is the list:

ME No.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

IEMBERS

000 or more Each

$0.15
.20
.30
.50

) and 31.

O 11, ILL.

—251—WHP

Current Safety Topics in the

RUBBER INDUSTRY

As presented in the Sessions of the Rubber Section at the 1950 National Safety Congress

Volume 28
Transactions
1950 National Safety Congress

NATIONAL SAFETY COUNCIL
425 No. Michigan Avenue • Chicago 11, Ill.

PLAINTIFF'S EXHIBIT tabbies WV-026255

PLAINTIFF'S EXHIBIT tabbies 030628.26

What's New...

In safety, as in all other human activities, the question is repeatedly asked, "What's new?"

Many answers to that question are given every year by those who participate in the various sessions of the National Safety Congress. Many new methods, devices, and ideas which later became generally accepted first were presented at a Congress session.

Because of this fact, safety directors throughout the nation have always found the Transactions of the Congress a valuable tool in their accident prevention programs. Publication of the Transactions in small volumes—one for each Section or Division—permits wide distribution of pertinent portions of the Congress material to management and supervisory personnel at small cost.

The 34 volumes of the 1950 Congress Transactions are listed on the last page. Distribution of these volumes to key personnel is suggested as a valuable aid in the safety program.

In preparing these Transactions the proceedings of the Congress have been condensed and edited for reference purposes. Complete original manuscripts, with any charts or illustrations which were used, are available in National Safety Council files. Views expressed at the Congress or in this record are those of the Congress participants, and not necessarily those of the National Safety Council.

THE RUBBER SECTION

This volume is a record of the sessions held at the 1950 National Safety Congress by the Rubber Section. The conduct of these Congress sessions each year is only one of the many cooperative activities which the Rubber Section carries on in behalf of its members, and for the benefit of accident prevention work in the rubber industry generally. The Section gives guidance in the preparation of a great variety of technical and educational material useful in the day-to-day safety programs of rubber plants. The activities of the Section are under the direction of its Executive Committee, the members of which are listed at the close of this volume.

Remarks of a Contest Winner for Large Plants

By F. C. THAYER
Safety Supervisor, U. S. Rubber Co., Mishawaka, Ind.

We do not have access to a secret formula for winning contests. If we did, we would not hesitate to tell you and the world about it.

Actually we do nothing more in our accident prevention program than any of the plants represented in this group today. We doubt if we do as much as some. However, we do take a very serious and sincere attitude toward the task of preventing accidents and we try to profit from our own accident occurrences as well as those of other industries. We rely on individual job-training activities of which safe operation or behavior is an integral part. Our delving into the operations of some jobs has been the initiating factor in organizing job-training programs which improved the method from the standpoint of efficiency as well as safety.

We are not unique in anything we do, other than an occasional safety promotion scheme. As you know, promotional schemes only stimulate interest and do not carry the burden. So, rather than attempt to produce a never-ending series of safety publicity or promotional stunts, designed to really "knock-'em-out," we have chosen the following course of action.

First, we are convinced that safety is a good product. Never has there been a product to be sold that requires such a minimum investment and yields such tremendous dividends as safety. Since safety is a *life*-time proposition, we apply a slow, but steady form of salesmanship to properly shape our employee's attitudes toward safety before they become involved in accidents.

We were advised several years ago, that the best way to turn a large boat around by it's hawser is to maintain a slow and even pull, and not to give a few spasmodic jerks on the hawser. By analogy we feel that we will reach much deeper into the minds and actions of our employees through personal contacts, through regulated educational material releases, and through meetings designed to encourage preventive maintenance of our property and safe operation in the plant.

We have a small staff as compared with safety departments in some industrial plants. Therefore, we must make a little, go a long, long way. To be effective we have planned our program as described above and are endeavoring to keep our safety program at a constant level.

We do not intend to withdraw from competition in this section, in fact we would like to extend our string of awards. However, we would much rather have all industry tie for first place with a very low experience rate. In short, we are not any better than anybody else, our system is no better, we are fortunate and we want to wish all industry to share our good fortune.

Remarks of a Contest Winner for Small Plants

By JOHN S. P. WILSON, JR.
Personnel Manager, The B. F. Goodrich Co., Miami, Okla.

The employees of the Miami Plant are indeed proud of having won the National Safety Council's Rubber Section 1949 Safety Contest for Division Three and of having established a safety record of 2,150,574 man-hours without a lost time or disabling injury.

I should like to stress that the record established by the B. F. Goodrich Company in accident prevention can, to a large degree, be attributed to a recognition of the fact that safety is the responsibility of the line organization and cannot be delegated to staff groups as is the case in many forms of personnel activity. The personnel department can hire a man, but it can't keep him safe.

Accident prevention must begin at the top

with the plant manager 100 per cent back of the safety program and requiring a recognition by every foreman that the prevention of injuries to his employee is his personal responsibility.

Then, of course, the foreman must set the pattern both by a personal example and by having unsafe conditions corrected with reasonable diligence and promptness.

Safety is not something that can be stressed today and ignored tomorrow. It is a continuous activity and one which requires not only an around-the-clock alertness but also a safety consciousness on the part of all employees.

The Miami Plant's safety record for 1949 is an excellent example of what can be accomplished in safety through the coordinated and continued efforts of all employees working as a team.

We have learned through experience that successful safety programs are those which are designed to stimulate and maintain the interest and active participation of all employees. Safety programs which fail to hold the interest and continued participation of all employees, regardless of how good they may otherwise be, are doomed to failure.

Our line management is thoroughly sold on the use of personal safety contacts. These contacts, which are patterned after the General Motors plan of making at least two safety contacts per shift, have proved to be very effective.

Our management also maintains a constant emphasis on the fact that good housekeeping and safety go hand in hand. We have learned through experience that accidents are often caused by hazards created as a result of disorderly conditions. We have found that accidents are materially reduced where good housekeeping exists.

Management of the Miami Plant also participates in inter-tire division contests in which all tire manufacturing plants compete for the T. G. Graham Safety Trophy. We have found that competition between similar production groups is important in any accident prevention program. In our contest, the plant with the best performance each quarter wins one leg toward permanent possession of the Vice-President's Trophy. Four wins or legs are necessary in order to win permanent possession of this trophy.

Our management welcomes the interchange of accident prevention information between all tire manufacturing plants—our own as well as yours—when such information is available. This information has proved extremely helpful in the elimination of hazardous conditions and unsafe practices which were brought to light through the actual experience of others.

I am pleased to state that our Miami Plant helped make it possible for The B. F. Goodrich Company to receive, on a corporate basis, the National Safety Council's Distinguished Service to Safety Award in the year 1949.

As a result of the increased man-hours worked this year, the Miami Plant has been promoted to Division Two of the Rubber Section. We welcome this promotion and are pleased to have the opportunity of competing with those who make up this Division. We are hopeful that we can continue to furnish the same high standard of competition in Division Two as we did in Division Three.

