
| 1—          | Cuts on hands and smashed fingers.....  | 21             | 24.1%  |
| 2—          | Handling logs and pulpwood in yard..... | 16             | 18.4   |
| 3—          | Cuts and eye injuries on barkers.....   | 11             | 12.65  |
| 4—          | Blocks fell on feet.....                | 11             | 12.65  |
| 5—          | Trucking .....                          | 11             | 12.65  |
| 6—          | Injuries around paper machines.....     | 7              | 8.06   |
| 7—          | Pickeroon, struck foot .....            | 3              | 3.46   |
| 8—          | Stepped on nails .....                  | 2              | 2.3    |
| 9—          | Boiler-room burns .....                 | 2              | 2.3    |
| 10—         | Pinched in belts .....                  | 2              | 2.3    |
| 11—         | Coupling cars .....                     | 1              | 1.13   |
| Total ..... |                                         | 87             | 100.0% |

A careful study of this table reveals the fact that one-fourth of all accidents were from minor cuts and bruises and 18 per cent from smashed toes and fingers caused from handling logs and pulpwood in the yards. A further study of the history of these eighty-seven accidents shows that not more than ten could possibly have been prevented by guards or safety devices installed by the company, and that the remaining seventy-seven, or 89 per cent, were caused by carelessness or thoughtlessness on the part of the men themselves.

## **Experienced Men**

Let us be open to every modern device which promises to do this hazardous work with more experienced men.

### **EDUCATION IN SAFETY WORK.**

This may seem, gentlemen, a little far from the topic assigned but it leads directly to the statement that the greatest specific danger in our paper industry, and I believe in any industry, is the Careless Man and the greatest specific problem with which we are confronted is, how to reach the careless man. The answer is, education in safety work:

1. Education thru bulletin boards, monthly safety publications, etc.
2. Establishment of a safety organization in which these men have an active part and interest.
3. Judicious use of signs and posters at dangerous points in the mills.
4. Contests or records of safety progress in the various mills and departments.

I will briefly take up each of these subjects and endeavor to give you our methods and results of treating same.

1. Bulletin Boards, Publications, Etc.—We have established in each of our mills three bulletin boards, as illustrated here, on which is displayed each week the National Council Bulletins, together with data and interesting facts from our own plants.

We publish for the employes a monthly Safety Bulletin, combin-



ing safety and welfare work and distribute them with the pay checks.

We are sure that our bulletin boards are appreciated and that the Safety Bulletins are read not only by the men in the mills but by their families.

2. Our Safety Organization—Planned along the lines advised by the National Council, our safety organization is based on the fundamental and necessary principle that the men themselves must do the active work if they are to derive the benefit. To this end the workmen's committees, consisting of three men in each mill, have one new man each month, by which plan we shall eventually have every employe a member of the workmen's safety committee. Our experience and the interest shown by the men has convinced us that the policy is the right one to follow.

3. Signs—Our policy has been to use signs carefully, believing that a multiplicity of them is worse than too few. We have, at very small expense, made and used blue print signs, similar to samples, to good advantage in the more exposed places, a few of which I have here.

We believe that the extensive or rather promiscuous use of danger signs is confusing and defeats their main purposes, to warn employes of the more dangerous places and to give the foreman the necessary backing in enforcing the safety rules and regulations.

4. Contests and Safety Records—During the last three months of 1914 several of the mills of our section entered a safety contest, the prize—a large Safety First flag—going to the mill having the least number of lost-time accidents, based on the number of men employed. Did this pay? Our records show an average of 31.3 accidents per month for the first nine months of 1914. For the last three months the average was only 17 lost-time accidents per month making a reduction of 46 per cent.

For 1915 we have had an intermill contest with this (illustrated) emblem as a prize going each month to the mill with the best accident record. Our average number of accidents for the first nine months of 1915 was twenty, or 36 per cent below the corresponding months of 1914.

I have, gentlemen, endeavored to show you that the educational part of the safety work is our greatest specific problem and endeavored to illustrate our methods of attacking it. Guards are

necessary, but with a well-managed safety organization the limit of guarding is ultimately reached and the Human Factor must be given the greatest attention. (Applause.)

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SAFETY INSTRUCTIONS AND WARNINGS FOR  
SPECIFIC DANGERS IN PAPER MILLS.

G. E. WILLIAMSON, STRATHMORE PAPER COMPANY.

Mr. Chairman and Members of the National Safety Council: One of the most difficult and, at the same time, important aspects of safety work in industrial plants is to place before the persons you wish to reach suitable safety instructions and warnings in such a manner that these instructions and warnings will be read, understood and heeded.

In the discussion which follows, the writer will endeavor to present briefly the methods employed in the four mills of the company with which he is connected, to bring before the employes the dangers incident to their every-day work, make them think constantly of Safety First and act accordingly. No attempt will be made to deal with a lot of generalities bearing on the subject under discussion, nor to suggest rules or methods applicable to all conditions which exist or may arise in paper mills, but rather to recite personal experiences, in the hopes that the way may be opened for an exchange of ideas and experiences beneficial to all, as this is the true function of the round table meeting.

It may be well to explain at the start that early in the present year the company with which the writer is connected instituted a Safety First campaign and followed in general the recommendations of the National Safety Council as to organization and procedure:

SAFEGUARDING OF MACHINERY.

It has been our experience and doubtless that of most companies which have instituted the safety movement in their plants, that, to the majority of industrial workers, Safety First means largely the safeguarding of machinery and other plant equipment. Our main efforts, therefore, are necessarily exerted in an endeavor to show even more important, and the greatest of these is the education of these people that important as safeguards are, other features are

## Safety Rules

Place before the persons you wish to reach suitable Safety instructions and see they are read and understood.

the workers themselves. An important feature of such education is pointing out to the various classes of employes the specific dangers which they encounter day after day but little realize.

The methods employed thus far are as follows:

### FIRST—BULLETINS.

In each mill are bulletin boards upon which are posted bulletins furnished by the National Safety Council. In place of these bulletins,

drawings and sketches—made on tracing cloth and blue printed—are posted at frequent intervals. These drawings show parts of actual machinery or processes in the mills, and have printed on them matter relating to the particular danger which the drawing is intended to emphasize. We have found the drawings to be of much value in pointing out specific dangers, showing as they do actual scenes or conditions that possess much human interest and are eagerly looked at by the employes, especially when first posted.

### SECOND—PRINTED INSTRUCTIONS.

It has been found advantageous to provide printed instructions, which are permanently posted in various parts of the plants. One of the most important of these is "Instructions for Operating Elevators," which, printed in large type, framed and posted under glass at each elevator entrance, gives specific directions for the operation of elevators and forbids acts which may lead to danger. Other signs—printed and framed in similar manner—bearing on unsafe practices, cleanliness and orderliness, are likewise posted at various carefully selected points around the mills.

In addition, typewritten instructions, addressed to the heads of departments, are frequently made out, and when drawn in the form of a personal letter, relating to a matter of particular interest to the recipient, have been found to be of much value, particularly when written and signed by an executive officer of the company.

At other times typewritten safety instructions or warnings are addressed to all employes or certain departments and posted on bulletin boards.

THIRD—SIGNS.

Signs are being used in increasing numbers both in and out of doors to point out particular dangers. These signs are made of wood, having black letters on a white background, with the familiar red ball danger signal occupying the center of each sign. Particular attention is given to the wording of these signs, that they may be brief, easily read at a reasonable distance, concise, and readily understandable. Signs like these, posted in various rooms and at dangerous points outside, cannot fail to attract the worker's eye frequently and impress upon him or her the importance of care at all times.

The fear of even a slight accident resulting from disregard of a big sign nearby is often deterrent to the chance-taker, for no man wants to run the risk of receiving the jibes of his fellow workmen under such circumstances, and the psychological effect is undoubtedly good. In order to make signs understood by every one due regard must be paid to the fact that not all of the employes read English.

FOURTH—SAFETY COMMITTEES.

One of the most vital parts of an industrial safety organization, we believe, is the local safety committee, for, if properly developed, the committee can accomplish an immense amount of good. It has been found to our advantage to divide each mill into sections and allot to each member of the local safety committee a particular section during his term of service on the committee. He is expected to visit all parts of his allotted territory at frequent intervals, observe all conditions which make for or against safety, and take immediate action or report his findings to a higher authority.

Here we have found one of the most positive and satisfactory

## **Safety Committees**

If properly developed the Committees can accomplish an immense amount of good.

means of reaching the individual employee. By properly instructing the committee members it is possible to bring before employees, who may be habitually careless or indifferent to safety motives and otherwise difficult to reach, a message which will appeal to their reason, coming, as it does, from one of their fellow employees and thus produce results otherwise unobtainable.

FIFTH—PUBLICATIONS.

There are many industrial concerns which issue at stated intervals some kind of a publication that reaches the employees. This is a most excellent means of appealing directly to each individual worker, and full advantage is taken of a publication issued monthly, in the form of a booklet, to issue safety instructions, point out specific dangers, and appeal to the rank and file for their co-operation and best efforts.

A means is also provided for each employee to submit for publication any views he may hold, or suggestions he may have to offer along lines of safety, and points are thus frequently brought out which, under other circumstances, would lie dormant.

It goes without saying that the above suggestions do not comprise all methods of issuing safety instructions and warnings practiced in paper plants, and it probably would be impossible to gather such in one short treatise, but those mentioned are all of a simple but practical nature and are being employed successfully at the present time. (Applause.)

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SAFETY INSPECTION METHODS FOR LARGE AND  
SMALL PAPER MILLS.

DR. A. D. RISTEEN, THE TRAVELERS' INSURANCE COMPANY.

Mr. Chairman and Members of the National Safety Council: To adequately discuss the inspection of paper mills of all sizes in ten minutes is a task from which the boldest might shrink without fear of criticism. I shall, therefore, touch upon a few points only, and will dwell mainly upon things that pertain peculiarly to paper mills, as distinct from plants of other kinds—though it will be understood, of course, that the inspector has certain general duties and responsibilities in all plants, whether they are paper mills or not. He must look out, for example, for the guarding of belts, shafting,

gear drives, pulleys, and saws, and for rails and toeboards about stairways, overhead gangways, and floor openings, and many other things not peculiar to paper mills.

The engineering and inspection division of the Travelers' Insurance Company, which I represent, has published two little booklets dealing with the general problem of accident prevention in paper mills, copies of which may be had by those who are interested, and I shall try to merely supplement the counsel that these booklets contain. Moreover, I shall speak only of wood-pulp mills, and shall not take up any of the special problems that arise in mills making paper from rags.

The inspector should take note of the yard conditions in general, and should give particular attention to the way in which the wood and sheet pulp are stored. The piling is sometimes so carelessly done that the stacks topple over, and the men often pull pulp wood away from the base of a pile so that overhanging ledges of interlocked pulp blocks are left projecting into space over their heads. Where portable elevators are used the inspector should note whether or not good judgment is used in placing each elevator in a firm and stable position, and whether or not guards are provided about the moving parts. Where conveyors are used to carry stock from the yard to the mill the entire apparatus should be inspected to see that there are no points at which a careless workman might be caught.

#### INSPECTION AN IMPORTANT FACTOR.

The driving mechanism of a paper mill is often located in the basement and operated with insufficient light, low head room, unguarded shafts, and wet, slippery floors. The conditions prevailing in a place of this kind should be very carefully studied and the inspector will usually be able to suggest improvements that will tend very markedly toward lessening the hazards without being in the least degree impracticable.

There are several places in a paper mill where proper ventilation has a direct influence on the health of the employes and on the accident rate. Dense clouds of steam are often present in the grinding room, for example—particularly in cold weather. The condensing steam keeps the floor in a very slippery condition and the steam itself greatly reduces both natural and artificial light. Workmen who are obliged to breathe an excessively vaporous at-

## VENTILATION

Adequate ventilation will tend to keep the atmosphere clear and greatly reduce accidents.

mosphere every day are naturally susceptible to contracting colds and other ailments. Adequate ventilation will tend to keep the atmosphere clear and will thereby greatly reduce the likelihood of accidents, as well as promoting the health of the men. The same conditions prevail, to a lesser degree, in the machine room, where large quantities of vapor are given off by the wet pulp as it passes over the steam rolls.

The use of electricity for power purposes is becoming more and more general in paper mills, and it is therefore necessary for an inspector to be familiar with standard and approved practice in this direction. Inferior equipment, faulty installation, and lack of proper maintenance present specially serious hazards in paper mills. Dry flooring is more or less efficient as an insulator in protecting the men against shock from contact with electrical conductors, but in paper mills the floors are wet almost everywhere and instead of affording some protection against shock they actually increase the danger. It is, therefore, vitally important to see that motor frames, transformer cases, and machines directly connected to electrical apparatus and circuit conduits, are adequately grounded; that wires carrying dangerous potentials are suitably enclosed or located well out of reach; that adequate protection is provided at rheostats, starting panels, and switches, and, finally, that the control devices are located in easily accessible places.

### SIGNALS AND THEIR USES.

The inspector should note the method of warning employes when dangerous operations are to be undertaken or machinery is to be started. If sound signals, such as bells or whistles, are used, it is essential that the sounds shall be loud and sharp enough to be readily heard above the noise of the mill, and if dependence is placed upon signal lights, these lights should be located so that the workmen cannot fail to see them. I believe, personally, that an

intermittent flashing signal is better than one that shows steadily. This principle is favored by advertisers using illuminated signs and I believe it could be advantageously employed in our industries.

Careful attention should be given to the digesters, in every respect. The inspector should look them over, with the utmost care, for evidences of leakage, and when a leak is found he must do his best to determine its cause and significance. If he deems it necessary to do so, he will, of course, insist that the digester be shut down, and that the cause of the trouble be investigated thoroughly and immediately. Naturally, however, he will not resort to such a heroic measure as blowing off a half-cooked charge of chips unless he has pretty definite and positive grounds for doing so. In many of the problems that arise in connection with digesters the inspector's lot is not a happy one and his task frequently calls for all the astuteness and ability that he can command. Those who are disposed to criticize an inspector who has had a section of lining removed from a digester, only to find that the corrosion that was feared had not occurred, should remember that it is hard for the human eye to penetrate six or eight inches of brick and cement and that hindsight is invariably clearer than foresight.

In entering a digester the inspector should be sure that it is free from gas, and well ventilated; and he should also see to it, personally, that the blow-off valve is closed, so that steam and gas cannot back up into the digester that he is in if another one in the battery is blown off.

#### TROUBLES OF THE INSPECTOR.

He should examine the lining carefully at all points, to detect any places where the acid has penetrated it. Any defects that are found should be remedied as soon as convenient, but it should be remembered that a hole in the lining does not always mean immediate danger of corrosion. The inspector should have with him a

## STEAM

Workmen who are obliged to breathe excessively vaporous atmosphere are susceptible to colds.



piece of flexible steel wire, similar to the "snakes" that electricians use for passing small electric conductors through conduits, and when he finds a hole he should investigate its depth and general direction by probing with the wire. If the hole is merely a small pocket it may be of no immediate importance, but if it is of some length, and especially if it appears to run to another opening at a somewhat different level, it may require attention at once. A hole that runs clear in to the metal of the shell may not give rise to much corrosion, not only because the acid will be brought into contact with the shell only in one limited spot, but also because the acid that enters the hole will soon become saturated with iron and then it cannot do further damage until a fresh charge is placed in the digester and fresh acid enters the hole. The most dangerous holes are those that are of some length and that open into the lining at *two places*. There may be a continuous current of acid through a passageway of this kind. If the hole runs along in contact with the metal shell the corrosion will be rapid, because the acid, being then constantly renewed, will go on dissolving more and more of the metal until it has cut quite a deep groove in the shell plate.

Scaffolds are often built inside of digesters, for the use of the men who have to repair the linings. They should be solidly and substantially constructed, because a fall from the top of a big sulphite digester down to the bottom of it is a serious matter. These scaffolds are often very poorly put together, however, and the cross-bracing is particularly likely to be slighted. The lack of care that is shown in building them is doubtless due largely to the fact that a digester must be idle while the repairs are going on and the management is naturally anxious to get it back into working order again as soon as possible so that it can be producing pulp. Hence the tendency to cut down the time allotted for building the scaffold. The inspector often has a good chance to look over a scaffold of this kind, especially when the lining is to be wholly or partly renewed, because he is then supposed to be notified, so that he can examine the condition of things when the lining is out.

#### A SERIOUS ACCIDENT.

I am here reminded of a special hazard in connection with a particular digester I was once inspecting. The lining required extensive repairs and a pole scaffold had been constructed in-

side the digester, so that the men could get at every part of the shell. I went over the lining myself, looking for trouble, while the men (who were French Canadians) were making the repairs. I was in there for perhaps two hours and all that time the Frenchmen were droning away upon one long, continuous, monotonous song. I don't remember what it was about—perhaps about the doings of the brave Papineau—but there must have been ten thousand verses to it for it was in full blast when I went in and was still going on with undiminished fervor when I came out. The hazard to which I refer, in this connection, was the one to which those Frenchmen would have been exposed if I could have laid hold of half a brick with eight good sharp corners on it. About an hour after I came out the scaffold collapsed and timbers and Frenchmen fell to the bottom of the digester, and I should have served as a foundation of the whole pile if I had stayed inside. One man had an arm broken, another had a collar bone broken, and most of them were considerably bruised. I was sorry for the poor fellows, but I could not help feeling that perhaps the collapse of the scaffold was to some extent a judgment on them for that interminable and unendurable song.

The blow-off valve and all its connections should be examined with great care, to see that they are sound and strong in all parts, and the inspector should see that proper precautions are taken, whenever a digester is to be blown off, to prevent men from being caught in the room or vat into which the digester discharges. I recall one case in which a man fainted or went to sleep in this place. Somebody called out a warning and as no reply came back the blow-off on a big digester was opened and tons of boiling-hot sulphurous pulp was discharged over the unfortunate man.

The inspector should assure himself that all the reducing valves and safety valves used in connection with the digesters are in good working order, and in particular he should see that there is a safety valve on the distributing tank from which steam is drawn off for the digesters.

The boilers used in paper mills sometimes develop bulges from overheating caused by deposits of pulp on the heating surfaces—the pulp fibers being introduced with the feed water. Whenever there is reason to think that this might possibly occur (as, for instance, when there is another pulp mill higher up on the same

## CRITICISM

Criticism should always be constructive and point out definite and practical remedies.

stream), the feed water should be passed through a filter of some kind, which will effectually remove any particles of pulp that the water may contain.

Finally, let me say that the inspector's criticisms should always be *constructive*. That is, they should be helpful and suggestive, and should point out definite and practicable ways in which the difficulties may be overcome. Mere criticism without further assistance may be of some benefit, but its

value is increased a thousand fold if the right way to do the thing is clearly pointed out. (Applause.)

### RELATION OF EMPLOYMENT DEPARTMENT TO GENERAL SAFETY PROBLEM IN PAPER MILLS.

H. W. STOKES, PRESIDENT, YORK HAVEN PAPER COMPANY.

Mr. Chairman and Members of the National Safety Council: Speaking broadly, a paper mill is very much like every other kind of manufacturing establishment in that it contains machinery. Machinery when it is at rest is safe, when it is put in motion whatever latent danger is in it becomes at once potential and an element to be reckoned with and controlled as far as possible, but it is always present.

Those who have preceded me today have given an outline of the character of machinery in general use in paper mills and the proper way in which it should be protected, so further reference to this on my part is unnecessary.

To obtain the highest degree of safety and protection to the employe, two sides of the problem must be considered, viz: The physical and the mental.

It requires no great expenditure to make machinery reasonably safe without impairing its efficiency, although it seems to be the

idea of some of the theorists who make our laws or who are employed to execute them that all machinery should be so protected that the hazardous element is eliminated entirely, or in other words made "fool proof," thereby reducing the efficiency of the machine to a minimum or rendering it almost useless for its intended purpose.

**SPECIAL PRECAUTIONS.**

All shafting should be boxed in as far as possible, every set screw on a pulley removed, and proper guards of frame or iron pipe of a reasonable height placed around danger spots.

The mental side of the question involves some different problems.

It may be taken for granted that few, if any, employers are really indifferent to the safety of their workmen, and that no one wants to have a man killed or even injured; yet the average employer is careless about it, and to my mind it is this carelessness on the part of both employer and workman which is responsible for most of the accidents.

By ingenuity and invention we have been able to create most everything, yet we cannot create life, though we can destroy it. A real responsibility, therefore, rests on every employer to insure as far as possible the life and welfare of those working for him, and every encouragement should be given to foster a spirit of care and watchfulness, not only on the part of superintendents and foremen but down the ranks to those in the lowest positions.

Where there is a danger spot put up a sign of caution. A man may get used to seeing it there and not notice it always, but the knowledge that it is there and the spirit which caused it to be there will have a subconscious influence, which, like an unseen hand, will warn him, and make him "stop and think" for a moment, and it is that moment which will quicken his faculties and make them alert. Under such circumstances the risk of injury is minimized.

The main idea is to impress on the mind of every workman that

## **The Careful Man**

Impress on the mind of every workman that a careful man is the best Safety device known.

a careful man is the best safety device known, and the employer must not lose sight of the fact that Safety First means as much to him as to his employee; that it is more economical to stop a piece of machinery a few minutes to adjust it or to put on a belt than to run the risk of an accident with the consequent claim for damages and the hardships to those dependent on the injured party.

#### FACTORY INSPECTORS.

Many of the states employ factory inspectors to make periodical visits to investigate conditions and suggest or order changes or additional safety devices. They are usually appointed through political pull, but as a rule have some qualifications for the job, and while some of their recommendations are not of great value they are human and appreciate a courteous reception.

From interviews with the factory inspectors of Pennsylvania, extending over many years, I am convinced that a hostile attitude toward them by the manufacturers, especially the smaller ones, is the rule. These manufacturers would be spared a considerable amount of expense and inconvenience if a different reception was accorded by them to the inspectors.

When an inspector finds the employer trying to reduce injuries and willing to meet him more than half way the result is doubly beneficial. It not only creates a friendly feeling on his part, but when he comes in contact with the workmen, will indicate to them that their safety and welfare is receiving proper consideration by those in charge of the management.

Workers should be encouraged to study the safety problem and make suggestions which will reduce the risk, to watch for and report defects in machinery, and the employer should co-operate by their safety and welfare is receiving proper consideration.

Employees are quick to sense the attitude of their employer and equally quick to reciprocate it, and the knowledge that Safety First is the motto and desire of the management, even though it may at times appear to bring a temporary loss, will in the long run pay a handsome dividend in greater efficiency, an increase of output, and a spirit of co-operation among the workmen which only those who have tried it can appreciate, and, what is still better, the satisfaction which comes to one from having done something to help his fellowmen. (Applause.) The Section then adjourned.

*The Prevention of Accidents Is  
a Duty I Owe Myself, My Fam-  
ily and My Fellow Workman*

## **National Safety Council**

### **Public Utilities Sectional Meeting**

**Philadelphia, Pa.**

**October 20, 1915**

**DR. E. B. ROSA, Chairman**

Acting Director, Bureau of Standards, Department of Commerce,  
Washington, D. C.

**W. J. CANADA, Secretary**

Electrical Engineer, Bureau of Standards, Department of Commerce,  
Washington, D. C.

### **WEDNESDAY MORNING SESSION**

**T**HE meeting was attended by about two hundred, the capacity of the room, with many standing. Dr. E. B. Rosa, Chief Physicist of the Bureau of Standards, Washington, D. C., acted as chairman, and Mr. W. J. Canada, Electrical Engineer of the same bureau, as Secretary. The following papers were presented:

"Linemen and Their Hazards," by Mr. Charles B. Scott, General Manager, Bureau of Safety, Chicago, Ill.

"Danger of Low-Tension Shocks," by Mr. H. S. Warren, Electrical Engineer, American Telegraph and Telephone Company, New York City.

An additional paper on the same subject, by Mr. Elam Milier, also of this company.

"Hazards of High-Tension Lines," by Mr. B. E. Morrow, Chief Engineer, Utilities Mutual Insurance Company, Schenectady, N. Y.

"Hazards of Gas Works," by Mr. James B. Douglas, Manager, Claim Department, United Gas Improvement Company, Philadelphia, Pa.

"Hazards of the Street," by Mr. Edward C. Spring, Manager, Philadelphia Division, Lehigh Valley Transit Company, Allentown, Pennsylvania.

The papers brought forth considerable discussion, among those taking part being the following:

On Mr. Scott's paper Mr. Gannett of Chicago, Mr. Ash of Pittsfield, Mr. Vincent and Mr. Spencer of Philadelphia, and Mr. Clements of New Haven, Mr. Warner of Youngstown, and Mr. Burton of Chicago. Mr. Scott's paper brought out the fact that the most serious hazards in the electrical industry are those of the lineman, and that a large proportion of these accidents are due to the human element and principally on account of physical and mental unfitness for the work, lack of effective rules, indulgence in dangerous practices and the misunderstanding of orders. Numerous instances and some statistics were given in support of this statement, and suggestions were given as to the selection, the discipline, the detailed instructions, and the guards and protective equipment which might reduce the hazards of linemen.

The points particularly emphasized in the discussion were the necessity for the foremen's constant attention and the importance of getting men to use the safety devices provided and to take sufficient interest to abandon dangerous practices. The great importance of proper instruction and supervision by foremen was particularly emphasized.

Considerable discussion also developed relative to the merits of the prone-pressure method of resuscitation as compared with methods employing mechanical breathing devices. The general experience appeared to indicate that the use of mechanical devices is of less moment than the immediate adoption of the prone-pressure method by men familiar with its application and directly at hand, since the mechanical devices usually are somewhat delayed in arrival on the scene of accidents and such a delay may be fatal. Various

methods of arousing interest in safety among linemen were also discussed.

The paper by Mr. Warren on "Danger of Low-Tension Shocks" discussed briefly the difficulty of securing reliable data on injuries by low-tension circuits and the doubt frequently existing as to whether a higher voltage did not actually supervene in cases of fatality assigned to low voltages. The factors involved in the severity of shocks were outlined, including the character of the body surfaces, the portion of the body included in the circuit, the internal body resistance and the duration of the shock. The physiological factors were also mentioned, and the suggestion made that in most cases it seemed probable to the speaker that persons in a normal physical condition would rarely be subject to injury by low voltages.

In the paper presented by Mr. Miller on the same subject, some outline was given as to the sources from which our present information on physiological results of electric shock and the voltages from which serious shocks or burns may result, are based. The doubt as to the voltage concerned in the accident was emphasized by this speaker also. In the newspaper reports of low-voltage fatalities the use of resuscitative measures is not reported to have been attempted in a majority of cases. In many cases the conditions were favorable to the fatality; that is, the person was standing on a damp floor or had his body wet with perspiration or otherwise. In over a third of the cases, however, resuscitative measures were reported to have been used, and in one-half of these a mechanical appliance. Some data was given by Mr. Miller as to the body contact resistances and assertion made of the probability that these will usually be high with accidental contacts. A quotation was also included from the report of the Commission on Resuscitation from Electrical Shocks, showing that the nervous effect on the muscles of respiration can usually be counteracted by prompt measures, whereas any interference with the regular beating of the heart is more likely to result in fatality.

Additional data was given with regard to relation of voltage to severity of shock, as shown by experiments on dogs, but no inferences were drawn with respect to ability of the human body to withstand electrical shock. A series of experiments made in England was referred to, with the conclusion of the experiments that



## Safety Habit

Safety, Security,  
Success—Safety af-  
fords Security to all  
who work under its  
rules. Success fol-  
lows.

the dangers of electric shocks at 500 volts have been misunderstood and exaggerated, and resulting in the further conclusion that in most instances of fatal accidents occurring from voltages under 500 volts unusual conditions must have existed, either external to the person or physiological.

The final conclusion drawn by the speaker was that low-voltage fatalities are very infrequent, except where quite special conditions exist. The discussion was

taken part in by Dr. E. B. Rosa, Mr. B. E. Morrow, Mr. Ash, Mr. Gannett, Mr. Vincent, Mr. Cannon, Mr. Canada and others, and brought out the fact that a considerable number of accidents do actually occur from low voltages and that the frequency of "unusual" conditions is sufficient to warrant attention to the protective measures against such accidents. Special locations, such as boiler-rooms, laundries, bathrooms, etc., were noted as particularly liable to cause good contacts should the human body be made a part of an electrical circuit in these locations. Certain experiences were cited in which linemen had been subjected to circuits of 28 volts d. c. to 36 volts a. c., these proving as high as they would with good contacts be willing to endure. Instances of physical examination showing apparently excellent physical conditions in persons injured by moderate voltages, were given. The discussion brought out the point that safety from low-voltage hazards is usually readily obtained by the grounding of external metal surfaces and the suitable guarding of live parts—two means of protection in which the manufacturers of electrical apparatus and devices can largely assist and in which the value of standardization of future practice is very apparent.

In his paper on "Hazards of High-Tension Lines" Mr. Morrow brought out the great differences existing in different sections as to what is considered high-tension. The advantages of strong line construction in preventing line failures were submitted, and the necessity was shown of providing sufficient working space to permit

line work to be carried on in comparative safety. The usefulness of tags and grounds was also mentioned as a means of safeguarding work on normally live parts. The advantages of portable lights for emergency work on overhead lines and the disadvantages of portable telephone sets, on telephone lines carried on transmission pole lines, were mentioned. The speaker also brought out the point emphasized in the paper by Mr. Scott, with relation to the great advance in accident prevention by the proper instructions and by close supervision of linemen, in the same way as is now becoming common for station men, was urged.

The discussion was taken part in by Mr. Sells of Atlanta, Mr. Spencer, Mr. Scott and others. The difficulty that comes from the nomadic tendencies of linemen was brought out, together with the great advantage that would result to the linemen themselves and no less to employers by the training of linemen in all parts of the country in reasonably uniform safety methods, such as are provided by suitable nationally adopted safety rules, since in emergencies resulting from considerable line failures or other causes, linemen need to be brought into one section from many others and the first few days is frequently a period of numerous accidents.

In his paper Mr. Spring emphasized the necessity for more actual work toward producing greater safety on public streets. The use of warning signs, barriers, and watchmen on guard about street excavations, pole work, and similar operations likely to increase the hazard to the public, was brought out. The necessity for establishing zones for loading and unloading passengers was mentioned, and the advantages of school instruction of children in street precautions was advocated. Playgrounds were also advocated as a means of keeping children off of streets as well as of organizing their play. The dimming of headlights was shown to have its disadvantages, as well as advantages, in making possible certain types of grade crossing accidents.

## The Safe Course

When in doubt  
take the safe course.  
If you don't under-  
stand your work,  
don't attempt it.

The discussion was taken part in by Mr. Doherty, Mr. Read, Mr. Smith, Mr. Morrow, Mr. Mack, Mr. Gannett, and others. It was brought out that the need of public instruction is very great and it is now necessary for public utilities to instruct their men to think for the public and to anticipate foolhardy acts on the part of the public, particularly of children. A considerable discussion developed as to the advantages or disadvantages of paying employees for time spent by them in safety discussions and classes. Many reported that the best results had appeared to come when the men met voluntarily and without pay. Others expressed the attitude that the cost of accidents is finally borne by the industry and that instruction in safety is fully as important as any other portion of the work in the industry. Some suggested also that where a man is paid he realizes the importance of his work, otherwise regarding it as somewhat perfunctory. It was generally agreed that instruction, not only of employees but of the public, must precede the attainment of any very considerable results in accident prevention by the growing hazards of streets and highways.

The paper of Mr. James B. Douglas listed the percentages of accidents in the gas industry caused by various features involved in the carrying on of work by employees. The fact was clearly brought out that the purely gas accidents constitute a small percentage of all accidents in the industry, the larger number being due to causes which are common to all mechanical processes. A number of typical accidents were given and a number of additional hazards were instanced for which illustrated accidents were not included in Mr. Douglas' paper. The subject matter of this paper had been so closely condensed by the writer and confined so entirely to very definite suggestions that abstracting is difficult. (The paper is, therefore, given in full in another place.)

Discussion was contributed by Mr. Morrow, Mr. Connor, Mr. Sells, and others, and a number of the points brought out by Mr. Douglas were again emphasized by the experience of others, but the paper proved so complete that little new material was added. Part of the discussion was upon the relative merits of different types of mechanical breathing apparatus, no conclusion being reached, but the advantages of breathing apparatus appearing to be reasonably well supported by good results in a number of asphyxiation cases.

The talk on the "Training of Street Car Platform Men" was given extemporaneously by Mr. Warnock, who emphasized the value of careful selection of employees, the close relation between honesty, courtesy, and carefulness, and the reduction of accidents in street car service as the time of service increases. The advantages of careful instruction and supervision were presented together with the importance of choosing the trainers with the utmost care. Various methods were suggested of obtaining and retaining the close interest of all the trainmen.

Before the close of the session Mr. C. B. Scott, as chairman of a special committee on by-laws of the Public Utilities Section, presented his report which was adopted and the by-laws accepted. Proceeding to the selection of officers, the session nominated and unanimously elected Mr. Harry Lucas of Philadelphia as chairman of the section and Mr. Alonzo P. Ewing as secretary.

Respectfully submitted,

W. J. CANADA.

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#### LINEMEN AND THEIR HAZARDS.

CHARLES B. SCOTT, MIDDLE WEST UTILITIES CO., CHICAGO, ILL.

Accidents to employees of electric light and power properties show a very large percentage to the linemen as compared with those engaged in other occupations incident to this industry. A careful study of the accident records of such properties also shows that those engaged as linemen sustain a large proportion of the serious and fatal accidents, which fact demonstrates that the importance of the safety of linemen is, in fact, greater than the numerical proportion of all accidents would indicate.

In dealing with the problem of the safety of linemen, it is very important that we do not forget that at least eighty-five per cent of the accidents to this class of employees are due to the human element and about fifteen per cent to mechanical or physical conditions of the property. Consideration of this ratio is fundamentally necessary in any intelligent plan for their protection. A careful analysis and the study of this failure of the human element develops that chief among the contributing causes for man-failure are phys-

**FOOLISH!**

When you take a foolish chance you invite someone to do likewise. Don't do it. Be careful.

ical or mental unfitness for the work, lack of definite rules, dangerous practices and misunderstanding of orders.

The records of the Commonwealth Edison Company for the year 1914 show that in its Street Department, which includes both overhead and underground work, the percentage of employees who sustained accidental injuries was twice as great as the percentage of all the other departments combined.

During the year 1914 the Public Service Company of Northern Illinois, a company operating both gas and electrical properties largely within the interurban districts adjacent to Chicago and operating about eight hundred miles of transmission lines, serving, approximately, one hundred and eighty communities, had a record of nine accidents of over thirty days' disability, eight of which were in the line department.

The Middle West Utilities Company operates public service properties in the smaller communities of several states. An analysis of the fatal accidents to employees reported by the subsidiaries of this company for the years 1913 and 1914 and up to October 15, 1915 shows a total number of fourteen fatal accidents to employees, of which ten occurred to linemen. Of the total amount of money expended on account of these fatal accidents to employees, three-fourths was expended on account of the fatal accidents to linemen.

From these facts we fully conclude that the safety of the lineman is a most important factor in the accident prevention problem of these industries.

I. SELECTION: Particular attention, therefore, should be given to the selection of men for this kind of work. Men of temperate habits, physically and mentally competent to perform the duties, should be selected. Men addicted to the use of intoxicants should not be employed in the line department. Frequently, sufficient attention is not given to the selection of linemen. Especially is this

true where extensive construction work is about to begin, when the man who happens along and declares himself to be a lineman is given employment and no effort is made to ascertain his fitness or qualifications to perform the work with safety to himself and others.

2. RULES AND PRACTICES: Many companies have certain definite rules and practices which are to be followed. Frequently newly employed men, and sometimes men who have been employed for some time, have ideas of their own which do not conform to the rules which the company has found by experience to be necessary. A certain discipline should control these conditions. A careful study of the practices of men should be made by the foreman and any hazardous practices corrected.

3. PARTICULAR AND DETAILED INSTRUCTIONS BY FOREMEN: Some foremen consider their duties fulfilled after they have briefly outlined the work to be performed, but, in order to insure the safety of the employes performing the work, their knowledge regarding the work should not be assumed. In all such cases they should be given detailed instructions by their foremen and these foremen should closely observe the men while they are at work in hazardous positions.

4. PROPER GUARDS AND PROTECTIVE EQUIPMENT: Rubber gloves, line shields and other approved protective devices should be furnished by the companies. In order to insure the use of protective equipment provided, there must be complete co-operation between the linemen and the foremen. Such co-operation can best be secured by interesting both foremen and linemen in accident prevention work. This interest can best be created by a direct appeal to the men—impressing them with the serious importance of such co-operation, of their own personal interest in their safety and of the beneficial results which may be accomplished by persistent co-operative effort. It cannot be maintained by occasional and spasmodic efforts in accident prevention, but the foremen and linemen

## SPLENDID!

It is a splendid thing to risk one's life when duty demands it, but it is foolish otherwise.

must be impressed with the fact that accident prevention is an important part of their everyday work.

5. **ALLOW SUFFICIENT TIME FOR PERFORMANCE OF WORK:** In some cases the engineering department arranges for the work to be done and also arranges with the operating department regarding the length of time that the lines are to remain dead. In many instances sufficient time is not allowed for the work to be done. In such cases the workmen are hurrying to finish the work and the foreman is also hurrying the men to complete the job in the time given and the men do not take time to provide proper protection.

#### DANGER OF LOW-TENSION SHOCKS.

H. S. WARREN, ELECTRICAL ENGINEER, AMERICAN TELEPHONE & TELEGRAPH COMPANY, NEW YORK.

I wish first of all to apologize for presuming to speak to you on a subject about which I know so little. The request to participate in this program was received at the office during my absence on vacation, and on the day after I returned, as I was considering whether it would be wise to accept the invitation, I received a copy of the printed program with my name included thereon. I concluded under the circumstances to undertake to comply with the request rather than to subject your committee to the inconvenience of procuring another speaker, my decision being based on the following three principal considerations:

1. That I wished to show my interest in and support of the work which your organization is seeking to accomplish.
2. That while I knew little or nothing about the subject I hoped to be able to study up something which would enable me to fill in the brief time assigned.
3. That if I declined in favor of someone else who was well informed on the subject the allotted space of ten minutes would be all too short for such a one to cover the subject adequately, hence he would doubtless prefer to make his remarks on some other occasion when more time could be devoted to them.

By way of further apology I have also to confess that my efforts to acquire information which might serve as a basis for some helpful remarks at this time have not been as successful as I anticipated.

partly on account of a very busy Western trip, which has kept me quite fully occupied, and partly because reliable information and illuminating facts on this subject are hard to get. Indeed, I have come to wonder whether the hypothetical individual mentioned above who knows a great deal about this subject is not purely a myth. At any rate, if he really exists I suspect he is of a retiring disposition and that difficulty may be experienced in finding him and getting him to appear and divulge what he knows. Hence what I say to you today must be very general in character and largely derived from theoretical considerations.

At various times I have heard, and no doubt you all have heard, of persons being fatally shocked by contact either directly or through some intervening agency with an ordinary 110 to 120 volt lighting or power secondary. I do not know personally of any instances of this sort and cannot assert their genuineness.

It is generally difficult even for those most intimately concerned in such occurrences to find out exactly how the accident happened. Usually there are some important factors which are not known and from the nature of the case can never be known. It may be that the person supposed to have received 120 volts was actually subjected to a higher voltage than superficially appeared or that by some diseased condition of the body he was abnormally susceptible to shock, electrical or otherwise, or some other unsuspected circumstance may have figured in the case. However, without attempting to pass on the actuality of any cases of this sort that may have been reported where persons in good physical condition are supposed to have been fatally shocked by electricity at voltages of 125 volts or less, let us see whether any reasonable explanation can be offered whereby such a positive occurrence may be accounted for.

I fancy there is no one in this room who has not at some time, and probably many times, sustained a shock of 110 to 120 volts, and in view of the trifling sensation and lack of effect other than an involuntary start produced by such shock it seems impossible that so slight an influence could be a direct cause of death in any case. To myself, personally, such shocks are unpleasant to about the same extent as the taste of fat meat, which I happen to dislike.

I recall that when in college it was something of a custom for us electrical students, when passing through the dynamo-room, to reach



## A Truth

"Many a truth is  
said in a joke."  
It is easier to issue  
orders than to give  
instructions.

with the two hands across the brushes of a certain 220-volt generator which was located near the passageway. This practice was repugnant to me, as I disliked the sensation of the shock, but it was less annoying than it would have been to confess myself a mollycoddle and incur the ridicule of my fellow students by making a fuss about it.

It is probably unnecessary to say that the 220-volt shocks never did any of us any harm.

Not only have we first hand evidence that shocks from secondary voltages are ordinarily harmless, but also there appears to be many cases where persons have sustained shocks from enormously higher voltages and yet escaped with their lives and even in some cases without injury. I do not speak from personal knowledge of any instances of this sort and no doubt in some cases the voltage actually sustained by the person was less than the full voltage of the circuit involved. To find out just how much voltage the person actually sustained would require more information as to the entire electrical circuit at that time than it is ordinarily possible to obtain. The voltage consumed in resistance to earth is often a large and unknown factor. However, there seems no reasonable doubt that instances have occurred where persons have sustained without harm shocks of several thousand volts.

It appears, therefore, that experience as well as theory gives countenance to the view that voltage alone is not the controlling factor in determining the effect of an electrical shock. It has been suggested that the amount of current which flows through the person's body, rather than the voltage impressed, is the true criterion of the danger. No doubt the volume of current is more controlling than the magnitude of the voltage, but I venture the opinion that if the phenomena of electric shock were fully understood they would be found to be quite complicated and the effects dependent upon the following several factors which are named in the possible order of their relative importance:

1. Distribution of current thru the body.
2. Rate at which electric energy is dissipated in body.
3. Total electric energy dissipated in body, involving time of duration of shock.

These assume the subject to be in normal physical condition. To what extent susceptibility to injury varies with certain sorts of ill health I am not prepared to say. Also, of course, alternating and direct currents produce quite different physiological effects, but this phase of the matter is not considered here.

If the above assumptions are in general correct it would follow that one of the most important factors in the problem is the magnitude of the resistance of the human body and particularly the contact resistances at the points where the current enters and leaves the body. The contact resistances probably constitute in general by far the greatest part of the total resistance of the body. If, therefore the person sustaining the shock is in some unusual condition with respect to surface contact, as, for example, with his hands immersed in baths of mercury between which a voltage is impressed, the surface contact resistances would be relatively small, hence the total body resistance would be abnormally small, the flow of current through the body correspondingly large and the energy dissipated in the body would be large and probably would be concentrated more or less at vulnerable points. In such a condition a voltage which ordinarily would be entirely harmless might produce serious or possibly even fatal results, especially if the shock were prolonged for a considerable time. To speak with confidence on this point or to state what conditions are essential to produce a fatal result would require a considerable amount of quantitative information which I do not possess.

My personal opinion is that for practical purposes voltages of 250 or less are not dangerous except possibly under very extraordinary conditions of exposure. When the maximum flow of current

## The First Law

Help us prevent accidents—look out for yourself first, the other fellow afterward.

is restricted by a substantial amount of resistance in circuit voltages considerably higher than 250 are not dangerous. For example, if the resistance were three or four times the total voltage it is improbable that a fatal shock could be caused even under the worst possible condition of exposure. If fatalities to persons in normal health have occurred at ordinary secondary voltages I believe they must have been due to some such extraordinary condition of surface contact as would allow an extraordinarily large current to flow and therefore cause an abnormally large energy dissipation for the voltage impressed. A similar line of reasoning would tend to explain how persons may be subjected to contact with high voltages and still not receive injury. If the contact resistance is large it may apparently, in some cases, amount to many thousands of ohms and the flow of current through the body and resultant dissipation may be small. Even if the impressed voltage is large, and particularly if the contact is of only momentary duration, no harmful results would follow. —

I regret that the ideas above expressed are not founded to a larger extent on observed facts and hence may be largely in error, but my experience has not been such as to bring me in close personal touch with accidents of this sort. I trust, however, that these few remarks may suffice to assist in suggesting to others, points upon which they can furnish information which will be helpful in drawing final conclusions. —

#### DANGER OF LOW-TENSION SHOCKS.

ELAM MILLER, AMERICAN TELEPHONE AND TELEGRAPH COMPANY,  
NEW YORK.

In preparing these notes on the danger of shocks from low-tension electric sources, I have attempted to present the available information in such a way as would lead to a general discussion of the subject. I have confined myself to the consideration of fatalities which, it is reported, have occurred on potentials of under 500 volts. This, in general, means light and power secondaries of 440, 220 and 110 volts. After having examined the engineering, legal, medical and journalistic data, and conferring with persons whose

duties presuppose familiarity with dangers from this source, I am of the belief that it would have been somewhat better to have assigned a title in the form of a query, that is: "Is There Danger from Low-Tension Shock?"

At the very outset I must say that engineering literature is almost devoid of references to fatalities occurring from voltages of 220 or under, and there are but few references to fatalities occurring from voltages under 500. In general, the medical literature bearing on this subject is confined to the physiological discussion of the mechanism of death by means of the electric current, and the discussion of experiments on animals, particularly dogs, from which certain inferences may possibly be drawn as to the effect of the electric current on the human body. Autopsies performed on the bodies of electrocuted criminals have also added to medical knowledge of this subject. From legal sources may be abstracted the testimony of experts who, however, in general, base their opinions upon the existing medical knowledge and such information as they may have been able to gather from engineering sources. Newspaper accounts of fatalities reported as resulting from contact with low-voltage sources are fairly prolific, but, after having attempted a fairly careful analysis of a considerable number of such accounts, I have been forced to the conclusion that this sort of information is not of great value. In many cases there is a doubt as to whether the voltage that caused the fatality was not very much higher than that reported.

Despite the fact that it is my feeling that the information obtainable from journalistic sources is not of great value, I shall, nevertheless, briefly describe my findings. In all, I have been able to obtain newspaper descriptions of sixty-three fatalities, covering a period extending over the past five years, occurring on voltages reported to be under 500. Of these, twenty are reported to have occurred on voltages of 110 or less, twenty on voltages from 111 to 220, and twenty-three on voltages from 221 to 480. In twenty-seven of the sixty-three cases the statement that the victim "died instantly" occurs, and in none of these cases is there any mention of resuscitation methods having been applied. If it is a fact that resuscitation methods were not attempted in any such proportion of the cases as is here indicated I think we may properly reach the conclusion that a considerable proportion of the fatalities were the

## WAR!

The greatest enemy of Safety is Carelessness. Conquer him or he will cause you injury or death.

result of neglect, in that apparent death was mistaken for real death. In sixteen of the cases reported, conditions surrounding the accident were admittedly favorable to a fatality—that is, the victim was either standing on a damp floor, standing in water, or his body was covered with perspiration or his clothes were wet. In fourteen of the cases there is clear evidence that death may not have been due to electric shock, but to secondary causes, such as a fall which re-

sulted in striking the head, internal injuries from a fall, a weak heart or other physical debility of some sort, a broken neck, etc. In twenty-four of the cases it was reported that resuscitation methods were applied, and in eleven of these it is reported that the pulmotor was employed, the time of employment varying from twenty minutes to two hours.

With respect to the physiological effects of the electric current, all medical authorities agree that the paths followed by the current, the current density, and the time, are the important factors. This at once leads to the conclusion that the location and degree of contact are important. Depending upon the location and size of the electrodes and the sort of contact made, the resistance of the human body varies over wide limits. In certain cases it may be of the order of 200,000 ohms, and in other cases under 1,000 ohms, though this lower limit would be unusual in the case of accidental contact. Much of the resistance is surface contact resistance and is particularly high when the cuticle is thick or where callouses exist, as, for instance, on the palms of the hands and soles of the feet. With specially prepared electrodes located at selected points the resistance may be quite low. In penal electrocutions, it is reported that from 7 to 10 amperes are forced through the body by potentials in the neighborhood of 1,700 volts. Under these conditions the resistance of the body is, therefore, of the order of 200 ohms. That such low resistances could ever result from accidental contact seems quite improbable.

It is generally agreed that death from electric shock may result from either of two causes, and at this point I think I cannot do better than quote from the report of the Commission on Resuscitation from Electric Shock, presented at the thirty-sixth convention of the National Electric Light Association in Chicago in June, 1913:

"The electric current may kill either by temporarily paralyzing the nervous control of the muscles of respiration, or by stopping the regular beat of the heart. When the heart is seriously affected it ceases to contract as a whole, but continues to contract in parts here and there, so that it appears to quiver. It is then said to 'fibrillate.' In this condition the heart fails to keep the blood circulating and death quickly results. At present no practical procedure has been discovered which will restore the regular beat of the heart in man after it begins fibrillating. Hope of resuscitation is now restricted to proper treatment of the cases of paralyzed respiration; and since deprivation of oxygen for about ten minutes injures irremediably some of the nerve centers of the brain, it is particularly important that measures for resuscitation be applied immediately and continued until natural breathing returns. In some instances, however, the heart may be merely weakened without being made to fibrillate; in such cases artificial respiration may be of vital importance, because a greatly weakened heart leads to impairment or total stoppage of respiration, which in turn destroys the last vestige of the heart-beat. In all cases, therefore, an attempt should be made to restore natural breathing. Fortunately, artificial respiration can be applied by laymen without immediate need of complicated apparatus."

This report then goes on to recommend the Shafer, or "prone-pressure," method of artificial respiration with which electrical workmen are becoming more and more familiar.

In so far as I have been able to discover, there is no completely reliable information with respect to the maximum current that the

## SAFETY

"Safety should be made the first consideration of every employe." Be Careful!

human body will withstand when the path of this current traverses vital portions, such as the heart, brain or spinal column, as, for obvious reasons, direct observations cannot be made. One authority, Dr. Henry Lewis Jones, in his work entitled "Medical Electricity," states that:

"In the absence of direct observations, the minimum fatal current for human beings may be estimated at about one-half to one ampere."

As complete a set of physiological experiments as I have been able to locate are those that were carried out by Dr. A. M. Bleile, Professor of Physiology in the Ohio State University, and reported in the transactions of the American Institute of Electrical Engineers for the year 1895, under the title "The Cause of Death in Electric Shock." Dr. Bleile made his experiments on twenty-seven dogs, using a 130-cycle alternating current source of comparably low voltage—that is, 100, 70 and 50 volts. His electrodes consisted of copper plates covered with sponges moistened with salt water and applied at the base of the skull and over the middle of the back. Currents of the order of 0.2 ampere resulted in death when the time of application was of the order of 4 seconds. With currents of the order of 0.5 ampere, death usually resulted when the time of application was but one second. The dogs experimented upon weighed on the average about twenty-eight pounds. Methods of resuscitation by means of artificial respiration were, in Dr. Bleile's experiments, unsuccessful. Dr. Bleile did not find in his experiments that the current had any disintegrating effect on the brain or nerve tissue, in so far as could be determined by microscopic examination. He does not attempt, on the basis of his experiments on dogs, to generalize with respect to the tolerance of the human body to electric shock.

In engineering literature may be found two particularly interesting papers on electric shock read before the Institution of Electrical Engineers (British) on February 27, 1902; one by Dr. Alexander B. Trotter, entitled "Electric Shocks at 500 Volts," and the other by Mr. F. B. Aspinall, entitled "Electric Shocks." Mr. Trotter carried out a series of experiments with the view of determining whether or not any considerable danger resulted from accidental contact with 500-volt trolley circuits. He made experiments upon himself and some thirty other persons, including twelve women and six children,

and reached the conclusion that the dangers of electric shocks at 500 volts have been much misunderstood and greatly exaggerated. He discusses cases of fatal accidents from 500 volts and shows that in all such cases the fatalities could be attributed to the existence of unusual conditions which resulted in very much more perfect contact than would ordinarily occur in electrical accidents, or to marked physical debility of the victim. Mr. Trotter concludes that with sound, dry boots, hardly anybody can feel a shock when standing on the live rail of an electric railway with one foot and a running rail with the other. With damp or wet boots a shock is felt, but in no case was it serious. He states that while wearing dry boots, without large nails, the resistance was so great that it was perfectly safe to touch a wire in contact with a trolley wire while standing on the ground or on the rails. Mr. Aspinall discusses in an interesting manner certain pertinent questions with respect to electric shock in general. He emphasizes the fact that everyone is not equally susceptible to an electric shock, and concludes that the physiological condition in which one is at the time one receives an electric shock makes a very great difference with respect to its severity. The interesting conclusion is reached that in cases of severe electric burns the likelihood of a severe shock is reduced, as the burn is evidence of a high surface contact resistance. With respect to the voltage required to cause death, he states that below 600 volts the conditions must be abnormally favorable; that below 1,000 volts the conditions must be favorable; and that above 1,000 volts the higher the pressure the more probable it is that the conditions necessary to cause death will obtain. He compares the relative dangers of alternating and direct current and comes to the conclusion that there is nothing more dangerous in one than in the other.

Our own experience in the telephone industry has not led us to the conclusion that there is any particular danger from low-tension sources. Our troubles from electric shock are not those that arise from voltages employed in signal service, but occur from accidental contact with foreign electrical sources. In an attempt to determine from a reliable source whether or not fatalities occur from contact with low-tension circuits I interviewed Mr. J. C. Robinson, Claim Agent of the New York Edison Company. Mr. Robinson tells me that in his experience as Claims Agent for the New York Edison



## HUNCHES

When you scent  
danger, stop! look!  
listen! Something  
may be wrong. Be  
sure of Safety.

Company, extending over a period of seven years, he knows of no fatality occurring on 220 volts or less. There have been cases of fatalities occurring on such circuits, but in each instance it has been definitely determined that it was due to a breakdown between the primary and secondary of a transformer or to other causes which impressed upon this circuit a voltage in excess of normal. Mr. Robinson states that this is not only the experience of the New York

Edison Company, but is as well the experience of distributing companies in general throughout the country.

### HAZARDS OF THE STREET.

EDWARD C. SPRING, ASSISTANT TO PRESIDENT, LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.

On account of the universality of the subject and the wide scope which street hazards have, it will be impossible for me, in the ten minutes allotted to this subject, to do other than to touch lightly upon the more important points of street hazards.

When we take into consideration that 57 per cent of the accidents today are upon the public highway there is certainly a large amount of work to be done to eliminate this great sacrifice of life. In the month of February last there were as many people killed by automobiles on the streets of New York City as during the operation of the elevated and subway lines from their construction to the present time. Statistics tell us that one person is killed for every 8,000 population upon the highways of the country, whereas on the steam railways only one for every five and one-half million. The time has come when strenuous action must be taken in safeguarding the interests not only of utility companies but of the public in general, and less talk as regards Safety First, but greater action.

You will pardon me if I confine my remarks more particularly to public utilities, as I am more familiar, perhaps, with this line of accidents than any other.

More attention must be given when opening up streets for track work, conduit, sewer, water, gas and other excavations of a like nature, that ample protection is made for the safeguarding of the pedestrian, with flags by day and lanterns at night. Foremen of gangs must be better posted upon the results of careless work and they must be brought to a more realizing sense of the responsibility that rests upon them in the protection of their companies' interests as well as the public at large.

In all work upon underground conduits, when the manholes are open, barriers should be placed about the same and a red flag or a man in attendance on the surface. In all work upon poles in the city streets, particularly through congested sections, the linemen at work on the poles should be protected by a ground hand, who should keep people away from the pole while work is in progress, as a pair of plyers or gas tongs, or any other tool used by the lineman in falling might injure a pedestrian most seriously.

A greater co-operation with municipalities and municipal boards of control must be entered into for the establishment of safety zones for the loading and unloading of passengers and for such traffic regulation as will avoid any congestion.

As I am a firm believer in the education of the child, that the future interests of Safety First may be more permanently founded, the work among the children in the schools cannot help but be of the most effective character. The safety campaigns which are being conducted at the present time in our larger cities by companies such as the Brooklyn Rapid Transit, Boston Elevated, Philadelphia Rapid Transit and Lehigh Valley Transit, are showing such results of a convincing nature that the money spent in this work is one of the best investments of any public utility company. The safeguarding of the children's interests in going to and from school by street

## **Saves Time**

**R e m e m b e r, i t  
takes less time and  
trouble to prevent an  
accident than report  
it. Think safety.**

monitors appointed from the upper classes is working out to good advantage, and the training, through lectures and moving pictures, of the mind of the child is carrying its effect to the parents as well. The cautioning of the child to cross streets at the prescribed intersections, to keep away from all wires that are hanging loose, and to "STOP, LOOK AND LISTEN" before crossing steam or electric railway tracks are all factors which go to make a campaign of this character most effective.

I would strongly advocate the co-operation of all utility companies with the local authorities in the establishment of playgrounds in various parts of the municipality. Not only do these playgrounds offer a physical training for the child but then it keeps the child off the streets and away from the greatest hazards which their lives are subject to.

The Boy Scout movement of the country is one to receive the highest commendation in the work that it is doing, and there is no other factor today that can be utilized to better advantage than the co-operation of the Boy Scouts of America in the safety work of the National Safety Council. They have already proven their effectiveness in many cases where large crowds have been brought together in the better handling and regulation of the same.

The turning out of headlights and the dimming of the same on the part of transportation companies is being asked for universally, but this is a matter which every transportation company must look into most carefully, that their interests will be thoroughly safeguarded in case of an accident.

The grade crossing, both on the highway and in municipalities, is one which is demanding the universal attention of the country today. The terrific slaughter of life at grade crossings is unparalleled save by the terrific war across the water. Municipal regulations and legislation and stringent action must be exercised in eliminating this feature of accidental death, as the public today does not seem to realize and does not take the precautions necessary to safeguard its interests at such a hazardous point.

The advent of the automobile industry in this country today is showing increases in accidents along this line of over 100 per cent, and the country has no other hazard today upon our highways to contend with more than the reckless, unlawful and insane manipu-

lation of automobiles by careless and inefficient drivers. I believe in more than preaching Safety First. Rigid action is necessary in the elimination of this accidental feature.

The company with which I am connected has instituted a system of obtaining the number and entering prosecution at once where an automobile passes a common carrier when loading and unloading passengers. In all cases where an automobile driver violates the laws of the road or in any other way shows his inefficiency to handle his machine, these numbers are also taken by the train crews and other employees of the company and a letter is written to the owners by the claim department of the company calling their attention to this violation of sane operation and placing the same upon file in the claim department, should a future accident occur to this same machine, that it may be used in evidence against them.

I strongly advocate the solicitation of the co-operation of automobile clubs in various communities, that a representative interested in safety work may take up with the various clubs the necessity of co-operation in Safety First, that the large number of people who are daily losing their lives shall cease.

Our company has had the most pleasant relationship with the Licensed Chauffeurs' Association and it may be of interest to note that in all the accidents that our company have had of this nature none have occurred, nor any complaint made of any mention, that has been handled by a licensed chauffeur—the majority of accidents being by inexperienced and reckless drivers.

In summing up this brief report on the hazards of the street, we must first bring about a closer co-operation between the employee and the company, that the employee may be thoroughly enthused with the Safety First idea; that he may know what an accident means to his company, that he may know what the loss of life or injury means to a human being. After we have accomplished this, then a closer co-operation with the public at large. No work can be accomplished and no end successfully attained without the thorough accord and co-operation of all of those interested. One of the gigantic tasks that the National Safety Council has to meet today is its relationship with the public, and until such a time as the public in general becomes more alive to the work of the National Safety Council and safety in general the large number of accidents upon our highways will not decrease.

## APPRECIATION

Your efforts to prevent carelessness and correct dangerous conditions will be appreciated.

## HAZARDS OF HIGH-TENSION LINES.

BRYCE E. MORROW, CHIEF ENGINEER, UTILITIES MUTUAL INSURANCE COMPANY, SCHENECTADY, NEW YORK.

In many companies the highest operating potential is called "high tension" and in some companies it is as low as 1100 volts. A well known authority when asked what he considered high tension said:

"Up to 300 volts low potential,  
300 to 900 volts medium potential,  
Above 900 volts high potential,  
Above 1500 volts extra high potential."

Limits, however, are not definite as engineers may differ. Certain hazards exist on all lines, even those carrying low voltage—the contact itself not being fatal, but falls from high places are often caused by slight shocks, which result in serious accidents.

## TRANSMISSION AND DISTRIBUTION LINES.

On account of their exposed position the transmission lines are possibly the weakest link in the high-tension transmission system and even the failure of a single insulator may cause a complete shutdown of the system. It is, therefore, necessary that very careful consideration be given to the design and erection of such lines.

In general, steel towers are used for high-tension transmissions of a permanent character, as they insure an increased reliability which is a feature of special importance where there is competition from unfailing steam plants located in the same field of distribution. However, many wood, iron and reinforced concrete poles are used and excellent results have been obtained.

The more important reasons for the greater reliability of a steel tower line over one of wooden poles are their substantial construction, which makes them capable of withstanding sweeping storms.

Lightning troubles, such as splintered poles, etc., are not present, and they are, of course, indestructible from forest fires. On the other hand, easy access to either circuit can be obtained in a double circuit tower, making it possible to keep up service on one circuit while repairing the other.

In repair work or changes where a hazard exists, clearance or working space should be such that the workmen may carry on repairs without being in dangerously close proximity to the live circuit. Before starting any work on dead lines they should be short-circuited and grounded at the place or places where work is to be done. As an additional precaution it is considered good practice to ground and short-circuit lines at both ends as well as to tag the switches controlling them. If these precautions are taken there is little chance of workmen becoming confused and attempting to work on live circuits.

Artificial light is necessary and is almost indispensable where repairs or changes have to be made during the night. The light should be portable and of such design as to enable a man to carry it, as there are places on many systems which can only be reached on foot. Attention should be paid to tools and appliances used on the work. Where working space is limited, tools not fitted for the work may easily cause serious accidents. Many devices are used for making temporary or permanent repairs while transmission lines are energized, such as the so-called "floating insulator," or specially designed tools, which are mounted on the ends of insulated wooden rods. The work is done during the day, and it is claimed, at a considerable reduction in cost.

The importance of not interfering with the service, where only one transmission line is used, is of considerable value. Telephone lines run on the same pole or tower line as the transmission circuits, if not properly installed, are a source of danger. Likewise, the practice of having patrolmen using portable telephones and tapping on the line, in order to acquaint station operator of his whereabouts,

## The New Man

The new man, to whom you give the hand of fellowship today, may injure you tomorrow.

is bad practice, and men have been seriously injured thereby. On a long transmission line, the system may become accidentally grounded, which induces a dangerous potential on the telephone wire. Telephone wires have broken and have swung into high tension lines, oftentimes with fatal results. There is a well established system of providing telephone booths, which may also be used for the storage of repair materials, or insulated stands with the telephone apparatus properly protected.

By far the greatest hazard in construction repairs or changes on high tension lines is the "human element." Linemen, as a rule, are of a roving disposition and are not contented for a long time in any one section, journeying back and forth to all parts of the country. Many receive their training with telephone or telegraph companies and fail to appreciate the difference between this and power transmission work. Due to climatic conditions, in sections of the country where precipitation is slight and the air dry, men have changed insulators on a live line operating at 20,000 volts with bare hands and with comparative safety. If this were attempted in other localities a fatal accident would result. One can understand how a man accustomed to work in a section where insulators are changed on high tension lines with circuits alive would very probably forget the danger he might incur while at work in a location where climatic conditions are different.

Instruction books which are furnished linemen contain information which, if studied, would be of material assistance to them in their work. However, experience has demonstrated that they are seldom if ever consulted. Unfortunately, instruction books are of little value unless the management demands and enforces strict compliance with rules. This can only be brought about through frequent talks and by the use of pictures illustrating good and poor practice in the work.

Rules furnished linemen should be as simple and as few as possible. Much good can be accomplished by a few minutes' talk by the foreman as to the hazards on the particular work to which they are assigned and the all-important fact instilled into their minds by frequent repetition that the only earning power they have in the world is a sound body, for which no settlement could possibly compensate in cases of serious injury, and that *chance takers* are not desirable employees.

The habits and physical condition of the workmen engaged in line work have an important bearing on elimination of accidents. The time has arrived when operating officials must give more consideration to the class of men that are hired for line work. They should have preliminary training in power plant or substation work, as well as training as groundmen, in order that they may acquaint themselves with the operating conditions in a general way, and be made to realize that their work is of just as much importance as the station or office men and that accidents are a reflection on their ability as workmen.

When operating officials give the same thought to the education of line foremen and linemen that at the present time is given other classes of help many of the hazards that now exist in high-tension lines will be eliminated.

#### HAZARDS OF GAS WORKS.

JAMES B. DOUGLAS, MANAGER CLAIM DEPARTMENT, THE UNITED GAS IMPROVEMENT COMPANY, PHILADELPHIA, PA.

With but few exceptions the hazards met in the operation of gas works are those met in other industrial plants. Many persons think that "gas accidents" predominate in the casualty experience incident to the manufacture of illuminating gas. Such, however, is not the case. The result of a survey of some 6,200 employee accident cases reported by 119 gas companies located in thirty-five states, which I have just completed for the American Gas Institute, showed that the accidents peculiar to the industry were:

Leakage of gas, outside (including three fatalities), 1.03 per cent.

Leakage of gas, inside, 1.62 per cent.

Explosions (including three fatalities), 3.01 per cent.

Amounting in all to but 5.66 per cent of the total cases received.

The remaining classifications were:

Machinery in operation (including one fatality), 2.63 per cent.

Elevators (2 fatalities), 2.19 per cent.

Falling in or through openings (one fatality), 4.23 per cent.

Hot material (one fatality), 4.88 per cent.

Objects, hanging or swinging, .75 per cent.

Objects, protruding, 4.36 per cent.



## Your Brother

Warn any man  
when danger is near.  
If he knows, all  
right. If not, you  
may save his life.

Objects, falling (one fatality),  
11.29 per cent.

Flying particles, 7.87 per cent.

Vehicles (three fatalities), 8.69  
per cent.

Nails, wires, etc., 6.53 per cent.

Handling of material, 9.73 per  
cent.

Slipping or tripping, 8.93 per  
cent.

Hand tools used by injured, 12.80  
per cent.

Hand tools used by fellow em-  
ployee, 2.19 per cent.

Animal bites, 1.75 per cent.

Miscellaneous (one fatality), 5.52 per cent.

From this it will be observed that in combating the accident frequency we are confronted by the problems met by other employers in the industrial world.

Although time forbids going but lightly into the subject to which I have been assigned, I shall endeavor to give you an idea of some of the most likely causes of accidents around a gas works:

In the generator house some of the accidents are due to:

Employees not standing at a safe distance from the mouth of the generator after opening the lid, in order to avoid being burned by the burst of flame which immediately follows the removal of the lid.

Pieces of fuel falling from overhead conveyor and its supporting structure. To be prevented by trimming and the removal of any loose pieces lodged overhead.

Tripping over obstructions or tools left on the floor, and catching feet in holes in the floor. Of course obstructions should be removed as far as practicable. Tools should be stored out of the way, preferably in racks, and the holes should be closed.

Falling of tools and similar articles from floors. This type of accident is prevented by copings or toe pieces around the edges and openings of the floors.

Hot material getting into workmen's shoes while they are engaged in clinkering; striking knuckles against the floor or against

standing objects while engaged in the same operation; misblows in sledging; also scalds due to carelessness in not standing at a safe distance when wetting down clinkers. Accidents in the class first mentioned are prevented by lacing shoes snugly or by wearing Congress shoes. To prevent accidents in the other classes, it is only necessary to BE CAREFUL FIRST.

Collisions between and with fuel buggies and barrows. Where conditions permit buggies and barrows should not be returned over the course used when loaded. In other words, a one-way passage is the safest.

Loose floor plates. Uncovered seal pots and relining bricks insecurely piled are also hazards to be looked for. All floor plates should be securely fastened in place when set and if they become wobbly they should be immediately secured in place. Seal pots should be covered or surrounded by guards, as serious accidents have been caused by employees stepping into these pots and sustaining burns which have become infected.

It is important to see that bricks are so piled that they will not become overbalanced. (In this connection, I am glad to note striking illustrations of the safe and the unsafe ways of piling bricks, in Bulletin No. 90 issued by the National Safety Council.) When men are at work relining generators it is advisable to place a screen over the opening in the tops of the generators to protect those inside from being injured by falling bricks and fuel.

Foot injuries, due to the absence of toe guards at the floor levels of elevator shafts, are also experienced from time to time. These are prevented by toe plates installed at the floor levels. If the plate is set at the proper angle the employee will involuntarily withdraw his foot to the platform as soon as it is touched by the toe guard; if not, the toe guard itself will automatically return the foot to the platform and serious injury will be avoided.

In the retort house are found a number of hazards in addition to some of those just mentioned. They are:

## Your Brother

Some of the men  
in our plant are in-  
experienced and do  
not know where dan-  
ger exists.

Unguarded coke holes in floors in front of retorts, resulting in employees stepping therein while clearing up coke, etc. Unless care is exercised to see that employees working in the cellar near these holes are warned before the hot coke is dropped they are liable to be burned.

Steam, which results in scalds when employees stand too close to the pile when wetting down hot coke.

Hot tar, which causes burns and eye injuries when employees fail to wear goggles and gloves while bulling or cleaning the pipes which conduct the gas from the retorts to the hydraulic main.

Employees are also liable to be run into by charging and discharging machines while closing retort doors if not very careful. It is advisable to place a signalling device, such as a horn or gong, on these machines to give warning when they are about to move. It is important also to see that the gears of these machines are guarded. The wheels also should be guarded to prevent foot injuries.

In the boiler and engine rooms care should be exercised to see that the passageways are kept clear, and that fire tools, barrows and other obstructions are kept in their proper places. Fuel and ashes should also be kept within restricted limits.

At times nails and pegs are found extending from walls at face level to hold tools and clothing. Such projections make dangerous hazards when not in use and they should be removed. Clothing should be hung in lockers and firing tools should preferably be kept in racks.

It is also dangerous to leave weights on dampers and regulator levers on account of the likelihood of their falling and causing injury.

Loose bricks are frequently found on the tops of boiler sets and they should be promptly removed or rebedded.

Where a safety valve blows off across the top of a boiler the outlet should be so extended that the steam will be discharged vertically, above body level if practicable.

The bursting of water gauge glasses is comparatively frequent and care should be taken to see that proper guards are installed to protect the eyes of employees engaged in adjusting these gauges.

Where boilers are connected in battery separate blow-offs should be run in order to avoid the possibility of the steam backing up while the boilers are being cleaned or repaired.

Moving machinery, shafting and belting should be guarded either by railings or expanded metal screens. (It is important to become familiar with the safety standards prescribed by the state.)

When cleaning purifier boxes in purifier houses, employees are liable to be effected by gas in the absence of proper ventilation. Care should be exercised to see that employees do not work in too close proximity when forking oxide. Minor injuries, such as puncture wounds due to fork tines, because of the presence of the oxide, are very likely to result in blood poisoning.

The soles of the shoes worn by employees engaged in this work should not have holes in them, because of the likelihood of infection following a mere scratch on the foot.

The passageways between purifier boxes usually being narrow, it is especially important to see that tools are not allowed to remain therein.

The principal hazards in the coal shed are falling objects and insecure walkways and platforms, and unguarded trestles, from which employees have fallen and sustained serious injuries. Every effort should be made to keep loose pieces of coal and tools off trestles and the ledges at the tops of the bins in order to avoid head injuries.

Care should be exercised to see that walkways and platforms are of the proper width and that proper railings are provided where practicable.

Naked flames should not be permitted where coal dust is present, as they might ignite the dust.

In the yard care should be exercised to see that barrows and carts are stored in their proper places in order that they will not be run into by thoughtless employees. If necessary to have a guy line at body level a warning sign should be hung thereon.

Valve stems and boxes above grade in passageways should be leveled in order to avoid the tripping hazard.

Boards and discarded material should be piled at points designated therefor. It is safest to bend over or remove old nails from loose boards.

Small pipe lines running across yards should be boxed in or placed below the ground level, preferably the latter.

Care should be exercised to avoid placing guys and marking stakes

## **The Next Man**

When you finish a job leave conditions safe for the next man. It only takes a moment.

where liable to cause employees to trip, and as soon as the guys and stakes have served their purpose they should be removed.

Gates should be made fast so that they will not swing in the wind and strike employees.

All persons should be kept off the ash dumps as far as practicable, owing to the likelihood of their stepping into concealed fires.

Exhausts should be made to discharge vertically and above head level.

Sumps or steam pits should be so located that the steam will not cloud passageways.

Railings should be placed along stairways and around platforms and walkways of holders, also on the galleries in front of siphon valves.

Loose material should be removed from tops of holders, stairways and platforms, from which it is likely to be blown and do harm.

It is advisable to drill holes in any depressions in the platforms and walkways in which water gathers, in order to let off the water and avoid the formation of ice, which might result in slipping accidents.

Of course, systematic safety work is the most effective step towards results in this field. At our Station A works in Philadelphia the decrease in working days lost due to accidents during the first nine months of the present year was 17 per cent, as compared with the same period of last year, when less men were employed.

A varying difference in the conditions and the size of gas companies makes it impossible to outline a safety organization that will meet every demand, but the following simple plan should fulfill the requirements of the average gas company:

The safety organization to consist of a chairman, who should be the manager, superintendent or his assistant, a safety inspector, and three other employees appointed from the manufacturing, distribution and commercial departments by the chairman of the committee. This committee should meet at least once a month, when

the work of the month should be gone over and discussed. Special meetings of the committee should be called in the event of a serious accident or of one of peculiar interest. Safety items in the trade journals should also be reviewed and the committee should compile and issue such information and statistics as are applicable to the company and existing conditions, should pass upon articles, pictures, etc., for bulletin boards; should investigate and act upon such recommendations as have been submitted, and should devise ways and means to keep alive the interest of the employees to the importance of exercising care to prevent accidents. Interest in the subject is, of course, intensified by safety talks, lantern slides and motion pictures. First aid competitions, etc., are also very beneficial.

The safety inspector should be chosen from among the employees of the company and should be one who can devote a good part of his time to the work of looking after safety details. He should make thorough inspections of the plant periodically, noting all accident hazards and hazardous working conditions. It should be his duty to pass upon the installation and maintenance of safeguards.

The man appointed from the several departments should be chosen from the rank and file of the employees. Care should be taken in making these appointments, as the men chosen should be proficient in their own work and should command the respect of their fellow employees. The duties of these men should be to be always on the alert to note and report accident and fire hazards and to make weekly inspections of company work and property. All recommendations should be referred to the safety inspector, who should investigate the conditions reported and submit the result to the committee. These men should meet with the safety inspector at such times as may be desired by him, when all new cases should be reviewed and new prevention work and ideas discussed.

The personnel of the employee members of the committee should be changed from time to time in order that all suitable employees

## **Safety Rules**

Every man should  
read and understand  
the book of rules.  
Have you a copy?

may eventually receive training in safety and broaden their knowledge of the work.

I trust that in the foregoing, which is necessarily incomplete, I have given information that will prove useful to all who are endeavoring to eliminate the accident hazards in gas works. (Applause.)

#### A PRAYER.

Lord, grant me this, while at my daily task,  
That I may never be unmindful of my brother's weal;  
That all his erring steps I may foresee,  
Forewarn him of a thoughtless act; to ever feel  
The wondrous blessing of the sight undimmed,  
The gratitude for body, clean, unmarred;  
Make me alert, let my perception be for him, a guard.

Grant unto me, that in no home shall come,  
Through fault of mine, the reaper grim;  
That widow's tears may not be shed, because of him;  
That childish eyes may never peer in vain  
To welcome back the toiler to his rest;  
Make me—Thy Servant of Immunity—grant me this  
That he unto the end may go—by Safety blest.

*Individual Precaution for Safety  
by Every Employee Is the Only  
Guarantee Against Accidents*

## **National Safety Council**

### **Textile Sectional Meeting**

**Philadelphia, Pa.  
October 20, 1915**

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**JOHN CALDER, Chairman**

**President, Manufacturers' Equipment Company, Boston, Mass.**

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**T**HE meeting was called to order at 9:15 o'clock by the Chairman, Mr. John Calder, President, Manufacturers' Equipment Company, Boston, Mass., one hundred and seventeen members of the Council being present.

The first paper of the session was read by the Chairman on "Safety Provisions in the Textile Industry Abroad."

#### **SAFETY PROVISIONS IN THE TEXTILE INDUSTRY ABROAD.**

**JOHN CALDER, PRESIDENT, MANUFACTURERS' EQUIPMENT  
COMPANY.**

Ladies and Gentlemen of the National Safety Council: It has been said that death and taxes are the only human certainties and accident is a good third, but there is a healthy skepticism as to



whether we have reached the irreducible minimum in the ratio of any of them. Public opinion, fortified by facts, insists that compensation at its best is a poor "cure" for accident and demands more "prevention." It is no answer to this in the twentieth century to say that the mill owner knows his own business best and that he needs no prompting or assistance from others. During the last decade safety engineering has grown to professional standing and the mill owner must prove his protective capacity, as well as assert it, by securing, as others are doing, progressive reduction in the number of preventable casualties.

The total industrial injuries in the United States are enormous and greatly exceed those of older civilizations, but the statistics, unless carefully analyzed, easily lend themselves to exaggeration and unjust conclusions as to responsibility.

This is the age of scientific method in business and the humanitarian argument will lose nothing of its force by the application of the former to ascertain the truth about industrial casualties. Confining myself strictly to cotton mills, let me ask what is the historical setting, what are the economic factors and statistics of death and injury in the industry, and what are we doing about it?

In both the Eastern and Western worlds the textile industry was, in the order of industrial development, the foremost in adopting power processes and self-acting machinery and it has maintained this lead to the present time. No industry has so large a proportion of mechanical appliances per employe and in consequence the risks attending all extensive use of machinery were first noticeable in the cotton industry and were soon found to be of a serious nature.

#### FIRST FACTORY ACT.

The machine cotton industry arose in England at the end of the eighteenth century. It did not imply the "cotton mill" as now existing, but it involved the rapid displacement by the factory system of production of domestic cotton working, which had been conducted with manual labor for at least one hundred years previous, and it massed the operatives in populous places and confined premises under unsanitary working conditions, which caused the serious deterioration of their health in a single generation. Early in the history of the machine cotton industry the state had to step in to protect the child, both against its employer and its parents. The first factory

act, largely a dead letter through lax enforcement, was passed in 1802 to abolish the exploitation of pauper children by local authorities who offered them on an indenture system to cotton manufacturers. The latter, carried away by the vista of great wealth, were unable to see to what this employment of young people of tender years for long hours at unremitting tasks would lead. This act, however, took no notice of the accident risk.

The epoch-making inventions, which made the cotton factory system possible, were quickly carried to New England, whose valuable water courses were soon harnessed to mills of a similar type. In England, where water power was poor and of relatively small volume, there were 188 water power cotton factories in operation in 1788. The first Boulton and Watt steam engine was placed in a cotton mill in 1785 and the perfecting of Watt's invention led, early in the nineteenth century, to great extensions in the factory system of cotton working and intensified the previously existing evils under which the operatives suffered. The exploitation of children continued and the parents were equally desirous with the employers that this should be so.

In New England the large, valuable and economical water powers were for long the cotton factory sites and are still of great importance. The development of the industry here was more gradual, and the hardy native stock, which formed the first operatives, was consequently less affected by working conditions—novel alike to them and their employers. From the first, however, the cotton mill has been inherently a dangerous place, and little foresight was exhibited in constructing some of its mechanical appliances with due regard to the ignorance and eagerness of the agricultural laborers who flocked to the mills. The invention of cotton machinery and of the steam engine practically brought about an industrial revolution in both countries and it was long before the consequences to the operatives were generally perceived and reflected upon.

It was not until 1844, in England, and due to the labors of Robert Owen, a prominent cotton mill owner, and Lord Ashley, afterwards the great Earl Shaftesbury, and a few others, that any notice was taken by the state of the havoc wrought by injury from machinery on the operatives. The evidence, however, was so overwhelming that in a legislature, in which the laborer had no control and little representation, the non-provision of certain safeguards was made a

## Is It to You?

The Safety Movement is an earnest, honest effort to prevent accidents and save lives.

criminal offense. Even then the protection afforded extended only to prime movers and transmission, the actual cotton machinery not being dealt with. A step in the right direction, however, had been taken and the example of what could be done to safeguard, by giving thought in the whirl of wealth creation, was not lost upon many of the more enlightened and humane mill owners; but it was only through a succession of statutes, each strongly opposed and covering

the next thirty years, that the legal right of the cotton mill operatives to have a healthy and safe work-place provided by their employers was established in Great Britain.

### SHORTENING THE WORK DAY.

All this development had as its subject only cotton, and later other textiles, but it was seen by 1867 that no logical distinction could be maintained between these and the much larger volume of power manufactures which had sprung up with the advent of the steam engine; and the statute of that year made the safety and accident provisions identical for all factories. The lassitude which a twelve or fourteen hour day caused in women and children, predisposing to accident, was partly relieved by the ten hour law passed in England in 1819, though negligently enforced, but it was not until 1874 that Massachusetts led the way in the United States with a similar law.

The industrial revolution in the United States did not reach its climax until about eight years after the Civil War. At that period employers' liability rested only on common law, factory restrictions were practically unknown and child labor laws little respected. In the meantime, a large part of our textile machinery was imported and it benefited from such protection as foreign makers had standardized. In other safety respects as late as 1874 protection was wholly dependent upon the initiative of mill owners.

It was not until thirty-three years after the first English statute

providing for safety in cotton mills had been passed in Great Britain that the State of Massachusetts, always in lead in the United States in education and industrial betterment, first recognized industrial safety in its Legislature by the Act of 1877, in which the main provisions of the English Factory Acts were duplicated.

For the next quarter of a century in the United States, after the Massachusetts Act of 1877, little legislative progress was made in the matter of safety and conditions remained decidedly below European standards. Nevertheless, in individual plants striking improvements were effected by employers in co-operation with state officials, insurance undertakers, and manufacturers of machinery. The total of injuries, however, never fully revealed owing to inadequate reporting of accidents, could not be hid, and the great interest awakened a decade ago in the conservation of our natural resources speedily spread to the vital statistics of our industries, with results which have been felt all over the land through the attention of nearly every state legislature for the past five years in the form of laws, both wise and lesswise.

During the quarter of a century following 1877, a great change for the better came over the English machine cotton industry, the stunted operatives of 1844 recovered their physique, the native stock persisted in their adherence to the cotton business and are now, in physical working condition and inherited skill, the best body of textile operatives. A large part of this they owe to the body of English Factory Legislation, which, though stoutly opposed, placed the employers in the closely competitive cotton business on an absolutely equal footing, and enabled employes to demonstrate greater efficiency with a shorter working day and a safer work-place.

#### EMPLOYMENT OF FOREIGNERS.

The development in the United States has been quite otherwise. The cotton manufacturers here have had to face a great industrial

### To Make Good

Some one has said that "the man who has a job has a chance." Yes, he has a chance—to make good.

revolution, which they were powerless to control. The native stock raising its standard of living and ambitions gradually forsook the cotton mills and its place was taken in succession by a series of foreign races in the order of the immigration from Europe and practically in a decreasing order of intelligence and standards of living. It became difficult in some districts to procure any English-speaking labor and this handicap (gradually extending to overseers as well) seems destined to become permanent. Nevertheless, it must be reckoned with for effective progress in industrial safety. We need more, not less, precaution in our cotton mills than in Europe. Many American employers in our textile and other plants have risen to the occasion and gone far beyond any local statutory requirements in their anxiety to cope with the situation. Special mention may be made of the United States Steel Corporation, which, in some of its plants, has had to cope with something like seventeen languages and dialects and has obtained remarkable reductions in casualties. The safety committee work of Ludlow Associates, one of your own members, will also well repay study by mill executives. Such cases, however, have been the exception rather than the rule. As a matter of fact, the industrial tragedies of the forest, the field, the street, the factory, and the mine, for a long time weighed very lightly upon the American conscience. Employers, employes, and the general body of citizens were alike in responding chiefly to catastrophes and in having little concern to prevent the daily loss of life and limb during our great industrial development which obsessed us very much as it did the early cotton manufacturers in England and grew beyond all anticipation. The American cotton manufacturer has made all industries his debtors for the way in which he has co-operated in the scientific reduction of mill fire losses. This has been accomplished without legal pressure and solely by mutuality in experiments, experience and burden. It is only logical to expect that mill casualties will be attacked in the same businesslike and successful manner. Today, happily, the majority of employers in all our industries are deeply concerned to avoid accident to employes and they are guided by no narrow interpretation of the existing statutes. It is wholly in accord with the American spirit that so much has been accomplished without legal pressure in the last ten years of wide publicity on industrial injuries.

I do not propose to touch here on the subject of compensation for

accident. Indeed, I do not believe that a compensation burden on an industry is in itself the creator of the best accident-reducing conditions, though the excellent technical assistance of the safety experts of insurance undertakers has been beyond question helpful. The wave of interest due to the recent incidence of this new economic burden upon the cotton industry is bound to subside, and sooner or later the consumer will foot the bill. As a matter of fact, it is not in the mill counting house, the state house or the insurance office, but in the mill itself and amongst the responsible executives there that we must look for the initiative that will procure the reduction of the present accident rate in cotton manufacture and a corresponding relief in compensation payments and insurance cost, not to speak of the moral gains.

It is well known that the economic factor has been and must still be the mainspring of the cotton manufacturers' progress as of all other industrial enterprises, but this does not shut out consideration of employes whose health and safety affect the long result. To an extent regretted by all mill owners, the mill is still to many of its operatives only a stepping stone and the seeds of precaution and of safety habits have to be sown largely on a moving soil.

#### RECORD OF CASUALTIES.

For the statistical portion of this necessarily limited discussion I confine myself to the accident returns from the cotton mills of Massachusetts whose records are well maintained and whose casualty experience is not the least favorable to the industry. What then is the extent of the reported injury sustained in the cotton mills of that State which represents the most advanced safety practice in the industry? These mills employed between July 1, 1912, and June 30, 1913, an average of 112,384 operatives, of whom nearly one-half were females, and in that time 7,489 casualties were reported. Fatalities do not figure prominently in the cotton mill risk. In the above, thirteen males—two of them minors—were killed, and 7,476 persons more or less injured; the injury ratio being 66 per 1,000 employes per annum. Seventeen hundred and sixteen (1,716) of the accidents or 23 per cent occurred to females. Specific mutilation was sustained in eighty-one of the non-fatal accidents and involved the loss of four eyes, two hands, one foot, two or more fingers in twelve cases, one finger in sixty cases and one toe in two cases. The other

## ALWAYS

Keep your eyes open for danger. — You may step over it going, but you may step into it coming back.

injuries varied from serious wounds and contusions to trifling hurts involving no absence from work.

The disability due to these injuries was under two weeks in over 76 per cent or in 5,711 cases; two to four weeks in 862 cases; four to eight weeks in 564 cases; eight to 13 weeks in 205 cases; 13 weeks to six months in 113, and over half a year in twelve cases.

This, in brief, is what happened in one year in the cotton mills of one State, and any helpful study of

prevention involves the further questions: Where did these accidents occur, how and why, and what can be done in the premises?

Owing to the supreme place necessarily occupied by machinery in the cotton industry, it is desirable to isolate at once all trivial occurrences and these beyond remedy from physical safeguarding though not necessarily unpreventable by better supervision and instruction. When this is done we find that in Massachusetts in one year the three chief mechanical elements in all mills, viz.: belting, shafting and gearing, caused three times as much lost time per employe in cotton mills as in the thirteen other leading industries (Table 1), and the element of gearing alone was four and one-half times more dangerous.

If we compare the lost time in cotton mills from the above causes with that in another industry also using much machinery, we find the ratio is over five times and the special item of loss of time from gear accidents nearly thirty-four times.

Such economic facts should lead cotton mill owners not to rest on past achievements, but to organize more thoroughly than has been done to reduce these losses and others which they imply on both employer and employe. There are not lacking indications that the burden on the industry of compensation premiums will shortly be increased, owing to alleged unfavorable experience with the cotton mill accident risk.

In the cotton industry the amount of machinery investment per employe is much larger than in most others, and its speed and in-

tensive use for production increase the chance of injury to operatives from machinery sources. The inherent mechanical risk of the industry is well recognized and is further illustrated by the analysis in Table 3 of 557 textile accidents reported consecutively in Massachusetts.

It was noted that in 192, or about a third of these injuries, no lost time was caused; in 277, or one-half, the absence was under two weeks, and in 88 cases, or about 16 per cent, disability extended over two weeks. It is not my present purpose to go into the details of the well-known methods for preventing, by more physical safeguards, a number of these accidents, but rather to urge such executive interest as will secure their constant application and improvement. The comparison made in Table 2, between cotton mill and shoe machinery gearing accidents, illustrates the results where the commercial responsibility for the safety conditions on leased machines lies wholly in the hands of the maker; in this case a single large corporation with a well-deserved reputation for care in this matter. On the other hand, though cotton mills might copy with advantage many of the protective precautions adopted with gears in the shoe industry, the cotton accident risk is distinctly increased by reason of the multiplied places at which a single worker may receive injury as compared with a shoe machinery operative. These considerations are mentioned in order to make fair comparisons, which cannot be done by quoting statistics alone.

## FORBIDDEN

"No employe is permitted to remove guards or operate machines without them."

### CLEANING MACHINERY IN MOTION.

It is worthy of notice that 120 of the above accidents or, more than 20 per cent of the total, occurred while operatives were cleaning machinery in motion, a cause of accident much more prominent in the textile industry than in any other. The technical necessity to clean at frequent intervals in order to maintain quality and quantity of product, the economic disadvantage of idle machines, the interest of employe, employer and frequently overseer in the earnings



TABLE 1—DAYS LOST TIME FROM INJURY PER 1,000 EMPLOYEES.

| Cause—         | Thirteen Industries. | Cotton Mills. | Ratio. |
|----------------|----------------------|---------------|--------|
| Belting .....  | 21.7                 | 43.6          | 2.0    |
| Shafting ..... | 12.4                 | 30.2          | 2.4    |
| Gearing .....  | 21.1                 | 98.2          | 4.6    |
| Total .....    | 55.2                 | 171.9         | 3.1    |

TABLE 2—DAYS LOST TIME FROM INJURY PER 1,000 EMPLOYEES.

| Cause—         | Shoe Industry. | Cotton Mills. | Ratio. |
|----------------|----------------|---------------|--------|
| Belting .....  | 20.0           | 43.6          | 2.2    |
| Shafting ..... | 7.7            | 30.2          | 3.9    |
| Gearing .....  | 2.9            | 98.2          | 33.8   |
| Total .....    | 30.6           | 171.9         | 5.6    |

due to absence of stoppages, all tend to make cleaning in motion one of the problems of the industry. So difficult has it been to prevent such dangerous employment, even where both the intention and the action of the management have been directed towards safety, that mechanical solutions of the difficulty have been sought. Where no strenuous effort is made administratively to check cleaning in motion, it goes on daily as a matter of course with inevitable accident.