Current Government Measures Affecting Safety in Rubber Industry

(A Panel Discussion)

Discussion Leader: H. L. Andrews, Safety Dir., The Firestone Tire & Rubber Co., Pottstown, Pa.

Participants:

Glen D. Cross, Safety Dir., The Firestone Tire & Rubber Co., Akron, Ohio.

W. E. McCormick, Dept. of Industrial Hygiene & Toxicology, The B. F. Goodrich Co., Akron, Ohio.

J. T. Kidney, Safety Dir., The Goodyear Tire & Rubber Co., Akron, Ohio.

Outline of Mr. Cross' Talk

I. History Of Codes, Statutes, Rules, And Regulations.

A. Statutory safety laws were the first form of safety legislation.

1. Difficulty of amending.
2. Codes are technical and need to be

detailed—difficult to do by statute.

3. Politics.

B. Present Method.

1. Enactment by statute of general statement. "It is the duty of every employer to provide reasonably safe and healthful working conditions for his employees and to do everything reasonably necessary to protect their life, limb, health, and safety."

2. Provision for the drafting of rules and standards to carry out this general statement of policy.

II. Rule-Making Authority.

A. 30 States—A Department of Labor or Industry Headed By A Labor Commissioner or Labor Department Head.

B. 18 States—Commission Plan—Industrial Commission, Workmen's Compensation Board, etc.

III. Examples of Two Plans.

A. Rhode Island Plan.

1. Industrial Rules Board.
   2 members from industry.
   2 members from labor.
   1 member from public—Chairman.

Commissioner of Labor and Commissioner of Health are ex-officio members without vote.

2. Rules when approved by the board go into effect upon approval by the Commission of Labor who may veto them although he never has.

3. Procedure.

(a) Commisioner notifies Board of need for a code.

(b) Commissioner then invites employers and labor to name members of a technical committee in industry involved. He may also add members of his own staff and others.

(c) After technical committee reaches agreement tentative code is submitted to "Industrial Rules Board."

(d) Following Public Hearing, the Board takes formal action, either by approving code or resubmitting to technical committee for further action.

(e) Commissioner of Labor may veto final code.

B. Ohio Plan.

1. Industrial Commission, composed of one labor member, one public member, one industry member, appoints Code Steering Committee when codes need revision or new codes are necessary.

(a) Composition of Steering Committee.

(1) 4 Labor Members.
(2) 4 Industry Members.
(3) 1 Member, Chairman and no vote, from Industrial Commission's Safety and Hygiene Division.

2. This Committee makes up code.

3. Submits tentative suggested code to Industrial Commission.

4. Industrial Commission holds public hearing.

5. May then resubmit code to Steering Code Committee for revision in light of hearing experience or adopt code as is.

IV. Use Of Codes.

A. Ohio has penalty clause in workmen's Compensation Act which permits penalty up to 50 per cent of regular award if code has been violated.

1. This is serious bar to good codes.

B. Usual use is through issuance of orders.

1. Inspector, upon finding violations, issues an order requiring its correction and sets a time limit.

2. If order is not obeyed within time limits, and there is an acceptable reason for delay, time limit may be extended.

3. If company defies order or unreasonably delays compliance, case may be taken to court having jurisdiction.

4. Court may assess fine or jail sentence or both.

V. Many codes have been written or revised in recent years.

	Number	Per Cent
A. In 1945 or since	167	45
B. 1940 to 1945	87	23
C. Before 1940	117	32
	371	100

VI. Subject coverages by codes.

	Number of States
1. Seats for female employees	46
2. Transmission equipment guarding	36
3. Boiler Codes	34
4. Elevator Codes	34
5. Ladders	21
6. Woodworking Machinery	16
7. Abrasive Wheels	15
8. Power Presses	9

VII. Extent of code coverage by states.

A. Most complete coverage.

	Number of Codes
1. Pennsylvania	65
2. Minnesota	61
3. New York	57
4. Massachusetts	49

B. Least complete coverage.

1. Delaware	2
2. New Mexico	3
3. North Dakota	3

C. Rubber codes.

	Year
1. New Jersey	1939
2. Maryland	1940
3. Kentucky	1941
4. Indiana	1947
5. California	1949
6. Nebraska	(now pending)

VIII. Make-up of codes.

A. General section to cover subjects common to all industries.

B. Specific industry codes.

C. Appendix which includes suggested safe practices and photographs of guards. This is not strictly a part of code.

IX. Trend is to make codes more uniform in different states.

A. Follow A.S.A. standards.

B. Advantages of uniform codes.

1. Machine-guarding at source made easier.

2. Plan helps companies with plants in more than one state.

X. Importance of keeping informed of contents of codes and of passing information on to your engineers and other personnel.

XI. Importance of participating in code Formulation.

X. Extreme points to be considered in writing codes.

A. Complete protection to employees regardless of the cost.

B. Keep number and contents of codes to a minimum.

W. E. McCORMICK: The past two decades have experienced a rapid growth in industrial hygiene. In the United States this has been especially true. Currently, active industrial hygiene units exist in 45 states, the District of Columbia, eleven cities and counties, Hawaii, and Puerto Rico.[1] Most of these units date from the late thirties and early forties. Only three states lack such facilities: South Dakota, Nevada, and Delaware.

Forty-three of the states have their in-

1. Trasko, Victoria M.: Industrial Health Legislation—A Compilation of State Laws and Regulations. U. S. Public Health Service, Washington, D. C., July, 1950.

TABLE I

Salient Features of Industrial Health Legislation in Health Departments

State	Authority for ind. hygiene services: Specific	Authority for ind. hygiene services: Implied	Industrial hygiene service established	Rule-making powers: Specific for o.d.	Rule-making powers: Gen'l	Enforcement powers: Specific for o.d.	Enforcement powers: Gen'l	Related statutory provisions	Rules and regulations issued: Gen'l	Rules and regulations issued: Other
Alabama		x	x		x		x			
Arizona		x	x		x					
Arkansas	x		x	x				x	x	x
California		x	x		x		x			
Colorado		x	x		x		x			x
Connecticut	x		x		x	x1		x		x
Delaware					x					
Dist. of Col.		x	x		x		x			x
Florida	x		x		x		x		1	
Georgia		x	x		x					x
Idaho	x		x	x1		x				1
Illinois		x	x							
Indiana	x		x		x					x&1
Iowa		x	x		x		x			
Kansas		x	x		x		x			x
Kentucky		x	x		x					x
Louisiana	x		x		x			x	x	
Maine		x	x		x					x
Maryland	x		x	x		x				x
Massachusetts					x					
Michigan	x		x		x					
Minnesota	x		x	x1			x		1	x
Mississippi	x		x		x		x		x	
Missouri		x	x		x		x			
Montana	x		x	x		x				
Nebraska		x	x		x					
Nevada					x		x			
New Hampshire	x		x	x1						x&1
New Jersey	x		x	x1						
New Mexico		x	x		x		x			
New York					x		x			
N. Carolina	x		x							
North Dakota		x	x		x					
Ohio		x	x		x	x			x	x
Oklahoma		x	x		x		x			
Oregon		x	x		x		x		x	&1
Pennsylvania		x	x		x					
Rhode Island	x		x	x1						1
S. Carolina	x		x		x		x			x
South Dakota					x		x			
Tennessee	x		x			x		x		
Texas	x		x		x	x		x	x	
Utah	x		x		x					
Vermont	x		x	x		x		x		x
Virginia		x	x		x		x	x		
Washington		x	x		x		x		1	x&1
West Virginia	x		x	x		x				
Wisconsin		x	x		x		x		1	x&1
Wyoming	x		x			x				