The administrative solution demands a good deal closer supervision and education of employes than overseers, as a rule, have been able or willing to give to the matter, and, unless mill owners take up the issue vigorously, little improvement can be expected from executive handling of the class of labor now available for textile operations.

The mechanical solution is a sure remedy for a number of the frequent injuries due to cleaning in motion. It involves considerable expense. It will not take care of the risk due to permitted cleaning in motion of main line shafting and transmission, but it does solve a large part of the cleaning accidents. It consists in developing interlocking machine and gearguards which automatically prevent the application of power to any machine while the guards are removed or are opened up for cleaning purposes. There is nothing new in the principle, which has long been applied to military apparatus and many other types of dangerous appliances. It is applicable alike to gearguards, roll covers, clothed cylinders and parts running at high speed which can cause serious injury even after the power is shut off. Machinery builders will gradually standardize

TABLE 3—ANALYSIS OF PARTS CAUSING 557 CONSECUTIVE ACCIDENTS.

## MECHANICAL ELEMENTS INVOLVED.

| Machinery—           | Rolls, Cylinders. | Gears. | Belts, Pulleys. | Chains, Sprockets. | Pulleys, Flying Shut-tles. | Fillers, Bobbins, Spin-dies. | Miscellaneous Re-volving Parts. | Miscellaneous Redp-rocating Parts. | Total. |
|----------------------|-------------------|--------|-----------------|--------------------|----------------------------|------------------------------|---------------------------------|------------------------------------|--------|
| Openers and pickers. | 6                 | 4      | 5               | 1                  | ..                         | ..                           | 4                               | 2                                  | 22     |
| Cards .....          | 21                | 19     | 7               | 2                  | 1                          | ..                           | ..                              | ..                                 | 50     |
| Lappers .....        | 7                 | ..     | ..              | ..                 | ..                         | ..                           | 7                               | ..                                 | 16     |
| Combers .....        | 8                 | 2      | ..              | ..                 | ..                         | ..                           | 3                               | ..                                 | 13     |
| Drawing .....        | 7                 | 6      | ..              | ..                 | ..                         | ..                           | ..                              | 7                                  | 20     |
| Speeders .....       | ..                | 14     | ..              | ..                 | 1                          | 25                           | ..                              | ..                                 | 40     |
| Spinning; twisting.. | 18                | 12     | 5               | ..                 | ..                         | 55                           | ..                              | 2                                  | 92     |
| Winders; quillers... | 3                 | 3      | 2               | ..                 | ..                         | 2                            | ..                              | ..                                 | 10     |
| Reelers .....        | ..                | ..     | ..              | ..                 | 1                          | 1                            | ..                              | ..                                 | 2      |
| Slashers .....       | 3                 | 3      | ..              | ..                 | ..                         | ..                           | ..                              | ..                                 | 6      |
| Beamers .....        | ..                | ..     | 2               | ..                 | ..                         | ..                           | 2                               | ..                                 | 4      |
| Mules .....          | ..                | ..     | 6               | ..                 | ..                         | ..                           | 5                               | 4                                  | 15     |
| Looms .....          | 4                 | 15     | 7               | ..                 | 33                         | ..                           | ..                              | 117                                | 176    |
| Marline layers.....  | ..                | ..     | ..              | 1                  | 1                          | 2                            | ..                              | ..                                 | 4      |
| Dye plant.....       | 19                | 2      | ..              | 1                  | ..                         | ..                           | ..                              | ..                                 | 22     |
| Printing .....       | 2                 | 2      | ..              | ..                 | ..                         | ..                           | ..                              | ..                                 | 4      |
| Calenders .....      | 8                 | ..     | ..              | ..                 | ..                         | ..                           | ..                              | ..                                 | 8      |
| Cloth winders.....   | 4                 | ..     | ..              | ..                 | ..                         | ..                           | ..                              | ..                                 | 4      |
| Folders .....        | ..                | ..     | ..              | ..                 | ..                         | ..                           | ..                              | 21                                 | 21     |
| Shearers .....       | ..                | ..     | ..              | ..                 | ..                         | ..                           | 5                               | ..                                 | 5      |
| Miscellaneous .....  | 3                 | 3      | 5               | ..                 | ..                         | 2                            | 8                               | 2                                  | 23     |
| Total .....          | 113               | 85     | 41              | 5                  | 37                         | 87                           | 34                              | 155                                | 557    |

such appliances if mill owners will take the initiative and specify them on new machinery, but they are sure to be omitted if the buyer exhibits no interest in this regard. Interlocking devices have already been applied to openers, pickers, cards, lappers, doublers, drawing, slubbing, roving and ring spinning frames, etc. Wherever they have been insisted upon they have been forthcoming, and it is a significant commentary on the influence of factory legislation in effecting improvements that twenty years ago Russian cotton mills were importing safer machinery than we now use because of the strict safety regulations under which that nation permitted the exploitation of the moujik in its textile business.

## **Taking Chances**

Remember it is  
better to cause delay  
than it is to cause an  
accident.

### **MORAL RISKS INVOLVED.**

Wonders in accident prevention have been already accomplished by plant owners in other industries, comparing in every respect with the experienced, intelligent and privileged men who own and operate our cotton mills. The textile industry owes it to itself to get busy on this matter and I have no doubt that, as the consumer must foot the bill in the end, the nation will not be unwilling to bear a share,

though it will probably, in the future, scrutinize most closely the itemized particulars of any claim for assistance.

This analysis of cotton accidents and their prevention would not be complete without frank recognition of the moral risks involved in the industrial world. I have investigated many thousands of accidents, both in the textile and non-textile industries, and the blame is pretty evenly divided between careless employees and neglectful employers. The chief causes are ignorance, carelessness, fatigue, unsuitable clothing, insufficient lighting, unsafe structures, obstructed and defective floors, dangerous machinery, dangerous operations, absence of safeguards, and not least, absence of safe-working supervision.

In a great many instances the carelessness and ignorance of operatives are contributory and cannot be off-set by physical safeguards or legal enactments, but they can be greatly reduced by painstaking instruction and supervision. The National Safety Council, and the affiliated Boston Safety Society of which your worthy President is a Vice-President, consists of employers in every description of industry and their responsible executives and engineers who have set themselves to get at the truth about industrial accident and who will accept nothing but facts. They have got them a-plenty. They are after "prevention" not "cure," and they include in their membership the best safety experts in the country who give their services and advice to the council, free of charge, for industrial betterment.

## NEEDS OF TEXTILE MILLS.

What our textile mills need in the first place is an awakening of interest among mill superintendents, foremen and overseers in safety work. In spite of the age of the machine cotton industry and its long acquaintance with accident, it has not taken the place it should have done in the modern safety movement. It was the first to experience and combat the industrial dangers due to power industry and it ought to be in the front rank today in co-operating with other industries in solving what is a common problem, which demands enlightened executive action, rather than reliance upon pressure from the state, which can never be more than an advisor and inspector of performance. The safety committee on which operatives from various departments serve, along with executives, the Safety Suggestion System, the organization of workers against dangerous practices, are conspicuously absent in many cotton mills where more expensive attempts to safeguard are not lacking. We need to take greater advantage of our moral resources in the mills and to profit by the increasing knowledge about the psychology and physiology of industrial accidents.

In all the work the societies I have mentioned undertake, they lay emphasis upon the conversion of mill executives to an active propaganda and on the absolute necessity for socializing the safety movement, which required for success the pooling of industrial accident experience and a co-operation of forces which no legislation can procure. When the cotton manufacturer has complied with the minimum legal safeguarding provisions and has posted various prohibitory notices in his plant and drawn the attention of overseers to the state restrictions upon employment about machinery, he has only touched the fringe of the subject. It is still necessary for him frankly to recognize and apply his mind to the continuing casualties in his own and other mills, to challenge every assertion that reduction is impracticable and to be foremost in inoculating his staff with

**Poor Parents**

Negligence is the  
father of disaster—  
Carelessness the  
mother of accidents.

a spirit of hopefulness and ambition in all matters of industrial betterment.

If the man higher up does not find time to do this, then nobody will, but, if he becomes a convinced advocate of the new safety measures and realizes his privilege and responsibility, he will effect changes which will react upon the whole spirit of his establishment and will greatly aid in the solution of the admittedly serious difficulties at present experienced in training and retaining the only labor now available for textile operations. (Applause.)

CHAIRMAN—The next speaker will be Mr. W. C. Swallow, of Manchester, N. H., who will speak on "The Hazards of Openers, Pickers, Cards, Etc." Mr. Swallow.

#### THE HAZARDS OF OPENERS, PICKERS, CARDS, ETC.

W. C. SWALLOW, AMOSKEAG MANUFACTURING COMPANY.

Mr. Chairman and Ladies and Gentlemen of the National Safety Council: In taking up the subject of hazards in connection with cardroom machinery we are brought at once face to face with the most dangerous machinery operations in the manufacture of cotton cloth, and after an examination of the machinery involved we are driven to the conclusion that the manufacturers of textile machinery have not as yet seriously considered the matter of accident prevention.

The possibility of arousing the manufacturers by the concerted demands of the users of this machinery will, I have no doubt, be discussed at this meeting. We will proceed to consider the hazards of pickers and cards as they are found in the ordinary cotton mill.

In our experience at the Amoskeag Manufacturing Company we have found that while only approximately 10 per cent of the total number of employees work in the cardrooms, over 25 per cent of the injuries about machinery are confined to this department. This covers picking, carding and roving machinery. We have found that one of the worst hazards of all is the beaters on the pickers, and if it is possible for the operative to open the beater covers or any of the covers on the picker, accidents—serious accidents—will surely follow. If, on the other hand, these covers are fastened in such a way as to prevent their being opened while the machine is in operation, the picker as an accident-maker loses much of its serious aspect.

Before locking these openings we had many accidents to picker hands, many of them non-English speaking, and in some cases new to the work, caused by opening those covers to remove some obstruction while the machines were running, and losing a hand or an arm in the beater, which revolved so rapidly that the operative failed to see or appreciate the deadly consequences of reaching into the opening. The fact that opening these covers was contrary to orders did not prevent their being opened "when the Boss was not around."

The photographs of the lock-guard for beater bonnets will give you a good idea of how the lock was applied and its operation. There is a bar which slides over each cover and securely locks it while the machine is running and the machine must be stopped before the locking bars can be drawn back, as in order to clear the covers the rod indicated in the photograph must go through the hole in the flange on driving shaft. This prevents the picker being started until covers have been replaced and the lock thrown back over them.

#### HEWING WITH BROADAXE.

Much can be done beyond these protective guards to reduce the hazards of the picker, but we, at the Amoskeag, are new in the safety movement and have been hewing away with a broadaxe at the high spots. We hope to be using finer tools when the next Safety Congress convenes.

The revolving top flat card has been the cause of a considerable number of injuries. There are many places on our ordinary card where more or less serious injuries to the fingers or hands can be received in gears or belts or against the clothing, but the two greatest hazards—the ones which have been productive of the most serious injuries—are the licker-in cylinder, with its cover unfastened, and the main driving pulley, guiltless of belt shipper or other protective device to prevent the hand or arm of the operative from being caught. The sharp, coarse teeth of the licker-in makes short work of the fingers or hands that come in contact with it while in motion, and as an effective means of preventing injuries in this particular place we have fastened the covers with bolts and nuts and the cover is removed only by the grinder when the card is stopped. I believe nearly all makers now adopt this practice, but we had a considerable number of older cards on which the licker-in covers were not fastened.

## BELTS!

Never try to shift  
a moving belt by  
hand. Never reach  
between large, fast-  
moving belts.

Probably the most serious of our injuries on cards have been caused by the operative getting an arm caught in the belt operating the main drive pulley. This was a very serious hazard, as we found that a man who got his arm caught in this way was nearly always thrown up onto the card, in one case with sufficient force to break off the burnisher roll stand which is about three-quarter by three inches of castiron. You can well imagine that the injuries received in this

way were very serious and sometimes fatal. By adopting the belt shipper, shown in these photographs, we have gone a long way in eliminating accidents of this kind. These cards ran for years with no shipper or other guard and belts were ordinarily shipped by hand or with a stick or bobbin.

One particularly bad spot was a lot of about 300 of a certain make of card. These were more than ordinarily dangerous, so far as the driving pulley is concerned, because on the inside, between the main driving belt and the side of the card was another pulley, driving, by about a 2-inch belt, over to the lick-in cylinder. If the operative had occasion to put on this small belt he often, against the rules, of course, reached his arm through the main driving belt. This brought him into a very dangerous position and the results were sometimes disastrous. To avoid this hazard it was necessary to change the driving arrangement completely. These photographs and sketches will perhaps better explain the situation. The pulley on the main shaft which carried the lick-in belt, was removed and the shaft shortened so as to bring the main driving pulley close up to the card, and the flange of the lick-in pulley removed; then the lick-in drive was arranged on the other side of the card, as shown. As these cards are now being operated they are no more dangerous than the newer models.

We have also added to all our cards the roller to collect the strips from the top flats and so cause these strips to roll up into a lap instead of dropping down on top of the doffer cylinder. Previously

when these strips did drop down it happened, in several instances, that the cover which is opened to grind and strip the cylinder was carelessly left open and when the operative attempted to collect the strips a serious injury to the hand was the result of coming into contact with the clothing on the main cylinder.

On some cards the cover or hood over the doffer cylinder allows too much space, this space being in the form of a wedge, so that the fingers may be drawn in and injured by the clothing on the doffer. This might happen when the doffer clothing was being ground—the grinder having occasion to feel of the surface. While accidents sustained in this manner are not serious it is far better that the cover be close to the surface of the doffer and that the cover end abruptly instead of being beveled away from the cylinder so as to allow a wedge-shaped apperature; or, better still, that a part of the cover be hinged so as to allow the hand of the operative to be easily withdrawn if caught in this manner.

From a sanitary standpoint the dustless stripper now in use on the Amoskeag has a distinct advantage, as the dust from the stripping operation is largely done away with.

#### STEADY, WELL-TRAINED HELP.

We believe that a steady, well-trained lot of help are a great deal less liable to injury through carelessness than the more shifting and unstable class, and the young and therefore more irresponsible boys. At present only adults work on cards and pickers in our plant, and while a considerable percentage are of foreign birth, their standard of wages is such that the turnover of employes has been very greatly reduced. This can only result in a more stable and highly trained organization.

Many injuries on pickers and cards are received by men new to the work and we are now working on a plan to insure the careful instruction of such beginners and to lay upon the overseer, with

## NEVER

Don't try to operate a machine you don't understand. See the foreman for instructions.



increased emphasis, the necessity of care and forethought required to properly discharge the obligation which the company assumes when it puts a man to work amid new and unfamiliar surroundings. These are tentative forms which are being considered and will, no doubt, be adopted in substantially their present form. It is planned to have these certificates filled out for each learner who enters the employ of the company, on work where any appreciable hazard is involved. These certificates will be issued from the employment department, where all help is engaged, and will be filled out by the overseer and second hand and returned to the employment department and filed in the personal record of the employe. From a legal standpoint they will refute the claim of any injured person that he was not properly instructed or warned against the danger of his work or that the machinery or apparatus on which he was set to work was not in a safe and suitable condition; and inasmuch as the overseer has to go on record in the matter it is safe to assume that the provisions of this certificate are carefully carried out.

Another blank we propose to file in the employe's personal record is this small one which is the overseer's statement that he "had occasion today to warn said employe against doing the following act in violation of the rule of the company." We have had some trouble and one or two serious accidents to men starting motors, not especially in the cardrooms but trouble might occur at any place where motor drives were in operation. To avoid starting machinery before the motor is up to speed, and thereby causing an overload and a possible blowing out of an oil switch, we have devised a starting signal consisting of a line of green and red lights which runs the length of the room. When the man whose duty it is to start the motor enters the motor room he switches on the red signal lights and they burn until the motor is up to speed, when he switches off the red lights and turns on the green which is the signal to start up.

#### SAFETY ORGANIZATION.

We have completed a safety organization within the past six months which is made up of a safety board composed of the plant superintendents and department heads—a safety committee of four men, one of whom acts as safety inspector and gives his whole time to the work, and the works committee which are changed in the various rooms each six months. This safety organization totals

600 men, who wear the safety button and are alive to suggest safeguards and anything which will improve the work conditions in their department. While we are too new at the work to give any concrete results, we believe that a persistent educational campaign and the co-operative efforts of these committees are bound to result in a reduction of accidents in the Amoskeag plant. (Applause.)

(Several interesting photographs of the machines guarded as described in Mr. Swallow's paper were exhibited and attracted favorable comment.)

#### DISCUSSION.

The discussion following Mr. Swallow's interesting paper brought out many points worthy of mention. The certificates to be filled out by overseers and second-hands when hiring inexperienced employees had not, to the present time, been put into practice, but inasmuch as the management of the Amoskeag Mills had the hearty support of all the overseers they believed that the project would be successful in keeping all new employees duly warned of the dangers which confronted them. In order to socialize the movement among the foremen, a general rally was held and an address made by Mr. Marcus A. Dow of the New York Central Lines, New York City. The overseers realized that the safety movement was by no means a joke. The Chairman emphasized this point very considerably by stating that wherever safety was most successful, it was largely because the foremen had been sufficiently energized to take a wholesome interest in keeping down the number of accidents.

It was disclosed that although the figures, as stated by Mr. Swallow, indicated that 25 per cent of the textile accidents occurred in the cardroom, yet in his opinion the relative cost of these accidents was considerably in excess of that amount, for the reason that nearly all accidents in this department are of a very serious nature.

The Amoskeag Mills have not tried guards on their picker belts, but where the belt shippers were installed on the cards they were found to be astonishingly effective as guards. At this point the Chairman declared that one of the great reasons why textile machinery was lacking in guards was because the guards were not insisted upon when the purchase of machinery was made. Every purchasing agent should have written across the top of his stationery a notice

### **An Experiment**

Injure an experienced man and a new man takes his place. A new man is always an experiment.

to the effect that all machinery on which bids are submitted must be completely guarded. It would not be fair for manufacturers to expect to purchase, at the present time, guarded machinery at the same price they would obtain if the machinery were unguarded. However, it would not be long before standard castings for gear covers and other guards could be developed, and in a comparatively short time the prices would drop back to where they are at present.

CHAIRMAN—The next speaker will be Mrs. Annie Leisenring, of Allentown, Pa., an Inspector for the Department of Labor and Industry.

#### **CLEANING MACHINERY WHILE IN MOTION.**

MRS. ANNIE LEISENRING, INSPECTOR, DEPARTMENT OF LABOR  
AND INDUSTRY OF PENNSYLVANIA.

The speaker stated that her experience had been largely confined to the silk industry, and she had found that the employes in these mills considered their occupation as merely a stepping stone to something better. There were all nationalities to be dealt with, the great majority of whom could not speak a word of English. At the present time all employes under 16 years of age must present a certificate of education, nevertheless we hear of a family landing one day at Ellis Island and on the second day the father and the older boys are at work in a steel and iron plant, the older women engaged in cigar making, while the children have found their way into the silk mills. The reason for this is that certificates in a great number of cases are forged and handed from one to another among families and friends.

The guarding of belts and gears is not all that must be considered. Shop organization is by far the most important. If the organization is well established it should inspire confidence between the management and the employes. When we consider that several cases were

disclosed where during the period of six weeks employees had been working in eight different industries, the need of good shop organization is apparent. One accident was related where, in a jute mill, a woman operator had been injured on a machine where all gears were guarded and shifters provided on all belts. In some manner she had reached up from the floor more than fifteen inches beyond the inside of the guard and lost her fingers in some gears. She

had lived for three years in the United States, yet spoke no English, and could not understand a word of German. An investigation was made to determine whether notices had been posted to warn the employees against cleaning while in motion and it was found that notices to that effect had been displayed in four different languages but her own was not included—probably if it had been she could not have read it. In such a case as this a good shop organization among the employees would, no doubt, have brought her to realize the danger she was running at the time she was hurt, and the accident thereby avoided.

There are several reasons for dissatisfaction among the younger employees. At 14 years the children very frequently leave school and enter the workshops, where the discipline is, of course, not so strict as at school. If a thorough organization were established among the employees and a few of the careless ones were discharged for gross carelessness, or horse play, there is no doubt but that much of this trouble could be overcome. Furthermore, employees should be required to report all danger points to the foremen.

#### DISCUSSION.

In discussing this subject the Chairman told of the method carried out in France, whereby the children under age were obliged to attend schools located in the mill yard for half a day before they were permitted to work the remainder of the day in the mills. By this method the forging of certificates was impossible. A child was

### **Sure Enough!**

There is a vast difference between "falling" for a thing and "tumbling" to it. Start right by doing it the safe way.

taught not only the fundamentals of general education, but was also instructed as to the dangerpoints in the section of the mill where he was to work during the afternoon. After the child had passed his lessons in a satisfactory manner he was given a safety certificate, but if any inspector in the mill found this child to be careless, the safety certificate was revoked and the child dismissed from his job. The tendency of the times has been to criticise the trusts and larger employers of labor, yet in this humanitarian safety movement it is almost without exception that we find the large employers of labor leading the way, and it is the small shop, located in some inconspicuous place where the inspector seldom visits, that the great mass of preventable accidents may be said to be at present occurring.

Mr. Burns, Chief Inspector of the American Mutual Compensation Insurance Company of New York City, told in an interesting way about the educational work which is being done in all the textile plants insured in his company, particularly those mills located in and around Utica. Safety lectures were given at regular intervals and a doctor from the Red Cross Society delivered lectures, giving illustrations on first aid to the injured. After the course had been completed a major surgeon was sent from the National Red Cross Headquarters at Washington to conduct an examination, and only one out of twenty-five candidates failed to pass. The interest displayed by these employes in first aid was merely incidental to the enthusiasm which the other fellow workmen displayed, and an appreciable reduction in the severity and number of accidents has been most evident. (Applause.)

CHAIRMAN—Mr. Henry A. Hale, Jr., of Boston, will speak on "The Hazards of Bleaching, Dyeing, Printing and Finishing."

#### HAZARDS OF BLEACHING, DYEING, PRINTING AND FINISHING.

HENRY A. HALE, JR., MANAGER, BUREAU OF SAFETY,  
AMERICAN MUTUAL LIABILITY INSURANCE  
COMPANY.

Mr. Chairman and Members of the National Safety Council, Ladies and Gentlemen—As in many other industries a considerable part of the accidents in bleacheries, dyehouses and print works may be attributed to unguarded gears, belts, pulleys and calen-

der rolls, together with lack of instruction and discipline, but it is to a few of the peculiar hazards which prevail in these plants that I will give particular attention. I will not attempt to discuss the various machines and processes in the order in which they are found in finishing textiles, as many of the machines are used several times in different stages of the work.

There are some important features in general construction which should be given consideration, particularly lighting, floors, arrangement of machinery, and the handling of the steam which escapes from vats and machines. A larger percentage of accidents in these industries may be attributed, directly or indirectly, to improper regard for these important features. Poorly lighted rooms, and dark corners and passageways, are too frequently found in many dyehouses and print works. Floors are too often allowed to remain in a slippery condition and in need of repairs. Where well-drained floors of concrete are not used, plank flooring with space between each plank for drainage should be maintained in first-class repair. This will eliminate a great number of the accidents which are daily occurring. By giving ample thought and consideration to the arrangement and installation of machines, much expensive guarding may be done away with. Steam pipes and moving parts can often just as well be placed out of reach instead of being located near passageways, where they continually invite injury. In this respect an ounce of forethought is worth many pounds of safeguards.

During cold weather, particularly, clouds of steam and vapor are responsible for many accidents that might be prevented if the employes were able to see properly. By installing suitable curtain-like partitions for confining the steam, and introducing ample exhaust systems much of this trouble can be easily overcome. Such partitions should extend from the ceiling down to a point which will just permit ample head clearance for the employes and machinery.

#### -CHLORINE FUMES.

The methods of handling acids in a bleachery deserve careful study. Fumes of chlorine and chlorine compounds should be eliminated and the liquids handled in an enclosed pipe system so far as possible, in order to avoid the injuries which are caused by the splashing of acids where carboys are used. The method of dissolving chloride of lime, in order to obtain the desired bleach, generally

**"I Am for Men"**

This is the motto  
of the Safety Department,  
and it includes  
all men, too.

entails a serious hazard owing to chlorine fumes, and in cold weather it is, of course, essential that all ventilators and windows be kept open, even though discomfort and annoyance are encountered. A better way is to purchase chlorine gas in pressure tanks or cylinders, and permit the gas to flow into tanks of water until the desired strength of acid in solution is obtained. In this method no fumes are given off and there is no lime precipitate to be taken care of. The acid solu-

tion should then be pumped into receptacles at the top of the building and fed by gravity through a pipe system to each machine, where the flow may be regulated by valves. The piping systems for acids, starch and dye liquors should be so arranged that in every instance the regulating valve is within easy reach on the outside of the machine, and the pipe outlet located where it can be reached without coming in contact with gears and other moving parts. Many bleacheries are now using more acid carboys and hand receptacles than is necessary. If carboys are to be used at all, suitable inclinators or acid hand pumps should be provided.

Center bars, arbors and print rolls are responsible for scores of injuries which occur in all parts of a plant, largely on account of carelessness on the part of employes in handling. Suitable trucks should be provided and sufficient warning given to make the employes appreciate the dangers that lurk in this prolific source of trouble. Many of these accidents may be avoided through persistent work in education—extremely elementary though it may appear.

The common type of sewing machine, which is used to sew together the ends of the pieces of manufactured cloth, is found to cause many innocent looking scratches, which frequently become septic owing to the nature of the materials handled. These scratches come from the needle points on the rim of the wheel, and may be prevented by substituting, for the points, a simple spring clamp to hold the cloth. The points now used frequently break off and by substituting the clamp many injuries will be prevented.

**A FATAL ACCIDENT.**

A strange accident to a keir boy occurred in a plant with which the writer is familiar. The boy became tired and went to sleep inside his keir. Before the lid was closed for turning on the steam, a workman called out for him, but receiving no answer it was supposed that the boy had gone out into the yard. When the keir was opened the poor lad was found "well done." For this reason, the plant I have in mind has since that time made it a practice to send two men inside each keir as it is being filled.

Not many accidents can be attributed to hydro-extractors, but they are very serious whenever they occur. While an extractor is in motion the employe in attendance is strongly tempted to tuck back any loose ends of cloth that may fly out. As a result several amputations have been brought to our attention. A remedy for this hazard is to equip all hydro-extractors with rigid metal covers, so attached that the machine cannot be started unless the cover is closed, and also so that the cover cannot be raised until the machine has stopped.

Exhaust systems for carrying off lint and waste are imperative on such machines as nappers, shearers, singers, etc. Plants are in operation today which are lacking in this respect, and, as a consequence, we find many accidents reported due to "cleaning while in motion."

I have withheld from the discussion of guarding gears, but as a single exception would mention the protection of the gears on the side of printing machines which drive the engraved rolls. Most manufacturers contend that these gears cannot be guarded without seriously impeding the work. If a large crescent-shaped plate is laid close over these gears with a hole at each hub for making adjustments, the necessary protection can be obtained without incurring inconvenience to the operator.

In closing I would call attention to a pernicious practice that is

**Too Many Cooks**

That may be true  
in a kitchen, but  
there can't be too  
many Safety men in  
the factory.



prevalent in nearly every bleachery and dyehouse. Lunches and dinners are eaten by the men as they tend their machines or vats, with no attempt to first wash their hands or eat the food amongst clean surroundings. Bottles of tea are often warmed in the hot liquors and not wiped off before the men drink out of them. Employes should be relieved at their machines and compelled to wash before eating, and under no circumstances should the food be consumed inside the workrooms. Until this evil is corrected severe cases of chrome poisoning and disorders of a similar nature will continue to prevail. (Applause.)

(A number of stereopticon views were shown illustrating several points brought out in the foregoing paper. An analysis of accidents in these lines had been prepared by the Bureau of Safety of the American Mutual Liability Insurance Company, and was distributed to those present. This synopsis showed in detail the number of slight and serious accidents involved on the several hundreds of the machines found in these industries.)

CHAIRMAN—Mr. D. S. Beyer, Manager Accident Prevention Department of the Massachusetts Employes' Insurance Association, Boston, has prepared the following interesting arguments in favor of the need of safety standards for new textile machinery, but owing to his unavoidable absence from the meeting, the paper will read by the Chairman.

#### THE NEED OF SAFETY STANDARDS FOR NEW TEXTILE MACHINERY.

DAVID S. BEYER, MANAGER ACCIDENT PREVENTION DEPARTMENT, MASSACHUSETTS EMPLOYES' INSURANCE ASSOCIATION.

Mr. Chairman and Members of the National Safety Council: There is a peculiar element of danger in the operation of textile machinery from the fact that "flyings" or waste, so commonly present in textile plants, tends to collect in the gearing and other moving parts, necessitating frequent cleaning of machinery. Since many of the operators in this industry are on piecework there is a natural tendency on their part to clean the machinery while it is in motion; this undoubtedly accounts, to a considerable extent, for the high ratio of gear accidents in the textile industry, as compared with

those in other industries. (See paper entitled "The Prevention of Accidents in Cotton Mills," presented by John Calder before the National Association of Cotton Manufacturers, and re-printed in "Safety Engineering" for October, 1915.)

On account of the above-mentioned conditions, the mere provision of ordinary guards is not sufficient. Many accidents occur in this industry on account of employes removing guards and being caught in the running machinery. To overcome this difficulty the interlocking principle has been applied to gear guards, beater and cylinder covers, lap machines, etc.—that is, the guards are interlocked with the starting mechanism in such a way that they cannot be opened while the machinery is running and the machines cannot be started without the guards in place.

Such safeguards are required by law in some foreign countries. Accordingly they have been standardized by the principal builders of textile machinery and will be furnished if specified at the time new machinery is ordered. They can be secured at little additional cost, where it is expensive, and in some cases, impracticable, to provide them later.

#### DEFINITE STANDARDS ESSENTIAL.

It follows that in the textile industry, more perhaps than in any other, definite safety standards are essential for the elimination of many preventable accidents. Notwithstanding the fact that Safety First has become a watchword throughout the United States, new textile machinery, in an unprotected state, is being constantly installed in plants in this country which would not be accepted in England or even in Russia.

In the State of Massachusetts, during a period of one year, there were 573 gear accidents in the cotton and woolen mills alone, or more than one-half of all gear accidents occurring in the state. (See First Annual Report of the Massachusetts Industrial Accident Board.) Special machinery, peculiar to the cotton and woolen mills—such as openers, pickers, cards, spinning and drawing frames, slashers, looms, etc.—caused 3,177 accidents during the same period of time. This record clearly indicates the need of practical safety standards for new textile machinery, such as those mentioned above.

The textile industry is especially notable in the large number of machines of the same type which may be found in a given plant.

There may be several hundred, and in the larger plants several thousand, machines of the same kind, and a few dollars expense per machine for safety devices rapidly mounts into large sums. Obviously it would be impossible, from the manufacturer's standpoint, to immediately provide interlocking guards for all the equipment already in place. There would seem to be no good reason, however, why the new equipment which is being ordered from time to time should not be equipped with this important form of protection.

To secure such protection, definite safety specifications must be used at the time an order for new equipment is placed. Such specifications should be adopted voluntarily by the textile plants, and regulations for safeguarding will undoubtedly find their way into the statute books of the various states in the form of definite legal standards as time goes on. (Applause.)

After discussion on Mr. Beyer's paper and a few words of appreciation by the Chairman, the Section adjourned.

*Habits of Care and Watchfulness Are More Important Than Safe Machines and Safe Places*

## **National Safety Council**

**Section of Industrial Hygiene**

**Philadelphia, Pa.**

**October 20, 1915**

**DR. OTTO C. GEIER, Chairman**

**T**HE meeting was called to order at 2 o'clock by Chairman Geier.

THE CHAIRMAN: Ladies and Gentlemen: This marks the first meeting of the Section of Industrial Hygiene of the National Safety Council. Those of you who have attended the general sessions have learned that it is the purpose of the Executive Committee to permanently organize sectional meetings.

You have learned that this organization is to take place as follows: That the various sections are to elect their own chairmen, vice-chairmen and secretaries; that the chairman of each section is then to appoint four committees; that the three officers, plus the four chairmen of committees, plus the Secretary of the National Safety Council, Mr. Cameron, shall comprise the Executive Committee of each section.

The Executive Committee has deputed an individual to come before each section at the time of organization to present this plan.

I will ask Mr. Avery to address the meeting at this time, so that we may take care of the matter of organization first, and then proceed with the program.

MR. AVERY: The Executive Committee thought best that we have a uniform plan or outline for the organizing of these sections and have drafted an outline that I will read:

BY-LAWS OF THE SECTION OF INDUSTRIAL HYGIENE  
OF THE NATIONAL SAFETY COUNCIL

NAME.

*Section 1.*

This organization shall be known as the SECTION OF INDUSTRIAL HYGIENE of the National Safety Council.

OBJECT.

*Section 2.*

The object of this Section shall be to promote the purposes, objects and activities of the National Safety Council as the same more particularly apply to the special problems of the members of this Section.

MEMBERSHIP.

*Section 3.*

Membership shall include all members of the National Safety Council who shall be interested in the activities and purposes of this Section and who shall signify to the Secretary of the National Safety Council, or to the Secretary of the Section, their desire to affiliate with this Section.

OFFICERS.

*Section 4.*

The officers of this Section shall be a Chairman, Vice-Chairman, and Secretary, who shall have the usual duties of such officers and whose terms shall extend to the annual meeting of the Section following their respective election or until their successors are elected.

ELECTION OF OFFICERS.

*Section 5.*

Nominations of officers shall be made by a Nominating Committee of three appointed by the Chairman of the Section, which committee shall report at the annual meeting its recommendations of

officers, which report shall be followed at said meeting by the election of officers for the ensuing year. Other nominations for offices may also be made by any members of this meeting.

MEETINGS.

*Section 6.*

There shall be an annual meeting of the members of the Section held during the period of the Congress of the National Safety Council, notice of the time and place of which meeting shall be posted at the Information Desk of said Congress. Other meetings of members may be held on due call and notice by the Sectional Executive Committee.

COMMITTEES.

*Section 7.*

The affairs of the Section shall be conducted by a Sectional Executive Committee which shall be composed of the Sectional Chairman, Vice-Chairman, and Secretary, and the Secretary of the National Safety Council, who shall be ex-officio a member thereof, and the chairmen of the following four Standing Committees, which committees shall be appointed by the Sectional Chairman.

1. Membership Committee.
2. Standardization Committee.
3. Committee to study causes and remedies of hazards in the Section's field of activity.
4. Program Committee.

IN GENERAL.

*Section 8.*

The Sectional Executive Committee shall appoint such other officers or committees and amend these by-laws or adopt other laws and do such other acts and engage in such activities as may be needed to wisely further the objects of the Section.

SUPERVISION BY NATIONAL SAFETY COUNCIL.

*Section 9.*

This section shall be under the direction of the Executive Committee of the National Safety Council.

All by-laws and amendments thereto, activities, expenditure, literature, bulletins and published data of this Section shall be sub-

## **"Taking a City"**

**Controlling your  
temper will oft-times  
prevent accidents to  
yourself and others.**

ject to the prior approval of the Executive Committee of the National Safety Council and all publications of the section shall be under the name of the section as a Section of the National Safety Council.

**THE CHAIRMAN:** Are there any questions to be asked by the members in regard to this method of organization? (No questions asked.)

**THE CHAIRMAN:** The very autocratic Executive Committee of the National Council has commanded me to appoint a nominating committee. I will appoint on such nominating committee: Dr. Sidney McCurdy, Youngstown, Ohio, Chairman; Dr. F. W. Keough, New York; Dr. J. W. Schereschewsky, Pittsburgh.

We will ask this committee to retire and during the course of the afternoon to bring in a report as to nominations.

It now becomes my pleasure to introduce to you Dr. George M. Price, who will present the subject of "Systems of Health Supervision (description and scope of various systems now in actual operation)." Anything that I might say in introduction of Dr. Price would be superfluous to any of you at all familiar with health supervision of industries. Dr. Price. (Applause.)

### **SYSTEMS OF HEALTH SUPERVISION.**

**DR. GEORGE M. PRICE, DIRECTOR JOINT BOARD OF  
SANITARY CONTROL, NEW YORK CITY.**

Mr. Chairman, Ladies and Gentlemen: If I were to follow the program, "Systems of Health Supervision (description and scope of various systems now in actual operation)," I would probably not be able to get through today, and probably would be left without an audience. I shall try only, in my brief remarks, to give the general outline of the subject, and to stick to general principles, except in one instance where a more detailed account will be given.

Health supervision in industries is based on two principles:

First, The principle of industrial justice. Second, The principle of industrial efficiency. The first recognizes the importance of the human factor in industry. The second recognizes the intimate relations between the health of the worker and the output of the industry, or the industrial efficiency.

Health supervision in industries is rather of recent origin, but it presents already a large number of types—a variety of types of supervision, from the simplest to the most complex. Perhaps the most simple type of health supervision is that found in a plant where an arrangement is made by the manufacturer with a physician in a neighboring locality or dispensary to give first aid to some of the injured in his plant. From this primitive type, I might call it, or simple type, to the very complex health supervision as we have it already, or as it ought to be, is quite a long step. It is perhaps better for us to give a skeleton outline of what our conception should be of a complete health supervision of industry. When we are clear about such conception we may perhaps give a plan by which we may change the various types of health supervision found in the various plants in this country.

Of course, our first conception is more or less individual, and my conception is not necessarily the universal conception which should be accepted. Now, my idea of a complete health supervision is one that takes in the following five aspects of industry:

First—Sanitary supervision.

Second—Industrial Hygienic supervision.

Third—Purely Medical supervision.

Fourth—General Hygienic supervision.

Fifth—Health Insurance.

#### SANITARY SUPERVISION.

The first aspect is the sanitary supervision of the plant. No health supervision can get along without this, and this is the first step in any industrial health supervision.

### Well Done!

If you have been  
the means of pre-  
venting an accident  
during the year, you  
have done well.



By sanitary supervision I mean supervision of the plant, its construction, its light (or illumination), its ventilation, and its care for the comforts and necessities of the employes within the shop. Whenever I speak of sanitary supervision I always remember the physician of a big lead company who, when he came before a hearing of a New York factory commission, was asked whether there was any hot water in the plant. He said: "I don't know." I do not call that proper health supervision. Sanitary supervision is the first part.

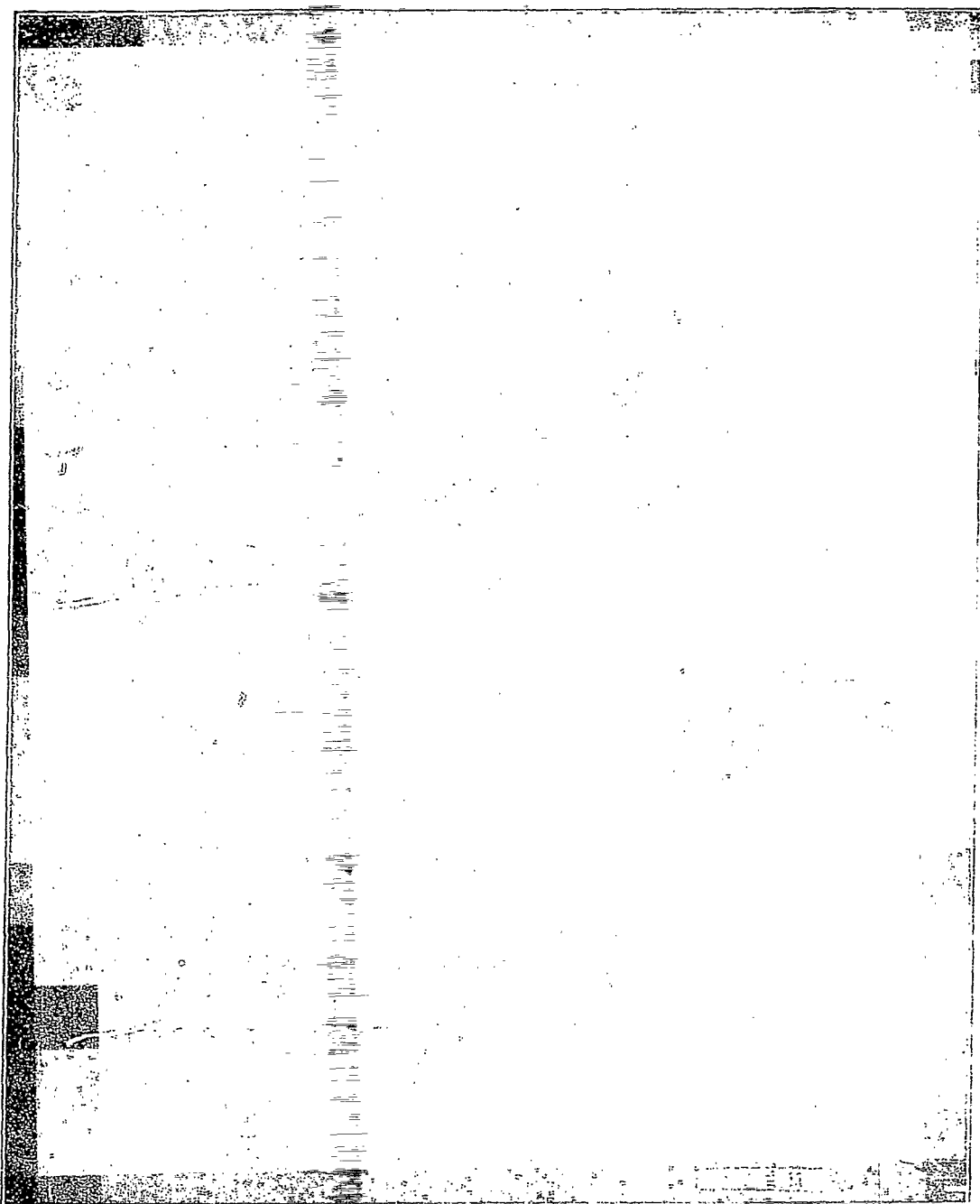
The second part is industrial hygienic supervision. By this is meant supervision of the processes in the industry as well as conditions in the industry which affect, more or less, the worker in the plant. This, of course, embraces the various processes involving dust, gases, fumes and poisons; and those processes which have, perhaps, certain infections or infectious diseases in their train. In general, industrial supervision of processes tends to promote the health of the workers.

The third part is the "purely medical." That is, first, the physical examination of workers as they come into the plant or before they come into the plant; second, a periodical examination of the workers while at work; third, a first aid and emergency treatment of those injured in the factory; fourth, the treatment of acute and chronic diseases of the workers while in the plant.

The fourth aspect of complete industrial health supervision is what I call general hygienic supervision. I was struck by a remark of a man in Rochester who said: "Of what avail would it be to take care of the workers from 7 o'clock in the morning until 6 o'clock in the evening, when we let them off, without supervision, from 6 o'clock in the evening until 7 o'clock in the morning?" It seems to me that a complete health supervision must include a general health supervision, not only of the worker but of his family, his general surroundings, his addiction to alcohol, or other abuses.

#### HEALTH INSURANCE.

Lastly, there is what I call health insurance, or social insurance, whichever name you want to give it. To me it seems that to make health supervision complete there must be some system by which the worker who is more or less disabled is taken care of while disabled. The worker should be given some work which is up to his



FIRST AID ROOM FOR INDUSTRIAL PLANT  
Educational Safety Exhibit, National Safety Council Annual Congress, 1915



strength, and he should not be given work which he is not able to do, nor should he have to work in time of sickness or invalidity. It seems to me the complete health supervision of industries should comprise, as well as possible, social or health insurance—should take care of the worker while disabled, while sick, while invalided.

So much for the systems of health supervision. Now, as to their sources: There is at present principally one source, and in theory there are three sources, of industrial health supervision: First, individual; second, industrial; third, the state.

By individual health supervision I mean that which emanates from the factory owner himself. This is, practically, the system which is at present in vogue all over the country where some system of health supervision has been adopted. There are, of course, objections to such a source. A system of supervision which is dictated by the owner himself is apt to be too autocratic—and, well, shall I say, despotic and paternal?—and has a great many chances for abuse. The workers as a whole are not as yet ready to accept this source of health supervision as a panacea for industrial conditions.

The third source, we are perhaps not ready to accept in this country. At least, individualistic tendencies are such that we may regard state supervision as too socialistic; and, perhaps, it has certain disadvantages which may militate against its adoption, at least in the near future.

#### JOINT SUPERVISION.

The second source, which I have indicated as “industrial supervision,” is that supervision which is conducted by an industry instead of by an individual factory owner. In this embryonic type it has been in practice in this country by the steel industry, which, although one corporation, still is practically embracing a large part of the industry. In Germany the industrial associations are having a very complete system of health supervision, which seems to be in the right direction. In this country we have an example, of which perhaps many of you have heard, of the control of sanitation by an industry—namely that of the cloak, dress and waist industry of New York City. In this industry we have a supervision which is rather complete. It embraces sanitary supervision, industrial, hygienic, medical and insurance, rather complete at present, so much so that workmen going in must be examined, and every

## Pay Once

Let one accident prevent another. If experience is worth nothing, you are in a bad way.

factory in the organization must undergo the introduction of a sick benefit association, which is at present taking care of 25,000 workers. In this industry we have a control by the industry; that is, the manufacturers' associations, comprising some 600 manufacturers organized into a large body. The workers are organized into large unions. These have come together by collective agreement, and have formed an institution which is called the Joint Board of Sanitary Control, and this institution has supervision of the health of the industry. It seems to me this is an ideal method of supervision. There cannot be any quarrel between the manufacturer and the worker because both are represented in the board and the work is financed by both of them. The manufacturer pays half of the cost while the union pays the other half. All the actions of the board are under supervision by both sides and the Joint Board of Sanitary Control at present has complete sanitary inspection and supervision of the shops. We also have a fire drill division, which takes charge of fire drills in every shop in the industry; also a first aid division, which gives the proprietors first aid boxes for their shops and sends a nurse to every shop once a month to instruct in the use of the first aid outfits. We also have a physical examination which takes care of all workers coming into the industry, those who feel themselves ill, and those who are to be sent away for their own benefit. We also give attention to dental and eye diseases. Thus, we practically perform a careful medical supervision of all the workers of the industry, consisting of about 85,000 men and women.

This is simply a type showing what, in my conception, should be the source of complete health supervision of an industry. Perhaps it will be for other industries to follow. I believe, however, it is a step in the right direction. (Applause.)

**THE CHAIRMAN:** The Chairman has allowed himself the privilege of extending Dr. Price's time. It seems to me, however, that

inasmuch as we have a very full program we will have to limit the speakers to ten minutes apiece, expecting they will have another opportunity in the discussion.

Just at this moment we will take an adjournment. I have protested to the board of directors against the unsanitary conditions, the lighting, ventilation and crowded condition of this room, and we will adjourn now to another room. (The meeting adjourned to room back of the ballroom.)

The next speaker, Dr. W. H. Clarke of Worcester, Mass., comes to us with a great deal of force because of the fact that he is one of the pioneers in this movement of medical supervision of industry.

THE CHAIRMAN: Dr. Clarke will now address us on "Practical Experience, With Methods of Health Supervision." (Applause.)

### **PRACTICAL EXPERIENCE, WITH METHODS OF HEALTH SUPERVISION.**

**DR. W. H. CLARKE, NORTON COMPANY, WORCESTER, MASS.**

Norton Company is a company situated at Worcester, Mass., which manufactures grinding wheels and grinding wheel machinery. Up to 1911 we had no medical provision for the treatment of sickness or accidents except such as existed in the first aid kit in one of the experimental laboratories. In May, 1911, the policy of a medical department was adopted and a doctor was employed. There was at that time no equipment other than above mentioned and the entire department as it now exists has been gradually built up. During those four years and a half the department has changed from a one-room emergency department, in which physical examinations were made as well as the handling of accidents and sickness, to a three-room department, thoroughly equipped for making

## **The Easiest Way**

It is easier to do a thing right than to explain why you did it wrong.

physical examinations of every employe and for treating sickness or accident occurring in the works.

At the end of the first six months it was evident that the department was going to be a success and that more help would be necessary to handle the cards. A male nurse, who had had the experience of serving in the United States Navy Medical Corps, was added to the department and has remained with it up to the present time. So active has the department become and so valuable to the board of directors that when the new administration building was erected in 1913 one corner of it was divided into three rooms and given to the medical department, fully equipped for work. The factory up to this time had about 1,200 employees on its pay roll. Recently, however, the plant has expanded and the number of employees has now increased to 2,000. This has thrown so much work on the medical department that it has been necessary in the last three months to add, first, a clerk to handle the cards and records, and, second, an additional doctor to assist the surgeon in making physical examinations and handling accidents and sickness. The department has gone under the name of the Department of Health and Sanitation. It has never been considered welfare work but a business proposition and has ranked in equal importance with other departments in the shop.

During the development of the department from its beginning to the present time many changes have taken place in the ideas of the department and it is the results of this practical experience in methods of health supervision which I will discuss in this short paper.

#### FUNCTIONS OF DEPARTMENT.

The functions of the department are six in number:

1. The examination of all applicants prior to entering the employment of the company with a view (a) to the elimination of men totally unfit for the work to which they are assigned; (b) an adjustment of those partially unfit to suitable departments; (c) to enable the employe to realize his defects and to co-operate with the doctor in reducing these to the minimum and thus increase his efficiency; (d) to introduce the prospective employe to the doctor and the medical department in order that in case of subsequent sickness or accident he will know where to go.
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2. The care of minor sicknesses and the diagnosis of any cases of serious sickness applying to the hospital for advice.
3. First aid and the subsequent treatment of all accidents.
4. Supervision and the maintenance of good sanitation throughout the shop.
5. Publicity upon health matters. This is done by the distribution of leaflets written by the doctor in charge of the Department of Health and Sanitation and distributed in the pay envelopes monthly.

6. The following up of all men absent from work for more than forty-eight hours, to determine whether they are absent on account of unreported sickness or accidents or for other reasons.

The above is a basic outline of the Norton method of health supervision. We will now discuss the more important of these functions, giving the conclusions at which we have arrived as a result of experience.

#### PHYSICAL EXAMINATION OF PROSPECTIVE EMPLOYEES.

This should be done before the man is definitely hired.

(a) In order to prevent contagious diseases becoming established in the works.

(b) To prevent grossly defective men attempting work for which they are incapable.

(c) To allow adjustments, by transferring a slightly defective employee from one department to another where his defect will not have any effect upon his work.

For several years we have tried having no examination until after the employee has been with the company for two weeks. This was to enable us to find out whether the man would be satisfactory before going to the expense of a physical examination. We found, however, that men started work who were grossly unfit for the type of work at which they were placed and several cases of contagious diseases were discovered when the men came up for examination. We therefore started the present system of a physical examination of the applicant before admission to the working force.

It is evident that there is a very close relation between the hiring department and the medical department. The hiring department selects a man who appears to fulfill every requirement and



**FOREMEN!**

A preventable accident is a disgrace to the foreman in whose gang it happens.

then sends that man to the doctor for an expression of opinion as to whether his physical condition is such that he will make a good workman in the department to which he has been assigned. If the man is not satisfactory from a physical point of view for that department he may be for another, and it is the duty of the medical department to point this out to the hiring clerk in order that he may make such a change, if possible. If it is not possible the man should

not be allowed to work in the factory, for his work will be inefficient and he will probably receive lasting harm from it.

At Norton Company the hiring at present is done early in the morning, thus making it necessary for the doctor to be at the works very early if he would make examinations before the men go to work. In order to avoid this a preliminary examination was instituted. This is made by the nurse, after receiving a course of training by the doctor. This preliminary examination has proved very satisfactory, as every case is checked up by the doctor at the second, or complete, examination, made within two weeks of the time the man is hired. Any man found defective by the nurse is held and not allowed to go to work until the doctor has examined him. I consider this, however, to be a make-shift device, and while working well in our case, where we have a particularly competent nurse, I feel it is not a system that should be recommended. Undoubtedly the most efficient and best method is to have the doctor make a complete physical examination before the employee is taken into the shop.

**HOW THOROUGH SHOULD A PHYSICAL EXAMINATION BE?**

At Norton Company we find ourselves becoming more and more thorough as time goes on. Each addition to our routine has been made because of necessity and not for theoretical reasons. We now make an examination which takes from twelve to twenty minutes, and which includes blood pressure but not urine analysis, ex-

cept in cases of 40 years or over, and in younger individuals when indicated by blood pressure of 150 systolic. Otherwise the examination is about as complete as for life insurance. The patient is completely stripped before it is concluded. We have never had any trouble from men in accepting this examination as a preliminary to being hired. In fact the majority of men show great interest and thank the doctor for the advice he gives them in regard to minor defects. It has been stated by doctors at different meetings that a complete physical examination should take at least an hour. We are willing to admit that from twelve to twenty minutes is an extremely short time in which to make a complete physical examination but unless this short time is taken physical examinations of employees in factories would be impossible without such a large staff of nurses and doctors that the expense would be prohibitive.

In my work I hear a great deal from the manufacturing side. I find that the enthusiasm of the board of directors is not great towards spending large sums of money for physical examinations and it is very easy to frighten prospective adopters of this system by unnecessarily strict examinations.

There are few if any doctors in private practice who take more than twenty minutes in making physical examinations of their private patients. I venture to say there is no life insurance company which takes more than one-third of an hour for an actual physical examination. Why, then, should we suddenly develop an idea that the healthy workman should require an intricate system of examination far more thorough than that used in other branches of the medical profession.

During my experience at Norton Company we have found practically no cases in which our primary physical examination proved later to have been inadequate. And such lapses, when they occur, are rapidly corrected as a result of subsequent examination.

## THE DOCTOR

"The majority of the men show great interest and thank the doctor for the advice he gives them."

## WHAT CASES OF SICKNESS SHOULD BE TREATED?

A few words will suffice. We believe in treating all minor cases, that is, all men applying to the hospital with conditions not severe enough to need a doctor but where advice and some simple drug is advisable to keep them at their work. All cases of sickness should, however, be examined and a diagnosis made. For this reason I like to consider the medical department as a diagnostic clearing-house in which the seriously sick cases are promptly discovered and sent to their family physicians or to a general hospital, while minor cases are given advice and a little medication if such seems indicated.

## HOW SHOULD ACCIDENTS BE HANDLED?

Treatment of accidents has been so thoroughly thrashed out that there is hardly anything to be said upon the subject. I believe that where possible, as in our case, a central hospital, where all accidents are sent, is more satisfactory than multiple first aid stations. In large shops I can easily see that this is impracticable, but I feel sure that more thorough work is done in the hospital than at the first aid stations.

The fact that we have never had an infection in any wound treated at the Norton hospital shows, in our case, at least, that it has proved efficient. Each department should, however, have a first aid outfit to use for serious accidents, and the foreman in each department should be instructed in the use of these few simple things. The outfits should, however, seldom require renewing.

## HOW SHOULD THE PROBLEM OF SHOP SANITATION BE HANDLED?

Sanitation belongs to the medical department. The doctor should make weekly inspection of all sanitary arrangements throughout the shop and should arrange as to the cleaning of these. After the routine has been established it may be left safely in the hands of an assistant, who should have under him a sufficient number of men who give their whole time to following out the routine. It is only in this way that toilets, locker-rooms, etc., can be kept in good condition.

## HEALTH PUBLICITY.

We believe that this can best be maintained by leaflets published monthly and distributed in pay envelopes. These should be in the

simple language of the patent medicine advertisements. The patent medicine advertiser is not working for his own amusement, but knows he is going to reach the public. I know of no better way to reach the public than by following his evil example. We may later be able to take to better things but our first plan should be to write so that every one will understand it.

FOLLOW UP.

A list following up all sick and injured employees should be reported to the hospital. I do not believe this should be a function of the medical department though we have made it such at Norton Company. This belongs particularly to the hiring branch of the factory and again emphasizes the advisability of union between the hiring department and the medical department. The medical department notifies the hiring department each day as to the number of men out on account of sickness or accident and this department follows it up. This will materially reduce the work of the follow-up men. The value of the follow-up system to the factory in keeping men at work has been dealt with in other papers and in other places. These are the most important facts which I can bring out as my practical experience in methods of health supervision. (Applause.)

THE CHAIRMAN: This sectional meeting is apparently justifying itself. It is apparent there is a deep interest in the supervision of the health of the workers.

We will next hear from Dr. Sidney A. McCurdy on "Results Accomplished."

RESULTS ACCOMPLISHED.

DR. SIDNEY A. MCCURDY, YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO.

Mr. Chairman and Members of the National Safety Council: I found, after I began the preparation of this subject that it was very difficult because of the lack of accurate statistics. I desire to take this subject up in three aspects.

Any discussion that may be of value upon the practical results of the physical examination of people must be approached from three different angles and by two divisions of each angle. If rated

## You Know Him?

A dangerous man is one who acts with no thought of consequence to others. He soon becomes a menace to every one.

as valuable it must satisfy the needs of the individual; of industry, and organized society, both as to its economic and humanitarian assets. Unfortunately at this time the problem has been so little studied that it is difficult to draw accurate conclusions from the disjointed mass of statistics, but a fair estimate may be made and a theoretical deduction of its present and future results fairly constructed.

It is my purpose to consider each one of my three divisions separately, though of necessity each much blend into the other, as all things co-operative must join hands for the common good.

### NEEDS OF THE INDIVIDUAL.

That the value to the individual is not the least I am certain, though at times a single example may seem to work a hardship. The object of the examination, as far as the worker is concerned, at our plant is designed for his benefit as well as for the company's. I find that to be the case in other industries, so far as I am acquainted. Since a man's own wage and reward for service are in direct ratio to his physical ability to work, anything that increases the number of days that he can work will necessarily make him more prosperous. As a man's savings depend upon how he spends his earnings, anything that diminishes an unnecessary doctor's bill increases his saving margin. This is exactly what we are attempting to do and are accomplishing. At the Norton plant, under the guidance of Dr. Clark, it has been shown that those who were examined and advised as to their health have lost many less days' time per year than those who were not examined. He has also proved that those who reported at the dispensary with minor ailments were ill a much shorter time, because of early and appropriate care, than those who did not report. Dr. Meade of the Ford plant informs me that the difference in absenteeism, under a very well organized medical department and follow-up system, has caused a decrease from one and one-half per cent to three-quarters of one

per cent. Dr. Patterson of Philadelphia has shown that under the complete medical system that lead poisoning with its loss of time to the worker has practically been eliminated and a consequent increase in wage accomplished. Thus, we see the economic value to the worker from the lessening of lost time. On the humanitarian side there seems to be a generous credit. A worker has the right to expect to be free from danger from contagious and infectious diseases during his working hours. It would certainly be unfair to needlessly expose any man to tuberculosis, syphilis, smallpox, etc., yet this is what we have been doing under the old system. Dr. Mock of the Sears-Roebuck Company of Chicago has conclusively proven that as his work became more thorough and extended over a longer period of time, that after the once over, when he culled out the most of their tuberculosis, he has always discovered less and less as he went on, proving that he was not hiring new foci of infection and was constantly eliminating the old. In time he will practically eliminate tuberculosis from their working force. Two cases of smallpox appeared in our tube mill one morning and were discovered by my assistant, Dr. Dobbins. These men were sent home and 2,204 men immediately were vaccinated free of charge. Of this number 1,183 were fair or good takes, in spite of the fact that many had been previously vaccinated, and there was not an infection or more than the expected vaccination illness in a single case. Syphilis, the cause of more disaster to the human race than most any other disease, is spotted and eliminated, if in the infectious stage. We had a very interesting experience with a man who came to my office to consult me regarding a simple stomach disorder. I found upon questioning him that he ran a 100-ton hot ladle crane—a job that requires accuracy and judgment for his safety, that of his fellow-workmen, and for the preservation of property. This man was diagnosed as having paresis or insanity due to syphilis. He was at once removed from this important work. Three weeks

## **His Right**

A worker has the right to expect to be free from danger during his working hours.

later he tried to kill his mother and six weeks later he died in an insane asylum. Trachoma, a disease of the eye that often causes blindness and surely impairs vision, was found by us to be present in epidemic form. Major J. W. Schereschewsky examined our force and found in 5,962 men 76 cases of positive trachoma, a percentage of 1.3 per cent. He also found in the school children, mostly sons and daughters of our workmen, ten cases, or a percentage of 1.53 per cent. We opened, at our expense, a hospital for the quarantine and treatment of these cases and practically eliminated trachoma for the time being. Since then Dr. Dobbins and myself have examined the eyes of 9,000 men and have found that forty-two new applicants had trachoma. These men came from all parts of the country, conclusively proving that trachoma is quite prevalent in the United States, especially among the foreign workers. It has been our custom to treat all cases of trachoma, whether applicants or not. Railroad men depend for their safety and the safety of others upon their eyesight and their ability to read the color signals. Machinists who have deficient vision should have their eyes corrected in order that the handicap they possess may be removed and they may fairly compete with men of good vision. Hernia ran 2.6 per cent in our examination. It has been our custom to have all men in our employ either wear a truss or be operated on. The operations have been done by my assistant or myself free of charge if the patient was unable to pay. We have insisted, where possible, that the patient pay the hospital bill but if in dire circumstances we have arranged that the person might be cared for through the various charitable agencies. Up to date we have done forty odd operations, none of which have had a recurrence and none of which have been off work more than six weeks. We have over a hundred men wearing trusses and we inspect these men at least once in two months in order to see that their trusses are being worn. The taking of blood pressure has been a valuable help to the men. May I illustrate with one case that thought we were meddling with his welfare? We discovered a man with a pressure of 210. This man was offered the chance of seeking lighter work in our organization and taking treatment. In anger he left us and ever after, while living, boasted that he was doing harder work than before. Six months later he died (from a stroke of apoplexy) while he was doing the hard work that we had denied

him—a condition that we had predicted and explained to him. This man, with reasonable care, might have lived and been a good producer for many years if he had but listened to advice. I might go on and write a book upon the individual benefit, but believe that these cases will assist the development of the discussion along this division.

I can not leave this subject without calling to your attention one company that is a leader in one phase of this work. The Goodrich Rubber Company has kindly given me some figures of the value of the dental inspection of the mouths of their employees and some of the results of their dental clinic. I think that they are pointing a way that others will follow.

#### THE NEEDS OF INDUSTRY.

There must, of course, be some benefit to an industry that engages in this work. Just what that benefit may be in dollars and cents is as yet very hard to estimate, and as to the benefit in a better understanding between employer and employee I am not so sure, since the employee has seen fit to be suspicious of any good intention of his employer. It is my belief that the employer receives his benefit in a reflex manner after the employee has first received his. In some cases of new applicants the industry is able to reject their labor for the applicant's benefit and in others for its own. The fact still remains that any employer is benefited by a system that will keep his force more constant, as it is a large drag upon industry to pay the cost of hiring and bringing to efficiency any unnecessary number of men. This has been worked out surely by at least one company, the Avery Company of Peoria, which, under the leadership of Mr. Avery and the management as well as Dr. Farnum, for they have proven that the number of men hired has been markedly diminished and the efficiency and consequent productivity of those selected has been much increased, both to the workmen's advantage and that of the company. Safety has been advanced to new possibilities, for the man who is physically fit to do his work is a safer man to himself and his fellow-workmen, and when accidentally hurt becomes well in a shorter space of time. Hernia, which was the common cause of fake and unfair claims made upon a company for damages, has been reduced to a minimum. Epileptics, who were a source of danger to all, have been

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## **The Common Good**

**Individual good or harm must be forgotten in the endeavor to advance civilization.**

placed in positions of safety. Out of it all, when the clouds clear away, I firmly believe there will be a common ground established upon which employee and employer can meet, for the benefit of both and the common good of mankind.

### **ORGANIZED SOCIETY.**

Lastly, we must consider such a movement and radical change from the viewpoint of organized society. Individual good or harm must be forgotten in the endeavor to ad-

vance civilization and the welfare of humanity. We must ever have before us the thought that wealth is produced by the accumulation of the endeavors of individuals and the savings by them of the results of their productivity. Wealth, which buys us many of our pleasures, depends absolutely upon the health of the producers in all walks of life. In this movement we have the first real organized effort to actually make the science of preventive medicine a reality. Here we have a compulsory education of adults that will teach all the value of their bodies and that will instruct the world in methods of preserving their bodies. Here we inaugurate a movement that strikes at the fundamentals of the world's production and human happiness. With this knowledge we are ready to attack the problem as to what to do with the unfit. Certainly as this work progresses we will have an ever decreasing number of unfit, but at the present time it is a real question. I do not blame the manufacturer for the lack of care of the unfit, but place the blame where it belongs—upon organized society. This work is relatively so new that, there really has been no opportunity to prepare for the care of the unfit. Because I reject a man for employment in the steel industry is no sign that he is unable to work anywhere else. Our steel work is so hard that no man with heart trouble, for his own good, should be engaged in it. It simply means that he must seek an industry filled with easier burdens. At the present time we have no agency that can direct such a man to his suitable place. I see in the city state employment bureaus of Ohio, when they realize their obligation

to society, the means by which men may be vocationally guided according to physical fitness. Properly conducted and socially efficient, they should have the lists of places suitable for unfit humanities to work in, a place profitable for themselves, and where they can produce the maximum commensurate with their health. For those who are incapacitated through sickness or old age I firmly believe that we should establish a system of state insurance and old-age

pensions, so that a man, while well, may be compelled to save a small sum to care for himself or fellow-workers when sick. Under this plan there can be no question that a nation can build a system of efficiency that will produce infinitely more than formerly and still care for those who have been incapacitated in a far better and more humane manner than at present. (Applause.)

**THE CHAIRMAN:** The next paper is that of Dr. J. W. Schereschewsky, of the United States Public Health Service, on "Standardization of systems of Medical Supervision." Dr. Schereschewsky has been doing a splendid work for industry and we shall be glad to hear from him at this time.

**DR. SCHERESCHEWSKY:** It is evident that in the few minutes at my disposal I cannot enter into any discussion of my subject, "Standardization of Systems of Medical Supervision."

I believe I can indicate a few points in regard to such systems which should be standardized. It is plain, the benefits to be derived from medical supervision are very generally recognized.

#### STANDARDIZATION OF SYSTEMS OF MEDICAL SUPERVISION.

**DR. J. W. SCHERESCHEWSKY, UNITED STATES PUBLIC HEALTH SERVICE, PITTSBURGH, PA.**

Mr. Chairman, Ladies and Gentlemen: I can touch but lightly on this subject in the few minutes at my disposal. It is

### The Common Good

A nation can build a system of efficiency that will produce infinitely more than formerly.

plain that the benefit to be derived from systems of medical supervision of workers is becoming generally recognized, yet the whole subject, at present, is in a state of flux. Different ideals exist of the functions of medical supervision, its place in the industrial world, and the ends it may be made to subserve. We are now in its formative period. The useful evolution of the future depends largely upon our treatment of this subject in the present.

It needs but casual inspection of the various supervisory systems now in existence to determine that the greatest diversity, both in scope and efficiency of execution, exists at the present time. In the majority of industrial plants any system whatever of medical supervision is conspicuous by its absence; in others, some form of medical supervision is present, but, as a rule, is very far from accomplishing what it might accomplish. In still fewer plants there is a systematic endeavor at medical supervision with a resulting service which conforms more nearly to the conditions we would desire in an enlightened industrial world.

#### MEDICAL SUPERVISION AND RELIEF.

All who have studied or have had practical experience in this subject are unanimous in the belief that medical supervision is a good thing; all who are interested in medical supervision would like to see the idea become universal in practice. Yet the very diversity in organization and results create confusion and retard evolution. Moreover, medical supervision and relief, as it exists today, is, in a large measure, devoid of systematized methods for the collection of certain essential data which are necessary for the study and development of this particular field of industrial evolution. The presence of this data would greatly facilitate progress.

It is believed, therefore, that if we could agree upon a basic plan upon which such systems could be organized, if practice could be rendered uniform, if all of us could start in this work with the same ideals, if all the important data collected in the course of the work could be preserved in systematic form for comparative reference, we would make a most important contribution to the welfare of man.

The objects of the medical supervision of workers have been elsewhere described. Its fundamental purpose is to prevent the transmission of disease, needless physical deterioration, the safe-

guarding of the worker from preventable industrial hazards, the continuous maintenance of health—in other words, to render industries “safe” from a health as well as from an accident standpoint. Prevention is, therefore, the keynote of the system. But because medical relief is often itself of a preventive character, such relief must also be provided for in systems of medical supervision.

In addition to the above, provision must be made for the systematic recording of the valuable data which results from such systems, so that their study will yield the indispensable information as to benefits derived, the cost, the prevalence of defects and diseases among groups of workers, the direction in which hygienic improvements should be effected and the suppression of activities which are superfluous or ineffective.

#### PLANT PHYSICIANS.

There is need, therefore, for standards in the following particulars, which fall naturally into two general classes, to wit: (a) Standards of personnel and equipment, and (b) Standards of practice. Under the first head we must consider the employment of whole time or part time plant physicians; the number which should be employed for a given factory personnel; the aids, in the form of clerical, nursing and other assistants, which should properly be supplied the plant physician; the function of such assistants; the floor space required, the construction and equipment of the relief department, and similar questions.

Under the second heading we must put:

1. Standards of physical examination.
2. Standards with respect to rejections.
3. Standards in regard to physical defects and diseases not implying rejection, including the provisions for those physically sub-standard.
4. Standards of practice in regard to injuries.
5. Standards for the treatment of cases requiring medical relief.
6. Standards for the sanitation of industrial plants.
7. Standards for efforts at health education of the plant personnel.
8. Systems of recording and compiling records.

It is evident from the foregoing that this question is highly com-

## The Two H's

A bed at Home is worth two in a Hospital. It is better to be careful than crippled.

plex. There is so much that might be done, yet we are hampered at every hand by cost considerations, misapprehensions of the benefit incurred, and many other discouraging features. Nevertheless, it is important, if medical supervision is to fulfill its predestined function, measure up to the constructive ideals it stands for, that all the standards enumerated above must be considered in their turn and due provision be made for their adoption.

I cannot close without referring to a provision which will largely simplify the solution of the problem. Economists tell us that sickness insurance, which is a fact in European countries today, must sooner or later be introduced in this country. This is, of course, an economic provision of the future. We have not got it now. Yet well organized systems of mutual sickness insurance exists in many plants. I need hardly say that pending the legislation on sickness insurance which seems bound to come, such private mutual sickness insurance provisions should form part of the department of medical relief. In this way means may be furnished for properly distributing the cost, increasing the efficiency of the supervision and establishing and realizing in actual practice some of the essential standards which I have indicated above. (Applause.)

THE CHAIRMAN: We in Ohio believe that the Industrial Commission of Ohio is in a way to set new standards. We in Ohio believe that our State Health Board is setting new standards for health supervision. It, therefore, gives me great pleasure to introduce Dr. Emory R. Hayhurst, of the Ohio State Board of Health, who will speak to you on "Standard Forms for Recording Medical Data."

DR. HAYHURST: In order to make intelligible what I am going to talk about I have brought some 200 forms, and I will ask you to help me distribute these forms, in the shape of cards.

## STANDARD FORMS FOR RECORDING MEDICAL DATA.

DR. EMORY R. HAYHURST, DIRECTOR DEPARTMENT OF OCCUPATIONAL DISEASES, OHIO STATE BOARD OF HEALTH, COLUMBUS, OHIO.

The desirability of adopting standard forms for industrial health relations seems very opportune at this time because (1) the movement for state-wide sickness insurance (similar to that of accident insurance) is on foot for all who are gainfully employed; (2) legal action against employers on account of alleged industrial sickness is becoming more and more frequent; (3) juries and courts are becoming more and more inclined to consider that the word "injury" in compensation laws includes occupational diseases; and (4) efficiency men and industrial economists have begun to look into the question of the health of workers with a considerable degree of seriousness.

As a beginning, it seems desirable to limit the number of so-called standard forms which may be used for obtaining data to two in number—one for the worker and one for the work place. From these two forms as a basis, other forms may be developed to fit the peculiarities of time and place. The forms submitted for your scrutiny are intended for the first physical examination, and, in the case of sickness complaint on the part of any worker already employed, for an inspection of the workplace or work qualities with which he is surrounded. Follow-up forms, forms for repeated examinations or inspections, and forms for making summaries will not be considered here. Also, it is not presumed that we are dealing to any extent with acute medical conditions which suddenly incapacitate for work.

### USE OF FORMS.

In the use of these forms, it is suggested that cards of the same size and respective colors, but left blank, be kept on hand for recording additional or special data. In brief, the yellow form, headed

## **"I Told You So"**

Tell the man in charge of the shop before an accident happens—not afterward.

"Personal Health Data," considers the worker as a unit. In establishments undertaking physical examinations, this form should be filled out for each worker as fully as policy and means permit. The filling out of this form should be the first requisite in undertaking physical supervision of workers. The filling out of the white form, entitled "Employment Health Data," it is expected, will be done next in order. The two forms are kept together, along with any additional information collected, and the whole placed within a folder so that each worker's record, complete, is kept in a folder by itself. Cards and folders are so sized that they will just fit into the standard filing cabinet drawer of 5x8 inches in dimensions. It will be observed that one edge of the folder protrudes about half an inch and upon this should be typewritten the worker's name, number, and other desirable identification features. Caution is advised in increasing the number of forms. In connection with the forms here presented, it is believed that most essential features have been included. In fact, your general comment at first glance is undoubtedly to the effect that the forms are too extensive. This preliminary opinion requires some comment. In the first place, it will be noted that all the information is of basic character respecting the worker and his work place, that there has been kept in mind health, efficiency, and prolongation of working life, and that all has been arranged for on two conveniently sized cards. For persons who have a natural inclination to write in a large hand, or to prefer space, there is no reason why the information upon these two cards may not be spread out upon cards of larger size. All that is necessary is to adopt a size fitted to some of the standard cabinet drawers.

Taking up the yellow form ("Personal Health Data") in more detail, it will be observed that headings are listed down the left-hand side of the card with blank lines extending to the right for recording findings. Just exactly what to record is indicated by the small type words printed in succession just beneath each line. By this means practically the whole card may be written upon almost as though it were a blank, yet the specifications are all present.

Here and there, especially toward the ends of lines, room is left for miscellaneous information. The form is gotten up with the idea of saving writing time as much as possible; also reading time, and yet to leave out nothing of importance. To do this, it is sug-

gested to use a simple common code composed of X, XX and XXX, which indicate degrees of defects, with "R" for right and "L" for left. The note at the top of the card explains this use. By so doing, not only writing time is saved, but space, so that where it becomes advisable to record other data, the space is at hand for so doing.

The factors for "Identification" are, it is believed, pretty well covered, and, in general, those for "Previous Health." It was found impracticable, however, to include the numerous features which might be present in different cases as to "Present Health (complaints)" in the space allowable, so two blank lines without comment have been left for this purpose. The features of "Habits," "Family," and "Health Interest" are self-explanatory. Under the head of "Physical Examination," it is believed that the most important conditions to be sought for, for the purposes at hand, have been indicated by the cue words beneath the lines.

#### KEEPING THE RECORDS.

It is to be noticed that considerable relative space has been devoted to the "Eyes." This is in keeping with the findings of physical examinations. In Ohio, for instance, where 15 per cent of the industrial workers of the state are now physically examined, eye defects have been found to be the chief ones in number. Even with the space allowed, it is to be noted that the single word "disease" stands for a multitude of possible conditions. Under the head of "Ears," "scars" refer particularly to those of former mastoid operations. Undoubtedly the dentist would have us devote more than one line to the subject of "Teeth." In connection with "Gums," "discolor" would include lead lines, copper lines, etc. It is thought well to put the word "Voice" down since this feature alone is sometimes very suggestive. The cue words to the three lines devoted to "Chest" include suggestive conditions, but the entire space may be used in some descriptive manner, especially if none of the terms seem to apply to a case in question. It is believed that the cue words under the head of "Abdomen" will catch most physical imperfections of this region as well as of the dorsum. The same may be said of one of the cue words under "Pelvis, Genitals, and Rectum." In Ohio, the second chief physical defect appears to be "hernia." Space is left here for recording the degree (by the



## **The Difference**

**Between a wise man  
and a fool is the  
fool's mistakes never  
teach him anything.  
Think it over.**

use of the Xs), the position ("R" or "L"), and for a word or two of description, if necessary. A line is also present for the examination in the case of the female.

In regular procedure of physical examinations, the "Lower Extremities" conveniently come next in order as the examination proceeds, while peculiarities in the upper extremities come last. Significant cue words are subtended for each. The ascertaining of the pulse in both wrists simultaneously (the

same should also be done in the case of the ankles) is also emphasized. Attention is specifically called to "Brachial Arteriosclerosis." "Blood pressure" should be taken both before and after exercise. The amount of exercise should be standardized and it is suggested that the bending movement in attempting to touch the toes and then extending the body upward and backward, ten times in about twenty seconds, would suffice for a proper exercise standard. Usually some idea of myocardial efficiency can be determined thereby. The one line devoted to "Urine Analysis" with its cue words, is believed to be sufficient. Definite standards should be adopted for indications and methods of procedure in blood pressure determinations and urine analysis and perhaps for blood and sputum analysis, but I consider these beyond the scope of this short paper.

For the three lines devoted to "Mental Tests," acknowledgment is made to the United States Public Health Service's scheme employed at immigration depots which is here considerably abbreviated.

Finally, on this card a little space is left for "Miscellaneous" information, for "Summary" or "Diagnosis," and for recording the "Disposition" of the case. Here latitude may be given in that the advised disposition or the actual disposition may be recorded.

The "Employment Health Data" form, the white card, is arranged to be of use (1) for the self-inspection service of a plant; (2) for private inspection bureaus (insurance companies and the like); and (3) for official or governmental inspection services. It

requires not only a keen observer, but one who is skilled in the effects of hazards upon health to fill out this blank properly. Hence, the plant physician or other physician should always perform this duty.

It has been somewhat difficult to devise a single form which would answer for all three types of inspection services. Yet it appears very desirable to have all inspections alike in both elements and methods. Otherwise it is useless to discuss standards. As far as possible, the individual worker should again be considered a unit in the use of this form and this form should be filled out whenever and wherever a worker complains of indisposition or sickness. A very broad view should be taken of this word "complaints." The medical examination of the individual, which has been previously completed, should be kept in mind, for it may exhibit physical findings which do not occasion any complaint on the part of the worker but may yet be due to, or endanger him, in certain features connected with his work. Whether the worker makes his complaint to the factory physician, or to his own physician, or at a dispensary or hospital, or directly or indirectly to the State Factory Inspection Service, this same form should suffice for the necessary inspection. It will be noted that "Home influences" and "Habits" are provided for.

### **The Other Fellow**

While busy making yourself safe, take a little time to make your fellow workmen safe, too.

#### IDENTIFICATION AND PERSONAL HISTORY.

This form makes use of a slightly different system of recording than that described for the physical examination. After the first few lines, which are devoted to identification and previous industrial history, the examiner or health inspector passes on to a consideration of the health-hazards to be taken under advisement. Just which work place to undergo analysis is a matter which depends upon the object of the inspection. (1) In the case of a private physician, a dispensary, or hospital which is making an inquiry into the industrial relations of a patient, that work place where

it is considered the chief hazards existed should be taken and its name written in the space marked "Work Place." It should also be indicated explicitly whether the information concerning the hazards is according to the statement of the patient, or whether it is the result of an actual investigation of the work premises where the afflicted worker was employed. In case it appears advisable to obtain information upon two or three work places which may have influenced the health of the worker detrimentally, it is necessary to use two or three separate cards. (2) In the instance of an inspection service conducted by an insurance company, or by state or federal authorities, the information would be the result of each actual inspection of a premise. In case an individual worker was not the subject of interest, the unit might be taken as a trade-process or an entire department or work-space in the establishment. (3) In the case of a factory physician's survey, after completing his physical examination of the worker and learning either of industrial health complaints or hazards from the worker or suspecting the same from the results of the physical examination, he should go to the worker's place of employment in the plant with this card in his hand, and after careful observation, check and estimate the various hazards as he encounters them. It is presumed that the information obtained will be brought to the attention of the management or of the efficiency bureau in the plant.

By all means an attempt should be made to standardize the terms used which indicate the *occupation* and the *industry* of the worker. In order to accomplish this, it is very advisable that the nomenclature of the United States Census Bureau, as exemplified in its recent publication entitled "Index to Occupations, Alphabetical and Classified," be used. On this account a column has been left in the table on this card under the head of "Industrial Data" which is headed "Census Symbol." Here should be placed the number which the census classification gives to the particular occupation or trade-process which the worker is pursuing. In addition, in the columns headed "Industry" and "Occupation," the exact terminology should be used as laid down in this manual. A few months' work with this manual has convinced me that its 9,000 or more occupational designations cover practically every form of industrial application and that elasticity enough is furnished to cover all others by following the directions.

## HAZARDS OF THE OCCUPATION.

Now, as to the hazards of the occupation itself (and these imply hazards to health only), an arrangement is submitted covering, in the left-hand margin of capitalized words, all of the hazards usually encountered, *e. g.* "Dust," "Air," "Fatigue," "Poisons," etc. The balance of the space to the right is devoted almost entirely to cue words which answer the specific question "Why Hazardous?" Here will be found a fairly full delineation of all of the incidents pertaining to the work place, the workman, and the supervising force which may have a bearing upon the reasons for calling attention to "Dust," "Humidity," "Air," etc., as hazards. It should be the object of every inspection to determine how much the hazards affect the *efficiency* of the worker and for that reason this word is placed along with almost every hazard, where it may be marked X, XX, etc.

The method of using this part of the card is really very simple. It requires very little writing. If it is obvious at a glance that "Dust" is no hazard, then all of the words qualifying that idea are passed over, but if "Illumination" is a possible or obvious hazard, the reasons are specified by marking the cue words themselves with X, XX, or XXX, according to the degree of the conditions found present. If it is desired to indicate that such hazards are not so much the fault of the process itself as of the work *space* in which it is being carried on, or of the *locality* or region, it is marked respectively "S" or "L" in addition to the Xs. (See footnote on the rear of card.) Finally, there is enough space on the left-hand margin to grade each hazard as a whole.

It is truly surprising how an analysis of this character will uncover features in connection with work which have remained unsuspected for a long period of time. In fact, the chief value of this inspection service is to get right down to the bottom and find factors which may be causing slow-going or chronic affections—that great class which is so much on the increase and is the chief bane of the American people today, and is, in many respects, peculiarly American, according to the findings of our statisticians.

In order to illustrate the practicability of these forms, it is not out of place to say that this is the system which was adopted in making the recent survey of industrial health-hazards and occupa-

tional diseases in Ohio. All of the information of the survey is contained in eight drawers accommodating 5x8-inch cards, the card forms and their method of use being practically the same as these. In summarizing surveys for large numbers of items, the most easily workable system is to give each sub-hazard or defect a number which will stand for that hazard or defect wherever used and does away with the time and space required for the constant rewriting of terms. By these means, 1,040 establishments employing 235,000 wage-earners were covered in the State of Ohio within the space of eighteen months with a part-time working force of half a dozen physician-investigators and a total appropriation of \$14,000.

In conclusion, it is not expected that even two persons, much less a body of interested individuals, will agree upon standards for any purpose, unless each is fully prepared to relinquish some pet ideas and opinions. The two forms submitted are, therefore, not offered to you as perfection exemplified. An attempt to keep down the number of forms, to be comprehensive and at the same time to be specific, to produce something workable, and to satisfy differently interested classes who are seeking efficiency, but whose information should be the same—these have been the chief objects in arranging these specimen standard forms for recording medical data. (Applause.)

#### PERSONAL HEALTH DATA

(Yellow Form)

*Note: Use X for slight defect, XX, more marked; XXX, very marked; R, right, L, left, as required.*

DATE.....

IDENTIFICATION: Name.....

|              |         |            |
|--------------|---------|------------|
|              | Surname | Given name |
| Address..... |         |            |
| No.          | Street  | City       |

Age    Sex    M. S. W. D.    Place of birth    Nativity of parents

|                        |                                      |                       |         |       |
|------------------------|--------------------------------------|-----------------------|---------|-------|
| Religion               | Date of immigration                  | Time in this vicinity |         |       |
| .....                  | .....                                | .....                 |         |       |
| Apparent age           | Height                               | Weight                | Posture | Gait  |
| .....                  | .....                                | .....                 | .....   | ..... |
| Gross deformity        | Apparent general condition of health |                       |         |       |
| .....                  | .....                                |                       |         |       |
| Degree of intelligence | Ability to understand English        |                       |         |       |
| .....                  | .....                                |                       |         |       |
| Miscellaneous          | .....                                |                       |         |       |
| .....                  | .....                                |                       |         |       |

## PREVIOUS HEALTH: .....

Medical or surgical attention, especially since 12 yrs of age, such as:

|          |             |           |       |
|----------|-------------|-----------|-------|
| Diseases | Mutilations | Fractures | Cures |
|----------|-------------|-----------|-------|

|                   |                   |
|-------------------|-------------------|
| Health migrations | Venereal diseases |
|-------------------|-------------------|

## PRESENT HEALTH (Complaints) .....

## HABITS:

Present .....

Past .....

|         |         |        |
|---------|---------|--------|
| Alcohol | Tobacco | Coffee |
|---------|---------|--------|

|     |       |     |
|-----|-------|-----|
| Tea | Drugs | Gum |
|-----|-------|-----|

## FAMILY: .....

|              |                  |
|--------------|------------------|
| Tuberculosis | Arterial disease |
|--------------|------------------|

|          |        |          |
|----------|--------|----------|
| Diabetes | Cancer | Insanity |
|----------|--------|----------|

## INTEREST: .....

|               |               |
|---------------|---------------|
| In own health | Miscellaneous |
|---------------|---------------|

## PHYSICAL EXAM.—HEAD:

.....  
 Gray hair      Parasites      Scalp disease      Deformity

FACE: .....  
 Pallor      Suffusion      Cyanosis      Skin dis.      Deform.

## EYES (Snellen Chart):

.....  
 Without glasses      With glasses      Color blindness

.....  
 Squint      Proptosis      Diplopia      Nystagmus

.....  
 Increased tension      Lid reflex      Deformity      Disease

.....  
 Puffiness      Icterus      Pallor      Injection      Pterygium

.....  
 Pupils: unequal, contracted, dilated, irregular, opacity, reflexes

EARS: .....  
 Hearing      Wax      Cotton      Discharge      Odor

.....  
 Eczema      Tender mastoid      Scars

NOSE: .....  
 Obstructed breathing      Nasal voice      Ozeana      Deform.

LIPS: .....  
 Color      Movements      Defects

TEETH: .....  
 Tartar      Caries      Irregularity      Malocclusion

.....  
 Absence      Odor      Dental work      Use of brush

GUMS: .....  
 Retraction      Redness      Pyorrhoea      Discolor      Atrophy

|                                    |                         |                                       |                            |
|------------------------------------|-------------------------|---------------------------------------|----------------------------|
| TONGUE .....                       | Coated .....            | Defects .....                         | Movements .....            |
| PALATE: .....                      | UVULA: .....            |                                       |                            |
| VOICE: .....                       | TONSILS: .....          |                                       |                            |
| PHARYNX: .....                     | TEMPERATURE: .....      |                                       |                            |
| NECK: .....                        | Goiter .....            | Glands .....                          | Pulsations .....           |
|                                    |                         |                                       | Scars .....                |
|                                    |                         |                                       | Movements .....            |
| CHEST: .....                       | Skin affections .....   | Flatness .....                        | Sunken apices .....        |
|                                    | Emaciation .....        | Limited expansion .....               | Suspicious breathing ..... |
|                                    | Bronchitis .....        | Pleurisy .....                        | Tuberculosis .....         |
|                                    |                         |                                       | Pneumonia .....            |
|                                    | Emphysema .....         | Stoop .....                           | Spinal disease .....       |
|                                    | Breasts .....           | Deformity .....                       | Valvular disease .....     |
|                                    | Myocarditis .....       | Pericarditis .....                    | Miscellaneous .....        |
| ABDOMEN: .....                     | Skin affections .....   | Adiposity .....                       | Distension .....           |
|                                    | Dullness (flanks) ..... | Ventral hernia .....                  | Liver? .....               |
|                                    | Gall bladder? .....     | Spleen? .....                         | Kidneys? .....             |
|                                    |                         |                                       | Visceroptosis .....        |
|                                    | Tender points .....     |                                       | Abnormal swellings .....   |
|                                    | Scars .....             | Lumbar or sacroiliac affections ..... |                            |
| PELVIS, GENITALS AND RECTUM: ..... | Hernia .....            | Patency of rings .....                | Adenitis .....             |
|                                    |                         |                                       | Varicocele .....           |



|                                      |             |                 |                   |
|--------------------------------------|-------------|-----------------|-------------------|
| Hydrocele                            | Deformities | Skin affections | Venereal diseases |
| .....                                |             |                 |                   |
| Hemorrhoids                          | Fistula     | Miscellaneous   |                   |
| .....                                |             |                 |                   |
| Defects or diseases of female organs |             |                 |                   |

**EXTREMITIES:**

|                                    |                 |                   |                |
|------------------------------------|-----------------|-------------------|----------------|
| Deformities                        | Scars           | Ulcers            | Varicose veins |
| .....                              |                 |                   |                |
| Skin affections                    | Edema           | Arches            | Toes           |
| .....                              |                 |                   |                |
| Soles                              | Pulse at ankles | Patellar reflexes | Ataxia         |
| .....                              |                 |                   |                |
| Fingers                            | Hands           | Wrists            | Arms           |
| .....                              |                 |                   |                |
| Arteriosclerosis (radia, brachial) |                 | Glands            | Miscel.        |

**BLOOD PRESSURE:**

|                 |           |
|-----------------|-----------|
| Before exercise | .....     |
| After exercise  | .....     |
| Systolic        | Diastolic |
| Pulse pressure  |           |

**URINE:**

|                    |         |            |          |         |
|--------------------|---------|------------|----------|---------|
| Appearance         | Sp. gr. | Reaction   | Sediment | Albumin |
| .....              |         |            |          |         |
| Reducing substance | Indican | Microscope |          |         |

**MENTALITY TESTS:**

|                |             |              |          |       |      |
|----------------|-------------|--------------|----------|-------|------|
| Day            | Month       | Date         | Year     | Place | Ship |
| .....          |             |              |          |       |      |
| Months in year | Names       | Days in week | Names    |       |      |
| .....          |             |              |          |       |      |
| Backward       | Counts 1-20 | Counts 20-1  | Mistakes |       |      |
| .....          |             |              |          |       |      |

HOME: .....  
 Congested: neighborhood, house, apartment, tenement  
 .....  
 No. floors      Vent.      Light      Dampness  
 .....  
 Heating      Renter      Owner      Boarder  
 .....

Home industry                      No. adults                      No. children  
 .....  
 Sleeping room: Vent., Light, Dampness, Heating, No. pres.  
 .....  
 Bathing facilities      Toilets      Organization memberships  
 .....  
 HABITS: Food.....Clothing.....  
 Spare time: .....  
                     Dissipative      Recreative      Other work      Sleep

UNEMPLOYMENT CAUSES: .....  
 .....

## INDUSTRIAL DATA:

|        | Names of Employers | Adresses of Employers | Industry |
|--------|--------------------|-----------------------|----------|
| 1..... | .....              | .....                 | .....    |
| 2..... | .....              | .....                 | .....    |
| 3..... | .....              | .....                 | .....    |

| Occupation | Census Symbol | Date Begun | Date Stopped |
|------------|---------------|------------|--------------|
| .....      | .....         | .....      | .....        |
| .....      | .....         | .....      | .....        |
| .....      | .....         | .....      | .....        |

WORK PLACE: (Specify which employer: 1, 2 or 3)

HOURS: .....  
                     Day      Night      Overtime      Noontime  
 .....  
                     Other recesses      Per week      Steadiness      Seasons

HAZARDS .....

WHY HAZARDOUS (suggestions) .....

DUST: Type.....Amount; breathed, skin, eyes; prevention, confinement, removal, respirators, carelessness; dry sweeping, dusting or cleaning during work hours; promotes inefficiency, sickness .....

**DISORDER (DIRT):** Building structure, floors, surroundings, materials, insufficient cleaning, ordering; negligence; promotes low standards, inefficiency and injuries.....

**HUMIDITY:** Water, steam, vapors, dampness; confined dampness or dryness; promotes injuries, sickness and inefficiency .....

**ILLUMINATION:** Obstructed surroundings, limited window space, lighting (AEGO and by process); shadows, contrasts, flickering, glare, brilliancy, colors; poor shades, eye shades, goggles, helmets, screens; dark-room work; facing light source; promotes sickness, injuries, inefficiency.....

**AIR:** Stagnation, room temperature (high?), humidity (low?); fine dust, smoke; leaks of gas, vapors, fumes; open fires, gas flames; very close confinement; promotes sickness, and inefficiency .....

**HEAT:** Insufficient protection, rest intervals, drinking facilities, showers, baths, lockers, change rooms, clothes-drying quarters; long hours; permitting undue exposure; promotes sickness, injuries and inefficiency.....

**COLD:** Insufficient heating, clothing; drafts, inactive work, alternations with heat; outdoor closets; weather exposure; basement work; promotes sickness and inefficiency.....

**FATIGUE:** Laborious work, long hours, piece work, speeding up, monotony, constant standing, prolonged strains, chairs without backs, faulty postures, hard floors, jarring processes, pressures against body, eye strain, noise; insufficient rest periods, female quarters, variations, rotations, recreations.....

**INACTIVITY:** Sedentary work, limited movements, mental concentration, confined work space.....

**PRESSURES:** Caisson work, diving, high altitude, concussion.

ODORS: Sickening. ELECTRICITY: .....

INFECTIONS: Materials.....insects, animals, persons;  
mouthed articles, short intervalled handling of objects, wiping  
rags, oil; frequent trivial injuries, burns, flying particles; prox-  
imity to others, spitting on floors, common towels, cups; insuf-  
ficient wash places, closets, gloves, goggles, cuspidors, rules,  
medical care, physical exams., first aid, hospital arrangements  
.....  
Venereal diseases: suggestive pictures, writings, language—  
especially where sexes work together.....

POISONS: Name and form.....amt. of  
risk, worker ignorant, careless; instructions insufficient, disre-  
garded, wrongful, harmful; mislabeling; eating at work, in work  
room; mustache, beard, indifference, medical supervision, gloves,  
respirators, clothes, lockers, washing facilities, lunch room  
.....  
Mechanical protection.....  
work variation, rotation.....

THIRST: Drinking water not good, or convenient, or properly  
cooled, improper beverages preferred.....

ALCOHOLISM AND DESIRE FOR STIMULANTS: Thirst,  
dust, fatigue, tradition, habit, physical weakness; permitted dur-  
ing work; saloons near, ignorance of effects; no home gardens,  
no efficiency department.....

Signed.....

N. B. In addition to the marks X, XX, and XXX, use L for haz-  
ards which are due to the Locality (or neighborhood), and S  
for hazards which belong to the Space (or work room) in  
which the work is done. All other hazards are presumed to be  
due to the nature of the Process itself.

#### DISCUSSION.

THE CHAIRMAN: The Chairman believes that the discussion of  
these subjects will possibly prove fully as interesting as the papers  
themselves. Discussion will now take place on the first five papers.  
In addressing the meeting, the chair asks that those discussing the  
papers give their names, residences and business connections, so

that the stenographer may make note of the same. He also asks that they step forward, if that is possible considering the crowded condition of the room.

(A motion was made, seconded and carried that the next two papers be included in the group to be read before the meeting proceeded with the discussion of papers. The writers not being present the chairman asked for a discussion on the first five papers.)

**THE CHAIRMAN:** If the abstract problem were put to us—as to the value of the physical examination and supervision of the health of the industrial worker irrespective of the method, there would be a general agreement that it was best for industry and for society that this matter be undertaken. The thing that has brought forward controversy has been the method of supervision, with the resulting conflict between labor and capital.

**STATE MANAGEMENT.**

**MR. H. A. BULLOCK** (Brooklyn Rapid Transit Company): I fancy that a good many of us in this meeting are, so to speak, between the upper and nether millstones. On the one side we have a force of workers that we want to influence in the interest of their health and efficiency. On the other side we have certain business conditions limiting and determining the amount of funds and the procedure that can be adopted with the workers. Whether we happen to be executive officials or not we have to go over the income accounts to determine how much may be applied to one object or another and determine whether a method is practicable in view of certain necessities of the business. If we were starting the whole subject—if we were building society anew—we would not be in that position. But, unfortunately, we are never building society anew, any more than a great city is building anew when it tries to modify or improve its transportation system or any other municipal facility. Therefore, I doubt whether state management of many of these problems is going to be realized quite so quickly as some might wish to see, through the compelling influence of the state and the state's ability to raise money by taxation.

The state's ability to impose taxation upon its members for workmen's compensation and similar legislation is limited. I do think we are going to see a power that will produce a rapid enough result to satisfy the workers. I believe that when we realize that we are

## Every Man

Has a right to live  
and we want to help  
him to live his life in  
perfect safety. We  
must have his co-op-  
eration.

an aggregation of industries under similar conditions we can set up machinery to handle these problems, and it will probably get the best result. But the greatest number of industries are not in that condition today. The public service corporation is practically the only one of its kind in the town; there is not another one in a locality near enough to cooperate with it; so it becomes autocratic and uses the paternal method.

When it comes to providing practicable methods for doing these things, if we can advocate the medical work so that the industry finances it—where the medical work comes in contact with the industry itself, such as in employment—and let the industry share at that point and encourage the workers to assist by providing for sick benefit insurance. I think we will make steadier progress in attempting to adapt our ideals to practical conditions than if we go too far in attempting to have industry take all the cost or to put too large a part on the worker. We will lose a great deal that otherwise might be accomplished. (Applause.)

THE CHAIRMAN: Dr. Alice Hamilton of the Federal Bureau has come into the room, so we will proceed with the regular program. Dr. Hamilton will speak to us on the subject of "Some of the Objections to Health Supervision, Including Suggestions for Caring for the Physically Unfit Workmen."

### SOME OF THE OBJECTIONS TO HEALTH SUPERVISION, INCLUDING SUGGESTIONS FOR CARING FOR THE PHYSICALLY UNFIT WORKMEN.

DR. ALICE HAMILTON, HULL HOUSE, CHICAGO, ILL.

Mr. Chairman: I was very much disconcerted when I saw the title of my paper as printed in the program. When I saw that the program committee had planned a section devoted to the physical examination of the working men, I suggested to the committee that

the side of labor ought to be presented, and suggested that they ought to have a trade unionist come and tell why there is a great opposition among working men to the physical examination. They asked me to present it instead of having a trade unionist, so I am only a spokesman, and when I am presenting objections I am presenting his objections. What may seem to you unreasonable, seems to him to be reasonable, and you who represent one class in the industrial

world should know the attitude of their class with regard to measures you have adopted or which you may think of adopting.

So, with that proviso—that what I say is an attempt to present the attitude of the working men—I will give you the objections as I understand them. If based upon mistaken ideas, then I think you ought to try to clear up the mistake, because, if you don't, the opposition will undoubtedly and inevitably grow. Those of us who are interested in laws for the direction of the working men believe that the working men will combine against all such laws and go on taking chances under the old haphazard system.

Now, their first objection is the effort to get rid of the so-called agitator. They believe it has taken place and feel they can prove it.

The second objection is that your system of examining a man in order to see whether he may get a job or hold a job results in throwing out a lot of workmen who believe that they still have a good many years of active life before them but who have been found to have some physical defect which the employer, insured under the workmen's compensation laws, believes increases his risk. Suppose a man is found to have a heart weakness or hernia. Of course, any physician would say it is much better for that man to be prevented from doing any hard, strenuous physical work. That is true, but put yourself in his place—I wonder how many doctors or other professional men would care to have a company's physician decide how they shall live? Many may be told they are under too great a mental strain, and you may believe that; but would you be will-

### A Question

"I wonder how many doctors would care to have a company physician decide how they shall live?"



ing to pass from a large salary to a smaller salary if told that thereby you would prolong your life?

ARGUMENT OF THE WORKMAN.

With the worker, he must pass down to a lower position. The employer thinks he is doing the very best he can when he gives, say, his machinist a position as watchman or elevator man. He thinks he is doing the best he can; but the skilled workman is passing, probably, from \$3 a day to \$1.65 a day. That is just as bitter for him as it would be for you to accept a subordinate position after being at the head, and that is what the workman opposes under this system of compulsory examination. They say they have no objection to a physical examination, especially in regard to communicable diseases, or for workers under compressed air, knowing that the strain is too great. They are willing to accept that; they are willing to accept a regular examination for occupational diseases. They do not object to it when it is needed for the safety of the public. The railroad conductors say they have always had such examinations. The Amalgamated Street Railway employees also say they have no objection to it. What they do object to is the physical examination that is carried out, they believe, in the interest of the employers only—to lessen the employers' risk.

We must all remember that I am speaking as if I were the workman. He does mistrust the company physician, no matter how unjust that suspicion may be. He says if the examinations are to be carried out, they should be by neutral, impartial physicians—such systems as Dr. Schereschewsky and Dr. Patterson and Dr. Hayhurst have instituted. They say that the health supervision should be by the state or municipality, not by an interested physician.

They say, also, that the system is spreading like wildfire in the United States, as it is not in any other country, even in England, where workmen's compensation is in force and after which we have copied. They say it is due to the American speeding-up system. They see the world of workingmen being put through the sieve of physical fitness—the physically fit passing through and those left not being provided for.

LACK OF PERSONAL INTEREST.

We must realize that there are a great many concerns employing unskilled or semi-skilled workmen, where there is no personal re-

lation at all to the company, and where the workman is not provided for when declared unfit. They say there is no provision made for these men. They say no employer has a right to cast out the physically unfit until two things have been done—the health of the workingmen in all trades safeguarded and some system of state insurance for invalidity and old age provided. Mind, I say “invalidity.” I think the majority of working men would say that the sick workingman, the actually sick, is apt to be looked after by the humane employer, but the man invalidated and unfit for work, and too old—we know it is the truth when the workman says it is almost impossible for a man forty years old or older to get a job when thrown out. The workingman says this must come first—you must provide for the man who is thrown out before you provide for a system which will throw him out.

Now, probably what I have been saying seems to most of you only partly reasonable and to many unreasonable. To me it does not seem unreasonable. I have only tried to give the attitude of the workingmen, and I hope there will be an opportunity for you to say how unreasonable you think it is. I may be able to answer some of the objections. (Applause.)

THE CHAIRMAN: We are, indeed, indebted to Dr. Hamilton for presenting the workman's side of this question. The Chairman was sorry to learn that the workingmen would not be represented on the program, as in Chicago, by a member of their own body, but I am sure Dr. Hamilton has presented their side as well as any representative could do it. We will now hear from Dr. Francis D. Patterson on the subject of “Medical Supervision in Small Plants: Suggestions for the Combining of Several Small Plants Under One System.” Dr. Patterson is Director of the Accident and Sanitary Department of Harrison Bros. & Co., Philadelphia, Pa.

#### MEDICAL SUPERVISION IN SMALL PLANTS.

##### SUGGESTIONS FOR THE COMBINING OF SEVERAL SMALL PLANTS UNDER ONE SYSTEM.

DR. F. D. PATTERSON, PHILADELPHIA, PA.

Mr. Chairman and Ladies and Gentlemen of the National Safety Council: It seems to me that it is a very big advantage to the state at large if measures can be taken to extend medical super-

## **Labor's Lesson**

**"Medical supervision is an absolute boon to the working man and the working woman."**

vision throughout the industries. In the first place, it is a very distinct advantage to the employer of labor. In the second place, it is of equally great advantage to the employe. It seems to me that in any medical supervision the two should have a common meeting ground and that we should try to put before labor, both organized and unorganized, the fact which I say—knowing that it will be disputed—that medical supervision in the industries is an absolute boon

to the workingmen and the working women, and is something which they, on their part, should encourage and help, and that it should have their support—which I am sorry to say it has not received.

From the standpoint of the employe it has been urged by organized labor that medical supervision is an infringement of the personal liberty of the American citizen, be he male or be she female. [Laughter and applause.]

Gentlemen, organized labor stands practically as a unit in opposing medical control, and they do it for several reasons. In the first place, because they have asked, and naturally so, what is going to become of the physically unfit? The time at my disposal does not permit of making a plea for state insurance to take care of those who by reason of having to go into labor before maturely developed have lost what should be the heritage of every American citizen, and that is good health.

We are going to see, in every state in this country, state insurance, but this is not the time to discuss it. I want, however, to enable my people to have a two-fold education—an education, in the first place, of the employee to the fact that one of the greatest boons that can come to him is to have medical supervision in the plant; that he will have at that plant, at certain stated hours during the day, a competent medical man to whom he can go as guide, philosopher and friend, to whom he can look for the maintenance of his health in the industry.

For the employer it means that he has a doctor on the job in his plant at a certain stated hour in the day, and that he is going to examine the applicants for employment—not so much for the rejection of the physically unfit as for the classifying of the job to the particular man, finding out what the man's particular capacities and capabilities are, and trying to put the man into his proper place in the industry, so that he does not try to get the square peg in the round hole, with consequent disorganization, not only from the standpoint of the plant but also decreased earning capacity from the standpoint of the man himself.

### **The Square Peg**

Trying to put the man into his proper place in the industry, not the square peg in the round hole.

#### **PHYSICAL EXAMINATION.**

I believe it is perfectly feasible. I am doing it in Philadelphia, and I believe it can be done in every state throughout this land—to have a doctor go to the plants at a certain specific hour, let him there examine the men and see the accident cases that occurred the day before, and which were dressed by the first aid men, and confer with the workers. Let him take, sometime during his stay at the factory, a walk around and see what the conditions are. A doctor soon gets experience enough in the factory to determine whether conditions are right or not. Let him make a friend of the superintendent of the plant, so that the superintendent will look to him for advice and assistance in solving these problems. I am convinced that if this is done, and carried out on a sufficiently extensive scale, we will succeed in stamping out septic infection in the industries.

I believe the time has passed, in most plants, when a man has his finger cut that he is allowed to tie a dirty rag on his finger, and eventually land in the hospital with a serious infection. If the men at the plant know they have first-aid boxes and a first-aid attendant and can have dressings made, and that the next day they are going to see a company surgeon, who will be there, I am satisfied—as satisfied as that I am standing here—that cases of septic infec-

tion will disappear. I know we have done it in our plants, and I know everybody else can do it.

I believe, as was said here yesterday, that we must have a combining of the German and English characteristics in this country. We must have not only supervision on the part of the state, but we must also have amenability on the part of the worker. I believe if we can educate the workingmen, organized and unorganized, to the fact that medical supervision of workingmen in the plant means what I know it means—increased wages for them—I am satisfied that in the not far distant day we will have a class of workingmen in this country who will live so long that they will need neither old age nor invalidity pensions. [Applause.]

#### DISCUSSION.

THE CHAIRMAN: This very interesting group of papers is now open for discussion.

MR. BULLOCK: In my previous discussion I had this in mind, and, forgetting the limitation of time, I said, perhaps, too much by way of preparation. It is very easy, in practical experience, to wreck the best intended and most theoretically perfect plan that can be devised, butting up against either financial difficulties—inability to get the money—or operating conditions, which for the time being can not be disarranged.

We are more or less in the same position as a man who has a house built fifteen or twenty years ago which he has always maintained in a reasonably sanitary condition, and in which he has brought up his family, and who has a neighbor next door who builds a new house for his family and in it he puts the latest devices in plumbing and sanitation. The man who is obliged to continue in his old house, because of inability to build all over again, is not thereby chargeable with any less regard for his family or himself or the community. Practically, in almost every going industry, work of this kind must be arranged on top of conditions already there. Especially in an industry like public service, we are liable to wreck the institution. I believe, therefore, if we are able to get an equitable distribution to the financial burden it is possible in every plant to have the medical inspection directly in contact with the direct supervision of the industry.

Pending such day as all these things may be taken care of by the state—if they are ultimately taken care of in this country, which still is largely individualistic and not communistic—leave the insurance phase to the mutual benefit associations, which in most large industries are successfully maintained with the assistance of the company. I think under those conditions you are more likely to develop sympathy on both sides, because both sides appreciate the practical advantage of it and have a certain share in its management and financial support.

#### MILWAUKEE ROUND TABLE.

MR. PRICE (Wisconsin Industrial Commission): I feel as if some one ought to say something about "keeping the ball going." In Wisconsin we have had, in Milwaukee, a round table as to physical examination. It was the most interesting round table we have ever had, and I want to speak of two facts that have stuck to my mind—two thoughts everyone took home from that meeting.

First, it was brought out by all the speakers, giving the figures and the concrete examples, of the very large number of cases of men found with physical defects who are put on their feet and not discharged. One company representative spoke of the rule they are following, of taking a man who has applied for employment and who has some minor defect, and putting him on his feet and then giving him a job.

I believe, friends, that the laboring men have not got at the facts, and we have not helped them to get at the facts in regard to what is really being done. I don't believe any of us have got at the real facts as to how much of the discarding of men will be absolutely necessary. Personally, I went home from that meeting more convinced than I have ever been that physical examination is a boon, as Dr. Patterson has said, to the workingmen. For instance, the International Harvester Company has examined 13,000 employes. Their system is this—of course, they examine every new employe, but, especially in Chicago, they examine the old employes—the nurse goes through different departments and picks out suspects, men who are pale, perhaps, and they are sent to the doctor. I think the figure is 25 per cent of the suspects were found with some degree of tuberculosis. They take those men and do one of three things with them: The men, first, in the incipient condition—not serious—are

### Lincoln-Like

**"Do the very best you know, in the very best way you can." This applies to safety.**

given short vacations, and it is remarkable what it has done in regard to putting men on their feet. The second class are sent to their homes and a nurse is sent to the homes to teach them how to take care of themselves. Third, it is arranged (by the payment of money) with one of the best sanitariums near Chicago that the company can send the men who are in the more advanced stages to this sanitarium. One case, I remember, was very striking. It was the

case of one of the very best foremen in the Deering works who was caught just in time by the physical examination to save his life. [Applause.]

#### —STANDARDIZATION OF SYSTEMS.

DR. GRAHAM ROGERS (New York State Department of Labor): The discussion here seems to be entirely from the manufacturer's side. Of course I have to speak from the side of the enforcement of labor laws and collection of data and statistics upon which to base such laws. "Medical Supervision and Care of Employes" is the title of a paper read in 1907. New York City was the first to have medical inspection of factories and from the material we have gathered it has grown to a bureau of medical experts. It seems to me, from the work in factories, the prevalent idea is that it should be confined to mere physical examination of the workers. We must go further than that. It is really, now, the enforcement of industrial hygiene. The medical man is responsible for that; a good medical man should have industrial supervision of a factory. He must, first of all, be a factory inspector—must know every process and portion of the industry, he must co-ordinate with the safety man and mechanical engineer to get results. I will go down the list of papers and try to say something on each of them.

The practical experience and results accomplished have proven that this medical supervision and industrial supervision of hygiene is philanthropic on the part of the state. That is, according to business principles and economics. The small plants cannot afford high-

salaried experts. Who is going to help them? It is going to be the state, with its experts. The larger plants will also consult with the state.

The standardization of systems is absolutely necessary. In New York we did not take an ordinary plan for results, we had forms and made physical examinations without any law for it, because you cannot examine a man if he does not want to be examined. That is his constitutional right. But as to the child, in New York City we put a law on the books that gives us the right to examine the child. The child of today is the nation of tomorrow. If you want to find out what is the matter with a man you will not try to do it by merely considering his symptoms; you must find the cause. The real cause of malaria—which used to be thought to be caused by cold and exposure, dampness and so forth—was not known until we made analysis and found out it was a germ. The same with yellow fever. So, in industry, you must analyze the process. If a man comes in leaded or with arsenic, find out where it is used. We follow up and find out where he got it and then apply the remedy.

Every medical man must work with the mechanical engineer. If his trouble is caused by dust, it means the practical installation of exhaust systems, not theoretical arguments. Then again, on the question of safety, there are just as many accidents from poor lighting as there are accidents that can be helped. You may put a guard on a machine, but there may be a guard that will set up neurosis. It is not purely a physical manifestation, in the machine room, not merely a guard that is needed—but consider it an out-and-out problem of industrial hygiene.

I could go on and talk for hours on this thing, showing where you must study it. You cannot take a man out of a medical school and put him into a plant and make a plant expert out of him. We are just waking up now to the fact that there is such a thing as industrial hygiene. It is just as much a specialty as is the eye, ear, nose

### Lincoln-Like

"If your knowledge falls short of the ideal, keep on trying to learn." Try to be safe.



and throat branch of medicine a specialty. The way to make a good plant physician is to put him into the plant and let him see conditions for himself. He will then say: "You must take such and such a man off the monotonous work he is now doing or else relieve the monotony in some way." If a respirator is needed, he will tell you to supply a decent respirator. The thing is to study the condition and find out the cause; then remove the cause. [Vociferous applause.]

#### NEED OF EXPERTS.

**CHAIRMAN:** Something might be said to emphasize what Dr. Rogers has said regarding the unfitness of the average medical examiner for his work. In the American Medical Association's Convention, held in San Francisco this year, in a session on industrial sanitation, it was brought out that the average medical man was unfit for this work. It was impressed on the meeting, and later published to the country at large, that the profession must prepare itself for the larger industrial field. The members of the association realized that the greatest possibilities for social service exist along this line. I am glad that Dr. Rogers indicated the scope of this work.

This is not a destructive system that is being introduced into industry, but the most constructive one yet suggested to labor. The reason labor has objected to it is because they are blindly antagonistic and fail to understand the possible net results of conscientious medical supervision. Knowledge is what we need on this subject and we have a painfully small amount of it today. Let us frankly know and state how many physically unfit society is supporting. It is up to the officers of this Section to see to it that out of the work of its committees shall grow some actual data from which work of this kind may be promoted.

#### PROPER DISTRIBUTION OF EXPENSE.

**MR. ASH (Pittsfield):** There have been two thoughts brought out at this meeting; I would like to emphasize one. What is to be the proper distribution of expense in handling this problem; what should the manufacturer carry, and what should labor carry? There is a fundamental law with that which most of you are familiar, a very simple law, and that is what we call the "half-and-half proposition." Any of these things, to be a success, must be put on the

basis of an equitable distribution of expense between the two parties. For instance, under this proposition, where the employees are contributing so much toward a sickness and death benefit fund, the plan we use is, for every \$100 that is paid out by the employees, in a benefit fund, an equal amount is the company's share of the burden. That plan can be applied all through, I think. For instance, in maintaining a restaurant, the economic plan we want to get is to "break even." It is difficult to do that, but if we can get those mediums to work out that way, there is no question as to success.

Another thing is to get the sympathy of labor in all these things. I think where we have difficulty in getting the sympathy of labor it is our own fault, and because we do not try to get it and educate the men in safety work. Those who have used such efforts in educating them for safety work have gotten results. I have talked a great deal, and I think you will find that the average workingman is very receptive as to the truths of the thing if you will put it to him in a number of ways; approach the problem in perhaps a dozen different ways, and you will not have any difficulty in being successful. You must educate the worker up to the things you want to accomplish. The getting of appropriations to do these things, and then getting the sympathy of the workingmen, are pretty big problems, and they are what we should aim to solve. [Applause.]

#### EXAMINING FOR EMPLOYEES' BENEFIT.

DR. HORIGAN (The Larkin Company, Buffalo, N. Y.): I did not come here to make a speech or to say anything, but we have had such a large experience in our plant that I think I might tell of it, with the idea that it might be of some benefit. The Larkin Company has expended considerable money along the lines that have been discussed today and they have always done it with the idea that they were expending the money for themselves, for the benefit of the plant, and have always carried that thought to the workman—that while they were examining him for his benefit they were also examining him for the plant's benefit. When taken sick they helped to take care of him, and for the benefit of the plant. They have helped to take care of him when injured, and that was for the benefit of the plant as well as for his own benefit. I think that is one of the points that ought to be brought out—that we are not doing this work purely for the benefit of the workingman, or trying to get

## Are You Alive?

The man who doesn't boost for safety isn't alive to his own best interests.

the workingman to believe we are doing this for him alone. It is not honorable and he doesn't believe it anyway.

Another point to be brought out is that all must work together—the employer, the workingmen and the doctor. We talk of physical examinations: You cannot make a physical examination if the person being examined is not joining with you in the examination; that is shown under the old methods, under the old trolley cases—negli-

gence cases. The family doctor had an enormous percentage of advantage; the patient was with him and he understood the symptoms; the doctor examining the man for the plant was always at a disadvantage.

Up there we have done a great many things, but we have not said much about them. I don't know whether anyone has ever talked about them. We have examined everybody, and we follow up the examination. If we find a case that needs half an hour's rest, they get half an hour's rest, and we furnish an excellent restroom for that purpose. If we feel they should have half a day's rest, they get it, and we furnish the restrooms for them to rest in. If we feel they should have a month's vacation, we have a farm in the country where we send them for that month's vacation. If we find they are developing incipient tuberculosis, we find out where is the best place to send them and we send them there. If it is a chronic case of tuberculosis, we find the best place for that and see that they get there. Sometimes we have a difficult problem in inducing them to go to these places. We have a difficult problem, oftentimes, in getting a man with incipient tuberculosis to believe that he has incipient tuberculosis. We often have a hard time to get a man with chronic tuberculosis to realize his condition.

I have told you of our experiences as a little help. [Applause.]

(QUESTION): Doctor, would you give us an idea of what percentage of men have been discharged on account of—as a result

of physical examination? What percentage of men applying have been refused labor on account of physical examination?

PERCENTAGE OF REJECTIONS.

DR. HORIGAN: We don't follow that principle—of what you would say is the "turning down of the physically unfit." A man who comes and applies for a position, and finds that he is not physically fitted for the position, generally agrees with us that he should not take the position. We don't turn him down, but if he doesn't fit the position he is convinced he doesn't fit the position, and we haven't any place for him.

(QUESTION): What percentage, doctor, are among the convinced? Is it a large percentage?

DR. HORIGAN: No, a very small percentage. If a man comes with a hernia, and the position open to him is not suited to his condition, we argue with him and show him that he should have the hernia corrected. No one in the plant loses his job on account of the physical examination and its finding.

(QUESTION): He is given a different kind of work?

DR. HORIGAN: Yes, if a man working in the lead department shows any sign of lead poisoning he is taken away from that kind of work; or a man showing a heart strain is taken from his particular line of work and given another kind. We do not carry the entire burden. He helps to carry it, too.

(QUESTION): Suppose a hundred men applied for work and you have them given a physical examination, how many would not be hired on account of physical condition, approximately?

DR. HORIGAN: I could not say. I should say about two per cent. I do not mean to say that is so at all. That point, I think, was brought out today—that all this data should be collected. We are collecting it but we have not summarized it.

## Less Time

It takes less time  
to explain why you  
were late than to  
make out an accident  
report.

DR. HAYHURST: We might give another side of the question, that the very best method employed with the physically defective was to find a place for him, though in many instances he had been so long out of work it was difficult. It is also pointed out very explicitly how places could be fitted for the defective.

MR. ACKERLY (Eastman Kodak Company): It may be interesting to know that the physical examination of employes actually works out. A few years ago we examined 7,000 employes, and not a single man was turned down. We are not laying off any employes. It is comparatively easy to adjust the men to work of their capacity.

DR. PRICE: I want to ask the man from the Eastman Kodak Company, when he says not a single employe has been discharged—what percentage have not been hired as a result of the physical examination?

MR. ACKERLY: I cannot tell that, I am sorry; but I am very sure the percentage is very small; that is, a great deal less than has been stated by anybody who has spoken so far.

#### FEW MEN REJECTED.

DR. ROBINSON JORDAN (Syracuse, N. Y.): I think there are many industries coming into this country which are going to change these figures. Take the woodworking industries—there will be, perhaps, very small occasion to reject men in that; but with the development of some of the lines of chemical industry, as developed in Germany, a very much more careful examination is to be made. So the figures made in one industry, of one or two per cent—there might be many more than that rejected in some of the new industries coming into the United States. I think that when examination discloses abnormal conditions of heart or kidneys, it might be sufficient to unfit a man for some of the chemical industries—more so than in the woodworking or garment industries.

MR. ROBERTSON (Eastman Kodak Company): There was a good reason why there were few objections when we started physical examination: Because we guaranteed all of the employes of the company they would not lose their jobs on account of it. We had them, they were in our employ, and we stated that we would keep them regardless of what happened—would simply change them to give

them work more suited to their capabilities. Since then it runs between 6 and 7 per cent, slightly increasing as we draw the lines a little tighter.

(It was moved and seconded that the time of the meeting be extended half an hour later than the schedule, which placed the time of the adjournment at five o'clock. Motion carried.)

THE CHAIRMAN: We will now have the next paper, by Dr. Lloyd Noland.

#### ORGANIZATION OF SYSTEMS OF FIRST AID IN PLANTS.

DR. LLOYD NOLAND, SUPERINTENDENT DEPARTMENT OF HEALTH,  
TENNESSEE COAL, IRON AND RAILROAD COMPANY,  
BIRMINGHAM, ALA.

GENTLEMEN: I have been honored with an invitation from this Congress to speak on the subject of "The Organization of Systems of First Aid in Plants."

We have gone, I think, more into the question of handling employes than anyone in this country. We have 18,000 employes, who live with their families on company ground, in company houses, and yet are entirely independent of the company. We employ thirty-seven physicians. I would like to add that about 50 per cent of the cost of these physicians is contributed by the employes on a monthly basis, averaging 75 cents per man per month. I say this to show I am not backsliding on the subject of "first aid."

First aid, in the sense now generally accepted by the public, consists in aid to the injured by laymen or fellow workmen who have been given some special training for this work. Broadly speaking, this training consists in special instruction and drill, teaching methods for the covering of open wounds with sterilized dressings; the control of hemorrhage; the splinting of fractures to prevent compounding and to relieve pain; resuscitation of the drowned, electrocuted, or gas-poisoned, as well as methods for transporting the injured. Such training is well enough in its way and no doubt many lives and much suffering have been saved by its pupils in situations where skilled medical attention was unavailable.

There is, however, another side of this question, for no line of endeavor has ever more completely demonstrated the truth of the old adage, "A little knowledge is a dangerous thing."

**"Carelessness"**

Is a man careless  
who has never been  
taught the Safety  
First method of do-  
ing his work?

**SKILLED FIRST AID.**

Any surgeon who has treated a large number of injured men has observed cases of paralysis and seriously impaired circulation from a too tight application of tourniquets when no tourniquet was required, of eyes seriously damaged by over-zealous first aid men endeavoring to remove foreign bodies, of fractures so tightly put up that serious harm is done, or so loosely treated that compounding has re-

sulted, and so on ad infinitum. In addition, and even more important than the above, are the hundreds of cases treated by ordinary first aid, who, believing or being told that all necessary attention has been given, later develop serious infections or deformities which could have been avoided by skilled and proper treatment.

The field to be covered in the proper training for this class of work is so enormous and every detail is so vitally important that it is an impossibility to so train workmen to care for injuries that harm will not frequently be done. It must be admitted that under certain conditions the good far outweighs the harm, and that on the battlefield, the frontier, in small logging camps and other situations where medical aid cannot be promptly secured, first aid training is necessary and is to be encouraged.

The above statement, however, does not apply to manufacturing plants located (usually) in or near centers of population and employing a sufficient number of men to justify the expense of adequate and skilled care for the injured.

To put the matter more clearly, I wish to draw a strong and clear-cut distinction between first aid rendered by unqualified laymen and first aid administered by persons qualified by education and long and careful training in every phase of the work—or in other words, professional first aid as against the effort of the amateur.

I would strongly urge that every plant employing more than a very few workmen arrange to have its first aid work done by a qualified surgeon, or an extremely well trained nurse, and that the

time of the workmen hitherto given to first aid training be devoted to instruction in accident prevention.

#### WAYS AND MEANS.

Now as to ways and means: Let us take for example a plant employing a thousand men. Such a plant will usually have a contract or other arrangement with a surgeon of standing in the community and with a good hospital covering the care of the seriously injured, so that this phase need not be gone into very deeply. From a practical standpoint an ideal arrangement for the best class of first aid work would be the establishment of a well equipped emergency hospital, located as near as possible to the center of the plant. An entirely adequate hospital should provide a dressing-room, a minor operating-room, an emergency ward of, say, two beds, and an office and bedroom for the physician in charge. The construction and equipment of a building of this character requires a very modest outlay. A well-trained young physician and a male nurse should be all the personnel required for its running.

If the plant covers a large area a motor ambulance is essential, but if the plant is concentrated, stretchers will serve well for the transportation of the injured. Ambulance or stretcher stations should be located at various points in the plant and these stations should be designated by number. If such an arrangement is in force there will be no necessity for first aid equipment and boxes all over the plant, and much unnecessary turmoil and consequent lost time of first aid men will be avoided.

#### PRACTICAL APPLICATION.

Now as to practical application: Every employe should be instructed to report at the emergency hospital for the immediate treatment of any injury, no matter how trivial, if a break in the skin is sustained, or if an eye is injured. When a serious injury occurs a call should be immediately telephoned to the emergency hospital,

### **"Recklessness"**

The "Don't give a d——" spirit is responsible for a lot of accidents and a great deal of suffering.



giving the number of the nearest ambulance station, and if the service is properly organized the physician or nurse with the ambulance should arrive within five minutes. The necessary first aid is then immediately given in the proper way, and the patient conveyed to the emergency hospital for appropriate treatment under proper conditions and later removed to his home or to a hospital if necessary.

The two great factors which have stimulated first aid are infection and hemorrhage. As to the first: From a bacteriological standpoint every penetrating wound of the skin sustained under working conditions is an infected wound, the infection being carried in from the individual's clothing or on the object creating the wound. The bacteria infecting ordinary wounds are, generally speaking, never airborne. Practically this means that the immediate covering of the wound by sterilized dressing is unnecessary and that a lapse of time, of say one-half hour or less, is of little consequence, provided the wound be properly treated at the end of that time.

#### HEMORRHAGE.

As to hemorrhage: In an experience covering many thousands of injuries resulting from almost all types of industrial accidents, I have yet to see a case of fatal or even serious hemorrhage that could have been controlled by the ordinary first aid man, and as a matter of fact serious hemorrhage except inter-cranial and intra-abdominal is an extreme rarity in industrial injuries.

If the above be true there can be no objection to the man with a minor injury walking to the emergency hospital for treatment or to the serious injury waiting for perhaps five minutes or less for skilled attention.

In a critical survey of several thousand injuries occurring in a large plant where the routine advocated above is followed, I am unable to find a single instance where harm has resulted from the lack of first aid training in the usually accepted sense, and I am satisfied that the substitution of a system of this character in any large plant where general first aid training is now practiced will show an enormous decrease in the number of days lost time per accident, as well as tremendous saving of hitherto wasted time on the part of first aid men. [Applause.]

CHAIRMAN: The next paper will be read by Dr. M. J. Shields, of the American Red Cross Association, Washington, D. C.

**MEANS AND DESIRABLE EXTENT OF INSTRUCTION TO  
WORKERS IN FIRST AID.**

**DR. M. J. SHIELDS, AMERICAN RED CROSS ASSOCIATION,  
WASHINGTON, D. C.**

I have taken the liberty of discussing the last part of the title of this paper first, and on account of its importance I think it should come first. If I had been asked to write a paper only on extent of instruction of workers in first aid, I could have done that very briefly, for my fifteen years' experience in teaching first aid has given me some very positive and practical ideas.

The instructor in first aid should always be a qualified surgeon or physician and in his lectures or talks he should not teach too much anatomy. The outlines or gross anatomy of the human body is sufficient—some practical physiology and the working functions of the principal vital organs. He should shear his language of all technical and medical terms possible, using practical comparisons, such as the stopping of bleeding in like stepping on a hose, the bone represents the ground, the artery the hose, the compress the foot; also lay special stress on the abuse, danger and damage of tourniquets, especially in venous bleeding by the use of bell cords, rope, fish lines and wire. The men should be made to understand plainly that first aid doesn't mean to make doctors out of "car knockers" or quacks out of "trouble shooters."

They should be instructed not to wash wounds, excepting in case of very greasy wounds, when gasoline can be used. They should be instructed to paint the wound with a weak solution of iodine, or use iodine ampoules and apply a plain sterilized dressing; how wounds become infected, that the germs are not usually on the thing that cuts or causes the wound, not to any appreciable extent in the air, but the germs are on us, under the finger nails, on the hands and clothing; that a handkerchief that has been used on the mouth and nose doesn't have fifty-seven varieties, but twenty-seven kinds of bugs, and that nature does not need carbolic acid, iodoform, bichloride or that popular thing, "wind and water peroxide," to heal a wound. That punctured wounds, like stepping on nails, running wires into the hand, and wounds made with screw drivers, are serious on account of what the nail or wire pushes in, and the best first aid is the immediate services of a doctor in this particular kind of injury.

## WARNING

Every accident is a notice that something is wrong. Correct the cause and eliminate accidents.

That it is not their work to set fractures or reduce dislocations, but simply to apply temporary splints and retaining bandages.

### CARE OF INJURED WORKMEN.

In burns the covering of the burned part as quickly as possible with moistened picric gauze, linseed oil and lime water, or, in an emergency, with any kind of oil, used on gauze or clean cloth. Never use absorbent cotton or waste next to the burned surface.

The workers should be emphatically told the serious danger of eye injuries and of foreign bodies in the eye and their prevention by the use of goggles, and not to have sharpened or burnt match sticks, toothpicks, pencils, blades of knives, steel picks or men's tongues used in their eyes, but to use harmless things like a clean horsehair loop, absorbent cotton on a toothpick or a corner of a clean handkerchief, or to go to a doctor immediately.

They should be taught and thoroughly drilled in artificial respiration—the "prone method"—together with the danger and avoidance of electric contact. The treatment of surgical shock without giving a bath of whiskey; in fact, not to give alcohol at all in accidents.

They should be taught simple methods of the care, covering, handling and transportation of the injured; also the practical stretcher drill.

As a rule not much roller bandaging should be taught, as it has been brought to my attention that patients have been delayed from getting to the hospital by the men applying a fancy bandage. Very simple and few dressings should be used. The shell wound compress and bandage, the small cut and finger dressings are very practical, quickly applied, and the use of these should be taught.

Just here I am glad to tell you of the recent organization of the American First Aid Conference. This organization is composed of representatives of the Army, Navy, public health services, prominent chief surgeons of railroads and other large industrial plants. Its sole purpose is to standardize first aid materials and first aid train-

ing, so in the latter class we might have in this country a large, trained personnel who could be used should the emergency arise. A special board has been appointed by the Surgeon General of the Army, who is president of the conference, to recommend and have adopted standard first aid dressings, packets, etc., for all industrial accidents.

The workers should not be taught to give medicine, as very little medicine is required in accidents, possibly the only remedy would be aromatic spirits of ammonia to be used in place of whiskey, where a stimulant is required. The use of the hypodermic needle should never be taught and its use emphatically condemned, also the use of any drops in the eye.

The men should be taught how to care for accidents peculiar to their occupation and in the plant in which they work.

#### PRACTICAL SUGGESTIONS.

There are a number of methods used in teaching first aid, but any method or plan adopted should be one that will make this instruction bring the best and most beneficial results in accidents. Illustrated lectures and practical demonstrations are the methods most generally used. The lectures illustrated by lantern slides and moving picture reels, anatomical charts and diagrams. Some teachers use the mounted skeleton. I hardly think the whole skeleton is necessary, the bones in the arm and leg and perhaps the ribs would be sufficient, and as I said before it isn't practical to teach too much anatomy. Practical demonstrations in the treatment of specific accidents on the living model I think is the best way to impart first aid so that it will be permanent and bring results in real accidents.

I give the following as a suggestive plan: Suppose, for example, that first aid has never been inaugurated in the mine, plant, factory, shop, or at the railway division point. A mass meeting is held in the plant, or at a convenient hall, at which the surgeon or physician lecturer gives a condensed lecture, illustrated by practical demon-

## ANGELS

May preserve fools  
and drunkards who  
take chances — do  
you care to qualify?  
Be sure of safety.

stration, aided in this by several employes, the program of which could be showing methods of arresting bleeding, treatment of wounds, methods of applying temporary splints, treatment of shock, artificial respiration (especially in an electric shock and gas poisoning), practical methods of carrying and transporting the seriously injured.

At the close of the meeting volunteers to join the first aid class should be asked for, holding out such inducements as Red Cross first aid certificates, merit marks, names placed on the honor roll and prizes. The men who volunteer ought to represent various departments and sections of the plant. The class is then organized, electing their own officers if thought best, except the surgeon or surgeons who teach the class. These should be selected by the management, and I think the surgeon should always have an assistant so as to take his place in unavoidable absence. The first aid course is then begun. A regular specific series of lectures should be given, based on and conforming with the various Red Cross first aid textbooks. There are, as you perhaps know, a Miner's, Railroad Man's, Industrial, Police and Women's edition; also the Industrial edition is printed in four foreign languages. The meeting of these classes should not be oftener than twice a month. Cards can be printed and issued giving the place, date, and hour of the meetings. These meetings should not last over one hour and a half. The doctor's lecture, say thirty to forty-five minutes, the rest of the time devoted to practice in applying first aid to imaginary injuries, drills and asking and answering questions, the doctor in charge supervising the practice.

The classes should not be too large, say not over fifty members. Where the plant is large, the men could be divided into groups of fifty and, of course, new classes can be formed and taught each year. Limiting the size of the class to fifty has worked out very practically in my work with the Associated Bell Telephone Companies and the mining companies.

#### RED CROSS EXAMINATIONS.

The men should be encouraged to take the Red Cross examination at the completion of the course, and it has been my experience that they are eager to do so and they prize their diplomas very highly. These examinations are held locally by an examiner appointed by the Red Cross and the examinations are very practical in character, further details of which can be had by referring to any

of the Red Cross textbooks. I might also mention that the Red Cross has two special funds from which cash prizes are awarded for meritorious first aid, one for railroads and one for other industrial workers.

Where there is a well organized Safety First department, with a number of members, men for first aid training can and ought to be obtained from this department without holding a mass meeting, as safety and first aid go together. In fact, they can hardly be separated. First aid aids greatly in the best first aid, which is "first aid to the uninjured," and it also helps to bring out the humane side of accident prevention.

Everyone engaged in Safety First work, I think, realizes that the human element is the most important element in accident prevention and I know by years of experience that first aid training is of untold value in Safety First. This can be proven by the statistics of several large corporations. In two instances where systematic first aid training has obtained for several years fatal accidents have been reduced 50 per cent, non-fatal accidents reduced 30 per cent and the time lost after accidents reduced between 30 and 40 per cent. [Applause.]

#### REPORT OF NOMINATING COMMITTEE.

CHAIRMAN: We will now have the report of the nominating committee, Dr. McCurdy, chairman.

DR. MCCURDY: First comes the name of the Section. The committee recommends that hereafter this Section be designated as the Section of Industrial Hygiene of the National Safety Council.

The committee nominates the following as officers of the Section, in accordance with the by-laws governing the Section:

Chairman, Dr. Otto C. Geier.

Vice-Chairman, Dr. George M. Price.

Secretary, Mr. G. L. Avery.

(The Chairman asked Mr. Avery to take the chair.)

It was moved and seconded that the report of the committee on nominations be adopted as read. The motion was carried and the men whose names were read were duly declared to be the permanent officers of the Section.

On motion, the meeting adjourned.

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the methodology used in the study. It discusses the data sources, the data collection methods, and the data analysis methods. It also provides a brief overview of the results of the study.

3. The third part of the report is a detailed description of the results of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

4. The fourth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

5. The fifth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

6. The sixth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

7. The seventh part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

8. The eighth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

9. The ninth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

10. The tenth part of the report is a detailed description of the conclusions of the study. It discusses the findings of the study and the implications of the findings. It also provides a brief overview of the conclusions of the study.

*One Man's Effort Toward Safety  
May Seem Small, but All To-  
gether We Can Do a Great Deal*

## **National Safety Council**

### **Railroad Sectional Meeting**

**Philadelphia, Pa.**

**Oct. 20 and 21, 1915**

**MARCUS A. DOW, Chairman**

**General Safety Agent, New York Central Lines**

### **WEDNESDAY MORNING SESSION**

#### **RAILROAD REPRESENTATIVES PRESENT**

**Delaware, Lackawanna & Western:**

W. C. Wilson, Claims Attorney.

J. J. Pierce, Trainmaster.

G. C. Ferris, Assistant Trainmaster.

H. C. Harris, Foreman Buffalo Division.

C. B. Vanetta, Chief Clerk, Mechanical Division.

C. E. Robinson, Fire Chief, Transportation Department.

H. A. Rowe, Secretary, M. L. Division Safety.

W. D. Sturtevant, Assistant Claims Attorney.

**Erie:** Charles T. Banks, Safety Supervisor.

**Chicago, Burlington & Quincy:** E. M. Switzer, Safety Supervisor.



Illinois Central: S. S. Morris, Chairman, General Safety Division.

Toronto, Hamilton & Buffalo: G. C. Martin, General Freight and Passenger Agent and Chairman Safety Committee.

St. Louis & San Francisco:

W. B. Spaulding, Claims Attorney.

Frank Wightman, Superintendent of Safety.

C. H. Balzell, Superintendent.

Buffalo, Rochester & Pittsburgh:

J. S. Rockwell, General Agent.

E. M. Bentley, Special Representative Engineering Department.

Bessemer & Lake Erie:

A. D. Chittenden.

T. C. Whiteman, Manager Relief Plant.

Delaware & Hudson: M. L. Snyder, Inspector of Transportation.

Chicago & Northwestern:

R. C. Richards.

James Sullivan, Safety Inspector.

H. J. Bell, Safety Inspector.

El Paso & Southwestern: R. P. Kyle, Safety Superintendent.

Northern Pacific: F. M. Metcalf, Special Representative of Vice-President.

Pennsylvania Lines East:

R. H. Newbern, Superintendent of Insurance.

F. T. Bowler, Engineman.

Mr. Riggs, Blacksmith-Foreman.

L. F. Smurthwaite, Examiner.

Vincent Colleli, Office Superintendent of Telegraph and Italian and English Instructor.

R. L. Kell, Assistant Supervisor.

Wm. H. Gates, Carpenter.

E. F. McKenzie, Conductor.

D. C. Irving, Accident Clerk.

G. D. Chenoweth, Supervisor.

M. M. Sheedy, Safety Inspector.

M. J. Davis, Assistant Engineer Motive Power.

T. H. Carroll, Safety Inspector.

J. C. Rose, Chief Claim Agent.

Boston & Maine: S. G. Watkins, General Secretary Safety First Organization.

Hocking Valley:

G. S. Welch, Trainmaster.

F. C. Amos, Assistant Trainmaster.

New York, New Haven & Hartford: F. W. Mitchell, Chief Examiner on Operating Rules.

Baltimore & Ohio:

E. R. Scoville, Chairman General Safety Committee.

John T. Broderick, Supervisor of Special Bureaus, Operating Department.

Dr. Robert I. Randolph, Eye and Ear Specialist.

C. W. Egan, General Claim Agent.

Union Pacific: J. M. Guild, Safety Supervisor.

Rock Island Lines: L. F. Shedd, General Safety Supervisor.

Chicago, St. Paul, Minneapolis & Omaha: G. L. Wright, Chairman General Safety Committee.

Central R. R. of Georgia: C. H. Findley.

Pullman Company: M. E. Arkills, Safety Engineer.

Lehigh & Hudson: C. F. Merrill, Superintendent.

Norfolk & Western:

C. H. Blakemore, Chairman Central Safety Committee.

J. L. Durham, Member of Safety Committee.

Southern Railway:

L. L. Oliver, Law Department.

P. H. Quinn, Claim Department.

Pennsylvania Lines West: C. W. Garrett, Office of Vice-President.

Canadian Pacific: F. R. Heney, Claims Adjuster.

Cumberland Valley Railroad: T. Hamilton, Master Mechanic.

Youngstown & Northern: W. Greenwood, Safety Engineer.

**STOP-LOOK-LISTEN**

113,570 killed.  
123,611 injured in  
the United States in  
twenty-five years  
walking on railroad  
tracks or flipping on  
cars.

Vandalia: J. E. Mechling, Master  
Mechanic.

McKeesport Connecting Route:  
William A. Cornelius, Man-  
ager.

J. B. Ayres, General Safety  
Committee.

Nashville, Chattanooga & St. Louis:  
C. H. Crawford, Assistant  
Engineer, Mechanical De-  
partment.

Duluth & Iron Range: G. S.  
Locker.

**New York Central Lines:**

Marcus A. Dow, General Safety Agent.

Frank V. Whiting, General Claims Attorney.

C. R. Myers, General Agent, Indianapolis.

G. A. Dabelle, Station Agent.

A. M. Rickerson, Conductor of Mohawk Division.

J. B. Chadwick, Assistant Superintendent, T. & O. C.

F. B. McGirr, Safety Agent.

C. D. Shaff, Safety Agent.

S. Lenzner, Master Car Builder, Detroit.

R. S. Jarnagin, Safety Department.

F. W. Lees, Assistant Road Foreman of Engines.

F. H. Hansen, Assistant Master Car Builder.

C. B. Floyd, Safety Agent.

H. S. Balliet, Assistant Terminal Manager, Grand Central  
Station, New York.

Wm. Morrison, Assistant Signal Engineer.

F. H. Judd, Assistant Engineer.

American Locomotive Works: J. W. Kamper, Safety Inspector.

Southern Pacific: F. B. Wiegand.

San Pedro, Los Angeles & Salt Lake: Howard Elliott, Chairman  
Safety Committee.

OPENING ADDRESS.

MARCUS A. DOW, Chairman.

**I** FEEL particularly pleased and honored in being permitted to call to order the first Railroad Sectional meeting of the National Safety Council, and it is especially gratifying to see so many roads represented in this gathering of railroad safety men, who are here in the interests of such a superior purpose as that of saving human life and limb. Heretofore at the annual congresses of the National Safety Council, the meetings have all been of a general character, but with the rapid growth of the Safety Movement throughout the country and the consequent increase in the membership of this Council, it was felt by many members that it would perhaps be more profitable for representatives of certain industries to get together on one or more days of the Congress and hold meetings of their own. Accordingly, the railroad members of the Council were formed into a Railroad Section and the members of this section and invited guests are gathered here to discuss Safety problems which affect their own industry.

The fact that so many railroads have entered vigorously into this so-called Safety Movement does not mean that railroads are only just beginning to adopt Safety as a principle, but it is evidence of their progressiveness and indicates the earnest desire of railroad officials to study the problem of accident prevention and improve, if possible, an already enviable accident prevention record.

The spirit of this movement has rolled across the continent like a great tidal wave, and now railroads and other industries, as well as municipal organizations, everywhere are forming or have formed complete and systematic plans for work in this field of commendable endeavor. The growth of the movement has been greatly enhanced by the results that have been obtained where systematic and well organized plans have been persistently carried out. Experience has proven that spasmodic campaigns of Safety, launched with spectacular displays of wasted energy and then dropped, will not bring

**Don't Do It!**

The most dangerous thing you can do is to crawl over the bumpers of cars blocking a railroad crossing.

results. Any effort to prevent accidents through education must be continuous and persistent. Many railroads and other industries are able to show gratifying results in accident reductions secured through such systematic effort. We expect to hear in these meetings from roads which have accomplished such results, just what results have been obtained and how they were obtained. Speaking for the New York Central Railroad, I will say that in the year ended June 30th, 1915, as compared with the previous fiscal year, there were 167 fewer persons killed, a decrease of 27% and 2305 fewer persons injured, a decrease of 21%. This refers to all persons killed and injured on the basis of the Interstate Commerce reports for that period.

Railroad work is not the most hazardous of occupations. Conservative statistics show that there are at least four other great industries in this country where the number of persons killed per thousand employed is greater than on the railroads. That the railroads stand firmly upon the principle of Safety as the first consideration is manifest in every phase of railroad development. Improvements are made in construction, equipment and the efficiency of their personnel on the basis of Safety before cost, and as a result of this old established principle the record of passengers transported with absolute safety upon the railroads of this country is nothing short of phenomenal. During the fiscal year 1914, there were in the United States 315 operating companies with a mileage of 113,333 miles, which is nearly one-half the entire railroad mileage of the United States, and which if stretched out into one long railroad would form a steel girdle extending four and a half times around the world, on which there was not a single passenger killed in a train accident, although there were more than 450,000,000 passengers carried by these roads,—a number equal to four and a half times the country's population. In the cities of New York and Chicago during 1913 there were 774 persons killed in the city streets by being struck or run over by some moving street vehicle, while during the fiscal year ending June 30, 1914, there were but 85 passengers killed in train accidents on all the railroads in the country, *so that in those two cities alone there were nine times as many persons killed by moving street vehicles as there were passengers killed on all the railroads of the country.* But, while passengers on trains have been practically immune from serious or fatal injury, due to

the Safety and Efficiency of railroad operation, there is another class of persons over whom the railroads have little control, who have found railroad rights-of-way increasingly unsafe. These persons are the trespassers who voluntarily and needlessly risk their lives by using the railroad tracks as public thoroughfares and who thereby contribute every day to a needless sacrifice of life and limb that is a disgrace to our civilization, and who by their reckless disregard of their own personal safety cause more than 50% of all fatal accidents occurring on railroads each year. This is a safety problem that is not within the power of railroads to successfully solve without the support and co-operation of the public, and this needless yearly slaughter of more than 5000 American citizens, mostly thoughtless wage earners who walk the railroad tracks to and from work, *will continue until the restraining hand of our Congress at Washington is raised and a Federal law enacted which will effectively prohibit trespassing on railroad rights-of-way.* While this particular problem is not set down for discussion on the formal program, I hope it may not be overlooked and that those who have suggestions as to how to interest public officials and the public in general in this phase of Safety work will give free expression of their views.

But there are other problems which may profitably be discussed in this session and an interesting program has been prepared. In the Safety work that has been conducted on railroads and in other industries two important elements have received attention. One of these is the mechanical element or the guarding of machinery, the installation of safety devices and the correction of conditions, which if left uncorrected might contribute to unsafeness. The other is the human element, and it is this big, powerful, all-important factor which will undoubtedly dominate our discussions in this meeting. For years there has been a nation-wide agitation in behalf of greater safeguards for employes of railroads, other industries and the general public. In every state there has been a veritable epidemic of legislation with a view of protecting the working man from possible injury. *Safety devices of every description have been installed, rules formulated, regulations adopted and mechanical safeguards invented and applied until it would seem that accidents never could happen.* But, the disquieting feature of the situation has been that up to a year ago, *in spite of these extraordinary precautions taken to insure immunity from harm, accidents resulting in injuries increased*

## Think Safety

Remember the wife and kiddies at home and do everything the safe way for their sake.

*steadily and the very laws that were made to lessen accidents actually seemed to foster them. It remained for the officials of the railroads and other great industries to discover where the real trouble lay. The conclusion was reached that, with all the laws which might be passed and safety devices which might be installed, there would be no successful reduction in accidents until there had been enlisted the co-operation of those persons in whose interest such precautions were*

*being taken.* In other words, it was found that the *human element* was upsetting all the carefully laid plans of well-meaning legislators and, it was with this fact in mind, that within recent years, this so-called "Safety" Movement was started.

A study of the accident records of individual railroads as well as a careful analysis of Interstate Commerce Commission records shows very conclusively that at least 90 per cent of all injuries to employes are caused by the fault of either the injured man or some other employe. *The Human Element! It can never be effaced by all the laws that can ever be passed and enforced. The one great powerful factor which will curtail and reduce and which is already curtailing and reducing accidents on railroads and in other industries is co-operation between employer and employes to find the most effective means of increasing the thoughtfulness of the employes, to teach them to think and avoid practices which may result in injury to themselves and others. It is this spirit of co-operation which will prevent more accidents than all the laws that ever were passed or ever will be passed intended to regulate the Safety of modern transportation.* All the laws that can possibly be written in all the statute books of the world would not prevent injury to the employe who steps in between moving cars to adjust a coupler and who, while in that perilous position, stumbles and falls under the wheels, to be dragged forth a helpless cripple, to be for all his days, if he lives, a burden to himself and society, a poor unfortunate wreck of a human being, racked by pain and soured by the bitterness of his

lot, and all because he did not think, or did not take the time to stop those cars before he went in between them. It is because the accident records conclusively show that the majority of injuries are caused by acts of carelessness similar to this that the railroads have launched their Safety campaigns.

How, then, can we most successfully educate our employes to guard against injuring themselves, and how can we educate the public to use the ordinary care which will prevent injury to persons who are rightfully on or near our premises? Each representative here has had his own experiences in this work. Many of you originated methods of education which have been effective on your own roads. It is for the purpose of interchanging ideas that we are gathered here in this meeting and to the end that the greatest possible benefit to all may accrue it is my earnest hope that every one here will enter into the spirit of the occasion and take active part in the discussions.

And may you all leave this meeting with a new incentive for greater effort. May you take away with you that truly American spirit which places humanity above everything else and which will enable you to whole heartedly continue to uphold and promote the cause of Safety, first, last and always,—because it is for humanity,—because it is for economy—because it is right.

I thank you. (Applause.)

MR. W. B. SPAULDING: Mr. Chairman, for the purpose of carrying out the plan of the Executive Committee of the National Safety Council for our Railroad Section, I move that the Chair appoint a Nominating Committee, who shall provide a plan of bylaws for the government and operation of this Section of the National Safety Council, the bylaws, of course, to be in harmony with the plan and principle of the National Safety Council, and to nominate officers for the Railroad Section for the coming year.

(The motion was seconded, voted upon and carried. Committee

## **Don't Take Chances**

on railroad tracks,  
and don't let your  
children do so, either.  
Do your part to cut  
down 55 per cent of  
railroad fatalities.



composed of Messrs. Spaulding, Blakemore and Rockwell appointed by the Chair.)

CHAIRMAN DOW: We will proceed with the discussion of the very interesting and able address delivered by Mr. W. C. Wilson, Claims Attorney of the Lackawanna Railroad, yesterday afternoon at the general session, entitled, "Public Safety and the Railroads."

MR. R. C. RICHARDS (Chicago & Northwestern): Mr. Chairman, I would like to make this suggestion in regard to that discussion. Probably there are a great many people here today that were not here yesterday and did not hear the paper. Now, if Mr. Wilson is here and would give us that paper it might help a whole lot, or give an outline of it for the benefit of those who did not hear it.

CHAIRMAN DOW: Mr. Wilson, I think that is a good suggestion. Will you come to the front and give us the gist of your talk yesterday?

#### PUBLIC SAFETY AND THE RAILROADS.

W. C. WILSON: Mr. President, Ladies and Gentlemen: "Safety First," in its capacity as first aid to the uninjured, perhaps rightly may be considered to be a conspiracy to rob the doctor and the undertaker. As its objects are the preservation of life and limb, and therefore the pursuit of happiness, it may be said to fall strictly within our constitutional rights and prerogatives. It is at least one form of railroad activity in which a man can engage without danger of going to jail. The Sherman anti-trust law does not touch even the hem of its garment; standpatters do not condemn it, even though it is a new fangled notion. The Progressives have not only embraced it but have appropriated it for campaign purposes. Labor Unions generally have accepted its principles and the Interstate Commerce Commission has placed its approval upon it by saying in its 1912 report:

"Great possibilities in the solution of the problem of accident prevention lie in the so-called Safety Committees which have been organized on many roads. By making 'Safety First' the dominant idea in the minds of employes and continually point-

ing out methods of its attainment an important step in the right direction is taken."

It was not so very long ago that railroading in this country was in its infancy. Roadbeds, motive power and equipment were primitive. But the prophets of those days, with an abiding faith in the future and a courage which knew no retreat, ran their rails through the valleys, over the mountains and across the plains, adopting the standards of construction then in vogue. No sooner had they been built than the mighty and unceasing rush of population began to overtax the railroad facilities and require readjustments to meet these increasing demands. From that day to this the railroads of this country have been in a state of evolution. The engineering departments have been called upon to build and rebuild their lines. The motive power and equipment departments have been obliged to revise their specifications again and again. The operating departments have been pushed to the limit to devise new and improved methods to meet the requirements of a traffic which was growing by leaps and bounds. Then again, these conditions imposed financial obligations which many roads were unable to stand. Receiverships were common and even the strongest were, at times, in danger of default if not bankruptcy. Nevertheless, under these trying conditions it must be conceded that the development of the American railroad to its present state of efficiency has been the greatest triumph yet achieved by American genius, aided by indomitable pluck and perseverance.

It is evident that, under these circumstances, the refinements of railroading would receive scant attention. It was railroading in the raw, and millions of property were squandered and countless human lives and limbs were sacrificed to this untamed juggernaut. It requires more stable conditions than have existed in which to cultivate the organized humanities. Human life was doubtless as sacred in former days as it is now but there were not so many safeguards thrown around it. The "Safety First" movement itself was an evolution, and when the time was ripe it stepped out, as an angel of light, into an industrial world that was ready to receive it, an old and yet new revelation of the duty of man to man.

"Safety First" as a distinct and organized movement started on American railroads in 1910, when Mr. Richards of the Chicago and Northwestern sounded the bugle call and began his campaign. Since

## Personal Duty

The prevention of accidents and injuries is a personal duty which every one owes to himself and to his fellow workmen.

that time its growth has been phenomenal until at the present time practically no railroad in this country, big or little, is without some form of safety organization.

While it may not be strictly germane to the topic assigned to me I believe as a necessary prelude something should be said about the development of the movement thus far.

It is hardly necessary for me to say in this presence that we found the personal equation to be the

most important factor; but how to reach and influence it effectively was the most difficult problem to be solved. Naturally, the first efforts were directed toward correcting unsafe physical conditions along the road. These were open to observation. Most of them could be corrected by the expenditure of a little time and money. A great and important work has been accomplished in this regard. It was early recognized that the great body of employes must be reached and enlisted in the cause before any fundamental success could be achieved. For this purpose mass meetings are held at principal division points, at which speeches are made by officers and men, and stereopticon views and moving pictures displayed, illustrating the safety idea.

In addition to mass meetings the men are being reached by "Safety First" literature. Bulletins, pamphlets and magazines are being published and distributed broadcast among employes and their families. Out of this abundance of talking and writing has developed a new class of literature, earnest, virile and abounding in hot shot which has caused the railroadman to sit up and take notice.

This warfare against carelessness and inefficiency has developed a new ideal among railroad employes which is writing its record every day in improving the conditions under which men work and in bringing to the railroad men of this country a clearer vision of their duty to themselves, their families and the public at large, in the protection of life and limb and in the prevention of avoidable accidents.

The results are most encouraging. The latest authoritative statistics available are furnished by the advance sheets of the report of the Interstate Commerce Commission covering casualties of all classes on steam railroads for the quarter ending June 30, 1915. It says:

"As compared with returns for the corresponding quarter of 1914 the figures show, for train accidents, a decrease of 18 in the number of persons killed and of 561 injured; for other than train accidents a decrease of 162 killed and of 1,722 injured; and for railroad industrial accidents an increase of 14 killed and a decrease of 2,109 injured, making a net decrease, all classes, of 166 in the number killed and of 4,392 in the number injured."

There was a decrease of 185 in the number of collisions and a decrease of 443 in the number of derailments. As compared with the corresponding quarter of 1914 there was a decrease of 655 in the number of train accidents. Doubtless a number of elements have contributed to these results, but in the face of such a splendid record who shall say that the "Safety First" movement on American railroads has not made good, or that all honor should not be given to the officers and men who by their effective co-operation have helped to secure such a conspicuous victory.

But what has the public done in reducing casualties on the railroads? Practically nothing. Seventy-two per cent of the fatalities charged against the railroads for the year ending June 30, 1914, were neither employes nor passengers; they were outsiders, representing the general public. Twelve times as many people were killed in highway crossing accidents as were killed in train accidents. Nearly three times as many trespassers were killed as employes, and this includes the whole body of railroad employes of all classes.

It is evident, therefore, that the public should be vitally interested in this railroad safety problem. It may not concern the man in the

## **If You Forget**

Small neglects are apt to cause serious accidents.

Let every employee make himself a committee of one to prevent accident.

street what conditions exist in the operation of the adjacent factory, but he cannot assume that attitude with reference to railroad operation. When a passenger, he places the safety of his life and limb in the care of the Company. He has a right to rely upon the soundness of its operating rules. But the rules are dead and worthless things if they are not executed by competent and careful employees. An efficient railroad employee, therefore, is both a public and a private asset. He will observe the operating rules not only because they are rules but because they are right; not only because irregularities may subject him to discipline but because he has adopted the principle of "Safety First" as his rule of conduct.

But building up and maintaining a body of careful and efficient employees does not solve the problem. We can control our own employees to a degree but we can not control the public. Railroad efficiency is matched by public inefficiency. Railroad carefulness is neutralized by public carelessness. Casualties to employees are going down; casualties to the public are going up.

Do you know that of the 265 passengers killed on American railroads for the year ending June 30, 1914, only 85 were killed in train accidents? What happened to the 180? Forty-eight were killed by falling from cars, 69 while getting on or off cars, 47 by being struck or run over at stations or in yards and 16 from miscellaneous causes. Without attempting to relieve the railroad companies from any responsibility which may rest upon them for these casualties it is safe to say that a large percentage of them could have been avoided by the exercise of greater care on the part of the injured persons and that many of them were due to their rank carelessness.

How did it happen that 69 passengers were killed and 2,788 passengers were injured in getting on or off cars? Of the death cases unquestionably the great majority were caused by the passengers trying to get on or off moving cars. The injury cases came from a variety of causes: Too great haste, baggage and bundles which obscure the sight and occupy the hands, the distraction of babes in arms and children, inattention to the tread of the steps and the distance of the lower step of the car to the station platform, high heels and narrow skirts, and in addition to this a natural confusion of mind of the infrequent traveler in boarding and alighting under strange conditions.

How do you account for the fact that 48 passengers were killed by falling from trains, exclusive of those injured while boarding or alighting?

An examination of the record would show that in most cases the passenger unnecessarily placed himself in a position of danger. These were caused by passengers standing on car platforms while the train was in motion and especially by passengers standing on car steps long before the train had reached their station, so that the moment it stopped, indeed usually before it stopped, they could jump and run for home or office.

How did it happen that 47 passengers were killed by being struck and run over at stations and yards? Some of these accidents were due doubtless to the carelessness and sometimes the extreme carelessness of railroad employes, but the greater part were caused by indifference to danger on the part of those injured. When not fenced in passengers will swarm over the tracks, sometimes at considerable distance from the station platform, and take all kinds of chances of being struck by moving cars or engines, just because they follow an idle fancy to stroll around and kill time. Time survives, but they do not.

Based upon these official records, supplemented by the experience of all those who are charged with the duty of investigating such matters, it is clear that too often there is a spirit of utter recklessness on the part of the traveling public which materially helps to swell the list of casualties on American railroads.

There is another prolific class of accidents in which the public has a joint responsibility with the railroads—those which occur at highway crossings. In the year ending June 30, 1914, 1,147 persons were killed and 2,935 were injured at railroad highway crossings—a total of over 4,000. The railroads are making large yearly expenditures in the elimination of grade crossings and this policy will be consistently pursued even though at great cost. Frequently the unwillingness of municipalities to join with the railroads, and sometimes their active opposition, have held up progress in this direction to the disadvantage of all concerned. In addition to this work of elimination new and improved safety devices are being installed and the number of flagmen and crossing gates or barriers has been largely increased. Some roads, notably the Long Island, have displayed large signs and posters at important crossings warning the

## **RULES**

**Rules and regulations can be adopted and signs posted, but all are useless unless every man is careful to see that they are maintained.**

public against careless driving. But notwithstanding these admittedly improved safety conditions, there will be an increasing number of highway crossing accidents, due to the perilous situation caused by the phenomenal growth of the automobile traffic.

There is scarcely an issue of the daily press which does not contain the record of some horrible automobile accident at a railroad crossing. With everything in his favor—a machine presumably under per-

fect control, no horses to become frightened and unruly and the power to stop almost instantly, if exercising even a minimum of caution the driver, disregarding warning signals, even to the extent of often plunging through the safety gates, sends his machine upon the tracks only to be struck by the swift and powerful locomotive and hurled to his death.

The courts have taken cognizance of this increasing peril, not only to the automobilist but to the traveling public. The United States Circuit Court of Appeals, in a recent decision, said:

"With the coming into use of the automobile, new questions as to reciprocal rights and duties of the public and that vehicle have and will continue to arise. At no place are those relations more important than at the grade crossings of railroads. The main consideration hitherto with reference to such crossings has been the danger to those crossing. A ponderous, swiftly moving locomotive followed by a heavy train, is subjected to slight danger by a crossing foot passenger, or a span of horses and a vehicle; but, when the passing vehicle is a ponderous steel structure, it threatens not only the safety of its own occupants, but also those on the colliding train. And when to the perfect control of such a machine is added the factor of high speed, the temptation to dash over a track at terrific speed makes the automobile, unless carefully controlled, a new and grave element of crossing danger. On the other hand, when properly controlled, this powerful machine possesses capabilities contributing to safety. When a driver of horses attempts to make a

crossing and is suddenly confronted by a train, difficulties face him to which the automobile is not subject. He cannot drive close to the track, or stop there, with risk of his horse frightening, shying, or overturning his vehicle. He cannot well leave his horse standing, and if he goes forward to the track to get an unobstructed view and look for coming trains he might have to lead his horse or team with him. These precautions the automobile driver can take, carefully

and deliberately, and without the nervousness communicated by a frightened horse. It will thus be seen an automobile driver has the opportunity, if the situation is one of uncertainty, to settle that uncertainty on the side of safety, with less inconvenience, no danger, and more surely than the driver of a horse. Such being the case, the law, both from the standpoint of his own safety and the menace his machine is to the safety of others, should, in meeting these new conditions, rigidly hold the automobile driver to such reasonable care and precaution as go to his own safety and that of the traveling public."

The terrible toll which is being paid each year by this class of accidents demands that remedial action be taken both by the railroads and the public.

During the year ending June 30, 1914, 5,471 persons were killed and 6,354 were injured while trespassing on railroad property. In spite of all that has been said and done to minimize this evil the slaughter goes on undiminished. It seems even to flaunt itself with brazen effrontery, asking what we are going to do about it. Primarily the responsibility must rest with the public. This is so because the people make the laws and in the last analysis public officials will administer the law according to public sentiment. It may surprise you to know that thirty-five states have no laws specifically prohibiting trespassing on railroad tracks. Some have such laws but with penalties so trivial as to make them a farce; if not, then the average magistrate will proceed to make them a farce on his own hook.

## **CAREFULNESS**

The more you insist upon carefulness on the part of others, as well as exercising it yourself, the safer it will be for all.



Nowhere in Europe is there any such record of casualties. Heavy penalties are enforced against trespassing on railroad tracks and as a result the number of injuries due to railroad trespassing is only about 5 per cent of the number in this country.

This evil is nation-wide. It has been characterized by Mr. Marcus A. Dow in his striking article on the subject as "A Nation's Neglect," but notwithstanding the many efforts which have been made to improve the situation it is still the nation's neglect in all essential particulars.

In securing the highest standard of safety in railroad operation the co-operation of the public is essential. Such co-operation must not stop at simply wishing the railroads good luck in their task. The people as a whole must be trained along safety lines and the laws and the courts in administering the laws must embody and enforce safety standards which represent the enlightened convictions of the people. There must be the same painstaking effort in the education of the public as has been put forth by industrial concerns in the education of their employees. The fact is that the people as a whole have lagged far behind in this safety propaganda. As an illustration, laws have been enacted recently with the object in view of relieving the traveler on the highway of any legal duty to look or listen at railroad crossings under certain circumstances. As an easy way of avoiding crossing accidents it is argued in some quarters that the railroads eliminate grade crossings. It might also be said with equal force that the way to stop a drought is to make it rain.

There must not only be co-operation but it must be organized co-operation. Sporadic efforts will produce no lasting effect. The problem is nation-wide and too big for individual or dissociated action and I believe the National Safety Council is in a position to wield a powerful influence in moulding public opinion and in organizing the people in a campaign against the crime of carelessness.

May we speed the day when the ideals for which this Council stands shall be realized, when railroads and all employers of labor will vie with the people and public officials who represent the people in reducing the perils to life and limb which lurk about us on every hand, and in the prevention of these avoidable casualties which are such a blot upon the fair name of our country. (Applause.)

CHAIRMAN DOW: Is there any discussion on Mr. Wilson's paper? I think that the subject of grade crossing accidents may be deferred until after the next address by Mr. Rose, which will cover that topic. But are there any other phases of Mr. Wilson's paper to be discussed, particularly the trespass proposition?

MR. H. S. BALLIET (New York Central): Mr. Chairman, I am curious to know whether Mr. Wilson has information which would give us a view of the relations between the reduction in accidents for the first quarter of this year as related to the reduction of train movements, assuming that we have had reduction, generally speaking, through the United States.

CHAIRMAN DOW: Can you answer that, Mr. Wilson?

MR. WILSON: I do not believe there has been very much reduction in that regard, in train movements. You mean engine and car mileage?

MR. BALLIET: Yes.

MR. WILSON: As to the quarter ending June 30, 1913, the figures which I have got on the advance sheet issued for the press by the Interstate Commerce Commission, just one big sheet, which was laid on my desk only two or three days ago. And of course that did not give the train mileage and I have not any information on that subject; I do not just remember what the relations of traffic were for the quarter ending June 30, 1914, but I am inclined to think that the mileage this year under the present conditions is even greater than it was in 1914. Of course it may not be. I know that our own road is having all it can do to handle the traffic.

MR. METCALF: A short time ago I got up a circular on this question of trespassing—I am a Northern Pacific man—and addressed it to the agents and section foremen and requested the agents in particular to try and get the views expressed in that circular into the hands of the school teachers in the little villages and towns along our line and give them a little talk about this question of trespassing. I also made a trip over the line and at all the important towns I made it a particular point to see the newspaper reporters, give them a little interview, and I was fortunate enough to

## **Your Work**

**It is as much your duty to be careful and comply with safety rules, as it is your duty to properly perform your work.**

have a column, sometimes a column and a half, in some of these smaller town papers on this very question of trespassing, calling attention to the danger that was incurred by going on the railroad track, not looking to see whether there were trains approaching and so forth. And I believe that a great deal of good can be secured by getting the newspapers interested in the subject. As I explained, it is something of common interest; it is not solely for the rail-

road that I was talking, I was talking for the public; and I got the newspaper men as a whole generally to see it in that way and they gave it a very good writeup. And I have asked our agents, I have asked our superintendents, to have the agents send to them and they would forward to me clippings from all the country papers along the line showing just what had been done. It was my intention to get a list of the newspapers along the railroad, check them over and see which towns have not had a writeup and then I am going to make it a particular point to reach the editor, send him some literature on that subject and see if we cannot get a little better dissemination of the information that we want to get to them in regard to trespassing.

I also at the same time got out a placard about trespassing, showing the number of people that had been killed and injured during the last year. I had that posted conspicuously in all the depots. And from some comments that I have received I think it is a question that is being thought well of and I am having a good deal of co-operation in general by the school teachers and newspaper people and even the clergymen.

CHAIRMAN DOW: Mr. Metcalf, have you tried to do any educational work among the employees of manufacturing plants along your right of way?

MR. METCALF: No, not yet. I have rather left that to the local officers and superintendent. The superintendent and trainmaster

are generally closer in touch with the people whom we serve than I am, and they would pay a great deal more attention to them than they would to me.

MR. FRANK V. WHITING (New York Central): I would like to make a suggestion in connection with the trespass proposition. The Association of Railway Claim Agents have had a committee on the trespassing evil for at least two years. Last year we gathered the statistics from practically all the railroads in the United States covering accidents to trespassers, and that information goes into considerable detail, showing the social status of the trespassers killed or injured. The Association has published that report by states and for the United States and Canada. We are at the present time engaged in the distribution of that report to the newspapers and various periodicals throughout the United States. It was early in the year furnished the members of the Association of Railway Claim Agents and it is possible that the safety men would like those reports. I do not know just whether we have enough to supply the road, but the claim men, of course, have the reports for their respective states as well as for the country.

CHAIRMAN DOW: We have a list of members present here and if it is the desire of those present to have them I am sure Mr. Whiting will be very glad to mail them to those present.

MR. G. S. LOCKER (Duluth & Iron Range): Mr. Chairman, I would like to tell you gentlemen here the most effective way that I have found upon our railroad of interesting the general public, and especially on the subject that was brought before you by Mr. Metcalf of the Northern Pacific. I hold one meeting every month in four or five of the cities along our line, showing moving pictures and stereopticon slides, and particularly along this line of trespass. I go into that city and make my pictures and slides local. I show to these people in that community a picture of some of their own boys and

## **A Live Issue**

A live issue stimulates publicity. Make Safety work interesting and results follow.

girls climbing on our cars, playing around the depots, walking up and down our tracks, and then gaining the hearty co-operation of the superintendent of schools in that community on that very difficulty. I have these meetings in the afternoon for children only and for those who cannot attend the evening meetings, which I also hold in the same place. I use the moving picture theatres and in some places the opera house or auditorium. We have our own moving picture machine, which we move to these different places where one is not available. I have had as high as one thousand school children at a meeting in the afternoon. Some of those children see their own picture thrown on the screen, taken while they were trying to board one of our trains or playing around our yards or on our tracks. I have found that that had a greater effect on that community than if I would show some foreign picture. Making it local entirely I get more hearty co-operation from parents in trying to educate their children to discontinue any of these unsafe practices. And after I have created in that community a desire for those things, and have created a spirit among the school children and among the parents they desire to come there and learn those things. I have been able to put into three of the different schools, and I am going to put into several schools on our line, a little book, "Sure Pop and the Safety Scouts." I have that installed in schools in three of our cities. It has been put in as a supplementary reader and is taught to the children by the teacher. And I think that is one of the greatest helps in educating the younger generation and instilling into their lives the safety first idea. (Applause.)

CHAIRMAN DOW: I would like to say just a word about the little book "Sure Pop and the Safety Scouts" which Mr. Locker called your attention to. This is a story published under the auspices of the National Safety Council, and one of the most interesting and absorbing safety stories that I have had occasion to read. I think that every member here will be interested in getting a copy of that book. The price is thirty-five cents in single copies and I think for ten copies it is twenty-eight cents. Copies of this book may be obtained from Mr. Cameron, Secretary of the National Safety Council, in Chicago.

MR. G. C. MARTIN (Toronto, Hamilton & Buffalo): I would like to tell you the propaganda we started on our little line in regard

to trespassing. We carried on a campaign somewhat of the character of the Northern Pacific as outlined by their representative. We have a large manufacturing city, a number of industries in the City of Hamilton, and a great many of them are located along our line. We did start to educate the employees of these factories to keep off our tracks with very good results. In many instances we have had to send a special representative to the management of the factory and ask them to caution their employes, which they have done. We also took it out through the schools. We have great trouble with school children. I believe we have overcome that difficulty by circulars and lectures by the principals and teachers of the schools.

We also instructed all our crossing watchmen to keep trespassers off the tracks. Now these watchmen required a good deal of attention themselves before they really came to the conclusion that that was part of their duty. We had our officers go along themselves. I myself on one occasion walked along the track and asked the watchman, who did not know me at that time, who he was, and after I passed by I asked him why he allowed me to walk along the track. He said, "It is only a short distance and no trains in sight." I said, "Is that your instructions? Isn't it your duty to prevent people from walking along the tracks?" He said, "Yes." I replied, "Why don't you carry out your duty?"

We issued several circulars to our employees, particularly to our section foremen, and to bring it home I might say that I was going over the road on the inspection car one day with our roadmaster and we stopped at a station for a few moments and there were some trespassers walking along. The roadmaster was within a hundred yards of me at the time. I allowed this trespasser to go on and see what he would do, but this roadmaster passed this man, and then I went home and made a safety report of it. It created quite a little discussion and brought the thing right home. I do not think we have much trouble today with either our section foremen or others.

Furthermore, we went to the magistrate in the City of Hamilton and got him interested, so when we brought people before him for trespassing they were properly convicted. I believe our laws are pretty strong if we get them carried out and we have had good results from that.

**TRESPASS**

Avoid walking on  
railroad tracks and  
before crossing on  
**ANY TRACK,**  
"Stop, Look and  
Listen."

MR. T. H. CARROLL (Pennsylvania Lines East): The Pennsylvania Railroad has been actively engaged in the prevention of injuries and fatalities to trespassers for a long time. And the figures show that we have been quite successful, as high as fifty per cent, we have shown a reduction in the fatalities, but it is an endless job. The Publicity Department is all right. It is all right to talk to school children, it is all right to do anything that you can do; but after

you have done it, you will find that you have got to go over and do the same thing. In other words, the gentleman who made the speech here about the Duluth & Iron Range, that goes to the public schools every day or every week or every month, in time you will find that the school children are back in the same road. I do not think that anybody would agree that one sermon to a child would be a permanent lesson.

The point that I want to develop is this: to what extent is the railroad responsible for trespassing and to what extent should it go to prevent trespassing? Of course we can plan something but our efforts are necessarily spasmodic so far as the publicity end of it is concerned. You could not get a newspaper to publish an article more than every six months or a year, and all the other efforts that we put forth are more or less spasmodic. And it seems to me that we ought to face this problem to determine just exactly how far the railroads should go. I would like that point developed.

CHAIRMAN DOW: It might be of interest to you, following Mr. Carroll's remarks, to hear briefly what the New York Central has done in this trespass proposition. In New York State we have a fairly adequate law which prohibits trespassing on railroad rights of way. The trouble with the law was that till we took hold of the matter a year ago it had been a dead letter. We decided that we would put a man on this trespassing work to devote his entire time to it, and accordingly a safety agent was assigned to that work. The

first thing that we had him do was to begin at one end of the road and go right through to the other end and call upon every justice of the peace or judge of a court who had jurisdiction over these cases. He took with him information as to the number of persons killed and injured trespassing in this country yearly and showed him graphic maps pointing out the number of persons injured on our road in various localities. In almost every instance, I might say ninety-five per cent of the cases where these judges were called upon, they expressed great astonishment at the facts we had given them. They had been absolutely in the dark as to what this trespass proposition meant; and in nearly every case they promised hearty co-operation in the enforcement of the law.

This same man who called upon the judges would also call upon the newspapers and solicit their co-operation, giving them the same line of talk, imparting the same information, and we also found that the editors of the newspapers were also astonished at this annual slaughter of American citizens.

After this publicity work had been done and after the judges of these courts had been called upon, we then went to the manufacturing plants and began to try to get the co-operation of the heads of those plants located along the right of way. We printed a little pay envelope insert which we furnished free of charge to the heads of these manufacturing plants and asked them to insert it in the pay envelope. Those read: "The New York Central Railroad Company has called our attention to the risks daily incurred by those of our employees who walk along the New York Central tracks to and from work. Government records show that more than five thousand persons are killed in this country each year while trespassing on railroad tracks. In order to prevent these accidents and save human life, the laws of this state prohibit walking on railroad tracks by unauthorized persons. The railroad employs special officers to arrest offenders and if you do not keep off the railroad

## **CROSSINGS**

Keep off railway  
or crane tracks, ex-  
cept the regular  
crossings. Before  
crossing any tracks,  
**STOP! LOOK!**  
and **LISTEN!**



track you not only run the risk of serious or fatal injury but you are liable to arrest and punishment by fine not exceeding five hundred dollars or imprisonment for not less than one year or both.

"The practice of walking on railroad tracks by our employees must be stopped at once. The interest of personal safety requires that strict observance of this rule must be enforced."

Following this general plan of publicity and education we issued instructions to our police department to begin making arrests. The general plan which was carried out was to select some point on the road where the trespassing was very intense and where a large number of persons were known to use the track during certain hours of the day as a public thoroughfare. Police officers would be put in this locality and instructed to make from five to ten arrests every day and to continue that practice until the trespassing at that point had been broken up. We selected the judge who had been most favorable when our representative had originally called upon him, and these cases were taken before that judge and we got a large number of convictions. We got fines imposed ranging all the way from two dollars up to twenty-five dollars. We had prison sentences imposed ranging from five days up to three months. And I know of a number of those intense points where trespassing at the end of a week or ten days had been absolutely broken up by this practice, and after a few weeks had elapsed, or less, perhaps, we would send the officers back to that point to see if there had been any recurrence of that practice, and he would perhaps have two or three arrests to make. But the practice on the same scale that it originally existed at that point had not recurred.

In addition to the publicity matter that I have already called your attention to we posted conspicuously on all bridge abutments, telegraph poles and other conspicuous places, in large letters, the words, "Do Not Walk upon the Track." We prepared placards of this size (indicating) and printed in various languages, which were conspicuously nailed up on abutments, shanties or offices, at highway crossings and other points of ingress and egress to the right of way, calling attention to the law and reading in this manner:

NOTICE.  
TRESPASSING PROHIBITED.

RAILROAD LAW.

"No person other than those connected with or employed upon the railroad shall walk upon or along its track or tracks except where the same shall be laid across or along streets or highways, in which case he shall not walk upon the track unless necessary to cross the same.

PENALTY.

"Violation of this law is punishable by a fine of not more than \$500 or by a year's imprisonment in a penitentiary, or by both.

PURPOSE.

"The purpose of this law is to save human life. Many hundreds of persons are killed or seriously injured each year while walking on railroad tracks.

"By trespassing on the railroad you not only run the risk of being killed but are liable to arrest and imprisonment."

Now I think the great trouble with trespass laws, where they do exist, is that the general understanding of the public is that those laws are made simply to protect the railroad property from trespass, from unlawful intrusion. If the public can be made to understand that those laws are not made solely to protect the railroad property, but in the interest of humanity, to save human life, and if we carry on our educational campaign along those lines, I think the greatest good is going to result. And I want to emphasize this to those of you who have laws in your state which prohibit trespassing, to impress upon the minds of the public the fact that the law is passed for the benefit of the people and not particularly for the benefit of the railroad company.

In some of the states through which we run we have no trespass laws. We have now assigned this same Safety Agent to the duty of going into the various large cities in these states where trespassing is intense and getting hold of the proper officials, Chambers of Com-

### Quitting Time

At quitting time, do not hurry over railroad tracks or through dangerous places. Be on the lookout and take sufficient time to be sure.

merce and other public bodies, and trying to get a municipal ordinance passed which will prohibit trespassing within the city limits. Of course this does not cover the situation as much as we would like, but it is giving us a start in those states where we have no law.

I think, gentlemen, that this campaign which we have carried on persistently in the New York Central for the past two or three years has brought us very good results. We noticed in the year first after

this campaign was started that it reduced our trespassers' death and injury cases very materially.

MR. G. C. MARTIN (Toronto, Hamilton & Buffalo): May I ask what has been done with regard to employees off duty as trespassers? We have had considerable difficulty, in fact one of our greatest difficulties was with our own employees after they had left their work, walking along the track through the yard; and we claim that they are trespassers and have forbidden it, but they have gotten away with it.

CHAIRMAN DOW: I do not know that we have especially taken up that feature of it. I do not know that we have any points where employees are the principal offenders, although I do know of places where employees walk the tracks. But we have devoted our energy mainly to the places where employees of manufacturers and non-employees and machinists and other outsiders use the tracks going to and from their work. We have made a specialty of those points.

MR. MARTIN: Don't you think the railroad employees themselves should set the first example? They are not known generally as railroad employees, and people see them passing along the tracks by the watchman and others continue to do so. I believe the first lesson should be taught to our own employees and let them pass the word on to others.