1 Jointly or in cooperation with State labor authorities.

dustrial hygiene units in state health departments. Two states, Massachusetts and New York, have them in the labor department. Also, two states, Illinois and Ohio, have units in both health and labor departments. A summary of the state industrial hygiene unit's legislative features is shown in Tables I and II. An examination

TABLE II

Salient Features of Industrial Health Legislation in Labor Departments

State and Agency	Authority for ind. hyg. service (Specific)	Ind. hyg. service estab.	Rule-making powers: Specific for o.d.	Rule-making powers: Gen'l	Enforcement powers: Specific for o.d.	Enforcement powers: Gen'l	Related Statutory Provisions	Rules and regulations issued: Gen'l	Rules and regulations issued: Other
Alabama—Ind. Rel.			x		x		x		
Arizona—Ind. Com.						x	x		
Arkansas—Labor			x		x		x		
California—Ind. Rel.				x		x	x	x1	x
Colorado—Ind. Com.				x		x	x		
Conn.—Lab. & Fact. Insp.					x1		x		x
Delaware—Labor Com. ..						2	2		
District of Columbia—Min. W.&S. Bd.....				x		x	x		
Florida—Ind. Com.			x1		x			x1	
Georgia—Labor			x		x		x		x
Idaho—Ind. Acc. Bd.....			x1		x				x1
Illinois—Ind. Com.			x						x
—Labor		x			x				
Indiana—Labor			x		x		x		x1
Iowa—Labor						x	x		
Kansas—Labor				x		x	x		x2
Kentucky—Ind. Rel.	x				x		x		
Louisiana—Labor			x		x		x		
Maine—Labor & Ind.....						x	x		
Maryland—Ind. Acc. Com.				x		x			x
Massachusetts—Lab.&Ind.	x	x	x		x		x		x
Michigan—Labor						x	x		
Minnesota—Labor & Ind..	x		x1		x		x	x1	
Mississippi—(None)									
Missouri—Lab. & Ind. Rel.						x	x		
Montana—Agr.,Lab.&Ind.						x			
—Ind. Acc. Bd...				x		x	x		
Nebraska—Labor				x		x	x	x	x
Nevada—Ind. Com.				x		x	x		
—Labor Com.						x			
New Hampshire—Labor ..			x1		x		x		x1
New Jersey—Labor & Ind.	x		x1		x		x		x
New Mexico—Labor & Ind. Com.						x			
New York—Labor	x	x	x		x		x		x
N. Carolina—Labor			x		x		x		x
—Ind. Com...	x3								
N. Dakota—Agr. & Labor				2		2			
—Work Comp..						x			
Ohio—Ind. Com.	x	x	x		x				x
—Ind. Rel.					x		x		x
Oklahoma—Labor						x			
Oregon—Ind. Acc. Bd....				x		x	x	x1	x1
—Labor						x	x		x
Pennsylvania—Lab. & Ind.				x		x	x		x
Rhode Island—Labor.....			x1		x		x		x1
S. Carolina—Labor						x	x		
—Ind. Com....			x						
South Dakota—Labor						2			
Tennessee—Labor				x		x			x
Texas—Labor Stat.							2		
Utah—Ind. Com.....				x		x	x		x
Vermont—Ind. Rel.				x		x			
Virginia—Labor & Ind....						x	x		
—Safety Codes ...				x					
Washington—Labor & Ind.				x		x	x	x1	x4
West Virginia—Labor				x		x	x		
Wisconsin—Ind. Com.....				x		x	x	x1	x1
Wyoming—Labor & Stat..	5					x	x		

1 Jointly or in cooperation with State Health authority.
2 Laws concerning women and minors only.
3 Specific for dust control.

of of these two tables shows that most states have given both rule-making and enforcement powers to the official industrial health agency.

A discussion of these powers with respect to the individual agency is, of course, impossible at this time, but suffice it to say that a wide variation exists, ranging all the way from very general requirements of sanitation to quite exacting codes with respect to hygienic standards and ventilation. The trend of state legislatures is to increase such powers and to enact more stringent codes. As representatives of industry, you should become familiar with your individual states codes and your industrial hygiene agency.

The reporting of occupational disease varies considerably among the different states. This is shown in Table III.[1]

TABLE III
Summary of Requirements for Reporting of Occupational Diseases

State	To health departments		To labor departments	Reporting provisions in workmen's compensation laws[2]		
	Regulation	Statute	Statute	o.d. Specified	"Injury" defined to include o.d.	Use of indicated terms
Alabama		x				
Arizona						Claims
Arkansas	x					Injuries
California				x (Rule)		Injuries
Colorado	x					Injuries
Connecticut		x			x	
Delaware						Injuries
District of Columbia						Injury
Florida						Injury
Georgia	x			x		
Idaho						Injuries
Illinois				x		
Indiana				x		
Iowa	x					Injuries
Kansas	x					
Kentucky	x					Injuries
Louisiana	x					
Maine		x				Accidents
Maryland		x		x		
Massachusetts			x		x	
Michigan		x				Claims
Minnesota		x			x	Accidents
Mississippi	x					
Missouri	x	x				Injury
Montana		x				
Nebraska						
Nevada						Injuries
New Hampshire		x				Injuries
New Jersey				x		
New Mexico	x			x		
New York			x	x		
North Carolina				x (Rule)		
North Dakota					x	
Ohio			Lead poisoning[3]	x		
Oklahoma						
Oregon					x	
Pennsylvania	x		Lead poisoning[3]			Injuries
Rhode Island		x			x	
South Carolina		x				Accidents
South Dakota						Accidents
Tennessee					x	
Texas				x		
Utah						Accidents
Vermont						
Virginia						Claims
Washington	x					Claims
West Virginia						Injuries
Wisconsin		x		x (Rule)		
Wyoming						

1 Physicians are required to report under these laws.
2 Employees and, at times, physicians are required to report to industrial commissions or workmen's compensation boards.
3 Reportable to both health and labor departments.