CHAIRMAN DOW: I do think that is an important point.

MR. SHAW (Ford Motor Car Company): I just wanted to say a word, that I came into your railroad meeting today and heard you speaking about reducing accidents. We have another gentleman here from the Baker Motor Car Company, who have fenced in their plant and employees are allowed to go out into the street so that none will go across the track. Now our plant, the Ford Motor Car Company, has done the same thing. But as I came down to Philadelphia I was noticing through a number of large plants the switches run directly into the plants, where at noon time there are thousands of employees swarming upon the tracks, and I just wondered.

## **Eyes Front**

Do not stand or walk upon the tracks except when your duties require it. Face the current of traffic where possible.

CHAIRMAN DOW: I would like to ask the question whether the practice is general among railroads of instructing the flagman, brakeman and other employees to keep trespassers off the way too, if the following speakers will touch upon that subject.

MR. MCKENZIE (Pennsylvania Lines, East): The trouble should not be as great in this district as we have on the Pittsburgh Division. That division, as you all know, is a producing division. They lay it right out in the woods and dig a hole in the hill and start to hauling the coal out of it, and the railroad is the best path they have got. The county road is nothing but a mudhole. And in around the mill district it is the same way, generally bordered with beer kegs. I think it would be wise for the railroad to agitate with the state for better highways paralleling railroads. I think the trespassers as a rule take the better footpath, and if they had a good wagon road or a good footpath along the railroads they would not be near as hard to keep off. It is not the uneducated man either that takes that. You will find just as many educated ones that know better and know the law of trespassing on the tracks as you will the more ignorant class. The same thing applies in all districts, and I have worked from one end of the Pittsburgh Division to the other, in the coke

region and in the coal district; and they have a great deal of trouble wherever they have a bad highway. Now the agitation all through the state is for better roads, and I think we ought to help the cause along.

In this education of the public I cannot see that it is the duty of the railroad to keep trespassers off. Every child that is born is an asset to the government. By the time you give it a common school education you have got about four thousand dollars tied up in it and about ten thousand or fifteen thousand dollars in a college education, according to the class of college; and when we are talking of preparedness, I think it is up to the government to see that the life of that child is kept just as long as possible; and they could not begin better than by taking a hand in the trespass evil themselves without leaving it to the railroad people to arrest them, or leave it to some of you railroad men to pick them up when they kill them.

MR. S. G. WATKINS (Boston & Maine): Mr. Chairman, our railroad we operate in five states. Some of those states have trespass laws and some do not. In one state it becomes a question of fact whether the engineman did all that he could to prevent the accident when he observed the trespasser upon the track. That of course lets all of our trespass cases go to the jury and the trespass question in that state is a troublesome one.

Now I believe in law, but I believe more in education; and a little more than a year ago, just as an experiment, I visited all of the schools in my own home town and I asked each teacher to write me a letter telling what she thought of that phase of the work. And the teachers in some of the schools asked each scholar who heard the lecture to write me a letter, with the understanding that I should receive two letters from each grade. When I received those letters I was very much surprised to find in every letter the child in some form or other had expressed these words: "I did not realize the danger."

It appeals to me something like this: If the child trespasses upon our tracks because he does not realize the danger we owe that child something that he is not getting. After this I took up the work of the trespass question and also the passenger question in our public schools and during the past year I have had the privilege of talking to over forty thousand children. Now it is a simple way to reach a

lot of people. Most of our schools have a hall, so that I have been able to get together from a hundred up to eighteen hundred children from the high school age down to about the Sixth Grade in each hall. So you can reach forty or fifty thousand children at the thinking age, at the age when they are learning something very easily.

I go first to the superintendent of schools, and in many cases the superintendent has visited the different schools with me. I have been for more than twenty years a claim agent, and of course it has been part of my duty to investigate accidents; and I simply tell the children stories of accidents that I have investigated myself and know all about; and in this way I can appeal directly to the child. In every city and town that I have visited I have received letters afterwards from the superintendents of schools, in many cases from the principals, expressing their approval and their appreciation of this method of informing the public. I have a little circular printed and these are given to the teacher and she distributes them so that one circular goes into each home, and the child carries the circular home and explains to the parents the lecture that was held and the parents read this circular.

In many towns the reporters of the papers visited one school or another and in this way we got a fine notice in the newspapers. I present the subject entirely from the humanitarian standpoint and keep out of sight as much as possible the legal end of it.

Of course, as one gentleman has said, this is something that has got to be kept up, and that is the discouraging part of the proposition. But still I do feel, with the effort of the past year, and having reached over forty thousand children—and I don't know how many thousand families and I don't know how many newspapers and how many school superintendents and teachers—I do feel that the effort is worth while and that we have gained something not only along the line of trespassing, but also care while a passenger; and I feel that the effort in the public schools is really worth while. (Applause.)

MR. SMITH (Illinois Steel Company): Mr. Chairman, I am not a railroad man, I am a steel man. We handled this subject, the trespass question, in Illinois the same way that has been spoken of here, and we have done a little more than I have heard today. Every schoolroom takes accident prevention ten minutes each week. The

## Chance-Takers

The chance-taker is not only a widow- and orphan-maker, but also helps support the undertaker and the doctor.

Spring Steel Car Company provided twenty-one letters, which gave the teacher twenty-one days to work out the safety talk. They also have put in a safety scout book in every school, and that assists the teacher in talking accident prevention, thus finishing the information and instruction that this line has started. I don't know any better way than to have the scholars taught accident prevention some period of time every day during the week.

MR. G. L. WRIGHT (Chicago, St. Paul, Minneapolis & Omaha): We have a law on the statute books in the State of Wisconsin compelling the teachers in that state to devote, I think it is thirty minutes a week, to the education of children on the trespass problem, trespassing on railroads. There were a number of our school teachers throughout the State of Wisconsin that did not know anything about that law, did not know there was such a law on the statute books. I visited a number of schools and I quoted this law to them and I found that the results that have been obtained have been very beneficial. We had at Eau Claire, Wisconsin, for instance, a number of school children who, when they would leave the school on the west side of the track, right close to the track, would just simply swarm over the yards there. I visited that school and gave a talk there along the lines spoken of by Mr. Watkins, and after I had spoken about this law on the statute book the principal of that school got up and said that he did not know there was any such law on the statute books, he was surprised. And after that he made it a point to devote thirty minutes of each week to safety talks in that school, not only in that one but throughout the City of Eau Claire.

Now as one gentleman said over there about the railroad tracks being the best highway. Gentlemen, I am right here to tell you that I heard a man get up in the legislature in Minnesota, stand right up and say that the railroad track was the only path that his constituents had to go back and forth to the postoffice or to the store, and that he was not going to favor any law that would be a drawback in any

way to his constituents. That is Minnesota. We have got a trespass law in Wisconsin, but it is a farce as far as the law part of it is concerned. We tried to get a trespass law in the State of Minnesota, but when a senator will get up and make such a remark as that and talk along those lines there is no use of trying to do anything, I am satisfied of that.

As Mr. Watkins said, however, I think that more can be accomplished by going right into the schools and devoting ten or fifteen minutes to the scholars. I have made it a point to go through the different states through which we run, to the different schools, and talk to those children along those lines; being in the claim work for five years before I took up this safety work, I was in a position where I could state cases that came under my personal observation, and the results that we have obtained have been wonderful.

**CHAIRMAN DOW:** Now I am sorry that we have got to leave this very interesting topic, but we have quite a long program here to get through with today and it will be necessary for us to go on to the next topic. I hope that every one here has taken in all the suggestions that have been made on this very serious and very important topic of preventing accidents to trespassers on railroads, which constitute the greatest percentage of fatal injuries occurring on railroads every year.

**MR. BROWN:** May I ask one question? Is there in the State of Pennsylvania any law about giving this instruction on safety?

**CHAIRMAN DOW:** Will Mr. Rose answer that question?

**MR. ROSE:** None that I know of.

**MR. L. F. SHEDD (Rock Island):** Mr. Chairman, without expecting any special privileges, I notice that they failed to touch on one very important feature of the trespass law, and that is the laxity on

## **DANGER!**

Watch out for  
trains. Don't depend  
on the other fellow.

Always look in  
both directions be-  
fore crossing a rail-  
road track.



the part of our employees to attempt to keep trespassers off our trains and engines. I do not assume for a minute that the Rock Island lines are the only ones that have experienced this, and I say it in all fairness that it has come to me that some of our enginemen said that they would not attempt to keep them off, and I followed it up and found it so. Possibly, as the gentleman down in front of me said, there is a very fertile field in which we might work of requiring simple obedience to the rules among our employees, that they keep unauthorized persons off their trains and engines.

CHAIRMAN DOW: We will now pass on to the next topic.

We will now take up a very serious proposition, as affecting the outside public in respect to railroad accidents. We have the topic before us, "Automobile Grade Crossing Accidents, What Can Be Done to Check this Fast Growing Peril?" This topic has been assigned to a gentleman who I am sure is going to give us a most interesting discussion of it. I take a great deal of pleasure in introducing Mr. J. C. Rose, Chief Claim Agent of the Pennsylvania Railroad Company.

#### AUTOMOBILE GRADE CROSSING ACCIDENTS.

JOHN C. ROSE, CHIEF CLAIM AGENT OF THE PENNSYLVANIA  
RAILROAD COMPANY.

MR. J. C. ROSE (Pennsylvania): I am going to take a little shot at the trespassing evil just before I start, so don't take my time until I begin. You are not going to get anywhere on the trespassing evil until you get an act of Congress enforceable by United States Marshals and punishable by heavy fine and imprisonment. When you do that you will solve the problem. About the twenty minute talk in the schools, we did that with the Philadelphia & Norfolk Railroad with some success. But like the practice of our friend Frank Whiting and others, who used to read prayers every morning, what good did that do?

Of the many problems associated with the safety movement in its application to the railroad industry the most annoying, the most perplexing, and in some respects the most distressing, is the grade crossing accident, and it is a lamentable fact that of all it is the

question to which the public with whom there is a perfect solution, give the least attention and in which apparently it is not at all concerned.

The campaign for the improvement of the conditions surrounding the workman in his industry with respect to the personal injury hazard which, for the want of a better term, is called the "Safety First Movement," was inaugurated by a railroad man purely from humanitarian impulses, and it has been received with such public favor that it is now accepted as a vital principle of industrial progress.

The trespassing evil, which is next in importance, has received some little attention here and there and I believe has even become a part of the curriculum of some of our public schools. It also is something of a moving picture enterprise, and by these means the evil consequences of its indulgence is widely told.

But what of the grade crossing accident? What has been done to check this fast growing peril? By the general public absolutely nothing, and it is almost impossible to excite even passing interest in any attempt to remedy the condition.

What reason can be given for this indifference to the first law of nature and what explanation is there for the recklessness with which the traveler on the highway now enters into such places of known danger. Is it that our long association with the hazard has caused a hardening of our senses? When steam power first entered into the economic development of the country the dangers which it was feared would accompany the use of the locomotive were used as arguments of protest against the granting of charters to railroad companies, but contempt seems in this day to have taken the place of fear and timidity of the generation which has but recently passed. I have not time to go into the history of the subject which would be necessary in a more comprehensive treatment of the problem, but shall take the situation as it exists at this time.

There are on this day approximately two million automobiles in active circulation throughout the country, and if the increase continues at the ratio promised, there will be within a few years a motor vehicle for every man, woman and child in the land. An official of one of the larger manufacturing concerns told me last week that his company had contracted for materials for the manufacture of five hundred thousand motor vehicles to be turned out

## **Call Him Down**

When you see a man do a careless thing, "Call him down," and don't be afraid you will hurt his feelings.

during the year 1916, and that they already had sold one-half the projected output. It is reasonable, I think, to assume that all the other concerns in the United States will make an equal number so that we may expect to have our grade crossing hazard increased next year by thirty-three and one-third per cent, plus any increase in railroad traffic.

The cars manufactured next year will, I imagine, be operated under like conditions to those existing at

the present time—with respect to the moral, mental and physical qualifications of the drivers, so that we cannot reasonably expect any improvement in the manner in which cars are run. Your observation, I assume, corresponds with mine as to the non-observance, or rather the non-enforcement of the speed regulations throughout the country. There seems to have been a general relaxation in this regard and the immediate future certainly promises no return to conditions which controlled in the early days of the motor vehicle.

While passing let us consider in comparison the conditions under which railroad trains are operated, the character of the man at the throttle of the locomotive engine and the long years that he has spent in acquiring the knowledge that justifies the service; and the fact that the railroad train is run upon a fixed way under rules and regulations adopted and enforced to insure the safety of all persons.

This question of qualifications is of sufficient importance to be considered by itself, and I regret that I have not time to treat it more fully. But I desire to cite an instance which I feel will command more than passing attention and interest. Not forty-eight hours ago I stood at the corner of Market and Fifteenth Streets in this City for just ten minutes, during which time four automobiles came up to the curb within my view and the occupants of each in turn got out and went into nearby saloons. Would you want to commit the safety of members of your family to the care of a person operating an automobile who had taken even one drink

of liquor? With due consideration for the feelings of my friends, I respectfully insist that a license should not be issued to a person who indulges at all in intoxicants. This may seem drastic, but if you will take the suggestion home at night to your own fireside, you must agree with me that it is not unreasonable.

I have noticed that of late intoxicated automobile drivers are severely dealt with in some courts but the punishment usually follows some serious damage for which there is no redress. Why not eliminate this hazard by the more certain wise of refusing a license to a rum drinker?

It is common knowledge that in all the states there are statutes requiring railroad companies to provide certain safeguards for the protection of the traveler on the highway and in most instances they are not viewed by the railroad companies as unreasonable. We all know, of course, that the perfect solution of the problem is the elimination of the level crossing, and this is being accomplished as rapidly as the resources of the companies and the aid of the public will permit, but it is a very heavy burden and a great many years must pass before this relic of our early poverty will cease to exist.

On the eleven thousand miles of line comprising the Pennsylvania System there are 13,027 highway crossings at grade. It costs on an average of \$50,000 to remove one crossing. Thus it will be seen to eliminate all the remaining crossings on the line of the railroad would entail an expenditure of \$600,000,000. The various companies of this system have, during the past twelve years, expended over \$66,000,000 in improvements resulting in the elimination of 1052 grade crossings.

On the Long Island Railroad \$15,000,000 have been spent in the elimination of 305 crossings and that Company spends \$300,000 a year in the protection of the crossings that still exist.

The time at my disposal but permits of this brief statistical statement as to what the railroads are doing as their part of solving the

## SERVICE

Success comes to those who take advantage of experience and seize opportunities, building upon a solid foundation of service.

problem. The figures of all the railroad companies in the country of this experience would be startling in its magnitude.

I shall also avoid statistics with respect to the number of accidents that are constantly happening, but I want to assure you that I am not becoming hardened to the terrible toll in tears and financial distress we are paying for this neglect of our obligations to society. The fatalist would view the situation as the toll of progress, but I am not willing to share the thought that this sacrifice is a necessary part of the development of the race. It is rather a blot upon our refinement and a shame to our generation.

But you ask me for a solution of the problem or a remedy for the evil and taking the situation exactly as I find it there is, in my judgment, but one certain cure, and that is a law carrying such penalty as will insure its enforcement, an act of Congress (and I have given due consideration to the limitations of the powers of the Congress) requiring the traveler on the highway to give due regard to his own safety and those who have committed their lives to his care, in this form:

ENTITLED; "An act to promote the public safety at highway crossings at grade, of interstate railways, by compelling the traveler on the highway to stop, look and listen before entering upon such crossing, under penalty to be enforced in the manner therein specified."

SECTION 1: Be it enacted, etc., that any and all persons approaching at grade a railroad crossing, over which interstate commerce is conducted by steam or electric power, must, at a point not less than ten, nor more than forty feet from such crossing, stop, look and listen, before entering upon such crossing.

SECTION 2: Any and all persons who violate this act, shall upon conviction thereof, be liable to pay the costs of the prosecution and to forfeit and pay the sum of fifty dollars; one-half thereof to go to the informer, and one-half to the United States; which sum may be recovered, by and for the benefit of the informer, as are other debts in the several jurisdictions herein mentioned, by an action to be brought either in the District Court of the United States; or in any court, or before any Justice of the Peace, alderman or magistrate of any state, city, town or county, within the United

States, which, by the laws thereof, have cognizance of the recovery of debts of equal value, against such party guilty of the violation of this act.

SECTION 3: This act shall become operative on the blank day of blank, etc.

SECTION 4: All acts or parts of acts inconsistent with this act are hereby repealed. (Applause.)

MR. MCKENZIE (Pennsylvania Lines, East): Mr. Chairman, I think this meeting should go on record in favor of a law as proposed by Mr. Rose. I know of two instances on the same crossing in Pennsylvania, in Westmoreland County, where the stopping of a car prior to going over the crossing would have prevented an accident. At Manor station, where the company has a watchman stationed, one car stopped with its engine under a moving freight car, the freight train coming down about thirty or forty miles an hour, and the gentleman was going to make a flying stop on an icy pavement and stuck his engine under the car and it tore that off quickly. Fortunately no one was injured. In other words, the watchman tried to stop the gentleman and he stopped right on the crossing—a new seven passenger Chandler; and the passengers all got out, and when they got through with that automobile there was nothing left but the motor. If this law had been enforced in these cases they would have each had cars. And I think this meeting should go on record by all means in favor of that law as proposed by Mr. Rose.

MR. ROBERTSON (Ford Motor Company): I will come up front, because I want to take issue with the gentleman. I happen to represent the concern mentioned that is going to build five hundred thousand cars, and a law such as is proposed here, requiring an automobile to stop, look and listen, never would get by, you know. Understand, I do not want to take issue with the question of safety on crossings, because we are all interested in it. But the driver of an automobile and the owner of a vehicle of that kind has got some rights in the public highway as well as the common carrier crossing over the highway. We will build and sell five hundred thousand cars, with a total of two hundred million dollars investment to the purchaser—some investment, and some right to the investors to the

### **In the Meantime**

**When an irresistible force meets an immovable body — While this is going on we had better get busy on Safety First work.**

use of the public highways with safety. So that it is a joint problem. It is not for me as the driver of an automobile to entirely look out for the railroad, but it is a joint obligation as between your railroad and me as the owner of a vehicle with an equal right to the use of the highway to look out for each other in some way.

Now the six hundred million dollars mentioned by one of the gentlemen as the cost of removing your grade crossings is three times

the purchase price of our product to the users of highways for one year. So that when you say to me as the owner of a motor vehicle that I must stop within ten feet of your railroad and get out and look and listen or go ahead, like a street car conductor does, it is hardly fair.

I do not want to prolong my talk on this, but I simply wanted to place some of those facts before you. Now our car, mind, is a cheap car. The other five hundred thousand that was mentioned, which will be probably a fair estimate of the actual number of automobiles manufactured and sold during the present year, so far as the monetary value is concerned, would probably treble the two hundred million dollars spent by purchasers for our cars. So that the total automobile drivers would invest in this single year is more than the six hundred million dollars for the grade crossings. But that, of course you say, is for the one road; and the multitude of roads and the multitude of investments would be prohibitive; that is, it is prohibitive for the railroads to ask them to elevate their grades at the present time.

**MR. W. C. WILSON** (Delaware, Lackawanna & Western): I would like to ask the gentleman what substitute he has for stopping, looking and listening. What ought the automobilist to do driving a Ford car?

**MR. ROBERTSON:** Well, I can't say. I will say this, with all due respect to our own company: that the drivers of Ford cars are the

most reckless drivers there are on earth as far as my experience goes; and that is due to the fact that everybody can buy a Ford and everybody will try to buy one, regardless of their knowledge or ability to drive the car. I heartily agree with the suggestion that the man who gets drunk—or maybe not go that far—is not fit to drive any car. But I will go further and require the driver or owner or operator of an automobile to pass some sort of a technical examination as to the

mechanical control of the car before he is permitted to drive it a foot. You take your cars, you put them into the hands of men, women and children; you go out on the streets not only of Philadelphia but every other place and find ten, eleven and twelve year old boys operating not only a Ford but a big six cylinder car of some kind—a woman particularly—has no more idea of the mechanical mechanism than a rabbit. And I have seen people taking one of our cars,—we would send them out with a demonstrator, and for fifteen minutes the demonstrator would have his hand on the wheel and in another ten minutes he would say, "Well, there is your car. Take it home. Run home with it;" and before he got home he would get run over at a grade crossing. (Laughter.)

MR. FRANK V. WHITING (New York Central): Mr. Chairman, I think Mr. Robertson is perfectly safe in that suggestion that owners of cars and would-be operators need to take a mechanical course. It would not interfere with the business of the Ford Company at all. (Laughter.)

And then another thing occurred to me about his opposition to Brother Rose's suggestion that the Ford Company do not need the assistance of the railroad companies to destroy the Ford cars in order to create a market for new ones. (Laughter.)

Seriously I think that the suggestion of Mr. Rose is a good one. I am not quite so sanguine that the Congress could pass a law of that kind, but in the interests of safety I think it ought to be done.

## **BOOZE**

Seven out of ten accidents are caused by carelessness. Cause: Liquor makes men reckless. They or their fellow workers are injured.



It is a rule of negligence in Pennsylvania that the traveler on the highway must stop and look and listen before crossing a track, and if he does not stop he is guilty of contributory negligence and cannot recover damages. That of course is not the law of the state and it is not recognized as such by the average traveler on the highway.

I am very glad to offer a resolution that the recommendation of Mr. Rose be adopted by this Railroad Section of this National Safety Council.

(The motion was seconded by Mr. Greenwood and several others, voted upon and carried.)

MR. G. C. MARTIN (Toronto, Hamilton & Buffalo): Mr. Chairman, I have two suggestions to make in regard to the subject of what the railroad might do to help. In the first place, in cities, where we have gates lowered to protect the crossing, you have all heard and all know of automobiles running through the gates, particularly at night, because when a reckless man is driving an automobile, particularly after he has a drink or two, he can't see anything but red. I believe that most of our gates are protected by a yellow light at the present time, an ordinary lamp dropped down. I think that could be better protected by a red light. The objection to the red light has been that it could face an engineer and stop him possibly as well. Just before I left Hamilton a gentleman knowing that I was coming here brought me a couple of photographs of a newly patented lamp which will fill the bill. It shows a red light to the man on the street, but is blind to the engineer. It is a very simple little mechanical contrivance and simply goes over the ordinary lamp.

MR. WHITING: Is that for the gate or the flagman?

MR. MARTIN: For the gate, when the gate is lowered. It is blank on the side of the engineer in both directions and shows red to the street. It is a very simple and very inexpensive contrivance. I will be glad to leave a copy of this with your Secretary.

Another suggestion that might help on outside crossings, road crossings. Some of those dangerous crossings are in such a position that an automobilist going at even ten or twelve miles an hour is not aware of the railroad crossing until he is almost on it. We have many conditions of that kind. And in order to protect such

a crossing I am of the opinion that a railroad sign say one hundred feet away from the tracks on the road—it might mention the railroad, for that matter, on the sign—"Railroad Crossing 100 Feet Ahead," and that will give him information that the railroad is there and he will take better precaution, if he is sober.

There is another precaution. Following the resolution that has just been passed and in addition to the law as suggested, I would suggest this: every owner of an automobile must have a license and must carry a number. When he is to obtain his license why would it not be well to have a printed condition on that license and have them required to sign it? We have many conditions on tickets and baggage regulations and other things that we require passengers to sign. Now if each man getting a license for an automobile was required to sign a certificate that he would, if the law is such, stop, look and listen before crossing the railroad, it would bring it definitely home to that man; and if it was also definitely stated that if he did not and was found guilty of not doing that he would lose his license, and in this way you will bring it right home to that man under the Pennsylvania Statute.

CHAIRMAN DOW: I would like to offer as a suggestion that one or two points be discussed in connection with this topic, the question of whether or not the crossing flagman should be provided with a flag with which to signal the pedestrian or traveler on the highway to cross the tracks. I suggest that for the reason that I believe there are railroads which have done away with the crossing flags on the theory that a flag signal given by the flagman is confusing to travelers on the highway. I would also like to suggest the question as to whether the hooded lamp showing red in the direction of the highway is used by crossing flagmen on any railroads at night.

MR. BLAKEMORE: The objection to a red gate lamp would ordinarily be found by the operating people that they get to using the red more than absolutely necessary for such collateral purposes as that, on the theory that it cheapens the red signal. We had exactly the same proposition made to our men and they objected to it on that theory. They said that to use the red light or the red flag or red for any collateral purpose cheapened it in connection with train operation. I just wondered what your people thought about that. They did not find that objection to it?

## Safety Rules

The man who will not listen to Safety rules may have to listen to the sound of the ambulance gong.

You cannot afford to take a chance.

MR. MARTIN: Well, this red lamp does not affect the operation of the railway in any way, as it is blind to the engineer and the trainmen, but it does show for the man running the automobile, as the red lights are used on the rear of automobiles; another man coming behind seeing a red light, he is mighty careful not to get too close to it. That is the feature that comes to us in regard to this very lamp I mentioned.

CHAIRMAN DOW: I would like to ask Mr. Richards, of the Northwestern Road, if he will not say something on this topic.

MR. R. C. RICHARDS (Chicago & Northwestern): Mr. Chairman, I have been very much interested in what has been said on this red lamp. I have noticed it on the Southern Pacific, and especially in Southern California they are using a signal of that kind, and they are doing the same thing on the New York Central, and it seemed to be very effective when the red was so hidden that the trainmen could not see it—I suppose on some such plan as this lamp you speak of.

The other question that the gentleman raised, about the sign some distance from the track, that is particularly used on the obscure and dangerous crossings. Now on the recommendation of one of the safety committees of the Northwestern Road we commenced installing these signs some two or three years ago, and we put them up all the way from a hundred feet to a thousand feet from the crossing, depending on the conditions at each particular crossing. Just how effective they are of course we don't know. We have had some accidents on crossings that are so protected, but how many they have prevented we never will know. But we have had only a few and I think that a lot could perhaps be done in that way if we all got together and co-operated in getting up something that we could all use.

**MR. G. C. MARTIN** (Toronto, Hamilton & Buffalo): Pardon me one moment. I want to say that the last suggestion I made there was right along the same lines, as you cannot make any of these precautions foolproof. It is not more than a month ago since one of our trains ran into an automobile and killed five people. That crossing was protected by a bell and the bell was ringing all the time. Other automobilists who were in that vicinity got up and swore to that effect. In fact, the party was really given warning by one of the automobiles before he hit the crossing.

Now you cannot prevent accidents of that kind where there is a fool in charge of the car. It was proven that the man who was driving it was nothing more nor less, and always had been in his own home town. We got up his record and it was proven conclusively that he had a very big head, because he owned the car and wanted to drive it over and through everything. Well, he drove it for the last time. But we cannot prevent such fellows as that getting into trouble, and that is the reason why I suggested that license, so that he will have to sign it, and the first time that he breaks the rule and is caught at it that his license be withdrawn.

**MR. RICHARDS:** I would like to say one thing on those licenses. You know those licenses are issued every year about the 10th of January, they begin to get them out, and it occurred to me when this gentleman was speaking that if this Section of the National Safety Council would get up something in the way of a printed warning to go out with those licenses and furnish them gratis to the state official who issues those licenses we probably could very easily arrange to have them sent out at no expense, and it seems to me that is a thing we might do. Now the National Safety Council a year or so ago prepared a warning to automobile drivers and gave it very general distribution. That copy might be used for this Section, so that they can have something of that kind as a copy or draft to

## **Team Work**

Team work, every man interested and helping, will do more than anything else to prevent accidents. Give your mate a square deal.

get out this proposed notice. I believe it would be effective and useful.

MR. L. F. SHEDD (Rock Island): I would like to add to the record just a little bit. I am more or less disturbed over the remark that the representative of the Ford automobile made, in which he conveyed the idea, I believe, indicating—to me, at least—that an automobile driver who would stop, look and listen would be doing the railroad a service. There is no attempt to criticise his remark at all. Isn't that the sentiment that we must meet not only from the Ford people but manufacturers and owners of cars: namely, that when they stop they are doing the railroad a service? I do not believe they are.

Regarding these signs and notices, I believe that we ought to bend our energies, as it were, a little more in following up Mr. Rose's resolution, part of the resolution made by Mr. Rose's suggestion, and not attempt to burden the railroads with a multiplicity of signs, five hundred feet, a thousand feet, and so on; because those fellows surely cannot obey them. The other is, can't we get hold of the Ford representative and through him, if he be willing—and we will be anyhow—see if we can't use him to bring about a change of heart among the automobile fraternity, both manufacturers and users, that if they stop, look and listen they will be doing themselves a favor and not the railroads? (Applause.)

MR. ROBERTSON (Ford Motor Company): Just in answer to that, we will be very glad to co-operate in every possible way, and inasmuch as we send to each purchaser of a Ford car direct from our office a bill of sale for every car we sell, we probably could put into the hands of every Ford purchaser some sort of uniform card of warning that might be prepared by the association, and we will be very glad to furnish them. I think I could arrange with our sales department to have them sent to every purchaser. More than that, we publish our Ford Times, which goes not only to immediate Ford owners, but old Ford owners. We are publishing an edition of 350,000 or 400,000 monthly, and we will be glad to publish in that such safety suggestions as might be prepared by some member of this Section or by the Council itself.

Now in answer to the other, about the automobile owner doing a service to the railroad by stopping his car, as a driver of a car for the

last thirteen years my experience with the railroad at grade crossings has been and is yet today a peevish experience. We come up to a grade crossing in a city or village and a freight train two miles long stops across the crossing and holds you there from fifteen minutes to half an hour. If you courteously request them to cut the train they don't tell you to go to hell but they intimate that you can go to hell or fly over or go under.

If the railroads will co-operate with the drivers of automobiles to a certain extent and not hold crossings that way—they do it right in the heart of the City of Detroit; they hold a crossing against us from ten to fifteen minutes and they get five hundred automobiles backed up in the street. And it is a co-operating proposition and I would not have you feel or our members feel that the Ford Motor Company officially and myself are not ready to co-operate in every possible way to remove what is a present danger with the increased growth and the increased number of reckless automobile drivers and dangerous drivers on the streets. (Applause.)

**CHAIRMAN DOW:** I think that Mr. Robertson's suggestion as to sending out these warning notices to purchasers of Ford cars is an excellent idea, and if carried on further through other automobile manufacturers will help to solve the very difficult problem as to how we can reach the automobile drivers with proper warning as to their conduct at grade crossings.

It might interest you to know that on the New York Central Railroad something over a year ago I had an investigation made to determine with what degree of care the average person approached places of danger at railroad crossings. We had representatives of the Safety Department stand an entire day at three separate grade crossings located at widely separated points. One of those crossings was at Syracuse, New York, another one was at Detroit, Michigan, and a third at Indianapolis. They kept a very accurate check on every person, either on foot or in any kind of a vehicle, who passed over these crossings between the hours of seven o'clock in the morning and I believe it was seven in the evening; and if I remember the figures correctly out of a total of 7,779 persons who crossed the tracks on these three crossings there were only 359, or less than five per cent, who took the precaution to look both ways before crossing the tracks, regardless of whether they stopped or not.

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## **The Employer**

**Remember that all the rules and regulations that can be adopted; all the safety devices that can be attached to machines; all the guards**

Now, I personally feel and thoroughly believe that practically every grade crossing accident can be prevented by the simple precaution of stopping to look and listen, and I think this is a very important phase of this subject that we have under discussion. I would like to hear from some further safety man before we dismiss this topic.

**MR. CHARLES T. BANKS (Erie):** Mr. Chairman, I would like to make a motion that a committee

be appointed to draw up a suitable notice for distribution. I think that Mr. Rose ought to be put on that committee. I would suggest that he be made a member of that committee.

**CHAIRMAN DOW:** Is there any second to that motion?

**MR. RICHARDS:** I second the motion, and I think that that notice ought to be not only to all automobile manufacturers but to all city officials who issue licenses.

**CHAIRMAN DOW:** You have heard the motion, gentlemen. Is there any discussion on the point?

**MR. GREENWOOD (Youngstown & Northern):** I would like to inquire why we should draw the line on any particular kind of vehicle?

**MR. RICHARDS:** That is the topic.

**CHAIRMAN DOW:** The proposition is reaching the automobile drivers through these various plans.

**MR. GREENWOOD:** I look at it that way, too, but I think it would be discriminating to include only the automobiles.

**CHAIRMAN DOW:** What suggestion would you have to make for reaching the other class of travelers?

MR. GREENWOOD: I do not know that I could make a suggestion, but I think possibly that this could be issued to every vehicle owner.

(The question was called for.)

CHAIRMAN DOW: You have heard the motion. All in favor signify it by saying aye; contrary no. The motion is carried. The Chair will later appoint a committee to draw up suitable notice.

MR. BALLIET (New York Central): Mr. Chairman, not having heard from the Lehigh Valley man or representative on the floor, I offer a suggestion for your record following Mr. Martin's proprietary lantern. We should steer clear of proprietary articles as far as we can, and I believe we should have the Lehigh Valley man tell us their experience in shielded lanterns on grade crossing gates. I have no knowledge myself, but I know they are conducting experiments. I have observed on the Central of New Jersey a change from the old custom of having the gate crossing man give you a hand signal light, by changing to a disk in red printed in white on it the word "Stop." I have studied it somewhat. It seems to be more or less cumbersome to handle, but it has the effect of giving additional safety to the grade crossings and the people, that is, the pedestrians and vehicles and automobiles. It attracts their attention.

(Lehigh Valley representative not present.)

MR. C. F. MERRILL (Lehigh & Hudson): Speaking of that sign on the Jersey Central, I have noticed it at Phillipsburg, passing there one day, and the train was on the bridge. An automobilist looked at the train and judged the distance and went right on over the crossing. You can't do anything with signs. You have got to have a Gatling gun; that is the only thing that will stop them.

MR. J. S. ROCKWELL (Buffalo, Rochester & Pittsburgh): I would like to speak a moment on one suggestion of the Chair in regard to this discussion, and that is whether a crossing flagman should in

## Can't Do It All

which can be erected: all the warning signs that can be posted are useless unless every man is careful and insists on like treatment.



any case use his flag to motion or to indicate to the driver on the highway to proceed; and I am utterly opposed to that principle. I think that the flag or the lantern in the hands of the crossing flagman should never be used for any purpose except as a signal of danger. We had a case on our own road whereby the crossing flagman being in the habit of shaking his flag and waving it horizontally as a danger signal and then when the danger was past using it over his shoulder for a signal to go ahead, an automobilist misunderstood him and thought he was giving a signal to go ahead, and the result was an accident. I think that the flag should not be used in any case as a signal to proceed.

**CHAIRMAN DOW:** Before closing the discussion on this subject I will ask Mr. Rose if he has any closing remarks to make on the subject?

**MR. ROSE:** I just want to say about the red light: the red light will not show at all as a signal on the gates. On the bridge crossing the Raritan River at New Brunswick there is a gate indicating that the draw is open. There is a canal that runs through there and they take this draw off and this gate stands with a brilliant red light right in the center of the road. A man came down along there, going half way down the bridge, and passed another automobile. He was right behind him and he saw the red light back of his car and he ran around it. This man in the car saw him and saw he was going around, and he said, "If that fellow doesn't stop he is going overboard." It was a very dark night and this was a very brilliant light and he saw this and thought it was another car right in the center of the road and he turned around that red light and went overboard. So I think until municipalities stop using red lights to indicate obstructions in the highway we cannot use them on the grade crossings, because all a man has to do is to run around it, and that is what they do.

Up in Trenton the other day a man ran in front of a green light. Evidently he didn't know what it was, but he got killed. Therefore you can't use a red light as long as it indicates other obstructions of limited dimensions, because people will run around it. You have got to have something else. A green light is best, it means caution; but a man has got to slow down.

I never knew before what color it was that a drunk recognizes.

I thought he was not safe with any color. Therefore I protest against the red light. I think there should be a definite crossing light. We have that on the West Jersey Railroad of the Pennsylvania Division. In some respects it is good. It tells a man that there is a point of danger and he hurries up and gets away from it and gets in front of the train. You inform a man that there is a grade crossing there and if you don't compel him to stop he is going to hurry out of that sphere of danger and get in front of a train if a train comes along.

Now my whole argument is this: the railroads have done their duty, no question about it. They have observed every law that has been placed upon the statute books, and there is something for the public to do that it has not done. (Applause.) That is the whole gist of this argument. They must begin seriously, too. I hope it will not stop with this very interesting talk I have heard from these gentlemen and I hope that in the coming Congress, as I have suggested, it will be met in some way and brought up to the attention of our legislators in Washington.

I was very careful not to mention the Ford concern when I was talking about it. I want to say that the Ford people have been very hard put to get material for their cars. The manufacture of munitions has taken a good deal of iron out of their course of manufacture, and for some parts of their machines which are not very important they use scrap material melted down and make it better than new. Up along the railroad here there was a high wind not long ago that blew a tin roof off a house and the owner didn't know what to do with it and a neighbor told him, "Send it around to the Ford plant. They will buy it." He did so and this is the letter he got the next day: "I don't know what you hit with your car but I can put it in first class condition for fifteen dollars." (Laughter.)

MR. FRANK V. WHITING (New York Central): I have got to make a little speech tomorrow and John Rose is going to follow me and discuss my speech, and this is the only chance I have got to get even with him. I always thought the Pennsylvania were up to date but I did not know they used green lights for caution. We use them for safety on the New York Central.

I think that we ought to do something to strengthen the hands of our men who protect crossings. It is not always the fault of the

## **The Chance Taker**

**The careless workman who does things in an unsafe way is a menace to his fellow workmen, as well as himself.**

traveler on the highway that he is hit on a railroad crossing, and if the traveler stops every time before he crosses the track it won't prevent all accidents by any means.

Personally, I feel that every flag that is in the hands of a crossing man ought to be taken out of his hands. There is not one man in a hundred knows a signal to stop from a white or a yellow flag. Our thought is that we will take crossing flags out of the hands of the flagman, that we will provide them

with a disk, perhaps a white enameled background with the word "Stop" on each side—something that will be light and convenient and handy to use. Our thought before that idea was suggested was that we would teach our crossing flagmen traffic signals such as are used by traffic officers in the city streets. We have also in mind the idea of using as a substitute for gates at places where we felt that we did not want to go to the expense of putting in gates, the now very familiar signal of stop that is used in Detroit and Chicago and New York and other large cities by the policemen at the various crossings. We have experimented in painting the outside of our gates red, not only the gate blades but the standards, and on the line east of Buffalo we use the red light on the gates. We propose to make that standard for the system. It is also our intention to try and develop—I am not very sanguine of our success—a red light for the use of the flagmen on crossings. It is going to be rather difficult to get the men to use that light so it will not be shown to approaching engineers.

One of the most important things that I feel that we have undertaken is the assignment or designation of some officer on the division or some man specially employed for that purpose to oversee the work of the crossing gatemen and flagmen and instruct them how to perform their duties and to study the problem of preventing crossing accidents. And I think there is a great deal the railroads can do on their part towards eliminating these highway crossing accidents, aside from the question of the public doing their part.

**CHAIRMAN DOW:** The time is getting along and we will have to pass to the next topic. We will adjourn in about fifteen or twenty minutes for luncheon and in the meantime we will take up the topic of "The Value of Prizes or Awards to Committeemen, Other Employees or to Divisions and Shops for the Purpose of Stimulating Interest in Safety Work," by Mr. W. C. Wilson, of the Delaware, Lackawanna & Western Railway Company.

## **Think Safety**

Some men never think before they act. As a rule it is best to think first, and the other fellow is always safer for it.

### **PRIZES TO EMPLOYEES OR COMMITTEEMEN FOR SAFETY WORK.**

**MR. W. C. WILSON** (Delaware, Lackawanna & Western): Mr. Chairman and gentlemen: The only reason that I was selected for this topic at this sectional meeting was that the Lackawanna was the only road that the committee knew of which had used the prize system in this way, and therefore they pressed me on duty to present the matter. I feel somewhat embarrassed to be before you again. I have not very much to say about it.

I have here our Safety Bulletins and in No. 11 we have photographs on two pages. If you will kindly take it and pass it along while I am talking you will get a visual idea of what we are doing. On the first page is a picture of an award which is a watch charm. Instead of a button or any other device, a watch charm of solid gold with enamel and so forth was selected.

Human nature is the same in all classes of society and as safety work is an individual proposition and cannot be incorporated in mandatory rules—while they may be so incorporated the following of such rules is largely an individual proposition—we need a stimulus, a stimulus of the individual in the railroad business and in any other business where the same conditions exist. And it occurred to our central committee, therefore, that if any award could be made on each division to the men who had done the most in the cause of

safety on that division it might stimulate an interest among our men; and that was decided upon. Then the next question was how shall the men be selected? And we decided that the division committee should by vote select the man to whom the award would go on that division. That was followed out. The result was great interest among our division committees and quite a contest in two or three of them; and in one of them the man who was reported by the sub-committee as being their choice was entirely thrown out and an engineer was unanimously chosen as the representative of that division to receive this award.

The award itself, as you will see by looking at the picture, is a very handsome enameled face gold watch charm that they are proud to wear, made by one of the finest of our jewelry firms in New York City, and is a thing of beauty. Every man that got it this last year is proud of it. One man did not have a watch chain. He immediately went in and bought a fine 14 karat watch chain and had this hung on it, and he is as proud as a peacock and it is a matter of talk among our men and we believe that it has worked very well and the contest is on for this year with a good deal of interest. I will not deal any longer with that subject. On the face of the watch charm in the outside circle is "Award of Merit," and another circle inside "Safety First," and across the middle of it is "D., L. & W.," and on the bottom the year, 1914. Then we decided to give a flag to the division which made the best safety record as to injuries to employees; we did not include the public or anything else, simply confining it to the record upon injuries to employees. A flag was presented to the operating division making the best record; and a flag was awarded to the division, and then we have a separate flag for the shop. And these flags were awarded in a big public meeting. One flag was awarded to the shop at Scranton, which got the flag last year, before an audience of nearly three thousand people, with due ceremony, and the award of merit to the men was made an occasion for an affair which emphasized the whole business.

Then the M. & E. Division, which is our eastern division, got the prize flag for 1914, had a big meeting, had a flag raising. They took great interest in selecting the place where the flagpole should be and one man requested the privilege of being intrusted with the care of the flag and of the grounds around the flag pole. He wanted to have it beautifully lawned and with flowers and so forth, and he

wanted the privilege of raising the flag every morning and lowering it at sunset every night; and he takes great interest in that and we had quite a pow-wow when the flag was raised. The big engines all round tooted their blasts and the big crowd took off their hats and made it quite an occasion. And the shop, you will see in the pictures, has taken a great interest in the flag, in raising the flag high in the air. Our Master Car Builder said that they selected a place and put that flag where it could be seen for forty miles in every direction, up on a hill right near the shop.

This is enough to show you that the men, at least, have taken a great interest in this proposition. It has appealed to them and they are proud of it and we believe that it is one way of stimulating not only individual effort but associated effort towards securing the result that we are after. (Applause.)

MR. R. P. KYLE (El Paso & Southwestern): Mr. Chairman, with due regard to Mr. Wilson's ideas about giving prizes and awards to stimulate interest, I do not agree with him in some respects. It has been said and all agree that "Safety First" is simply a business proposition, economy and efficiency; and I think that when we go to spending money to arouse their interest by giving them prizes we are lowering the business idea. It seems to me it is a waste of money. We do not give the men prizes for learning the book of rules or anything like that; and the safety first rules are the same ideas identically. They have got to obey safety first rules and I do not think we want to lower it by giving prizes. I think that some recognition of the division, being awarded a flag, is a good idea. We have a cup, which I do not like, because it has to be kept in a small place and is obscure, but the flag, I think, is a much better idea.

MR. CHANDLER (Dodge Manufacturing Company): Mr. Chairman, I am not a railroad man, but we have experimented quite considerably with the element of bonuses and prizes, and the attitude our directors and president took on the point was this: that we are spending quite a few dollars every year for welfare work and there was no better welfare work than that of conserving the employees' lives and parts of their bodies; and money that was put into the bonus system is chargeable to our Welfare Association; the theory on which that was based is this: that a man will do more for the

## Accidents Repeat

It was formerly believed that "Lightning never strikes twice in the same place." We know from experience that

gang or his department than he would for himself; and that where he would take some chance, feeling that he was perhaps a little bit of a smart Aleck in doing it, to take a little chance that might result dangerously, the thought that it will get the department in bad has deterred a great many of them.

Our plan has been two days' extra pay for every man in the department that has had a perfect score. At first there was no thought of that ever materializing, so they

qualified it by saying that if none had a perfect score, the next to perfect would prevail. The first eight months it was not noticeable that there was any great interest in it; but after that time about half the departments had perfect scores. Then it was very noticeable, the caution of the men, not for the eight months but for the last year was very pronounced in cautioning one another against taking foolish chances; and many times we have heard admonitions from one to another, cautioning him against getting the department in bad. They do not caution so much about a fellow getting hurt as against the gang losing two days' pay. I recall one instance, a fellow having charge of a department had a hurt thumb; he had an accident policy and had to lay off four days to get in on it and he mentioned it and was very proud of the fact that he had put it over on the insurance company. At the end of the year he was the only blot on the department which cut them out of two days' pay, and he was very unpopular, so much so that the management had to step in and take steps to prevent him from being ostracised. So that they are very keen on the records of the department because of that two days' pay.

And as a means of showing the effect of it I have here statistics which show the cost of our accidents per year per hundred dollars payroll for the last five years. In 1910 it was fifty cents; the next year, 1911, twenty-two cents; in 1912, eleven cents; in 1913, 7.9 cents; and in 1914 seven cents. It shows how the cost of accidents has been pulled down. In the time off, beyond the fraction of the

first day of accident, .39 of one per cent three years ago, the next year .19 and the next year .11; showing how the time off due to accidents has decreased. (Applause.)

CHAIRMAN DOW: I am sure that we are very much indebted to Mr. Chandler for his information.

MR. E. M. SWITZER: I would like to ask on what basis Mr. Wilson figures that the division or job is entitled to a flag. Is it on the fewest number of accidents or is it on the fewest number per hundred employees or on the fewest number per thousand train miles?

MR. W. C. WILSON (Delaware, Lackawanna & Western): It is the percentage per thousand men, figured upon the percentage basis of a hundred men employed.

MR. SWITZER: Is that for the division also?

MR. WILSON: That is for the division also. The reward of merit is made not on the man's personal record of getting hurt or not getting hurt, but that is a record of recommendation for practical safety protection.

CHAIRMAN DOW: We will take an adjournment until two o'clock; and I want to call your attention to the fact that this afternoon we are going to have a very important topic for discussion, in fact, the next three topics relate to the education of the workman to awaken individual interest in the subject of the safety movement among the employees, and I think that is a very important problem that we all want to be here and discuss.

## Accidents Repeat

If you fail to study  
the cause of your  
accidents and remove  
the cause, they are  
bound to repeat  
themselves.



## WEDNESDAY AFTERNOON SESSION.

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The meeting was called to order at 2:00 P. M. by Chairman Dow.

CHAIRMAN DOW: Is the committee which was appointed to draft the by-laws and nominate officers of this Section for the coming year ready to report?

MR. SPAULDING: These are the by-laws, gentlemen, that are drawn in harmony with the scope and object of the National Safety Council for the Railroad Section. (Reads.)

### BY-LAWS OF THE RAILROAD SECTION OF THE NATIONAL SAFETY COUNCIL.

#### NAME.

##### *Section 1.*

This organization shall be known as the RAILROAD SECTION of the National Safety Council.

#### OBJECT.

##### *Section 2.*

The object of this Section shall be to promote the purposes, objects and activities of the National Safety Council as the same more particularly apply to the special problems of the members of this Section.

#### MEMBERSHIP.

##### *Section 3.*

Membership shall include all members of the National Safety Council who shall be interested in the activities and purposes of this Section and who shall signify to the Secretary of the National Safety Council or to the Secretary of the Section, their desire to affiliate with this Section.

**OFFICERS.**

***Section 4.***

The officers of this Section shall be a Chairman, Vice Chairman, and Secretary, who shall have the usual duties of such officers and whose terms shall extend to the annual meetings of the Section following their respective election or until their successors are elected.

**ELECTION OF OFFICERS.**

***Section 5.***

Nominations of officers shall be made by a Nominating Committee of three appointed by the Chairman of the Section, which Committee shall report at the annual meeting its recommendations of officers, which report shall be followed at said meeting by the election of officers for the ensuing year. Other nominations for offices may also be made by any members at this meeting.

**MEETINGS.**

***Section 6.***

There shall be an annual meeting of the members of the Section held during the period of the Congress of the National Safety Council, notice of the time and place of which meeting shall be posted at the Information Desk of said Congress. Other meetings of members may be held on due call and notice by the Sectional Executive Committee.

**COMMITTEES.**

***Section 7.***

The affairs of the Section shall be conducted by the Executive Committee of the Section which shall be composed of the Chairman, Vice Chairman, and Secretary of the Section, and the Secretary of the National Safety Council who shall be ex-officio a member thereof, and the Chairman of the following four Standing Committees, which committees shall be appointed by the Chairman of the Section.

- 1.—Membership Committee.
- 2.—Standardization Committee.
- 3.—Committee to study causes and remedies of hazards in the  
Section's field of activity.
- 4.—Program Committee.

## Do It Now!

Don't put off until tomorrow to make that safety suggestion you have in mind. It may save some one a serious accident.

### IN GENERAL.

#### Section 8.

The Executive Committee of the Section shall appoint such other officers or Committees and amend these by-laws or adopt by-laws and do such other acts and engage in such activities as may be needed to wisely further the objects of the Section.

### SUPERVISION BY NATIONAL SAFETY COUNCIL.

#### Section 9.

This section shall be under the direction of the Executive Committee of the National Safety Council.

All by-laws and amendments thereto, activities, expenditures, literature, bulletins and published data of this Section shall be under the name of the Section as a Section of the National Safety Council.

CHAIRMAN DOW: Gentlemen, you have heard the proposed by-laws read. What action do you wish to have taken?

MR. R. C. RICHARDS (Chicago & Northwestern): I move their adoption as read, Mr. President.

(The motion was seconded, voted upon and carried.)

MR. SPAULDING: Under these bylaws and within the power that was conferred upon this Nominating Committee we were to agree among ourselves and offer you the names of the officers that are provided for in these bylaws, namely, a Chairman, a Vice-Chairman and a Secretary. After thoroughly canvassing over the situation and trying to keep in view the interests of this Section and its progress, we came to the conclusion that we could not offer you a better name as your Chairman for the ensuing year than that of Marcus A. Dow, our present Chairman. (Applause.)

The Committee instructed me to say in this connection that they desired to put themselves on record as against the principle of the second election of any officer in this Section; in other words, that they want to put themselves on record as favoring rotation in office;

that they do not feel in nominating Mr. Dow and handing you his name for consideration, that they are violating the spirit of this principle, because all of us of the committee, and some others that we talked to, recognize that the success of the meeting that we have had on this occasion has been largely due, if not wholly, to the indefatigable efforts of our present presiding officer, and the success with which he has conducted it we think merits in this particular instance the reward which he can receive at our hands. That is our feeling. This will be in fact the first election of a Chairman that the Section will make.

For Vice-Chairman we offer you the name of Mr. J. M. Guild, the Supervisor of Safety of the Union Pacific Railroad, located at Omaha, Nebraska. (Applause.)

For Secretary we offer you the name of Mr. H. J. Bell, Safety Inspector of the Chicago & Northwestern Railroad, located at Chicago. (Applause.)

MR. T. H. CARROLL (Pennsylvania Lines East): Mr. Chairman, I don't know whether it is the consensus of opinion or not that a man should succeed himself, but my experience in clubs and other organizations is that if you get a good man in office you want to keep him, and I would like to go on record to that effect.

CHAIRMAN DOW: Gentlemen of the Railroad Section, I want to assure you that I very greatly appreciate the honor which this Committee has conferred upon me. I thoroughly agree with the suggestion of Mr. Spaulding that there shall be rotation in office. I think it is due to the other railroads who are in this Section to have the selection of officers each year from various sections of the country; and I think that the suggestion made is a very good one, very timely. I will say this, however, that if the consensus of opinion of the members of this Section is that I shall retain this position for another year that I will do it solely with the idea that I can give to this

## A Joke

Yes, we agree with the fellow who said that "Safety First" is a joke. Let us all enjoy it. But who is the joke on?

Council and to this Section the very best efforts that I can to build it up. However, as stated, I feel in the way that Mr. Spaulding has spoken, that there should be rotation in office, and I would be glad to have any further nominations, especially for the office of Chairman, and I would be glad to receive from the floor any nominations that may be put into a motion.

A MEMBER: I move the nominations close.

(The motion was seconded.)

MR. SPAULDING: I move that the Secretary be instructed to cast one ballot of the section for the officers nominated.

(The motion was seconded, voted upon and carried.)

CHAIRMAN DOW: Gentlemen, I thank you very much for your kindness. (Applause.)

I think we ought to hear from the Vice Chairman, Mr. Guild.

(Mr. Guild was not present.)

The newly elected Secretary is here, Mr. Bell.

MR. H. J. BELL (Chicago & North Western): I am sure I thank you all very much for this courtesy and I will try for my part to make the Railroad Section something of which the National Safety Council will have reason to be proud.

CHAIRMAN DOW: I have a suggestion to make with regard to the next two topics. The first one, "What Is the Best Way to Create and Maintain Interest in Safety Work Among the Members of Safety Committees and Employees in General," and the next one, No. 6, "What Is the Best Method for Reaching Non-English Speaking Foreign Employees in the Conduct of Safety Work?" it just occurred to me that we might expedite matters a little bit inasmuch as those two topics are very similar and co-related in many respects, if we have the principal papers read on both topics first and then proceed to the discussion of both topics.

We will now hear from a gentleman who has given a great deal of time and thought to the study of the problem of how to interest and educate the employee in safety work, and I know of no one who can give us a better paper on this subject, from experience and results accomplished, than the gentleman who is to talk to you. I take great pleasure in introducing Mr. W. B. Spaulding, of the Frisco Line.

WHAT IS THE BEST WAY TO CREATE AND MAINTAIN  
INTEREST IN SAFETY WORK AMONG THE  
MEMBERS OF SAFETY COMMITTEES  
AND EMPLOYEES IN GENERAL?

The ways that have been followed by railroads having a Safety First organization to create and maintain interest in Safety work among safety committeemen and employees in general are substantially similar and well-known to you all. These ways have in the aggregate been successful, some of these ways being sufficient to arouse the interest and secure the confidence and co-operation of some men, while other and entirely different methods were necessary to destroy the indifference, allay the suspicion and secure the co-operation of others, so it is manifestly impossible to select any one of these ways and label it the best way, all having been serviceable in attaining to some distinct extent at least the result desired.

My subject implies that there is or may be a best way. Can we determine what that way is?

The Safety First movement has been in active operation on practically all the railroads of this country for from four to five years. Its greatest effort has been to educate the men into a knowledge of the benefits that would flow to them from its success. The time that has passed since the inauguration of this movement, the effort that has been made and money spent to advertise it, the great decrease in injury and death cases it has brought about ought to have been sufficient to mobilize all railroad men in this country into a vast army of enthusiastic supporters for such a cause.

Has this happened? If not, why?

Let us enumerate some of the reasons given by committeemen and other employees for their lack of interest and activity in this movement.

They say:

1. That the movement is too one sided in that much is made of an error of an employee causing injury to himself or others, while no record is made or criticism heard of the short-comings of the company producing a like result.

Since the chief executive officers of the railroads invite just criticism of company practices or short-comings that have caused

### **The Boss Says:**

It has always been claimed that "it takes two to make a quarrel." We won't quarrel with you for taking an interest in Safety work.

or are liable to cause injury and provide their employees with printed postal cards for their use for this purpose, believing that both the company and the employee will profit thereby, why is it that the criticisms have not been forthcoming to an extent that no considerable number of employees should feel that there was a just basis for this complaint? Is it because the Superintendent is chairman of the safety committee and might feel that such criticism reflects upon

him, and therefore frowns upon and discourages it?

They say:

2. That the present method of securing committeemen does not tend to make the place one of honor or desirable, or gain for the committeeman the respect and confidence of his fellow-workers, who assume that the committeeman must take the company view of all matters; that the committeeman is pointed out as a company man—one who carries tales and therefore to be shunned, and, as a consequence, the influence of the committeeman among his associate employees is destroyed. That where the names of employees to act as members of future committees are secured by suggestion from the members of a retiring committee, it often happens that names of employees privately known to have scoffed at the Safety movement and to have ridiculed the committeemen, are handed in in order that such scoffer may be placed upon the firing line and made to feel the humiliation and personal discomfort that he has inflicted.

They say:

3. "That there is no use to report anything, for you never hear of it and nothing is done to correct a condition that has been reported."

This assertion discloses how vast the unattended-to thing suggested by an individual employe looms up in his mind, totally blinding him to the many thousands of things that have been done upon the suggestion of other employees and upon the initiative of the com-

pany itself to make things better and safer for all, and indicates that a personal acknowledgement by the committee of every suggestion, along with information as to the action taken thereon and reasons therefor, would prevent men from applying so false a test to so great a cause and immediately decrying it upon the results of that test.

They say:

4. That the appearance in the minutes of the committee of the names of employees who have been responsible for accidents, along with criticism of such employees, makes talk harmful to the Safety First movement.

They say:

5. That committeemen and other employees are reluctant to express their real sentiments about the methods and manner of carrying on the Safety First movement for fear of putting themselves on record as against Safety First.

Enough appears in the foregoing to disclose a regrettable lack of that spirit of friendship and sympathy between employer and employe necessary for the greatest progress in any undertaking in which genuine, sincere and earnest co-operation is indispensable. So it appears that the best way to create and maintain interest in Safety work among committeemen and employees in general is to establish reciprocal and unwavering confidence between the junior officials of the company and the men, so far at least as the Safety First movement is concerned. Confidence must be won by friendship known to be true. It cannot be commanded by authority.

How can this reciprocal confidence be established and the place of the committeemen be made one of influence and of honor?

Some Superintendents possess the talent of laying aside their official authority and character when acting as the chairman of a safety committee and making themselves a single individual unit in a body of men intent upon the accomplishment of a common object beneficial to all, and can do the same thing in connection with

## **HORSEPLAY**

Many accidents are caused by fooling, horseplay and distracting attention of others, and they are hard to excuse.



any Safety First work. Such Superintendents have no apprehensions in regard to the matter of allowing other members of the safety committee to act as chairman. Would not reciprocal confidence begin to grow and thrive if all Superintendents would acquire the same faculty? It has been my observation that interest and activity in Safety First work among the rank-and-file was the greatest and the position of a committeeman an esteemed place on those divisions where the Superintendent possessed and exercised this faculty, and that carping criticism, petty fault-finding and suspicion was confined to those divisions where he did not.

In my view, the Safety First movement belongs to the men because they control the majority of the causes of accidents and are the victims of them, and therefore they should control this movement and the company co-operate with them, rather than they with the company. I think that interest and activity in the Safety First movement would be increased and much more be accomplished if this idea was made to predominate. So long as the notion exists that the men are being used in the Safety First movement to serve a purpose of the company, rather than the company being used to serve a purpose of the men, the Safety First movement will carry a needless handicap.

Americans are accustomed to representative government. They respect and honor the President of the United States, but would not consent to his picking out the persons who should serve in Congress. Safety committees consist of one or more representatives from each class of men in the service. Would not confidence in and respect for the safety committee be increased if each class of men named their own representative on the committee, and the title "company man," now opprobrious, become one of honor?

When reciprocal confidence is established between the boss and the workers every man will rush forward and put his shoulder to the Safety First wheel and rejoice in the success of this great cause, and contentment, sunshine and happiness will abound. (Applause.)

CHAIRMAN DOW: As I suggested awhile ago, I think the best method to pursue is to proceed with the original paper on the next topic, and then we can discuss these two topics, which are very similar. Unfortunately, Mr. Isaiah Hale, of the Santa Fe System, who was to give us a talk on educating non-English speaking foreign em-

ployees, found out at the last moment that he could not get here, and we therefore have arranged as a substitute to have a talk by a very interesting speaker, and while Mr. Hale has sent me a paper which I will read following the next speaker, I am going to introduce to you a gentleman who was formerly the safety expert on the Northern Pacific Railroad but who has recently taken up this work on the Erie Railroad. He came to me about ten minutes ago and said that he had a great deal to say and hoped I would give him more than five or ten minutes to talk, and I know that he can fill in fifteen or twenty minutes and interest you very greatly. I am not going to confine him to the subject of foreign employees, but I want him to tell us about his experience in safety work generally; and I take great pleasure in introducing to you Mr. Charles T. Banks, Safety Supervisor of the Erie Railroad. (Applause.)

**WHAT IS THE BEST WAY TO CREATE AND MAINTAIN  
INTEREST IN SAFETY WORK? HOW TO EDUCATE  
NON-ENGLISH SPEAKING EMPLOYEES.**

**MR. CHARLES T. BANKS (Erie):** Mr. Chairman and Gentlemen: I want to set the Chairman right first. I told him it would take me longer than ten minutes to express my own regret and that of the members here that Mr. Hale could not treat this subject himself instead of me. Mr. Hale has been so conspicuously successful in his safety work that it is rather embarrassing for me to say anything on a subject that he was going to talk about.

The foreign speaking employee, I presume, is a condition that we are going to face forever, particularly in our track work and some of our repair work and shop work. Those occupations are no longer very attractive to American born workmen. I think everybody will admit that the foreign speaking employee that we have now, the Italian and the Greek and some other nationalities, are mentally very young. I think perhaps mentally the tests would show that they are between thirteen and fourteen years of age. So, instead of looking upon an extra gang of Italians as men, should not we look upon them as children, in a way, and when we start our children to doing something like hilling up potatoes or some other of those little things that we try to put the boys and girls at work at, we do not give them a hoe and tell them to go out in the garden and hill

## Think of the Other Fellow

Do not leave draw heads, couplers or other obstructions alongside of tracks, where persons may stumble over them.

up the potatoes, and mother does not give them a piece of cloth and a needle and some thread and tell them to hem a piece of cloth; but we go out and show them how to do it.

Now I do not believe we do enough of that with our foreign employees. We hire a man to do the rough work around the shop, and the foreman gives him a wheelbarrow and says, "Tony, go ahead and take that stuff off that platform and wheel it over here." But he

does not go over there and tell Tony that the peculiar part of that work is not to let some of that stuff fall on his toes; and Tony doesn't know that a drawbar is two-thirds heavier on one end than it is on the other, and as soon as he takes hold of it he destroys the center of gravity and smashes his toes. Now wouldn't it be nice if the foreman would go over there with Tony and tell him how to handle that drawbar or whatever the material is? And then if he would go over this route with Tony—maybe Tony has to cross the repair track somewhere where they move cars—and if he would explain to Tony, even if Tony did not understand all the language, he could demonstrate to him.

Now in the first place, after he has got all through with this, perhaps the foreman would have lost, as he claims, twenty minutes; he thinks that is lost time. I think that is the best twenty minutes he has spent in the whole day. And when he gets all through, Tony says to himself, "This fellow must like me. Nobody else ever took any pains to show me anything. This fellow here don't want me to get hurt or killed. He thinks I am a good fellow." And Tony tells somebody else in this same language about it, and after a while that foreman establishes a pretty good reputation with his Italians and Greeks and the trouble around that shop stops. And when we are going to do some track work or we are going to use the rail loader somewhere—and probably this particular gang of Dagoes never saw a rail loader; they don't know anything about it at all—wouldn't it be a good thing for the roadmaster or the supervisor or

whatever your organization calls the man that has charge of the track forces, supposing that this supervisor went out and got hold of the foreign foreman of this track gang and said to him, "Tony, we are going to take up some rails tomorrow. We are going to get all the men out in the morning, and before we go to work we are going to have a little demonstration of how to make these hitches on the rail, how to get hold of it. Now I think you know how to do that, and just to be sure about it I am going through the motions. We are going to show you how to handle a rail without getting your fingers pinched. Now after we have got that rehearsal or demonstration all over with, then, Tony, it is going to be up to you to tell these fellows in your own language how to do it, and then we are going to keep track here all this month to see how many men you have hurt in this extra gang, and we are also going to keep track of somebody else's gang every day, and pretty soon we are going to know who the best foreman is on this division, the fellow that is best, that teaches his men how to do the work without getting hurt. And that foreman is going to be ace high with me, and maybe the low man wouldn't have any job at all; I don't know yet. We will talk about that a little later on."

Now Tony, you know, after he got to be a foreman, thought he was quite a fellow. He has worked quite a long while and he is jealous of that. He gets a chance to boss these other fellows and get maybe fifty cents a month out of them; I don't know about that; they say he does. (Laughter.) But we don't care so much about that; but, anyhow, we know he is jealous of his authority and he don't like to think of having to go to work for the Lackawanna or some other road, leaving a good road like the Erie. (Laughter.) So he braces up, you know, and does the best he can to educate his men how to do their work without getting hurt.

This probably sounds a little theoretical to you, and maybe you think I am just saying this because Mr. Dow asked me to take the

## **A Common Cause of Accident**

**Avoid jumping upon moving cars or engines. Your work does not require it and you cannot afford to take the risk.**

place of a good man. But actual demonstrations of a year on a railroad showed that the educational work resulted in a decrease of forty-eight per cent of track men killed and twenty-nine and a half per cent of track men injured; and on car men and shop men, shop labor, a decrease of fifty-five and a half per cent in killed and twenty-one and a half per cent in injured.

A MEMBER: What period?

MR. BANKS: One calendar year, as compared with the previous calendar year, when they were not doing very much of this educational work.

I think that the responsibility for the accidents that occur on a railroad which are chargeable to individual negligence—and somebody said this morning that that was ninety per cent of them, but the best I could ever get was eighty-five, and that was enough—was due to lack of education. The gentleman who said that rather inferred that that was the fault of the man who was hurt because he did not educate himself; but you know, I believe, it goes away back further than that; I think, away back anyhow to the man on the railroad who is charged with the responsibility of handling the safety first work. It goes back to the trainmaster and superintendent, the general superintendent and everybody else. They say that the man is individually negligent, but we ought to say that the man is ignorant, because he has never been shown how to do the work any other way, and then when he gets hurt we say he was negligent, individual negligence.

The foreman knows how to do this work the right way or else he would not be a foreman. He forgets that there was a time when he didn't know how to do it and somebody was good enough to show him how. Maybe he has got a finger or two off and every once in a while when he wears gloves he thinks of that time. Outside of that he doesn't remember it.

We are trying to make a start on our foremen and master mechanics and our officials to get their mental attitude into the right channel so that they will follow this thing along down the line and take the time to educate our men. The statistics of the Safety Department—and my personal opinion is that everybody ought to have those of some kind or other—are of great assistance in furthering this work. If you can go out, say in October, and tell the master

mechanic how many accidents he had on his district, what caused them, and then show him where some other fellow on some other district had only half as many, who had as many men and had as many locomotive miles to his credit, and all this, then you know that you can use it for comparative purposes, and you ask him why there is such a wide difference. The chances are he can't tell you. And when you ask him the second time, by that time he has started to think a little bit; and the third time he has got the answer; because he probably has got the accident situation pretty well in hand by that time. I find that the use of actual figures in talking this matter over with our men on the line is of great benefit to us. I think perhaps everybody uses those figures. I know that it would be almost impossible for me to get along without them.

Mr. Dow has asked me to talk about anything else that I think of in connection with this matter, which was very generous of him; and I know all of you are going to be pleased when I say that I am not going to say anything more, but I am going to let this matter go as it is here and give somebody else a chance. I thank you. (Applause.)

CHAIRMAN DOW: I will read you the paper which Mr. Hale, who was to have been here in person and handle this topic, has sent me.

#### HOW TO EDUCATE NON-ENGLISH SPEAKING EMPLOYEES.

San Francisco, Cal., October 11, 1915.

MR. M. A. Dow, Chairman Executive Comm., Transportation Section, Nat'l Safety Council, Philadelphia, Pa.

Dear Mr. Dow:

The Santa Fe Railway is singularly fortunate in having practically all our foreign labor recruited from one race—the Mexican. I had not been long in safety work before I realized the handicap put on our efforts by the fact that we were working directly only about 50% of our employees—those located at division points, terminals, etc., and being entirely out of touch with the other 50% working at outlying points in extra and section, bridge and building, water service, signal gangs, etc. As a means of reaching these men my Company bought for my use last year a large seven passenger automobile which we equipped with a set of steel flanges fitted over the regular pneumatic tire.

## Against the Rules

Avoid jumping on cars or engines; your work does not require it and you can not afford the risk, neither can your family.

I am now nearing the close of a five months' trip in this car covering our entire System, and during which time I have carried a ten minute safety talk to every man on the System employed outside of division points and terminals. Because of the illiteracy of the Mexican laborer we could not successfully reach him with printed matter, because we have entire gangs in which not even one man can read, so I wrote a ten minute talk along lines which I thought

most likely to reach and interest them, which article I had translated into the peculiar lingo of the Mexican peon, and later had recorded on two phonograph records.

Part of the equipment of my track automobile is a phonograph, by means of which we gave this talk to Mexicans standing alongside of track on one side of car, while I was personally talking to foreman and any English speaking employees, on the other side of the car.

I might add that this Mexican talk covers more than Safety—it is a loyalty talk as well, and it is my opinion that aside from any Safety value it may or may not have, it will, as a loyalty proposition, more than pay for the time and effort it all cost—and believe me, it has cost five months of as hard work as an ordinary man often does.

I repeat—I am strong for this sort of thing from a loyalty viewpoint, for the reason that the average foreign laborer, unable to understand the usual civilities one hears everywhere, has very little to reach his understanding which is calculated to add much to his respect for or interest in his associates or associations, so that when he pricks up his ears and listens to the first real message of good will, good cheer and good advice which has ever come to him, believe me when I tell you it strikes a sympathetic and responsive chord.

To further and more surely reach them I have made it a practice that whenever I tie up at night in a place where we have an extra

gang or large number of men employed, I take the car down into that part of yard where their outfit cars are stored and give them a musical concert of a dozen or more high grade Mexican or Spanish band selections, this concert lasting an hour or more and during which I make liberal distribution of Mexican safety literature, safety buttons—and incidentally cigarette papers and smoking tobacco—the latter a sort of “Pipe of Peace.”

Experts tell me the phonograph records above referred to are some of the plainest and best talking records ever made. During my trip just closing, approximately 20,000 Mexicans have listened to this talk, have talked about it for days after hearing it, and their foremen tell me have subsequently seemed to be more thoughtful and careful than before our new treatment—“a consummation devoutly to be wished.”

Sincerely yours,

ISAIAH HALE.

CHAIRMAN DOW: We are now ready for discussion of the two topics presented by Mr. Spaulding and Mr. Banks. I think this is a very interesting and important subject and would like to have as many as possible take part in the time which we can spare to it.

MR. H. J. BELL (Chicago & North Western): Mr. Chairman, in addition to the proposition that Mr. Banks spoke of, of giving the members of the safety committees and the employees generally the figures showing the extent to which the accidents have been reduced, we have found on the North Western Railway that they are very, very interested in knowing how many recommendations have been made by members of committees and employees generally and how many of those recommendations have been adopted. For instance, I think in the last four years, on the Chicago and North Western Railway, we have had something over 21,000 recommendations made on safety postal cards and otherwise, of which all but 678, or something like that, have been adopted and put into effect.

## Use Your Eyes

Look in both directions before stepping upon a railroad track, especially in yards. Be particularly careful when crossing tracks.



I think it is one very good way of showing to the men and the employees generally that the recommendations are reasonable and proper, but it also shows to the men that the company is willing to adopt and put into effect any reasonable recommendation they make.

Of course, I presume that most roads now take some method of recognizing in some way the committee of the road which makes the best record for safety during the calendar year, fiscal year. On the North Western Railway we have a safety banner for the division, one for the shop and one for the terminal district which makes the best record each year. Last year for the first time we went a little farther in the matter and granted a week's vacation with pay to the members of the various committees which won that banner. I think that is one very substantial manner in which the company can show its appreciation of the work done by the men, and it is bound to create a rivalry and competition between the members of different committees. I just wanted to give the gentlemen those thoughts for their information.

CHAIRMAN DOW: Supplementing what Mr. Bell has just said, on the New York Central since our committees were organized in May, 1912, the committee members have brought up for recommendation approximately twenty thousand items, and to date the railroad company have corrected over eighty-nine per cent of them; and of the balance still uncorrected a great many are still under consideration by the central or general safety committees.

It just occurs to me that it is a very important matter where employees from the rank and file or committeemen on the safety committees make a report in writing of conditions or practices which they feel ought to be corrected in the interests of safety, that the chairman of the committee or the superintendent of that division should acknowledge the receipt of the communication and later inform the original man who reported that item as to what action has been taken. I think if that is not done that there is a great tendency to discourage the men who are trying to do the best they can in this safety work. Is there any other gentleman who will give us the benefit of his experience?

MR. R. P. KYLE (El Paso & Southwestern): Mr. Chairman, I would like to supplement your remarks and Mr. Spaulding's, about

the necessity of letting the men know what becomes of their recommendations. We publish the minutes of all meetings and in them is given the standing of all recommendations. Some are passed on by the safety committee and then are published. Often a man makes a recommendation at one meeting and it is passed over to the central safety committee, and the next meeting when the matter is disposed of, he is not there and does not know what has become of his recommendation. He only sees that as time passes on nothing is done. And I think care should be taken to let the men know personally, each one, what is done with his recommendation; if it is followed, thank him for it; and if it is found impossible to carry it out in every way, give him the reason for it.

In regard to Mr. Banks' talk, I think that the whole point of the matter is that the foreign laborer has a mentality of fifteen or sixteen, as Mr. Banks says, or perhaps lower. I have seen Mr. Hale's car and his phonograph and have heard the records, and that is a mighty fine way of getting the Mexican laborers, because he goes right to them and they are interested in that kind of work.

On the El Paso & Southwestern I have gotten out a little bulletin in the Spanish of the peon and tried to make it as simple as I could. I have taken a picture of a little boy who has been injured on a railroad. A picture I find they are interested in. Some of them cannot read, but a picture will catch their eye. Then in it I have talked, in as simple language as I could, of the important accidents that they meet with, and I have put it in language that will interest them. For instance, as you know, the national sport of the Mexicans is the bullfight. Well, in this bulletin I mention, "Be careful of motor cars, because they are like a mad bull. If you get in front of them they are going to hurt you." (Applause.)

MR. COLLELI (Pennsylvania Lines East): Mr. Chairman, I have the pleasure to be the Italian-English instructor for the Pennsylvania Railroad. We have no methods like these mentioned, but I think we have the best method, so far as I know, and if any road has any other method I would like to know it, because I am very much interested in the subject. I was employed by the Pennsylvania Railroad about three years ago, and I found that a great deal of the trouble came from the foreign element because they did not know what was going on in the company; in other words, they were

## Personal Duty

The prevention of accidents and injuries is a personal duty which every one owes, not to himself alone, but also to his fellows.

laid aside, forgot. The superintendent of the telegraph, who is directing the correspondence school for employees, got hold of me and he told me to devise and create something for the Italian. I began to scratch my head. But finally I sat down and I began to write lessons for the Italians to learn English, for the Italians are an intellectual people; they are willing to grasp anything to elevate themselves, and I do not believe the statement that many of them

are about or at the age of a boy of thirteen or fourteen. (Applause.) You would be surprised if you should go with me on the road to find out that we have men employed as trackmen who have been in the technical schools in Italy; but owing to their ignorance of the language and the customs of America they have been compelled to take a shovel and a pick. These are the class of men who have advanced to track foremen and assistant foremen and they are giving their best to the company.

To proceed with the lessons now, I have written, with the help of some officials, thirteen pamphlets. The number of pamphlets will be about thirty, according to my plans, and we are teaching in very simple language how to use tools, how to economize tools, how to save lives. Illustrations are in the books, because, as the gentleman said, pictures are lessons by themselves. And in such a way you will be surprised to hear that we have over three thousand Italians enrolled in the Italian-English course, while learning English and while learning the way to do railroad work without the help of the foreman. For in my investigations I find that the mistake is this: that most of the foremen are narrowminded; they are jealous of seeing the Italians advancing and taking the place of the English speaking people; and therefore they treat the employees not very cordially. They are apt to call them son of a so and so, Dagoes and Guineas, and this and that. They detest such a thing. They come from a civilized country. They know what civilization is, and they do not like it, and they write letters every day

into our office saying, "We cannot stand the language of the foremen. The foremen are brutes." The supervisors do not know of this, because when they go on the road they see the foreman and they ask the foreman, "Well, John, what is it today?" "I need the ties and I need the rails." "All right. Good-bye." The supervisor doesn't know what is going on in the gang. As soon as the supervisor turns his back there the foreman goes around and says, "Hurry

on there, you Guinea, you Dago," and so forth. There is the mistake. And on the Pennsylvania Railroad we are trying to remedy that mistake. We are choosing men as foremen who understand more or less of humanity. Safety first, the principle of safety first, extends to save human life and the educational part of it is to instruct the employees to be humanitarians. It is not all in the saving of the life of a man, but we ought to be more or less human towards our fellow men, our workmen.

I do not want to take too much time here, because I have not prepared a speech.

(Applause and cries of "Go on.")

For the benefit of the illiterate people I have held meetings, safety first meetings, in Italian, and with other employees, like the negroes in the South, or the Greeks or the Slav, and so forth. Then we give the lecture in English and Italian and photographs or views showing the proper and the improper way of doing railroad work are thrown on the screen. I think that is one of the best methods, which is everlasting on the mind of the employees, whether they know how to read or write. Also, we listen to the complaints of these men, and we are apt to take their cases; and, as you see, on the Pennsylvania Railroad the gang of Dagoes are not forgotten; they are remembered. (Applause.)

CHAIRMAN DOW: I am sure that we have all gathered some new thoughts by this very interesting talk by the representative of the

## The Little Things

Small neglects are apt to cause serious accidents.

Vigilance a watchfulness insures safety.

foreign laborer. I would like to ask the gentleman whether in showing lantern slide pictures of unsafe practices you show, following the picture of the unsafe practice, a slide in the Italian language explaining the picture, or is it explained by the interpreter? What is your method in that regard?

MR. COLLELI: We have slides explaining in English and Italian. We give the slide, for instance, in Italian, then follows the English, both.

MR. T. H. CARROLL (Pennsylvania Lines East): We do not want to monopolize all the time, but to corroborate what Mr. Colleli says, we have a station on the Pennsylvania Railroad where 318 foreign laborers are employed, and we have not hired or fired one in over a year. We did hire one, and that was to get a good baseball pitcher. (Applause.) And if he had not called attention to the fact that Mr. Banks was in serious error in assuming that the foreigner was less intelligent than the American in a similar capacity, I should have done so. In fact, our statistics show that the proportion of trackmen killed among the foreign element is no greater than it is among the American element. And for ordinary stupidity I do not think there is anything at all inferior in the foreign man. It is simply the same problem with the foreigner or the American: the man who comes into the service needs instruction, and unless he is familiar with the operation he cannot know how to avoid accident. It only requires a combination of circumstances for him to get caught.

So the theory that Mr. Banks advanced was all right, only it should apply to all of us just like it does to the foreigner. My own opinion is, after very careful study of the subject, that the most important thing to be done on the railroad today is to see that a man is made aware of the hazard of operation before he is put to work, or at least out to work by himself.

I want to call your attention to another point which was raised and that is in regard to statistics. Disraeli, in advocating a certain proposition in the English Parliament once, after somebody had quoted a lot of statistics, said, "Lies, damned lies, and statistics." And that is true of railroad statistics. You can quote statistics to prove anything you want to. For instance, Mr. Banks said that he had shown an improvement of fifty per cent. That might have been

a bona fide improvement. I believe it was; but nearly every railroad in the country which has published statistics showing thirty or forty or fifty per cent in the last year or two is simply publishing fiction, for the reason that the work has decreased and the number of employees has ordinarily decreased. The result that we have made is astonishing. But we are not deceiving ourselves that we can keep that up in 1916 when business resumes. I hope next year we will have something to report, but I doubt very much that we will have as fine a showing as we have now.

To get back to my point, it does not serve any purpose to say that so many men were killed on Jones' or Smith's division; you want to know how they were killed; you want to know how many Dagoes and how many Americans. That is not all you want to know. You want to know how many men were killed in proportion to the number of men in the service. It doesn't mean anything to say in a great big division where you employ four hundred Dagoes, so many were killed; you want to have a comparison of the number that were killed with the number that were in the service. We compile our statistics to show every occupation in the service and we show the number of killed and injured, the number in the service; and opposite, on another column, we show the percentage of men injured.

Before I go any further in that respect, we believe on the Pennsylvania Railroad that safety is an operating matter. We believe that the man on the ground is the man who should be held responsible for the proposition; and we put it up entirely to him. We go before our staff officers and we take our statistics and begin with conductors and go all the way down the line of enginemen, firemen, brakemen and flagmen, and we call attention to the number injured in each particular occupation; and it is astonishing what a tremendous interest there is and how surprising it has been to some of our officials to learn the large proportion of men injured in some departments and almost total immunity in others. That is why it is necessary to segregate the particular accident from the occupation standpoint.

Then, after you have done that, there is still another proposition. You want to couple the occupation injured with the cause of injury. I have been greatly inspired by the addresses I have heard here at this meeting. It does me good to get here before this meet-

### Never Too Soon

The fellow who said "'Tis never too late to mend," was not talking about accidents. Sew up the rip before an accident happens.

ing and hear the people voice their sentiments. But, gentlemen, we are speaking for the most part in generalities. Unless you get to the point where you can put your finger directly on the spot where the injury occurred and show how it occurs, you get nowhere. And in carrying out that thought we classify our injuries according to the character of the work, and then under each heading, seventeen in all, outside of shop, and about nineteen in shop,

we classify them in detailed causes, three hundred and forty causes in all, and three hundred and sixty in the shop. There are seven hundred causes.

Now you go down the line of these causes. We will take, for example, getting off or on engines and cars. The first thing we have is defective steps or stirrups on the cars. We have the astonishing fact that almost a whole year passed without a single accident from that cause; maybe two or three or half a dozen on a railroad that has 150,000 cars on its tracks all the time, which is a remarkable thing. The next thing, you come down to this: a man grabs hold of a handhold and he slipped, and puts his feet in the stirrup and slips. Is that carelessness? Is there anything else or is there anything that can be described in those terms that indicate something wrong with the man's mind. I say it is not. It is something that might be characterized—the English characterize it as misadventure, or something in the operation. There is no need of deceiving yourself about these things, because they constitute the vast majority of accidents.

We go down further and come to operating brakes. The man is on the top of the car and puts his brake clip on the wheel and he pulls it down and it slips a little and he falls. That is not carelessness. Come down further. A man will go to move a coupling lever and bruises his hand. That is not carelessness or thoughtlessness or ignorance. It is the same thing that happened to me when I went to make a fire in the heater. I went to shove a stick in the heater

in a hurry and it didn't go in, and stuck in my hand. That is the way railroad men get injured. As to the fatalities, people walk in front of trains, and that is frequently absentmindedness. There is a whole list of causes of occupational injuries. It seems to me that the crying necessity for the solution of the accident problem is to determine the man that is injured, where he is injured and how he is injured. I thank you very much. (Applause.)

## **Safety Committee**

**Let us all be  
Safety Inspectors.  
Report unsafe places  
to your foreman on  
the Safety Department.**

MR. C. T. BANKS: By some unfortunate and peculiar coincidence the figures which I have given here on my percentages were based in the same manner that the Pennsylvania bases its figures, on the number of men employed. We do not take the number of accidents in one year and the number of accidents in some other year and then perform a subtraction, but we base it on the intelligent foundation of giving consideration to the number of men employed. We go a little further than that, too; we base it on the locomotive miles made.

And as concerns the mentality feature of our foreign laborers, that is not my opinion at all. That is, I am not expressing it as having arrived at those conclusions by anything that I personally have observed. I am taking the word of an army surgeon who made some actual mentality tests. If anybody has any quarrel with the situation they should discuss the matter with the mentality tests as they are made by our army surgeons.

MR. S. G. WATKINS (Boston & Maine): Gentlemen, I come up front to speak with you because I want to see you and because I have learned it is not good safety first for me to talk with people behind me.

I wanted to carry Mr. Banks' idea just a little bit further. The situation on my road in regard to the section men is about like this: We have the old-time Irish foreman and the Italian crew, and during the year 1913 we lost twelve section men, and ten out of the



twelve were killed by being struck by trains. I wanted to find out just what was the matter, so I spent a number of weeks out amongst the section men watching them work, and one day I saw this: a crew of men were tamping ties and the foreman was watching them. A train came around the curve and the foreman hallooed, "Look out." The Italians didn't move, because "Look out" didn't mean anything to them. And then he hallooed, "Take care;" and then he hallooed something else that I couldn't understand, only there were some swear words in it, but the Italian looked at the man who was at this time swinging his hands and acting as though he was crazy; and the Italian looked at the foreman in astonishment but he didn't see the train at all; and finally the foreman ran and pushed the man out of the way. And I conclude that the twelve men were killed, ten of them by being struck by trains, not because the Italian was a fifteen-year-old boy, but because the workmen and the foreman did not understand each other.

So we immediately prepared a little circular printed in the Italian language, and a copy of that circular went to every track laborer on our system. We also interviewed the section foreman, and it was put up to him about like this: "Now here, if you lose a handcar you would be mighty disturbed, because you have got to account for it. But you lose a man and you simply say, 'Well, it is too bad, but he didn't look out for himself.'" Now it is a thousand times worse for a foreman on the Boston & Maine Railroad to lose a man than it is to lose a handcar, and it is up to you to protect your men." (Applause.)

Now we are all interested in results. During the year 1913, as I have told you, we lost twelve section men, ten of whom were killed by being struck by a train. During the year 1914 we lost two section men, and neither of these was struck by a train. I don't know what did it, but that is what happened. I was a good deal worried, and I wondered if we could do it again. Well, almost ten months of fifteen have passed, and when I left home we had got through this year with a loss of only three; so I think we are pretty near going to do it again this year.

I believe the way to solve the problem of accidents to the track men is for the section foreman and the track men to get together and understand each other.

I am afraid we are losing sight of one thing. The question was

discussed here or some excellent papers were read about the better way to carry on the safety first work. That is not quite it, but you get the idea; and I have not heard any more about it. I hope that won't be forgotten, that phase of the question, because we are all mightily interested to know what we can do to keep up the safety first interest on our road.

Now here is something that we have started on as an experiment. Of course I don't know how it will come out. Our road has equipped for me a safety first car—not an automobile, by the way, but an old parlor car that we have fixed up into a lecture hall and so on. That car we placed down in the yard and I invite the men to meet me in that car, say at eight o'clock in the evening, and we have a sort of get together meeting and talk over things there in the car. We also have an excellent stereopticon and we show on the screen some good pictures of scenes along the road, some that are interesting, some that are instructive, and also we show pictures of some of the things that are being done that are killing the men. Well, of course we have the moving picture entertainment and all that kind of thing to compete with. Sometimes we have the car full and sometimes we don't have many. But we go a little bit further. We keep that car open until midnight, and during the midnight hour we invite the men who work nights. We ask them to bring their lunches to the car and during that hour they look at the pictures and we go over these things. And by personal contact we get hold of a big crowd of men that work nights that we never have a chance to see in any other way. And I hope that we are going to get somewhere through that line of work.

I tried an experiment last week in a little town where we have only about twenty railroad men, away up in the country. I held a meeting at eight o'clock, and as we had only a few men we invited the railroad men and their wives, and we filled the car full. We had something over forty, not because some of the railroad men had two wives but because some of them brought their daughters and their sons. Well, what interested me most of anything was that during the six months we have lost seven men by being crushed to death between the drawbars. A man will go in to adjust the knuckles and a car will drift down and he is crushed. And I showed the picture on the screen of a man smoking an old cob pipe and adjusting the knuckle and a car drifting down just ready to catch him; and a

## Safety First

Do not kick draw-bars or push them over with the hand or foot, or try to separate air or steam hose, open knuckles, or turn angle cocks.

woman spoke up in an excited tone and said, "Why, the railroad men don't do that, do they?" I said, "Ask them, they are here"; and she turned to the man at her side and said, "John, do railroad men do things like that?" Well, John hesitated but finally he said, "Well, I suppose I do that every day of my life." The woman didn't say anything but she gave John a look that led me to think that when they got home that matter would be threshed out. (Laughter.)

And, gentlemen, I have an idea that when these things are talked over in the home by the women and children and the next day that John steps in to adjust that knuckle he will remember that picture and he will remember the wife and child and will do away with that transaction. I thank you, gentlemen. (Applause.)

MR. MCKENZIE (Pennsylvania Lines East): For the benefit of the brother that has just spoken in connection with protecting his trackmen I will just state that on the Pennsylvania Railroad they furnish each foreman with a very shrill whistle, and it doesn't matter what the man is doing, when that whistle blows he gets clear. They also station a man some distance away from the men in foggy weather to sound his whistle or alarm and the trackmen know whatever they are doing at that time, when that whistle blows to drop their tools and get off the track. And it might help if the idea was carried out all over the United States. I think it is a real good one. I notice it as I go by in the engine, and I know that it saved a whole track force of about a dozen men three years ago. The man that was in advance blew his whistle and went into the ditch as I passed him, and we were running pretty fast and the other fellows just scattered like tenpins as I passed them. If it had not been for the whistle I don't think that any of them would have got off.

MR. S. G. WATKINS (Boston & Maine): This has brought to my mind a thing I had skipped. We instructed our foremen when they wished to warn a man of any danger to shout, "Clear the track," and

never use those words for anything else; and also to have a drill once in a while and shout "Clear the track" when nothing was coming to see that the men all understood it; and if a man didn't understand it, run and push him out of the way; so that a new man, no matter whether he was an Italian or what he was, would learn that that sound meant danger and would clear the tracks. We use that instead of a whistle.

## **Safety First**

**Do not lift pin  
(when lever does  
not work), when  
cars are about to  
come together or are  
in motion.**

MR. C. H. BLAKEMORE (Norfolk & Western): I just want to return to the statistical end of it. Believing in the fallacy of statistics we use the standard of the payroll. Say in the shops if we injure a man a year for say ten thousand dollars payroll of men employed in that shop and the next year we injure only one man for every twenty thousand dollars of payroll at that shop, that is an improvement, undoubtedly. You can't get around that. The same class of men are employed, at the same work, paid the same money, and if you injure only half as many men to the same payroll it is important. I should think that would be an absolutely accurate standard. That would be no fallacy.

MR. CARROLL: It would not be a fallacy in so far as you did not employ any new men. Ten or fifteen per cent of the men hurt on the railroad in busy times are men with less than two months' experience.

MR. S. G. WATKINS (Boston & Maine): That is true. That would be an accurate standard, I should think.

Now you said another thing about the accidents which would happen, accidents which were not preventable, and it brought to my mind one of the things which happened in our shops. You said the other day you tried to put a stick of wood in the stove and struck it on the side of the stove and injured your hand. All those things are not non-preventable accidents, however; because it brought to

my mind a thing which happened in one of our shops in exactly the same manner. The man was working on some timber and he had a little pile here and another pile here, and while working with another tool it became necessary—he laid down a chisel, which was a wood chisel, and it became necessary for him to use a piece of wood with his tool, so he picked up the wood chisel to lay it on the other pile; he had laid it down just as anybody would have done, with the blade towards him. He didn't think and he picked the wood chisel up just as he found it, which was with the blade towards him, he tried to lay it on the other side, the butt of the chisel caught on the other corner, and you can imagine what happened. It cut through all the tendons and he was off for a long time, and his thumb was stiff when it did heal. That was not your case, but that was simply the motion of a man not thinking. It was just as easy to take that chisel by the butt as by the blade, but he didn't think. It is just a question of thinking, largely.

MR. EDWARD C. SPRING (Lehigh Valley Transportation Company): At this morning's session of the Public Utilities the same subject was presented as your first paper which was read this afternoon, the best way to get close to the employees and to get the employees interested in the Safety First work. The question came up this morning and will be brought up this afternoon at the new Section of the Street and Interurban Railways: is it better to pay the members of your special safety committees or to have them work without pay? That is a question that came up this morning and will be taken up later in the afternoon; and I would like to get an expression of this meeting whether the steam railroads of this country pay their committees or whether they work without any compensation.

CHAIRMAN DOW: I believe that the general practice on steam railroads, Mr. Spring, is to pay the time of the safety committee-men attending the safety committee meetings, which are held usually every thirty days.

A MEMBER: And their expenses.

CHAIRMAN DOW: And their expenses. They are not paid outside of that.

MR. G. C. MARTIN (Toronto, Hamilton & Buffalo): Mr. Chairman, may I have one second on the statistics? We have a little different plan from any suggested here, and we have turned them over and decided that this really gives more definite information than the others; and that is the number of men working per injury, the number of hours' work. The percentage can be drawn off. For instance, if you only have one accident this year and have none next year, that is a hundred per cent; so working with small numbers, the numbers affect it very effectively. In this we have \$42,000; number of men working per injury, 32. Then we go on, number of hours work per injury, 8,461; and so on. That gives a definite figure and something that won't lie, because you have got the number of hours the men work.

CHAIRMAN DOW: We have here this afternoon Dr. Robert I. Randolph, Chief of the B. & O. Surgical Staff, and I am going to ask him if he won't talk to us a moment or so. (Applause.)

DR. ROBERT I. RANDOLPH: Mr. Chairman and gentlemen: There are some few things that have occurred to me in listening to this discussion. One of these things has been an absence of any but a slight allusion to the question of discipline. I have felt after a long connection with a big railroad in Baltimore that the question of neglect is one which has not occupied our attention sufficiently. Why, for instance, since early in January I have removed something like four or five eyes and treated somewhere near two hundred eyes for injuries of various degrees of gravity. I find in talking with these men—and really we get very much closer to them as doctors than any member of the staff—and I want to say here that I do not agree with Mr. Spaulding in thinking that there should be anything approaching intimacy or anything like familiarity between foremen and the men under him. I think the more formality, the more rigid adherence to the letter of duty and the letter of the law the better. In talking with other men in the profession, with the Pennsylvania men, the two Thompsons, Young of Burlington, Myers and Black of Milwaukee, and Southern and the Chesapeake & Ohio, they have pretty much the same sentiment, that the question has always been one of neglect. We have a set of men who are absolutely oblivious of the simplest way of taking care of themselves, and those things can always be brought back to a man who has accidents.

## GOGGLES

As long as our eyes are the windows of our soul, we may all look out for ourselves. By the use of goggles we can protect our eyes.

I had a talk with a man the other day whose eye I had taken out, a very handsome, tall fellow, about twenty-three or four, recently married, and he was permanently mutilated by losing one eye as the result of this accident. I had to take an eye out, and I was asking him some questions in connection with his accident and things that he told me. I asked him whether he had a pair of goggles on and he told me that he had no goggles on. I asked him why. He said, "Well, the men I meet are constantly jeering at me for taking the precautions for safety of that kind;" and his wife told me that it resolved itself into a question of vanity. His wife said that these men did not want to wear disfiguring goggles—a perfectly safe thing.

I could tell you a number of instances where the value of the thing has been demonstrated in a number of cases. Now I have come to the conclusion, after dealing with those men, that it is far easier for a doctor to become more or less—his personality becomes more or less impressed upon the regular men or any of our patients than most men who deal with them, and I find that the question of successful dealing with shop accidents, particularly, is better handled by the most rigid exaction of not only duty but of some sort of penalty in the case of infraction. They either should be put off, pay reduced or a stop put to their promotion or their future in some way interfered with. I believe in exercising, so to speak, the ten commandments—"Thou shalt not do so and so"—clear through their career, and I believe you will find a tremendous lessening of this class of accidents.

The question then of neglect. Some few years ago I instituted a postal card system, which, by the way, appears in nearly all the big cities in this country now; that is, trying to put a stop to the massacre that we find on the 4th of July. At that time Baltimore was as bad as the rest. I finally enlisted some of the heads of the police department in the movement, and I found that the whole thing drifted on the question of neglect. And that spring about ten

years ago Baltimore led all the cities in this country in the fewer number of accidents in connection with the 4th of July. I am sure you will all find that is going to be the case in dealing ultimately with shop accidents. We have about five thousand men employed by the B. & O. in the shops in Riverside and Mount Clare. I have some four hundred accidents a year there. Most of those cases, however, are trivial, but I have a great many which are from congested points along the road and those are serious. It is surprising I should have so many. It is not particularly because it is I, but because while we have a number of men along the route to look after eyes and of course ears, only one man who is supposed to look after the very difficult cases, and they are referred to me, as a rule.

Now as I say, I suppose I take out somewhere in the neighborhood of eight or ten eyes a year for the railroad, eight or ten eyes, leaving men with one eye, of course. There is a whole army of men, one-eyed men, who have their life to go through with, all, as I say, for the lack of discipline, the question of the most rigid demanding or strict accounting for the foremen, who are supposed to be responsible. (Applause.)

MR. J. S. ROCKWELL (Buffalo, Rochester & Pittsburgh): I am very glad indeed to hear what Dr. Randolph has said, because for years it has been my belief, and I have been preaching it to our operating officials, that discipline for injuries will be one of the greatest methods of reducing the number of injuries. I cannot see why a man who would be disciplined if by his carelessness the property of the company was destroyed should not be disciplined if by his negligence another man was injured or he was injured himself.

I have accomplished this much: today in our transportation department on the record of every man that is injured, no matter how seriously or how slightly, is entered the fact of the injury, the cause of the injury, whether it was due to his carelessness or the care-

## **Protect Your Eyes**

A bird in the hand  
is worth two in the  
bush. If you have  
two good eyes, see  
that some other fel-  
low does not cause  
you to lose them.



lessness of somebody else or was purely accidental; and he is called before his superior officers and is reminded of the fact, and in most cases he is disciplined, actually disciplined for his carelessness, even if he is laid off for some time by reason of the injury.

In our maintenance of way department we have the same principle as applied to section foremen. If by the neglect of a section foreman or his failure to observe the rules that are hammered into his head by his superior officers somebody is hurt or some injury occurs, he is disciplined. In severe cases he is actually suspended and in grievous cases he is fired from the employ.

Another thing I would like to say while I am here is that we have found on our little road, the Buffalo, Rochester & Pittsburgh, very good results through employing Italian section foremen. I heartily agree with the Italian instructor of the Pennsylvania that the mentality of the Italians in many cases is very good, and especially among our section foremen. We have section foremen on our road who have been in that capacity for ten or fifteen years, and they have produced excellent results with their fellow Italians.

MR. W. GREENWOOD (Youngstown & Northern): Mr. Chairman, I represent the Youngstown & Northern Railroad. If you have any trouble in discovering where it is you had better perhaps write to the United States Steel Corporation or the Carnegie Division of it. I have come here to discuss these matters, including the one that is under discussion just now, rather broadly, and I have prepared some remarks to dispose of it.

Long ago the railroad companies recognized the importance of specifying how the operations that involved considerable hazard should be conducted to avoid accidents; but their rules, like the statute laws, were too much given to covering the subjects in a general way. The principal object in mind was to place all responsibility for such personal injuries as might occur on the shoulders of the victims.

The basic principles of our statute laws make safeguarding against accidents to employees obligatory. It was only when this principle was found to be enforceable and, too, when enactments specifically defined the purpose of safeguards, that we woke up and gave the matter deserved attention. The law had to be reinforced to enable us to distinguish between so-called acts of Providence and our own

negligence. The method for properly dividing responsibility for avoidance of accident was shown by legislative enactment, but perhaps the necessity for thus doing has been brushed aside by recognition of the fact, the loss that accrues must be borne by some one and higher efficiency in prevention comes from charging the loss to the industry that should be responsible for suppression of the cause.

The industries and utilities have done much to make accidents—and we might add suicide too—impossible in industrial employment, but much remains to be done. All cannot be done at once, but the work is going forward as fast as conditions will permit.

Perfect system for the prevention of accident will come through the process of evolution that is now going on. A question that we might differ on is, will the agitation it is getting hasten or delay the day? Enthusiasm may induce the beginning of action, but not all the enthusiasm that would burn and destroy half the world would keep the work in continuance if there was no hell for our sins. It seems to me that too many of the methods offered for accident prevention are prompted by mistaken ideas, and this is quickly recognized by those we accuse of lethargy, and instead of promoting the evolving process it is retarded. Erroneous efforts discredit the cause and bring all engaged in it into contempt. As an illustrating instance a brakeman is told he must not kick the drawnhead, or rather, he must not hold it in position with his foot while the car is moving so that the knuckles will lock; yet the conditions are such there is no way to do it with greater safety. Also a trainman is required to ride on the front end of a train of gondolas or boxcars when the engine is pushing it, and yet in designing and constructing cars the end beam of the car body that once afforded the only standing place or walk or crossing from one side to the other, is not allowed to extend beyond the enclosure on the platform. The economy effected by such construction amounts to but little and I can see no other reason for adopting it. Innumerable instances can be cited that prove some other consideration than "Safety First" prevails. There is reason for saying the oft-quoted inscription found on the side of the car was exhaustively expressive, even though exception might be taken to the diction:

Your cars are rotten, your track is worse,  
And yet you holler "Safety First."

## Safety First

"A miss is as good as a mile," but remember you are not always missed.

When every man is cautious, watch the percentages go up.

There is much talk about education by example and verbal instruction being a substitute for mechanical safe-guarding and printed instructions in book form. Let us consider a case where this method and no other is pursued. A gang is employed to do work of a certain class or within a certain defined district. By constant and wearying effort each man has been taught that he must do each part of his work in a certain prescribed way for the sake of safety.

In large gangs changes in the makeup are so frequent that if this kind of education or method alone is pursued the foreman must devote more time than can be afforded to instructing and watching. We claim that unless the safety instructions are placed before employees so that there will be no possibility of denying that it has been done, indifference will continue to exist, litigation will increase and the proper division of responsibility between employer and employee cannot be accurately determined.

Courage, pride, vanity, indifference, caution, negligence, perception and obtuseness, all are conditions of birth or training. But I am inclined to think they are more a condition of training than birth. These conditions must be dealt with all the time and such as operate injuriously must be counteracted if they cannot be removed.

Instead of laboring so hard to implant vocational education in every one, our efforts should be directed towards implanting an academic one. Guards, enclosures, etc., are effective and if rules are efficient for getting our product why can they not, by the same method of application, be made effective for accident prevention? (Applause.)

CHAIRMAN DOW: I suggest that the matter be discussed as to whether or not the wearing of goggles be made compulsory. We are beginning to make it compulsory in the shops of the New York Central System, in fact that rule has been absolutely put in force in a large number of our shops and men are sent home from work

and made to stay there until they have agreed to come back and wear the goggles.

And another question which I would like to ask, inasmuch as Mr. Rockwell and Dr. Randolph brought up the subject of discipline, is what is the opinion of the gentlemen here, as to whether discipline should be administered where infraction of safety rules or indulgences in unsafe practices is brought up by a rank-and-file member of the safety committee. It seems to

me that if we are going to get into that habit we are going to destroy the effect of this co-operative safety work among the employees, and that perhaps it might be better if discipline in such cases as that were left to the operating officials to handle just as they would the ordinary book of rules. I would like to hear some expression on that subject.

MR. W. C. WILSON (Delaware, Lackawanna & Western): Mr. Chairman, I personally think that we ought to have these papers, a paper by Mr. Blakemore and one by Mr. Richards, for the reason that the two topics we are discussing could take our time and attention for the rest of the afternoon very easily, and the matters which we are discussing are peculiarly such matters as would come up tomorrow morning under the general rule as the Chairman has given. And I fear that some of the gentlemen may have to leave. It is getting along somewhat in the afternoon and they would like to hear these papers, and as the discussion is of a general character I would make the suggestion at least that we have the papers, and then the formal papers will be disposed of and all the rest of the time for general discussion.

CHAIRMAN DOW: I think that is a good suggestion. The next is topic No. 2, "The Value of the National Safety Council to Railroad Safety Organizations." We have with us here today a man whom we consider is the father of the safety movement in its present form on the railroads of this country, a man whom we all love and think

## **Do Your Part**

It is a pretty safe proposition that "We can't all be presidents of these United States," but we can "Boost for Safety."

a great deal of; and we are more than glad to know that he is back with us today after a serious illness, in better health and better looking than he has been in years; and I am going to ask Mr. R. C. Richards to talk to us on this subject. (Applause.)

#### THE VALUE OF THE NATIONAL SAFETY COUNCIL TO RAILROAD SAFETY ORGANIZATIONS.

MR. R. C. RICHARDS (Chicago & Northwestern): Mr. Chairman and gentlemen: I want to thank the Chairman for the very fine things that he has said about me. I only wish that I could feel that they were all properly said and that I was entitled to those kind words.

The subject that has been assigned to me this afternoon is the question, as I understand it, of what benefit can the National Safety Council be to the railroad Safety First movement. Now it is only a century and a quarter or so ago since that wonderful Congress was held in this same town, hardly a stone's throw from where we are now sitting, that resulted in the birth of what we think is the greatest nation in the world. And who can doubt, gentlemen, that the inspiration and the courage and the faith in the future of that nation which they were to bring forth must have resulted from the inspiration and the courage and the faith that an association, constant and continued for many weeks, brought to those men, which so inspired them that they pledged their lives, their property, and their sacred honor in furtherance of the ideals of freedom?

Now cannot we take that lesson home to ourselves? Can anybody who has been here today and yesterday, who will be here tomorrow and perhaps Friday, fail to have drawn some inspiration, some courage and faith in the future of this movement that we are all so vitally interested in? Because we men know that are on the railroads, know perhaps as well or better than any other class of men, that after all the greatest asset that we have in this nation of ours is not our towns or our streets or our buildings, but it is the men and women that populate our country. And we also must realize that when we lose one of those men or women we have lost something that never can be brought back, that never can be replaced. It is not only a financial loss but it is an absolute loss that cannot be replaced. We can rebuild buildings, we can replant trees, we can make new

gardens, new homes and new streets; but never in the world will that man or that woman or that child come back to help us in our civilization when once passed away.

And so it seems to me that that inspiration that we ought to gather at these meetings is the greatest and the chiefest benefit that we are going to derive; because we learn that men are not only interested in the safety movement on railroads, but we find in every industry, among public officials everywhere, that constantly increasing growth of interest in conservation of human life. Now to me that is the chief benefit that we as railroad Safety First men are deriving from these meetings. There are many other benefits and details that must come to us all as we think about it and as we hear these talks.

Now as we all know, one of the greatest difficulties that we meet with on railroads today, one of the things that causes fifty or sixty per cent of the fatalities, is the trespasser evil. The discussion that we had here this morning must demonstrate to us all that through the National Safety Council we are going to get another start to try and remedy a part of that evil. The idea of distributing to all automobile manufacturers, to people who drive machines, to all vehicle drivers, a warning about crossing the tracks and walking on tracks is one thing that is going to be a wonderful benefit to us in this propaganda that has been going on here for the last two or three years to stop this trespass evil. And I think that we all ought to feel encouraged about that; because as I remember the last report of the Interstate Commerce Commission for the last six months that they have published shows a remarkable decrease in the number of trespassers killed or injured over any other period of the same length of time for the last four or five years. It was twenty or twenty-five per cent, and I think it was a remarkable reduction, and I believe has been largely brought about by this propaganda that the railroads have been spreading all over this country to try to put a stop to that class of accidents.

! The same thing we can do in connection with this Safety Council on the automobile highway accident question. There are so many ways that the National Safety Council can be of assistance to us at practically a nominal expense that it seems to me that any railroad that fails to be a member of the association must be blind to the benefits which might accrue to it.

I think the mere fact that we should have a paper read at a

## **BOTH KINDS**

**Some fellows complain when they pay for accident insurance and do not get hurt. Others get hurt and have no insurance.**

general session of the National Safety Council such as was read by our friend Wilson yesterday, and the publicity that it was given in the Philadelphia papers, is an actual benefit to every railroad in this country.

Now if we had a railroad meeting just as large as that meeting of the National Safety Council was yesterday morning and such a paper as that was read, do you think it would get any publicity? It would be about two inches instead of two

columns. Now if through the National Safety Council the safety propaganda of railroads can be given this publicity in the newspapers, surely that is a wonderful benefit to us and that is one of the very many benefits that we are going to derive, in my opinion, by belonging to the Safety Council.

The paper of Chancellor McCormick yesterday—it seems to me that no man or woman who was in that room could possibly have heard that paper and not go home with the inspiration to do better and greater things. (Applause.) And surely the publication of a paper like that in the proceedings of this Safety Council and their general distribution among the Safety First committees of the various railroads, where they will be read and studied and thought over, is going to inspire the men who are not here to greater efforts.

Now five years ago if somebody had talked about having a Safety Council in Philadelphia to consider the methods of conserving human life in industries, on the railroads, on the streets and other places, do you suppose that we would have had nine or ten hundred people registered at that convention? Why, we would all have been lucky, we would have thought ourselves extremely fortunate if we had had a hundred. And it only shows, gentlemen, the inspiration that comes from these large gatherings, the gatherings of people who are interested in industries different from our own. We inspire them and they inspire us.

The only thing, it seems to me, that we ought to do now is to put our mark up higher. A few years ago if anybody had said that

accidents could be reduced fifty per cent or forty per cent or thirty per cent by the education and co-operation of our men, he would have been laughed to scorn. Nobody dared to make that prophecy, although many of us hoped and believed it might be so. And now a railroad or an industry that cannot show that much reduction in its accidents is thought to be a back number.

And so I say, gentlemen, that the benefits which we derive are so plain and so clear and so great that we all of us ought to appreciate it and do all that we can to further the ends of the National Safety Council. I thank you. (Applause.)

CHAIRMAN DOW: If there are any roads who desire further information as to the membership in the National Safety Council, with the cost of membership or any other information, if they will drop me a line at my office in New York or else write to Mr. Cameron, Secretary of the Association, the information will gladly and promptly be furnished.

The next topic is "The Value of Moving Pictures in Safety Work—What Plan Could be Devised for Procuring Effective Films?" We have with us today a gentleman who has done a great deal of constructive work on the Norfolk & Western Railroad, and I take a great deal of pleasure in introducing to you Mr. C. H. Blakemore, Chairman of the Safety Commission of that road, who will talk to you on this topic. (Applause.)

#### THE VALUE OF MOVING PICTURES IN SAFETY WORK.

MR. C. H. BLAKEMORE (Norfolk & Western): Mr. Chairman and gentlemen: It is good to have an opportunity to say something for safety at any time, but it is a particular pleasure to have an opportunity to say something on this particular subject in which I am so interested and to this particular audience, made up as it is

### CO-OPERATION

Remember that each person is responsible for his success and that his success is dependent upon the success of his employer.



of men whom I know to be so intelligent and vigorous and earnest in their efforts to save human life.

An accident prevention campaign is designed to prevent accidents, not merely to permit us to print "Safety First" on our letterheads; and to prevent it is first necessary to know what causes are responsible for those accidents we wish to control. Preventable injuries to railway employees, as you all know, may be divided into two large classes: the one caused by the master, on account of his failure to inspect and properly repair and guard; and the other caused by the servant himself, due to those careless, thoughtless things to which railroad employees are so peculiarly addicted.

An analysis of causes has made clear to all of you who know anything about accident statistics that only a small minority of such accidents may be placed in that first class; and then that small minority is rapidly growing smaller, because the employer is so fully covering and fully guarding, inspecting and so forth, leaving the majority to be placed in that second class to which I have referred. In short, I think we all know that more than eighty per cent of preventable injuries to railway employees are due to their own careless acts.

Now if you expect to make future substantial progress in accident prevention you must confine your activity almost exclusively to that eighty per cent; and to make your efforts effective it is absolutely necessary that you influence the individual employee to correct his careless habits. Of course the first thing you think of when you speak of influencing an employee is that question which we have all had so frequently, "How shall I influence him?"

Now for fifty years he has had the rules to guide him and he has had discipline to punish him, and yet accidents have continued—I could say have inconsistently increased. So it is clear that what you want is something more, something which will inject into his mind the desire to be a safe man and the knowledge of how best to accomplish it. And to inject anything into his mind it is first necessary that you really interest him. And I submit that you can come nearer interesting him really by motion pictures than by any other one method.

It, of course, is not necessary for you to confine your intellectual activity to motion pictures. By all means send him literature; by all means talk to him. I have talked to our men and I have sent them.

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literature, and I have shown them motion pictures, and I have carefully observed the effect of each effort, and I do not hesitate to say that of all, motion pictures constitute the best method of making a strong and lasting impression upon the mind of the average workman.

During the last five months we have had in operation a motion picture electric car equipped with a high-class moving picture machine, a Bausch & Lomb stereopticon and an aluminum screen, with which we produce as attractive motion pictures as can be seen in any professional house. The program is short, made purposely short so that it may not tire them. It consists of a lecture of fifteen minutes, the lantern slide occupying about twenty minutes, commenting on each slide, and finally of the real motion picture, occupying some twenty or twenty-five minutes—a total of approximately one hour. The motion picture that we have been using is that admirable one called "Steve Hill's Awakening," the story of which was written by Mr. Dow of the New York Central Lines and produced, I believe, under his personal direction. And I want to say that for this purpose I can conceive of no film more interesting, forceful and comprehensive. During that five months more than eight thousand employees have visited this car; and the effect on them has been remarkable. I entered that comparatively new field with some misgivings both as to the attendance of the men and as to the probable effect upon them. I was particularly concerned as to whether or not transportation men would come in. They could not attend on the company's time, because their duties would not permit it, and they could not be controlled when off duty, except through a personal desire to see the pictures; and I wondered if that personal desire would be sufficiently strong to influence them to leave their homes and their personal matters. In practice we have found that instead of being obliged to persuade them to come into the car, you can hardly keep them out. The car is often so crowded that men must be turned away. And one of the most pleasant features of this work has been the effect upon the old employees. I venture to say that the most of you present have, through bitter experience, found that the man upon whom your safety efforts have, in many cases, been wasted has been the old employee. He knows; he doesn't want any advice. Upon this class of men the effect of the picture has been wonderful. They come in, I think, in many instances,

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## Report at Once

Why not save yourself pain, your family distress and suffering, when you can do this by reporting each accident at once.

because they hear the other men talk about it. I think they expect to be bored or, at the least, mildly interested, and they go out enthusiastic, and come to me frequently asking if they will be permitted to come again and bring their families. What was said to me by one old-timer will serve to typify their general attitude. This old conductor, after telling me how he had enjoyed the entertainment, said, "Nothing that was said in there about accidents was new to me, and

I saw nothing in the pictures that I hadn't seen done in life a hundred times. In fact, I have done most of them myself; but," he said, "I never thought about them so earnestly as this exhibition has made me think." He says, "I want to tell you that if this outfit don't get the men with families to thinking, if you don't educate them with this, you might just as well give up trying."

Now I am very anxious to continue this branch of education and I want to see a number of the other railroads try it; but I am concerned as to how we are going to get films to make the necessary change every now and then when it is necessary to start over the system with a new film. The films must be of the very highest character, both as to workmanship and acting; because employees have an opportunity nowadays to see the best professional pictures every day, and unconsciously, then, they will compare what they see in the picture houses with what we have to offer. The unemotional film, the one without a story, will not serve the purpose, because, you can send a child to school and make her study but you can't make the employee retain the impression, even if he gets it, which you are trying to make, unless you interest him; and the films without a story will not get his interest. Of course, they are all right; I have seen many without a story that are very good, but they don't get and keep his interest and his mind does not retain the educational impression which you are trying to give unless his mind is stimulated by a vivid interest, an active interest.

A number of the leading film companies, among them the Pathe

and the Universal, have said to me that they were perfectly willing to take up this proposition of furnishing films upon a reasonable basis of their furnishing one film and giving copies, provided a sufficient number of railroads get interested in taking copies. The Pathe people told me that if we would give them a list of what we wanted shown in a picture and take their scenario writer on the yard and show him how these things were to be done, it would be easy; that he would write a story connecting this whole fabric, and then they would put their actors on it and produce a film of approximately the length we suggest, which is about two thousand feet. That occupies just about the right time.

Now I would like to see some committee formed or some systematic way arranged for the production of such films. I think it is unnecessary to tell the safety men who are here that the future progress which is to be made and must be made through education—that is an important branch of education; it is one of the most effective, if I know anything about it; and I would like to see this Council, or, if it is not consistent for the Council to do it, I would like to see a number of these individuals who are interested in that project get together somehow and form some channel for the making of appropriate films. I thank you. (Applause.)

MR. CHARLES T. BANKS (Erie): May I ask what the charge is for films?

MR. BLAKEMORE: The Pathe people said they would furnish us approximately two thousand feet of film, provided as many as ten or fifteen railroads went in, giving each railroad a copy, the copies to cost approximately three hundred dollars. Now that was just offhand, you understand; but that gives you for the present an idea of what they might cost.

MR. BANKS: We have just bought a moving picture machine. We started out by buying "Steve Hill's Awakening" for the first

## **Watch Your Step**

It is just as easy to do things right as wrong, and a whole lot safer. Look out for falling material when passing under crossings.

film, and, of course, we are going to be in the market for some more; so we would like to get in with anybody else that wants to join in on this film business. You can always count on the Erie. We have also bought a machine to take pictures. We went in all over. (Laughter.) And we are going to project them and take them.

It just occurred to me when my friend Blakemore was talking here and asking about how we were going to get our films, one of the optical companies, one of the principal optical companies that is interested in the furnishing of goggles for our men, has a scenario in process of making. They have their films all taken. The scenario was written, but because it did not have a villain in it—of course, you have either got to have a villain or a love story in all these films in order to get them across the footlights and make it interesting—and they haven't any villain in this story and it is going to be rewritten. I suppose they are going to have this villain come in and steal a pair of these good goggles and substitute some other fellow's goggles, and for that the villain is going to lose an eye. (Laughter.) I don't know, but anyhow there is going to be a villain in it. Now that film is going to be valuable to Mr. Blakemore and the rest of us who have gone into the movie stuff, and I should suppose that it would be a nice, neighborly thing for us to exchange our films once in a while here. I didn't have any exchange with the New York Central Railroad and I had to buy one. But after a while we will have one that we will be willing to exchange, maybe. But the Erie will always be glad to join in any movement for the procuring of films.

CHAIRMAN DOW: I might supplement Mr. Blakemore's talk on moving pictures, because the New York Central Railroad has also had a moving picture car on the road for some time since this film which has been spoken of was produced; and we also feel that it is one of the best things which we have done. The employees are taken into this car in groups of from fifty to seventy-five and given a short talk by one of our safety agents preceding the picture and then the moving picture reels are shown. We have even gone so far as to get our shopmen in to see those pictures and hear the lecture during working hours and pay them for their time, which has taken from half an hour to thirty-five minutes.

The interest in the safety work I feel has been very greatly increased among our employees through this picture. They have had a better understanding of what the safety work really amounts to, and we have had a great many requests in yards to show the picture over two or three times in order that the men might go home and get their wives or sisters or brothers or somebody else to come down in the evening and see the picture. We have given shows in the cars anywhere from six to ten and twelve times a day, and up to date I think there is something like 75,000 or 80,000 of our employees who have been in this car to see the pictures. We feel so very well satisfied with the results that have been obtained through these moving pictures that we expect to produce other pictures of the same character if we cannot get them any other way. As a matter of fact, I am already working on another scenario which we hope to have authority to produce, inasmuch as "Steve Hill's Awakening" has also pretty nearly worn itself out on the New York Central.

Now I want to say this: the film, "Steve Hill's Awakening," was written by me and produced jointly, under my direction, by the New York Central Railroad and several other roads. I think the Delaware, Lackawanna & Western, the C., B. & Q., the Norfolk & Western, the Santa Fe, Lehigh Valley, and the Erie Railroad now have copies of that film; and other railroads who may desire a copy of it can procure the same through me, as we still have the original negative and can still make prints from this negative. The cost of the film to the next road who may desire one would be approximately \$275. Every new road which comes in and takes a copy of that film, of course, will reduce the expense to all concerned \$25 or \$30 or somewhere in that neighborhood.

MR. AYERS: I am not a railroad man; I am identified with manufacturing, and we have an intramural system of roads. I should probably have been at another sectional meeting this afternoon but in view of the fact that I received at noon a telegram from the New York Central Line asking me to speak in the neighborhood of Pittsburgh next Monday night, I thought I had better attend the Section to get some points from the live wires; and I am not at all disappointed; I am very much pleased and gratified, and I wish to felicitate this sectional branch upon the manner in which they have handled the subjects which you have before you.

## SWITCHING

Do not put your hand between the lock-pin and the end sill or hold cutting lever while making a coupling.

I wish, also, to say to you that in this work of promotion of safety and conservation and so forth, you may say what you please about the great volume of printed matter, but give me a picture every time. Vision is one-eighth of a second and sound is eleven hundred feet a second, so that, you see, the eye will grasp and take in more readily and more quickly a thing that is projected before you than the ear can possibly take or a man can retain; so we want not only the

picture but the picture and the story, both of the agencies which you are now advocating here; and the movies—we use them here, for they are an entertainment. We turn around and use the movies to display the arts and modes and industries and otherwise, with that vision, that thing that is so valuable and means to us so much. And as my worthy friend Mr. Richards says, it is a thing that cannot be replaced—human life. Every other thing that we have of material form is replaceable but human life; and anything that can portray through the agency of a moving picture, that will take in and will educate men for the prevention of injuries and accidents—accidents happen, injuries occur; and ninety-seven per cent of the injuries are preventable; three per cent are happenings. But this is a serious matter—education, enlightening through the various forms and agencies.

They say—the gentleman spoke here this afternoon of the Italians—I am not talking of him particularly, but the one who is unfamiliar with the English language—he does not understand. But if he is shown, and if a thing is pictured to him he will grasp that just as well. He has a mentality equal to the Anglo-Saxon or any other, but we do not know the language. I could not speak Italian, only I know Latin; and it is a Latin language, but I could form an idea of what it would be. And so it goes. All of these things are of the greatest interest and you live wires have given me a whole lot of inspiration, and I want to thank you for the privilege of speaking. (Applause.)

MR. BROWN: I am on the industrial safety side, but I would like to raise one point that was mentioned by Dr. Randolph: the question of disciplining the men—for instance, in the case of the use of goggles. A few months ago, in a certain large plant of this state, the goggle business had sort of gone by for the time being. We had then about two hundred men. It was my privilege to go there and I made some comments on the situation. The next week there was an address given before a gathering of the foremen of that plant, and the gentleman who was to address the meeting had been requested to bring out that point. He gave his address and when he came to the subject of goggles he did not talk about discipline at all. He drew a picture in words, an emotional picture of what it meant to lose your eyes, what it meant to your wife what it meant to your children, what it meant to your family: your decreased earning power, what it meant to lose the sight of all the beautiful things which we love and which mean something to us in our lives outside of our daily work. Personally I was very much touched with the eloquence with which this gentleman addressed that meeting. As a result, the foreman, who is an American in charge of that group of men, went back and told this story—I believe I am telling this accurately—to one of the Italian men, and he had that Italian man tell the story over again to the assembled group. I went through the crowd two days later and I did not find a man without his goggles on, and there was no question of discipline. They had about two hundred men working at that time. They have over six hundred working today. Within four days I have been through the bunch of men and I did not find a man without his goggles on. No discipline was required. (Applause.)

The meeting then adjourned.

## ENGINES

When necessary to go under an engine, it must first be hooked up on center, cylinder cocks must be opened, brakes set and blocked.



**SECOND DAY**  
**MORNING SESSION**

**T**HE meeting was called to order at 10:10 A. M. by Chairman Dow.

**CHAIRMAN DOW:** When we adjourned yesterday afternoon I think we left unfinished the discussion of topic No. 5, which was so ably presented in the paper of Mr. W. B. Spaulding, "What Is the Best Way to Create and Maintain Interest in Safety Work Among the Members of Safety Committees and Employees in General." I think that the meeting this morning may be a sort of free for all, and everybody here who has something on his chest that he wants to get off and bring up his own subject can get up and do so. That is what we want you to do. Please don't forget topic No. 5, which is very important, and let us continue for a little while, at least, the discussion of this topic. Now who among you has got something important to say on the subject of "How to create and maintain interest in safety among the members of safety committees and employees," some one that we have not heard from yet?

**MR. T. H. CARROLL** (Pennsylvania Lines East): Mr. Dow, suppose as a starter you give us a little excerpt from your wisdom on the subject.

**MR. R. P. KYLE** (El Paso & Southwestern): I would like to ask that you give us in that talk how that plan of yours about having some special topic in the meetings is working out, as you did for awhile, I remember.

**CHAIRMAN DOW:** I will say just a few words, particularly on safety committee work, because a short while ago we began to have the same perplexities that I presume a great many of you have, and that is as to what we could do to awaken more interest among the members of our safety committees. As a matter of fact, the ques-

tion came up on our road as to whether we should continue holding the meetings of our safety division committees every thirty days. Some of our operating officials said that they were of the opinion that the work of the committees was about completed; that they had corrected all the unsafe conditions on the road that were to be corrected, and that there was nothing more for the committees to do. I took issue with them on that point and concluded that it was time for us to begin and try to educate our committees to take up another very important phase of safety work. In other words, they had been, since their organization, devoting most of their time to the correction of physical conditions. But most of the members of our committees seemed to feel that that was the only thing that they were appointed on the committees for, and they had no conception of any other duty which they were to perform. I also came to the conclusion that the members of the committees must have some definite responsibility placed upon their shoulders aside from the reporting of those unsafe conditions. And so I drew up a set of rules which I submitted to the general-safety committee of the system and which they approved and immediately put into effect. I will be glad to read this set of rules. It may be of interest to you.

"1. The meetings will be held at least every sixty days, at which meetings the Superintendent will personally preside."

That rule was made for the reason that in some instances the Superintendent, with his various duties, would find it impossible for him to attend the meeting on a certain date, and rather than postpone the meeting till a time when he could be there, some other person would take charge of the meeting who, perhaps, was not as capable of conducting the meeting as he was.

"2. That when any other member of a committee is absent from a meeting, he be required to advise the Chairman as to the reason for his absence, which will be shown in the form of a memorandum attached to the minutes of the meeting."

MR. CARROLL: Will you state how many you have on the committee, please?

CHAIRMAN DOW: Our committees vary in size. While we have a sort of a rule which states who shall be on these committees, we do not confine the size of the committees to those instructions. We

## Two Don'ts

**Do not stand on foot-board between engine and car.**

**Do not foul a main line or converging track until the switch is lined for you.**

leave it to the Superintendent to use his judgment. Usually our committees have from fifteen to twenty members, and that, of course, includes the men from the rank and file, representing every branch of the service. We have a conductor, an engineman, a foreman and a brakeman, a shopman and a trackman; and those members are all rotating members. They serve for a period of six months. On the same committee we have the division officials, in-

cluding the superintendent, the master mechanic, the trainmaster and such officials as that, who serve permanently.

MR. CARROLL: Does the term of service expire at the same time for all of them?

CHAIRMAN DOW: No; we are trying to arrange that so that two or three or four will expire at one time only.

"3. A statement is to be furnished by the General Safety Agent showing the number of persons injured, divided as to operating divisions and shops, classified into 'Cause' and 'Employment,' which will give a comparison of one division with another for discussion in the meetings of the Division Safety Committee."

This statement is prepared in my office and lists the accidents under eighty-eight specified causes and divides them up as to operating divisions. This gives the members of the Division Committees an idea of just how their division stands each month in respect to accidents.

MR. CARROLL: Mr. Dow, let me be clear on that. Do you furnish the statistics by months?

CHAIRMAN DOW: Yes.

MR. CARROLL: Have you found so few accidents in one division that it would hardly be enough to call attention to?

CHAIRMAN DOW: No, I cannot say that we have. We have a printed form which calls for this information. Of course, if there

were no accidents on a certain division there would be nothing in that column.

MR. CARROLL: Well, the point I want to develop is whether you think it is worth while to exhibit a month's record.

CHAIRMAN DOW: I will be glad to pass this blank form around to you and show just what it is.

MR. CARROLL: I want to get clear on that, because it will probably come up for discussion. Even on the largest division you would have so few accidents in one month that there would be not sufficient to make any appreciable classification. In other words, it would take practically three months to get a variety of accidents.

CHAIRMAN DOW: Well, in any month, in fact every month, there would be many causes on that list opposite which there would be no accident recorded. The point is here: there is a cause there which shows accidents due to coupling and uncoupling cars. Now if the superintendent and chairman of the committee on a certain division and the members of that committee see that every month they are getting accidents under that cause, that such accidents are predominating, there is a weak spot—there is a thing that they must get after and try to find the means of getting it corrected.

MR. CARROLL: You show, then, all the divisions together?

CHAIRMAN DOW: All the divisions. The divisions are shown separately and the list of causes is shown as to each division. I will say here that this form which we are sending out has met with a great deal of approval by all of the members of these committees. The employees sit down and take this form and talk about it and it seems to arouse a great deal of discussion and interest among the members of the committee.

"4. The selection of specific illustrative causes by the General Safety Agent to be sent to the Division Safety Committees for dis-

## **Moving Cars**

**If your duties do not require it, never attempt to board or alight from moving cars or engines. Do not take unnecessary chances.**

cussion at their meetings with a view of educating employees against a recurrence of such accidents."

Now I mean by that that we go over our accident reports as they come in to my desk each day and we pick out certain cases that are illustrative, and without giving the name of the person injured or the locality, we write up a brief description of that accident, showing just how it happened, and send out to the committees a dozen or fifteen or twenty of those illustrated cases for them to take up and discuss at their division safety committee meetings, and in the minutes of the meeting which are prepared after the meeting is over, and a copy sent to the general superintendent and one to myself, they show on those minutes just what action they took in respect to each of those illustrative cases. That is, the superintendent will read those illustrative cases and he will say, "Here is a man injured in such and such a manner," and discussion will follow. And the result of that probably will be that the superintendent will issue a bulletin or a letter of instructions on his division, or in some manner take it up with a view of calling to the attention of every one the accident which occurred somewhere else and which they should take steps to prevent, even though it did not occur on their own division.

MR. CARROLL: I appear to ask a lot of questions because I am vastly interested. Do you also make a recapitulation of the monthly statements by quarterly, semi-annually and yearly?

CHAIRMAN DOW: We do that semi-annually and yearly, yes.

MR. CARROLL: For discussion at the safety meetings what is the objection to giving the name of the person injured?

CHAIRMAN DOW: There is no objection to it except on a large system like the New York Central, if this accident happened in the New York territory, for instance, on the New York Division, the fact that the name was mentioned would be of no particular interest to an employee on a division out in Chicago, a long distance away. If these illustrative cases were confined to the division in which the accident occurred and everybody on that division personally knew about the case there might be some advantage in giving the name, but I cannot see any advantage in doing so.

MR. BALLIETT (New York Central): A railroad president told me this week of a case where they had bulletined a certain accident, giving the name of the employee and the circumstances. He said that the employee who was injured sued the company. The lawyer had a copy of that bulletin and had the piece of iron that he stumbled over, and the result was that he got three thousand dollars from the company. He said that hereafter they would omit the names in the bulletin.

MR. CARROLL: I want to join with the rest of the party in thanking you for that information.

CHAIRMAN DOW: I think that is one of the objections to giving the names, although I won't say that that is what prompted us to omit the names, but we have considered that feature of it. I do not know that that was what caused us to omit the names; simply the fact that we did not see any advantage in giving names over a large system of this kind, where only on one division would employees know anything about the case.

MR. S. G. WATKINS (Boston & Maine): Don't you think the man himself might object to having the name given and talked about?

MR. J. M. GUILD (Union Pacific): On most of the railroad systems in the United States I believe that they have adopted this system of holding a company board of inquiry in case of serious accident. I remember when that was first started on the Union Pacific there was considerable talk about what effect it was going to have as far as settling claims was concerned, and it afterwards developed, after we held three or four of them, that it was really a help rather than a hindrance.

CHAIRMAN DOW: Come up to the front. By way of introduction, gentlemen, I might say this is the new Vice-Chairman of the Railroad Section, who was not here yesterday.

MR. GUILD: We have had considerable trouble on the Union Pacific in connection with mentioning the names and dates of accident that we publish in bulletin form. As I said before, when we started out to hold these public boards of inquiry, upon which two or three outsiders are asked to serve in connection with the superintendent and his staff in investigating the accident, the Claim De-

**Rule Books Say:**

Before shoving cars that should be coupled together, slack must be taken.

Test hand brakes before depending upon them.

partment took the stand that it was going to hinder them materially in the settlement of claims. However, after we had investigated two or three it was found that instead of being a hindrance it was a help. And I believe that the same thing applies in connection with issuing bulletins along the line of personal injuries. We are trying to show our men that we are absolutely on the square with them and as far as the settlement of claims is concerned it has absolutely

nothing to do with it. And I think the best thing that any railroad can do to advance the ideal of their own safety department is to give the names. When we have an accident we mention the date, names and all the information we can give them. If there is a personal injury lawyer in the country we know he is going to get all the dope. He is not going to depend on the railroad information; he will get it himself. So I do not think we are getting anywhere by leaving out the names. I think it does a whole lot of good by indicating to the men that we are absolutely above-board with them, that we are not trying to hide anything, that we are not trying to take the safety stand from a legal point of view; and for that reason I think the best thing to do is to give them all the information or don't give them any at all. I thank you. (Applause.)

CHAIRMAN DOW: Rule No. 5 under which we operate our committees reads as follows:

"5. The assignment at certain meetings of a live topic to be discussed by the committee at its next meeting," such as "How we can best interest the employee in the safety movement," might be assigned at one meeting and the members be requested to talk on the subject at the following meeting. The subject of this kind may be assigned by the general safety agent. A brief report containing a summary of the discussion brought out to be sent to the General Safety Agent.

I want to tell you that is one of the best things we have done as

far as our committee meetings are concerned. Those topics have been selected now the past year in my office and assigned to these committees and we find that where a committee originally may have been in session two or three hours, now some of them go in session at nine o'clock in the morning and they do not adjourn until seven or eight or nine o'clock in the evening. They have got something to talk about.

## **Shoving Cars**

When using a stake or push pole to shove cars, stand on the side of the stake opposite the direction in which the car is to be moved.

We do not make all of these topics of a general character; sometimes we make them specific. For instance last month I think we assigned the topic, "How can we reduce injuries to persons on account of being struck by trains, particularly trackmen or laborers of the foreign element?" And we got some of the most valuable suggestions you can imagine from the members of our committees who were assigned this topic to prepare papers on and also the other members of the committee who discuss the paper after it is read in the meeting. Some of these papers have been so excellent that we have had them printed or mimeographed and sent out all over the system for other committees to read at their sessions or to be read at other meetings of employees. I tell you it has been a splendid thing in stimulating or arousing interest in the meetings.

**MR. CARROLL:** What means do you allow for disseminating this information at these meetings?

**CHAIRMAN DOW:** Well, we have various ways. We send printed or mimeographed copies to each committee and we also publish a safety bulletin or magazine devoted entirely to the safety subject, and in each issue we take the best papers that are prepared, take extracts from them and devote several pages to publishing these extracts.

Rule No. 6 is as follows:

"6. The members of the Division Safety Committee to be requested to caution at least two employees, not members of the com-



mittee, during the interval between meetings in regard to the taking of unnecessary risks or indulging in unsafe practices. A report to be made by each member at the succeeding meeting, giving name of employees they have cautioned and practices they cautioned them against. Such reports to be included in the minutes of the meeting."

There is another point which I think has had excellent results. We were a little bit skeptical about inaugurating that. We thought perhaps it might be resented on the part of the employees, and there may be some even now who dislike to make such reports, feeling that perhaps they are going to get some one into trouble. But that has not been the idea at all. The only reason we required the name to be given to us was that the members of the committee will have a definite responsibility fixed upon them; and if they have got to report somebody that they have talked to about an unsafe practice during the month you may be pretty sure that they have talked to that man.

Now in the magazine we also make a report with regard to what has been done with regard to that part of the committee work, just merely outlining some of the occasional advice that has been given. I will just read you an extract from the last issue of our magazine on "Unsafe Practices":

Under the existing rules, members of the Division Safety Committees are continuing to report two instances where they have cautioned other employees against unsafe practices between meetings. The following are a few illustrations of practices which employees have been cautioned against by Committee members:

A fireman cautioned another fireman against permitting engine rake to protrude from side of engine.

A brakeman cautioned another brakeman against kicking draw-head over with foot while cars were moving toward each other. (Dozens of reports received of men cautioned against this practice, which is an extremely dangerous one.)

Conductor reprimanded a brakeman for running ahead of cars, which were in motion, for the purpose of opening knuckle.

Conductor cautioned brakeman against standing between the rails and getting on foot-board of moving engine coming toward him. (After all that has been preached on this particular subject, it seems that some men still indulge in this dangerous practice.)

A signalman was cautioned by a fellow-employee against placing his hand between stock rails at interlocker plant, as he was running the risk of losing his hand or fingers if the switch was operated.

A brakeman warned a conductor of the risk he was taking in getting on the head end instead of the rear end of a moving caboose.

Brakeman warned another brakeman not to attempt to shut off angle cock between cars in train after having given signal to engine-man to move.

A freight conductor severely reprimanded one of his brakemen for attempting to part the air hose while the cars were in motion.

A fireman upon observing another fireman opening the knuckle on an engine, which was about to couple onto another engine, warned him against the unsafe practice.

A yard conductor prevented a brakeman from going between moving cars to make a cut.

A yard conductor warned a brakeman not to run along side of fast moving cars to uncouple same while they were passing over cross-over.

A signalman cautioned clerk against getting on and off trains while in motion.

An engineman cautioned a brakeman against the dangerous practice of riding with his foot on the truss-rods of a moving train to bleed the air.

Every committee member reports at least two cases of where he has done some such constructive work as that in the interval between two meetings of the committee. The idea is to fix a definite responsibility upon the members of the committees, so that when they come to this meeting they know that they have got to take part in the meeting and show they have done something during the interval since the last meeting.

"7. That a member of a committee who has no report of an unsafe practice or condition to make at a meeting should be required to give an explanation as to why he has nothing to report and what he has done to further the safety movement since the last meeting, such report to be included in the minutes of the meeting.

"8. An inspection trip to be held on each division once a year, taking the entire Division Safety Committee over the Division on safety inspection trip. On such inspection the committee to be divided into sub-committees, each sub-committee to be assigned to

## CLEARANCE

Do not leave cars  
on sidings, in yards  
or on the road so that  
they will just clear.  
Leave them so that a  
man on the side of a  
car will be safe.

look out for specific conditions that ought to be corrected; also for the purpose of talking to employees at stations, etc., en route on the safety movement."

For instance, we will appoint a committee to observe the conditions at grade crossings and report where a view might be improved. Another committee will be assigned to the duty of looking out for draw-heads lying around the yards between tracks which might be stumbled over and so on.

"9. That the members of the Committee be instructed to send a written report to the Superintendent without delay advising him of any unsafe conditions or practices which they have noticed or which have been brought to their attention and which require prompt action, without waiting until the next meeting of the committee to report them. Items thus reported to the Superintendent, even though disposed of prior to the meeting, should be reviewed at the next regular meeting of the committee and included in the minutes of the meeting."

MR. S. G. WATKINS (Boston & Maine): Mr. Chairman, may I ask how often you hold this division meeting?

CHAIRMAN DOW: Well, never less than every sixty days, and on some divisions they are held every sixty days and on some every thirty days.

Now we have a blank form used by the Chairman of each division for reporting all proceedings at their meeting, and all these items which I have explained to you are required in this report as well as physical conditions which the blank was originally prepared for. Each item as it is brought up shows the serial number of that division. The name of the man making the report is given, the recommendation he has made is written out and the action taken in the committee meeting is explained in the next column, and then there are columns on the side which bear the headings "Corrected," in one column, and "Held for Further Consideration," in another, "No

Action Taken" in another, and "Referred to the Central Safety Committee" in the fourth. Every item which is brought up by a number in the Division Safety Committee is included in this report and is carried over into the succeeding reports until it is finally shown "Disposed of," in the disposal column on the outside of this sheet; so that no item can be lost sight of. It has got to be either corrected or disposed of in some manner before it is dropped. A

copy of these reports is sent by the General Superintendent to my office, and if at the end of four months or some other reasonable time I see an item dragging along here in the column "Held for Further Consideration," I will take it up with the Superintendent to see just what the matter is.

MR. CARROLL: Does the Division Superintendent as a general proposition manifest a spirit of general co-operation with the committees?

CHAIRMAN DOW: Absolutely. Our Superintendents are almost without exception, heartily in favor of this movement and giving it their whole support.

Another practice on our road which you might be interested about is what we call a safety work card. In my department we have a number of safety agents—on some roads you would call them inspectors—and in addition to other duties assigned by myself they make inspection trips over designated territories which they have charge of; and when they make a report to me of the condition in a shop or yard which requires attention this card is made out. It originally goes to the superintendent of the shop or superintendent of the division, and on this card it states that he has today made inspection of such and such a division and recommends that the following work be done. When the superintendent or those having charge of this particular work have completed the correction of that condition the original card is filled out by the superintendent and mailed to

## WAIT

The usual reason for going between moving cars is to turn the angle cock or lift pin when the lever does not work. Wait until cars stop.

my office. He fills in at the bottom of the card showing the work to be completed on such and such a date. Now when the safety agent mails this original card, calling it to the attention of the superintendent, a duplicate is sent to my office with the same information on it, and every thirty days a clerk in my office goes over these cards and checks them off. And if the condition has not been corrected in thirty days it is followed up by my office until the original card is finally turned in showing the work completed.

Another thing I just wanted to touch on briefly while I am on my feet—I do not want to monopolize this whole meeting—and that is the very great necessity of co-operation of the foremen or the men who are charged with supervision. In every great movement men will follow the leadership of some man who is over them; and if that man is a good leader or a leader for a good cause he is going to accomplish good results; and if he is a bad leader or lukewarm or indifferent to that cause, how are you going to expect the men under him to be in favor of that cause?

I want to say that it is my opinion that if the foreman in a shop or a yardmaster of a yard is a good live safety man and makes up his mind that he is not going to have serious accidents in his yard, that he won't have them. Now when we get to a point in this safety work where we are going to have every one of our foremen instilled with this spirit of safety, and that they are going to have a clear accident record, have the best record in their yard of any yard on the system, then we are going to begin to cut down our accidents a great deal more than they are being cut down even now.

A short time ago, with this thought in mind, I issued a circular which was signed by the general managers and sent out to every man who was charged with supervision, which reads as follows:

"The full co-operation and continual vigilance of men charged with supervision is necessary to insure safety. Accidents resulting in injury or death can only be prevented by the enforcement of rules and the absence of unsafe practices. The employee charged with supervision who has a knowledge that employees under his jurisdiction are indulging in practices that involve risk of injury to themselves or others; and who fails to take proper corrective measures, is morally responsible for any accidents that may result.

"If a yardmaster makes up his mind that he is going to put a stop to unsafe practices in his yard and goes at it with determination and

persistence, there will be very few accidents in that yard. The same is true in the shop if a foreman will take such a stand. There is a no more enviable thing for a yardmaster or foreman to strive for than a record of no serious injuries or deaths among the men under his jurisdiction; and such a record can be attained if the man in charge insists at all times that work shall be done only in a safe way. The prevention of accident means a great deal to you and the men under you and to the railroad company. All who are charged with supervision are earnestly requested to give this matter serious consideration and make a determined effort to eliminate practices that may result in injury."

MR. CARROLL: Who did you say put that out?

CHAIRMAN DOW: That was sent out by the general manager on each road. Now I think that is a very important matter, something that every one here ought to remember when they go back to their respective roads. Because you cannot expect the men in the ranks to co-operate with you in this safety work if the men who have direct supervision of their work are not interested and are not good live safety men.

MR. R. P. KYLE (El Paso & Southwestern): Mr. Chairman, that last bulletin that you brought up, I want to say that I took that up with our management, and after referring it to the attorneys they said that if we issued such a bulletin as that we would in every case of accident lay ourselves liable for such an accident; that we put it up to the foremen and supervisors that they should prevent every accident, and when an accident does occur they can take that report and say, "You were morally responsible for this accident, because you say that you shall see that accidents do not happen."

CHAIRMAN DOW: Morally responsible, it says.

MR. KYLE: Well, legally, so it worked out, they claimed it would work out.

CHAIRMAN DOW: This matter was considered by our legal department before we put it out and they decided that there was no objection to the bulletin.

MR. E. M. SWEITZER (Chicago, Burlington & Quincy): Mr. Chairman, I heard about that circular that you just read some time

## Get the Habit

Recklessness is no indication of courage; brave men are always cautious, therefore, cultivate the habit of being careful.

ago. In fact you sent me a copy of it and it was a good idea, and I wrote a similar circular, which our vice-president sent out, and it was sent to every man charged with responsibility, and I would like to say that it did a great deal of good. Now as to the legal aspect of the matter, I do not think that it ever got us into any trouble at all. I never heard of a case where a man got hurt and this letter from the vice-president was brought up in any way that would hurt us in

effecting a settlement. On the other hand, it has done a great deal of good and before a great while I am going to have another one gotten out.

CHAIRMAN DOW: I will tell you one of the results of that bulletin on our system. Within two weeks after it was sent out the yardmaster in the yard at Rochester organized a sub-committee right along the same lines as the division safety committee, in his yard. He picked out six or eight brakemen and conductors and he put them on this committee. He wrote in and got a copy of some of these rules which I have just read to you; he got some of our blanks. He said, "I am going to have a committee of my own out in the yard. I am going to prevent these accidents." He took it up with the superintendent who decided that this yardmaster, who was a member of the permanent committee, should make a report to the division committee of the work of his sub-committee in the same manner that the division committee reports to the general superintendent and myself. And the reports of this sub-committee are just as full of information and interest as the division committee reports. They are even assigning these topics which come to the division committees for discussion out in their yards, and they were so enthusiastic about it in the Rochester yard that we sent the information out to all the officials, and those sub-committees have been organized in practically every large yard in the system and we are getting right down to the meat of the thing. I think that circular had a great deal

to do with it. Now is there any further discussion on this topic? I think I have taken about enough of your time.

MR. MCKENZIE (Pennsylvania Lines East): I was forcibly impressed last evening in the address of Chancellor S. B. McCormick when he referred to the second commandment, to love your neighbor as yourself. I believe if we would adopt the Billy Sunday plan of personal work we could do about as much for safety as we can with rules; go to each man and interest him with the fact that if he gets killed you are going to lose a good friend; while you won't get his job but get the same wages and get promotion, you would rather have him than wages. I know I have worked successfully with a number of men on the booze question. It means discharge on our road if they find out you take too much booze. These were young railroad men and I personally interested myself enough to ask them to cut it out for the sake of their families and for my sake, because I didn't want to lose them. I believe that we could handle this question, show them the loss to their families by depreciation in value as an employee if they are crippled. In our department we are very fortunate to have a set of officials who try to find them employment at regular wages when they are disabled, so that in the line of engines they put them on the same work that I do as an engineer. And there are quite a few systems where if a man falls down physically he must fall down financially. I think if we put it up from the laborer or the trackman, right up to the higher officials, that we are losing a friend and his family is losing a supporter, that we would instill into him a conviction that we are directly interested in him and we are thereby fulfilling the commands of the Almighty. It seems to me we would be our brother's keeper. That is, we are now trying to pass booze laws to take care of the inebriate after he is a total wreck in this state. We have to pay taxes to keep up the asylums and there is no reason why we should not just save those taxes by a little personal work and save the man

### **Once Is Enough**

**Investigate every accident that happens in your gang, and try to prevent an accident occurring in a like manner.**



before he becomes a wreck either as a drunk or as a cripple.  
(Applause.)

MR. CARROLL: It seems that I always follow a Pennsylvania Railroad man in trying to get one over. I have often wondered at a safety meeting how the division superintendents of the various divisions which we all represent would feel if they were present. It seems to me that there is something more fundamental in this safety problem than we have reached as yet. It is not to be expected that we have covered the whole road in the four or five years that we have been progressing—and I am using the word “we” now collectively as the railroad, and you are very much alike. I spoke of something fundamental in the safety question; and that I believe to be the relation of the superintendent to safety. For after all it does not matter what you do, unless it is done from the superintendent down the line, it is not of a permanent character. Several years ago we received in our office a pamphlet of the safety committee’s report of one of the big western roads. It contained a great number of recommendations. There were bridges that needed grading; there was material piled along the track too close for clearance; there were telegraph poles that would not admit of a man to pass; there were men engaged in practices that were specifically forbidden by the rules. Some of our officials wrote a letter to the officer under whose jurisdiction I worked and asked him what he thought of the bulletin; and my officer gave it to me to make an analysis of it. The bulletin corresponded in all particulars to the reports that we make and reports that you make. It was simply a combination of the recommendations made by the various companies of that particular railroad.

Well, the first thing that struck my attention was a number of conditions that were obviously wrong in the maintenance of way department. Then I asked myself the question why should a safety committee have to call attention to the conditions that were out of whack in the maintenance of way department? Then I went a little further and I found out the other departments were out of order. I asked myself the question again, why should these departments be held to account by a safety committee? I do not want to be misunderstood in what I am endeavoring to say. It is a very, very keen question: and unless one is very proficient in the use of English,

unless his thoughts are very clear, he is liable to be confused; and I do not want to detract one iota from the good that is accomplished by safety organizations nor by the safety committees. But I do want to call your attention to this fact: that we should not get the duties of the superintendent confused with the duties of the safety committees.

Now personally I made an inspection at a big freight station where several hundred men are employed. That was two years ago. And I discovered that all the men at that station were required to walk over the yard tracks, twenty-five in number, and two high-speed passenger tracks. Upon that inquiry I found that a bridge was contemplated. I returned to that station a year or so afterwards and the bridge had been erected. The columns supporting the bridge were placed between two tracks at right angles with the bridge, but diagonal to the tracks, and they had a scant clearance of four feet seven inches, which is the minimum on railroads. By slightly slewing the column we could have gotten a clearance of say five feet or five feet and a half.

The point which I wish to illustrate by that is that the maintenance of way department failed to recognize their full duty in the construction of that bridge. So getting back to my original proposition, that we must not get the functions of the superintendent confused with the functions of the safety committees, I think that the management in the future on all railroads will hold the division superintendent and his subordinate officials accountable for these conditions that are being constantly discovered by safety committees. In fact, unless we arrive at some means whereby the division organization itself, through the instrumentalities of the general offices where the information is collected, in this way arrive at some means whereby a division superintendent will have it in his power—he does have it in his power—whereby he will see to it that everything is done that can be done to make the railroad safe, I think that any results we accomplish will not be permanent.

We have often heard the question of whether it is considered proper to impose discipline for infractions of rules and regulations discovered by safety committees. It is obviously not proper, but a proper organization covers that by having men detailed for that purpose who are part of the organization. On our railroad we call them efficiency checkers. Men go around the division all the

## WHY?

"Most men who are crippled in business have a lame excuse." But what is the use of being crippled if we can be safe?

time looking for conditions that are wrong and for practices that are dangerous.

If I have made myself clear I am happy. I want to conclude by saying we should be very careful and jealous of the authority of the superintendent and instead of working from without within we should work from within without, and support the superintendent and try to increase his authority to the last degree, so that when he says go it means go, and when he says do this,

it means do that. So when the manager takes an inventory of his safety he will find that the division superintendent is the Johnnie on the spot. On most divisions I believe that most superintendents are interested in this subject, deeply interested in it, and there is no question about devising ways and means to see that they are interested. And if we can get a permanent method instituted whereby the general manager and all other executive officials are assured that the superintendent is vitally interested, and not only vitally interested but taking every step that is within his power to make operation safe, I think the result in safety will be of a very much more permanent character than can be obtained in any other way. I thank you. (Applause.)

MR. H. J. BELL (Chicago & Northwestern): Mr. Chairman, I think, in view of what Mr. Kyle said, that I ought to state that on the Northwestern Railway we try in every way that we can to add to the importance of the work of the safety committee. We try to get them to understand that the safety committee does not consist of the superintendent and the other officials of the division, but that every member of the safety committee is as much a part of the committee as the superintendent. In other words, we try to let those men go into a safety committee meeting, not as agents, conductors, brakemen or superintendents, but as a safety committee. I think we all realize that this whole matter gets down to the proposition of supervision, and I do not believe on any railroad in this

country we have too much supervision. So that therefore the more supervision and inspection we can get on the part of the members of committees, so much more successfully are we going to conduct our safety campaign.

One thing, for instance, that will illustrate that matter is that recently one of our safety committees made the suggestion that when any man on the division was found to do careless or thoughtless things that he should be written a letter by the superintendent or by the safety committee. We put that matter up to the various committees on the road and there was a very great deal of discussion as to how that matter should be handled. In other words, the members of the committee objected to reporting careless practices to the superintendent for fear that the man who was reported would be disciplined. So that they devised the plan of having this notice or letter sent by the Wisconsin Division Safety Committee, for instance; not by the superintendent, not by any member of the committee, but by the committee as a whole. We think that is going to do very good work.

Now in connection with the matter of discipline, I agree with Mr. Carroll decidedly, that except in unusual cases discipline should not be administered when a report of a careless practice is made by a member of the safety committee. In fact, we have said to our men very candidly and repeatedly and right now we have on the press a printed bulletin calling attention to that fact, that the management has expressly agreed that no one will be disciplined the first time that he is reported by a member of the safety committee, it does not make any difference what he does. Now we think with that assurance that we are going to get more reports of careless practices; and certainly we all agree that carelessness is the one thing which today we have got to work hardest to overcome. I want to say, if I may, Mr. Chairman, just one thing about the trespasser matter that I did not have the opportunity to bring out yesterday. I don't know whether you gentlemen all appreciate it or

## WORK

It takes longer to figure out how to get money without working than to get the money working. We work best with good eyes, hands and feet.

not, but the National Association of Railway Commissioners recently took cognizance of the very great importance of the trespasser matter. They appointed a committee which drafted a law, a trespass law, and sent it to the Governor of every state in the country. I do not believe that the law was passed in any state, unfortunately. Notwithstanding that it seems to me that that is a very good stepping-stone for us to use to get legislation of that kind. That law empowers section foremen and station agents to make arrests, not as employees of the railroad company but as deputy sheriffs. In other words, they automatically, the moment they arrested any one, became an employee of the state; so that, as I understand it, that would preclude any possibility of the railway company being charged with false imprisonment or anything of that kind.

You also know that the Interstate Commerce Commission issues figures showing the number of people killed and injured in any way on all the railroads in the country. The New York Central Lines and the Northwestern Railway made an analysis of the personal status of these people and determined that a certain percentage of them were the so-called transients, hoboes, drunks and so forth, a certain percentage children below fourteen years of age and another certain percentage, I think sixty-six per cent, were citizens of the locality in which the accident happened, for the most part wage earners. We got out that information in a circular diagram form, assigning these different percentages to different parts of the diagram. Now we are consolidating that circular with the proposed bill of the National Railway Commissioners in a little card form and we give that as wide distribution as we can; because we know the only way we can stop the trespassing proposition, and thereby the only way we are going to get a law on the subject, is by creating public sentiment, getting the people to appreciate the real importance of that subject. Now as I say, we get those cards out, get as wide distribution as we can. We are now getting out a government postal card covering that same information, which is going to be sent by every employee of the company who sees a child, for instance, walking on the railroad track, playing on the cars, we are going to send that card by United States mail to the parents of that child and ask their co-operation in stopping that kind of business. We recently had electrotpe newspaper plates made of that card

and gave it to a great many newspapers; in fact, the newspapers of all representative really large cities along our line of railroad, without any particular comment, thinking that if we could get the papers to publish that as pure reading matter it would attract more attention than if it was put through in any other way. It is also the plan to have that card of information in an enlarged form placed in every station or building on the line of railroad.

I tell you these things, gentlemen, because I think if we will all do our own fair share of promoting and disseminating information in regard to the trespass matter that we will get farther than we will in any other way, and we will get there very quickly. I thank you. (Applause.)

MR. HOWARD ELLIOTT (San Pedro, Los Angeles & Salt Lake): What our brother locomotive engineer said about Billy Sunday leads me to say that while I am thoroughly in accord with the idea of personal work, we have come to the conclusion that that is not based, the conduct of a safety campaign, on the same lines as a religious revival, but the after effects of it are sometimes worse than though we had no campaign. We have been very careful, extremely careful, on the Salt Lake Road, not to overload our employees with advice and reading matter. We have so far this year issued but five pieces of literature, each one of which was only one page long. If we have any method it is to be brief. One of these was on trespassing, which was copied, I think, about five hundred times in practically every paper from Salt Lake City to San Pedro, California, and many other papers; and I may say that we are indebted to Mr. Dow for two or three sentences in that bulletin regarding the proportion of trespassers who were citizens of the community.

We issued another in regard to auto drivers and grade crossings, and the manager told me he was having ten thousand copies of that printed for issue.

I want to say for the benefit of the meeting that I think it has been our experience and it is my opinion that it is a good deal better to give employees too little, to give the employees less literature, than to overload them. We find the best results come from giving such an amount of literature that they are hungry for more. I want to say on our railroad, where they started out with three in-

### Every Tub—

Every man is the sole proprietor of his own shoes. But he wants to keep on the good side of Safety to be able to wear a pair.

juries per day, that now they have reduced it to one per day, regardless to the time lost.

CHAIRMAN DOW: A few minutes ago I told you about the method of assigning topics to the members of our committees to read papers on and discuss. Mr. Bell brought up the question a few minutes ago of the members of the committees doing their work as committee members and not as a brakeman or conductor or some

other particular employee. Here is the recommendation which we printed in our bulletin from the agent of one of our divisions on the Michigan Central. This is a fireman:

"Safety Committees should not confine their work to their own department but should observe practices and conditions in other departments, because men seeing the same things every day can easily overlook an unsafe condition or practice."

I think the thought there is a very good one. Some of these recommendations are made from the men in the ranks. I will read two or three, because they may give some information that would be of value to you.

An agent on the Michigan Central says: "Member of a safety committee reporting an incorrect condition should state from whom he received the report and person who made the report should be given worthy mention by letter from the Chairman of the Committee, as this would encourage others to make reports."

An engineer on the Michigan Central says:

"To further promote 'Safety First,' I talk to all 'Knockers' and change their ideas, if possible, to those of a 'Booster.' I have found that a knocker is the safety movement's worst enemy and when he is changed to a booster he is one of its best workers."

A conductor on the Big Four says:

"I suggest that in addition to the regular meeting of the Division Safety Committee that frequent meetings be held at terminals, at

which meetings not only members of Committees but other employees and their families be invited to attend. The Chairman of the Local Committee or his assistant should preside at such meetings. This would give every one a chance to speak on the safety subject. The report of such meeting should be read at the next meeting of the Division Safety Committee."

His idea there, is to have a sort of Round Table meeting, such as we are having here, and let all the employees get into it and discuss any topic, any subject which may come to their minds.

A conductor on the Big Four says practically the same thing:

"A short Safety Meeting should be held in all departments every three or four weeks to keep before them the safe way of doing their work. A new employee should be carefully watched and in a reasonable length of time, if found to be of unsafe habits, he should be cautioned before causing injury to himself or others."

The next one is a very good suggestion, it seems to me, and one that I think we will adopt. One of our road foremen of engines says:

"I think it would be a good plan to have the ex-members of our Committees required to make reports of having cautioned other employees against unsafe practices, the same as the present Committee members are doing."

What do we do with our committee members after their term of service has expired? Do we just let them go and take it for granted that they are going to keep on in safety work, keep up their interest, and in other words carry out the work that we put them on that committee and trained them to do, or do we follow it out by having reports from those ex-committee members, keep in touch with them and find out whether they are really following out the work which we trained them to do in the safety line?

One of our master mechanics says:

"We have decided to hold frequent meetings for all men em-

### **Don't Be Too Sure**

You may be able to see through the hole in a grindstone, but you can not tell how soon some careless act may result in an accident.



ployed in this department to discuss the safety movement. We have recently held such meetings at practically all points on this division. These meetings have been very informal and have been presided over either by myself or my assistant and are held either in the round-house foreman's office or right in the shop. At these meetings the foreman has called the men's attention to the manner of doing their work in a safe way and using proper tools and appliances at all times."

MR. L. F. SHEDD (Rock Island Line): In reference to the report compiled and distributed by the Interstate Commerce Commission—I speak of their monthly bulletin—it conveys to me two very instructive subjects handled in the bulletin and with considerable emphasis by that body. I refer to their criticism of the railroads for a lack of supervision—understand, not a lack of supervisors but a lack of supervision—as well as to the indifference of their very high personnel to questions of personal injury and death caused by their roads. In other words, they call it a dereliction on the part of employees. I believe in connection with all the literature that we are getting out, that we should not as the representatives of railroads overlook these two very important features. The Interstate Commerce Commission's reports are about the only ones that I use in any particular talks. I do not do much talking. We have to believe all they say, whether we want to or not. The first paragraph states where it occurred and when it occurred; the second paragraph, if you will note, of the report goes directly as to who is to blame, and they tell us to just refer to the report of 1913, which says that sixty-three per cent of the accidents investigated by them were caused, and of course injuries and death resulting therefrom, from dereliction on the part of employees. In 1914 it had increased to seventy-five per cent.

Gentlemen, they are sounding a warning, as I believe. I do not want to be considered a pessimist but I believe they are telling us something is going to be done pretty soon or there will be a change of heart. And I believe it behooves us as railroad men to seriously consider those two propositions. I believe that the best results in our safety work can be attained if we as safety men will inaugurate, as far as we can, a campaign and try to advance it, through which better supervision will be obtained; not more supervisors, gentlemen,

but better supervision and a closer adherence to the rules. I am not criticising managers or employees, I am talking of the facts presented by the Interstate Commerce Commission.

I have in mind a criticism of the Interstate Commerce Commission of how the methods of several men were considered on a slow piece of track. On that piece of track an accident occurred. The Interstate Commerce Commission, after taking up the report, told the railroad that in sixty days there was but one train on that railroad that could possibly have obeyed the special instructions and gotten over that piece of track. That all goes to the matter of supervision. In conclusion the train-dispatcher was in a position to know whether that was going on. I don't know whether he did or not. Assuming that he did know, he is guilty. If he did not know he is guilty. Gentlemen, I merely mention these as they occur to me. I have not much time to work up literature because the railroad that I have the privilege of representing is not very strong on literature. But those things are the things that go right to the seat of our work. We ought to watch those things as far as we can and not just stop by sending out literature and catching hold of the safety committee, but let us go a little further. Let us drop in the dispatcher's office, you fellows who have an opportunity. Let us look over the train sheets. They will think you are butting in, but let us check out the train sheets.

MR. CARROLL: Are you suggesting now that the safety inspector check out the train sheets?

MR. SHEDD: No, I am only offering a suggestion. I say you fellows who have the opportunity, let us talk to the train dispatcher. In other words, let us get up among those fellows—I doubt if one of them ever attended a safety meeting; I don't think I ever saw one at any meeting. I am not criticising the train dispatchers. Let us go a little further, the employees who handle those train orders, if you want to do it. I am not doing this in a critical way, but just to get it before you. But let us get down and think about those things. There have been some very eminent articles written in connection with violations of the rules of the railroad. I want to tell you that I am a stickler for compliance with the rules. These rules are put in a book—the transportation rules, I speak of now. They are simply the result of a life spent in energy and effort on

### **The Benefit of the Doubt**

**Just because a man doesn't drink is no sign he isn't thirsty, and because a man is injured is no sign he was careless.**

the part of the brightest railroad men the world has ever known; and I feel as though our fellows and you fellows ought not to take those rules in their hands as they have been doing. Mind you, I am taking the report of the Interstate Commerce Commission that they have been doing it. You can get those reports for twenty cents each month. And that august body hammers on those two points, lack of supervision and violation of rules. That is why the report that Mr. Carroll spoke of awhile ago was possible, the lack of supervision on somebody's part, permitting the material to lie around, or there may be a bridge in a condition which the safety movement or the safety committee said it was in. And just briefly all those things come to the point of the improper supervision, lack of supervision. I thank you. (Applause.)

MR. F. T. BOWLER (Pennsylvania Lines East): Mr. Chairman and gentlemen: I do not have access to the literature that the majority of you do have, but I have had considerable experience in a personal way. I am chairman of a safety committee on the Maryland Division; and listening to the gentleman who just took his seat about the violation of rules, he certainly cannot mean the Pennsylvania Railroad. We do not violate rules on the Pennsylvania Railroad. We do not keep men who do violate them. As to the train dispatcher, he has no more authority to violate a rule of the Pennsylvania Railroad than the man who tamps ties. The superintendent himself does not violate them.

Speaking of taking a chance over a slow road and under adverse conditions for making time, I was in the general manager's office one time discussing certain matters and the engineer of one of the divisions said that the train dispatcher had taken him to task for not making time on a certain train in fog, when he didn't consider it safe. He said he had the letter and he asked the man what he could do for him. He said: "Well, I will attend to the train dis-

patcher. Furthermore," he said, "gentlemen, we want it distinctly understood that we don't want train dispatchers to jeopardize our road and our employees and the public for the sake of building a reputation of getting a train over the road on time. We want it understood distinctly that we want to save men;" and, making use of his words, he said: "To hell with the time." That is the kind of men we have to run the Pennsylvania Railroad.

My experience has been that the men of the safety committees, a great many men find fault with safety committees, and the consequence is I make enemies by taking men to task about violating little safety rules; that is, getting off on the wrong side of a train adjoining a track where there are trains going by almost every minute; other cases of getting on engines moving forward towards them; other cases of getting off just before the train stops. All of those things are done daily, and when they are not in sight of some officer or some member of the safety committee they will continue to be done until somebody suffers. And there have been a great many of them that did suffer. We have got men today that have only one hand and no feet from the effect of just such accidents.

Now we want to profit by the experience of others and to get closer to the man himself, to picture to the man what he will do to himself and his family after he has done a little foolhardy trick to get home sooner or get off quicker, or get the train started sooner, or not having the engineer come to a dead stop to get on, and making an invalid of himself and a burden to himself and his family his entire life.

The object of the safety committee was to better the conditions of the company, better the conditions of the men, better the conditions of the facilities, and to keep up at the same time the gratification of the public and the safety of the public. Now I see every day of my life—and I work every day that I am allowed to, and I see in every day of the days that I work; when I have got no work

## **Switchmen, Take Notice!**

**Never attempt to make a coupling or work between cars on the short side of a curve.**

I am not around the railroad; I stay home—I see some little thing that is done wrong. The average railroad man of any experience knows, I think, when he is doing wrong. Now what we want to inculcate in the minds of our employees is that the safety committee is not intended as a vigilance committee, but to get after the little things that cause the loss of a finger, eyesight or arm or leg.

Not long ago I went through the shops—I am going to tell you a little incident that won't take but a very few minutes—where they cut up old boilers and make washers of them; cut them up in strips in a punching machine that works about like that. (Illustrating.) Each one of them is cutting two of the pieces. There is a pair of tongs provided for the men to put that in the shears and cut it off. The man operating it had been instructed time and time again not to do that with his bare fingers, because if he put them in too far he would cut his fingers off. I looked at him for a few minutes and he said, "I make better time." I said, "Which is the best time, to save a few minutes or go all the rest of your life without two or three fingers?" Another man had his thumb cut off after I had been talking to him, because he removed the guard off a saw. I went and talked with him and I said, "How did you lose your thumb?" "Cut it off on that thing." I said, "With the guard on it?" "No, I took it off."

That is the conduct of a great many men in our shops, but we are getting away from that; and I could stand here and talk to you a whole hour on what I have seen, but it would take too much time, and it has all been covered by the gentlemen who talked before me.

Now, speaking of grade crossings, we have only one way of getting rid of grade crossing accidents, and that is you people who are privileged to vote for our national legislators get them to make a law accompanied by a penalty to everybody trespassing and who does not stop, look and listen. The Ford automobile man said yesterday, if I understood him, that he wanted the railroad to slow down at each crossing so that the automobiles could get by. Now when you weigh that and put it into actual service, on a run of two hundred and twenty-four miles on a fast passenger train I believe there are about two hundred grade crossings.

MR. CARROLL: Seven hundred and eighty.

-MR. BOWLER: Well, I say two hundred important ones, where there are a whole lot of people go by every day. That run is made in two hours and forty-seven minutes, with long stops. If you would slow down sufficiently to justify the automobile men to pass over each one of these crossings it would take nineteen hours to make that trip, and they would not be satisfied, the railroad would not be satisfied and there would not be any money in conducting a railroad of that caliber. And the automobile man in that day's travel, or in that four hours' travel, he might cross one single railroad, and I doubt if he would cross more than two. I was only last Saturday going over on train 70, running about forty-five miles an hour, had slowed down a little. Just there was a track tank and a very short distance from the track tank there was a grade crossing, infrequently used. It was not an important crossing. A man came up in a buggy, an old man seventy years of age. The bank is cut away and the bushes, so that the road will be plainly seen from a long distance each side. There were two painters painting at the station. This man came up and stopped. I blew the whistle for the crossing. As I say, he came up and stopped. About the time I blew the whistle he started to move. The painters tried to stop him and he paid no attention to them. He said: "Attend to your own business;" and he drove right up on the track ahead of me, and the horse went across and the buggy and he went to eternal destruction. Now that is one case. A few days prior to that—we have a place where four tracks merge, and in starting I am just as likely to run on No. 1 as I am No. 2 with this train. I went down No. 2 track. Sitting in the middle of the track, between two grade crossings, in between the rails, no further than from here across the street, was a little baby girl, under four years of age, playing in the middle of the track, and could hardly get over the rail. When I saw her sitting there it put me in a quandary. I didn't know what to do. But it was out of my way. She got up and turned around and smiled back to us and did little things like that. (Illustrating.) The next telegraph office was only a hundred yards from there and I stopped and notified the superintendent that such was the case. Now I would just as likely have been running in No. 1 track as No. 2. All the power under heaven would never have saved me from going over that little innocent baby, playing where she thought she had a perfect right to.

**"Trust to Luck"**

Employees must not trust to the care exercised by another when their own safety is involved. Be sure of your own safety.

Now, my friends, brothers, railroad people and gentlemen, what we want is law. That baby could not be punished by law, but the parents or the people who had that baby under control should be imprisoned for negligence. If we do anything wrong the first thing we hear about is contributory negligence on the part of the man who was handling the train. Now we will put the contributory negligence on the part of the parents or mother who was

handling the baby or who drove the buggy.

Now I want to say just a little more and that is this: we speak of disciplining the men who are making a safety committee report. I want it understood as my views that it would be the worst thing that ever was imposed on the safety committee. We do not want employees to think that safety committees are to get them into trouble, but to keep them out; and the hearty co-operation of all the employees with the safety committee and the hearty co-operation between the safety committee and the employees. We are trying to have a more and more hearty co-operation of the members of the safety committee itself and the men in general and governing officials. I thank you. (Applause.)

MR. F. H. HANSEN (New York Central): I want to say that I work for the New York Central Railroad Company and I believe it is on a par with the Pennsylvania Railroad Company. (Laughter.) And I am satisfied—in fact, I know—that there are rules that are violated on the New York Central Railroad, not because the officials do not do everything they can to have these rules lived up to, and I am satisfied that the same conditions, taking the speaker's own argument, are in effect on the Pennsylvania. For example, he called attention to the case of where a man had lost his thumb by operating a saw. He stated how this man was asked how he came to do this. He had removed the guard from the saw. I believe every railroad company has instructions out, absolute instruc-

tions, not to use any saws without the guard is in proper condition, and consequently he was violating the rules.

He also made the remark about men jumping off and on the engine while in motion and some of them, most of us all, push drawbars over and so forth. Wasn't this violating the rules of the company? Now, with all due respect to the gentleman who spoke and the railroad he represents, I believe that every railroad in the country has employees who are constantly violating the rules, or we would not begin to have the accidents we are having.

In regard to subject No. 5, I am a strong believer in sub-committees. As the chairman spoke sometime ago about the yardmaster inaugurating sub-committees and holding meetings, this same subject was sent out by our chairman and brought up a few months ago by one of our superintendents. We were asked what we would suggest to advance the safety movement. I made a suggestion at that meeting that we did not go down into the rank and file sufficiently, or, in other words, did not have sufficient representation from the shop and tracks and so forth on these committees. He suggested at that time, at the close of the meeting, that before our next meeting was called, which would be in sixty days, that we try that matter out. As a result I visited some of our shop points in the car department with which I am connected, called the various foremen and shop inspectors, piece work inspectors and others into the meeting, gave them a talk on the same line as our superintendent had given us a talk, tried to have them understand the importance of calling all the men's attention to the safety movement, and when they found some one who was violating the safety instructions or following unsafe practices that they should not go up to him and commence damning the man and tell him if he didn't quit this, that or the other he would be dismissed. but to go up and talk to them and show them what the result might be, who would be the one who would have to suffer if they lost a limb or died.

## **Moving Cars**

**Be sure to warn teamsters and others working in or about cars before coupling to moving cars. Do not allow men in moving cars.**



These foremen in our large shops at Cleveland, I had some seventeen or eighteen of them at that meeting—these foremen went back and selected sub-foremen out of their respective departments and employees in accordance with the number of men employed under them. They had the same kind of meetings, gave their men the same kind of instructions, and within the next thirty or sixty days, before our next division meeting was held, these employees all reported in to their foremen. Their foremen in turn reported to the general foreman and it finally came to our office; and when our report went to the superintendent's office at the next meeting, in turn they were forwarded, the majority of them, to the General Safety Agent. After trying this out for sixty days, I asked at a meeting a few days before the division meeting was held, what each one of them thought of that movement; and to a man they thought, from the results and change in the spirit of the men they had talked to, it was a very good thing. One of the committee men said a few days after having attended a meeting, he noticed a man going across the tracks to get a pail of water. The cars were about four feet apart in one case and when he went across with his pail and when he came back he went through again. He could have gone two car lengths further and got a clear track. This committee man went over and called the man's attention to the danger he was in, passing between two cars instead of going around the end of the train. He said at first the man went on as though he didn't understand him. But he motioned in passing through there the cars might have come together by cars being thrown on the track and he said he had better go around the other way. Inside of a couple hours after that the man picked up his pail and started after another bucket of water, and he noticed that he went around the end of the train. When he came back he did the same thing.

Another instance at the Cleveland passenger station, I was standing there waiting to take the train one morning and a man that had been in our employ twenty-five or twenty-six years, possibly longer, was instructed to make a cut between the smoker and a coach, as they wanted to put another car in the train. The cut was made and this man didn't see me standing there among the other passengers and employees. As soon as that cut was made the engine with the baggage car and smoker started to pull away to pick up this other coach. As soon as these cars had parted possibly two

feet this man stepped through from one side to the other, went to step through. As he did so the switch engine from behind, which was also switching on the rear end of the train, threw a car across on the track and struck these cars. Every one let a yell out, including myself, and the man just barely jumped out in time. He turned around and smiled. And this was the next day after we had the meeting in the superintendent's office that I have spoken of. A few days after that we had our shop meeting and I instructed our men to have this particular man attend this meeting. I mentioned what I had seen a morning or two before that. I noticed this man sitting there; I didn't mention any names because the man was getting fidgety; he knew I was referring to him, although he didn't see me. I asked him in the presence of the rest of the employees whether he realized the danger he was in, what might be the results. He candidly said he had done that hundreds of times before, possibly, but never had been caught and never thought really what the danger was. But he said to me, "From this time on I will guarantee that you or no one else will see me taking that kind of a chance. It never was explained to me what the result might have been." Now I turned around and put him on as a member of this committee. He is serving on that committee today as near as I know. The foremen of these sub-committees have the privilege and power of changing them every two or three months, so that some new members are coming on all the time, and we believe that that is a move in the right direction.

CHAIRMAN DOW: There is a gentleman here who has been passing in and out of this meeting and every time I have had a glance of him I have been busy and every time I would turn around I would see his coat tails going out the door. I have caught him here now and I want to ask the President of the Philadelphia Local Council to say a few words to the Railroad Section, Dr. F. B. Patterson.

DR. F. D. PATTERSON: Mr. Chairman and gentlemen of the Railroad Section: It is a privilege to me to have the opportunity of being here this morning to make a few remarks to the Railroad Section upon several subjects which are very, very close to my heart at this time. I have listened with keen interest to what you men have said upon the subject of getting laws upon our statute books

## INDIFFERENCE

**Indifference to the safety of others may place your own life, or that of a member of your family in danger.**

Federal Government; but what we need and what you men can and will give us is the education of the general public so that every man, woman and child living in this great industrial commonwealth, or any other commonwealth that makes up this Union, will know in his heart and know in his mind and never forget that the shortcut of trespassing upon the tracks of any railroad, be it steam or electric, may be a shortcut, not to their place of business, to their school or wherever they are going, but it is a shortcut either to the morgue or the hospital.

Education, which has been so ably carried on by your efficient and genial Chairman, Mr. Dow, along his lines, is to my mind the keystone in the arch that is going to carry us across the railroad tracks at the crossings in safety.

I have the honor to serve—and it is always an honor to be associated in any way at all with that dean of the safety movement, whom I respect, admire and love, Ralph C. Richards, as a member of a committee of this National Council. We have a committee, and some of you gentlemen may not have been here at the time that I had the honor of getting up and making a report of that committee, which is known as the Universal Danger Sign Committee; and it is going to be our aim, our object, to try step by step to reach the goal when we may have a universal danger sign, which by its color or colors and by its shape, is going to say to every man, woman and child, no matter what language they speak, that "Here is Danger." On behalf of that committee I want to get the help, and I need it,

to make trespassing, I hope, a felony. But I want to say to you men that no law that goes upon the statute books, be it one of the states of this Union or passed by act of Congress, is going to be of the slightest value at all unless you take and put behind that law an educated public sentiment that is going to have that law enforced. What we want in America, to my mind, is not more laws to clutter up the already overfilled statute books of the various states and the

gentlemen, of every one of you men in the railroad game to try to show us what is the light. We will send you from time to time for you to try out and experiment with, samples of our signs, and we want you to frankly criticize them as you may find that they work out in actual practice.

In closing, if the Railroad Section of this National Safety Council will, for the sake of the men who drive automobiles upon the highways of our land, adopt standards and put out upon every railroad crossing two things: in the first place, a sign five hundred feet distant from that crossing, so that the man at the wheel of that automobile may know he is coming on a railroad; and a second sign right at the railroad itself, visible day and night; I want to say that you will do a work which will get the thanks and which will have as its reward the thousands and thousands of lives that are needlessly sacrificed upon our highways today. (Applause.)

## **Safety Habit**

**It is better to lose  
a minute in avoiding  
an accident than a  
month in nursing an  
injury. GET THE  
SAFETY HABIT.**

MR. E. R. SCOVILLE (Baltimore & Ohio): Mr. Chairman and gentlemen: I will not take up much of your time, but there are a few things here I thought might interest you. On the Baltimore & Ohio Railroad we conduct a safety campaign very similar to that as it is conducted on the New York Central Lines, except that our rotating committeemen are appointed for a period of three months instead of six; that being so with an idea of getting more men on the committees to understand the work, consequently we thought more men would be interested in the safety work.

Our divisional safety committee meetings are scheduled in a manner which permits a member of the General Safety Committee to visit each meeting. There are twenty divisions and we print a schedule which carries the dates of the meetings over a period of six months. And I have had the pleasure of visiting every Division Safety Committee held on the Baltimore and Ohio Railroad in the last twenty months.

Our blanks for recording the minutes of the meetings of the safety committees on the various divisions are the same as those on the New York Central, except that they are of letterhead size, which admits of a more permanent or better method of binding. So that the members of committees retiring from the Division Committee may understand what has been done with the items which they reported, at the close of each meeting we issue a bulletin which is posted on each bulletin-board, giving the number of the item which was reported, the name of the committeeman reporting it and what was done to correct the item. That is posted for the benefit of all employees. The man who reports the item gets credit for it on that bulletin.