The need for more uniformity among the various state and local industrial hygiene codes is obvious. In order to promote this the American Conference of Governmental Hygienists developed, and approved at its 1949 annual meeting a suggested "Uniform Industrial Hygiene Code."[2] This is an advisory code only and has no legal authority per se. However, it may well set the pattern for future industrial health legislation.

The health provisions of the recently adopted "General Industry Safety Orders" for the state of California[3] follow closely the recommendations of this code.

In order to obviate some of the difficulties of securing wide acceptance of a uniform industrial hygiene code, it has been suggested that it be developed by the American Standards Association. It is my understanding that the ASA is in the process of developing such a code at the present time. This Association has developed over the past several years a number of hygienic standards for toxic materials, and these standards have not only proven quite valuable in evaluating industrial health hazards, but have been generally accepted by industry, labor, and government. The same may be expected of a uniform code developed by this Association.

2. American Conference of Governmental Industrial Hygienists: Uniform Industrial Hygiene Code. Secretary: Dr. L. J. Cralley, Environmental Health Center, U. S. Public Health Service, Cincinnati, Ohio.

3. California Division of Industrial Safety: General Industry Safety Orders. Printing Division, Sacramento, Calif.

A New Look In Industrial Safety

By G. W. HARPER

Assistant Professor of Mechanical Engineering, University of Illinois, Urbana, Ill.

There can be no question that safety, at least to the extent of self-preservation, goes back to the earliest beginnings. What the caveman did or did not do about safety, we will never know, because it all happened before the dawn of recorded history. However, we can rest assured by the very fact that we are here today, that whatever our early ancestors did was sufficient.

It was not until the rise of large populations in industrial centers, that we began to have some of the acute problems in safety, sanitation, industrial hygiene, and a good many others. This "Industrial Revolution" appeared in Europe a good many years before it was felt in the United States. Both the problems and partial answers were secured in England and Germany long before those same things became problems for us. These items coupled with the fact that we in this country followed the pattern of the English Common Law, paved the way for the course of events which followed.

As industrial centers grew in size, the number of injuries increased to such an appalling number, that people realized something must be done. The first step was logical in that an effort was made to alleviate the suffering, and distress on the part of the injured's family. This was followed by other acts, and then by the "Working Man's Compensation Acts." From these humble beginnings has grown the present concept of industrial safety. Every one now realizes that—to use the terms of the Ohio Industrial Commission—"Safety is better than compensation."

Many companies have well planned, well directed, and excellently applied safety programs. On the other hand, we find plants where safety is merely a catch word. Perhaps one of the main reasons why there isn't as much done as should be, is the failure to realize that industrial safety can be broken into its component parts.

The first step in the solution of any problem is to ask questions. For our discussion this afternoon, I would like to propose three questions, the answers to which I am sure will point the way to a slightly different approach, and "start a new look in industrial safety."

First, what are we trying to do, what are the objectives, what are we striving for in an industrial safety program?

Next, what are the means, the tools, the equipment with which we can do the job?

Third, how are we going to use these tools to meet the needs; how do we apply them on the job?

The answer to the first question can be stated in general terms. In fact, at this stage we must not be specific. We must define the ideals. For this reason I would like to outline what I consider the seven "Principles of Industrial Safety."

1. Accidents can be prevented. The techniques of prevention are not too difficult and can be applied after the cause or causes are discovered.

2. There must be a genuine interest on the part of top-management. In addition to this interest and support, top management should take an active part in the safety program.

3. Safety must be made a part of the job, it cannot be something that's dragged in by the tail after a job has been described. The foreman or job instructor cannot teach a job correctly unless he stresses the safety factor from start to finish. We have either seen or heard of a supervisor who very carefully instructed an employee in his duties, and then, at the tail end, said "Oh yes, we have some safety rules, too."

4. To achieve success in our industrial safety program, we must have the enthusiastic cooperation of all employees. The methods will have to be decided by your own organization, to meet your own conditions and hazards, because these vary from plant to plant.

5. We must have adequate safety training for the supervisors. The foreman must be able to recognize the hazards because he is the man who can do something about them in his own department. Unsafe practices and unsafe conditions must be eliminated if the foreman is to be a leader in his own department.

6. There must be a competent safety staff to assist the line organization in carrying out the safety program. The number of safety personnel in a plant of high hazard has to be large.

7. A safe plant is a plant where there is a full respect for plant efficiency. There has to be respect for rules and regulations.

"What are the tools we have, with which to accomplish this safety job?" When we arrive at this point in our class work at the University of Illinois, I like to point out to the students that an industrial safety program is very much like the kit of tools you have in your car. You carry them with you to do certain jobs, but you do not make use of them until there is a need. Some tools are general purpose tools, some are special. In like manner, we have general and special tools to be applied in safety. For want of a better term we call these "activities."

Another parallel might be the store. Let's assume for the moment that we are standing in such a store. What would we see on the shelves? There are three departments in this store. One section is labeled "Engineering." On the shelves and bins of this department we see sections marked with the titles of accident investigation, reporting system, accident records, accident analysis and statistics, inspections of various shapes and sizes, codes for fire protection, machine guarding, and many others.

The second department in this store is labeled "Training." This, too, is a large department. It includes such items as induction procedures, plant or general safety rules, sound slides, movies, safety graphs, supervisory conferences, safety conventions, short courses, institutes, and university extension programs.

Coming to the third department, we see the general topic "Promotion." Some stores selling the same goods call this department "Maintaining Interest." The sections of the department are labeled very much the same. Some of the labels read, safety posters, bulletin boards, signs, stunts, campaigns, employee contests, inter-departmental and inter-plant contests, accident write ups, company publication, and suggestion systems.

At this point it should be pointed out that no single activity can be pigeonholed exclusively on any one shelf. Human activity is such that there is overlapping and interlocking all along the way. For the purpose of discussion, and for clearer thinking, I feel that the various activities should be labeled.

Now that we have tools what are we going to do with them? The third major phase of industrial safety is that of application and administration.

Each plant and each company has a different organizational structure and the application of a safety program must fit

the organization. If we return to our principles we can point out how the job can be done. However, each plant will have some variations, suitable to its needs. In the larger plant, you have a full time safety director and an assistant, two or three safety engineers, perhaps, and safety inspectors. In the smaller plants you may have a man who has the title of personnel director or employment manager who does the safety work.

There are some general principles that can be applied. Safety committees, safety inspection committees, and so on have been utilized, and always can be used. The extent of departmental meetings, group meetings, etc., will have to be determined to fit your particular situation.

A "new look" in industrial safety consists in thoroughly and logically breaking the problem into these components: Principles, activities, and administration. The first consists of our goals; the second the tools used to do the job, consisting of three types—engineering, training, and promotion; and the third the application or use of these tools in each of our plants.