During the last fiscal year on the Baltimore & Ohio Railroad 15,352 items were recorded on the minutes of the meeting. 14,217, or 92.7 per cent of those items were corrected. 581, or 3.7 per cent were dropped after investigation as unwarranted or unnecessary. 554, or 3.6 per cent were still under consideration, that is, open items.

Now regarding the trespass, we have a blank which we use in Ohio, which I think might be extended to other divisions. It is a written trespass notice and reads:

"Mr. Blank,

Dear Sir: You are hereby notified to discontinue walking or loitering upon the premises of the Baltimore & Ohio Railroad, and your attention is hereby called to Section 6882 of the Laws of the State of Ohio, passed May 10, 1884. A copy of said law is quoted below."

That has done us some considerable good. People whom we warn to refrain from trespassing upon the track, when they were served with a written notice, a great many of them would discontinue the practice. We were unable to get them to do it in any other way.

We have also been taking the numbers of automobiles where the driver disregarded the instructions of the crossing watchman and we have been reporting those and writing to the owners of the automobiles. On a second report we gave the name of the driver or the name of the owner to the man who issued the license, and that has done some good. We have just issued and distributed to

all of our employees a little pamphlet entitled "First Aid to the Injured," which might be of interest to some of you. In some of our shops we have a number of injuries. We have appointed a committee to pass on those injuries and each day a bulletin is issued in that shop. This is simply: "M. Cotrell, Machinist, injured October 2nd while using reamer, ran his hand inside of same while it was in motion. Same caught finger of his left hand, mashing it badly; this injury probably due to carelessness. Had party been more careful the injury would not have happened, and he should not have put his hand upon the reamer while in motion. This makes the third injury under the supervision of Mr. Wycherly since October 1st." Now that gets Mr. Wycherly busy.

We are getting now to the point where we require the supervisors to pay more attention to the men under them. We are requiring the use of the goggles when the character of the work performed makes it necessary. We have just appointed four inspectors, one inspector on each grand division, that is, under each general superintendent's jurisdiction; and it is the duty of these men to observe unsafe practices as well as unsafe conditions. They will attend each division safety committee meeting and make reports of the unsafe practices that they have noticed in the past month. I think I will not take any more time. (Applause.)

CHAIRMAN DOW: It is now time to adjourn the Railroad Section Meeting, and immediately a meeting of the Public Safety Section is to take place in this room. There is just one point I want to mention before you leave, and that is in regard to the safety bulletins or other interesting literature which you men get out on your various roads. The National Safety Council has a weekly service distribution of safety literature, and in order that the railroad members may get the full benefit of the service it is earnestly hoped that those of you who have gotten out bulletins which are instructive and interesting will send a sample of the same either to myself or to the Secretary of the National Safety Council in Chicago. They will then be passed upon by the Bulletin Committee and if that committee decides to use the same it will be sent out to all the railroad members. In order to make this service profitable we should all remember to send in samples of literature that we get out that may be interesting to others.

In closing the Railroad Sectional Meeting I want to personally thank every one of you for the great interest you have taken in this meeting, because it is the coöperation of every one of you that has made this meeting so interesting and instructive to all of us. I thank you all for coming here. Some representatives have come from great distances. We have Mr. Elliott, for instance, from Los Angeles, California; and Mr. Kyle from away down on the Mexican border. And it indicates the great interest that you men are personally taking in this work of the conservation of human life, that has brought you on your long trip to this meeting. I thank you all heartily for the coöperation you have given us in making this Railroad Section a success. (Applause.)

(On motion the meeting adjourned.)

*Kindness Brings Happiness.  
Nothing You Invest in  
Will Bring Greater Dividends*

## **National Safety Council**

### **Safeguarding of Machinery Section**

**Philadelphia, Pa.**

**October 20, 1915**

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**ROBERT J. YOUNG, Chairman**

**Manager, Department of Safety and Relief, Illinois Steel Company**

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**C**HAIRMAN ROBERT J. YOUNG, Manager Department of Safety and Relief, Illinois Steel Company, Chairman of the Safeguarding of Machinery Section, called the meeting to order at 2 o'clock Wednesday, October 20.

A splendid program had been outlined and assigned to technical experts of nation-wide reputation and the interest manifested in the subject, as the work of the Section is developed, bids fair to make this department of the National Safety Council one of first importance and value.

Informal debate was had on the objects and scope of the Section, after which Chairman Young introduced Mr. J. M. Woltz of the Youngstown Sheet and Tube Company as the first speaker. Mr. Woltz used many illustrations to emphasize the important points in his paper. He was given an enthusiastic reception.



## SAFEGUARDING MACHINES AND TOOLS.

JAMES M. WOLTZ, SAFETY DIRECTOR, THE YOUNGSTOWN SHEET  
— AND TUBE COMPANY.

Mr. Chairman and Members of the National Safety Council: The wide range of the subject assigned to this paper will permit of only a hasty review of some points that appear to the speaker to have application to machinery and tools in general that are in common use in many of our plants and shops.

The safeguarding of machines and tools, like many other of the problems in mechanics, resolves itself into the use to which they are to be placed and the purpose for which designed. Fundamentally a guard is placed to prevent accidents, practically it may also be used to prevent wear and tear on gears, bearings, wheels and other material.

Many lines of machines have now been standardized by various manufacturers, so that there is very little difference in their general design, and guards have been made to conform to the requirements of national and state laws. In the latest models there is very little complaint of lack of proper safeguards, so that I take it we are more deeply interested just now in the particular kind of guard that has been found to give the best service when used on the older installations, that were made before the necessity of thorough safeguarding was realized, or if it was recognized before it had been demonstrated that the proper place to safeguard a machine or tool was in the plant where it was designed and made.

## GUARDS MUST BE SUBSTANTIAL.

A visit in any modern plant of today will show conclusively that there was a crying need for the safety engineer. His work can be seen on all sides and the variety of guards and material from which they are made is still further proof of a condition that has been recognized by all—the need of a definite set of standards as a guide for this class of work.

Some engineers prefer guards made of cast iron, some punched plate, some sheet metal, others wood, mesh or expanded metal. All of these materials have their advocates, and likewise it is found that each has been condemned when used for certain specific purposes.

Guard railings of all heights, weights and material may be seen side by side in the same plant.

We have illustrations of a wide variety of guards used on machinery in a great diversity of manufacturing effort. As can be seen, all of the material mentioned has been used in the various guards shown and it is also noticeable that in many instances guards on machines, to accomplish the same results, are of many different materials.

We have seen machinery that was considered as being sufficiently guarded by the operating department, where only a band of metal extended around the exposed wheels, where the gears meshed there was still ample space for a person to get caught and injured or for material to be drawn into the gears.

It is hardly necessary to state that this inefficient method of guarding is not approved by those who have had practical experience in the work, but perhaps the most surprising part is that very recently a new machine was seen that had just been received from the makers with two such guards on it.

Some safety engineers oppose the use of solid cast or sheet metal guards on the theory that all the working parts of machines should be so guarded as to permit an inspection of the parts without removing the guard, or at least to render inspection easy and rapid.

Others oppose the use of punched, mesh, or expanded metal guards, because in their opinion such guards permit dirt, dust, scale, and fine particles of abrasive material and other matter reaching working parts. The claim is made that this results in a more rapid wearing of parts and frequently the breaking of gears, that might be prevented by the use of a guard of another material.

It has been found in practical experience that heavy cast guards used on roll tables and other heavy machinery have in many instances the disadvantage of requiring a crane to handle them. The crane may be required at another point at the same time also, and this of course results in more or less delay in repair work, when the factor of haste in getting the plant in operation is highly important. A sheet metal guard would in most instances do quite as well as the cast guard, and the weight of the sheet guard would permit its being removed without the use of a crane. Whether a gear runs in oil, and the amount of lubricant used, is also a controlling factor in guarding. In other words, in designing guards

## To Know

The efficiency of a department find out how the employes like the boss.

and selecting the material from which they are made, it is well to weigh carefully the place they are to be used and the work they are to perform.

### GUARDS ON MACHINE TOOLS.

The safeguarding of machine tools has recently received a great deal of attention and oftentimes the proper designing of guards that are practicable in operation have presented more difficult problems than would at first thought be conceded.

There are various chip guards on the market that do the work for which they are designed very acceptably. Punch presses, presses, shears, shapers, and this class of machinery and the methods of handling material used in them are now so guarded that there is really very little cause for injury to workmen on this class of machinery.

Some of the guards are so arranged that the machine can be tripped only when both hands are removed from danger, others have a rod that brushes the fingers or hands aside or prevents them being close enough to be caught. Other machines are so arranged that the power is cut off if there is any obstruction in front or on top of material to be worked, that is, sufficiently near to be caught by descending machinery.

Various methods have been worked out of handling material that is placed under presses, to avoid the mutilation of hands of operators. Sticks, brushes, vacuum cups, bent wire, sliding bed, and other methods have all proven their value according to the work to be done.

### ACCIDENT TO THE HANDS.

The unguarded hand tool is a fruitful cause of accident and an examination of our accident statistics will disclose that the largest single item of injuries happens to the hands. It is true that many of these accidents will be found charged to the handling of material by hand, but we are satisfied from our own experiences that foremen are not always as careful as they should be in their reports

and many of these accidents should be charged to unguarded hand tools. It would appear to be well worth while to devote more thought to this feature of safeguarding.

Barrow handles can be easily and cheaply supplied with hand guards, either of wood or metal. Burs on bars and drills are easily seen and the blacksmith can soon provide against accident from this cause if the foremen will only watch these matters a little. Battered hammers and sledges with rounded striking surfaces are common sources of accidents that can be easily eliminated by close inspection.

Wrenches that have spread or broken jaws are a fruitful source of injury. Air hammers and drills are tools that need at least daily inspection for defects.

The proper placing and distribution of light is a matter that has only recently been given the attention it deserves as a means of accident elimination.

#### FAULTY MACHINES IN SCHOOLS.

The need of teaching safeguarding and safe work practices by practical demonstration in our technical and high school is one phase of this subject that has recently been brought home to us. An inspection of a high school foundry and machine shop showed that young students were given instructions on unsafe and inadequately guarded machines. That unsafe practices were permitted, and thus by inference, taught in foundry work.

Surely if we hope to make the progress in the future we should, the boy students of today, who are to go into our factories and shops tomorrow as officials or workmen, should be taught the danger of their work, the best and safest practices, the need of tool and machine protection, and the great importance of immediate and competent medical attention being given even the slightest injuries. All of which, in our opinion, are quite as necessary to make a good workman as the technical mechanical instruction.

### **Thoughtlessness**

Has come home to  
some of us and very  
nearly home to most  
of us.

I am indebted to the following companies for material used to illustrate this talk: The B. B. Goodrich Rubber Company, Akron, Ohio; the Macey Company, Grand Rapids, Mich.; the Westinghouse Electric and Manufacturing Company of East Pittsburgh, Pa.; the Norton Company, Worcester, Mass.; the United Shoe Machinery Company, Boston, Mass.; the Republic Iron and Steel Company, Youngstown, Ohio; the Milwaukee Gas and Coke Company, Milwaukee, Wis.; Crown Willamette Paper Company, West Lynn, Ore.; the Eastman Kodak Company of Rochester, N. Y.; the Brown & Sharpe Company, Providence, R. I.; the Youngstown Sheet and Tube Company, Youngstown, Ohio; the Pullman Company, Pullman, Ill.; Pickands, Mather & Co., Cleveland, Ohio; American Locomotive Company, New York; Crocker-Wheeler Company, Ampers, N. J., and the Willamette Pulp and Paper Company, West Lynn, Ore. (Applause.)

CHAIRMAN: The next speaker will be Mr. Harry Guilbert, Chief Safety Inspector, American Car and Foundry Company, Chicago, Ill.

#### CONSTRUCTION OF AND COST OF MAKING SAFEGUARDS IN SHOPS.

MR. HARRY GUILBERT, CHIEF SAFETY INSPECTOR, AMERICAN CAR AND FOUNDRY COMPANY, CHICAGO.

Mr. Chairman and Members of the National Safety Council: We have installed approximately 20,000 metal guards (solid and screen) upon the machines in our various shops at a cost of \$300,000. This does not include steel platforms and ladders.

After trying a number of different methods, experience has taught us that the following one is not only the most practicable but the most economical also: First, purchase the following machines for manufacturing the guards:

##### NECESSARY EQUIPMENT.

High speed drill that will drill up to one-half inch hole, \$90.00.

Hand or power driven punch that will punch holes through three-sixteen inch and three-eighth inch plate; belt drive, \$200.00.

Hand or power driven shear—alligator or regular type—that will cut ends of plate 18-inches wide. Alligator, if selected, to have 10-inch throat; belt drive, \$250.00.

Rolling machine for sheet iron; for three-eighth inch plate, 24 inches wide, belt drive, \$400.00.

Heavy iron block for forming on, 2 cents per pound.

Machine with motive power of some kind to drive rivets, or small pneumatic riveter, \$175.00.

Total, \$1,115.00.

Second, pick out a corner in one of the departments (centrally located, if possible) for your "shop." If you cannot find a space, build a shed (corrugated building will do) and install a motor and shafting to drive the machines enumerated above. This is a wonderful improvement over the old and inefficient method of making guards in different departments in some out-of-the-way corners, where it is impossible to have the men under your personal supervision all the time. By placing the safety inspector in charge of the safety gang he can see that the appropriation is spent on safety *only*.

PERFECTING THE SYSTEM.

Reason for the system outlined above:

Hand-made guards cost twice as much as machine-made ones.

Saving of time and labor.

Without the machines referred to above, guards will have to be cut out, punched, etc., on machines located in different departments that are used for output. As these machines are in use almost constantly, it is obvious that output will not be delayed to accommodate safety. This means that the safety gang will either have to work overtime (time and a half) or sit-down and wait for a chance to get the machine (here's where your cost multiplies); and in the meantime somebody may be injured on an unguarded machine. By the way, if the shop is so busy that the machines cannot be shut down to have guards installed, do this work during the noon hour, night, or Sunday. Don't make guards and lay them to one side; they will deteriorate and will possibly get damaged also.

Now, let us suppose that the machines for making the guards have been installed. The number of men required to manufacture the guards depends, of course, upon the size of the shop.

Split the men into gangs, pay day rate and so much extra per man to the gang that turns out the greatest number of guards during the week. This will foster a spirit of competition among the differ-

## USELESS

Rules and regulations, Safety devices, guards and signs are useless unless every man is careful.

ent gangs and the work of manufacturing and installing guards will proceed with the greatest rapidity.

Our Berwick shop had ten gangs, composed of four men each, engaged in safety work for a year. The amount of work accomplished was amazing, \$40,000 being expended in a very short time.

### ECONOMY IN CONSTRUCTION.

Making blue prints for guards is both costly and unnecessary. Pencil sketches will answer the purpose

admirably. By following the method outlined above we have effected a saving of 50 per cent and more.

A lot of money can be saved by conducting the work of safeguarding along systematic lines. For instance, suppose we want to safeguard a large shop where steel cars are manufactured. In a shop of this kind there are hundreds of machines such as shears, punches (horizontal and vertical) deep gap riveters, bull riveters, etc. First guard the punches, then the shears and so on; jumping from one machine to another means that the dies, etc., on the machines for making safeguards have to be changed more frequently; this means a loss of time, and time means money.

Guard gears, first,  
Guard fly wheels, second,  
Guard belts, last.

Overhead safeguarding, such as crane gears, platforms, etc., should be taken care of after the floor work is completed, for the reason that where a dangerous condition overhead is a menace to one or two men, an unguarded gear on the ground floor is a menace to hundreds of workmen.

### HINTS ON SAFEGUARDING.

Where angle iron is used to attach the side of guard to the face, cut angle into pieces two inches long and place at intervals inside the guard; this will cause a large saving in material and will do away with blacksmith's work.

Small guards can be welded; this makes a neat job and reduces cost. In shops where heavy material is constantly being moved around and piled on floor and where there is a great deal of vibration, material one-eighth inch thick should be used in making guards, one-quarter inch thick on the floor line, and they should be securely fastened to the frame of the machines with heavy, substantial brackets one-quarter by one inch. By doing this, the guards will last

as long as the machines and your repair bill will be reduced to the minimum. Our Detroit shop has some splendid examples of substantial safeguards. In a number of instances fly wheels have exploded, but the broken pieces never got out of the guard. A plate on the fly wheel spokes does not constitute a safeguard.

In manufacturing guards do not neglect to leave sufficient clearance between guard and gears. Frequently a gear tooth will break, fall into bottom of guard and if there is no clearance the gears will pick up the broken piece, with the result that the gears will be stripped. This not only means a new gear and delay; it means a black eye for safety.

#### GEARS, BELTS AND FLY WHEELS.

Material used in the manufacture of safeguards:

For Gears—Solid plate with screen insert where gear engages pinion. By doing this, condition of gears can be seen at a glance. Some people prefer an all-screen guard; this is a mistake, particularly in a foundry where dirt and grit shorten the life of the gears. By using a solid guard, the life of the gears can be prolonged indefinitely. An all-screen guard might be O. K. in a box factory but not in a shop where heavy material is being handled and where there is constant vibration. Use angle iron lugs to fasten sections of guards together.

Belts (high speed)—Heavy screen with angle iron frame. Door in guard to be hinged at top, not at side or bottom.

### It Costs

The railroads of the  
United States \$57,-  
000,000 a year as a  
result of accidents.



Fly Wheels on Punches, Shears, etc.—Solid, substantial guards that will hold pieces of wheel in the event of same breaking. Small door for making inspection. A big saving can be effected by using pieces of scrap angle iron, plate, etc., in making guards.

#### WOOD WORKING MACHINERY.

Planers—Substantial screen with angle iron frame. Guards on side belts should consist of a number of doors making access to belts easy. Should a broken side belt strike a man on head, it will fracture his skull. Solid guards on gears.

Boring Machine—Screen for belts and on bit; solid guard on bit will choke up with shavings. Automatic guard over end of bit.

Gainer—Screen for belts. Substantial plate over heads.

Tenoning Machine—Screen for belts. Heavy plate on top and bottom heads. Automatic guard (made of plate) on third or coping head.

Swing Saws—Screen for belts. Automatic (plate) over saw.

Automatic—Double, screen for belts.

End Cross-Cut Saw—Heavy plate on saw.

Overhead Horizontal Belts—Ladder construction with substantial supports.

Band Saws—Screen guards for top and lower heads. Angle iron over return portion of blade. Light iron guard over working portion of blade. (Applause.)

CHAIRMAN: The next paper will be by Mr. E. B. Tolsted, Deputy Engineer, Independence Inspection Bureau of Philadelphia. I am sure his address will be very interesting. Mr. Tolsted.

#### SAFEGUARDS FOR ABRASIVE MACHINERY.

E. B. TOLSTED, INDEPENDENCE INSPECTION BUREAU,  
PHILADELPHIA, PA.

Mr. Chairman and Members of the National Safety Council: There are certain machines which the safety engineer regrets to recommend safeguards for. His reason is not that the machines do not need protection, but rather that, no matter what protection is put on, it is likely to prove unsatisfactory for certain kinds of work. Among the machines included are the punch press, the circular saw,

and the grinding wheel. Fortunately, grinding-wheel protection is not so difficult as the protection of other machines.

A practical safety engineer hesitates to recommend a device which needs constant adjustment or attention. Most grinding-wheel guards need constant watching to see that they are properly adjusted. Where wheels may be worn down to a point where they are ready to be discarded, frequent adjustment of the guards becomes necessary. With this in mind, our engineer may well have misgivings as to the outcome of his recommendations when such equipment is to be provided. However, a sufficient number of practical installations are in use to justify the recommendation of these devices for most wheels.

Safety in grinding work includes much more than the provision of guards. The purchasing agent obtaining the grinding wheel frame can be of great assistance. He has a number of things to consider. He should learn what kind of work is to be done upon the wheel, the sizes of wheels which are to be used, and the probable location of the equipment. The frame should be sufficiently heavy and constructed so that vibration and loosening of parts will be reduced to a minimum. Provision should be made in the frame so that rests may be used with the wheels and so that they may be adjusted close to the wheels at all times. Where possible an enclosure for the belt should be purchased with the frame. Sometimes, however, it is more convenient to provide the belt enclosure after the frame is purchased than to purchase one which can be adjusted to any position. However, where the belt enclosure is not purchased with the machine, the design of frame and bearings should be such that an enclosure can conveniently be put in place. It is common practice with some organizations to enclose the belts down to the pulleys, and because it is difficult to enclose the pulleys they are left unprotected. This does not comply with the requirements of most of the states, and a complete enclosure of belts and pulleys should be arranged for.

#### SIZE OF THE SPINDLE.

Another item of importance for the purchasing agent to bear in mind is the size of the spindle. Large wheels require large spindles, but frequently the safety inspector finds a large wheel on a small spindle. The committee which was appointed by the grinding wheel

## Call Attention

To tools, machines,  
or appliances you  
know to be unsuit-  
able, improper or  
defective.

manufacturers of the country to study safety with respect to grinding wheels has made recommendations in regard to spindle sizes and these should, in all cases, be followed unless state or insurance requirements make larger sizes necessary. The use of too large spindles is better than the use of ones which are too small. The purchasing agent should, where leeway is provided, specify one of a few standard sizes as much as possible rather than have a great variety of

spindle diameters in the shop. This makes it possible to change wheels from spindle to spindle as they wear down, and in this manner to retain much higher average rim speed than would otherwise be possible.

The sizes of bearings should be ample so that they will not have to be replaced frequently, so that vibration may be avoided due to worn bearings, and so that spindles will not heat and cause the wheels to crack.

### FLANGES.

Flanges should be of as large diameter as the work at hand will permit. The recommendations of some of the states are that flange diameters be within 4" of the wheel diameters where possible, and the requirements of some departments are that the flanges be at least one-third the wheel diameters. Large diameter flanges are desirable so that side pressure, blows, etc., will be taken up by them rather than by the wheels. The flanges should be identical in size and in design for each wheel to insure equal and opposite pressures on the sides of the wheel. Flanges should be dished or relieved, bearing on wheels only near the circumferences of the flange. A 10" flange, according to some of the state regulations, should have a relief approximately seven-tenths of its diameter, smaller flanges a relief of about the same proportion, but larger flanges may have relief slightly greater in proportion to the flange diameter. The depth of relief should never be less than  $\frac{1}{8}$ ", and for wheels over 10" a depth of relief of  $\frac{1}{8}$ " is recommended.

Flanges should be of steel or other strong material so that they may not be bent or broken easily. The inner flange should be pressed or keyed on to the spindle so that the flange of the wheel will not slip on the spindle.

With these points taken care of, the operating department can usually, without great difficulty, provide such additional equipment as is necessary to make a grinding wheel and frame moderately safe.

## **Seven Years**

**Of dogged fighting  
by one corporation  
has reduced fatal ac-  
cidents per year from  
572 to 301.**

### **CARE AND USE OF WHEELS.**

When obtaining wheels for the machine the purchasing agent has a number of other points to bear in mind. For instance, he should make sure that the wheels are bushed for the spindles upon which they are to be placed, and the manufacturer should be called upon to specify the speed at which he considers each wheel capable of running safely.

When wheels are received from the manufacturer they should then be stored in dry places and should be supported so they cannot fall or be struck by men who may be passing. They should be tested carefully by balancing on the hand and tapping with a hammer. Perfect wheels will ring, whereas broken ones will give a dull sound.

When wheels are given out from the store room they should again be tested by the stock man and they should also be tested by the men receiving them. The stock man should call the attention of the others to the recommended speed and should caution them not to place the wheels upon spindles which revolve too rapidly.

Where cone pulleys are used, the belt will probably have been shifted to the pulley which will give the highest spindle speed previous to wearing down and removing the old wheel. When a new wheel is put on this spindle there is a danger that men will forget to change the belt back to the slower speed pulleys. For this reason an interlocking device is desirable to prevent putting

wheels on when the belt is on the high speed pulley and to prevent changing the belt from the low speed to the high speed pulleys when the wheel is not ground down to the size which will give a safe rim speed. This device consists of a yoke around the belt with the necessary attachment so that a rod will project against the wheel to prevent the undesirable conditions just mentioned.

#### OVER-SPEED IN WHEELS.

Other possibilities of over-speed in wheels come from variable speed motors, from substituting larger wheels than those intended for use, and from thoughtlessly increasing line shaft speed. The variable speed motor control can be interlocked and the substitution of too large wheels can be prevented by placing some permanent obstruction on the wheel frame. Frequently the guard can be designed so that it will limit the size of the wheel. When a guard is not used a pin can be fastened to the frame. On bench machines the frame may be designed so that the wheel will not go onto the spindle on account of interference with the frame. Hardly any practical protection can be devised to prevent increasing the speed of the line shaft, and consequently it should be the duty of the safety engineer to check up rim speed of wheels from time to time.

An easy method for determining the rim speed of a grinding wheel is as follows:

- a—Multiply diameter of wheel in inches by 1.6.
- b—Measure number of revolutions which the wheel makes, in the number of seconds equal to the product obtained above.
- c—Multiply the product by 10. The answer is the rim speed in feet per minute. This answer is about 2% too high. For speeds in the neighborhood of about 5,000 feet per minute, this error is about 100 feet per minute.

As an example of the method of using the above take the following:

Grinding wheel 20" in diameter. Multiply by 1.6. Product 32. Measure number of revolutions which wheel makes in 32 seconds. Multiply this by 10. For instance, if the number of revolutions in 32 seconds were 538, the rim speed of the wheel would be about 5,380. To correct for the error, subtract 100 revolutions and the rim speed will be found to be about 5,280 feet per minute. If the

number of 1.57 is used instead of 1.6, the result will be correct without subtraction, but for most of us this makes the problem impossible for mental calculation.

#### GUARDS.

Guards for wheels should, as nearly as possible, be complete enclosures. It is frequently the practice to make guards which leave the shaft ends exposed. In many guards not sufficient portions of the wheels are enclosed, and frequently light construction is used and guards would not hold wheels in case of breakage.

Because of the poor guards which have been provided on wheels from time to time, the insurance company requirements and the state laws have, of necessity, to be made very stringent. Several state regulations now require the construction which is recommended above.

Guards will not be liked if they interfere with the work and consequently they should, wherever possible, be adjustable. Frequently home-made guards are adjustable in a horizontal direction. As the wheel wears down the guard is adjusted back. This, however, makes an unsatisfactory guard, because as the wheel wears down the guard interferes more and more with the work. If the guard is adjusted downward and backward at an angle of  $45^{\circ}$  from the horizontal, or if any one of several other arrangements is used, the guard fits closely to the wheel throughout most of the life of the wheel. The guard which does not fit closely to the wheel at all times is likely to allow portions of the wheel to fly in case of breakage of the wheel. Frequently the matter of improper adjustment has been of sufficient importance to have caused guards to be discarded.

The next matter of importance is that of exhausters. Where particles of metal and emery get in men's lungs the health of these men is in danger. Wherever possible, this dust should be removed as soon as it is made and the only satisfactory means of doing this is to provide exhaust attachments of sufficient size. This subject is one which is too large to discuss in the time allotted to me. Perhaps it is well to say, however, that no one who has not had experience in this work should undertake to design and install such a system unless he has his drawings passed upon by state authorities, insurance companies, or others who are experienced in this line of work.

## A Photograph

Of a blind man and several pairs of broken goggles on the bulletin board—no more trouble.

### GOGGLES.

With a completely safeguarded equipment there will undoubtedly be accidents from time to time. The matter of plate glass spark guards and goggles has been discussed following the reading of the last paper. Accident from sparks can be reduced by the use of either of these devices, but generally speaking, goggles will be found to be the more satisfactory. When we teach the men that they

must use bubble fountains in preference to the common drinking cups we are encouraging them to consider the possibility of having disease transferred from one man to another. We cannot blame the workmen if they object to wearing glasses which have been worn by other men and which have not been disinfected.

Wheels should be kept as nearly true as possible. This reduces the danger of work being knocked out of the men's hands and it avoids some of the accidents which are the result of getting work caught between the rest and the wheel. Wheel dressers should be provided and these should have guards so that particles from the dresser or portions of the dresser will not fly and strike the men. Such guards may now be purchased.

Perhaps one of the most important things to consider is the question as to how wheels are used. Side grinding wears grooves in ordinary disc wheels and weakens them and makes the outer portion of the wheel more liable to break off. Even where this is not the case heavy side pressures on wheels may cause them to break. Side grinding should be allowed only on wheels which are specially designed for it.

Finally, the grinding wheel problem, like most others, is one of providing good equipment and then training men to use it. The problem is one for the purchasing agent, the executives and the safety man to pull together on if accidents are to be prevented and money is not to be wasted. (Applause.)

The Chairman introduced Mr. William P. Eales, Safety Engineer,

Travelers' Insurance Company, Philadelphia. Mr. Eales made an excellent address upon "Safeguards for Air Compressors." His address was interesting and instructive and was well received.

**SAFEGUARDS FOR AIR  
COMPRESSORS.**

W. P. EALES, SUPERVISING INSPECTOR, THE TRAVELERS' INSURANCE COMPANY.

Mr. Chairman and Members of the National Safety Council: When your committee assigned me the subject of "Safeguards for Air Compressors" for discussion at this meeting, I examined our records to learn the number, character, frequency, and causes of accidents attributed to this particular kind of equipment. It was apparent at once that serious accidents involving permanent disability exceed in number the trivial and minor accidents, and in this respect our experience is directly opposite to that encountered with steam engines and other generating apparatus. While these serious accidents are rather infrequent they occur with sufficient regularity to merit earnest attention.

The unsatisfactory performance of air compressors, and the hazard to those who operate them, are influenced by several factors and conditions. The main contributing causes are insufficient capacity, improper installation, unfavorable operating conditions, and negligent operation and maintenance.

**EQUIPMENT AND SPEED.**

The equipment must be adequate in size and of proper design to deliver at normal speed the desired air volume and pressure. Any speed in excess of 500 feet of piston travel per minute should not be considered in accepting new installations. If the desired pressure at the point of delivery cannot be maintained without exceeding this speed it is an indication of leaky valves or connections, or it shows that the compressor is too small for the requirements. Another feature that must be considered in connection with crank-and-

**SIGHT**

A dark factory is  
a dangerous factory.  
Let there be light  
and Safety.



flywheel air compressors is the rim speed of the flywheels. Under the most favorable operating conditions the peripheral speed of solid castiron flywheels should not exceed 5,000 feet per minute, and when a wheel is "built up," or composed of parts that are joined together by bolts or in other ways, the maximum allowable speed should be determined with due reference to the construction of the wheel. A light wheel, with flanged joints in the rim, for example, should not be run at a peripheral speed exceeding 3,000 feet per minute. Where the duty of a compressor is subject to frequent and sudden changes the flywheel strain is unusually severe and special allowance should be made in such a case in designing the wheel.

Air compressors should be erected and installed where the air is clean, cool, and free from dust and grit, and the power-room or portion of the plant containing the compressor should be paved or floored so that it may be kept clean and free from dust. This precaution should be taken before the compressor is put in commission. It is not essential that it be located in a detached building, but when it is adjacent to a crusher building, or to a boiler-room or any other department where dust is formed, the compressor-room should be made dust proof.

#### CARE OF COMPRESSORS.

When the compressors run continuously, or when the duty required of them is severe, it is vitally important to provide an adequate and unfailing supply of cooling water for the jacketed cylinders, cylinder heads, and inter-coolers. If the supply of cooling water is limited, or if it is of doubtful quality (containing lime or mud, for example) it will pay at the time of installation to make special arrangements to secure a better supply or to purify the supply that is already at hand. Impure water, and consequent deposits upon the interior cooling surfaces of the water jackets, often leads to overheating and causes difficulty and trouble. All overflow water from the cooling system should be piped in such a manner that it will be plainly visible to the attendant.

Direct-acting or straight-line types of compressors, with Corliss or other positive-motion suction and discharge valves, are best where the operating conditions are unfavorable, and where the skill and proficiency of the operatives are uncertain.

Air compressors have extremely variable loads, as a rule, and it is important that the foundations and fastenings be designed to take

care of the fluctuation and prevent shock and vibration due to sudden stopping and starting when the pressure attains or falls below the normal at which the regulating device is adjusted. Pipe lines should be free from sharp turns and angles and should be arranged and secured so as to avoid excessive pulsation and vibration. Discharge pipes near the compressor should be covered or insulated where exposed or easily accessible to the attendants. Provision should be made for the free expansion and contraction of the piping, because in some air lines the range in temperature is fully as great as in a steam lines. The theoretical temperature of air that has been compressed suddenly and without loss of heat, from atmospheric pressure at 60 degrees Fahrenheit to a gauge pressure of 100 pounds per square inch, is about 480 degrees Fahrenheit, or approximately 150 degrees higher than the temperature of saturated steam at a corresponding pressure. Therefore great vigilance, care, and attention are necessary.

#### TANKS AND VALVES.

Air tanks or receivers should be built of boiler plate of known physical qualities and in accordance with boiler specifications. All openings for threaded pipes and connections should be reinforced, if necessary, to provide full threads. A spring pop safety valve with full-size connection should be attached direct to the tank and set to release at a pressure not exceeding the safe working pressure of the tank, using a safety factor of at least five. Air tanks should be placed so that all their external surfaces can easily be exposed for examination. They should never be put underground nor in other inaccessible places. Manholes should be provided in all tanks that are more than thirty-six inches in diameter, and handholes as a means of access to the interior should be provided in smaller tanks, so that the inspector can examine the interior in all cases. Every tank should also be fitted at its lowest point with a drain pipe, not less than an inch in diameter, to carry off water and oil.

Stop valves in delivery lines should be omitted so far as possible. If stop valves cannot be avoided (which is sometimes the case where there is more than one compressor) they should be of gate or straight-way types. Globe valves should never be used in discharge lines. A spring pop safety valve, of sufficient area to release under an overload of 50 per cent, should be provided between the compressor and the stop valve.

## **We Know**

How hard it is for  
the wife, the mother,  
to make a living for  
her fatherless children.

### **EXPLOSIVE HAZARD.**

Compressed air is properly regarded as a fairly safe power in comparison with steam or electricity, and yet there is an explosive hazard involved that is not very generally appreciated, and to guard against this particular attention must be given to the internal lubrication of the cylinders and to the circulation and temperature of the cooling water. Steam cylinder oil should never be used in air cylinders.

There is an intense dry heat in air cylinders, while in steam cylinders moisture is usually present to some extent. Oil will adhere to a dry surface when it would wash off of a similar surface that is moist or damp, and for this reason a smaller quantity of oil is sufficient in an air-compressor cylinder. A pint of air-cylinder oil should be ample for a twelve-inch cylinder for twenty-four hours' running. It is sometimes difficult to adjust a gravity lubricator to this fineness of feed, and hence for this purpose forced-feed mechanical lubricators are recommended. There is danger in using too much oil in air cylinders. At a pressure of 100 pounds the temperature in an air cylinder often reaches 400 degrees, on account of interruption in the circulation of the cooling water, and owing to the likelihood of exposure to this intense heat the cylinder oil must be of such a nature that it will not volatilize nor form a coating of carbon or burnt oil around the discharge valves and render them inoperative. This condition is encountered in small compressors, the discharge valves of which are actuated by springs only. The carbonized matter in the cylinder oil, liberated by the application of heat and deposited in the air passages and in and around the valves, may be removed quite well by the application of soapsuds or soapy water. Kerosene oil should never be used for this purpose. It becomes necessary in some cases to remove the valve bonnets once a week, to clean out the ports and passages.

In some installations fusible plugs are provided in the bonnets or parts adjacent to the discharge valves to relieve the pressure in

case the temperature reaches 500 degrees—the danger point. This is a wise precaution, and plugs of this kind should be adopted more generally. Self-oilers are advisable for the various external working parts of air compressors. They are efficient and economical.

All flywheels, rods, cranks, yokes, belts, and other moving parts should be effectively guarded. For this purpose an iron or wooden railing, three and one-half feet high, is sufficient, if it is of a permanent and substantial character and placed so that there is a clearance of at least fifteen inches between the railing and the moving part that is to be protected. If a clearance of this width cannot be had, the inclosures should extend to a height of at least six feet, and be filled in with a substantial wire-mesh screen. (Applause.)

CHAIRMAN: The subject of our next paper, "Safety in Crane Chain Practice," will be ably presented by Mr. Earl B. Morgan, Safety Engineer of the Commonwealth Steel Company. Mr. Morgan is a recognized authority on his subject. Mr. Morgan.

### SAFETY IN CRANE CHAIN PRACTICE.

EARL B. MORGAN, SAFETY ENGINEER, COMMONWEALTH STEEL COMPANY, ST. LOUIS, MO.

Mr. Chairman and Members of the National Safety Council: It is indeed amazing to find the scant attention that the subject of the strength of chains has received from investigators in the field of strength of materials. One can readily obtain from most any handbook a table of so-called safe loads, but the peculiar thing about these recommended safe loads is that when put to actual practice the chains are not safe, but fail—and fail frequently—hazarding the lives of the many workmen over whose heads the supported loads are carried back and forth.

The peculiar thing about these chain failures is that the chain,

### After All

"The science of business is the science of service — he profits most who serves best."

after being subjected to a so-called safe load, as specified in handbooks, and safely resisting this loading repeatedly, suddenly fails under a loading seldom equal to and more often far less than the recommended loading. Furthermore, an examination of these sudden "pop" failures reveals that they are seldom due to a bad or burnt weld, or to a section of the link that has been weakened by wear or abrasion, but generally shows that they are due to a so-called crystallized link.

After quite an extended study of failures due to a crystallized link, the writer has concluded that they are due to imposed stresses equal to and in excess of the elastic limit, and in this brief discussion will attempt to show that the crystallized link is undoubtedly due to overloading and cannot be prevented by annealing.

#### — THE ELASTIC LIMIT.

The term crystallization is undoubtedly a misnomer, as all steel and iron are originally crystalline in structure. What really takes place is that the working of the metal beyond the elastic limit simply breaks down the long fibres or granulates them, as it were. It is simply a condition of fatigue. The characteristic hardening or brittleness of the metal in this condition is undoubtedly due to the heat which is set up internally by the slippage of the fibres.

This is certainly most convincing evidence that something is radically wrong with our tables of so-called safe loads, as it is a well established principle in strength of materials that the extreme fibres of a material should infinitely resist imposed stresses within the elastic limit, of course making reasonable allowance for deterioration due to rust and abrasive wear.

What does this mean? It means that if we purchase well-made chains, inspect them regularly for detecting any deterioration due to wear and rough handling, and subject them to proper loading, they should last infinitely. It is also apparent that our problem is not one of remedying the so-called crystallized condition of the metal by annealing, but rather is it a matter of preventing it by subjecting the chain to a proper, safe load.

#### WHAT IS THIS PROPER, SAFE LOAD?

It seems that most of the recommended tables of safe loads have been based upon the ultimate strength of the chain as developed by

test and it is interesting to note that these ultimate strengths are practically the same as can be derived by the empirical formula: "L" equals 1.66 times the area of the section, times the ultimate strength of the material. In this formula it is assumed that there is twice the section available in tension and simply allows the difference for defective welding. Such a basis for safe loads has been erroneously supported by arguing that if a new one-inch chain tests at an ultimate strength of 40,000 it can be used at 10,000 pounds, and therefore have a safety factor of 4. This is an erroneous conclusion as an ultimate strength test of a chain will give a much higher result than the figures derived by designing the link as a structure based upon the permissible extreme fibre stress. This is readily understood when it is shown that the fibre in an open link is subjected to a stress in straight tension, plus one due to the bending moment, this being maximum at the four points of compound curvature.

When a chain is pulled in a tensile test to a rupture point, the failure is usually one in direct tension on the sides of the link, as the sides of the link become straight and the bending stresses are no longer present, as this distortion takes place before the critical maximum point in the bending stresses occur. So it can be seen there are absolutely no grounds for basing the safe working load upon such a test.

#### PERMISSIBLE WORKING STRESS.

The writer is firmly convinced that the proper safe load should be based upon a permissible working stress for the extreme fibre and not on the ultimate breaking strength test of the chain. This necessitates the solution of the maximum extreme fibre stress that is developed in an elliptical shape, which is the usual shape of a chain link. This involves a theory which has received very meager attention in technical works. There seems to have been only one attempt to develop a formula for the fibre stress developed in an elliptical ring based on experiment and good, sound theory. I refer to a thesis on the "Strength of Chain Links" made at the University of Illinois Experimental Station in 1907, in which the following formula has been developed for open links. This formula can be readily derived by applying the theory of flexure in curved shapes.

## All the Time

It is well to observe Safety First even when picking mushrooms.

$$f = \frac{P_2}{0.4d}$$

Where  $f^e = \begin{cases} \text{extreme} \\ \text{fibre stress in tension} \end{cases}$   
 $d$  = diameter of the stock used in link  
 $p$  = load on the chain

Let us now investigate a specific table of safe loads for only a few of the most commonly used sizes of chains, by applying this formula, substituting the values of the loads

for "P" and solving for "f," the extreme fibre stress developed thereby.

In Safety Engineering for August, 1915, and also in a recent "Bulletin on Safe Loads" issued by the National Safety Council, the following safe loads for straight suspension for W. I. handmade short-link chain are recommended. The writer has found by actual experimental tests that these values are on an average of about one-seventh of the ultimate breaking strength, and are, in fact, a trifle lower than the loads imposed in general practice in most plants.

| Size                      | Safe Load<br>Pounds |
|---------------------------|---------------------|
| One-half inch .....       | 2,400               |
| Five-eighths inch .....   | 4,000               |
| Three-quarters inch ..... | 5,500               |
| Seven-eighths inch .....  | 7,500               |
| One inch .....            | 9,500               |

Now it is interesting to note that with these recommended safe loads the following stresses in the extreme fibre are developed by using the formula as cited above:

|                        |                               |
|------------------------|-------------------------------|
| One-half inch.....     | 24,000 pounds per square inch |
| Five-eighths inch....  | 25,600 pounds per square inch |
| Three-quarters inch... | 24,500 pounds per square inch |
| Seven-eighths inch...  | 25,000 pounds per square inch |
| One inch.....          | 23,700 pounds per square inch |

**AVERAGE ULTIMATE TENSILE  
STRENGTH.**

Anyone familiar with the theory of the strength of materials can readily see what this means. It means that the extreme fibre will be stressed up to and in excess of the elastic limit in the case of an iron chain, as the writer has made repeated tensile tests on Norway or Swede iron, which is about as pure as any commercial iron obtainable, and has never developed more than average ultimate tensile strength of 44,000 pounds per square inch, and an average elastic limit (or drop of the beam) of 23,500 pounds per square inch. This shows how such loading as exhibited produces stresses in excess of the elastic limit, notwithstanding the fact that the impact stresses due to mechanical breaking in lowering the hoisted load, which are no doubt very severe under certain conditions, have been neglected. It is evident this magnifies the danger in applying stresses which will destroy the resiliency of the metal. This is, without a doubt, the reason why chain links become brittle and fail. It is also the reason why the average user encountering such difficulties resorts to annealing as a remedy.

There has been much said of late both pro and con concerning the annealing of chains for restoring the metal from the so-called crystallized condition to the original physical properties. No doubt this annealing is a good thing in that it often forestalls failure, not because the metal has been completely restored to its original qualities, but because it has simply been made more tough. The writer has made several experiments on sections of metal taken from crystallized links, trying to find out whether annealing really does completely restore the metal. A series of four tests were made in each of the following cases: A test bar was prepared from a piece of original stock of Norway iron, which was used in making up several chains. Those chains were put in service and subjected to loading in accordance with the tables recommended in handbooks, and after a short time became fatigued and failed. Two test bars

**Italian Proverb**

"A wise man and  
a fool together know  
more than a wise  
man alone."



were prepared from each side of the failed link, one bar being left in the fatigued condition and the other annealed to a temperature of 1500 degrees Fahrenheit. These specimens were tested in a tensile machine with the following results. The figures exhibited are an average of four tests in each case:

| Specimen—                    | Elastic Limit<br>(Drop of beam.) | Ultimate Tensile Strength. | Per Cent Elongation. | Reduction of Area. | Fracture. |
|------------------------------|----------------------------------|----------------------------|----------------------|--------------------|-----------|
| Original stock .....         | 25,600                           | 41,500                     | 48.5                 | 78.4               | Cup       |
| Fatigued (not annealed)..... | 38,700                           | 46,900                     | 29.0                 | 74.6               | Irregular |
| Fatigued (annealed) .....    | 30,000                           | 44,300                     | 47.0                 | 78.3               | ¾ Cup     |

The chemical analysis of the original stock showed: Carbon, trace; phosphorous, .029; sulphur, .006; manganese, trace; silicon, trace.

#### ANNEALING NOT CURE FOR FATIGUE.

A careful examination of the above test data will show that the annealing did not completely restore the original physical qualities of the iron. The writer does not feel that annealing is inadvisable, but is firmly convinced that annealing is not the cure for fatigue. Annealing chains is certainly a good additional safety factor in that it softens the metal and does away with the dangers of a brittle link. But the fact still remains that an annealed chain will undoubtedly fatigue if overloaded, so we are not going to have maximum safety in chain practice by all the proper annealing. What must be done is to revise the present code of so-called safe loads and base them on the rational basis of the permissible extreme fibre stress of the material used, using the same principles of design as are used in all structures, as after all chain links, rings and hooks are only structures designed to resist imposed loading conditions.

It is going to be hard to remedy this overloading of chains, as a big misunderstanding has taken deep hold of the average mechanic and user of chains, and why not? Have not the best handbooks and authorities recommended these loads? To convince an old shop hand that a five-eighths inch iron chain should be only worked to 1,600 pounds in straight tension when he has been using it to about 5,000 pounds is indeed a hard proposition, as he feels it is perfectly safe because the chain has carried the load numerous times without failure.

**SUMMARY.**

In summarizing the writer feels that the following points should be closely observed to procure maximum safe conditions:

1. Decide upon material desired, low carbon O. H. steel or an iron as nearly free from impurities as possible. A pure iron, I believe, is preferable to steel, as it makes a better weld than steel, and also an iron link will stretch out to a lock more easily if overloaded, which serves as a telltale for inspection.

2. Prepare a rigid set of specifications covering the material, workmanship, and tests desired.

3. Insist on a hand-made link, as the machine-made link is bent cold around less than twice its own diameter at a high speed on an elliptical mandrel. This sets up severe initial internal stresses in tension and compression in the outer and inner fibre of the link respectively, which is sure to cause a weakened condition, while in the hand-made link this bending is made under a cherry red heat and obviates such stresses; also a far better lap weld is secured in a hand-made link.

4. Number each chain and keep a record of when it goes into service and length of service and class of work it is used for. Inspection should be made daily by a competent and experienced person to detect any reduction of section due to wear, deformation of links and any visible flaws developed in the welds. This is somewhat tedious and expensive, but must be done and done carefully to insure safe operation. In case a chain has been fatigued, due to having been overloaded, it requires an experienced man to detect it and then it is only possible to catch a small percentage of such cases. A fatigued link has a characteristic metallic ring when struck a sharp blow with a hammer, while a good piece of Norway iron has a decided dull sound when so struck. The writer has found that rings so detected by a metallic ring can be further tested by placing the link edgewise on an anvil and striking it several sharp blows with a sledge. If it is fatigued it will break with a decided crystalline fracture.

5. Special attention should be given to the design of the ring that connects the chain to the block hook. This ring should be designed to withstand the same load as the chain, using the regular formula for a circular ring under tension in a diametrical line. The

## ANNEALING

"Will not prevent fatigue of the metal in case the chains are overloaded."

maximum stress in a ring is found by solving for the maximum moment, which is at the points of application of the load.

$$M (\text{max.}) = 0.318 P D$$

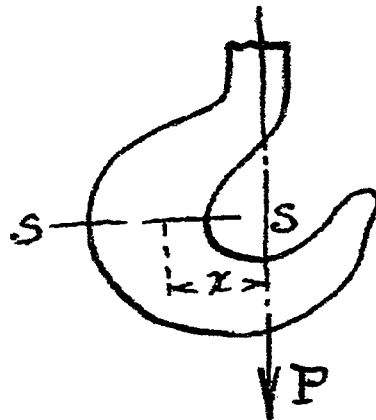
Where  $P$  = the load, and  $D$  = mean radius of the ring.

If we equate this value of  $M$  to the resisting moment of the section we get:

$$0.318 P D = \frac{.0982 f d^3}{D}$$

Where  $f$  = extreme fibre stress, and  $d$  = diameter of the section of the ring.

The writer has found many chain rings which upon investigation by the above formula have proven to have a far lower safe load than the links.



6. It is advisable to check up the size of the hook, as the writer has found the usual practice of designing a hook is to use the following empirical formula:

$$f = \frac{P}{A} + \frac{Px}{S}$$

Where  $S$ , = area of critical section  $SS$

This formula is in error in that the second term represents the bending stress calculated from the formula used for straight beams, which however, does not apply to curved pieces.

7. The last but most important recommendation is to subject the chains to a proper load, and, as an additional safety precaution, anneal them before they are put in service. This annealing though will not prevent fatigue of the metal in case the chains are overloaded, but will merely soften the chains so they will pull to a lock and serve as a telltale for overloading.

It is obvious from the foregoing discussion on the causes of fatigue that annealing at regular intervals is felt entirely unnecessary, as, if there is any benefit from annealing at all, it will be merely to toughen the metal, and therefore is only necessary once. (Applause.)

DISCUSSION.

MR. MORGAN: We have had repeated failures due to fatigue. I noted the line of failure. It looked as if the portion in tension had failed long before the portion in compression. The best way to find out if a chain is crystallized is to place the link on an anvil edgewise and strike it. It will fail under hammer stroke, with a sharp fracture almost perpendicular in section.

MR. AYRES: I don't believe in crystallization. I wish to correct the speakers to this point. There is no such thing as crystallization—it is granulation.

MR. MORGAN AND MR. ARKILLS (simultaneously): This is understood.

MR. AYRES: Mr. Morgan referred to heat treatment. Years ago, in my experiments with iron, I found that the treatment offered by heat would improve it up to the sixth treatment, and that when the eleventh treatment arrived it was back to its original condition. All in all, however, I do not believe in chains—I prefer cables.

Mr. Morgan commenced by a blackboard demonstration, and gave a formula for safe loading of open links.

MR. MORGAN: While mechanics have habitually been overloading chains, here are the outstanding points that must be observed for chain safety:

1. In purchasing your chains decide upon the material desired. Pure iron is preferable to steel because it gives better evidence of yielding under an overload and lends to a better weld.
2. Prepare a rigid set of specifications; covering workmanship, physical tests of material and proof test of chain.

## ANNEALING

“The old method of throwing a chain into an open furnace is not real annealing.”

3. Insist upon a hand-made link; and insist on a three-heat process in making the link.
4. Number each chain and keep a record of when it is placed in service; the flaws, etc., must be noted; by careful inspection.
5. Place chains and proper loading conditions.

MR. BYRON CUMMINGS: What about a chain which has been in use for several years without annealing? Suppose you have a test made of a part which has not been annealed, and of a part which has been annealed—what has been your experience?

MR. MORGAN: I cannot say that the time-element enters into the case. The deciding factors are quantity of the load and the permissible fibre stress of the material used in the chain.

MR. CUMMINGS: Should chains be annealed every six months?

MR. MORGAN: I do not believe in annealing chains regularly as a cure for fatigue or so-called crystallization, as experiment shows annealing does not restore fatigued metal without a doubt. You should not overload to a point where you need to anneal chains.

MR. ROBINSON: Don't you believe in annealing of chains?

MR. MORGAN: Steel deteriorates due to rust more quickly than iron. In regard to annealing, I have already stated my views on this.

MR. ROBINSON: How about chains exposed to atmospheric conditions at all times?

MR. MORGAN: This must be watched. But I can't say that any difference is noticeable beyond oxidation.

MR. ROBINSON: Is it the case that iron chains do not have the same tendency to crystallization that steel chains have?

MR. MORGAN: I feel that this is true, as iron has a greater degree of malleability.

MR. WOLTZ: How would you keep a record of chains?

MR. MORGAN: The metal-tag system is bad. The records should be stamped on the chains themselves. Recommend stamping the connecting link of each length of chain, use a stock number, for example, XYZ, which refers to a card index record for complete data.

A MEMBER: When chains are heated up to cherry-red, doesn't this relieve them?

MR. MORGAN: That is another way of asking whether annealing is a remedy. I have already given my views thereon.

A MEMBER: We have found that annealing chains is as nothing compared to not lifting beyond the safe load.

MR. HANSEN: The real question is if annealing, as such, *will tend to restore the structural unity of material?*

MR. MORGAN: My tests have led me to believe that annealing does not completely restore the metal to its original physical properties. Although the elastic limit which was appreciably raised by overloading can be slightly reduced.

MR. HANSON: Our accident ratio is extremely high from the breaking of hooks.

MR. MORGAN: Most hooks are under-designed. Most loads are placed on the points of hooks—therefore standard formulas won't do at all. Oiling chains on a sand floor wears them out quickly. On a wooden block dry floor, oiling would be all right to reduce bearing wear.

A MEMBER: Cannot a crane's motive power be so constructed that you cannot overload it?

MR. MORGAN: You can have a rule that nobody can use a chain except the foremen or your chainmen and educate them as to proper loads. I know of an accident where a man went to a shop, picked up the first chain he came to, put it over some material, and was then injured through the chain flying back and hitting him on the head. He did not know the safe load of the chain. You must confine the use of chains to those well versed in them. Try to give your cranemen a clear idea of the weight of things.

A MEMBER: I have found lots of accidents due to a side-pull, or through a chain being burned by a trolley wire. This is why a chain failed. Foremen didn't know of this. Chain did not fail through lack of strength, but because of wear and tear, pulling across girders, etc. This practice should be discontinued.

## CRANEMEN

"Try to give your  
cranemen a clear idea  
of the weight of  
things."

MR. MORGAN: In our foundry we lift hot castings, and three feet from the hook our chains became fatigued, no doubt due to stress under high temperatures. I find a piece of iron will fail under much lower tensile stress than you get at the ordinary temperature. We increased the section of link for three feet from hook on a three-quarter inch chain, making that portion seven-eighths inch. This allowed a greater safety factor for overloading under severe heat conditions.

This increase of section is also good where chain is subjected to wear in wrapping around rough edges.

MR. ARKILLS: I believe in the annealing of crane chains spoken about during last year's Congress. I still believe in this and have followed up these tests. My tests have been on new chains, crystallized chains, and on chains annealed after they had become crystallized. Take factor of safety of ten. If you can't use a large chain, you must use a smaller. We buy iron chains right through. We have made repeated tests and found that a seven-eighths inch chain would stand up to about 20,000 pounds, at which point there would begin a permanent set in the chain, showing that the elastic limit had been reached.

MR. MORGAN: What would the ultimate failing point on that seven-eighths inch chain be?

MR. ARKILLS: We judge from 42,000 to 47,000 pounds. I do not claim that annealing will restore a chain to its original strength, but it does give us safety. It will make a chain yield. The point I want to make clear is that you must utilize a usable size of chain—this being so, chains will be overworked under ordinary conditions. We have had chains through five annealings and these gave good service. But when they became crystallized or fatigued we gave them up. Each time a chain is annealed it is deteriorated. The old method of throwing a chain into an open furnace, covering it up, and leaving it over night, is not real annealing. Some parts will

get a great deal of heat and others a mere trifle. If you are going to heat the chain, it must be all brought to the same temperature, so as to attain complete saturation. We have a special furnace constructed at our plant where the flame does not strike the chain. We also had a cast iron basket made of five-eighths inch metal with holes one inch in diameter. The chain is placed in this basket and is heated up to about 1500 degrees, according to the kind of metal of which the chain is composed. It is left in the basket until saturation is complete. Such chains will stretch out like molasses before they will break. The annealed link is preferable because it will run up gradually. One of the hardest things that a safety inspector has to determine is when a chain is crystallized. A solariscope might not give results. I have, therefore, relied on several tests. When a new chain will run a test of 20.6 and the average of the test in annealing may be 19. For crystallized chains you may get 24.8. This gives 5 per cent leeway on which to base judgment of crystallization. While I do not say that you can control crystallization, let us continue to experiment, and be ready to report at next year's Congress. We test our chains in a testing machine steadily.

## CHAINS

1. Pure iron.
2. Rigid tests.
3. Hand-made links.
4. Number chains.
5. Proper loading.

MR. GREEN: Have any of these tests shown a uniform crystallization in the section, or was it stratified?

MR. ARKILLS: We have made 250 tests. Over 100 were crystallized.

### INSPECTION OF CRANE CHAINS.

DR. A. D. RISTEEN, THE TRAVELER'S INSURANCE COMPANY.

Mr. Chairman and Members of the National Safety Council: I should like to sound a note of warning about the formula that Mr. Morgan has given. It may work very well in practice, for all I can say without further examination, but it looks to me altogether too *simple* to be accurate.



A chain link resembles a hook, in a somewhat remote way, and the theory of the two must therefore be related to a certain extent. If a simple elliptical link with no stud is severed at the middle of one of its sides, but a cut made at right angles to the length of the chain, it becomes converted into a sort of hook, and in theory the chain link must therefore be regarded as a special case of the hook, or else the hook must be regarded as a special case of the chain link. At this moment it is not wholly clear to me which would be the case, but I think the two are related so closely that they should be studied together.

The old, classical theory of the hook, which has descended to us from Grashof, is of little or of no use. It is simple enough, and it seemed to be so obviously true that we were tempted to say, with the Frenchman: "If the facts do not agree with it, so much the worse for the facts." But, as I have said, it isn't any good, because the loads that it allows for hooks are far smaller than those that experience has proved to be safe.

Karl Pearson, the English authority on mathematics and elasticity, was the first one, so far as I know, to show what is the matter with Grashof's theory, and to point out the way to develop a sound theory. Two young Englishmen (whose names I regret to say I cannot recall offhand), inspired and guided by Pearson, worked out this theory a few years ago, obtained an entirely new formula for hooks, tested this formula by a comparison with experimental data, and showed that it is capable of giving excellent results.

Walter Rautenstrauch, of this country, then took the subject up. He simplified the formula somewhat, tested it by a more elaborate comparison with experimental data, and gave us a formula that is accurate enough for nearly all purposes.

The formula, as I have said, appears to be a good one, capable of giving excellent results, but it has two faults:

1. It involves a particular elastic constant, known as "Poisson's ratio," in a very important manner; and this constant has not yet been determined with any great accuracy for the materials of which hooks are made. I hope, some day, to be able to work this thing backwards, treating as an unknown quantity the coefficient, which is really Poisson's ratio, and using hook experiments to determine the value of this coefficient to be used in future hook calculations.
2. The second objection is, that the formula is still too compli-

cated for general use by men without more or less mathematical training. It is quite possible that it can be simplified somewhat, without any important loss in accuracy. That is another thing that I propose to take up in the near future.

I have said all this with regard to the hook, because I am inclined to believe, although I have not yet specially studied the theory of the chain link, that the full theory of the link will prove to be more complicated than that of the hook.

#### LIFE OF CHAINS.

I have no doubt *whatever* but that chains will last far longer if we lessen the loads that they have to bear. This remedy is very simple, if we can carry it out, but it seems to me that this recommendation merely avoids the question in which we are so much interested. For every structure subject to stress there is a limiting value of the stress, such, that if this limit is not exceeded, fatigue will never occur, and this is of course true for chains also. Keeping chains within this limit is not always practicable, however. It is most nearly practicable where a chain is used on a crane or in some other place where we can know pretty definitely what the stress upon the chain is. In construction work, quarrying, and various other lines of activity, however, chains are used under such circumstances that the specified limiting load, that Mr. Morgan would recommend, is very likely to be greatly exceeded at times. Chains that are used as slings, for example, are often severely overstrained, because the men who use them know but little about the parallelogram of forces, and do not realize that the stress on the chain may depend fully as much upon the obliquity of the upper parts of the sling as upon the dead weight of the load that is being raised. Then again, chains may be subjected to severe local stresses, of which we have no record, by being twisted or crossed; or loads may have been started or stopped so suddenly that heavy and wholly needless stresses may have been thrown upon the links from this cause.

#### PROBLEM FOR INSURANCE COMPANY.

The problem for the insurance company (and that is the interest that I represent) is different from that of the shop. The shop can (and should) tag its chains or stamp them with numbers, and keep records of them, and give them out with due reference to the uses to which they are to be put, and the foreman can be on the watch

## Chain Safety

"If chains are to be annealed they should be annealed in the right way."

to see that no chain is abused. But how is one of our inspectors to know what a chain has been through? And in the fulfillment of our responsibilities to those who give us their business, should we not require annealing, for the reason that it is not possible for us to give definite assurance in any *other* way, that the chain is safe? If I understood Mr. Morgan correctly, he admitted that annealing will at least *postpone* the evil day when the trouble comes.

The ordinary conception of annealing is to throw the chain into a fire, heat it red hot, and let it cool slowly. This is pretty crude work and even this much is hard to do if the chain is a big one or a long one and there is no special furnace at hand. I am sure that there are very few plants indeed—comparatively speaking—that have any even fairly accurate means of telling the difference between say 1,400 degrees and 1,500 degrees Fahrenheit, and yet a couple of hundred degrees in the annealing temperature may make quite a serious difference in the results obtained.

I am convinced we will all agree at least upon this: That if chains are to be annealed, they should be annealed intelligently and in the right way. I should be very glad indeed if Mr. Morgan, or somebody else, would give us some definite recommendations with regard to annealing temperatures, and how to handle the chains to the best advantage, in annealing them, particularly where special furnaces for this purpose are not available. (Applause.)

### DISCUSSION.

MR. MORGAN: That four-tenths covers a multitude of factors too complex and also too exact to be considered. To be mathematically exact on figuring a link when a weld is the controlling point and at same time so uncertain would be folly. Therefore, 0.4 is close enough. There is too much rule of thumb in present day handbooks.

A MEMBER: What is the best method of securing a nut on the shank of a hook?

MR. MORGAN: Use a grip-nut or a cotter pin.

A MEMBER: What method would do for proper annealing and testing of chains in a small plant?

MR. ARKILLS: I cannot say. You should improvise according to ways and means at hand. You must avoid overheating of chains and underheating, too. You must get complete saturation of chains at the proper temperature.

THE CHAIRMAN: Do you think that it is imperative to have an annealing furnace?

MR. ARKILLS: Yes.

CHAIRMAN: The last of our most interesting papers for this Sectional meeting is that by Mr. J. C. Smith on "Crane Safeguards." Mr. Smith is the Chief Safety Inspector of the Inland Steel Company. I take great pleasure in introducing Mr. J. Claude Smith.

#### SAFETY AS APPLIED TO OVERHEAD CRANES.

J. C. SMITH, INLAND STEEL COMPANY, INDIANA HARBOR, IND.

Mr. Chairman and Gentlemen: To the iron and steel industry is due the credit for the development of the overhead traveling crane. These giant monsters of strength, capable of carrying hundreds of thousands of pounds, are an essential factor where such loads must be moved as part of the daily operations. As the magnitude of the work to be accomplished increased the overhead cranes became a more complicated machine—consequently, more dangerous—and, therefore, a big subject for the safety engineer.

Just as steel companies developed the crane so they developed the safety movement, and their safety engineers, working hand-in-hand with progressive crane manufacturers, have constructed cranes which are remarkable exhibits of the application of the ideals of safety.

## Overhead Cranes

Giant monsters of strength, must be safely moved in daily operations.

Of course, cranes equipped with all the devices recommended by safety engineers are more expensive than those not so well guarded and some purchasers will not, or cannot, pay the price, but such persons should remember that states are passing laws relating to safety; that factory inspectors are being recruited from the ranks of safety engineers instead of politicians, and soon—very soon—they will be compelled to provide guards. This is expensive, interferes with operations, and such guards are never quite as satisfactory as those made an integral part of the machine when designed and constructed.

The Standardization Committee of the National Safety Council have prepared tentative standards for overhead traveling cranes, which, based upon the specifications of the United States Steel Corporation, are generally considered as the most comprehensive embodying all the latest and best ideas.

#### SAFETY STANDARDS.

I will not take the time to read over these specifications to you as those who are interested can obtain copies of same through Mr. W. H. Cameron, Secretary of the National Safety Council.

At this time I will, however, through the courtesy of Mr. R. J. Young, Manager of the Department of Safety and Relief of the Illinois Steel Company, and Secretary Cameron of the National Safety Council, show you some slides which show the application of safeguards to cranes and will, no doubt, be very interesting. (Safety slides used may be secured from the Secretary of the National Safety Council.)

In addition to the specifications contained in the tentative standards proposed by the Standardization Committee, I have the following suggestions to offer:

The purchaser of cranes should specify that the standards for safeguards of the National Safety Council should be applied on cranes. This should cover hooks, cables, etc., as well as the crane itself. He should also obtain a duplicate set of drawings and calculation sheets and check same for safety.

I cannot approve of the recommendations made in a safety publication recently that to gain overhead clearance under-slung bridge girders be used, as this type always gives considerable trouble. It is better to lower the bridge walk than to lower the girders.

The specifications provide for a walk on both sides of the bridge, and while I agree with the standard, still many companies only provide one walk and where such is true the walk should be on the drive side of bridge.

Numerous accidents are due to misunderstanding of signals between operator and hooker and it is advocated that cages be as low as consistent with operations. Steel sash and wire glass should be used in cabs.

Controllers should be arranged so that operator can see hook at any position. Handles of controllers should be of the locking type and clear indicating marks placed on controller as to how to move handle for certain movements.

The rotary type bell is much more efficient than any other type.

Drums should never be of the overhung type.

Where it is necessary to use tackle to change motors, etc., rigging should be provided on root trusses for that purpose. Where this work is heavy, and to facilitate operations, electric hoists are now being installed above runways.

Escape platforms should be provided at pouring stands for cranes handling molten metal.

Screen guards should be provided between parallel crane runways and along platforms built where workmen can reach crane rail.

Some companies are guarding the drive shaft, while others are not. However, I believe it should be to entirely conform with accepted safety standards.

#### RECOMMENDATIONS BY MANUFACTURERS.

Certain crane manufacturers are recommending the use of short shafts for crane trolleys on account of the greater ease with which they can be handled. It is also a feature of some cranes to have the trolley sides connected with solid cast steel separators, instead of structural, in order to gain permanent alignment of trolleys.

Dynamic braking was very well described by Mr. R. B. Davenport before the Association of Iron and Steel Electrical Engineers at Milwaukee in 1912 and he offers eight "apparent advantages" of the use of dynamic braking with electric hoists. Those interested should secure copy of his paper, which is exceedingly interesting.

To give crane operators control of hook in case of breakages is still an unsolved problem on most cranes. However, the latest de-

## **It Is Not Enough**

**To provide crane  
safety — operators  
and hookers must be  
safe men.**

velopment of the ladle crane, as manufactured by a leading concern, has solved the problem for that type of crane.

They eliminated overhanging drums by carrying the auxiliary trolley on a pair of auxiliary girders, placed between the main girders in such manner to allow the main hoisting rope to pass between the main and auxiliary girders. Safety ropes were added to make all hoists doubly safe. The trolley was redesigned to have in-

terlocking gears and two motors placed over the track wheels, and each drum with its own gearing motor and brakes. Six dynamic brakes were used, one on each armature, and two on each jack shaft, any three of which were designed to hold the full load. Thus, by providing double cables, increased gearing, and brakes, and by interlocking the drums together, compelling the same speed, a broken gear, pinion or shaft would not cause an accident.

The only other features in connection with the providing of safety equipment is that necessary for handling special material—as spreader beams for long bars, hook rack for sheets, safety hooks, etc.—and all of these devices should be carefully designed to prevent accidents. Even after we have a perfectly safe crane and other equipment, we may have accidents connected with the operations to be performed by the crane and in fact most overhead traveling crane accidents occur in connection with operations and are not due to lack of safety devices.

### **CRANE SAFETY.**

There are five groups of workers whose safety is directly concerned with the operations of cranes and these are:

|                  |                   |
|------------------|-------------------|
| Crane operators, | Crane inspectors, |
| Crane hookers,   | Crane floormen,   |
| Crane repairmen, |                   |

and we might include all persons who have any occasion to work around crane runways.

The hazards to which crane operators are subjected may be classified as "General Operating," "Electrical," and "Special," the handling molten metal, etc.

Just as we specify that the crane shall be a first-class and safe machine, so in order to obtain safety, we must specify that the crane operator and the hookers are safe men. They should be carefully selected for the position they are to fill. A crane operator should have mechanical inclinations; he should be young, active, quick with his thoughts and movements, yet cautious and careful; agile, yet surefooted; keen-vision; even tempered and conscientious.

Hot-metal cranemen require at least years of experience before undertaking such dangerous work. To promote safety and avoid accidents, crane operators should comply with the rules promulgated to direct their work and should use every possible effort to exercise due care and caution at all times.

When coming on duty a craneman should carefully inspect his crane, see that all working parts are oiled, including the sheave blocks; hoist chains and cables should be lubricated daily, empty grease cups should be filled and oil passages kept clean.

Loose or dangerous gears, keys, ladders, runways, bells, brakes, etc., should be reported to crane foreman on a daily report blank. Each craneman is responsible for the condition of his crane and he should never fail to include all defective conditions in his report.

Crane must be kept clean, free from dirt and grease. Cranemen should assist repairman and see that all guards are replaced and all loose material removed before crane is put in operation. Footbrake and limit switch should be tested at beginning of each turn.

Look over all switches! If main switch is found open, be sure all controllers are in "off" position before closing switch. If safety switch is found open, do not close it until you are absolutely sure no one is in a position to be injured. Look on trolley, all parts of crane and crane runway.

## **Crane Operators**

Should be young,  
agile, quick in  
thought and move-  
ment, yet cautious  
and careful.



Fire extinguishers must be kept in cabs at all times. Report when same have been used so they can be refilled.

When hoist cabs are being repaired or replaced craneman should always see that there are at least two full wraps of hoist cables on the drum.

If crane is located outdoors, when leaving crane, operator should block or lock crane in position so it will not be blown by wind. This applies especially to gantry cranes.

Where it is necessary to sand tracks it should be done by means of sand boxes. Cranemen should never sit on truck in direction crane is moving and attempt to sand track from bucket, as he is very liable to get caught between truck and columns of building.

When any work is being done on hoist, such as removing armatures, shafts, etc., operator should always have burden block as low as possible.

No one, except authorized persons, should be permitted to ride in crane cab, and then only when absolutely necessary, as in case of repair work, etc. When such persons are in the cab the crane operators should be held responsible to see that they are in a safe position before crane is moved. No one should be permitted to ride on trolley.

When notified that men are working on or near runway, cranemen must keep a careful lookout to avoid accidents.

Never go, or permit any one else to go on top of crane without opening safety switch on top of crane and locking it open or protecting it by means of "Danger—Do Not Move" sign.

Cranemen should remain on duty until relief appears, unless excused by proper foreman. They should not leave crane except in case of necessity and when leaving should open main switch and lock it open. Under no circumstances should cranemen permit any one except authorized persons to operate crane.

#### DO'N'TS FOR CRANEMEN.

Where crane runways parallel, crane operators are forbidden to cross from one crane to another over the runways. It should be a rigid rule that all persons get to and from cranes by means of regular stairs or ladders. No one should be hoisted up on crane block to get on crane.

Cranemen should not smoke, eat, read or sleep in crane cabs,

and should not be permitted to operate crane unless in good health. Their work concerns the safety of many men and they must be on the alert, giving their individual attention to their duties at all times.

Under no circumstances should cranemen be permitted to throw articles at men on floor to attract their attention nor for any other purpose.

Operators should avoid running into blocks at end of crane tracks, as they might give way. Cranes should never bump into other cranes, unless other operator has been warned and no one is in a position to be injured, and then only in case of urgent necessity, as operations of this kind are liable to damage equipment.

Cranes should not be used to move cars. Side pulls should not be made with crane unless absolutely necessary and then only with the approval of the superintendent. Where side pulls must be made provision should be arranged to prevent hoist cables coming in contact with trolley power wires.

Where two or more cranes are used in combination to lift one load the several operators must be extremely careful to lift and carry load evenly.

Peculiar problems arise where there are high and low crane runways in buildings, but as this is not a universal arrangement I will not attempt to discuss it today.

#### ELECTRICAL DANGER.

We have now come to the electrical dangers connected with crane operations and while very few accidents occur from this source all should be avoided.

Cranemen should not use controllers to supply heat for cage. In case of electrical short circuit, or if a controller should stick, it is advised that operator immediately throw all controllers (except one that sticks) into "off" position, then open the main switch with a rapid motion. Power must always be off when repairing controllers, or any other electrical apparatus, or when screwing light bulbs in sockets.

Operators should never reverse controllers by throwing them all the way around, as it will burn controller.

Handles of controllers should be moved from point to point to gradually increase the speed of motors. Speed should be restricted until slack in chain or cable has been taken up.

## A Small Fire

Was once regarded  
as a proper return  
for insurance premiums.

If power goes off, all switches should be pulled out and controller moved to "off" position promptly. As soon as pilot lamps light up (when power is on again) motors may be started.

### OPERATING INSTRUCTIONS.

Operating instructions for crane-men are included under the following:

Cranemen are to do all work required by foremen or floor hands directing operations in the depart-

ment, except such things as will, in his judgment, be liable to injure men or damage crane or other apparatus.

Under no conditions should an operator permit his crane to bump into another crane until he is positive that no one on the other crane is in a position to be injured. Orders from anyone to the contrary are to be disregarded.

Loads improperly hooked, or in such condition as to be dangerous, should not be handled unless absolutely necessary.

No one should be permitted to ride on load or crane hooks, nor on top of trolley. Refuse to move.

Chains, slings, and loads should be carried high enough to avoid striking men on floor or catching in machinery, etc., on the floor. Hookers should hook up hooks.

It is not good practice for operators to run more than two motors at one time.

Loads should not be hoisted, lowered or dropped, from magnets, until operator is positive every one below is out from under the load.

Signals should be received from one man only and no move should be made without a signal from the proper man.

Before starting to hoist trolley should be placed directly over the load to avoid swinging load against workmen. Never jerk or swing loads; hoist gently, handle carefully and lower slowly.

Operator should see that hookers walk ahead of loads carried by cranes and warn men on floor to get in the clear.

Bell should be rung before starting to hoist, before moving, and rung frequently while moving.

When hoisting especial attention should be paid to the block to avoid tripping limit switch or running block to drum. In case hoist block gets near limit switch don't shut off power, as current is necessary to operation of limit switch.

When pulling chains out from under loads see that no one is in a position to be struck by chain.

When loading material in car, great care must be exercised to avoid injuring hooks. Load should never be swung against car to straighten same.

Especial caution should be exercised when handling molten metal. Ladles of molten metal should never be carried over men working below.

When handling heavy loads, particularly hot metal, test the hoist brake by throwing the controller in "off" position after load has been lifted a few inches, if brake does not hold, do not move load until it has been adjusted.

When handling molten metal it is advised that operator run only one motor at a time.

Crane hookers should exercise great care to avoid accidents. Hooker should never ride on any burden being carried by crane. He should never take hold of crane cable above sheave block, as his fingers might get crushed between cable and sheave.

Hooker should ever be watchful of loads carried by cranes, or suspended in the air, and keep out from under them at all times. He should walk ahead of loads being carried by cranes and warn men on floor to get out of the way.

When loads are being hoisted or carried no one should stand between the load and other objects, as load may swing and strike them.

Hookers should learn how to make safe hitches and should study table of stresses on slings at various angles.

## REMEMBER

He who reads and  
does not heed may  
live to rue the care-  
less deed.

When working in cars care must be exercised so as not to get caught between load and side of car.

Great care should be exercised when getting in or out of cars over which magnets are being carried as they may strike you.

Hookers should never attempt to operate cranes, or go on crane for any purpose. Neither should they meddle with electric wires attached to magnets.

Cables, chains, slings and hooks should be carefully inspected. Never work with defective appliances.

In case hooker thinks load is too heavy for crane he should notify foreman.

Hooker should never lie down in dangerous position in cars while waiting for crane as a load may be brought and lowered on him.

When hooking handles on chain, hooks should always be used as they are provided to enable you to keep your fingers out of danger. Chains or cables should not be held in hands while craneman is taking up strain. A hook, preferably a long-handled one, should be used to guide chain.

Hooker should never stand near piles of bars or other material when same is being hoisted from ground as the pile may tip over on him.

A block or pad should be placed between sharp edges of loads and cables so cable will not be cut.

Load should be carried high enough to clear all material on floor.

Hookers should exercise great care when placing blocks under loads and never get under the load. Use a block to shove blocks under load or toss them under.

Stand at a safe distance, in a safe position, when chains are being pulled out from under load so same will not fly and strike you.

Chains or cables should be hooked up when about to be carried loose by crane so they will not catch on anything.

Guide hooks when being hoisted, after being unhooked, so they will not catch on load and tip it over on you.

Repairmen working on overhead cranes have peculiar dangers to contend with and must exercise great care at all times.

They should make provision so that other cranes on runway will not run into crane being repaired. This can be best accomplished by repairing crane at point which is most accessible and will interfere

least with other cranes and operations below. In order to fully protect crane, blocks should be placed on crane rail.

Before starting repairs it should be ascertained that all controllers are thrown off, that main switch and safety switch are opened, fuses removed, and locks or signs placed on switches.

"Danger—Workmen Above" signs should be placed under crane and where the job is a big one space under crane should be railed off.

A repairman should never, under any circumstances, go on crane without notifying operator.

Where a number of men are working on crane, each member of the gang should place his padlock on the safety switch.

When men are compelled to work on or near crane tracks, cranes must be blocked and operations cease at that point while such work is in progress.

Care should be exercised so that no loose parts fall to the ground.

Before removing any part which may release hoist block, block should be lowered to floor, or, when this is not possible, gears should be blocked or wedged so they cannot move.

When hoisting materials on crane have man above give signals and never permit anyone to stand in a position to be injured should something give way.

Upon completion of repairs, remove all blocks, loose parts, tools, etc., and replace all safeguards before crane is put in operation.

Men tightening down rail clamps should exercise great care not to strike their tools on power bars and wires. Tape handles of tools used in doing such work. (Applause.)

CHAIRMAN: As this completes the work of the Section, we will now adjourn.

"And the end is that the workman shall live to enjoy the fruits of his labor; that his mother shall have the comfort of his arm in her age; that his wife shall not be untimely a widow; that his children shall have a father, and that cripples and helpless wrecks who were once strong men shall not longer be a by-product of industry."

P. B. Juhnke.

*Tomorrow Is Unborn—  
Yesterday Is Dead—Today  
Is Yours—for Safety*

## **National Safety Council**

**Banquet (Informal)**

**Philadelphia, Pa.  
October 20, 1915**

**R. W. CAMPBELL, Toastmaster,  
President, National Safety Council**

**TOASTMASTER R. W. CAMPBELL.**

**L**ADIES and Gentlemen, Members of the National Safety Council, and Friends: It is again my privilege to address you at the banquet session. I have had three such privileges, for which I have regarded myself as being very fortunate. I have spoken to you at each of the three preceding Safety Congresses from the banquet table. At each of these, in some way or other—I don't know just how—I have found it convenient to go to Holy Writ for a topic or a text, as our pastor would say. I believe in consistency, and hence tonight, in the few remarks that I will make to you in opening our banquet session, I wish to direct your attention to the text which will be found in the forty-ninth verse of the second chapter of the Gospel according to Luke. It is the language of a boy—a boy who had accompanied his parents on a journey to the largest city in the province, where he went to attend a feast at the temple. On leaving the party did not observe that the boy was



left behind and it was some time before it was discovered that he was not with them. When, on their return and out of their dismay, they had inquired of him "Why?" he gave them answer: "Wist ye not that I must be about my Father's business?"

I wonder, ladies and gentlemen, if we may not be privileged to say: "Wist ye not that we must be about our Father's business?" I believe the answer will come "Yea." What did he regard as his Father's business? He considered it a doctrine of service—a kind, loving and sympathetic service—a service of man to man. It has been said that they who serve God well, serve his creatures. He epitomized to the highest extent the highest meaning that can be given to the word service; He healed the lame, the sick, the halt and the blind; He relieved suffering and sorrow; He relieved the troubled mind, the torn and bleeding heart; He suffered and made the great sacrifice. He left to us, though, teachings and doctrines that have been the foundation of all good and all right from that time to this—teachings and doctrines that have gone hand-in-hand with the march of progress; teachings and doctrines that have permeated through every phase of social life.

Are we about our Master's business? Is not our work a work of service? Are we not performing a service of man to man? Are we not trying to put loving kindness and thoughtful consideration of our fellowman into our activity and are we not attempting to alleviate suffering and sorrow? Are we not attempting to prevent broken hearts? Are we not trying to establish doctrines and rules and principles that may serve mankind for its better interest? Are we not establishing a doctrine and a principle that is permeating into every phase of our social life?

The safety work of today affects every relationship that we have. It enters into the home, into our social life, into our business life and into every economic situation that we have. This doctrine of service—this service that we are attempting to do as man to man—is surely entering into every one of those conditions.

And so I believe that we may honestly say that we are about our Father's business. Are we about it well? Let us hope that we may be. Let us hope that our future efforts and activity may be even greater and better than they have been in the past.

I am reminded of a little churchyard over in sunny England, a churchyard old and overrun with weeds. The church at its side

is a tumbling ruin. There is in that churchyard a stone erected to the memory of—whom? Time and the elements have obliterated practically all that the stone ever had upon it. You may read, "Sir John ———," a blank, evidently meaning "Born," and a blank, "5" at the end; "Di" indicating "Died," but nothing else. But time has not been able to obliterate that which follows: "The world was better in that he lived." Gentlemen, may it be said of the National Safety Council, and may it be said of each of us as individual members, through the manner in which we shall conduct our future activities, when we are gone, that the world was better in that we lived.

SERVICE.

"The sequence—what? Not endless sleep, not idle, stagnant hours,  
But cycles of accomplishment that thrust their glories on  
And ever on, to gild new eras of eternity.  
We know not how the consummation ends. We know not what  
The magic circles bound. We only know that noble thoughts  
And deeds are chains of gold that bind their authors to a universe  
In which no wrongful act can crush the seed of everlasting right."

"And the end is that the workman shall live to enjoy the fruits of his labors; that his mother shall have the comfort of his arm in her age; that his wife shall not be untimely a widow; that his children shall have a father, and that cripples and helpless wrecks who were once strong men shall not longer be a by-product of industry." (Applause.)

New institutions are prone to establish customs. It has been, in our very short past, the custom that at this time the announcement should be made of the officers for the ensuing year. The Executive Committee, at its meeting this afternoon, has performed its duty and I have the rare privilege of announcing to you the officers who have been selected to guide the affairs of this organization during the coming year. After the announcement I shall take pleasure in presenting to you the man who has been selected to act as your guide and as President of this organization.

For President, Mr. Arthur T. Morey. (Applause.)

For First Vice-President, Mr. Lew R. Palmer. (Applause.)

For Second Vice-President, Mr. C. W. Price. (Applause.)

For Third Vice-President, Mr. Edwin R. Wright. (Applause.)

## SERVICE

"I helped a blind man across the street, and lo! I was safely across as well; his cane had found a mudhole that I did not see."

Secretary and Treasurer—and here I am going to depart for a minute, and, if I may, again repeat to you that which I would like to have you know about the man who is here, who has been selected for that office. We have had the very finest service and the very finest executive ability in the office of our Secretary and Treasurer, and I cannot help giving tribute again to the man who has been re-elected to the office—Mr. W. H. Cameron. (Great applause.)

Assistant Secretary, Mr. J. J. Lamont.

Director of Exhibits, Mr. M. A. Dow.

### HONORARY MEMBER.

At the same time that these announcements are made it has also been our custom to make the announcement of the election of honorary members, if any have taken place during the year. It will be remembered that four years ago the first Co-operative Safety Congress was held in the City of Milwaukee under the auspices of the Association of Iron and Steel Electrical Engineers, at which time the idea with respect to the National Safety Council had its inception.

The year following, under the auspices of the same organization, a second Safety Congress was held; and, in fact, through the activity of that organization the National Safety Council was made possible. Your Executive Committee, in its wisdom, has felt that it was eminently proper that that organization should be accorded the honor of being elected an honorary member of the National Safety Council. I have the pleasure of making that announcement here.

Commissioner Jackson has also been called away from the city and he desired it known that it was not through any lack of interest on his part, but through press of public business, that he was compelled to be away from this banquet this evening.

And now I think I have one of the pleasantest duties to perform that it has ever been my lot to undertake. I have served on your Executive Committee and acted as your President two years. Dur-

ing that time I have been in intimate touch and intimate relationship with all of the members of its Executive Committee. To know those gentlemen has been to love them. To be with them has been to respect them, but among them all there has been no one who has so endeared himself to all of us, no one who has seemed to be so capable of filling the office of President as has the gentleman who has been selected to take my place, Mr. Arthur T. Morey. (Applause.)

### Safety Creed

"Inasmuch as ye have done it unto the least of these, my brethren, ye have done it unto me."

PRESIDENT-ELECT ARTHUR T. MOREY.

Mr. President and Other Friends: I thank you for those gracious words, Mr. President. We all know Bob Campbell—and that if he had to hang a man he could do it only in a most pleasant and gracious way. And while I do not exactly feel like a man that is to be hung—at least I think I don't, never having had that experience—yet I am in the position of one who finds himself under a responsibility, his high concept of which has made him feel an unfitness for it—especially when he realizes that it is expected of him that he follow in the footsteps of one who has shown such ability and wisdom in that office. And this feeling is intensified if one measures one's responsibility by the possibilities of the situation in which one finds oneself—a situation in this case which involves those most precious things—human life and limb.

Mr. Campbell is representative of the high character of the personnel of my other associates on the Executive Committee. It has been one of the choicest experiences of my life to have been associated with these men. I do not believe that since the world was founded a group of men of finer character or of nobler purpose and greater unselfishness has been gathered together for a holy purpose. I greatly regret that six of them are not to be on the Committee next year, although we are gratified that their places have been taken by six others of such great worth and strength. Knowing

that the President has their counsel and support, and understanding the character of men they are, gives him much hope as to the discharge of his own duties.

Well! It is a great movement, and it seems most fitting for a movement like this, which has humanity as its foundation and which is so filled with the spirit of love for our fellow men, that we should hold this Congress in the City of Brotherly Love. I believe that God himself is in this movement because it is written that, "Inasmuch as ye have done it unto the least of these, my brethren, ye have done it unto me"—and for this cause that we are in is for the prevention of accidents and care of the widows and the fatherless.

This safety cause is one of the most constructive movements that has ever appeared among the affairs of men. I say this advisedly, because good safety work is the study of the right and orderly way to do things. It does not work through fear or in a negative way, but it operates to make men more thoughtful, considerate of others and mindful of the conditions about them. It is surely the handmaid of efficiency.

I think the best phrase, the best slogan that has been coined for the cause, is—"Safety First is Thinking First." For this reason it lends itself so admirably to the teaching of children. It builds up their mental processes; it makes them observant, and too, to be thoughtful of others. In our work with children, in getting the school children interested in the public safety work and so forth, let us always be careful not to put any negative fear in the child's mind. To put such fear into a child's mind is a crime.

This movement also, so far as my humble knowledge goes, is one of the greatest secular movements for the forwarding of the idea of the brotherhood of man that has ever come among men. It has caused employer and employe to meet together on a common, humane ground. It has brought the spirit of co-operation and fellowship into business, as it could not have been brought in any other way. It seems to me that this safety work is representative of America's best ideals. As it has been so beautifully referred to this evening, it stands for "Peace on earth, good will towards men," and we do not know, nor will we limit, the good this movement may yet do in an international way, as has been referred to.

The pioneer work has been largely done. The route has been determined, the survey made, the grades built, the bridges con-

structed and rails laid—and it is for us, who now come to take up and carry on the work, that we double-track the road and put in the branch lines and carry forward to fullest service this great cause for our fellowmen. But, regardless of what the Council may ever achieve, it can never do a greater or better piece of work than has already been done in the pioneering by Mr. Campbell and Mr. Cameron.

There is no limit to what can be accomplished, excepting insofar as we put a limit to it ourselves. And we must, in the spirit of broadest receptivity, keep the channels open to co-operate with all other activities that have the good of our common cause at heart. The spirit of our work should be co-operation—always co-operation and good will and efficient service.

And I think it is most significant that at this Congress the personnel of those participating has been so high. The larger attendance of the engineers, the technical men, the men of affairs, means much. We are growing, we are progressing, we are improving in quality; and there isn't any right object to which we can attain that we cannot accomplish if we know that Omnipotence is behind every good work.

You have chosen a President who at least has high ideals of what the cause should be and as to how it should be conducted, and with your co-operation he will do the best he can. I thank you. (Applause.)

GREETING TO PRESIDENT MOREY.

TOASTMASTER CAMPBELL: I would bespeak for your new President all that measure of co-operation and sympathy and support that you, as members of the National Safety Council, have given to your former officers, and on behalf of them, Mr. President, I am going to pledge you that support, and in confirmation of it I am going to ask you all to rise and greet your President. (The members rise, with applause.)

The management asks me to make another statement. A message is received from some source to the effect that if any of you contemplate meeting him on his way home around the corner of the alley and taking it out on him, he is not going home tonight.

If any confusion arose with respect to the seating it was very largely due to the fact that a very large number of reservations were made at such a late hour that it was impossible for us to do

## Be Consistent

"The only way to have a friend is to be one." If you preach Safety, practice it.

as we had planned, namely, to have a printed list of the seating arrangements for your information. The committee asks your forgiveness with that explanation.

We have been exceedingly privileged this evening in the attendance at our banquet of two of the most prominent of the citizens of the Commonwealth of Pennsylvania. We should feel, I believe, a great deal of pride that our cause should have been felt so important as to warrant the presence of these

two gentlemen with us. The next speaker is one who to a Pennsylvania audience needs no introduction. I take pleasure in presenting to you the Honorable Martin G. Brumbaugh, Governor of the State of Pennsylvania. (The members rise, with applause.)

HON. M. G. BRUMBAUGH,

GOVERNOR, STATE OF PENNSYLVANIA.