We've talked about packages on shelves—items or elements that go to make up a safety program. The new look in safety, if you will gentlemen, is to re-evaluate what we have been doing and what we mean to do, wherever your plants may be or wherever your jobs may be. Let's re-evaluate these tools on the shelf, the pile of ammunition, if you will. Let's see that it gets in the cannon. And let's see that it is pointed in the direction of our general principles or general directives. When we pull the trigger we will see an explosion of industrial safety and industrial safety cooperation such as we have never seen before.

Medical Aspects of Accident Prevention

By R. R. MEIGS
Assistant Vice-President, Liberty Mutual Insurance Co., Boston, Mass.

A complete accident prevention program has a medical aspect and those of us involved in accident prevention work should understand it and endeavor to promote, expedite and assist in the development of procedures to handle this particular aspect.

I believe that the acceptance of the idea that there are certain problems best handled by medical methods or by a combination of medical and safety engineering methods will clear away a great deal of fuzziness in some of our accident prevention approaches.

We are all familiar with the finding that a large percentage of industrial accidents are due to "personal causes." "Personal" is a very general word and "personal causes" often include many where no medical aspect is involved, but in the other very sizeable group we find real evidence of our need for a medical approach in accident prevention.

It is in this group where we find a lot of "headaches" where the straight accident-prevention engineering often bogs down. I believe that we can speed things up and accomplish better results as we become more expert in recognizing specific needs for special skills in this area.

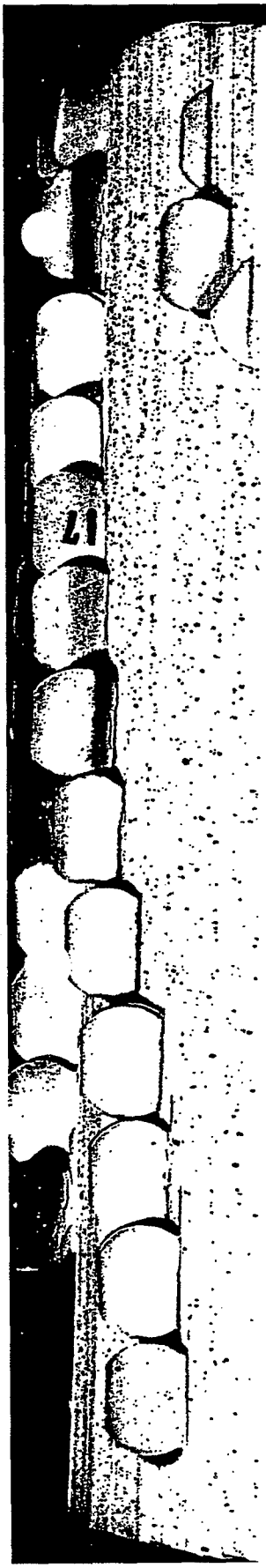
Not long ago in a relatively large plant where things were not going too well a medical and safety group became convinced that accident prevention in one department was for all practical purposes solely up to medical people.

It could have been worked out that this department needed better machine guarding, or more supervision or more attention to safe practice, etc.; but it actually was agreed that there was a unique group of people in this department who could best be handled by medical personnel.

This is an unusual instance but I would not be surprised if, as we become more experienced in handling the medical aspect of accident prevention, such occurrences would be more common.

Let's take a quick look at the record over the years.

The record looks pretty good. In approximately 25 years, many industry-wide frequency rates of lost-time accidents have



been cut in half. However, if we take the national over-all figures published by various agencies and plot a rough performance curve year-by-year, it will be found that the downward "trend" is flattening out.

We find a similar situation in many plants. A point has been reached where the occurrence rate of accidents has remained practically stationary for a period of years. Summed up, this would seem to indicate that we are riding along a sort of plateau. We need to develop a more pronounced downward trend.

How can we go about it?

The methods now generally employed by safety engineers have been largely concerned with the development of safe methods and practices, the safeguarding of hazardous equipment and machines, the control of occupational diseases, and the education and stimulation of management, supervision and employees in the benefits of these undertakings. These activities have proved to be effective and are largely responsible for the growth and present stature of accident prevention.

In some of the larger plants, in-plant medical programs have been established which provide effective medical services. However, the quality and quantity of in-plant medical services vary dramatically. There are a large number of plants with excellent first aid programs. However, there are relatively few concerns where in-plant medical and accident prevention activities are coordinated.

There needs to be more exploration and research by safety engineers and industrial physicians to establish guides for coordinating effort—for accomplishing more with the effort and dollars spent for accident prevention.

This is the long-range part of the project.

What are some more specific actions to be taken?

The accident-prevention engineer should be active in the establishment of placement programs. In many instances, the sequence of events leading up to an accident started the day a worker was first employed and assigned to a job he was not physically or mentally qualified to handle.

The ultimate purpose of selective placement is to assign each worker to a specific occupation where the requirements of the job are within the capacities of the worker. To do this properly it is necessary to treat each worker as an individual. His skills, physical and mental capacities and personalty must be evaluated and then matched with the demands of the job.

The demands of the job can usually be compiled in a job description or specification. Such a specification should be definite in outlining the types and degrees of skills required. It must describe the environmental conditions of the job, the physical requirements, the "mental stress" of the job, etc. It should be comprehensive in covering all factors which might have a bearing on the worker's failing to meet the requirements of the job and, by so doing, becoming an accident casualty.

When the industrial physician is furnished with such material, he is in a position to examine an individual and appraise him for assignment to any specific job. While it is true that such appraisals of individual capacity involve consideration of many intangibles, it is a fact that the industrial physician is the most qualified to assess these factors.

The accident-prevention engineer should take an active, cooperative interest in plant health programs and should assist in their promotion as measures which will decrease the possibilities of accident occurrence. He should also recognize their importance when analyzing accident causes or when evaluating the accident-prevention problems in a plant, so that he will be able to assist the medical personnel in planning their work and in taking part in joint medical engineering activities.

Industry's greatest source of lost time is said to be absenteeism occurring because of non-occupational illness. One estimate has been made that out of every 100 days of lost time there are 94 days lost owing to non-occupational illness. It is reasonable to assume that a considerable portion is caused by minor ailments, headaches, respiratory diseases, digestive disorders, etc.

Let us assume that there are a number of non-dramatic ailments among shop workers which lend themselves to treatment, but which if untreated, and allowed to run their course will create mental and physical discomfort. (Included in this situation should

be those minor disabilities where self-treatment is attempted with varying degrees of success.) In such instances, it seems proper to assume that a certain temporary jeopardy exists to the extent that the worker is in a subnormal physical condition. His reactions may be slower, his energy lowered, his mind occupied, etc., with the result that he loses a portion of his capacity to perform his work. Physical impairment lessens his vitality and alertness. A half-well worker is disturbed and distracted. His below-par physical condition, therefore, becomes a form of hazard.

The maintenance, conservation and improvement of physical capacities of workers through in-plant activities are the project of industrial medicine. In addition to those practices of industrial medicine concerned with the direct physical care of workers, there are numerous indirect approaches. Programs to improve the general health, such as those concerned with better nutrition, sanitation, mental hygiene, health habits, dental care, etc., are examples of activities which, on a long-range basis, can be expected to raise the health level of a plant and reduce the occurrence rate of accidents.

I do not believe that any new or radical position is being taken when it is said that many industrial accidents occur where the primary or real cause of the accident is some type of physical or mental incapacity. We have known this for a long time, but we have not been very active in doing something about it.

The physical activity of any individual is dependent primarily upon the condition of his health. In industry a worker, to perform the work assigned to him, must possess some minimum of health to be able to carry on his activities effectively and safely.

Periodic physical examinations of individuals provide a method of checking on the development of a disability and initiating corrective measures in the early stage. This phase of industrial medicine is very important in accident prevention. The early detection and organization of treatment of an impairment are true preventive measures.

As we grow older, there may be a very definite diminishing of physical capacity. Without attempting to record the various inroads of age, it is sufficient to say that they produce, in many instances, specific reductions in the worker's ability to perform his work safely.

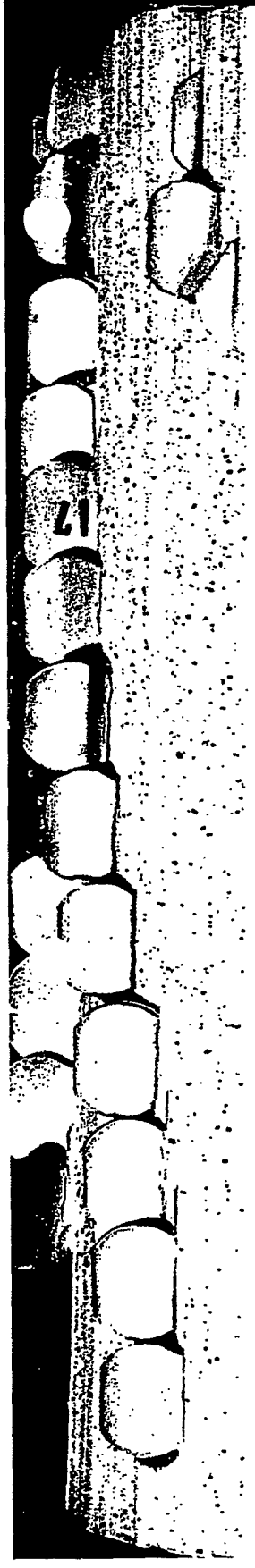
If these conditions *are not* recognized and definite steps taken to alleviate or compensate for them, the worker is forced to adopt modifications in his customary methods of performing his work. An older man is generally more experienced and less apt to resort to "foolish" measures in meeting the trying requirements of his job. Yet the liability of restricted physical capacity exists and with it an increased possibility of becoming involved in an accident.

Paralleling the periodic examination procedure which might be considered a mechanical method of physical check-up, there is the day-in day-out contact between the medical personnel and employees which develops when an effective and accepted medical program is in operation. Where the value and stature of the medical program is recognized by employees, they will bring their problems to the medical department. This consultation can be a more sensitive procedure than routine examinations in uncovering disabilities in the early stages. A high frequency of calls on medical personnel for assistance is an indication that a considerable amount of basic preventive work is being done.

I should like to do a little summing up here by running through a description of a typical set of circumstances which might occur in any plant.

Let's discuss a situation where a man injures his back while lifting a 25 pound container of dry, loose material. He has been employed on his present job for several years. He has made this same lift thousands of times. He is an efficient worker and has developed a knack for lifting this particular container smoothly and easily. He has never complained about the lift nor has anyone involved in accident prevention ever considered that the lift was unsafe. And yet, one day this man suffers a strain; he injures his back and loses time.

This accident might be considered a straight materials handling accident caused by faulty technique, possibly due to lack of attention, etc. Following common practice, some review of the method might have been made and suggestions offered about care in handling the container.



However, in this case, let us assume that investigation disclosed that this worker had become affected with arthritis in his left shoulder. It had developed gradually and the worker had taken no steps to have the ailmment treated. He had adjusted his motions and use of his muscles to favor his left arm. He had altered the rhythm of his job to compensate for his disability. On the day of the accident his arthritic pain was acute. During a lift he experienced a particularly severe twinge and in his effort to protect his shoulder he lost control of the burden. In his attempt to recover the control he was forced into an unsafe lifting stance with the result he severely strained his lower back muscles.

The primary cause of this accident was the arthritic condition of the worker's shoulder or, put in general terms, impairment of his health.

If this man had worked in a plant where there was a well-established in-plant medical program he would have gone to his foreman for advice when his shoulder began to interfere with his regular method of working. The foreman would have recognized that this was a situation where he needed the guidance of the medical people. Upon examination the man would have been given any indicated treatment and advice as how best to adjust himself to his job; or if treatment could not be expected to produce adequate results, arrangements would have been made for a transfer to work which would not aggravate his condition or slow up recovery. The worker would have been spared the discomfort before the accident and the injury itself. The economic waste of the accident would have been avoided.

I believe that the industrial physician can make a very definite contribution to accident prevention by participating in accident investigations. It is not meant that he should necessarily take part in the actual plant investigations, but rather in the study of those accidents where the causes involve personal factors. Where personal causes alone are concerned, the doctor is usually in a position to point our corrective measures.

Occasionally there are stubborn or difficult cases of mental or emotional disturbance. They require special treatment and should probably be referred to specialists in the psychiatric field. In general, however, counseling within industrial plants is a simple process of assisting normal individuals to solve their personal problems.

It may be found that there are accident repeaters in a plant. Then we have the difficult job of determining whether or not such people are actually accident-prone. There are some individuals who seem to be less able to take care of themselves than their fellows. They seem to lack ability to perform the fringe skills necessary in handling themselves as they go about earning a livelihood. The protection of these people from accidents goes beyond conventional safeguarding of hazards. It is practically a matter of protecting them from themselves. In such cases, proper placement is a major problem. There is no guarantee that an accident-prone person can be established in an accident-proof job, but there is a possibility of selecting employment where the possibility of accident can be minimized. To my way of thinking this accident-proneness has a very significant medical aspect and medical people can be of great assistance in determining how best to handle such individuals.

The proper initial care or first-aid treatment minimizes the severity of most injuries. Technically this is not accident prevention. However, medical personnel, in the course of handling such cases, is in a position to obtain valuable information having to do with accident potentialities. Minor accidents are often warnings of unsafe conditions, both as regards the individual personally and the hazards of his job.