Mr. President and Members of the National Safety Council: Being a citizen of Philadelphia, it is a peculiar personal pleasure to me to welcome you here for your Fourth Annual Banquet, and being for a time an exile from Philadelphia, it is a peculiar pleasure in an official capacity to welcome you to the great and splendid State of Pennsylvania. We are glad indeed to know that you count us among your friends. Here in this old Commonwealth of Pennsylvania you can always be assured of a warm, cordial welcome when you come interested in any cause that makes for the betterment of men, women and children.

After I came into the room tonight and began to quiz your worthy President and to ask myself what I might say that would be, at least for a few minutes, a source of entertainment to you, if not of profit, I ran over in my mind what, after all, is Pennsylvania doing as an organic government to promote such a movement as this? And when once you begin to study the problem I think you will

come to the conclusion which I have reached—that the particular business of government is to promote the welfare of its people; that without that purpose, no matter what other ideals enter into governmental activity, government is a failure. In this commonwealth of ours, which some of us love and which I trust all of you regard with good will, we have been endeavoring to accomplish some distinctly helpful things in the matter of general conservation

of our people, and particularly in the matter for which your Council stands, namely, the safety of our people in their toil and in their homes. We have 1,200,000 acres of land which this commonwealth has bought and paid for, and which is a part of what will be a larger state forest, in which we hope to breathe and make good air for our people, and from which we hope not disease but health will flow from its mountain streams. That is something worth while. (Applause.) I challenge any other commonwealth in the East to show as commendable and as advanced a position as Pennsylvania in that matter.

I need not remind those of you who are familiar with the matter that Pennsylvania in the last eight or ten years has done as much if not more for the conservation of the health of her people as any other state in the Union. In fact, it is a matter of pride in Pennsylvania that the work of our health department has challenged the respect and even the imitation of almost every other state in the Union. A few years ago an expert committed to that problem worked out this remarkable conclusion: that by reason of preventable disease in Pennsylvania our people lose annually—think of it, annually—one hundred and twenty-five millions of dollars. That is the price this one commonwealth is paying because it has not yet completed its whole service to its people. We are beginning through our sanatoria, through our dispensaries, through our medical inspection and through our instruction in our schools to remedy that condition. And it is the business of government to make it easy

## Team Work

"Every man interested and helping will do much to prevent accidents in our factory."



for people who toil to keep strong enough to toil in your communities throughout the commonwealths of this country.

We are trying to do something in that direction. No state, no commonwealth, performs its full duty to these people that does not seriously turn to the solution of that important problem. I presume there are all kinds of doctors here. Some of us are really useless doctors, men that don't practice too much; just talk about it, you know—now why cannot the medical profession in Pennsylvania, which is without a peer in any commonwealth in this Union, help you and the people in Pennsylvania generally to remove preventable disease from our communities and save us one hundred and twenty-five millions of dollars a year? We need that money. (Laughter.) I would go down to see Colonel Bryant oftener that I do if I had it. (Laughter.)

The further fact, I think, will come to you if you stop to reflect that in this commonwealth we are endeavoring, through the administration of our laws, to protect our people and to guarantee to them when they adventure upon any proper occupation or industry in this state the strong, sustaining and consistent support of reasonable law. People who work—all people in society, for that matter—have a right to the safeguards of proper law, and it is a part of the conservation of the human element in society that makes for the safety and welfare of all of us that law is properly administered. That in the large may be said to be true here in this great Commonwealth of Pennsylvania. I have to say that, having a member of the Superior Court the second door to my right. (Laughter.)

Here is, specifically, this great problem of the regulation and the conservation of life on the part of those who toil in our great and varied industries in Pennsylvania. We have labor legislation in Pennsylvania and it is to the credit of the great manufacturers of this commonwealth that they have welcomed from the beginning every influence that makes for the safety of the toilers in their great industries. We have not had at any time the opposition, in a commanding way, of those people, to any measure which looks to the safety and the conservation and the welfare of people who toil in this Commonwealth of Pennsylvania. And don't you allow anybody, wherever you hear it, say that in Pennsylvania there is any considerable element of our people in any way committed to any hostile relation to the splendid purposes which underlie your gather-

ing here today and this week in Philadelphia. We are with you, all of us are with you, save the few that have not enough sense to know where they stand on any question. (Applause.)

Quite recently one or two things have happened in Pennsylvania that are rather interesting as bearing upon the function you represent here tonight. We passed in the last session of the Legislature a workmen's compensation law in Pennsylvania. We talked about that for a long time and hesitated as to whether or not we would adventure into the matter, but when the Assembly met in this year that matter was settled and settled right in Pennsylvania; and it is now a fixed part of the policy and logic of Pennsylvania's economic situation that a part of the cost of production must go to the care of the unfortunate in toil in the matter of production in Pennsylvania. (Applause.)

In that law two things, at least, were uppermost in the minds of us who were anxious to see it enacted. First of all, that when accidents do occur and compensation is due: that it shall be absolutely certain; and in the second place, that it shall be quickly applied to the person injured. Those are the two remedial things that underlie the whole theory and purpose of the compensation laws in this Commonwealth of Pennsylvania. There is another purpose vastly more far-reaching and vastly more important than the certainty and the speed of relief in time of injury. Underlying your compensation laws is this vastly more important thought that we should make it hard, difficult, if not impossible, for any working people to be injured when they are engaged in their daily occupations in Pennsylvania. (Applause.) We have taken away in our compensation law every element which would interfere with the free and full protection and prevention of injury in our industries. It is a source of considerable satisfaction tonight that in the tentative working out of the law, which becomes operative in January of next year, everywhere in Pennsylvania we are meeting with a cordial co-operation and a cheerful compliance on the part of our people with the provisions of that law, and Pennsylvania, loiterer though she was, wakens up to the fact and is now going to give as an example to the other states in this Union—if it knows how to do it—an adequate and a fair and a proper treatment of the whole question of compensation and prevention of injury in industry.

There is another law that was passed this last session of the

## TRY IT

The way to succeed in Safety work is not to criticize your fellows but to excel them.

legislature that some of you may have heard of and which has a very definite bearing upon the problem to which you are committed. Every fair compensation law has its just warrant to be in the fact that it is to prevent or at least to make difficult injuries to the people who toil. How vastly more important it is, my friends, tonight everywhere in this country, that we should conserve the virility, the strength, the power and blessedness of the childhood of the

commonwealth. (Applause.) Now we have enacted a humane child labor law in Pennsylvania (applause) and we have probably done what no other Commonwealth has yet undertaken to do: We have provided that every week that a child under 16 and over 14 works in the industries of Pennsylvania, eight hours of that week of toil shall be spent in a continuation school conducted and operated and made a part of the school system in the district in which that child resides or works. (Applause.) We shall administer that law just as we administer any other law in Pennsylvania, in such a fair and open and equitable manner as to make it easy for our great, complex industries to adapt themselves to its provisions and to enter heartily into the carrying out of its several enactments. We look forward, therefore, in this great Commonwealth of Pennsylvania, to the time when every child that walks out of our schools and into our industries walks with a mind trained and a mind that will think first and therefore, in the largest way known to men, produce Safety First in occupational relations. (Applause.)

The Chairman was good enough to say I could go the limit in this speech. It looks as if I were going to do it!—I am interested in another phase of this Safety First problem. You may not know it, all of you, but you ought to know it, that you cannot carry out your Safety First idea in industry unless you put into the lives of your working people and into the lives of the children that are to be the working people in this country a moral responsibility for toil. Now here in Philadelphia, and no doubt in other cities in this country,

we are beginning to sense a situation palpable to any thinking citizen. We have reduced the hours of work for our people. We have done well in that. But we have made no provision at all adequate to the needs of those people for the right use of their leisure hours. And the wrongs of society—and if our good Mayor were here tonight he would testify to the same thing—the wrongs of society are committed by our people and the violations of the laws

of society occur not by people in their hours of toil, but by people in their hours of leisure. Until you establish playgrounds for your children and recreational centers for your people, so that every man, woman and child may have clean and sweet and wholesome and helpful recreation, you will not breed the class of citizens that will go into your industries with a spirit of Safety First in their hearts and in their lives. (Applause.) If you want to do your best work tomorrow, if you want to do what I hope to do tonight, go to bed early enough and sleep long enough to waken up at your best for tomorrow's work. You can't do that if you loaf in a saloon till the late hours. (Applause.) We have to make it easy for our people to find right places to enjoy themselves in their hours of leisure. In Philadelphia, through the auspices of our Home and School Association, ably represented here by Mrs. Wilson, who sits before me, we have endeavored to do something in that direction for the children and the people of this splendid City of Philadelphia. It is bound to come. (Applause.)

In the presence of the court I am going to make a prophecy that in the next twenty years we will be legislating more for the conservation of our people in their times of leisure than in their times of toil. See whether that is a good prophecy or not. I hope you will live long enough to test it out, twenty years.

Finally, then, this thought; we want, as far as we can accomplish it, to bring to the attention of our children in the schools and our people in their hours of toil, the importance of bringing themselves

## THE N. S. C.

Is putting the axe  
into accidents. Better  
an ounce of "did"  
than a pound of "going to."

daily to their tasks at their best; physically at their best, morally at their best, intellectually at their best; so that their toil is a joy and not a drudge from day to day. (Applause.)

I don't know whether all of you ever played in any games or not; I suppose you did, one sort or another. But I venture this prediction: that the game you played most skillfully was the one you played most frequently; and perhaps the converse of that is true. But you played it frequently because you were skillful in the game, and because you were skillful in the game you had joy in your soul in that game. The only thing that gives us joy in life is life is the thing that we have learned to do well. If a man once learns to do his work well, finds it a source of pleasure and satisfaction to solve its difficulties and triumph over its intricacies, that man comes to his work with a joy in his soul that money cannot buy; and that makes him one of the finest citizens of this great, splendid country of ours. I want you to sense that.

Some of you are factory inspectors and all that sort of thing; you are people that go around and meet people and look after them and safeguard them in their hours of toil. Let me ask you to do something. Why don't you, once in a while, instead of asking about how many rounds there are in a fire-escape or how much scaling of paint there is on this or that one—which is all good in its way (I am not quarreling with that question; I am afraid of this New Jersey lightning back here)—why don't you call a number of these men and women who are toiling and working under your supervision and inspection and sit down with them and talk with them like real friends and point out to them what in your wider experience you have found to be good for them, and out of the richness of the training and the study that you have given the welfare of others, help them to see it in the big way you sense it? You will be doing something worth while when you do that. (Applause.) Why can't we turn all this talk into our public schools and our private schools as a gospel of life, that every child in school shall be trained to the meaning of keeping his mind, his body, his moral spirit at their best for every day's service in life? When once we have done that and brought this mighty army that is to be into touch with the great industrial outlook of our people we shall have done something splendidly worth while.

I was reminded in your President's sermon—(laughter and ap-

plause). He takes his text from the best book I ever read, and preached a sermon as fine as any man need to hear to walk aright—a fine, moral, sensible sermon. I was reminded in that of a little line from one of America's sweetest singers:

"He that loveth best his fellow man  
Is loving God the holiest way he can."

I thank you. (Great applause.)

TOASTMASTER CAMPBELL: Ladies and Gentlemen: I am powerless of expression after such a talk as that we have just heard. All I can say to you of Pennsylvania is, you have some Governor. (Applause.) The next speaker will be the Hon. Rudolph Blankenburg, Mayor of Philadelphia.

HON. RUDOLPH BLANKENBURG,  
MAYOR OF PHILADELPHIA.

Mr. Chairman, Members of the National Safety Council, Ladies and Gentlemen: I am glad to be with you tonight. It seemed at first as though it would be impossible. One of the chief duties of the Mayor of a large municipality seems to be to attend banquets. I have already attended one banquet this evening; this is the second one. But the banquets themselves are not as bad as the fact that a man in my position, the Mayor of a large city, is always expected to bark for his dinner. When I was a boy, away on the other side of the water, we children had a small dog. The dog was called Bellow, and we taught him all kinds of tricks. If he wanted something to eat he was taught to say "Bow, wow, wow," and then he had to get a rubber cup or dipper. He would jump on a chair to reach the sideboard, bring down his dish when it was filled with either meat or water—he got nothing but water, the same as we tonight. I am glad we are getting nothing but water—Safety First. And safety is contained in this tumbler as well as in every tumbler on every table here.

But I must continue my story. There is only this difference between Bellow and myself. Bellow had to bark for his dinner before he got it, I have to bark for my dinner after I have eaten it.

This meeting of yours, to my mind, means an epoch in the history of the United States. Your organization is but four years old, yet

## Hand-in-Hand

1. Industrial Justice.
  2. Industrial Efficiency.
- Both must recognize the human factor.

it extends all over the country, from ocean to ocean, from California to the borders of Canada. I believe there are members present tonight from Canada. The good you can accomplish is something that as a general thing we do not as yet appreciate. In fact, many do not fully understand the scope of your work. I have always been taught to be careful and was careful, because if I did not attend to my mittens punishment followed. So I learned in early childhood

to be careful and not to do anything that might injure me or might hurt my brothers and sisters; and there were nine of us. My father was a minister—ministers generally have large families and small incomes. His was not an exceptional case. He was a firm believer in Safety First. He told us children: "I can't leave you any money, but I will give you a good education." So we had a tutor, a private tutor, who labored with us for seven years. Father often said: "Money can be taken from you—with an education you are safe—so if you are properly educated you may go to any part of the world and will be able to make an honest living and become a good citizen."

Now that kind of safety I always believed in and have tried to make the guide of my life. I have followed it wherever I have lived. For many years I was engaged in business in the City of Philadelphia. After fifty years of business life I retired in 1909. I did not permanently retire from business, however, because the people elected me Mayor in 1911. I have worked harder for the last four years than ever before in my whole career, and I am not through working yet. It was always my endeavor to have everybody—and I have employed thousands and thousands of people—understand that they must look out and not get into trouble through their own ignorance or carelessness. Safety First was always made prominent and so I never had an accident but once in these many years, and that occurred through disobedience of orders.

You are endeavoring, all over the United States, to establish

this principle of Safety First, which we are trying to preach in all branches of industry. Good luck to you! If there is anything we ought to consider above the dollar it is the welfare and the health of our employees. If we teach and preach that doctrine, and it is made effective, there will be a wonderful change all over the land. Give, as I have always preached, not only of our substance, but give of ourselves. Personal contact with the people in our employ will do much more for them than just monetary compensation. They should know that there is humanity in the employer, that he is humane, and that he does not want to enrich himself from their labors, but that he desires to help them to become good citizens and supporters of their families and to leave to their children a heritage of which they may be proud.

As stated before, ladies and gentlemen, I have already attended one banquet and have to go to two more meetings. We should look to establish safety in other things besides manufacturing and business life. We need Safety First in government. That safety can be brought about only by united action; and that united action it has been my endeavor, during four years of my holding office, to establish, with the result that the 12,000 employees of the City of Philadelphia today are free as they have never been before. We have made their interest our interest, we have tried to establish safety for them in every way in all conditions and among all classes of our employees. We have endeavored to get close to them in everyday life and they have appreciated it. Why should I consider myself better, more favored, and of more account than the humblest man in the City of Philadelphia? I shall live but a few years longer. I have lived 73 years now. I hardly look it, do I? Soon my time will come when I shall join the vast majority, and beyond there is no distinction of persons, at least we hope so.

Ladies and gentlemen, you compose the National Safety Council. I firmly believe that if you succeed in your endeavor in the great

## Great Men

"That man is great  
who can use the  
brains of others to  
carry on his work."



work to which you have dedicated yourselves—if you make it a success in our own country—it will not be long until we shall have an International Council of Safety. If we have such an International Council of Safety there never again will be war; never again the appalling slaughter which is now depopulating all parts of Europe. An International Council of Safety will prevent war in the future, and stop the shedding of the blood of the flower of young manhood. And what is war? Even if we experience its horrors at a distance of three or four thousand miles, our eyes fill with tears and we may well exclaim: “Is it possible that in these days of the twentieth century, at this period in the Christian era, such a war can be waged among civilized people?” Then we are told that war should be carried on in a civilized way. No war can be carried on in a civilized way. All war is hell, as Sherman aptly said.

Ladies and gentlemen, this card attracted my attention the moment I entered the room. On it is pinned the American flag, the most beautiful emblem of liberty ever designed by man or woman, and this flag was designed by a woman. Let us dedicate ourselves one and all to the services of our glorious country that has given us birth or has been a refuge to many, as it has been to me. I do not believe in hyphenated citizens of any kind or character. If they ask me: “What and who are you?” I stand up proudly and exclaim: “I am an American of German birth.” This is not treason to the country of my birth. I love the old homestead; I have visited it many, many a time, and though nearly all my old friends have passed away I still go there. The fondest memories linger around the old playgrounds, the old parish. But with all these fond memories, this is the land of my adoption and for this land I would, if need be, fight, in spite of my years, to the last drop of blood. (Applause.)

TOASTMASTER CAMPBELL: I have the pleasure of introducing to you Mr. Edson S. Loft of New York. (Applause.)

MR. EDSON S. LOTT,

PRESIDENT UNITED STATES CASUALTY COMPANY.

Mr. President, Ladies and Gentlemen: I suppose this ought to be the proudest moment of my young life, appearing on the same

platform with a real live Governor and a real live Mayor. Anyway, I know that my good wife here appreciates it. Why, she hasn't spoken to a neighbor since I announced that I was to perform here tonight. (Laughter.) More than that, she intends liquidating several social grudges through the prominence my association with these celebrities will give her family. (Laughter.)

Even my grandson has caught the fever. He is celebrating the event by wearing my evening clothes day and night, and that's why I am in this plain attire. (Laughter.)

And my grandmother is eating her breakfast the night before these days, thank you. (Laughter.)

I know that I am going to have a good time tonight, no matter what may happen to you and to President Campbell. (Laughter.)

And I know one of those who must listen to this experiment—you know that President Campbell regards it as an experiment—who will praise the result of the hard work I am putting into the thing, and that is our gracious and gifted Secretary, Mr. Cameron (applause), for 'twas really he who invited me to do this turn. Mr. Cameron and I are like Phon Hyer and Lem Cornwell up at Penn Yan, in York State, where I lived as a boy.

Phon played first base on the Rough and Ready Baseball club in that well-known place. (Laughter.) And Phon was some ball player, believe me. (Laughter.) He knocked nine home runs in one game with the Blue Jays of Kinney's Corners once. Over the fence gave a home run. (Laughter.) About a year after I left Penn Yan—many leave Penn Yan, 'tis such a good place to go back to, to get away from again (laughter)—some half dozen of us decided to go back and spend a week fishing in Lake Keuka—Penn Yan is on the shore of Lake Keuka. We hired (perhaps took is a better word) a shack on the lake shore. The first thing we did was to elect a cook, who was to cook for all of us until some one complained of the cooking, and the complainant was to do all of the cooking all the rest of the time. Phon Hyer was unanimously elected. On the first morning Phon was up bright and early and prepared breakfast on a bench in front of the shack. Just as he was about to break the news that breakfast was served, a particularly bright thought struck Phon. He said to himself "Here's where I leave this job." He gently poured a generous teaspoonful of salt in each man's coffee cup, poured the coffee, and then yelled "Break-

## SMILE

A man with a cheerful disposition doubles his power—and also doubles yours.

fast!" Lem Cornwell—Lem played leftfield on the Rough and Readys—was the first man at the bench. He was a full minute ahead of anyone else, because he did not stop to dress. Lem got down about half a cupful of that coffee before he discovered anything out of the ordinary with it. Then he spit and spewed, and said: "What blithering idiot put sa—but I *like* the stuff." (Laughter.)

My knowledge of workmen's compensation laws leads me to make

some remarks, now that we are in Pennsylvania, concerning the Pennsylvania Workmen's Compensation Law, which goes into effect, as you know, on January 1. As the executive head of a casualty insurance company, insuring employers against their liability under workmen's compensation laws, I have made careful study of such laws the world over, and some people are kind enough to believe that I know quite a bit about such laws.

I am very glad in this place to pay tribute to the zeal and solid sense of Governor Brumbaugh (applause) in insisting that Pennsylvania get into line with the thirty other States and enact a workmen's compensation law. Without your sturdy aid, sir, Pennsylvania would have had excuses to make to this gathering of safety experts, for a compensation law in these days is one of the tests by which men judge the social status of a State. I am glad, too, to testify to the merit of Pennsylvania's new law. (Applause.) It is not a perfect law, of course, but for a middle-of-the-road measure that recognizes facts and not what dreamers say are facts, it stands out before all the other laws. For this result, Governor, we, employers and employees and wicked casualty insurance companies, owe much to the Pennsylvania Industrial Accident Commission, on whose report the law was based. In particular to its hardworking Secretary, one of the leading compensation experts of the world. I mean, of course, that broad student, that clear thinker, that hard hitter, Professor Francis H. Bohlen of the University Law School. (Applause.) It argues well for the right working of your new law

that Professor Böhlen has been permanently retained on your State Commission, whose duty it is to see that the law is properly enforced.

By the way, before I forget it, I would like to say something about the Governor's remarks that we can all play best that game which we like best. I would like to say, then, that if the Governor likes the game of talk as well as he played that game tonight, he must talk in his sleep. (Applause.)

To be obliged to follow the patriotic, blood-warming speech of Mayor Blankenburg (applause) and the soul-stirring oration of Governor Brumbaugh (applause) is sufficient punishment for having the temerity to appear before you tonight, but my good wife, by way of encouragement, I suppose, whispered to me just before President Campbell's unctuous introduction (laughter): "Why, just see those great, big, fine-looking men. You will make a sorry spectacle when you get up." (Laughter.) But my reply to her was: "My dear, I do not notice that one of them has any bigger mouth than mine." (Laughter.) That was before Colonel Bryant had come to the speaker's platform. (Laughter.) Before he had joined the After-Dinner Speakers' Union. (Laughter.) And I secretly hoped that you might mistake a big noise for real rhetoric, for the President had asked me earlier in the evening, "What do you think of them?" meaning you, and I had replied, "I am not worried so much about that as I am about what they will think of me." (Laughter.)

Accidents—how to prevent them, how even to reduce them—this is the humanitarian work of the National Safety Council; this the broad lesson of this great Congress. Yet, what a different meaning has the word accident to that given it long ago. The day was when accidents were thought to be the work of a higher power, omens of good will or ill, and sought out as the messages of the gods to men. There were no Safety Councils then. Safety First would have been a profane, not a potential slogan. Nor were our fathers much wiser

## DON'T

Run around in the  
rain too long trying  
to find where you  
can buy an umbrella  
the cheapest.

than the ancients. Until recently, an accident was rather a visitation of bad luck, an experience, like rain or drought, quite beyond the control of men. In these modern days, what a change. The popular view now is that accidents are but neglects; neglects largely preventable—for a non-preventable accident is not really an accident at all, but just a circumstance in the scheme of things. Largely preventable, I say, and to be reduced just in proportion as by education and precept and command the ordinary man can be taught to take care of himself.

Right here, before I forget it, I would like to rise to a question of personal privilege, that I may call your attention to the fact that I am entitled to ask your indulgence while I attempt to explain, as best I can, the reason why our ten-talented and signally successful retiring President should have caused to be printed, in conspicuous type, directly underneath the name of Edson S. Lott, on page 21 of our beautiful program of the evening's entertainment, the caution: "No alcoholic liquors will be served." (Laughter.) Now, of course, I suppose that it's all right, but I just don't enjoy having it made quite so public. But, nevertheless, I love our President. He is a handsome man and a splendid man. (Applause.) I heard him referred to, the other day, as big of body, big of brain, and big of boodle. He surely is big of body and certainly is bigger of brain. His reputation, before he became the President of this far-famed organization, had enthusiastically o'erleaped the confines of his own commonwealth and had spread itself all over that part of the country where I make my living. Long ago the thought came to me that I ought to become acquainted with him. I was on speaking terms with Colonel Bryan and I thought that it wouldn't do me any harm to know other big men. (Applause and laughter.) Besides, my good wife had repeatedly told me that I should have at least a bowing acquaintance with some preacher—you heard the Governor call President Campbell a preacher. Therefore I went to his town to touch—get in touch with—President Campbell. (Applause.) At his office, I was told that he had gone out with some one to some club. I have forgotten the name of the club. At the club I was informed that he had gone home. It still being an hour and a half before dinner time, I thought that I might as well trail him to his home—probably he would admire my enterprise. So I hired a cab and set sail for the residence of our beloved President.

In response to my ring, a maid came to the door. "Is this the residence of Mr. R. W. Campbell?" I inquired. "It is," she said, sort of sadly, I thought, and then she pushed her head beyond the door until her eye caught that cab standing at the curb. She slowly swung the door wide open and slowly added: "Bring him right in." (Laughter and applause.)

Of course I do not pretend to claim that there is any connection between the incident which I have related and the doubt which possesses the President's soul as to the wisdom of permitting me to talk here tonight. (Laughter.)

Let's see. Where am I at? I had this—I thought I had it—memorized, and I certainly got it off all right and in fine style—so he said—to the editor of our local paper in the little town outside of New York where I live, before I started for Philadelphia. (Laughter.)

Yes, I was talking of workmen's compensation. We casualty insurance men welcome the new system. It is so much better than the old employers' liability laws. Compensation now goes to seven injured workmen where damages went to but one. Still, by just as much as the relief is broader, by just that much is the natural tendency to carelessness increased. The man whose family is secure from want through the existence of a compensation law is not apt to be as careful as he was in the employers' liability days. In this our safety campaign supplements the compensation law crusade. It puts pressure on the workman to make him more careful. It requires the employer to protect the men at work.

To hark back a minute, and to get the thing straightened out somewhat before we go any farther, I must say that—of course—I am not sure that by the juxtaposition of my name and "No alcoholic liquors will be served" anything was intended more than a sort of diplomatic reminder that I could not get mine here. (Laughter.) Thinking of Safety First I acted on the suggestion and went outside and brought mine inside. (Laughter.) Then, too, you know, none of us need be too certain that the President guessed right. It is possible that the printer may have slipped a cog and got that notice under the wrong name. You know perfectly well that when I went outside I found so many of you ahead of me that I came near never getting back. (Laughter.) But I got here ahead of the Governor, at that. (Laughter.)

## **Blue Monday**

**Do things right  
and you won't have  
to put on gloves  
when you open a let-  
ter from the boss.**

Moreover, the President might well have made the mistake my good mother made up at Penn Yan—in the old house where I lived as a boy—a couple of years ago.

'Twas this way: While I was home on a visit, I decided to have my old bedroom repainted and repapered.

I hired Skid Johnson—Skid and I went to school together—to do the work. I told mother that I had engaged Skid. She was

furious. You see, mother wanted me to employ a man of the Campbell type, the real dyed-in-the-wool sort, for she (God bless her) is a teetotaler of the violent variety. Why, if she had known that I would go outside with you all before coming inside here, it would hurt her. Mother said to me: "Skid Johnson is a rummy, and I won't have a rummy on the place." By personally guaranteeing that Skid would not drink a drop while he was on the job I induced mother to let him do the work. But mother warned me that I must not as much as let him see the Eagle Hotel while he was on the job, else all bets would be off. Then I explained the situation to Skid and agreed to pay him extra if he would not take a drink while the work lasted.

Along about noon of the first day of the work Skid came down stairs and announced that he would have to go down to the street—the "street" being where the captains of commerce of Penn Yan transact their business—and get some plaster of paris at Pinker's drug store with which to fill up the cracks in the walls. My heart sank. Pinker's drug store was just beyond the Eagle Hotel. I told Skid that I would get the plaster of paris. He argued long and earnestly, claiming that I could not select the right kind and all that sort of stuff. But I stood firm and finally won.

When I reached the old "Eagle," I dropped in, just to see whether it had changed any since I had last been inside. Do you know that about every man who had gone to school with me in the old academy when I was a boy dropped in at the same time, and we had what

might be called a Penn Yan Academy reunion. No one thought to serve the notice which distinguishes the printed program of this most enjoyable evening (laughter) and—well—finally I got the plaster of paris and started for home. I found that—through being away from Penn Yan so long—I was not as familiar with its thoroughfares as formerly, and it was just noon when I reached home. I entered the side door, where I met mother just coming to look out

to see if I were coming, and Skid, who was just going out on his way home to his noonday meal. I handed Skid the plaster of paris and he took it upstairs. Mother turned to me and exclaimed. "You promised me that Skid Johnson would not drink a drop while he worked here." "Well," I replied, "he hasn't as far as I know." "Hasn't," almost screamed my dear old mother. "Why, can't you smell his awful breath, and it's growing worse all the time. Get him out of the house. I can't breathe in such an atmosphere."

Do you know, Mr. President, that I am a bit puzzled by your array of speakers here. You have given us, first that accomplished scholar, the Governor of this great State, then the successful Mayor of this teeming city of workmen's homes, and then you have given us Lott—like his Biblical namesake, representing something wicked—the casualty insurance companies—and also from the modern Sodom—from the same sort of a place near where old Lott spent his time while he was on earth before he went to his reward. I wish that I were about to take mine now. (Laughter.)

I beg you to believe, ladies and gentlemen, that I have employed the style of talk I have been handing you only because I cannot hope to hold your attention by the use of any other brand. After you have listened to the intensely interesting and altogether wholesome address of our President, the patriotic appeal of the Mayor, and the really fine oration of the Governor, but the mention of the Governor that the conservation of the lives and limbs of the working people of this State makes for better citizenship comes back to

## Collecting It

"The world owes every man a living but he's got to hustle to prove the claim."



me as I stand here, and causes me to discard the nonsense and to try to say to you, in conclusion, another word about workmen's compensation laws and safety first campaigns.

We must not expect too much at once from either movement. Compensation should never be more than two-thirds of wages; perhaps, in the beginning, even less. More, accidents during the first decade of the safety campaign will not be much reduced. All that we can hope to do at first is to prevent maintenance of the previous annual increase. Education works slowly when habit and instinct must be overcome. And one thing more. Keep your eyes wide open for the ambulance-chasing doctor. New blessings ever have new evils in their train. The shyster lawyer's substitute, the shyster doctor, is not yet the curse that the shyster lawyer was. He cannot be that curse as the Pennsylvania law now stands. For, under it, the employer furnishes—the employee cannot select—the attending physician. This is not so in some states and nations. Witness their ever-mounting cost for medical relief. In the first five years after "free selection" of physicians became the law in France, the cost of medical service in compensation cases went up 94 per cent, while the number of accidents went up but 28 per cent. So beware, beware of the insidious agitator who asks a little amendment that, forsooth, the injured man may have his own doctor. That agitator is the forerunner of the shyster doctor; the shyster doctor, with his false medical certificates, his unnecessary treatments, his laborers' free clinics, and his divvies of the statutory medical fees with poor patients thus won. And, don't forget this, either. The employer, not the employee, nor yet the insurance company, foots the bills.

Safety First! Everywhere, that warning halts, that lesson guides, that inspiration stirs. And now, in this second year of the world war, the President of the United States halts and guides and stirs us all with a paraphrase, finer in sentiment, nobler in inspiration. Said he, the other day: America first! America first! And, if perchance America must, too, some time fight, we shall want men—strong men, sound men, contented men. Shall we not help to conserve these future fighters now? What if, through our safety campaign, we can now reduce the workers killed or maimed each year by 10, nay 15 per cent! For the nation's welfare, let us make it five, yes, ten points more. This is our part in preparedness. For

against the future need, Safety First and America first go hand in hand. (Applause.)

TOASTMASTER CAMPBELL: I think that we are all very glad that Edson S. Lott came out of Penn Yan. (Applause.) We are also glad that neither he nor his wife looked back as they came out of that city of iniquity recently. (Applause.) And I think that he may have no further doubt as to what we think of him. (Applause.)

The opening session of our Congress was very beautifully characterized by an address upon the ideals of our movement. We have the same gentlemen with us this evening and I do not feel that I would be just to you if I did not give him an opportunity of saying a further word to you, and I am going to ask Chancellor McCormick to say a few words.

CHANCELLOR M'CORMICK,

UNIVERSITY OF PITTSBURG.

Mr. Chairman and Members of the National Safety Council: The first and the chief word I should like to say is a word of real appreciation of the opportunity I had of being with you yesterday and of being one of your number at this very delightful dinner this evening. Not only have we heard this most eloquent and patriotic address from the Mayor of Philadelphia, and this most remarkably able address from our Governor, who could not have set forth the essential idea of this organization more perfectly if he had been a member of it from its inception till this present hour, and this very witty address which has just been concluded; not only in listening to these and in feeling the thrill of their eloquence, but in being permitted to be the guest of men who are engaged in great affairs in the business and industrial world and who are heart and soul committed to a movement, having as its purpose the bettering and conserving of human life, I count myself happy; and in the inspiration of the moment I want my first word to be a word of appreciation.

I really said yesterday all that I had thought to say, but as I have been sitting here this evening my mind went back to an experience I had last year in visiting not only all the countries of Europe, but

## And the Doctor Calls

When Indifference  
comes in the door,  
Safety flies out the  
window.

also Egypt and Syria and Palestine. When in Jerusalem a friend of mine told me a story of an old sheik in Jericho, with whom he gained an intimate acquaintance. According to the old mans' own story, he was one time riding towards Jericho when he saw in the distance a man riding what seemed to be a most beautiful horse. As he got nearer and saw how very beautiful that Arabian horse was, he said to himself: "I wish I had that horse." The nearer he got, the more

beautiful the horse seemed, and he repeated: "I must have that horse." And as he got up still closer to the man he said: "That horse must be mine." At this moment desire overmastered him and drawing from his belt the weapon of his country he threw the knife straight as an arrow into the back of the rider, wounding him to death. Without compunction, thus this sheik possessed the horse, at the cost of the life of the man lying upon the ground, his eyes still open, looking up at him. "But," asked my friend, "do you think that was just the right way to possess the horse?" "Well," said the sheik, "I was not very comfortable because of those eyes staring at me." This was his only answer. One such act seems horribly cruel, and were it not that in Europe today ten million men are trying to slaughter ten million other men we should say that such manifestations of cruelty and disregard of the rights of another were impossible. Certain it is that what is going on in the world today is not only stupid in the utter uselessness of it—for war is as stupid as it is ineffective—but it is bound to produce in the nations which wage war an absence of sympathy, a coarseness and cruelty in the people which will disastrously affect the manhood of Europe and fashion for them an ideal of character far removed from that which is represented in this gathering tonight.

Your President has read, on the reverse side of your program, the basic thought of this organization. I want to read it to you again: "And the end is that the workman shall live to enjoy the fruits of his labor; that his mother shall have the comfort of his arm

in her age; that his wife shall not be untimely a widow; that his children shall have a father; and that cripples and helpless wrecks who were once strong men shall not longer be a by-product of industry." These words are a statement of what you deem the real business of men and women in this present time. I want simply to ask you this question: By which of these methods—the method of war, the method of force, the method of destruction, the method whereby human life is held lightly; or the method of thinking for others, caring for others, entering into sympathy with others and endeavoring to make life as beautiful and perfect for others as possible—by which of these methods are we to attain unto the highest type of character? And I take it that that is exactly what we are in this world for: to learn what is the right kind of character and how we in the world are to attain unto it.

There are men who say this: that it is only as we from time to time engage in such a struggle as war that it is possible for us to develop the rugged, heroic virtues without which the human race must become degenerate. I am not one of those who believe that it is always wrong to fight. We in America have the right to ask our government how many men we need and how many guns we need and how many fortifications we need and how many defenses we need in order that we shall be able to resist an attack upon us; and it is the people's business to provide the money for what is needed. It is right to make preparation for a possible war, as long as there are men who believe in war. But I want to ask you whether it is true that in order to have the right kind of character we shall indulge from time to time in an orgy of destruction as the only means of securing it? Surely not. I believe, men and women, that on the contrary the way to character lies in the practice of those principles which underlie this organization to which you are giving your time and your service. I believe that it is by this method we shall attain unto that character which will be just as

## Be Nothing

"The way to be nothing is to do nothing." Mental lassitude usually calls for a hospital ticket.

heroic and infinitely more gentle and kind than that produced by the practice of killing men in war. Only as we come to understand how fundamental to character is the teaching of the Master when he said, "Thou shalt love the Lord thy God with all thy heart and strength and mind and soul and thy neighbor as thyself," shall we ever realize in its fulness the kind of character that ultimately must prevail over this world of ours.

I remember the story of Carroll and Lazear, doubtless familiar to most of you. An alumnus of our University in Pittsburgh in an address one day exclaimed: "What is the difference between the old Christian martyr and the present day scientific martyr?" And then he went on to tell how Carroll and Lazear went South to study the problem of yellow fever, to find out if they could what it was, how it originated and how it could be prevented. They took a yellow fever patient, almost in the last stages of the disease, out of the bed in which he was lying, and one of them got into the bed just as it was, warm with the warmth of the sick body. No result came from the experiment. Then they turned to the mosquito, already under suspicion, applying it first to the sick body of the yellow fever patient and then to one of them. We know the result—the disease and death; but the problem was solved. Men were taught how yellow fever came and how it could forever be prevented.

Then the orator went on to answer his own question. The difference is that the old Christian martyr died to save his soul, and the modern scientific martyr dies to save the lives of the people. Perhaps he was not altogether just to the old Christian martyr. He also died in order that he might be true to what he believed to be right. But true it is that the modern martyr dies to save the lives of his fellow men. It is the glory of this present time, here in America, that men, the men of this organization, are giving themselves in an effort to make life happier and better, and in the very process are developing in themselves the kind of manhood, the kind of character, which alone is worthy as fashioned after the ideal of Him who came not to be ministered unto but to minister and give his life a ransom for many.

Now it seems to me that we are living in a time, men and women, the most beautiful and the most helpful the world has ever known.

At Easton this afternoon we listened to an address by one of the foremost business men of our nation, at the head of one of the

largest corporations, in which he made a plea for college men in business, urging that business deserves the very best kind of men in this day; for, said he, business is now a science, a profession, requiring talent and training. Then he enumerated the various things the business man is doing; not simply carrying on his business for himself, but carrying it on also for others; interested in everything which concerns the well-being of the employee. In illustrating his thought, the speaker referred to this safety idea for which you stand tonight. As I listened, I thought that after all the glory of America is that of the great men of the nation, those managing the great industries, those engaged in great enterprises, are today taking thought not for themselves only, but for others, and are at least helping to bring about the conditions which will result in an universal peace of which Mayor Blankenburg spoke.

For myself, I wish to say once more that so far as I have opportunity and time I shall help along this idea, one of the greatest that has ever been born, and one which is destined to spread until it shall touch every industry, every organization, and I trust every individual person; and when that shall have come then we shall realize that which our Saviour taught us, that we have come into the world to make it the very Kingdom of our God. (Applause.)

TOASTMASTER CAMPBELL: There remains but one last function for me to perform. It is one that I perform with very great pleasure; as I said before, however, with some considerable measure of regret. I have enjoyed my work with you and as the head of this organization, but I take very great pleasure in turning the reins of its government over to my successor, which I now do. (Applause.)

(President Morey assumes the chair.)

PRESIDENT MOREY: This banquet session stands adjourned.

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*"WIST YE NOT THAT I MUST BE ABOUT MY FATHER'S  
BUSINESS."*

**FOR SAFETY**

**"The people need brave hearts, steady heads and strong arms. Let us seek to inspire self-reliance, manly courage and sublime faith in the goodness of God."**

**—Editor "Leslie's."**

*Warn a Man When Danger Is Near—  
Even if He Knows It, No Harm Is  
Done—You May Save Him the Injury*

## **National Safety Council**

### **Foundry Sectional Meeting**

**Philadelphia, Pa.**

**October 21, 1915**

**DR. RICHARD MOLDENKE, Chairman**

**D**R. RICHARD MOLDENKE was introduced by Mr. Arthur T. Morey, President, National Safety Council, and in his opening address compared the safety work of this with that of European countries and drew the conclusion that we were far behind the standards attained in the older countries. He also laid stress on the necessity of co-operation and advised placing of the responsibility for accidents directly on the foremen.

Mr. Arthur T. Morey of the Commonwealth Steel Company then gave a most interesting talk on the subject of "Foundry Floors."

A very interesting discussion of this paper was had, the following members taking active part: Mr. H. B. Smith of the Illinois Steel Company, Mr. Wilkinson and Mr. Flagg.

A paper on "Handling of Materials" was then read by Mr. A. L. Clark of the American Brake Shoe and Foundry Company, which brought forth considerable discussion by Messrs. F. W. Jones of the International Harvester Company, F. W. Shepard of the American Cast Iron Pipe Company, F. H. Elam of the American Steel Foundries, S. W. Ashe of the General Electric Company, A. T. Morey of the Commonwealth Steel Company, H. B. Smith of the



## **EFFICIENCY**

**Full efficiency  
comes from the man  
whose heart is in his  
work, be it mental  
or manual.**

Illinois Steel Company, Wm. J. Johnson of the Baldwin Locomotive Company, Geo. Schulz of the Maryland Steel Company, S. G. Flagg of S. G. Flagg & Company, and A. Simpson of the American Bridge Company.

Mr. F. G. Bennett of the Buckeye Steel Castings Company of Columbus, Ohio, then gave a very interesting paper on "Eye Protection," discussion of which followed at considerable length, the following members leading in the discussion:

Messrs. H. B. Smith of the Illinois Steel Company, F. W. Shepard of the American Cast Iron Pipe Company, G. E. Middleton of the Cramp & Sons Ship Building Company, A. T. Morey of the Commonwealth Steel Company, W. G. Brayer of the National Malleable Company, S. W. Ashe of the General Electric Company, F. W. Jones of the International Harvester Company, A. H. Lintz, of the American Steel and Wire Company, and A. L. Clark of the American Brake Shoe and Foundry Company.

The next order of business was that of permanent organization of the Foundry Section of the National Safety Council and a motion was made and seconded that the chair appoint a committee of three to formulate plans for the permanent organization and report back to the meeting not only their recommendations along these lines, but also their recommendations for officers of the permanent organization for the ensuing year.

The Chairman appointed Messrs. Arthur T. Morey, H. B. Smith and S. G. Flagg as the committee. It retired and returned, and made the following report and recommended the following:

On motion, which was duly seconded, the by-laws were adopted by the unanimous vote of the Section. The committee then placed in nomination the following gentlemen as officers of the organization for one year:

For Chairman, Mr. O. J. Fehling.

For Vice-Chairman, Mr. F. G. Bennett.

For Secretary, Mr. Earl B. Morgan.

There being no further nominations, a motion was made and seconded that the Secretary cast one ballot for the above-named officers. This being done the gentlemen were elected. (Applause.)

Motion was then made and duly seconded that Dr. Richard Moldenke (Chairman of the nominating committee) and Messrs. Morey, Flagg and Smith continue to serve as a committee and be empowered to fill any vacancies caused by the inability of any of the gentlemen named to serve as officers for the ensuing year. Carried, and the committee was continued and empowered as above.

The next paper on the program, "Hand and Foot Protection," by Mr. B. W. Conlin of the National Malleable Castings Company, Chicago, was then presented by Mr. Conlin.

Discussion on this paper was by Messrs F. W. Jones of the International Harvester Company, F. W. Shepard of the American Cast Iron Pipe Company, S. G. Flagg of S. G. Flagg & Co., H. B. Smith of the Illinois Steel Company, A. L. Clark of the American Brake Shoe and Foundry Company, and Dr. H. P. Honrigan of Larkin & Co.

Points particularly brought out were the great reduction in toe accidents, brought about by the use of the "Protectoe" shoes, the prevalence in foundries of varicose veins, and the necessity of leggings for use by pourers and those handling molten metal.

Mr. R. F. Flintermann was not present and the paper on "Foundry Yards" was not presented, nor was the paper on "Lighting, Heating and Ventilation" presented. General discussion, however, on these subjects was opened by Mr. Arthur T. Morey and the Chairman, Dr. Moldenke. The meeting adjourned at 12 noon.

The sentiment expressed by the majority of those present was that the first round table of the Foundry Section had been highly interesting and instructive, and a beginning toward material organized advancement in foundry safety had been made.

## ACCIDENTS

Don't think because an accident has not happened it won't happen. Be alert.

## ATTENDANTS AT FOUNDRY SECTION.

Jos. B. Freund, Midvale Steel Company.

F. G. Bennett, The Buckeye Steel Castings Company, Columbus, Ohio.

H. M. Elder, American Locomotive Company, Richmond, Va.

R. S. Brunner, Lehigh Coke Company, South Bethlehem, Pa.

C. H. Lane, Producers Oil Company, Houston, Texas.

Fred W. Jones, assistant superintendent, International Harvester Company, Auburn, N. Y.

Arthur T. Morey, Commonwealth Steel Company, Granite City,

Ill.

Miss Lillian Erskine, Department of Labor, Trenton, N. J.

Jas. C. Crown, Department Labor and Industry, Harrisburg, Pa.

Miss Helen B. Noyes, General Electric Company, Erie, Pa.

G. E. Sanford, General Electric Company, Lynn, Mass.

W. A. Blum, National Cash Register Company, Dayton, Ohio.

S. W. Ashe, General Electric Company, Pittsburg, Mass.

F. W. Shepard, American Cast Iron Pipe Company, Birmingham, Ala.

George Schultz, Maryland Steel Company, Sparrows Point, Md.

Dr. H. P. Honrigan, Larkin Company, Buffalo, N. Y.

Gordon McDonald, American Steel Foundries, Chester, Pa.

F. H. Elam, American Steel Foundries, Chicago, Ill.

G. E. Middleton, American Car and Foundry Company, Wilmington, Del.

Frank Brewer, Pennsylvania S. C. and M. F., Chester, Pa.

M. C. Dittmann, American Bronze Company, Berwyn, Pa.

John McMahon, American Bronze Company, Berwyn, Pa.

F. A. Hassett, London G. and A. Company, Philadelphia, Pa.

J. C. Sturtevant, American Optical Company, Southbridge, Mass.

L. A. Beagle, Zurich General Accident and Liability Insurance Company, New York City.

R. M. Kelley, General Electric Works, Erie, Pa.

H. E. Thompson, Amoskeag Manufacturing Company, Manchester, N. H.

W. C. Swallow, Amoskeag Manufacturing Company, Manchester, N. H.

George Brooke, Birdsboro Steel Foundry and Machine Company, Birdsboro, Pa.

W. E. Harrison, Pencoyd Iron Works, Pencoyd, Pa.

W. W. Macon, *The Iron Age*, New York City.

Stanley G. Flagg, S. G. Flagg & Co., Philadelphia.

A. H. Lintz, American Steel and Wire Company, 1501 Penn Avenue, Pittsburgh, Pa.

John Wright, Inspection Bureau, Aetna Life Insurance Company, Hartford, Conn.

H. B. Smith, Illinois Steel Company, Joliet, Ill.

George T. Fonda, Safety Engineer, Bethlehem Steel Company, South Bethlehem, Pa.

Eckford C. De Kay, State of New York Insurance Department, New York City.

Eugene McPeck, Safety Engineer, National Malleable Castings Company, Toledo, Ohio.

A. R. Palmer, The Thomas Iron Company, Easton, Pa.

H. N. Smith, Safety Engineer, American Brake Shoe and Foundry Company, Mahwah, N. J.

R. Y. Pullinger, American Bridge Company, Pencoyd, Pa.

W. P. Schofield, American Bridge Company, Pencoyd, Pa.

A. L. Clark, S. W. F., American Brake Shoe and Foundry Company, Chicago, Ill.

Dr. Moldenke, Chairman.

William J. Johnson, Baldwin Locomotive Works, Ridley Park, Pa.

Dr. Orlando F. Scott, Surgeon, Greenlee Foundry Company, Chicago.

Walter E. Chick, Pennsylvania Steel Company, Steelton, Pa.

Fred M. Chambers, Cramp's Brass Foundry, Philadelphia, Pa.

W. B. McLean, United States Cast Iron Pipe and Foundry Company, Burlington Plant, N. J.

Anthony Simpson, American Bridge Company, Pencoyd, Pa.

J. R. Anderson, Michigan Mutual Insurance Company.

J. D. Lyle, National Malleable Castings Company, Cleveland, Ohio.

N. G. Brayer, Sharon Works, National Malleable Castings Company, Sharon, Pa.

**No Employe**

"shall remove, displace, damage, destroy or carry off any safety device or safeguard."—Industrial Commission of Wisconsin.

A. T. Dexter, Melrose Park Works, National Malleable Castings Company.

B. W. Conlin, Chicago Works, National Malleable Castings Company.

W. Wallace Wright, William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.

A. W. Vennema, Manhattan Rubber Manufacturing Company, Passaic, N. J.

H. D. Scully, Canadian Manufacturers' Association, Toronto, Can.

**OPENING ADDRESS.**

DR. RICHARD MÖLDENKE (Watchung, N. J.): It gives me much pleasure to call to order the first Foundry Sectional meeting of the National Safety Council, and to congratulate you on the great interest shown in this important development of the safety movement.

On looking over what has been a part of governmental activity in European countries for generations, so far as safety of the workers is concerned, one cannot but be struck with the backwardness existing in America. I have given this matter much thought and investigation, and have come to the conclusion that the situation is a psychological one. I once heard Andrew Carnegie remark upon the character of our people. He held that in the family life of Europeans the active and restless spirits broke their bonds of environment and came to this country. Hence our make-up—as energetic individualists—pioneers in the development of the country, in spite of all the obstacles encountered.

I would add to the above, which is unquestionably true and patent to us all, that the creation of the "self-made" man in the development of the country—Mr. Carnegie himself being a shining example—has introduced one serious phase from which we have been and are still suffering very badly. To become a so-called "self-made" man, the individual in question has had to step upon very many of

his brethren who were less aggressively constituted. The result has been much of the "one-man" type of working condition government. Such a man oftentimes thought himself a little god, and was contemptuous of the lives and welfare of those whom he employed. The survival of the fittest was his code. Safety First was an unknown slogan to him. I remember acting as interpreter in a settlement with the widow of a "Hunky" who had been accidentally killed. Three hundred dollars and a ticket to Europe was the price of that life—then considered a generous payment.

The worm has turned and today the statute books of the several "progressive" states and territories are burdened with unjust legislation which might have been avoided had the "little gods" been killed off early in the game of manufacturing.

Today the owner of a plant is very much alive to the political and financial aspect of accidents in his establishment. He holds his supervisors accountable for safety conditions. These superintendents and managers are beginning to see the "efficiency" side of healthy men working under safe conditions, but are still slow to make the necessary expenditures.

#### EDUCATING THE FOREMEN.

The keynote, however, of the operative end of safety provision lies in getting the co-operation of the foundry foreman. He, himself, has advanced from the ranks through individual effort. He has probably stepped upon men under him in consolidating his shop power. He is oftentimes a czar in his domain. He resents outside interference with his men, as a rule, either tacitly or openly, and unless his co-operation is enlisted the best of plans will lack the snap required for complete success.

I would emphasize, therefore, the desirability of educating the foreman, as the immediate superior of the men at work, to the safety standard. As it is not possible to teach old dogs new tricks,

### Every Employer

"to furnish a place of employment which shall be safe for employes and frequenters thereof."—Industrial Commission of Wisconsin.

it would be well to begin an educational campaign with the younger element, destined to be leaders of the shopmen in the near future, so that these young men may begin to live in an atmosphere of safety. Their very being will then be permeated with Safety First, and whatever they do or recommend will unconsciously be based upon the assurance that the possibility of accidents to the workers has been taken into account. Not only will the dictates of humanity be thus cared for, but actual dollars put into the pockets of the discriminating employer. (Applause.)

#### FOUNDRY FLOOR PRACTICES.

ARTHUR T. MOREY (Assistant to President, Commonwealth Steel Company, Granite City, Ill.): As a preface to these remarks, I will assume that the pre-requisite to all good safety work—good organization—has been accomplished and has produced good feeling and the right co-operation in the shop, and I take it that my paper is not to deal with that phase of the work, but primarily with the mechanical safeguards or conditions on the foundry floor.

I am glad to say that it has been our experience that our safety work has been a very great aid to shop efficiency in our foundry; that it has improved many shop conditions and helped toward a better output and reduction in costs.

#### GOOD ORDER.

Many accidents and inefficiencies occur in foundries through a long inherited idea that there has to be disorder. This makes it difficult to put the hand promptly on things when needed, causes waste of certain supplies, and makes for much stumbling, confusion and accidents. So one of the best safety things we did was to have a good brick walk laid the entire length of the foundry, and now the shop gauges itself to that. We worked out a place for everything and proceeded to see that everything was kept in its place. In this we were more or less helped by our having in our shop many fixed molding forms or drags for our large castings. Narrow gauge industrial tracks were laid to deliver complete sets of cores directly alongside the respective molds. Boxes were provided for facing sand, wedges, etc. Classes of work and material were segregated insofar as possible. Flask piling was carefully watched, not only within the foundry building, but also in the yard storage.

**CRANE OPERATIONS.**

All our cranes have structural steel safety walks on the outside of each bridge girder. We have found the best flooring is checkered steel plate. Toe plates 6 inches high and railings 42 inches high, with intermediate railings, are also provided in these walks. Safety cut-out switches, housed in wooden boxes with hinged lids that can be locked with a padlock, were provided on all cranes, and no one is allowed to go on a crane to do any work without first locking the switch, the man retaining the only key thereto except the master key in the office. We have a simple well-guarded trolley, though the installation of trolley guards is suspended, as the practicability of such guards is still under discussion.

**ACCESS PLATFORMS TO CRANES.**

No one is allowed any longer to go on a crane runway without special permission from his foreman, in case of repair necessities, etc., in which cases lookouts are placed to completely guard the men. The need of going on the runways is very infrequent. Structural steel access platforms are provided for each crane, the platform being head-height below the same, so that the crane cannot strike anyone standing on the platform. From this platform a short steel ladder leads upward, so that when the crane cage is brought in position over the platform the ladder on the crane cage is in continuation of the access platform ladder.

**BELLS ON CRANES.**

We only use a bell on our heat handling crane, because if bells were put on all our eighteen cranes the multiple signals would be so incessant and confusing that they would defeat their purpose.

**EMERGENCY BRAKES IN CRANE BRIDGE DRIVE MOTORS.**

We have equipped one of our cranes with an emergency magnetic brake which will automatically stop the crane within ten feet in case the power fails. An emergency knife switch, placed in front of the controller, also controls this brake for cranemen to use in case a finger of the controller sticks.

**INSPECTION OF CRANES.**

Before any heat is poured, whistle signal is given and a machinist and electrician thoroughly inspect the heat-handling crane. All



## Not the Boss' Life

Safety means  
more than property  
—it means life, per-  
haps your life or one  
dear to you.

cranes are thoroughly inspected once a week. Cranemen also promptly report any condition needing attention that they discover while operating or oiling their respective cranes.

### CHAIN PRACTICES.

#### *Riding Chains and Crane Loads.*

—This practice is entirely prohibited, being considered dangerous and unnecessary. The complaint was made that not to ride loads would slow up the work, but I have

never heard any complaint hereon since such riding was forbidden.

*Loads Over Heads.*—Passing over men's heads of loads being carried up the shop is minimized as much as possible, the above referred to walkway furnishing a good opportunity to do this, anyone using the walk at the time stepping to one side until the load passes. Chainmen must precede loads up the shop to give warning.

*Swinging Chains.*—Chains without loads passing up the shop are not allowed to swing free where they might catch onto things, but must be guided by the chainmen walking beneath.

*Signals Between Chainmen and Cranemen.*—It has always seemed to the writer that a uniform code of signals should be worked out between the cranemen and the chainmen so that new cranemen and chainmen can quickly learn a clear, intelligible code, and old men being transferred to other cranes would still use the same code. This will be accomplished some time, though our own progress toward this better practice seems, for some reason, to be very difficult.

*Materials in Chains.*—This subject is a large one and I would refer any inquirer on this subject to the paper of our safety engineer, Mr. Earl B. Morgan, printed under the proceedings of the Safeguarding Section.

*Overloading of Chains.*—Our floor work requires different sizes of chains, which creates a condition that needs watching. The craneman is forbidden to move any load on which he thinks too

light chains are being used. The foremen also watch this matter and the chainmen are trained. This seems to avoid much trouble with wrong chains being used, such as light chains for too heavy work. Where the loads to be lifted are standard, a good plan is to have a posted table of weights so men may know the proper chain for such a load.

*Inspection of Chains.*—We have every chain in the shop inspected carefully by special chain inspectors every day. We make our own repairs and also thoroughly test all new chain upon delivery by manufacturer.

*Lamp Trimmer's Walk.*—The old custom was for the lamp trimmer to stand on the top of a crane trolley to trim the lamps, which was hazardous if the crane was bumped. Also if the crane should not be secured at the proper times and the lights were not attended to, this would cause darkness on the floor at night, which is another hazard. Therefore we built a lamp trimmer's walk of structural steel, with wooden floor for insulation purposes, 875 feet long—the entire length of the foundry floor. This permits regular and proper attention to the lamps and is entirely safe. This has proven quite an efficiency item, as the lamps last longer, due to regular attention, and the building is furnished better light. The old method required tying up the service of one crane and required two electricians, while one electrician does the work now and does not have to wait on a crane.

*Sand Buckets.*—We and neighboring foundries had very serious accidents from the accidental unlatching and falling of sand bucket bails. We finally solved this problem perfectly by riveting lugs on the rim of the bucket, to provide a notch, riveting a projection on the bail and increasing the play at the bails supporting trunnion, so that when the crane lifted the bucket the projection on the bail would be lifted and clear the notch on the rim of the bucket so that bucket could be turned over for dumping. When the bucket was set down, the projection on the bail would settle into the notch on the rim and be auto-

## Play to Win

Boost for Safety  
First, not second,  
third or last, but al-  
ways and every-  
where SAFETY  
FIRST.

matically locked against the bail's falling. For our dumping purpose, when the bucket is handled by the crane, we left the latch on one side, but when in this position there is no danger of the latter not fulfilling its purpose safely. The good order on the foundry floor also permits the buckets to be set down on level enough places to insure against improper tipping.

#### LADLE PRACTICES.

*Men Around Ladles.*—We prohibit any more men being around the ladle while heat is being poured than are absolutely necessary.

*Goggles.*—All those whose duties require them to work around the ladle are required to wear goggles, so that the popping of the metal out of the risers or from possible breakouts cannot injure them. We have found a bi-color goggle lens especially adapted to this use. The lower half is white, while the upper is "jew" blue.

*Ladle-Stopper Handles.*—We have had several accidents from the handle being struck while the ladle was proceeding over the floor, opening up the stopper and spilling metal, which has splashed on the men. We have improved this condition as much as possible, but have not as yet worked out a safe lock on this handle. Suggestions from others would be gratefully appreciated hereon.

*Foundry Shoes.*—We have sold over 4,000 pairs of foundry, or congress, shoes to our men. We only pour big castings, and the danger of getting metal on shoes has not been very great, but runouts are possible, and we have gotten a splendid shoe which we sell to the men at cost, the wearing qualities of which have caused it to meet with large sales. The manufacturer has recently improved this shoe, both for quality and protection, providing a strong toe to break the fall of objects falling on the foot.

*Skin Drying for Eye Protection.*—We experienced some eye troubles when the men used torches for skin drying of molds, the trouble seeming to come from the combination of the light and heat. We provided simple amber spectacles free to the men having this operation, purchasing these spectacles at the 5 and 10-cent store. Their wearing is optional, as men with weak eyes, who need protection, seem to appreciate their own need and ask for the spectacles.

#### JIB CRANE PRACTICE.

*Steel Beams.*—We replaced the old wooden "equalizer" beam with structural steel I-beams.

*Notches for Links.*—We provided cast steel notches secured to the I-beam, of such a design that the links can never jump off the beam.

*Air Hoist Hooks.*—Where possible, we closed these hooks so that the beam could never jump off them. Where convenient moving of the beam is required we provided a very deep hook.

*Handles on Links.*—We had many fingers injured by being caught between the links and the cope or drag when turning over. We provided handles on all links, the use of which entirely prevents such injuries. This has been a small cost with a very heavy saving.

*Strains on Threads.*—In the jib crane practice we have avoided all strains on screw threads, heavily cottering wherever necessary.

*Air Hose.*—We found that sometimes the air hose which transmitted the air to the air hoist cylinder would be disconnected by catching on projections and thereby drop the load. We, therefore, shielded all such projections to avoid fouling the air hose in any way.

*Core Truck Bumpers.*—We placed bumpers on all core trucks to avoid catching fingers of the men moving them between the trucks.

*Sand Mill Practice.*—We guard but do not house the crown gears. All belts and other conditions are completely guarded, especially the hopper. We built an expensive hopper guard, but found simple bars were quite adequate and much less in cost. We are now replacing, for efficiency reasons, all belt-driven sand mills with direct drive transmission, which improvement also has its safety value. The direct drive is transmitted through herring-bone gears, which are completely housed by a guard which holds oil, so that gears run in oil all the time.

#### OPEN HEARTH PRACTICE.

*Tap Hole Guard.*—In cleaning out the furnace with air blast, sparks were thrown across the foundry floor, so we provided a spark shield to be placed in position at the tap hole for this purpose after the runner spout had been removed when such work was being done.

*Platform Guards.*—Rails, toe guards, etc., according to practice, are along the edge of the whole platform. We still have an opening in the platforms under the runner spout and tap hole, but we are now improving this condition by making a complete flooring in this place.

### Obey This Rule

Do not turn on the electricity, gas, steam or water, or set in motion any machinery without seeing if any one is in danger.

*Charger Spark Guards.*—We found it necessary to put a sliding glass wire window in front of the charger operator to protect him from sparks from the furnace when charging from boxes in which snow or water had accumulated. This has been very effective, and the glass is heavily pitted, showing where sparks have been arrested.

*Bell.*—We have an automatic bell on the charger, so that same cannot be moved without warning.

*Wheel Fenders.*—The wheels and all other conditions that can be guarded mechanically are covered on the charger.

*Furnace Roof Hazards.*—Occasionally, if a furnace roof gets weak and a few bricks fall, mending of the whole has been necessary. To meet the danger of the roof caving in while the men were making repairs on same, we constructed a sufficient number of 2 by 2-inch v. p. boards covered by No. 18 gauge steel over asbestos, so that same could be laid across the buckstay tie rods, and a protective platform thus be quickly erected, with a hole through which to work. In case of collapse of roof, it was considered this would give enough protection for the men to make a hasty retreat.

#### IN GENERAL.

As stated above, all the foregoing improvements have been very closely related to efficiency, and now, irrespective of the safety considerations, almost every one of the foregoing would be desired for purely operating reasons. (Applause.)

#### HANDLING OF MATERIALS.

A. L. CLARK (Superintendent, Western Foundries, American Brake Shoe and Foundry Company): Given a foundry and equipment and an organization to handle the work, we are at once confronted with the need of materials. As they begin to come in and the various other activities of the plant proceed, the prolific troubles of the foundryman begin. There, of course, is the pig iron, scrap,

coke, sand, clay, brick, stone, lumber, patterns, and all the miscellaneous supplies to be handled and stored. It is obvious that the manual labor employed to do this laborious work will be selected at the gate more particularly with reference to their muscular development and with little, if any, thought as to their mental capacity or brain power or their capabilities for more skilled work. We have pig iron to unload; we are short of men, and any cheap man will do. He is hired and becomes a unit in our organization, sometimes susceptible to development and efficient training, but generally unresponsive to these influences, for usually "nobody" around a foundry has time or inclination to direct his movements and show him the "safe" way to do his work. He crawls under and between the cars, in ignorance of the time switches are made; he drops a pig on his co-worker's foot, and with the seemingly utmost care and abandon slams down a pig on the side of the car with his fingers in between—two cases for the first aid man. Fortunately for us, the switch engine did not come in while he was crawling under the car or we would have had a hospital case or worse. But, you say, you don't run a shop like that. We don't do things quite that way now. We have adopted more efficient methods of handling materials, and are preaching Safety First and always every day, and yet some of these same fellows get hurt.

Progress, of course, has been made. We are employing cranes with magnets for the handling of all metallic materials, grab buckets for sand, clay, coke, stone, etc. These and other mechanical contrivances facilitate the unloading and handling of materials, and eliminate to a great extent the hazards in this work. But follow the trend of operations, taking the stock to the cupolas: Have you your elevators equipped with safety devices; do you inspect your elevator cables regularly; have you safety gates at all openings; do you permit the promiscuous riding of employes on these elevators; are your charging floors safe as to load factor, and the

## All the Time!

Everlasting watchfulness is the price of Safety. Think of the loved ones at home before taking a chance.

floors, platforms and stairways so protected as to prevent pieces of iron being kicked down on someone's head below? Do you have someone inspect your scrap, so that no shells, shrapnel, or other explosive war materials are charged or no old piston heads go in without being broken to cause an explosion that might blow your charges out of your stack and blow your bottom doors down and scatter molten iron about among your workmen? Is your cupola man protected with goggles and leggings? Are your pourers Safety First men, or are they continually getting burned? Are they spilling iron and burning others? How are your chains, cables and slings? Are they regularly inspected, annealed and properly taken care of? How about your yokes and bails, and don't forget your ladles, the gears, your cranes, your hoists, etc.? These are all means of handling materials and must be guarded and watched as well as the men.

#### ORDER SPELLS SAFETY.

Remember, too, we may have forgotten to clean up our foundry, and piles of old sand are here and there; gaggers, rods, old and broken flasks lying around. Your men, in handling flasks or molten iron or finished product, stumble or trip or fall, are maimed, bruised, burnt, or perhaps have stepped on a flask side or bar with a protruding nail; infection sets in; they are laid up and new men must take their places tomorrow, and your risks of further accidents increased on account of the inexperience of the new men.

#### HANDLING OF PRODUCT.

Then there is the handling of your product in the cleaning-room; chips are flying here and there; belts exposed, as well as gears on your tumbling barrels. Where are the goggles on your chippers and grinders—up on their foreheads or used for protection of their eyes? Are all your emery wheels properly guarded, all rests in shape, safety collars used?

Once in a while one of the chipping gang gets hurt, so that your safety provisions must extend to this department, too.

Now that all materials have been handled, let us see what has been the reasons for our men getting hurt. If you are interested in and have practiced Safety First, you have provided the necessary guards and precautions; you have taken care of the external and

physical influences that tend toward accidents; you have effected clean and sanitary conditions, provided adequate lighting conditions, substituted good and safe tools and equipment for old and obsolete methods; equipped the men with goggles, congress shoes, leggings and suitable clothing. All these are factors for and are decreasing the number of your accidents, but you still have the ignorance, the carelessness, and the mental attitude of the indifferent men in the organization to contend with. This is a matter of education, perhaps of some discipline. It's all in the game and worth while. Taking five foundry plants with which I am familiar, ranging in capacities from 20 to 150 tons each per day, and employing from 50 to 250 men each, I have compiled data for the year which shows 159 accidents reported. Eighty were slight bruises, burns or abrasions, occasioning no loss of time or medical attention other than first aid; 16 shows loss of one or two days; 30 from three to seven days; 15 from seven to fourteen days; 12 from two to three weeks; 3 for one month, and 4 of longer duration. The lost time figured \$2,917.24; doctor's fees, \$687.65; compensation, \$1,050.95. So it will be seen that the loss to the men in lost time exceeded the expense to the company by \$1,178.64 for the 159 accidents reported. Forty-two per cent occurred in the morning hours, of which 70 per cent were between the hours of 9 and 11 o'clock; 58 per cent occurred in the afternoon, 77 per cent of which occurred between 2 and 5 o'clock. Of the 159 accidents reported, 77 per cent resulted from the handling of materials, with the lost time 611 days; 23 per cent were caused by other accidents, with lost time of 640 days.

THE RECORD.

Computed on a man-day basis, the accidents per 1,000 were as follows:

|                    |      |
|--------------------|------|
| Plant 1.....       | .64  |
| Plant 2.....       | 1.80 |
| Plant 3.....       | .92  |
| Plant 4.....       | 1.32 |
| Plant 5.....       | .72  |
| Men per 1,000..... | 1.15 |

In handling materials, .89 man per 1,000, and .26 man otherwise.



## DEPARTMENTAL ACCIDENTS.

|                                                       | Accidents<br>Reported. | Resulting in<br>Lost Time.<br>Ac'd'ts. | Days. | No Time<br>Lost. |
|-------------------------------------------------------|------------------------|----------------------------------------|-------|------------------|
| Handling materials in yard.....                       | 11                     | 8                                      | 63    | 3                |
| Putting up stock, charging, and<br>about cupola ..... | 10                     | 9                                      | 83    | 1                |
| Pouring iron .....                                    | 31                     | 26                                     | 275   | 5                |
| Foundry equipment and supplies.                       | 22                     | 22                                     | 67    | ..               |
| In cleaning room.....                                 | 20                     | 13                                     | 28    | 7                |
| Loading and shipping.....                             | 12                     | 12                                     | 32    | ..               |
| In machine shop.....                                  | 7                      | 4                                      | 32    | 3                |
| Cranemen .....                                        | 2                      | ..                                     | ..    | 2                |
| Attaching crane loads.....                            | 3                      | 3                                      | 23    | ..               |
| Coreroom .....                                        | 4                      | 2                                      | 8     | 2                |
| Night crew .....                                      | 1                      | ..                                     | ..    | 1                |
| Totals.....                                           | 123                    | 99                                     | 611   | 24               |

## COMPARISON.

In closing, I would say that as to comparison of total accidents for the plants reviewed that in

|                                |           |
|--------------------------------|-----------|
| 1913 we had 381 accidents..... | Reduction |
| 1914 we had 227 accidents..... | *40.4%    |
| 1915 we had 159 accidents..... | *58.3%    |

(Applause.)

## EYE PROTECTION IN FOUNDRIES.

F. G. BENNETT (Director of Safety, The Buckeye Steel Castings Co., Columbus, Ohio): The conservation of vision in foundries by preventative measures has reached a more defined and regulated status today than has any other branch of safety work. That there is an eye hazard in foundries cannot be questioned, and remarkable and commendable progress has been made to minimize the results of this hazard. Elimination of the causes, of course, should

\*As compared with 1913.

be the initial step in preventing injuries to the eye, but this cannot always be accomplished on account of the nature of the work being performed. Flying chips of steel, particles of sand, and other foreign bodies are among the most common causes of mechanical injuries to the eyes and can be, in practically all instances combated by means of protective lenses properly fitted and always worn by the worker.

In the modern foundry today we must consider its various branches, which include chipping of castings by pneumatic tools grinding on emery wheels, sandblasting, electric arc welding, oxy-acetylene welding, and other modern devices and practices used to produce finished castings. This broadens the scope of this subject and we must take into account the injuries that are sustained to the terminals of the optic nerve, as well as the common abrasions and lacerations to the cornea or outer coating of the eyeball.

There are different types of foundries, and the practices vary in different plants, but we can apply the general procedure in foundry practice to this discussion. First, we all know that molds are made into which hot metal is poured; the rough castings produced, which must now be finished and the uneven parts smoothed to turn out a salable article.

#### EYE HAZARDS.

In making the molds there is need of preventative measures. The large steel-casting foundries use the molding machine, on which the flasks are placed and the sand rammed by means of pneumatic tools. The specific cause of injury in this operation is the flying particles of sand and other foreign particles, which is caused by the action of the head of the rammer. We have never observed a serious injury arising from this cause, but there is some chance of it occurring. Numerous cases of sand in the eyes, however, have arisen from this one item. There can hardly be any danger from hand ramming. Protective lenses and more careful use of air rammers will lessen the amount of injuries in this respect.

### Your Eyes

**"You are warned  
against working  
without eye protec-  
tors or with battered  
tools. Get proper  
tools and goggles  
from foreman."**

Pouring of metal in the molds is accomplished by varied processes. There is the small hand ladle, bull ladle, tilting ladle, and the large ladle which is mechanically operated by pouring metal in different quantities through a bottom opening. There is always an eye-hazard present in pouring hot metal, no matter what method is employed, and while it is possible to somewhat lessen this hazard by more careful handling, protective lenses should be worn by all employes engaged in this work. Not only to prevent injuries resulting from splashes should protection be worn, but also the eyes should be protected from the glare of the hot metal. This phase of eye protection deserves specific consideration and will furnish enough thought to be discussed separately and by specialists who are making a study of properly tinted lenses to eliminate the introduction of the dangerous infra-red and ultra-violet rays to the delicate nerve terminals of the eye.

After a casting has been made and is turned out of its mold, the next process is to remove the superfluous metal to make it a finished article. This requires chipping by hand chisels, pneumatic chippers, cold sawing, sand blasting, grinding on emery wheels, and sometimes electric arc welding. It is a recognized fact that these operations are hazardous in respect to eyes and properly fitted protective lenses must be worn by the worker to prevent injuries. Where castings are chipped in molding rooms and when other workers are likely to be struck by flying particles, a shield of burlap on an iron frame should be used. However, there is only one safe rule to follow in chipping-rooms, and that is to have each and every employe, and all other persons, wear eye protectors. This is not an impracticable rule as it is in use in several large plants throughout the country. The hazard of arc welding is apparent and recognized and the welder's hood is worn by all operators. It is always best to confine electric arc welding to separate rooms where the nature of the work will permit. Sand blasting should also be done in separate rooms and the worker should wear the sand blaster's helmet, which provides protection to the eyes.

There are other conditions and circumstances which at times present an eye hazard, such as swinging material on crane chains, air hose breaking, and other unlooked for instances which will have to be given consideration as the local conditions will demand.

## LENSES AND FRAMES.

The statement that "properly fitted protective lenses be provided" covers a broad subject. This is the most important part of the preventative phase. A properly fitted eye protector should consist of lenses made from optical glass and of such thickness that they will withstand a hard blow, and of such quality that if struck the glass will not fly in small pieces, but will remain in the frame. The frame of an eye protector should be of substantial construction and made to fit the wearer in a comfortable manner. The lens should be secured in its frame in such a manner that even though the glass is shattered the pieces will remain. It is very important that the bridge be of such type that its application will be universal, as there have been numerous objections raised on the part of employes to the wearing of eye protectors on account of the discomfort arising from the misfit of the nose bridge.

There are some cases where employes wear corrective lenses and it is an easy matter to have the same used in eye protectors. However, the use of optical glass, ground neutral, will not cause eye strain and the statement from an employe that the wearing of goggles make his eyes tired only reveals the fact that he has some defect in his vision and needs to consult an oculist, as no doubt he always has had this trouble and is merely using this as an excuse not to wear goggles. Eye protectors should be issued from one central point and by a person who will take the time to see that they properly fit the employe.

## ENFORCEMENT OF RULES.

The question of getting men to wear eye protectors has been raised in the past. This is not as difficult as it was thought it might be. Publicity, education and discipline are the best agents to be employed. By use of the bulletin boards excellent results can be obtained. There is no better medium than the posting of broken goggles, with a statement giving the name of the wearer and other data. In addition to this, photographs of the man who has had an eye saved by wearing eye protectors offers another excellent way to get the men to wear eye protectors. Where it is mandatory that eye protectors are to be worn, it should be seen that the foremen strictly enforce any and all rules relating thereto.

There will be some eye injuries in spite of all preventive measures

## Let There Be Light

We have just two eyes and how important it is that they both be kept in first-class working order.

that can be employed and no matter how trivial the injury may be it should receive first-class attention by a competent person. Removal of foreign bodies from the eye by fellow workmen with match sticks, toothpicks or other unclean articles should not be permitted, as there is always present the danger of infection with its resultant scar on the cornea of the eye, to later cause a defect in the vision.

Generally speaking, this subject of eye protection is one that has

been given a great amount of thought and study, and the manufacturers and jobbers of eye protectors, in endeavoring to furnish a proper article, deserve considerable commendation and praise. One firm in particular has, and is, making a special study of properly colored lenses for use around intense heat and other occupations where a glare is to be contended with, and certainly is spending a considerable amount of money in endeavoring to turn out a satisfactory eye protector.

The use of all mediums to conserve vision should be studied and applied. We have just two eyes and how important it is that they both be kept in first-class working order. When one is gone there is only one left between seeing this beautiful world and an awful life of darkness. (Applause.)

## HAND AND FOOT PROTECTION.

B. W. CONLIN (Safety Inspector, National Malleable Castings Company, Chicago): What swift and wonderful changes, what a world of activity, and what marvelous labor-saving appliances have we witnessed in the operation of the foundry since thirty years ago! "Magic" is the only word that can be used for the making of the phrase, Safety First, when applied to the foundry. What a marvelous movie film is in the mind of the man who happened to be born in the foundry when it was an incubator of accidents and mishaps and has lived to see it reared through its various evolutions

down to the present-day methods of operation in the up-to-date foundry, where accident prevention takes precedence over profit making.

Many an old foundryman of malleable extraction has personally spanned the gap of time, when it was the recognized practice to start the heats in the foundry with a roar and din that is hardly equaled on the European battlefields of today, to the quiet, ordinary, matter-of-fact method of the present time. Need we wonder that under such conditions the foundry contributed more than its quota of the maimed and injured? In the earlier days the burned or injured employe was generally sent home, without medical attention, to be taken care of by the wife or mother, who very often not only acted as nurse for those of her own flesh and blood, but also looked after those to whom she was not intimately related, such as boarders.

Contrasting this with the present-day method of giving first aid at the plant and medical attention by the doctor—are we not justified in claiming progress along humanitarian lines, and may we not feel that because of the safeguards installed and immediate care given injury cases we have tended to lift the foundry out of the so-called hazardous risks and placed it in a position where it compares favorably with other lines of industry?

#### HAND PROTECTION.

The subject assigned to me for discussion is that of "Hand and Foot Protection." First, we will consider the hand, meaning properly, the upper and lower arm, together with the palm and fingers, injuries to which constitute 70 to 75 per cent of the total number of injuries in our plants. Those of you who are members of the American Museum of Safety, or receive their monthly bulletin, will recollect the picture of an infected hand which appeared in their bulletin of January, 1914, showing the result of blood poisoning starting from a little scratch on one of the fingers, with this description: "There are pictures of a man's blood-poisoned hand; the blood

### Are You Blind?

"To burn your bills is no way to make light of your troubles." Don't shut your eyes to danger.

poisoning started from a little scratch and it poisoned the whole hand. He suffered much pain and could not work for a long time. If he had told his foreman he would have been sent to the company doctor and would not have had blood poisoning. Always tell your foreman, as soon as you are hurt, even if it is only a little scratch, and he will send you to the company doctor." This case cost the Chicago plant of our company over \$400.00 in medical treatment and compensation. The direct loss to the man can hardly be estimated.

Infection is the crying evil, according to the plant doctor. What are the means of prevention of cuts and abrasions, infection of which is usually the result of neglect? Our practice is to furnish hand leathers to all foundry laborers, yard men, chippers, annealing men, and others whose work consists of handling castings and raw material, especially castings taken directly from the foundry, which have, before being annealed, sharp fins and other projections which lacerate the hands. You will truthfully say that hand leathers are not always practicable to use, and that they will not in every case prevent small cuts and abrasions. We find that by designing a hand leather for each class or condition of our work we can protect fully 90 per cent of our employees with hand leathers.

As a result of the accident before mentioned, we have developed a system of inspection that has nipped in the bud a number of incipient infection cases. I received, a few days ago, a report from one of our foremen, which I will read to you, using his own language: "Our inspection recently unearthed two infections that would undoubtedly have turned out serious if we had not inspected the men's hands. We have a way of taking hold of their hands and squeezing their fingers, and if they make a face something is wrong."

Our experience and records show that infections occur in greater numbers toward the end of the winter and through early spring, undoubtedly due to the fact that the men's calloused hands crack open during the cold weather, and with the coming of early spring or warmer days these callouses that are cracked become infected, probably due to perspiration washing the dirt and germs into them—no attention being given to this condition by the men until infection develops. To prevent the development of such cases, inspection of the men's hands is made by us regularly. This method of inspec-

tion or procedure has enabled us to head off a number of what might have proved to be serious infections. As a further protection, we furnish our men, during the cold weather, with a small bottle containing a lotion to heal chapped or cracked hands. It might be of interest to state that in addition to washing facilities throughout our plant the men are furnished with a bountiful supply of soap. It has been noticed that, since the men have been given the washing facilities, small cuts and bruises are brought to our attention that previously were covered up, which will account for the large percentage of hand injuries, being, as stated, 70 to 75 per cent of the total number of injuries in our plant. Of this number fully 60 per cent or more are only small cuts and abrasions.

#### FOOT PROTECTION.

Injuries to the feet constitute about 15 per cent of our total number of accidents. Our practice is to furnish a legging to each molder and laborer when he is working about or pouring molten metal. This legging is made out of eight-ounce heavy duck canvas, and is kept in repair from day to day—a daily inspection being made. When leggings are found to be worn or burnt they are taken from the men and replaced with others in good repair, and necessary repairs made to those requiring same. In addition to leggings, we compel each molder or foundry laborer to wear shoes of the congress type, and we have also in some cases obliged men with varicose veins to wear shin guards to protect their veins from being cut and bruised. The necessity for doing this will come home to you forcibly by the following illustration:

One of our molders afflicted with varicose veins, while carrying a mold stepped over a mold box, striking the inside of his leg at a point five inches above the inside ankle, producing a very slight abrasion, about one and one-half to one and three-quarter inches in length. This he failed to report to the foreman, considering it of such a trivial nature as not to require any attention; in fact, the man, according to his story, stated that he did not realize at the abrasion became infected; the entire leg swelled, and he developed time that he had injured himself. During the next two days this an inflammation of the leg and of the vein extending up the thigh. When our doctor saw him, the vein was involved clear up in the thigh, almost to the stomach. This was forty-eight hours after the



injury. The man was removed to the hospital, where warm dressings were applied. At the point of the injury there was considerable sloughing, which was of a gangrenous nature, and involved the tissues where the slough occurred. Healing was very slow; in fact, the tissues were never built in and restored until recently. The leg is now practically healed and there are one or two spots on it that are a little red and look as though a slight irritation might break the skin. Over a long period of this man's disability the left leg was probably one-third larger than the right. At the present time, measuring at the most prominent portion of the calf, the leg is just one-half inch greater in circumference than the right. He has large varicose veins covering the inner and posterior aspect of the right calf. A great many veins of the left leg have become obliterated through the intense and terrific inflammation that existed over this man's leg for a considerable period of time. This man was under our doctor's observation for a period of 483 days and the case cost the company \$955.15 for compensation and medical attention. (Applause.)

The Section, after informal discussion, adjourned.

*Every Accident Is a Notice  
Something Is Wrong. Correct  
the Cause—Prevent the Accident*

## **National Safety Council**

### **Woodworking Sectional Meeting**

**Philadelphia, Pa.**

**October 21, 1915**

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**H. N. TALIAFERRO, Chairman**

**Production Superintendent, American Seating Company**

**S. H. KERSHAW, Recording Secretary**

**Safety Engineer, Independence Inspection Bureau**

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### **WEDNESDAY MORNING SESSION**

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#### **PARTICIPANTS IN DISCUSSION**

Mr. William Newell, Safety Engineer, State Insurance Fund,  
New York City.

Mr. J. R. Patterson, Department of Labor and Industry of Penn-  
sylvania, Beacon Falls, Pa.

Mr. C. E. Connelly, Factory Inspector, State Department of  
Labor, Oklahoma City, Okla.

Mr. A. H. Campbell, National Cash Register Company, Dayton,  
Ohio.

Mr. W. E. Williams, Packard Motor Company, Detroit, Mich.

Mr. Chapin Roberts, Sears, Roebuck & Co., Chicago, Ill.

Mr. Henry A. Hale, Jr., American Mutual Liability Insurance Company, Boston, Mass.

Mr. Truitt, Electric Storage Battery Company, Philadelphia, Pa.

Mr. W. J. Higley, Willys-Overland Company, Toledo, O.

Mr. Frank B. Gilbreth, Consulting Management Engineer, Providence, R. I.

Mr. J. P. Quinn, Department of Labor and Industry, State of Pennsylvania, York, Pa.

Mr. F. G. Lovett, Ontario Compensation Board, Woodstock, Ontario, Canada.

Mr. Adrian W. McCoy, Department of Labor and Industry, State of Pennsylvania, Meadville, Pa.

Mr. J. W. Duffy, American Bridge Company, Philadelphia, Pa.

Mrs. Annie E. Leisenring, Allentown, Pa.

Mr. R. D. Young, Department of Labor and Industry of Pennsylvania, Harrisburg, Pa.

#### FACTS CONCERNING THE MEETING.

**M**R. FRANCIS D. CAMPAU, Secretary, Furniture Manufacturers' Association, Grand Rapids, Mich., and Mr. F. A. Barker, Manager, Safety Department, Lumbermen's Mutual Casualty Company, Chicago, Ill., failed to appear at the meeting with the result that papers on the following subjects, "Planers and Joiners" and "Interesting the Manufacturer in Accident Prevention Work," were not presented. The subjects: "Matching and Molding Machinery" and "Lumber Yards" were not assigned to specific individuals and no one volunteered to talk on these subjects at the meeting. The papers prepared by Messrs. Newell, Roberts and Dietz were presented in their proper order and a general discussion followed. Mr. Dietz concluded his paper with a series of lantern slide illustrations, which proved to be very educational.

#### GENERAL DISCUSSION.

SUBJECT—THE PAPER PRESENTED BY MR. J. A. ROBERTSON, MANAGER, CAMERA WORKS, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Mr. Robertson's paper related largely to experiences of the Eastman Kodak Company in their woodworking department. He spoke

of the fact that in spite of the large number of guards that are on the market, no universal safeguard for the circular saw or shaper has as yet been devised and that it is greatly a matter of individual design. This is particularly true in the Eastman Kodak Company's shops, where very small work is done on practically all of the machines, the finished dimensions often being within one thousandth of an inch.

As stated by Mr. Robertson's paper, there are four general principals to be considered in the matter of safeguarding a circular saw:

1. Saw blade should be covered when revolving but not in use.
2. There should be a riving knife to spread the material as the saw cuts its way through it.
3. The saw should be, as nearly as possible, completely covered while in operation.
4. A device should be provided to prevent wood being kicked back at operator in case it becomes caught in saw blade.

In the Eastman Kodak Company's shops they have provided adjustable jigs which seem to work in connection with certain permanent fixtures, which, in turn, are in most cases designed specially for each kind of work. This has been enabled by the large quantity of very small work done on their machines. Mr. Robertson seems to think that this could not be so conveniently done on larger work.

The Eastman Kodak Company has found it very desirable to secure suggestions from the workmen in the shops and, in fact, depends almost entirely upon this source of information for the knowledge of the engineering department in designing safety devices. One of the reasons for doing this is that the suggester, as soon as he sees his guard in place, immediately becomes a booster for it among his fellow workmen.

When an accident occurs in a shop, it is immediately investigated by consultation with the foreman and steps are taken to avoid further injury from the same source.

It sometimes happens that the various safety appliances for one particular kind of work become separated. Mr. Robertson explained the method by which the Eastman Kodak Company absolutely prohibits progress with the work until all of the necessary safety appliances are together and installed.

## UP-TO-DATE

We welcome suggestions from employees on anything to make conditions safer.

Mr. Robertson spoke of a system of compensating employees for good suggestions which is in vogue in the Eastman Kodak Company's shops at the present time, in which connection he mentioned the fact that probably 60 per cent of their most effective accident prevention work has been accomplished through this medium.

In conclusion, Mr. Robertson expressed his willingness to correspond with any person present at the meeting in regard to any

accident prevention problems with which he might be familiar and also to furnish photographs of some of the effective work done by the Eastman Kodak Company.

## CIRCULAR SAWS.

The discussion regarding subject of circular saws and shapers developed very interesting facts which are as follows:

Approximately 90 per cent of saw guards are found to be out of place by Pennsylvania State Department of Labor and Industry.

Rosewood and other soft woods seem to be harmful to lungs when sawdust is inhaled. Mahogany not so harmful, indicating the need of exhaust systems from a safety-to-health standpoint.

It is extremely difficult to guard any saw when work varies in character. It is probably the best plan to provide machines for work of a specific character.

The question was asked whether any one had devised a means on effectively guarding a miter saw. This question remained unanswered.

Mr. Williams spoke of testing thirty-two shaper guards with little or no success.

There seemed to be conflicting opinions as to the desirability of guards suspended from the ceiling.

Mr. Higley described an aluminum shaper guard which is constructed somewhat along the lines of an inverted cylindrical can

and secured to the top of the vertical spindle, revolving with it. This can protects the knives to a point very near the working edge and the top of the can is perforated so that the perforations form a ventilating fan which exhausts the shavings from the work into a conveniently located exhauster.

Mr. Guilbreth spoke of a very interesting photographic study of the movement of the hands at woodworking machines, as used in connection with the design of safeguards. The photographs taken in this study indicate by lines the various movements of the hands. Using this as a base, wire models are made, and the guards are made to suit these models.

Mr. Campbell spoke of an interesting sheet metal guard on miter saw to prevent the wrist from striking the saw blade. However, he did not claim complete protection for this guard, stating that it is only fairly good.

Guards secured to riving knife seem to be fairly good for straight rip saw work.

Mr. Williams seems to think that work done on a premium basis interferes with the changing of guard as each employee's entire time is occupied trying to increase his output. In answer, Mr. Taliaferro spoke of this as not being the fault of guard construction but rather the lack of sufficient premium to cover the amount of time spent in changing the guards for the various kinds of work. Mr. Duffy, of the American Bridge Company, told of several guards on circular saws and jointers which they have locked in place with padlocks so that they cannot be thrown to one side.

The meeting adjourned at 11:55 A. M.

## The Individual

The Safety Committee may overlook something. See for yourself that all is safe.

## AFTERNOON SESSION.

### ROUND TABLE MEETING.

**H.** M. TALIAFERRO, PRODUCTION SUPERINTENDENT, AMERICAN SEATING COMPANY, CHAIRMAN: It is indeed gratifying to those engaged in the woodworking industry to observe the interest manifested by the National Safety Council in this branch of endeavor. This is one of the largest and most important lines of endeavor in this country, and it is necessary and proper that a round-table meeting be devoted exclusively to the Woodworking Section. This industry has been considered hazardous from its inception, and as machinery has gradually replaced hand operation this hazard has grown. Every step in the process of manufacture, from the standing timber to the finished product, is surrounded with danger to the operator. Woodworking machinery is of necessity operated at a high rate of speed. This condition, combined with the edge tools that are required, makes the operations exceedingly dangerous. In the early stages of the industry no attempt was made to guard dangerous machines. As accidents increased some of the more thoughtful built guards, but they were crude and often interfered with rather than helped the operator.