The control of occupational disease or health impairment brought about by exposure to toxic materials, dusts, fumes, etc. is an important problem in some plants. Production and safety people commonly consult with medical authorities and industrial hygienists concerning the hazards in the proposed use of any new or unfamiliar material. Consultation of this type is truly preventive as far as accident control is concerned and eliminates those too frequent situations where the first indication of an occupational disease exposure comes when a worker develops a disability and those responsible for accident prevention must start with a reported disability to run down the cause of the trouble.

Where a recognized disease exposure exists, which is not under complete control or

does not lend itself to complete control, the industrial physician has the problem of setting up a health maintenance program to detect as promptly as possible any impairment of the workers' health. This is accomplished through appropriate periodic examinations (the frequency depends upon the severity of the exposure and may vary for different individuals) to enable the physician to initiate steps to prevent further development of the impairment.

Such a procedure is a definite form of accident prevention.

Medical personnel can do an effective educational job in explaining to workers the importance and need for using protective clothing, respirators, etc., and for following certain practices of personal hygiene so that occupational diseases exposure will be minimized.

The prevention of occupational disease is a team job requiring many skills, but the doctor is in a unique position to evaluate the success of any control program in that he is able to measure the results of physical impairment.

There is a medical aspect in any consideration of general working conditions such as illumination, noise, vibration, temperature, moisture, general ventilation, sanitation, etc. Such factors may have a definite bearing on the health level of a plant—and when the medical and engineering aspects are combined we have a sound, complete story.

An important phase of an in-plant medical program is education for better health. A good portion of preventive medicine depends upon education and instruction in good personal hygiene and proper health habits. Through pamphlets, posters, talks, etc. information can be passed along to workers and their families.

In most communities there are public and private agencies concerned with the general health of the public. As the benefits and facilities of such agencies are utilized by workers there is a rise in the health level and a lessening of disabilities. The industrial physicians can accomplish a great deal of health conservation by assisting workers in making use of such facilities. Persons interested in accident prevention should not overlook the possibilities of better community health as a definite factor in the overall reduction of accident occurrence and do whatever they can to promote it.

There is a trend to increase the scope of health services in some in-plant medical programs. These are dependent largely on the special requirements of workers in a particular type of industry or on the acceptance by industrial management that health services are particularly worthwhile as a part of industrial and public relationships. In some instances these services are a part of a medical care program supported by both management and employees. In other cases, management provides the services as an integrated part of its medical program.

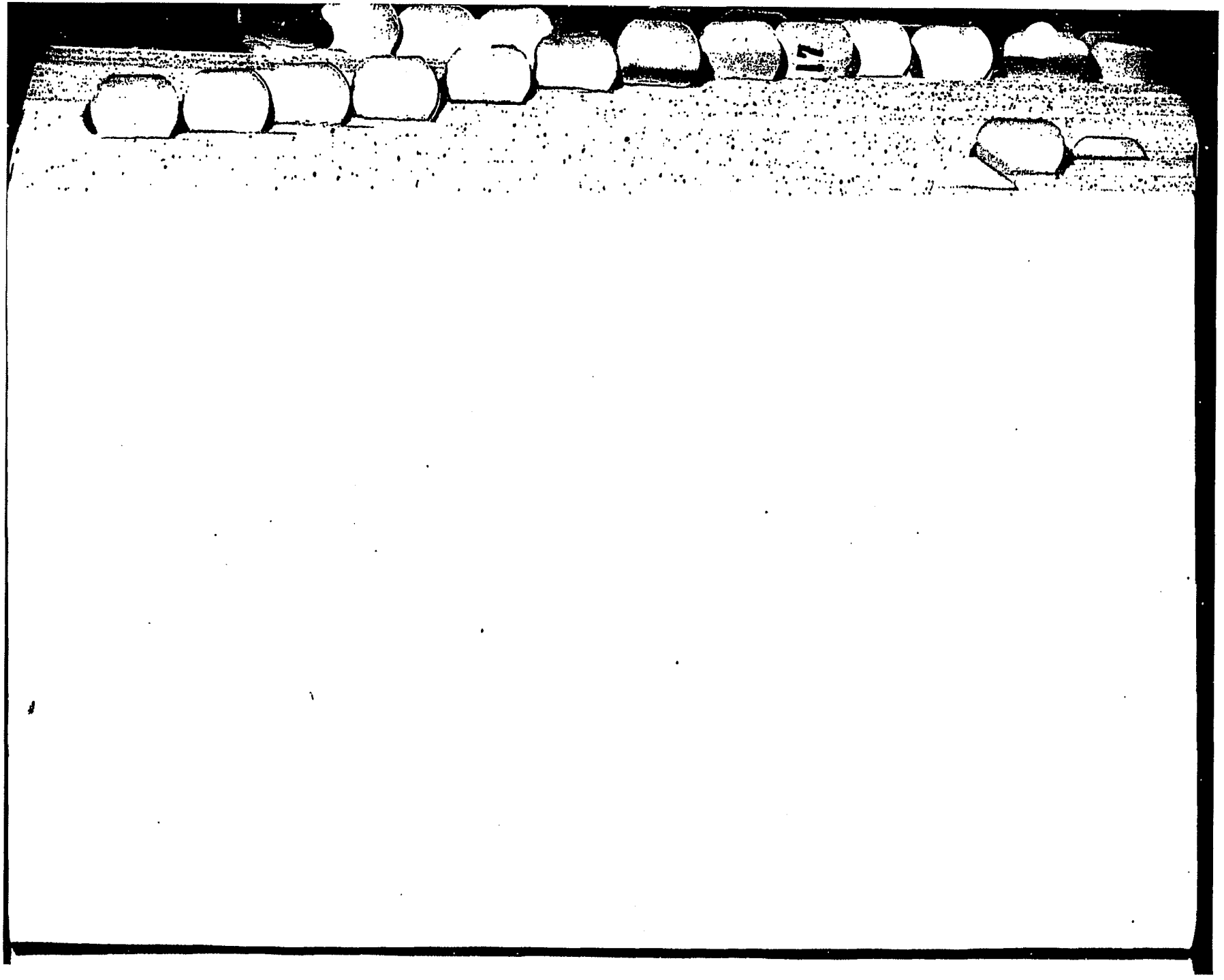
Each extension insofar as it improves the health of the worker will be another influence in the reduction of the mass of tangible and intangible factors now producing the lost-time accident frequency rate in the major industries of this country.

A definite portion of industrial accidents can be attributed to causes stemming from impairment of the physical and mental health of workers.

A challenge to those engaged in industrial medicine and accident prevention lies in the need for joint action to minimize and eliminate those personal causes. While it is true that one theoretical approach might be to attempt to engineer safeguards for all occupations and operations with the goal of making them "accident-proof," this is outside all reason because of the extent of the problem.

It is also true that it is impossible to set up any medical program to guarantee that each worker will be in such physical and mental condition that all personal causes for accidents cease to exist.

A concerted program will create a broader concept in accident prevention and increase the stature of both industrial medicine and safety engineering.



Officers of the

RUBBER SECTION

NATIONAL SAFETY COUNCIL 1950-51

General Chairman—S. A. WRIGHT, Inland Manufacturing Division, General Motors Corporation, Dayton, Ohio.

Vice-Chairman in Charge of Program—GEORGE BURKHARDT, General Tire & Rubber Company, Akron, Ohio.

Secretary—R. M. BOYLES, Midwest Rubber Reclaiming Company, East St. Louis, Ill.

News Letter Editor—R. W. FICKES, The Goodyear Tire & Rubber Company, Akron, Ohio.

Engineering Committee—W. M. GRAFF, Chairman, U. S. Rubber Company, New York, N. Y.; W. J. DOOLING, Hood Rubber Company, Division of B. F. Goodrich Company, Watertown, Mass.; J. L. DEAN, The Firestone Tire & Rubber Company, Memphis, Tenn.

Trade Association and Liaison Committee—C. E. BECK, Chairman, St. Clair Rubber Company, Marysville, Mich.

Health Committee—DR. R. H. WILSON, Chairman, The B. F. Goodrich Company, Akron, Ohio; F. W. SANDS, U. S. Rubber Company, New York, N. Y.; K. A. KELSON, The Goodyear Tire & Rubber Company, Akron, Ohio; DR. W. L. HOGUE, JR., The Firestone Tire & Rubber Company, Akron, Ohio.

Membership Committee—T. J. CAIN, JR., Chairman, The B. F. Goodrich Company, Akron, Ohio.

Publicity Committee—J. J. RAYTKWICH, Chairman, Naugatuck Chemical, Division of U. S. Rubber Company, Naugatuck, Conn.

Rules and Regulations Committee—*G. D. CROSS, Chairman, The Firestone Tire & Rubber Company, Akron, Ohio.

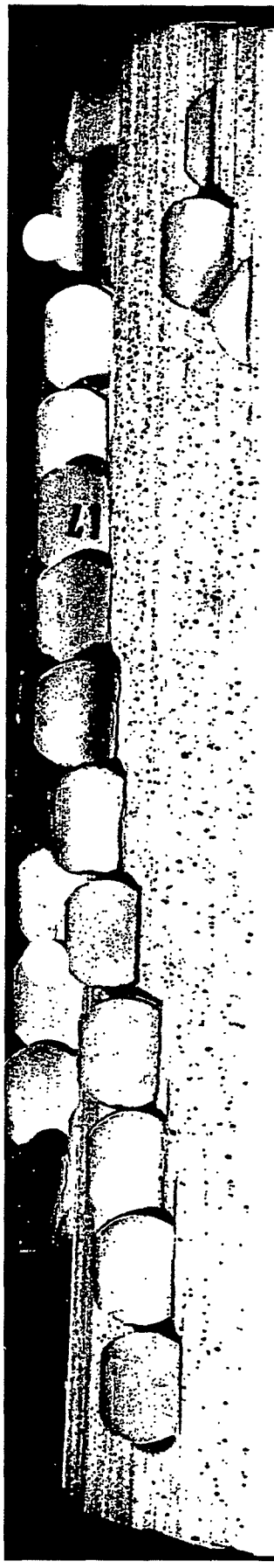
Poster Committee—L. F. NIXON, Chairman, Canadian Synthetic Rubber Limited, Sarina, Ont.; M. R. BATCHE, Xylos Rubber Company, Akron, Ohio; G. A. MILLER, The Gates Rubber Company, Denver, Colo.

Statistic Committee—C. E. FRICK, Chairman, Van Cleef Brothers, Inc., Chicago, Ill.

Members-At-Large—*H. L. ANDREWS, The Firestone Tire & Rubber Company, Pottstown, Pa.; M. E. BADSTUBER, Ohio Rubber Company, Willoughby, Ohio.; *E. W. BECK, U. S. Rubber Company, New York, N. Y.; *T. H. BOYD, Manhattan Rubber Manufacturing Division of Raybestos Manhattan, Inc., Passaic, N. J.; *R. A. BULLOCK, Corduroy Rubber Company, Grand Rapids, Mich.; *R. S. FARNUM, U. S. Rubber Company, Detroit, Mich.; *O. HOPKINS, U. S. Rubber Company, Providence, R. I. *ROLAND KASTELL, U. S. Rubber Company, New York, N. Y.; *J. M. KERRIGAN, U. S. Rubber Reclaiming Company, Buffalo, N. Y.; *J. T. KIDNEY, The Goodyear Tire & Rubber Company, Akron, Ohio; *J. E. LOVAS, U. S. Rubber Company, Passaic, N. J.; *W. L. SCHNEIDER, The B. F. Goodrich Company, Akron, Ohio.

Staff Representative—F. A. VAN ATTA, National Safety Council, Chicago, Ill.

*Past General Chairman



Other Volumes in this Series

Users of this volume will find much value in its companion volumes. Here is the list:

TITLE	VOLUME No.
General Sessions and Detailed Index to all Volumes	1
Aeronautical Industries	2
Air Transport Industry	3
Automotive and Machine Shop Industries	4
Cement and Quarry Industries	5
Chemical Industries	6
Coal Mining Industry	7
Construction Industry	8
Electrical Equipment Industry	9
Farm Safety	10
Food Industry	11
Glass and Ceramics Industry	12
Home Safety	13
Industrial Nursing	14
Industrial Subject Sessions (Sponsored by ASSE)	15
Maritime Industries (Marine Section)	16
Meat Packing, Tanning and Leather Industries	17
Metals Industry	18
Mining Industry	19
Motor Transportation Industry (Commercial Vehicle Section)	20
Petroleum Industry	21
Power Press and Forging Operations	22
Printing and Publishing Industry	23
Public Employment (Public Employees Safety Committee)	24
Public Utilities Industries	25
Pulp and Paper Industry	26
Railroad Industry	27
Rubber Industry	28
School and College Safety	29
Textile Industry	30
Traffic Safety	31
Transit Industry	32
Wood Products Industries	33
Speaking With People (Early Morning Sessions)	34

PRICES OF EXTRA COPIES OF INDIVIDUAL VOLUMES TO MEMBERS

VOLUME SIZE	*1 to 9 copies* *Each*	*10 to 99 copies* *Each*	*100 to 999 copies* *Each*	*1000 or more* *Each*
Less than 24 pages—	$0.25	$0.20	$0.15	$0.15
24 to 48 pages—	.30	.25	.20	.20
49 to 96 pages—	.40	.35	.30	.30
Over 96 pages—	.60	.55	.50	.50

Complete set of Transactions (34 volumes)—$6.00

NON-MEMBER prices are double member prices, except volumes 10, 13, 29 and 31.

NATIONAL SAFETY COUNCIL • 425 NORTH MICHIGAN AVE. • CHICAGO 11, ILL.

PRINTED IN U.S.A.

1000—251—WHP