Both employer and employee took accidents as a matter of course, assumed that they were unavoidable. You see nobody stopped to analyze the situation. Employer and employee were too busy to bother with a small thing like accident prevention. The conservation of life and limb was an undeveloped field. If here and there some one in advance of his time analyzed the condition relative to his own plant and applied a remedy he kept his light under a bushel and the country at large did not profit by it, and this was not altogether his fault for he may have made a feeble effort to place his findings before those who should have been interested but were not. Those engaged in the industry, as a whole, were not receptive to the

importance of this work; their attitude was wrong. The big idea—the National Safety Council idea—had not taken hold.

As time passed and accidents piled up, more and more guards were purchased or manufactured. The employer felt that he had done his duty by purchasing and installing the guards; in fact that was all he thought of doing. He had exhausted his resources; the bright light had not as yet dawned upon him. On the other hand, the employee felt that he had done his duty when the employer, having returned to the office he (the employee) carefully hung the guards on a nail. The employee felt that he was being treated as less than a man capable of taking care of himself—that his natural and manly rights were being questioned or abridged.

Thus you observe the lack of understanding of the natural laws governing the elimination of accidents on the part of the two equally interested parties. With this condition existing no progress could be made. Thousands of dollars had been expended for guards and well-lighted factories, laws had been enacted in various states enforcing installation of guards and demanding close inspection of hazardous machines and conditions, but still the accidents increased until the National Safety Council came to our rescue and taught us the science of accident prevention. It is no less than a science and is fast becoming a highly specialized branch of the industrial world.

The installation of guards is very important for the prevention of accidents, but the education of the employer as to the proper safety organization within his plant is vital. There is no trouble about educating the employee to a proper attitude for the prevention of accidents if the employer is equipped with the proper safety organization, but the man on the job must be reached or your accidents will continue. That the attitude is mightier than the guard is fast being realized in accident prevention work. The National Safety Council is wonderfully well equipped through its weekly bulletin service and information bureaus to keep one posted on the best method to organize and maintain this safety organization.

The National Safety Council has been organized a comparatively short time, but it has done a wonderful work in constructive education. From a small beginning it has risen in a few years to an organization of national importance. From embracing one (the



## **The Weak Link**

**The strongest chain is no stronger than the weakest link—the average man in the shop.**

steel) industry at the beginning, it has expanded its scope until now there is not an active industry that it does not reach. It has accomplished far more than even the most optimistic of its organizers ever dreamed possible. It has reached a point where its activities must be sectionalized and co-ordinated. The Woodworking Section is but one of the important divisions that it has deemed advisable to create.

Our discussions must necessarily be confined to the important

hazards of the industry. It will also be necessary to keep closely to the subject under discussion, and owing to the great amount of ground to be covered in the time allotted to us each speaker must be limited to ten minutes. I will ask that on being recognized by the chair, each will clearly announce his name, title, name of his company and city in which it is located.

An excellent program has been arranged by the committee and men best informed on their respective topics have been asked and have consented to present them to us. (Applause.)

### **GENERAL HAZARDS OF WOODWORKING INDUSTRY.**

culiarly subject on account of their operation of such machines, as  
WILLIAM NEWELL, SAFETY ENGINEER, STATE INSURANCE FUND,  
NEW YORK CITY.

General hazards of woodworking industry may be divided into two classes: 1. Hazards common to all industries in which power-driven machinery is used, and, 2. Hazards particularly prominent in, or peculiar to, the woodworking industry. It is to this latter class that this discussion will largely be limited. I shall further interpret the title of these remarks to refer to hazards other than those to which the operators of the various machines used are peculiarly subject on account of their operation of such machines. as

you will note from the program that the hazards attaching to the operation of particular machines are to be discussed by other speakers. It is, therefore, to the class of those general accidents to which woodworking employees are solely or primarily subject that I shall devote myself.

The location of saws and jointers with respect to aisles and to other machines should be given careful consideration, owing to the liability of stock being "kicked" back, in case of encountering a knot or for other cause, and striking any one who may happen to be in its path. For this reason operators of these machines should never stand directly in line with the piece being worked, but to one side of it. To assist in preventing this class of accidents blades should always be kept sharp.

Slippery or defective flooring is particularly hazardous around woodworking machinery, owing to the danger of falling against the rapidly revolving blades of some machine. Such accidents should be guarded against, as far as possible, by the provision of anti-slip flooring around such machines and also by keeping the blades or knives covered to as great an extent as the work will permit. Floors should be kept as free from sawdust and waste material as possible, and, in this connection, an efficient exhaust system will be found to be of great value. Good light is also indispensable, in that it lessens the chances of a person tripping over any misplaced object and possibly falling on to a machine in motion.

Unsuitable clothing, hazardous as it is in other industries, is particularly so in woodworking. Ragged sleeve ends or loose fitting or unbuttoned coats or jumpers, often catch on moving parts of machinery and cause serious and sometimes fatal accidents. It is a wise precaution in many classes of work to roll the sleeves of all garments up above the elbows. Employees working on machines should not be permitted to wear gloves, as they sometimes do.

Saws should invariably be housed-in under the table. This seems

## **SAFEGUARDS**

Safety devices are  
of little value unless  
maintained as they  
are intended.

to be a frequently neglected precaution which has resulted in many serious accidents to sweepers in woodworking plants.

Loose pulleys and belt shifters, or clutches, should be used for throwing machines out of motion when not in use. Care should be taken to make the belt-shifter action used for removing a belt to the loose pulley of a positive character, either by employing one of the many forms of locking-gear or a balance weight. Many accidents have arisen through the lack of this precaution, the belt creeping back on to the tight pulley and the machine thus starting unexpectedly. This applies particularly to woodworking and high-speed machinery.

Swing saws possess, in a marked degree, the potentiality of injuries to others besides the operator. Particular attention should be paid to the method of attaching the counterweight. The arrangement should be such that the counterweight, which is commonly made adjustable, cannot slip off the swing bar. There should be a positive stop at the end of the bar. The slipping off of a counterweight, due to a set screw working loose, recently cost a workman his right hand. In the absence of a stop at the end of the bar, the counterweight slipped off when the set screw worked loose, and the saw swung forward against an employee. If the counterweight mechanism is not so arranged that it limits the swing of the saw, a safety chain of properly limited length should connect the lower part of the swinging frame with some fixed object. When a swing saw is so located that a person may pass behind it it should be properly fenced in at the rear.

Shapers present a special hazard to employees in general, due to the liability of the knives flying out, and for this reason the knives should be carefully and securely set on the spindles. Both knives and collars are sometimes grooved, which greatly lessens the danger of the knives flying out.

In the case of a type of drill which runs continuously, and which slides up and down on a keyway, it is well to have it recede into a piece of pipe when not in use. This will prevent it catching in the clothing of any one passing.

In concluding, I wish to emphasize the fact that the guarding of belts, gears, etc., should receive more than ordinary attention, owing to the exceptionally high speed at which this class of machinery is operated. (Applause.)

### SAFEGUARDING OF JOINERS AND PLANERS.

F. A. BARKER, MANAGER, SAFETY DEPARTMENT, LUMBERMEN'S  
MUTUAL CASUALTY COMPANY.

In treating the subject of Safety for Joiners and Planers I have endeavored to relate from experience and statistical data, conditions and hazards, variety of accidents occurring from such hazards, and the practical safeguards that can be applied.

In considering the many varieties of these machines which are manufactured we find that they do not, other than in size, materially differ as regards points of hazard, although, thanks to progressive accident prevention, some manufacturers have made considerable improvements over their competitors in guarding such points. In fact, a number of the more modern machines present, other than the driving transmission, almost 100 per cent practical guarding. This does not necessarily mean 100 per cent safety for we have to, in order to do machine work, have moving parts, and with such must have a certain degree of danger, especially when we connect such operation with the employee, who is chargeable with 75 per cent of the cause.

In digesting the cause, effect, and remedy of accidents, we find the planer has for the cause the following general hazards:

|               |                  |
|---------------|------------------|
| Transmission, | Slivers,         |
| Feed,         | Take away end,   |
| Knives,       | Piling of stock. |
| Splinters,    |                  |

These general hazards can be subdivided as per the following:

#### TRANSMISSION.

The Motor—Not properly protected.

The Pulley—Getting caught between belt and pulley; also, contact with spokes and unguarded set screws in hub and the bursting of wheel.

The Belt—Getting caught in same, breaking of belt, shifting of belt, improper lacing for belt and applying belt dressing.

The Gears—Without protection and those only partially protected.

The Shafting—Where exposed and presenting the hazard of

**DANGER!**

Every sign in the plant means that the danger pointed out is there. Be on your guard.

clothing coming in contact with same, also exposed set screws, couplings and frictions.

**FEED.**

Under feed we have the always dangerous roll.

**KNIVES.**

The danger of contact with same, danger of laceration while adjusting and sharpening or changing of heads.

**SPLINTERS.**

Defective boards are often run through planer and the splinters are thrown when knife strikes such defective parts.

**SLIVERS.**

Handling of lumber always presents this hazard and the application of first aid treatment is often neglected.

**TAKE AWAY END.**

Lack of proper space between material coming from machine and a stationary object directly in line with same.

**PILING OF STOCK.**

Piles are made too high and not substantially piled, with results of toppling over on operator or moving parts of machine.

Our company, in the tabulation of accidents, endeavors to determine the cause in every instance and we digest the hazard on each machine similar to the outline above, but still we are almost daily presented with some new variety of hazard or cause, which shows us that even though we are making rapid strides in the elimination of preventable accidents there still remains the necessary careful supervision of this important work.

That which has been accomplished in making the planer safer is of small consequence compared to the wonderful improvement for

safety in the use of what was considered the most dangerous of our wood working machines—the joiner. This machine requires the best skilled mechanics to operate, but even with such—which is considered an immense factor in accident prevention—the square head has left its mark on, I dare say, seven-tenths of its operators and the mark is a trade mark which will always identify them as joiner operators. In fact, I believe the joiner operator that had lost a finger or fingers had a better chance of securing a job than the applicant who has not met with such misfortune, for it indicated to those who knew the traits of the machine, that he had seen actual service on the “finger eliminator.”

I do not know of any one safety invention or improvement in the entire woodworking field that has filled its purpose as well as the safety cylinder head for joiners. Out of all the joiner accidents which we have had, where the safety head was used, none have resulted in more serious consequence than cutting the flesh on the tip of the finger to the bone. The majority by far were merely flesh wounds. I believe that I can safely say that nine-tenths of these accidents, if they had occurred on the square head, would have resulted in the loss of a finger or of fingers.

The head, as far as the joiner is concerned, represents the big cause of accidents. Transmission does not differ from the outline given under planers and practically the only other physical hazard results from neglect in allowing the edge of the throat piece to become jagged and broken in places.

As to effect of accidents, it hardly seems necessary to dwell upon the effects of accidents occurring from these two machines. They leave the usual consequence—the widow, the orphan, the cripple. the monetary loss to employe, the employer and the community.

But as to remedy, much can and is being done. Transmission is no longer a problem to protect. All we have to consider is some barrier that will prevent accidental contact with such. Strength. de-

## FOREMEN!

**Carelessness**  
is dangerous. If a  
workman persists in  
being careless, dis-  
place him.

sign and convenience are the important essentials. If the design is practical wood will make as good a guard as metal.

Feed rolls of planers, especially on the smaller machine, present considerable of a hazard. If short material is being fed such rolls should be guarded. The usual type of a guard used is a bar in front, about four inches from roll, and set so lower edge is approximately on a level with center roll. On the large planer the rolls are set in somewhat of a protected place and this, combined with long material which is fed into same, makes them a comparatively safe proposition in regular operation, although a person might, for reasons of adjustment, come in close contact with same. For this reason we should try to eliminate another cause by providing another safeguard.

Planer knives are usually well protected, especially if a blower system is used throughout the plant. Such necessitating a close fitting hood, thus giving complete protection, but even with the head protected from every source except where material must pass through, we still occasionally make a record of an accident occurring on the small machine, because of the attempt to brush shavings off while the machine is running and thus getting too close to roller.

As to the joiner knives, we recommend only the safety type of head, and I may say that its prominence has become so widely distributed that the woodworker who has the square head knows it is wrong and is planning on replacing same with a safety head at an early date. It not only fills the bill for safety, but can be used for all classes of joining work.

We do not rest our joiner activities in the elimination of the severe accidents through the use of the safety head, but try to prevent such minor ones as may occur. This is accomplished by the use of a guard covering the unused portion of the head. There are a great many types of joiner guards, a number of which we believe are equally good. The principal thing is to have one that will automatically cover unused portion of the head, even though different dimensions of material are being used. In joining work considerable depends on the operator. He must be careful and never attempt to work a piece of material less than fifteen inches in length. The edges of the bed or throat piece should always be kept smooth, even and properly set.

The automatic joiner has no special hazard outside of the possi-

bility of getting caught between the material and feed chain. This can be effectively guarded against by providing a stationary guard around the end of the conveyor chain.

Splinters and knots occasionally cause accidents by being kicked back with considerable force. Usually these knots or splinters never get out of the machine. They can be guarded against, especially on planers, by providing a screen as a protector between operator and the point from where the kick-back occurs. The operator should use care when defective material is being passed through machine.

Handling of lumber means slivers in the hands of those handling same. As a remedy a leather hand protector helps to some extent. Gloves should never be worn when feeding machines. Slivers are not looked upon by employees as much of a hazard, and ordinarily they are not, but cases of infection are not infrequent and for this reason the teaching of "first aid" should be constantly kept up.

Serious accidents have occurred by a person being caught between material coming out of planer and a stationary object directly in line with such material. This has resulted in death. It should be guarded against by providing plenty of room for a person's body between the longest piece of material fed in machine and any stationary object.

The piling of stock before or after being planed or joined should receive careful attention. Piles should not be too high or improperly piled. Material has frequently fallen on those about, as well as on moving parts of machines, and falling material when operating a joiner is exceptionally dangerous.

In this article I have endeavored to mention only the physical hazards and it is unnecessary to say that the selection of the right man, the education and instruction as to his work are, without question, the biggest factors in the elimination of accidents on the planer and joiner as well as other machines. (Applause.)

#### DISPOSAL OF WASTE MATERIAL IN THE WOOD SHOP

C. J. DIETZ, SAFETY INSPECTOR, DEERING WORKS, INTERNATIONAL HARVESTER COMPANY OF NEW JERSEY, CHICAGO, ILL.

The disposal of waste material in the wood shop is important; or, in other words, the removal of shavings, sawdust, blocks, and especially the fine dust which arises from the top of the lumber which



**REMEMBER!**

Guards are for the protection of men—not machines. Better be careful than crippled.

has been blackened by exposure to the weather for any length of time. While lumber in this condition is being cut by the saw there arises a thick cloud of dust which permeates the surrounding atmosphere, making it unfit for an employee to breathe, and as we have been advised by those who have made pulmonary disease a life study that while poor housing, alcoholism, the common drinking cup and overwork all tend to lessen the power of the employee to resist dis-

ease, that dust in any form is the prime factor in causing pulmonary trouble. With this fact before us, we should endeavor to provide an exhaust system which will not only carry away the heavy waste but also the fine dust which is injurious to our employees, and thus eliminate this source of danger.

The question arises, how can we install and maintain an exhaust system on an effective and economical basis. Perhaps the practice at the Deering works, International Harvester Company, would be of interest to you and so your attention is called to the following: We are replacing the old type spider in our exhausters with one of the multivane type, which enables us to maintain the same vacuum with a reduction in the speed of the fan from 1,500 R. P. M. for the old type spider to 1,170 R. P. M. for the multivane type, and from tests made, shows a reduction of 10 per cent in power consumed, as well as a reduction in the cost of maintenance, due to the slower speed.

With our 60-inch Multivane Exhauster running at 1,170 R. P. M., we produce a suction equal to 12 inches in the U-tube, which equals 6.93 ounces per square inch at the inlet and approximately 3 ounces at the machines, at the extreme end of the system. The 60-inch belt-driven exhauster is our standard, the advantage being that we always have one or more available in case of a breakdown, which enables us to resume in the shortest possible time. Be sure your cyclone, or outlet, is large enough so as to avoid back pressure.

The main pipes leading to the exhauster should be in a straight line as near as possible and not less than 10 per cent larger in area than the combined area of all the branch pipes. All joints should be soldered, not riveted, and avoid all sharp bends. All elbows should be made with easy, smooth surfaces, having a radius in the throat of not less than two times the diameter of pipe to which they are connected. All connections should be made at the side of pipe and not on the bottom and should be spaced so as to avoid having any two connections directly opposite.

Blast gates should be closed on idle machines, which will help maintain the highest efficiency at all times. All connections at the machines should be made as tight as possible, especially on the rip saws. Here the inlet should fasten to the under side of table, which will tend to maintain greater suction at the point where most needed. We have found it difficult at times to make suitable connections with some of our woodworking machinery, due to faulty design, which no doubt could be overcome by asking the makers of woodworking machinery to design their machines—especially saws—so exhaust pipes can be connected in an efficient manner.

We have experimented at the Deering works with an exhaust pipe which is placed over the top of the self-feed rip saw, the purpose of which is to carry away all of the dust as it arises from the board as it passes the saw and we hope to develop a combination exhaust pipe and guard for the saw and feed wheel which can be fastened to the feed frame and will raise and lower with it. This will enable us to keep the suction as near as practicable to the lumber as it passes through the machine.

Auxiliary pipes should be placed at convenient points running down along the building columns to within three inches of the floor, to carry away any surplus waste which might accumulate on the floor. All blocks or stub ends of lumber are carried away to the

## **ALERTNESS**

Nothing is a complete substitute for alertness. When you are reckless, you are wrong.

wood pile in the yard by an endless belt and button conveyor, which serves all of the saws in a very economical manner.

The purposes of presenting these facts to you is that they may be the means of helping some to overcome conditions at the home plant along these lines, especially the installation of the overhead exhaust on the rip saws, which may call for an additional exhaust unit or two. It will be found to be well worth the expense, as we all realize that when we make working conditions congenial for our employees, they are more contented and as a result more loyal and efficient. (Applause.)

*The Greatest Risk of Injury a  
Careful Man Runs Is Through the  
Carelessness of Some Fellow Employee*

## **National Safety Council**

**General Round Table Meeting**

**Philadelphia, Pa.**

**October 21, 1915**

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**C. W. PRICE, Chairman**

**Assistant to the Industrial Commission of Wisconsin**

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The subject was "How to Educate the Workman" and the following named gentlemen took part in the discussion:

S. W. Ash, General Electric Company, Pittsfield, Mass.

H. J. Bell, Safety Inspector, Chicago & North Western Railway Co.,  
Chicago.

C. M. Brading, Safety Inspector, Wisconsin Steel Company, South  
Chicago.

H. A. Bullock, Chairman, Central Safety Committee, Brooklyn  
Rapid Transit Company, Brooklyn.

K. M. Burr, Safety Inspector, Illinois Steel Company, Gary, Ind.

Mrs. Lillian Burt, American Issue Publishing Company, Columbus,  
Ohio.

St. Clair B. Byrne, Chairman, Central Safety Committee, The Texas  
Company, Houston, Texas.

W. H. Cameron, Secretary, National Safety Council, Chicago.

- B. W. Conlin, National Malleable Castings Company, Chicago.
- L. A. DeBlois, E. I. du Pont de Nemours Powder Company, Wilmington, Del.
- E. C. DeKay, Recorder, State of New York Insurance Department, New York City.
- J. M. Eaton, Manager, Welfare Department, Cadillac Motor Car Company, Detroit.
- G. T. Fonda, Safety Engineer, Bethlehem Steel Company, South Bethlehem, Pa.
- H. W. Forster, Chief Engineer, Independence Inspection Bureau, Philadelphia.
- H. L. Gannett, Inspector of Safety and Fire Prevention, Commonwealth Edison Company, Chicago.
- Walter Greenwood, Safety Inspector, Carnegie Steel Company, Youngstown, Ohio.
- W. T. Hannigan, Secretary, Employes Benefit Fund Committee, New England Telephone and Telegraph Company, Boston.
- F. H. Hanson, New York Central Lines, Cleveland.
- H. B. Harmer, Claim Agent, Philadelphia Electric Company, Philadelphia.
- J. D. James, Safety Inspector, New Jersey Zinc Company, Palmyra, Pa.
- A. T. Morey, Assistant to the President, Commonwealth Steel Company, Granite City, Ill.
- E. B. Morgan, Safety Engineer, Commonwealth Steel Company, Granite City, Ill.
- L. R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg, Pa.
- Dr. F. D. Patterson, Director Department of Sanitation and Accident Prevention, Harrison Bros. & Co., Inc., Philadelphia.
- J. A. Robertson, Chairman Committee of Safety, Eastman Kodak Company, Rochester, N. Y.
- J. S. Rockwell, General Agent, Buffalo, Rochester & Pittsburg Railway Company, Rochester, N. Y.
- Dr. Ben. L. Reitman, Propagandist of the Jewish Labor Group, Chicago.
- John Schilling, Jr., Safety Inspector, Wm. Cramp & Sons Ship and Engine Building Company, Philadelphia.

- F. W. Shepard, Safety Inspector, American Cast Iron Pipe Company, Birmingham.
- Mrs. Nellie Slayback, New Jersey State Department of Labor, Montclair, N. J.
- H. B. Smith, Supervisor of Safety and Labor, Illinois Steel Company, Joliet, Ill.
- J. C. Smith, Safety Inspector, Inland Steel Company, Indiana Harbor, Ind.
- E. M. Switzer, Superintendent of Safety, Chicago, Burlington & Quincy Railroad, Chicago.
- S. W. Tener, Manager, Accident and Pension Department, American Steel & Wire Company, Cleveland.
- B. F. Tillson, New Jersey Zinc Company, Franklin Furnace, N. J.
- E. B. Tolsted, Department Engineer, Independence Inspection Bureau, Philadelphia.
- H. B. Vincent, Day & Zimmerman, Philadelphia.

**CHAIRMAN:** Experience in Safety work has demonstrated absolutely that 75 per cent of deaths through industrial accidents may be prevented. Such experience has also proved that one-third of the accident prevention problem is involved in mechanical safeguarding, and two-thirds in so interesting and educating the workman that one not only secures his hearty co-operation, but leads him to realize that safety work touches him more closely than it does the employer. I do not believe that any safety man here today will gainsay the truth of these statements. So I am probably safe in saying that the subject for the Round Table discussions this afternoon is the most important topic of the Congress. When allocating the chairmanship of the discussion to me, our Executive Committee indicated that probably one-half of those present at the meeting would either not be familiar with the details of what we safety men call a "Safety Organization," or would not have had sufficient experience in educational work to be really convinced of its practical character and value. For these reasons the discussion which is to follow is intended primarily for that group. We hope, of course, that the talks will interest the remainder, and that they will help matters along. We shall commence at the beginning; just as if you had never heard of a safety organization; and the whole ground will be

## **SIGNS**

Every sign in the mill means that the danger pointed out is there. You must obey these warnings.

Ask the foreman; he knows.

covered. Anyone may speak. The meeting is quite informal, and we wish plenty of questions. Secretary Cameron will now read the National Safety Council bulletin, "How to Start a Safety Campaign"; and afterwards H. A. Bullock, of the Brooklyn Rapid Transit Company, will criticize that outline.

SECRETARY CAMERON: The bulletin reads thus:

### **HOW TO START A SAFETY CAMPAIGN.**—The following suggestions

are addressed to the factory manager who has become convinced that safety is an indispensable part of an efficient factory organization, and wants to organize his plant so as to secure the co-operation of his foremen and workmen in preventing accidents.

1. Call your superintendents and foremen together, and tell them plainly what you have in mind. Lay before them the experience of other companies in reducing accidents and outline the methods adopted. (Ask N. S. C. for details.) Agree on a definite program, and make a written outline of the items in the order in which they are to be taken up; the more serious points of danger, of course, should be covered first.

2. Remember the company must show by visible and tangible signs that it means business and will do its part, before it can go to the workmen and ask them co-operate; therefore the first thing to do is to build safeguards and cover the more serious points of danger.

3. Some one person should be selected to give a part or all of his time, depending on the size of the plant, to the work of looking after the details of safety. He should be known as the safety inspector.

4. During the first six months have regular and frequent meetings of the superintendents and foremen for the purpose of reporting progress, exchanging suggestions and fostering interest and enthusiasm.

5. After considerable guard building has been done, and you have succeeded in getting your superintendents and foremen lined up and interested, then call a meeting of all of your employes. The manager should preside at this meeting, and should lay before the men the facts as to the causes of accidents, the large percentage of which cannot be prevented by guards, and the part which the workmen must do. He should frankly state that in the past the company has been negligent, and accidents have happened which might have been prevented had proper guards been provided. He should also state with equal frankness that many men have been injured because they were careless and thoughtless. He should say that now a new leaf is to be turned over, and the company will go to the limit and will build any guard which is practical, and urge the men to co-operate and all pull together for a safe shop. The superintendent and some of the foremen should also speak at this meeting. If it is possible, have your doctor speak on first aid and the importance of reporting slight injuries.

6. At this meeting appoint a workmen's inspection committee and outline its duties. Make it plain that the members of this committee are to have absolute liberty to make any inspection they wish, and to offer as many suggestions as possible—the more the better. Urge every employee to report suggestions to the committee.

7. Select a safety motto for the shop, such as:

"Be Careful."  
"No Accidents."  
"Stop Accidents."

"A Safe Shop."  
"Boost for Safety."  
"Safety First."

8. Place bulletin boards in each department and post on them such materials as the following:

- a. The motto of the shop in large letters.
- b. Pictures of injured men with stories of the accidents.
- c. Newspaper clippings of accidents.

## EFFICIENCY

Rules and regulations, mechanical devices, guards, warning posts and signs all lose their efficiency unless carefully maintained.



- d. Copy of suggestions made by workmen's committee.
- e. Analysis of accidents showing causes.
- f. Monthly report of accident records in the various departments.
- g. National Safety Council bulletins.
9. Remember that the secret of a successful campaign is to grip the proposition just as you would a new piece of work in the manufacturing end of your business. Convince every foreman that the company is determined to eliminate accidents, and give them to understand that they are expected to do their part. Be absolutely frank with your workmen, and make them feel that you are going to recognize them; give them a large part in the work, and let them know that you will welcome any suggestions.

A safety campaign should start off with vim; the men should be made to feel that a new leaf has been turned over and everybody is to take a new start; a sort of "all pull together" spirit should be fostered. An enthusiastic start will do more to jar the men loose and awaken interest than months of humdrum plodding effort. One manager who reduced accidents 50 per cent the first year was asked how he did it. He replied: "I made a noise, and I kept right on making a noise until every man in the shop got to thinking about safety."

Note: Other activities which will be helpful:

- a. Start a safety campaign in the schools. The children will carry the message home and help to increase the interest of the parents.
- b. Ask the ministers to conduct a Safety Sunday.
- c. Secure publicity in the local papers.
- d. Have moving picture films run in the local theaters showing such films as "The Workman's Lesson," etc. Write National Safety Council headquarters for list of available films.

H. A. BULLOCK: I cannot criticize the wholly admirable outline of a standard safety organization just given by Mr. Cameron. The methods of procedure which he has described and the principles upon which those methods rest are directly in accord with the principles which our observation of safety work throughout the country and our experience in our own corporation have led us to believe were the correct principles to follow.

We must understand that any such organization must be adapted to local conditions and that details which, as just outlined by Mr. Cameron, may seem to some of us to concern primarily a manufacturing plant, should be modified or adjusted to meet other needs if we are dealing with a railroad or other public utility corporation. There are, however, common elements underlying all work of this kind, and I shall endeavor to point out some of the elements that we all have to meet in systematic safety work in whatever industry we may be engaged.

The first thing to do is to create the proper environment in which to conduct your safety education. We are dealing primarily with a question of psychology. We are trying to make an effect on somebody else's mind. And although we might laugh at ourselves if we looked in a glass and said, "You are a psychologist," nevertheless as a matter of fact we are—everyone of us—and that means that we have got to consider every condition which affects the minds of the men in whom we want to implant this idea of "Safety First."

We must go a long way back of the individual employee and get at the heads of the business. As Mr. Cameron well said, the management must emphasize the necessity of "Safety First" by some demonstration of the fact that it backs the safety program to the limit. We must do away with what (to borrow the parlance of liability law) we might call the three "constitutional" excuses of the man who is against safety organization. These are, first, that the adoption of safeguards will tend to make courts and juries more exacting in damage cases; second, that if safeguarding of a plant is begun there will be no limit to the expense involved and that the concern cannot afford to stand such expense; and third, that it is cheaper to take chances than it is to be safe. These three "constitutional" excuses are much like the three old common law defences in liability litigation, and they have got to be eliminated just as much as the fellow servant rule, the doctrine of assumption of risk and the doctrine of contributory negligence had to be eliminated in working out our proper compensation act. And such elimination will do more to start the management right and to create the right atmosphere than any other initial step I can think of.

In the second place, we have got to get to the foremen and superintendents and show them that what we are suggesting is not in any sense a personal criticism, but is a helpful activity of which those in

### **Special Hazards**

**New employees and old men engaged on new work are more frequently injured than others. Find out special dangers to be avoided.**

directive position will be the first beneficiaries. We must explain to them that when a new method of interesting men in the subject of their safety (and consequently their efficiency) is introduced, supplementing previous endeavors which have been restricted primarily to the making and partial enforcement by discipline of certain rules, these new methods are no more a reflection upon the efforts that have preceded than was the substitution of steel axles for cast iron axles on

railroad cars a reflection upon the efforts of railroad engineers before the process of making steel had reached the present-day development.

Next we must attend to the matter of physical protection of the plant. While we may say that 65 per cent to 85 per cent of accidents are due to individual carelessness, it is not true that the element of physical protection of equipment amounts to only 15 per cent or 35 per cent of our safety program. Proper physical protection of plant is at least 50 per cent of the battle and at the start it approaches close to 100 per cent because you cannot convince employees that the management means what it says in the matter of safety if the management leaves employees to work among conditions that it knows to be unsafe without making every reasonable effort at protecting them. The absence of proper lighting, which may produce very serious accidents in certain plants, is an example of the direct result of failure to protect physical conditions. The indirect effect of such failure upon the minds of employees with whom we have to deal is still more important.

Now when we have educated the management and safeguarded the plant, we are ready for educational methods directed at the individual employee.

I have very little comment to make upon the admirable outline of such methods of education just presented by Mr. Cameron. A proper explanation of the plan at the outset is absolutely essential. I know of no better material for such explanation and for subse-

quent educational work than that which has been supplied by the National Safety Council and is being used more and more generally throughout the country.

I am convinced (and I have verified this conviction by correspondence with several hundred men engaged in safety work) that the participation of the rank and file of the men on safety committees and, so far as possible, the selection of these representatives by the general force of employees in their respective departments is a valuable and most vital element in successful safety organization.

The participation of the men in actual safety inspection and all other details of the work carried on by the safety organization, is, in my judgment, also essential. We do not want employees to feel that the safety inspector or the safety committee is a committee which exists only for the purpose of going around criticizing. We must, if we are to succeed, establish the feeling that the safety committee is a co-operative institution through which the man who operates the machine or the street car, and the foreman, and the superintendent, and the manager, and the president, and the directors, and the stockholders, are all striving to make the industry safer.

Intimate relations between the men and the management are, of course, most helpful. Meetings at which representatives of the management appear go far, in my judgment, to promote such intimacy. Employers' publications are excellent media for safety education, and safety may be impressed even in the routine correspondence of a company by the use of safety devices or slogans on stationery, stock forms, etc.

Finally, Mr. Chairman, I suggest the co-ordination, so far as possible, of instruction and disciplinary machinery with our safety work. I do not mean that the safety man is going to supplant the operating superintendent or foreman. But where, as with a railroad, it is necessary to maintain an instruction school, or where, as in a large manufacturing plant, an apprenticeship system obtains, it is possible

## **Think of the Kids at Home**

**To be careless,  
thoughtless or reck-  
less means injury  
sooner or later to  
yourself or others.**

to strongly emphasize the relation of man's safety duties to his ultimate success in filling his job. Similarly, discipline may be so shaped as to correct through education, as well as to warn through penalty, and as soon as the educational idea is introduced into discipline the opportunity for safety training is immediately presented. It will, in my judgment, surprise most people who have not tried it, when they find how quickly safety teaching may, without any undue disturbance of operating conditions, be implanted in the instruction and disciplinary machinery of their organization.

You will see from what I have said that we are dealing with the entire chain of circumstances which surrounds the employe in his relation to his job. What is commonly known as welfare work—questions of sanitation and other physical conditions surrounding employment—involves almost every factor in industry, but the elements which I have discussed are, I think, those most closely related to the program which the National Safety Council has laid down, and because I believe that these are essential elements I am strongly in favor of the general method of organization that Mr. Cameron has outlined.

**CHAIRMAN:** Would anyone like to ask questions now? Be frank and free. Tell your own troubles and experiences.

**F. W. SHEPARD:** The first statement in the bulletin says that you must interest the management. At our plant of 1,000 men, we have been carrying on safety work for three years; and I find that the greatest task is to interest the management, simply because executives must be shown that accident prevention work will benefit them. What is the best way to do this? Should it be from the economic, the humanitarian, or the safety first side?

**C. M. BRADING:** A good way to interest the management in safety work is to show that you have effected a reduction in accidents, as this necessarily implies a lessened cost. Let the executives have a set of figures showing the exact reduction in the annual cost. This method will hit a man's heart more than anything else. You might talk generalities to the management for a week and make no impression. So it is far more effective to submit the figures and say "Our accidents in 1914 cost so much; but we are saving in 1915." Of course, before bringing the matter before the management in this way, you must actually have effected a reduction.

CHAIRMAN: How about bringing in such figures from outside companies?

C. M. BRADING: That is a good idea, but the management would be more interested in its own figures. If you reduce your own accidents, you do not necessarily need to show the management the expense entailed in installing safeguards. The first cost of a good guard is all the outlay necessary to maintain that guard; and after these guards have been installed you will save money on the accident-cost.

E. M. SWITZER: It occurs to me that if we begin a safety campaign, we shall start at a point where we cannot show the management any figures at all, although we should like to do so. Mr. Shepard asks "How are we going to interest the management?" Naturally, somebody in that management must be initially interested, or we should never have a campaign at all. A good way would be to have that executive—he is probably the head of the concern—attend some of the safety meetings, and tell the foremen, superintendents and others that they must get thoroughly into the work, and do everything possible to stimulate it. I make this suggestion as applicable to conditions of starting campaigns when there are no figures whatever to show.

J. M. EATON: You can certainly bring a statement to the management of what your accidents cost. Of course, at the commencement of a safety campaign you cannot present any estimate of what you are going to save, for that is an unknown quantity. But you can have the executive come to the first aid room when a man with a shattered hand, for example, is waiting treatment by the doctor. What your executive then sees and feels will accomplish more than you could attain through two years of talking figures. I know this, because I have tried it.

SECRETARY CAMERON: I had the same experience that Mr. Shepard speaks of when I started safety work at the American Steel Foundries in 1910. I began by educating every official in the company. When an accident happened in any plant, I sent a report to the Purchasing Agent, the Vice-President and the President; and so I got all of them educated as to what was happening. It took me about six months to get through. I worked on comprehensive lines; persisted in the campaign of education; and submitted figures

### **In Case You Are in Doubt**

**Do things the way  
you are told, then if  
trouble comes, it is  
up to the Boss—you  
are paid to comply  
with the rules.**

epitomizing the history of accidents, how they occurred, and how they could have been avoided.

F. H. HANSON: I think any employer of labor in the United States will take up the subject of accident prevention if the subject is presented to him in a *competent* manner. Once he realizes that accident prevention is good business policy and means dollars and cents to him, you can certainly secure his interest.

A MEMBER: I contend that it is not the man at the very top you have to deal with, but the superintendent of production. It has been suggested that if you explain to that man that the accident-cost—particularly under our new Compensation Acts—will come out of the net profits secured through production, it may be possible to estimate just how much reduction in casualties will offset this accident-cost.

W. GREENWOOD: That has been actually proved in the discussion of basic principles. I invariably find there is a dearth of good statistical information. Suppose one man says that the accident-cost has been reduced 88 per cent, and another 68 per cent, on what basis do they start? Do they begin with a bad or a good record?

CHAIRMAN: Most of them start with a bad record.

W. GREENWOOD: It is to be deplored that we are handicapped by lack of authentic statistical information when discussing accident prevention. Such statistics as are here displayed are not satisfying and they have but little value when making comparison of one with another. As an instance, in the cases where the reduction shows 60 to 80 per cent, the methods for keeping down accidents before any reduction was shown may have been very bad, while in some other cases where the reductions are shown to be much less, the conditions before beginning to note the reductions, may have been much better than in the cases showing greater reductions. We might er-

roneously assume from the statements here bulletined that the one showing the highest percentage of reduction has the best record.

Confining myself to the subject under discussion, in starting an accident campaign, a method that I would suggest starting at the beginning of the game, and one that would be helpful as you go along, is to devise a good system for carrying statistical facts on forms that you can look at every day or any minute of the day and see where you stand. From this form a summary can be made covering any interval between the time of last summation and the present, which can be added to previous summaries if desired. Such a form need not be any larger than such as are used in many instances for keeping record of production or other operating detail on, and every accident that occurred would be transcribed from the hospital, foreman or other reports, to this form. Under the headings provided would appear name of injured, his foreman, department and all other information that might be inquired for by anyone interested. To summarize from this form it might be necessary to separate the facts, like foreman, nationality, department, etc., by counting them off, but in a majority of columns the footings need not be so divided.

I doubt if anyone has kept a record in just such a way, and I have failed to see such a method in practice in any of the many industries I have visited for the purpose of getting information on how to prevent accidents. The method of summarizing periodically from file records is too cumbersome, and the labor discourages effort to investigate records as frequently as is necessary.

If the management can be shown who gets hurt, their nationality, age, habits, and the various other things that have a bearing, direct or indirect, on the cause of accidents and their prevention, as could appear under 40 or 50 different headings, it can make an analysis of records at any time and can quickly apply remedies at the places where most needed.

## **Smile While You Do It**

**Extend a helping  
hand and a few  
words of advice to  
the new-comer and  
the man who doesn't  
understand.**



E. B. MORGAN: I do not think that the question of winning the management is entirely one of dollars and cents. I have not met a man yet who will not respond to the humane appeal.

H. L. GANNETT: We began with the slogan that we did not want ambulances backing up to any of our stations and sub-stations. I think it would be a good plan to send a plotted curve to the head of the department showing the reduction in accidents for his section. This should have a material effect.

H. W. FORSTER: In talking with many managers about the advantages of safety work, I first brought forward the humanitarian appeal, because I second Mr. Morgan's contention that men are entirely open to such a plea. Then, secondly, I have told him (using such information as was available) that people could make more money through safety effort than could be secured through any other phase of their activities as a rule. Lastly, I have said: "You have got to do this in any case, because the State compensation laws are forcing you to do it."

A MEMBER: Answering Mr. Shepard: The easiest way to educate your management, your foremen and superintendents, is to get a good safety man to address a meeting. Then the rest is easy. That proved the case in the education of our management.

E. C. DEKAY: Mr. Shepard raised a question as to starting the entering wedge with the management. I suggest that the time consumed by other employes in taking care of the injured be carefully noted in each accident which occurs; and that the result, expressed in dollars and cents, be shown to the executives as a starter.

DR. B. L. REITMAN: It is necessary that the management should show tangible evidence of interest in the workmen, and not in the sole question of saving money in damage suits.

CHAIRMAN: If you bear in mind what Mr. Bullock said, you will have surmised it is useless to hope for the workmen's interest until the management has gone ahead with the necessary guards. That possibly implied the proving to the workmen and the officers the necessity for each doing his part. I think every safety man here will concede that it would be ridiculous to establish a safety organization, with workmen's committees, until a considerable amount of good guarding has been done.

L. R. PALMER: It is decidedly necessary to secure the workmen's co-operation. If the management amply demonstrates that it is interested in the way the men are taken care of when injured, the men will readily see that the executives are sincere in their attitude. One plant with which I was connected had an accident record of two and one-half men injured out of one hundred each month. Now their record is down to 0.18. They put the humanitarian side into the work, and I believe this shows that the management inclines more to the humane ideal than to the dollars and cents aspect. From talks I have had with officials of the United States Steel Corporation I am convinced that they care far more for their record of men saved from injury and death than for the monetary saving which accompanies that record.

ST. CLAIR B. BYRNE: Have any here had experience of safety work in the oil industry, where workmen are exposed to serious conditions through possible ignition of oil? Carelessness with matches is a big problem. The clothing of the men is saturated with oil.

L. A. DEBLOIS: Before hiring workmen, my company makes it plain to them that they cannot have matches. But one cannot stop there. You must liberally post signs prohibiting matches, and regularly search the clothing of the men. In all of our works the policy is to discharge any man found in possession of matches. There are exceptions—as when a man is laid off—but as a rule the men know that discharge is the penalty resultant on finding even a single match. So if Mr. Lane wishes to combat the "match hazard," he cannot pause at the hiring-end. The work must be persisted in right along; but, even with all this effort, men will still be discharged from time to time for carrying matches. It is a long, hard, uphill fight.

ST. CLAIR B. BYRNE: Our men work in isolated locations. Some of them are recruited from the remote parts of Mexico. We provide them with safety matches only, each box having a label warning the man before he strikes a light. Some of our men have struck matches in the gas-engine house; and after they have been taken to the hospital, could not explain why or where they struck the matches; but we have assumed it was in order to smoke. Then, saturated as they were with oil, there was little hope for them.

**WANTED**

All employees are invited to offer suggestions for the improvement of safety methods and devices. Co-operation spells success.

**ORGANIZATION AND MANAGEMENT  
OF SAFETY COMMITTEES.**

**CHAIRMAN:** Now for the next topic: "Organization and Management of Safety Committees." Some one here has made a surprising statement to me. He maintains there are many concerns here in the East who do first-class safety work, but who do not have safety committees. I do not know whether he meant it; but in any case he said he did not believe in it. Out West, we do not think a man is doing

safety work at all unless he has workmen's committees. Mr. Burr of the Illinois Steel Company will now speak.

**K. M. BURR:** On the assumption that the management is interested in the elimination of accidents, I proceed immediately to the organization and management of safety committees. Enthusiasm must be the key-note of the organization and operation of safety committees. The movement must be a "men's movement." Because of this, I do not think that the management should lay down a standard form of organization for the men, and tell them what they shall do and what they ought to talk about. The main point is to make the men on the committees feel that the management is absolutely sincere in everything; and the form of the organization and its working should be left to the men. Enthusiasm will be killed if the ideas of the management are too strongly impressed on the men. I do not think it proper that the superintendent of a shop or a department should be chairman of a safety committee, because the tendency and the danger is that he will inflict his ideas too forcibly on the men. He should be the mainspring. He must be enthusiastic, and he must demand results. Different shops and departments have varying problems. The temperament of the men in these several sections is also a problem. Because of this, I feel that the organization in these sections could not be standardized. The first essential in any safety campaign is to engender an enthusiastic spirit in the men. But no one man can accomplish this. You must render your foremen enthusiastic, and let them transmit that

feeling to the rank and file. Probably the best way to accomplish this is to have the foremen or safety committee members talk safety in a personal way to groups of workmen. I think you should insist upon securing written reports of such meetings. We ourselves at first had difficulty in procuring such reports, owing to the differences in the natures of the foremen and the men. Many men object to making a report of something which they look upon as only their duty. I hold, however, that the effect of these reports is psychological. When a man is required to prepare a report, he will embody something of interest in it. He desires to show that he is talking to the men in an effective way; and when this must be put in writing, his mind lies closer to the work. As a result he develops ideas; he develops himself; and increases his ability to hold meetings and impress the men with his enthusiasm. Discipline should go hand-in-hand with education. Some men must be disciplined: they will not do as they are told. Men must accordingly be impressed by the idea that safety work is for their own benefit and that of their fellows; but if some of them will not see matters in this light, then discipline is a necessity. If still obdurate, they should be discharged. I think the "discipline-cases" should be posted in some instances; not as a punishment to the man who has transgressed, but as an example to the other men and as an indication that the foreman is in earnest.

CHAIRMAN: Mr. Burr, how many workmen have you on a departmental safety committee? How often do you change these committees? Do you put on the more humble class or the more intelligent class of men?

K. M. BURR: In harmony with my contention that the workmen or committee-men will develop their own ideas of organization, the number of men on a committee is not prescribed. Some of our committees consist of three men, while others have as high as thirty. I

## THINK!

Put your soul in  
your work, not your  
hand or foot.

Appliances used  
in your work should  
be frequently and  
carefully inspected.

believe large committees are preferable: they spread the gospel of safety more effectively.

CHAIRMAN: How often do they make inspections? How long do the men serve on the committees?

K. M. BURR: In developing the educational idea, I believe that the "soft pedal" should be applied to inspection. The natural tendency to education of men has been along the lines of least resistance. I hold that in directing matters, you should lay aside all consideration of personal contact and education. Our committees, which are selected by the superintendent and empowered to add to their number, have executive privileges. They recommend the infliction of discipline should they see fit; and they criticize workmen who are careless. I am not in favor of rotating committees. I think that the members of a committee should be permanent.

CHAIRMAN: Do you not think there is an advantage in changing committees so that a larger number of men will glean experience in finding things out for themselves?

K. M. BURR: No. The maintenance of a permanent committee seems to hold better efficiency results, for the longer men work on a committee the more capable they become. My personal inclination runs toward increasing the size of a committee by adding another man to it.

CHAIRMAN: Do you encourage a workman to make a practice of reporting careless practices and conditions to the workmen's committee?

K. M. BURR: Yes. We have, moreover, several non-English-speaking men on our committees; and as these men are connected with gangs who likewise do not speak English, our experience has been that such men are among our best safety propagandists, and able to expound accident prevention more efficiently than the average English-speaking man.

CHAIRMAN: That is a pointer to the "Doubting Thomases" who think that only the higher-grade men should serve on workmen's committees, and that results will not be attained if lower-class men take part.

SECRETARY CAMERON: In the case of a plant which is commencing safety work, how would you start the committees? Is it not essential to have a safety inspector take the initial steps?

K. M. BURR: I believe in safety inspectors, but these officials should be "easy bosses." They must not too obtrusively inflict their personality and ideas on the committee. Suggestion and not coercion should be the order of the day.

CHAIRMAN: In your capacity as a safety inspector, Mr. Burr, are you authorized to inflict penalties for disobedience?

K. M. BURR: Yes. But I disapprove of such penalizing: I do not consider it proper. It is seldom that safety inspectors inflict penalties.

A. T. MOREY: Mr. Chairman, what is your thought in locating the men on committees, and in changing them?

CHAIRMAN: The experience of the companies in Wisconsin who are doing the best safety work is that it is well to change the committees about once every three months.

A. T. MOREY: The whole committee?

CHAIRMAN: It must be borne in mind that they are not all new men, although it practically amounts to that. They will take off two members and leave one, or take off one and allow two to remain; but in any case, one man serves three months. These companies consider it proper that workmen should be given the experience of actually going through the plant and ascertaining matters for themselves. Possibly the type of committee of which Mr. Burr has spoken is balanced or outweighed by that advantage.

B. W. CONLIN: We have about 500 men at our plant. The plant committees, of three or four men each, meet in the foreman's office once a week, and then submit written suggestions or recommendations relative to dangerous places and the like to the central plant committee which foregathers in the superintendent's office. The central committee discusses these points, and reports are sent back to the workmen's committees, as to the action taken upon the suggestions. We rotate the men on these committees, but each man

### **To the Foreman:**

**A foreman who fails to boost for Safety should not be a foreman.**

**A place for everything and everything in its place.**

serves generally about a month. We let one man drop out, and put a new man in his place. Then, by coming in contact with the other two men, he becomes cognizant of the work being done. The nationality of the men does not make any difference. Any very good suggestions are rewarded by the giving of a safety button. The men themselves do not formally inspect a department, but as they are there during the entire working day, they may be said to be "inspecting" all

the time. The amount of good in the suggestions we receive is surprising.

B. F. TILLSON: "In our mine operations, the workmen's committees have proved invaluable. Where you have over 90 per cent foreigners, all separated in their work, the factors of co-operation and education of the workmen are far more important than the operation of mechanical devices for safety. We have workmen's committees of four members who make a tour of underground inspection once a week, accompanied by the mine foreman. The company pays them the full day's time. These men rotate on the committees; new men come in each week, so that there are always men on a committee who have mastered the rudiments of what the committee is working for. The committees serve four periods of a day each in four weeks; and the entire method is bringing results. Our chief gain lies not in the suggestions—which have proved infrequent—in calling dangers to the attention of workmen at the actual point at which they are busy. This plan has been followed for eighteen months; so that now about eighty men on these workmen's committees have been recruited from the rank and file as well as from the "bosses" in more than half the mines. When they come to an unsafe condition at a working-point, they have authority to call the attention of the workman there to the danger, and it is remedied immediately. The mine foreman, who accompanies the committee, has power to see that their recommendations are enforced, and work

is suspended while the committee waits the proper change in conditions, whether these be involved in topping or trimming ground or in keeping the explosives, detonators and caps together.

CHAIRMAN: Have you mixed committees—foremen and workmen together?

B. F. TILLSON: Originally we began with the general foreman on the committee. These men served in rotation. The shift bosses came in turn; and then, when these shift bosses had all passed through the workmen's committee stage, the most intelligent or the highest-grade labor came next. We are accordingly "working down the line" in that way; and hope that eventually—if the source of labor does not change too rapidly—we shall have had practically every man on the safety committee at some time or another in his career. Men serving on the committees receive a badge with a red border, which denotes the authority of safety committeemen; and when, after graduating, they are exempt from service, they receive a permanent badge with a blue border in return for the red-bordered one. This permanent badge designates the prestige they enjoy in having filled such a position, and as the men appreciate such prestige, we profit accordingly.

CHAIRMAN: Mr. Tillson, when you get down to the humble men in time, will a committee be composed entirely of them?

B. F. TILLSON: It is actually composed of the humbler men, for 90 per cent of the units are of Hungarian, Slavish, Polish, Lithuanian, or other alien labor.

CHAIRMAN: Have foremen and workmen served on any committee at any one time in the mines?

B. F. TILLSON: No. They are all humble men.

CHAIRMAN: Do you believe in the "mixed committee"—composed of foremen and workmen? Would it give better results than the committee composed of workmen alone?

## What They Mean

Necessity is the mother of invention; let's invent some things to prevent accidents. They mean cripples, widows, orphans and poverty.



B. F. TILLSON: We prefer a committee of workmen only. At present, one factor acts as a stimulus to the shift bosses. When the workmen on the committees find something wrong, it is virtually a reflection on the shift boss himself. Hence, there is a stimulus to the boss to make sure that his conditions are above criticism by the subordinates. Before concluding, I shall touch upon one other interesting feature. John, let us say, has served upon a workmen's safety committee and graduated from it. Some of us may come along at a future time and find John transgressing rules which he has learned while serving on the committee. He has no opportunity for apologies—no pretext for pleading ignorance of conditions which he himself has already called to the attention of workmen. Hence, it is gratifying to feel assured of the interest which the workmen on the committee take in "calling down" men of the "John" type who are caught in infringement of rules. The foreman seldom has to prod the committee, but he will do so if it has overlooked any point. We have encountered no serious abuses whatever in such criticisms of the men by their fellows.

H. B. VINCENT: Which is the best organization in the case of a high-tension electric transmission company supplying current for light and power over a territory of from eighty to one hundred miles; where there are probably ten to twenty men in one place; ten men twenty miles further down the line; and where—maybe—there is a central organization at the power plant in the center of the transmission area? Is it best to have one representative or else a small safety committee at each place?

H. A. BULLOCK: I am not engaged in the power-transmission business; but speaking from the point of view of detached units, I think there is a minimum number of men among whom you should attempt to formally organize a safety committee and so distinguish the members of that committee from the other men at that point. Take, for example, the situation of a company like ours, having a number of sub-stations with two or three men in each. The departmental committee of their department can keep in touch with these men, and make them—in effect—safety inspectors at that point. I do not think it a vital question whether we have a specially designated safety inspector to inspect sections, or whether, through properly organized committees the men perform their duties according

to their own judgment of conditions. Once we secure the right spirit, I think we can more or less trust the men to determine the best method of procedure. In a plant such as Mr. Vincent has alluded to, I would suggest that the men be regularly brought to headquarters in smaller or larger groups, as the case may be, so that they may become aware of the centralized safety activities, and have their minds opened. The principle, gentlemen, is the "open mind." It is not to tell the man something that he doesn't know, because as soon as his mind becomes receptive he knows it better than you do. A motorman or a conductor knows what is safe or unsafe in operating a car better than a depot superintendent who has a lot of things to look after; better than a division superintendent; and far better than the general manager and, perhaps, the president, who do not know anything about it. If only we can manage to keep the men's minds open through proper organization and co-operation, I think the matter of inspection will take care of itself.

CHAIRMAN: Can anyone else elaborate upon Mr. Vincent's query?

H. B. HARMER: We have a safety organization composed of a general safety committee. This committee is composed of the heads of various departments and superintendents and managers. Under them are sub-committees appointed at the various sub-stations and plants of the several departments. If an accident happens, a copy of the accident report is sent to the sub-committee by the general committee for examination and study which will lead to the elimination of that particular type of accident. We do not have a safety inspector; but the claim department has charge of that branch of the work; of having safeguards installed; and of calling the attention of workmen to typical accidents, with the end in view of eliminating that class of casualties. We have cut down a certain class of accidents 100 per cent; in other words, we have abolished them entirely by different practices recommended by that committee. The committee members are called the "Safety Council" or "Council of Safety," and have a distinguishing badge given to them. We value this committee highly, and it has worked out satisfactorily. At the end of six months, two or three men drop off the committees and new men take their places. In this way every man serving on the committees has six months' instruction in safety work, and then the

## Loose Ends

**Don't fool with electricity.**

**Employees are cautioned to look out for torn clothing, as same is liable to be caught in machinery.**

newcomers secure six months' contact with the existing members of the committee.

**S. W. ASH:** Have these committees largely an educational aim? What I desire to bring out is this: If you feel that you have a fairly good educational scheme, but do not have workmen's committees, what advantage do you think can be secured from such committees?

**ELMER B. TOLSTED:** The two main advantages accruing from a safety committee are that you get in touch with the workmen on the committee who know things that the president, vice-president and inspectors cannot possibly be aware of nor find out, because the workmen will not tell their superiors. They will tell their equals, however, and this is what counts. In fact, this very getting at the workmen not on the committee through being able to talk to their equals is one of the biggest advantages which the safety committee plan possesses.

**A MEMBER:** Mr. Chairman, take that case of sending men out on transmission work. Suppose that the men do not all make up the same gang. Two or three men in that gang may be employed on one kind of work and ten men on another, thus dividing them up. Here is a suggestion: If five men go out in a gang, one of them should be appointed as a safety man. He should wear a button. I believe you will all agree that it is necessary to have one man responsible for any duty, so that the appointment of one safety man in a gang gives him the business of looking after the rest for six months, and his word must be obeyed.

**W. T. HANNIGAN:** We have about 13,000 employes scattered over a wide territory in four states, and at no place is a large number of employes concentrated except in the large cities. Our company appointed a safety man and a physician to regularly visit the various cities and towns in our territory to talk safety and give first aid instruction. This plan is meeting with great success. Once a

week, or at least once a fortnight, we send out bulletins to each individual workman, which are made up from the facts of actual accidents, and which illustrate why such accidents happened and how they occurred. During 1914 we had about 525 accidents causing lost time. Last year we had only about 325 such casualties; a reduction of 200. Every man is told he is expected to go through his plant and request the men to make inspections for unsafe conditions. In three months we received 1,500 reports, which saved our spending many thousands of dollars. And under widely-spread operating conditions—such as obtain in electrical transmission—we believe methods such as the foregoing form the only effective means of getting at the men, instead of endeavoring to work through safety committees.

### **Short Cuts**

Look out for loads carried by overhead cranes.

Employees are forbidden to take short cuts over dangerous places.

**J. S. ROCKWELL:** I represent one of the smaller railroads of the up-to-date and prosperous type, operating along some 600 miles. So far, I have been unable to get my management to consent to the formation of any system of workmen's inspection committees. We have, therefore, done the best we could without them, and have succeeded in reducing the number of accidents by 50 per cent and the cost of accidents by 75 per cent. Our activities have been along various channels. One method, which has worked out well in practice, is the transmission of a periodical request to all our employees that each man—for a period of from one to four weeks—should make an inspection and report to his immediate superior every unsafe practice or condition that he can find. The immediate superior at once corrects all conditions that are rectifiable within the limits of his authority, and then passes on a report to his own superior. Finally, after all these suggestions have passed before the several officials, they come to me. Then they are tabulated, and discussed in a conference of the general officers of the company. Most of the conditions are corrected. Afterwards, every man on the railroad

who has made a suggestion receives a personal letter from me telling him whether his suggestion has been acted upon; and, if not, why no action has been taken. If the suggestion has not been looked upon as a proper one, the man is told the reason. We have an inspection and safety committee in connection with our fire department, composed of four or five fire department men, headed by the chief. They make inspections of all our shop points, not only for fire-hazards, but for dangerous conditions. These activities, coupled with constant instructions to our foremen, who are required to exercise great supervision, have yielded excellent results. As a large percentage of our section hand laborers understand little—if any—English, we require each section foreman to give talks to these men, and detailed instruction in their work; how to handle tools, to be careful of passing trains, and so forth. Once a week the roadmaster calls the section gang together and addresses them along the same lines. Every three months the heads of departments and their subordinates travel over the system in an inspection train, and these men scrutinize everything on the road with regard to cleanliness, good housekeeping and safety. Before resuming my seat, I should like Mr. Fonda to bring out the points that they have experienced in their committee work.

G. T. FONDA: Our average works-force today is 16,000 men: a large number to reach. We have had safety committees for every six months of work, but I differ with Mr. Burr in some of his conclusions. For example, we have found it very necessary to have a man versed in safety work take the others round and point out the way. We have had many men on the committees who would not be classified as "intelligent" nor "intellectual," for the simple reason that such a type of individual is not commonly met with in a steel plant, and it is the fellow of low mental caliber whom we have to reach. We accordingly appointed a man who devoted his entire time to circulating these men through their departments, and pointing out to them the different things that we desire them to think about and recognize. As Mr. Burr has mentioned, we put the "soft pedal" on guarding, for we were doing that with a fixed force of operatives as fast as we could. So we put all the stress on the mere question of preventing the "near accidents" in the conditions we could find, and indicating to the men being

taken through the department where they could tap a man on the shoulder and say: "Here, Jack, if you keep on doing that, you'll get hurt." We harp constantly upon this to the men. Our safety committees comprise altogether about 200 workmen from the rank and file, and these committees are divided into about 40 groups of five men each. One man, who is chairman of the fixed committee, who is more or less familiar with clerical work and first aid, acts as guide to these men, and assists them in preparing an intelligible report. He holds the meetings, and molds the men's ideas into a readable report which is transmitted to our safety department. The recommendations are brought before the general plant committee. The members of that committee are the general superintendent (who acts as chairman), the yard superintendent, the electrical superintendent, the master mechanic, and the secretary and treasurer of the company. It is essential to have officials of this caliber on the committee as the recommendations frequently involve matters of policy which demand executive attention, and in some instances authoritative explanations must be forthcoming as to why any particular suggestion cannot be acted upon immediately. In addition to pointing out careless practices to the men through their department, and asking them to recommend remedies for mechanical defects, we educate them in first aid work. The committees meet one hour during each week, and with the assistance of a competent man whose work is confined entirely to first aid activities, we teach them what to do in case of emergency. With a view to fostering the "team spirit," our first inter-department first aid meet will be held on November 6 at the Lehigh University Athletic field. All our officers will attend that meet, and their presence there will show the men that the executives are sincerely interested in what is being done. Our conviction is that the men can profit by a certain amount of first aid knowledge, on the principle that by knowing what to do in serious accidents it will make them think more about such accidents and their results.

J. C. SMITH: Having had ten years' experience with various forms of safety committees, I do not believe that any one standard type of organization for such committees will ever be adopted in any given plant and followed out unvaryingly for any great number of years. No one set form of organization will adequately meet

## **Everyone in Line**

**"It is reported that we have men from twenty-one different nations employed in one plant. We hope to see them all in Safety work."**

conditions in all plants. It is in changing things around and in stimulating interest that the greatest good may be accomplished. When safety committee work was begun ten to fifteen years ago, department safety committees were the rule. Then "rotation" became the rule; other departments were organized; and now some companies are veering back to the permanent plant committee plan. When the Illinois Steel Company began safety work ten years ago, it first organized departmental safety committees. These committees were large; and it was difficult to get the men to devote sufficient time to the work. We, therefore, changed this: divided the plant into five sections, appointed one man in each department, and had three men in each division. One man left each committee every two months, so that the whole committee rotated each half year. That gave us results from the safety point of view, but our superintendents were not satisfied with the plan from the operating end. These superintendents did not desire any committee of inspection—they wished a department of their own. No regular number of men was assigned to any departmental committee. As far as possible we endeavored to have the assistant departmental superintendent act as the committee chairman, with power to appoint as many committeemen as he desired. I think that by placing responsibility upon the committee chairman, and by having the committeemen report to him, better results are attained; and we then have a number of men who have thus an organization of their own and practically under their control. We hold—as Mr. Burr has already expressed himself—that the committee should not spend much time in inspecting all the departments. But we believe it is a good plan for the committee chairman, accompanied by the safety inspector or his assistant, to inspect each department once a week. As a rule we do this; and the inspection is a thorough one. Apart from this feature, the committee must work out its own salvation. In order to eliminate "dead timber" on the committee, we recently adopted a plan which I think

is new. Every week each member of the committee has to report to his chairman what he has done for safety during the preceding seven days. This, mark you, is not a case of making suggestions or recommendations. It must be a showing of something actually done to promote safety: either that some man has been told to perform a task the right way, or that a dangerous condition has been corrected. In this way we can ascertain if a man is carrying out his duties properly. If he is not doing as well as he might, we encourage him; but if he manifests continued apathy, we replace him. Such a method should lead each committeeman to work steadily for results. This year we have received 100 per cent more suggestions, and have had more committee work done than last year; and this proves that the committees are alive to their duties and responsibilities. So far this year we have had about 2,400 suggestions of repairs from the committees. In the actual formation of a department safety committee, we appoint a member from each section of the plant. All in all, our experience has been very favorable; and I heartily believe in safety committee work.

## ORDERLINESS

A disorderly workshop contributes to the number of accidents. Do not leave waste material or refuse lying around; keep premises clean.

CHAIRMAN: Mr. Smith, do you believe that the plan of workmen's safety committees can be adopted in the case of plants of 100, 200, or 300 men, and with just as good results proportionately as in the case of your own company's establishment? I make allowances, naturally, for essential modifications in the form of the workmen's committees.

J. C. SMITH: Absolutely—there is no question about it.

S. W. TENER: Here is a thought which has come to me. The National Safety Council is growing large; and this implies a diversity of interest. Mr. Hannigan, who recently spoke, is connected with a telephone company; so what possible interest can he have in rolling mills, wire mills, and other such plants? The situation is



entirely different. Naturally, we would not do away with our safety committees under any consideration; but at this juncture I think that either Secretary Cameron or I should indicate to those here assembled that it is the purpose of the National Safety Council to develop the "sectional idea" from now onward under the jurisdiction of its new board of directors and executive committee. I feel convinced that Mr. Hannigan and his other telephone company colleagues would like to take part in a round table meeting where workmen's committees were not under discussion, because I do not think that such committees are appropriate in the work of telephone companies; and I also doubt if a railroad could profitably utilize such committees to any extent. But the point I emphasize is that the sectional work of the National Safety Council will be an important matter during the coming year, and that opportunities will be given in the future for men interested in particular industries to get together and have round table discussions of their own.

CHAIRMAN: Mr. Tener has just been elected an executive committeeman of the National Safety Council, and all of you have evidence that he is to get busy immediately. Mr. Morey, will you please respond to Mr. Tener?

A. T. MOREY: When we realize the diversities of plants, it stands to reason that such dissimilar conditions call for variations in safety committee matters. Even in the case of the same class of plants, we have had the proposition advanced that, on the one hand, a stationary committee is the better while, on the other, some maintain that the "rotating" type of committee is preferable. I have even heard the opinion expressed that in certain instances there is no belief in any class of committees whatever. My own impression is that these three points of view are possibly all correct, and refer to different phases of work in the same plant. When, for instance, safety work is initially embarked upon, it may be that the "rotating" variety of committee should be in vogue, so that all may have an opportunity of comprehending what the accident prevention campaign stands for. Then, later on, perhaps the stationary committee may prove the better; and, last of all, when the superintendents and foremen realize that safety is basically a matter of efficiency in operation, the committee may finally be eliminated. I have thought it politic to outline all this in order to prevent confusion of thought.

and to offset the possibility of any of us leaving the meeting with the conviction that some do not believe in safety committees at all, while others again are supporters of one type of committee and some of another variety. Do you not think, accordingly, Mr. Chairman, that these beliefs refer essentially to the different phases of work which I have outlined, and are not, therefore, in conflict?

CHAIRMAN: I am glad you brought up this point, President Morey. What really concerns us here is the fundamental principle of recognizing the workman and giving him some active participation in safety activity, so as to win his confidence and interest, and to educate him. Speaking of the State of Wisconsin—with which I am familiar—there are all classes of industries there. Workmen's committees have been tried out in these plants, and as good results obtained in the case of a street railway company as in the case of a paper mill. I do not think, accordingly, that the specific class of industrial or other activity makes any difference in the success of a workmen's committee—but, of course, I may be in error as to this.

#### INSTRUCTION OF WORKMEN.

CHAIRMAN: Our next subject is one of vital importance. It is the "Instruction of Workmen"—especially the new men, and the non-English-speaking operative. Will Mr. James, of the New Jersey Zinc Company, be good enough to start the discussion?

J. D. JAMES: Four or five years ago the officers of the New Jersey Zinc Company became aware that accidents were happening in the plant which ought to have been prevented. This led to the formation of a safety committee composed of the working heads or superintendents of each department, which was deputed to look for dangerous conditions or machinery. You can readily imagine that it took but a short time to convince these superintendents that they were confronted by a large task. Lacking the time essential for proper grappling with these duties, they looked around for a man competent to inspect the whole plant and recommend essential safeguards. It then became also apparent that the inspector would himself require assistance in this work; so a man from each department was deputed to aid him, and the group of these assistants was called the Workmen's Safety Committee: based on the fundamental prin-

## CAREFULNESS

Teach men to be careful and you may prevent injury to yourself and others.

Make repairs before, not after, accidents.

ciple that the men from the different departments should be educated in the safety habit. We decided that the department men on this committee should rotate continuously, and that as each man's term expired every week, a new man should be brought in. This would maintain the force of the committee at steady level of eight members, and give it eight days to make tours of inspection. Soon we found that orders for guards began to pour in, and a force of

men was deputed to fill these requisitions. Suggestions still flowed in quickly—too quickly, almost—so we resolved to divide the committee, relegating half the members to tours of inspection of the plant or certain parts of it, and the other half to consideration of first aid work. We wanted to have the right man to attend to any accident which happened. As a result of this first aid instruction, we now have over 104 competent men able to act in emergencies. When a man gets through his eight days' course in first aid, and is able to undertake bandaging and resuscitation, he is looked upon as a competent graduate. He acts with authority in such work, and in the knowledge that he is expected to keep his department as free from accidents as possible.

CHAIRMAN: How do you instruct your new men? Take, for example, a non-English-speaking foreigner, who may have come right into your plant this morning.

J. D. JAMES: I have served on a committee where we had a number of foreigners who could not speak good English. We took them round the plant with us, and when we came to a belt, a bevel-gear wheel, a sprocket chain, or a shaft, or, in fact, anything that looked dangerous, we indicated to them the particular hazard involved in that appliance.

CHAIRMAN: Does your foreman instruct a man when he comes into the plant for the first time?

J. D. JAMES: Not all the time. The safety committee, however, takes particular pains to instruct the new men as they come on the committee. The foremen's department is supposed to do this without being told.

H. J. BELL: The one basic principle in safety is to convince the workman that *he* is the man who gets injured, and bears the brunt of an accident. It is the man on the job who suffers. So, of course, we must teach him safety methods.

The way in which the teaching is carried out is not the all-important element—it is the result accruing from such instruction which matters. It seems to me that we must accordingly get a real safety committee with wide powers. We must impress upon the members of this committee that the more they speak and do for safety the more they will be appreciated. I do not think it is proper to put the "soft pedal" on the guard proposition or on anything else. We invariably criticize our men when they do not make suggestions, whether the point involved is one of safeguarding or not. This does not mean that we invariably do anything they suggest, but the point is to insure a constant influx of recommendations. We certainly get them in good measure, and the majority are logical. Given a good safety committee, my belief is that the best way to instruct the workman is by encouraging activity. Get the men to attend to every item, and send them into departments other than their own. Again, I reiterate the fundamental idea that the man who works is the man who gets hurt. He, therefore, has the most interest in safety work, and you ought to make him a controlling factor in it.

CHAIRMAN: Mr. Bell, do you consider the Chicago & Northwestern safety committee work the best form of your accident prevention activity?

H. J. BELL: Yes. If the safety committee be properly conducted, it is the best thing for a railroad, and for any other form of activity.

## CHIPPING

You need two eyes  
—look out.

Don't do any chip-  
ping or calking un-  
less you wear gog-  
gles provided for  
that purpose.

CHAIRMAN: Will Mr. H. B. Smith now speak to us on the instruction of workmen: particularly the man who doesn't speak English?

H. B. SMITH: A little over four years ago we secured the services of a linguist, who, as each new man was employed, talked safety to him in his mother-tongue, and told him that he should report to the doctor whenever he received a slight injury. This linguist then asked the foreigner if he had understood what the foreman had told him; and if it turned out that the man did not grasp the foreman's talk, then the latter had to reiterate what had been said. We have secured good results from the work of this linguist. If any workman whatsoever has been off for more than thirty days, he must—irrespective of length of previous service—be re-hired; and the linguist must again give him the same line of talk: hammering home the conviction that safety must be one of the man's first duties; and while the linguist does not devote as much time to the re-hired man as to the out-and-out newcomer, every man is systematically reached in this way. The linguist relies upon data from the employment office to keep himself in constant touch with the men. Here is a little story to show you how the safety idea takes root: Two years ago a street fair was held at Joliet, and one of the traps laid for the unwary nickel was a flimsy-looking Ferris wheel. Two foreigners saw the wheel. One of them said to the other, "Come on, John. Let's take a ride." The other glanced at the wheel—then, quick as a flash, came the rejoinder, "Oh, no—Safety First." The man wouldn't trust himself on that wheel—he instinctively felt it was not sufficiently safe. There are, of course, many ways of reaching the men. For instance, one of the duties of the linguist is to examine men in their own language on the safety rule book; and they get a safety button for answering 90 per cent of the questions correctly. Our coke man, who has 300 under him, recently reported that everyone of them had a button. This speaks for itself. The mere fact of a man not being able to read his own language does not excuse him. There must be some one at his home who is able to read the rules to him; and we have many instances of successful examinations of men who can neither read nor write their own language. Frankly, I do not know of anything that is of more benefit to them than this examination on the rules. We began the plan

in 1910, and I believe in it as implicitly as ever. Our linguist makes a monthly report of the number of new hands and of old hands to whom he has talked.

CHAIRMAN: What would you do in the case of a small plant of 200 or 300 men, and which could not bear the expense of an interpreter?

H. B. SMITH: I would get men from other departments who were competent to instruct, and see that such instruction was imparted immediately. Out of 300 or 400 men you should certainly have at least three or four who could talk the languages of all the men at the plant.

CHAIRMAN: Take the case of a Pole, for instance. Would you rather have an American Polish-speaking foreman instruct him, or a Pole who could speak English?

H. B. SMITH: I would prefer that the man of his own nationality should do the instruction work. Some years ago we adopted the plan of sending a printed card to every foreman within a week after the employment of each new man. The foreman must sign that card to the effect that he has instructed the man, and the man himself must also sign the card signifying that he has received instruction from his foreman.

W. GREENWOOD: Mr. Smith, are all the instructions of the Illinois Steel Company incorporated in rule book form?

H. B. SMITH: We have rule books which embody many of the rules and different conditions peculiar to each department, and this is the basis on which we work.

W. GREENWOOD: Do you depend upon the men remembering the verbal instructions they have received?

H. B. SMITH: Yes. The linguist goes to several departments and talks to the men in rotation after they are employed. If three or four men are assembled in one department, he can give them instruction together. I cannot exactly say how many men he could talk to in a day.

L. A. DeBLOIS: How long does it take the linguist to give instructions? That would afford an indication.

## See the Doctor

All injuries, no matter how trivial, should be immediately reported and receive the attention of the company physician.

H. B. SMITH: The linguist goes to a man and asks him if he comprehends what the foreman told him about the hazards of the work. He tells the man that the services of the plant doctor are free; and that no matter how slight an injury he may sustain, he must see the foreman and then proceed immediately to the doctor's office, because the slight injury, if neglected, may lead to blood-poisoning.

A MEMBER: Mr. Smith mentioned that he sends the slightest injury to the doctor. Some others have stated that they instruct the men in first aid. There is a big difference between these methods. How do Mr. Smith and his company feel on this matter?

H. B. SMITH: In our plant of 3,000 men we have our first aid course, but the men do not apply such emergency treatment except in the case of electric shocks and gas cases. We use the prone pressure method.

MR. GREENWOOD: What would you do in the case of a man with a broken back?

H. B. SMITH: Place the injured man on a stretcher and send him right to the hospital.

MR. GREENWOOD: Would the men trained in first aid do that?

H. B. SMITH: No. There is a stretcher in every department, and it does not take any skill to place a man on a stretcher and take him to the hospital.

A MEMBER: I understood that your foremen did not speak the foreigner's language. You say, nevertheless, that the new man is asked whether or not he understood the instructions which a foreman had given to him in his own language.

H. E. SMITH: The case is that the linguist asks the man whether he understood what the foreman told him; and if it turns out that the man did not understand, then the linguist will summon the fore-

man and see that the man gets his instructions so that he can grasp them.

F. W. SHEPARD: I scarcely think we can accept Mr. Smith's statement that it does not require any skill to place a man on a stretcher as literally correct. A man with a simple fracture has often sustained a compound one through handling by rough-and-ready men. I certainly think that in cases of this kind it is well to have a first aid team, or at least somebody who knows how to properly handle a man in taking him to the hospital.

CHAIRMAN: Mr. Morgan, I understand that you have recently carried out an ingenious plan of co-operation in safety work with the local newspapers in your district.

E. B. MORGAN: Well, I do not quite agree that there is anything ingenious in what we have done. We have simply made good use of the two foreign newspapers that are published in Granite City and read by most of our foreigners. We furnish these papers with the translated article, amounting to about half a column, once a week. In consideration for publishing these articles we purchase 100 copies of the paper, and our interpreter marks each copy and distributes them to our men who read that particular paper, whether it be Hungarian or Bulgarian. In this way we feel we successfully reach these men through a new medium, as the paper not only reaches them personally, but also their homes, which brings an exceptionally good influence to bear. I think that almost any plant employing foreign labor could very readily make similar arrangements with its local newspapers.

MRS. LILLIAN BURT: During this discussion we have not so far touched on the fact that the sober man is the more careful man. My organization, the American Issue Publishing Company, has prepared a set of leaflets and posters showing the scientific side of the alcohol problem. The copy for these leaflets was approved by Dr.

### Up to the Man

Do not allow tools or material to litter the ground.

Most accidents happen when some one does not care enough.



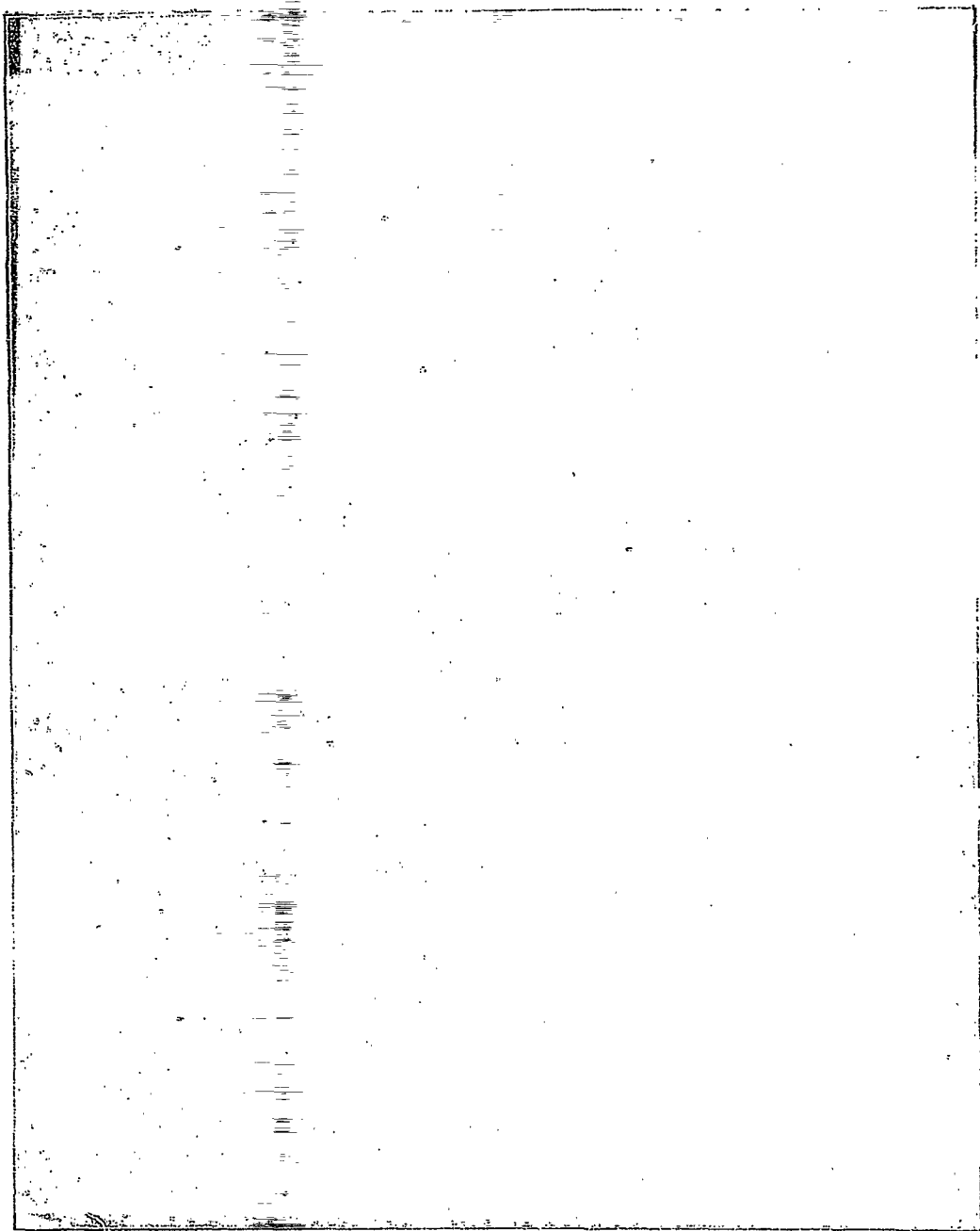
Darlington, of the American Iron and Steel Institute, and by Mr. C. L. Close, manager of the Bureau of Safety of the United States Steel Corporation, before they were issued. They have been in use by large plants—especially in Ohio. Let me tell you of the reduction of accidents effected by the "Water Wagon Club" of the Bessemer and Lake Erie Railroad Company after using this material for eighteen months. This club is recruited from all classes of workmen. During the last six months they employed 3,380 men, of whom 1,500 were members of the club. Within that period the Bessemer and Lake Erie had 224 casualties which took the men from work for three or more days. Of that number, only 43 occurred to "Water Wagon" men. If the same ratio of comparison had held good with the "Water Wagon" membership of 1,500, as in the case of the 1,880 men who were not members of the club, there would have been 101 more accidents than actually occurred.

CHAIRMAN: I notice we have a number of ladies present, and I hope some of them are in charge of women's work in the industries. Will any one of these ladies speak on the subject of instructing feminine operatives?

MRS. N. SLAYBACK: There is a psychological effect in the instruction of workmen which has so far been disregarded in this afternoon's discussion. I have found in my own experience that I must place the working man or woman on my own level. In no way can I speak down to the worker from my position in society. You must make the worker see that you are not so much his or her friend, as that he or she is your friend. You will secure the worker's entire co-operation only when you have taken the operative from his or her plane, and placed that man or woman on your level.

J. SCHILLING, JR.: My company has rules prohibiting the holding of workmen's meetings of any kind within the plant boundaries. The first point I had to contend with was how to effectively bring the safety movement to the notice of the men. Well, the first thing I did was to don overalls, go on the staging of ships and into the machine shops, and watch the men handling tools. But that was not the entire solution of the problem in our plant, since we have 32 departments: each department having a superintendent, his assistant, and distinct conditions peculiar to itself. A number of foreigners, moreover, are employed in several sections. I accordingly

EXHIBIT OF VARIOUS TYPES OF SAFETY BULLETIN BOARDS  
Educational Safety Exhibit, National Safety Council Annual Congress, 1915





organized a "Good Fellowship Association," which, composed of committees of intelligent workmen, takes up instruction in English, safety, first aid, social service and music. These committees meet in the evening and during the noon hour. The special function of the social service committee is to attend to the welfare of the injured. We found that alcoholism was one of the problems in the safety factor, because we had fifteen saloons within a radius of eight squares of the plant. The men were in the habit of visiting these places at noontime, not so much for the drinks as for the lunches. So a special committee was organized in our Good Fellowship Association; and, after borrowing a little money from the company, we started a lunchroom of our own, managed entirely by the company. We commenced by serving sandwiches and coffee.

CHAIRMAN: How long has the committee been instructing the men in safety?

J. SCHILLING, JR.: Only about three months.

CHAIRMAN: Is the work proving satisfactory?

J. SCHILLING, JR.: Yes—fairly satisfactory. Of course, there is still improvement to be made; but during the last six months we have reduced accidents 14.25 per cent.

#### THE SAFETY BULLETIN BOARD.

CHAIRMAN: We must now pass to the next subject: that of "The Bulletin Board." Mr. Eaton will now give us his views on bulletin boards.

J. M. EATON: In my opinion, there is no safety factor so susceptible of abuse as this very one of the bulletin board. I claim to know something of the matter because our plant has no so-called safety organization. Our only organization approaching one of that nature is a committee composed of executives which applies pressure to the foremen on certain occasions, so practically all our work has been done through the medium of bulletin boards. It is not the form or design of the bulletin board which counts—it is altogether a question of the matter posted on it; its location; and its being in a good light. We have a large number of these bulletin boards, which are erected in places where they can be easily seen. We have always adhered to the fixed rule of placing nothing on

## Too Late

**"You can lead a horse to water," etc. You can not persuade some people to be careful—until too late.**

these boards which does not either deal with safety or is strictly germane to it. A good location is essential for the board, so that it may be seen by the largest number of men; the board simply must be well lighted if results are to accrue; and it must exhibit matter which will interest the average man. I know it has been stated that good work might be done by posting statistical statements of reductions or increase of accidents in certain departments, but my own experience has proved that nobody reads such statements. The average factory hand loathes statistics. He doesn't really know what they are. Many of the men cannot add figures. The man must have something that appeals first to his eye and gets his attention. This causes him to pause at the bulletin board—his progress is arrested until he has found out exactly what the notice is. It may be a picture. Indeed, because we have a number of foreign-born employes at the plant we use pictures almost exclusively in some departments. The printed statements in bulletins which contain pictures, and in bulletins which contain statements only, must necessarily be short. You cannot get results with long drawn out wordings. My observation proves that when the men read the bulletins they do so during working hours and not in the noon hour. They go through the plant; pass the bulletin board, and pause a little to read the bulletins. They certainly won't waste time reading a long one, because some one in authority may come along. The bulletins must, therefore, have something short, snappy and to the point. They must be drawn up in words of one syllable; something that the men will grasp immediately. I do not put much faith in slogans, nor do I approve of a shop motto on the bulletin board. I am averse to anything which will be repeated constantly until familiarity breeds contempt. If you place a shop motto on a bulletin board and leave it there, it means absolutely nothing to the average workman. He doesn't pay any attention to it. Then you must have variety in the bulletins, and ought to avoid a repetition of "Don'ts."

Generally men dislike a succession of "Don'ts." Our bulletin boards show from time to time a good many posters on health. We tell the men how to do this, or how to do that. For instance—along with National Safety Council bulletins—I have used one on tuberculosis, printed on yellow paper with a red border. This had really nothing to do with safety in the strict sense: it did not give the men any idea of the care they had to exercise in the shop operations.

But it was something a little different, and it was widely read. Let me now outline our system of posting bulletins. The bulletins are changed every week, and sometimes more frequently. If there are two bulletin boards in a large room, or if there are two or more on the same floor or in the same building, identical bulletins do not appear on all the boards. Board No. 1 may have one class of bulletin and Board No. 2 another. Boards Nos. 1 and 2 never have the same bulletin on each if it can be avoided. The instructions are to have Boards Nos. 1, 2 and 3 all different. Of course, when it comes to Boards Nos. 5 and 6, you may find the poster on Board No. 1 repeated there. The idea is to have the man find something new on each bulletin board, so that his attention may be drawn to it. Naturally we have our general bulletin board on which "lost and found" notices and the like are displayed, and a small board on which notices pertinent to the benefit association are shown, but constant change is the rule as regards the safety bulletin boards proper. We do not post any bulletin simply because it is a bulletin. We exercise discrimination. We must have bulletins which tell the men something they can believe in. I feel that a good deal more can be accomplished through the use of bulletin boards than is generally conceded. If you will be as sincere in your bulletins as you are to the men in your personal relationships with them; if you will post nothing on the boards that you do not yourself believe in and are prepared to back up; and if you will change the bulletins frequently, you will arouse a remarkable degree of interest—to say noth-

## Foremen

Workmen's committees will fail if the foreman does not believe in the idea and give encouragement.

ing of results. We have reduced our accidents some 60 per cent in three years, using practically nothing outside of the bulletin board work.

HOW TO KEEP UP INTEREST IN SAFETY WORK.

CHAIRMAN: I am sorry that we must pass from this subject of bulletin boards, but I find comfort in the fact that the bulletin board question has been thoroughly presented to you in the graphic exhibit of such boards in our exhibit room. The next subject will be, "How to Keep Up Interest in Safety Work." I ask Mr. Robertson, of the Eastman Kodak Company, to start the ball rolling.

J. A. ROBERTSON: In keeping up interest we must devise new methods of rousing attention and enthusiasm. We must constantly think out fresh schemes to interest the men. We must not sink into a circumscribed rut. You cannot interest men in accident prevention without interesting them in other things along the same line. Such new plans as are evolved, however, must spring from the sincerity of the heart, because if you do not have the heart for a good foundation, you might as well have a religion without a Bible and without a creed. So far as concerns the economic side of the question, I think the late Elbert Hubbard laid it down that "A thing which is not economic is immoral." Let me qualify that somewhat—let us put it this way: "A thing which is fundamentally right must, if efficiently demonstrated, be economic." So the economic side of this matter is simply the result of the fundamental principle that it was right to begin with. You must constantly evolve safety plans and ideas from the crucible of the mind. We may do all that is humanly possible for the well-being of a tree; but it needs the changing seasons to round out its growth. So I think that the annual congresses of the National Safety Council take us out of our grooves and afford us a fund of fresh ideas for the stimulation of interest among our men, and for the general promotion of the cause to which we all swear fealty.

CHAIRMAN: A number of speakers have referred to enthusiasm in safety work. I know that nobody here doubts the importance of this precious attribute. The enthusiasm of my friend, Dr. Patterson, has done much to make this Congress a success, and I call upon him now.

DR. F. D. PATTERSON: In my capacity as president of the Philadelphia Safety Council, it has been my privilege to welcome you to this city. Now the time has come to bid you good-bye—to wish you Godspeed and good luck on your several ways. Last night our ex-president gave us a sermon which I feel sure everyone has taken to heart. I know that our cause is right, and I know that it is just, for, like the crusaders of old we march forth to conquer under the Cross as they did. I hope that every member of the National Safety Council will disseminate the message of these words on the back of our program: *“And the end is that the workman shall live to enjoy the fruits of his labor; that his mother shall have the comfort of his arm in her age; that his wife shall not be untimely a widow; that his children shall have a father; and that cripples and helpless wrecks, who were once strong men, shall not longer be a by-product of industry.”*

I feel sure that the Philadelphia Safety Council and the whole city of Philadelphia have had an inspiration and have seen a vision in the work which you have done here. And, as we close, let us all take home these lines of the poet:

I know that the problems that face us now  
Are sore to our erring view;  
But we've gained a sight of men and minds  
That our grandsires never knew.

We have passed from the time when Might was Right  
To the time when Right reveals  
Some part of her face, divinely fair,  
To the veriest clod who feels.

Through the long, slow eons we've upward crept  
As ever our God hath willed;  
And here has the right been crowned our king,  
Or there has the wrong been stilled.

There is much to do, there is much to win,  
But the ages have taught their lore;  
And we clearer see what the right must be  
Than ever man saw before.

The meeting was then adjourned.



### **A SIMPLE CREED**

**"My creed is to love justice, to long for the right, to love mercy, to pity the suffering, to assist the weak, to forget wrongs and remember benefits; to live the truth, to be sincere, to utter honest words, to love liberty, to wage relentless war against slavery in all its forms, to love wife and child and friend, to make a happy home, to love the beautiful in art, in Nature, to cultivate the mind, to be familiar with the mighty thoughts that genius has expressed, the noble deeds of all the world, to cultivate courage and cheerfulness, to make others happy, to fill life with the splendor of generous acts, the warmth of loving words, to discard error, to destroy prejudice, to receive new truths with gladness, to cultivate hope, to see the calm beyond the storm, the dawn before the night, to do the best that can be done and then—to be resigned."**

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